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Madison Bearden   Date

"We are Working in a Convergence": Multi-Sectoral Approaches and Partnerships in Nutrition-Sensitive Agriculture Programs in Bangladesh and India

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"We are Working in a Convergence": Multi-Sectoral Approaches and Partnerships in Nutrition-Sensitive Agriculture Programs in Bangladesh and India

By

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An abstract of
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Abstract
"We are Working in a Convergence": Multi-Sectoral Approaches and Partnerships in Nutrition-Sensitive Agriculture Programs in Bangladesh and India

By Madison Bearden

Background: Nutrition-sensitive agriculture (NSA) programs are crucial in addressing food insecurity and maternal and child nutrition in Bangladesh and India, where agriculture is the primary livelihood. Despite the ongoing NSA programs, both India and Bangladesh still face food insecurity, poverty, and undernutrition, increasing the need for multi-sectoral approaches and partnerships. However, limited research exists on multi-sectoral approaches and partnerships in NSA programs documenting the need to explore the effectiveness and challenges of using multi-sectoral approaches and partnerships and identify best practices. This study aims to fill the gaps in understanding how multisectoral approaches and partnerships operate and are effective in the context of NSA.

Methods: This study aims to identify the perceived value and prioritization of (i) multi-sectoral approaches and (ii) partnerships for NSA in South Asia. The data used in this analysis is derived from an ongoing landscape analysis of social and behavior change approaches within NSA interventions. This research will use qualitative data collected from two ongoing NSA projects in India and Bangladesh that are enrolled in the larger landscape analysis. The data will be analyzed using a thematic analysis.

Results: Both programs use multi-sectoral approaches and partnerships to obtain their objectives and implement their activities. The projects engage government, international organizations, academic institutions, private sector, religious structures, and civil society partners. Key themes that are associated with the multi-sectoral approaches and partnerships in the two NSA programs are the ability to increase capacity strengthening, integrate into existing structures, and collaborate to meet project objectives and activities. Other findings are the increase in investment into these programs through different sectors and partnerships as well as increase and encourage women's empowerment in agriculture practices.

Conclusions: Through the two case studies presented, it is evident that multisectoral approaches and partnerships played a significant role in facilitating the implementation of project activities. This appears to be achieved largely through enhanced capacity strengthening, integration with existing structures, collaboration, investment, and women's empowerment. This qualitative study shows the value of using multi-sectoral approaches and partnerships in NSA programs, which can contribute to future use of implementing NSA programs.

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Acronym List

FGD – Focus group discussion

IDI – In-depth interview

IRB – Institutional review board

NGO – Non-governmental organizations

NSA – Nutrition sensitive agriculture

POSHAN – Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition

RAISIN – Research-informed Adapted Implementation Science framework for Interventions in Nutrition

SBC – Social and behavior change

SUN – Scaling Up Nutrition

UNICEF – United Nations International Children's Emergency Fund

WASH – Water, sanitation, and hygiene

Chapter 1: Introduction

Context of the Project

By 2030, the Sustainable Development "zero hunger" goal seems to be unattainable due to the still significant undernutrition rates in the world (International Food Policy Research Institute, 2014). In countries in South Asia, maternal and child undernutrition rates are among the highest globally. India has the highest prevalence of undernutrition in the world, estimating 38.4% of children under the age of five being stunted, 21% wasted, and 35.7% underweight (Singh et al., 2022). Similarly, Bangladesh has a prevalence of undernutrition with 29% of children under five being stunted, 21% wasted, and 23% underweight, as reported by Das et al. (2022). Undernutrition is a main contributor to child mortality rates, with 45% of child deaths in India and 22.6% in Bangladesh attributed to undernutrition (World Health Organization, 2021; UNICEF, 2020). Anemia is also prevalent in this region, with 53.1% of women of reproductive age in India and 42.4% in Bangladesh being affected (Sunuwar et al., 2016). The factors contributing to undernutrition are complex, including poverty, high population levels, low access to healthcare, and poor maternal and child health practices (Müller & Krawinkel, 2005). Food insecurity is also a significant factor, with a prevalence of 40.6% in Southern Asia, and a lack of access to food and agriculture being a primary cause of undernutrition and poor livelihoods in developing countries (FAO et al., 2022; Sharma et al., 2021). Agriculture is a key livelihood for the population of India and Bangladesh, with 47% in Bangladesh and 58% in India are employed by agricultural sector (van de Bold et al., 2015). Still, both countries face several challenges such as food insecurity, poverty, and limited access to nutritious foods, making nutrition-sensitive agriculture (NSA) strategies vital (Ruel & Alderman, 2013; Sharma et al., 2021).

NSA programs aim to increase and improve nutrition and health outcomes in prevalent undernutrition areas in developing countries, especially for women and children (World Bank, 2013; Balz et al., 2015; Ruel et al., 2018). NSA approaches address underlying causes of undernutrition through community development, economic growth, and agricultural production (Pandey et al., 2016; Ruel & Alderman, 2013). Although NSA programs are becoming more established within South Asia, more efforts are required to meet the "zero hunger" target (Ruel et al., 2018; International Food Policy Research Institute, 2014). Nyguen et al. (2022) states, "the multi-faceted nature of the problem [of undernutrition] call[s] for multi-sectoral approaches". Multi-sectoral approaches and partnership are the necessary steps to decrease undernutrition rates, share of expertise, and fill knowledge gaps (Di prima et al., 2022; Nordhagen et al., 2019; Drewnowski et al., 2018). Meeting these specific target goals in Bangladesh and India will thus require multi-sectoral approaches that bring together multiple stakeholders in new partnerships with the shared goal of reducing undernutrition (Ruel et al., 2018; Baker et al., 2013; Pandey et al., 2016). However, limited research exists on multi-sectoral approaches and partnerships in NSA programs documenting the need to explore the effectiveness and challenges of using multi-sectoral approaches and partnerships and identify best practices. This study aims to fill the gaps in understanding how multi-sectoral approaches and partnerships operate and are effective in the context of NSA. Furthermore, the research will evaluate lessons learned and avenues of improvement for future use in NSA programs.

This research will accomplish its goals using two ongoing projects in India and Bangladesh as case studies. Both are NSA projects that use multi-sectoral approaches and partnerships to achieve their goals. The India NSA project aims to increase availability, accessibility, consumption of fish through promotion of aquaculture and hygienic practices, targeting women,

adolescent girls, and children under the age of six. The NSA program in Bangladesh aims to increase household milk consumption through improved livestock practices, women's empowerment, and diet related behavior change. Both projects work across multiple sectors (e.g., agriculture, health, private sector) and bring together government, non-governmental, civil society, religious structures, private sector, and other stakeholders to achieve their goals.

Problem Statement

To fully understand the implementation of NSA programs in South Asia and the contributions of these approaches to improving diets nutrition, more research is needed on the multi-sectoral approaches used and the integration project activities into existing structures and partnerships. As well, there still needs to be a greater understanding of how multi-sectoral NSA programs are implemented in the local context of communities' knowledge structures and norms as these can affect program implementation (McDermott et al., 2013; Ruel et al., 2018). Moreover, learning from ongoing projects about what works and what does not with regards to engaging multiple sectors and partners can enable future projects to develop effective strategies for multi-sectoral approaches and partnerships (Webb & Kennedy, 2014). Therefore, this research aims to answer the following question: *What is the perceived value of, prioritization given to, and lessons learned from multi-sectoral approaches and partnerships in NSA programs in South Asia?* By addressing this question, we aim to fill the gaps in knowledge and provide recommendations for future NSA programs and research in the region.

Specific Aims

To answer the research question, three aims have been identified:

1. To understand the perceived value of using multi-sectoral approaches and partnerships within NSA programs.

2. To characterize how these programs prioritize and act on multi-sectoral approaches and partnerships.

3. To provide recommendations for future NSA programs and research in South Asia.

Purpose

The purpose of the study is to understand the perceived value of multi-sectoral approaches and partnerships within nutrition sensitive agriculture programs in South Asia. This study aims to examine how two NSA programs prioritize and act on multi-sectoral approaches and partnerships. By identifying the strengths and weaknesses of these programs, this research aims to provide recommendations for future NSA programs and research in South Asia. Ultimately, these findings will contribute to enhancing the effectiveness of NSA programs. This research will utilize qualitative data collected from two NSA programs and use a thematic analysis to develop outcomes from the data and meet the specific aims of the paper.

Chapter 2: Literature Review

Malnutrition in South Asia

Countries in South Asia, specifically in Bangladesh and India, undernutrition rates are among the highest globally. The World Health Organization defines undernutrition as the imbalance of nutrient and energy intake, which can lead to long-term effects in children, such as wasting and stunting (World Health Organization, 2012). Wasting is below average for weight for height, while stunting refers to the below average height for age (Müller & Krawinkel, 2005). These forms of undernutrition can result in various health and societal risks later in life, such as increased susceptibility to disease, shorter life expectancy, and poor cognitive function (World Health Organization, 2012). In the South Asia region, the prevalence of stunting is 30.7%, and wasting is 14.1% as compared to the global average of 22.0% stunting and 6.7% wasting (Country Nutrition Profiles, n.d.; Sharma et al., 2021).

In South Asia, factors contributing to undernutrition are complex, such as poverty, high population levels, low access to healthcare, and poor maternal and childcare practices (Müller & Krawinkel, 2005). The lack of access to food and agriculture is a primary cause of undernutrition and poor livelihoods in developing countries (Sharma et al., 2021). There have been several interventions to combat these statistics, but there is still a high need for further efforts to reduce malnutrition in the region. For example, India has the highest prevalence of undernutrition in the world, estimating 38.4% of children under the age of five being stunted, 21% wasted, and 35.7% underweight (Singh et al., 2022). Similarly, Bangladesh has a prevalence of undernutrition with 29% of children under five being stunted, 21% wasted, and 23% underweight (Das et al., 2022). These statistics only highlight the urgency of interventions and sustainability in the region.

To combat all forms of malnutrition, United Nations International Children's Emergency Fund (UNICEF) introduced a conceptual framework (Figure 1) that identified underlying and primary causes and the complexities and multi-sectoral approaches involved to address maternal and child nutrition. The framework highlights three leading types of causes: immediate, underlying, and basic. Immediate causes discuss diets and feeding practices; underlying causes identify food insecurity, health services, and poor water, sanitation, and hygiene practices. Lastly, basic causes are the structural causes of poverty, social inequality, and lack of education. This framework emphasizes the use of multi-sectoral approaches in efforts to combat malnutrition.
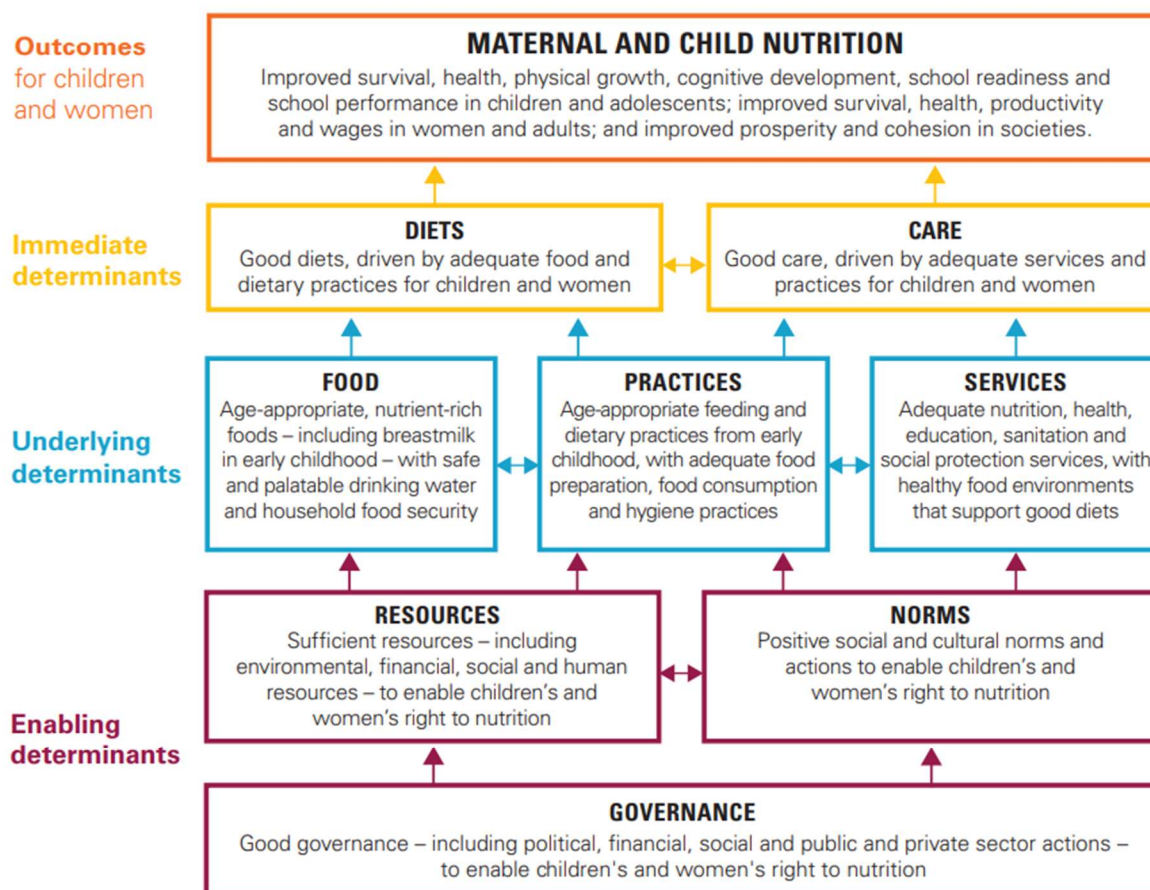
UNICEF Conceptual Framework on the Determinants of Maternal and Child Nutrition, 2020.
A framework for the prevention of malnutrition in all its forms.

Figure 1: UNICEF Conceptual Framework on the Determinants of Maternal and Child Nutrition. Source: UNICEF. (2021). UNICEF conceptual framework on maternal and child nutrition. UNICEF. New York, NY, USA.

Nutrition Sensitive Agriculture

Nutrition-sensitive agriculture interventions have adopted this framework to develop strategies for reducing malnutrition (Balz et al., 2015; Sharma et al., 2021). NSA is an approach that aims to address the underlying causes of malnutrition and development by intervening on community-level nutrition goals and actions, such as food security, agricultural production, adequate healthcare services, and economic growth (Ruel & Alderman, 2013). Nutrition-sensitive can become confused with nutrition-specific efforts, but nutrition-specific actions address the immediate determinants of malnutrition, such as food intake, feeding practices, and infectious disease (Ruel & Alderman, 2013). NSA programs aim to increase and improve nutrition and health outcomes, such as promoting food security, in prevalent malnutrition areas in developing countries, especially for women and children (World Bank, 2013; Balz et al., 2015; Ruel et al., 2018). Other aims of NSA are to increase the availability and accessibility of nutrient-rich foods, enhance crop and livestock value, and strengthen food systems (Balz et al., 2015). NSA provides and emphasizes a more multi-sectoral approach and integrates different community-level education and communication tools to reduce malnutrition and improve nutrition goals (Baker et al., 2013; Ruel et al., 2018). There are many sectors within nutrition-sensitive approaches, but agriculture provides the best influences on producing and consuming nutritious foods (World Bank, 2013). For programs to be nutrition-sensitive, they must: i) address determinants of health, particularly nutrition, and accelerate sustainable action, ii) implement at a large scale, iii) reach poor populations, and iv) link agriculture to food systems to nutritional status (Ruel et al., 2013; Gillespie et al., 2015; World Bank, 2013). In addition,

nutrition-sensitive programs must help the household and the community. Therefore, integrating nutritional considerations into different nutrition-sensitive sectors is essential in creating a multi-sectoral approach to sustainable and nutrition-specific interventions (World Bank, 2013).

Given the high rates of maternal and child undernutrition in South Asia, there is a need for effective implementation of NSA programs (Pandey et al., 2016). Agriculture is one of the primary livelihoods for the South Asian population, making NSA strategies such as agriculture interventions, policies, and women's empowerment vital in addressing malnutrition and food insecurity issues and meeting global nutrition targets (Sharma et al., 2021). Although NSA programs are becoming more established within these regions, more interventions are required to meet NSA targets, including accessibility and affordability of nutrient-rich foods (Ruel et al., 2018). Meeting the specific target goals of NSA programs will require bringing together multiple stakeholders and forming partnerships to contribute to multi-sectoral approaches (Ruel et al., 2018; Baker et al., 2013; Pandey et al., 2016).

Multi-Sectoral Approaches

Multi-sectoral approaches are a collaboration of efforts through different sectors and shared goals to combat complex health issues. These sectors include agriculture, education, nutrition, and health, with each sector having specific roles and expectations in addressing malnutrition. For instance, organizations within the health sector should provide information and training on nutrition education, while those within the agriculture sector provide information on agricultural practices, while the nutrition sector creates behavior change communication tools for the community level on best practices, and those within the education sector promote nutritional habits in schools. Multi-sectoral approaches have been used especially in nutrition efforts, through interventions and coordination of activities, capacities, and policies.

For these efforts to work, multi-sectoral approaches use several different partnerships and stakeholders; these include governments, NGOs, private sectors, institutions, and local businesses. The effectiveness of multi-sectoral approaches using additional partnerships relies on communication and coordination optimizing collaboration, flexibility, and adaptability in changing climates.

Garret et al. (2010) provides a framework, using empirical evidence, to present immediate determinants of malnutrition and the actions that can be taken multi-sectorally. The "Working Multi-sectorally" framework portrays the important steps needed at certain levels, showing different partnership landscapes, political, social, or environmental, and each sector's roles, especially in developing countries (Garrett et al., 2010). This framework is essential for multi-sectoral nutrition planning and narrowing of interventions, especially with an emphasis on government and donors (Garrett et al., 2010). Garrett et al. (2010) provides a narrowing scope of working multi-sectorally through internal, external, and institutional links. Beginning at the internal context level, organizational characteristics are the need for leadership, vision, capacity, and organizational structure, values, culture, and experience for collaboration (Garrett et al., 2010). Next is the external context, partnerships, associated with political, social, cultural, or economical, require development priorities, urgency, and environmental context (Garrett et al., 2010). Lastly, institutional links provide integration through shared understanding, roles and accountability, participation and partner relations, and partnership types (Garrett et al., 2010). Each context is an integral part of multi-sectoral approaches and partnerships, which are valued priorities.

Though many organizations use uni-sectoral or siloed approaches, which work independently with different goals and aims, leading to competing priorities and objectives, later causing

overlapping approaches. Silo approaches are attributed to failure, primarily due to a lack of funding and project management (Di prima et al., 2022). Matturi and Pain (2016) discussed the need to "overcome the default silo approach" because it is a concern within programs implementing or supporting sectoral approaches. Gillespie et al. (2015) discussed the lack of coordination, accountability, and administration of silo-ed procedures. With silo approaches, there is limited strategic action, synergy, and planning across multi-actors and sectors (Matturi & Pain, 2016; Di prima et al., 2022). Furthermore, it is difficult to develop policy with governmental and non-governmental actors or sectors with silo approaches, which was a barrier identified by Gillespie et al. (2019).

However, multi-sectoral approaches can be complex and have failed due to the complexity of program management and funding, which can lack coherence (Di prima et al., 2022). Therefore, when designing a multi-sectoral program, it should be ensured of the feasibility, accountability, and capacity of the program to ensure success (Di prima et al., 2022). Challenges to the multi-sectoral approach are the need for integrated agriculture and nutrition policies (van den Bold et al., 2015; Di prima et al., 2022). The lack of nutrition awareness is related to the agriculture sector of nutrition-sensitive processes, not just the health sector, making it a silo approach (van den Bold et al., 2015; Di prima et al., 2022). Another barrier to multi-sectoral strategies is the need for more monitoring and evaluation across nutrition interventions, which needs more coordination through coherence (Di prima et al., 2022).

Partnerships

There needs to be an emphasize on establishing partnerships within NSA programs. These partnerships can include governments, NGOs, and industries, and should be guided using an NSA framework to establish specific sectors and relate to certain partnerships to help with these

sectors (Ruel et al., 2018). New actions must be taken to combat malnutrition by thinking, planning, and designing strategies differently, especially in terms of partnerships (Ruel et al., 2018).

Research has shown that inclusive country systems, with involvement of governments and private sectors, are an integral part for successful implementation of NSA programs and sustainable development (Walker et al., 2014). Public-private partnerships are major supporters alongside governments and other partners in addressing nutrition and health promotion (Rowe et al., 2013; Bertolo et al., 2018). Each partnership brings different aspects and contributions to the fight against malnutrition and hunger.

It is essential to focus on the country context because partnerships can vary depending on involvement in different sectors and intervention strategies. Each partnership provides different perspectives, expansion, sustainability, and support to programs, either reaching marginalized communities through organizations or institutions providing training or businesses providing resources (Baker et al., 2013; Scaling Up Nutrition, 2014). Many acting partners are used to ensure the goals of nutrition programs are being met and gain relationships with leading influencers in nutrition globally.

Baker et al. (2013) suggests using situational analysis to identify best-implementing partnerships, especially in the private sector, to improve outcomes. Additionally, the organizations chosen in the private sector must be acceptable to the community and the government stakeholders (Baker et al., 2013). Challenges of public-private partnerships include trust, power imbalance of the private sector, field governance structures, resource problems, and weak accountability (Fanzo et al., 2021).

Successful multi-stakeholder and public-private partnerships have shown to lower malnutrition rates collectively (Drewnowski et al., 2018). Several public-private partnerships involved in NSA programs are civil society, NGOs, government, independent stakeholders, global agencies (i.e., United Nations or United States Agency for International Development), donors, ministries (i.e., Ministry of Health or Agriculture), institutions, and private businesses (Scaling Up Nutrition, 2014). Collaboration is a key to public-private partnerships to achieve specific outcomes (Kraak et al., 2012). Eggersdorfer & Bird (2016) state, "we must act as a global community in the immediate future."

Scaling Up Nutrition Movement

Scaling Up Nutrition (SUN) is an example of multi-sectoral approaches and partnerships in improving maternal and child health and nutrition outcomes in developing countries. The SUN movement aims to prioritize systemic change through multi-sectoral approaches to improve maternal and child health and nutritional outcomes in developing countries by 2030 (Coile et al., 2021; Keylock, 2020). In 2021, SUN worked in 62 countries in the initiative to involve more multi-sectoral approaches and partnerships using the SUN framework (Coile et al., 2021). This multi-sectoral framework includes three aspects: ii) "accelerating action on determinants of undernutrition"; ii) "integrating nutrition…in programmes in other sectors"; and iii) "increasing policy coherence" (Scaling Up Nutrition, 2013). Many successful factors for NSA programs have been the multi-sectoral approaches and partnerships through the SUN movement, especially at the civil society level (Di prima et al., 2022). Scaling Up Nutrition (2014) states, "When different groups combine their skills and resources, they can achieve much more than if they work alone." It is fundamental to incorporate multi-sectors and partnerships, especially working with governments to help scale up production, investments, assessments, and interventions in

different sectors; it "cannot be skipped" (Baker et al. (2013). The SUN multi-stakeholder platform framework established the necessary alliances, including for NSA programs (Scaling Up Nutrition, 2014).

Examples of Multi-sectoral Approaches and Partnerships in NSA
Program

Another example of multi-sectoral approaches and partnerships in NSA is the Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India (POSHAN), also known as POSHAN Abhiyaan. This program was established by the Indian government in 2017 as a national nutrition mission initiative, which aims in collaborating and capacity strengthening of different sectors, such as health, education, water, sanitation, and hygiene (WASH), and agriculture, and stakeholders to combat malnutrition in pregnant and lactating women, adolescent girls, and children under the age of six (Kapur & Suri, 2020; Padhee & Potaka, 2020; Suri, 2020).

This program operates at national, state, and local levels with interventions of iron and folic acid supplementation and encouragement of infant and young child feeding practices, kitchen gardens, and cultivation of crops, such as millet and pulses (Kapur & Suri, 2020; Padhee & Potaka, 2020; Suri, 2020). POSHAN Abhiyaan's goals are to reduce the prevalence of malnutrition and promote healthy development using improved healthcare access and services, dietary practices, production of nutrient-rich crops, and WASH (Kapur & Suri, 2020; Padhee & Potaka, 2020; Suri, 2020).

POSHAN Abhiyaan is still ongoing, but an evaluation of the program found improvements in nutrition measurements after the intervention, and other countries have begun to adopt their

efforts (Kapur & Suri, 2020; Padhee & Potaka, 2020; Suri, 2020). POSHAN Abhiyaan recognizes the need for NSA and the effectiveness of partnership involvement.

Research

Other research has shown the importance of multiple actors and sectors to improve nutritional outcomes. Van de Bold et al. (2015) interviewed stakeholders in three South Asian countries: India, Bangladesh, and Pakistan. It was found that government representatives, industry, and other stakeholders incorporated agriculture policies and programs with nutrition (van de Bold et al., 2015). It was deemed an important approach by partners for improving nutrition within these countries (van de Bold et al., 2015). For example, India had even begun to invest in NSA programs, such as kitchen gardens and traditional farming programs (van de Bold et al., 2015). In India, the partnerships developed through the government's incorporation of multi-sectoral approaches were being used through media, civil society, and industry, simultaneously working together to combat malnutrition statistics (Gillespie et al., 2015; van de Bold et al., 2015). At the state level in India, training modules are being developed and used for and from NGOs and government agencies, as well as research on nutrition and agriculture and increasing nutritious products at the industry level (van de Bold et al., 2015). However, barriers across these sectors included the lack of understanding and knowledge dissemination across national and state levels, causing gaps in implementation (van de Bold et al., 2015). Another barrier was the stakeholders' lack of leadership and ineffective coordination between the government and the Ministry of Agriculture, which later caused issues amongst the NSA policies and programs due to a lack of labor, incentives, and funding (van de Bold et al., 2015).

Similarly, in Bangladesh, collaboration barriers were identified with stakeholders, government, institutions, and industries, but they valued the importance of multi-sectoral

approaches by suggesting the need for better collaboration efforts (van de Bold et al., 2015). As a result, Bangladesh has implemented several NSA programs, school feeding, and policies throughout the country (van de Bold et al., 2015). Several actors included the Bangladesh government, civil society, media, and ministries, but some actors did not consider nutrition a part of the agriculture sector, posing collaboration issues (van de Bold et al., 2015; Gillespie et al., 2015). At the state level, the government provides support through the seed market, privatizing the markets, reducing food waste, and implementing nutrition agendas (van de Bold et al., 2015). Other stakeholders, such as institutions, international organizations, and media, played a key role in nutrition efforts through research or investment or training of front-line workers (van de Bold et al., 2015). However, through the challenges of each program, Bangladesh and India continued their efforts in NSA programs using multi-sectoral approaches and partnerships due to the importance of their country's nutrition and health (van de Bold et al., 2015).

Remaining Gaps

There is a need for more evidence on integration of NSA programs into existing structures and partnerships. There still needs to be a greater understanding of NSA programs in the local context of communities, which multi-sectoral approaches and partnerships can improve. If multi-sectoral approaches and partnerships are not involved in NSA programs, there can be a lack of knowledge of structures and norms in the local context, which can affect program implementation (McDermott et al., 2013; Ruel et al., 2018). In addition, it can be difficult to develop strategies for multi-sectoral approaches and partnerships with a lack of research and evidence on the topic (Webb & Kennedy, 2014). There is a need for more knowledge of the impact and sustainability of NSA programs on health outcomes (McDermott et al., 2013; Ruel et al., 2018; Webb & Kennedy, 2014).

There are also challenges to multi-sectoral and cross-sectoral work in NSA due to a need for knowledge, structural issues, funding, politics, and timing (World Bank, 2013). There are remaining gaps in the political sphere or markets for agriculture and nutrition, which requires more research on dynamics, facilitators, and barriers to involvement (McDermott et al., 2013; Ruel et al., 2018). Thus, there are opportunities and solutions ready to be explored, such as measuring the progress of nutrition programs and project sectors through accountability and nutrition-related indicators (World Bank, 2013).

There needs to be more evidence on multi-sectoral approaches to nutritional outcomes. Increasing awareness of NSA approaches is essential to allow partners to work outside their "core areas" (World Bank, 2013). Nutrition-sensitive programs have a complexity in design and implementation, working across several sectors, such as health, education, and agriculture, which require increased coordination and integration across industries, implementors, and beneficiaries (LeRoy et al., 2016). Furthermore, placing policies and frameworks amongst each actor for cooperation and respect can ensure open communication and prevention of conflicts of interest among stakeholders (Scaling Up Nutrition, 2014). To scale up these programs effectively, filling the remaining research gaps is essential. Discussing the dos and don'ts of NSA programs through multi-sectoral approaches and partnership integration is essential (Webb & Kennedy, 2014).

Project Objectives

To address the gaps in understanding how multi-sectoral approaches and partnerships operate in the context of NSA, this research aims to investigate the perceived value and priority of multi-sectoral approaches and partnerships in NSA in India and Bangladesh. Specifically, this qualitative case study research utilizes data from two ongoing NSA programs in India and Bangladesh that use multi-sectoral approaches and partnerships. To understand effectiveness of

multi-sectoral approaches and partnerships, this research applied a thematic analysis to identify key themes of success and challenges. Furthermore, the research evaluated lessons learned and avenues of improvement for future use in NSA programs.

Chapter 3: Methods

Research Overview

This study aims to identify the perceived value and prioritization of (i) multi-sectoral approaches and (ii) partnerships for NSA in South Asia. The data used in this analysis is derived from an ongoing landscape analysis of social and behavior change (SBC) approaches within NSA interventions. The larger, landscaping project aims to assess and describe how SBC strategies are used in NSA interventions, identify current practices and lessons learned, and provide recommendations for future research and programs. Thirteen ongoing NSA interventions are enrolled in the larger landscaping study; this paper utilizes data from two of these thirteen enrolled projects. These two enrolled projects in Bangladesh and India were chosen for their unique multi-sectoral approaches and partnerships and, the availability of project documents and data from site visits.

Data Collection

Qualitative methods were used in two phases: (i) document abstraction and (ii) site visits. The qualitative methods included document abstraction, in-depth interviews, focus group discussions, and direct observation.

Phase 1: Formative Research

To retrieve information on the organizational structure, project aims, implementation strategies, and evaluation of activities of the enrolled NSA programs, the research team systematically abstracted documents provided by the programs. Documents provided by the Bangladesh program included impact assessments (n=4), women's empowerment plan (n=1), stakeholder workshop report (n=1), story of change pamphlet (n=1), and performance reports (n=21). The India program's provided documents included core design (n=1), SBC strategies

(n=7), and performance reports (n=8). The abstraction tools were then created by the larger, landscaping project to meet the research aims and to obtain relevant information on those aims. The number of documents abstraction tools used on each project were Bangladesh (n= 2) and India (n= 8). Examples of the document abstraction tools include training proposals, formative research reports, gender strategies, monitoring/evaluation plans and reports, SBC strategies, front line worker trainings, educational curriculum and materials, and process evaluations.

Phase 2: Site Visits

Site visits were conducted to better understand the program activities and observe implementation in real time. Across Bangladesh, the project activities were occurring in twenty-three districts, and the research team visited six of them during a three week visit in June 2022. The India project activities were occurring in three districts within one state, and the research team traveled to all three within the southeastern region during a three-week visit in July 2022. Selection of project locations for site visits were selected in collaboration with the project teams. The sites for the study were selected with the aim of visiting both higher and lower performing sites as determined by the project, while also taking into consideration any COVID-19 restrictions during the time of the site visit. The research team also considered aligning the site visits with the implementation of project activities in the communities, as well as with their own timelines.

During the site visits, several qualitative methods were used for data collection. Participants were purposively sampled by project staff and the research team, with a sample size determined by the study team to achieve thematic and meaningful saturation (Hennink et al., 2017). In Bangladesh, ten focus group discussions, seven interviews, and three observations were conducted. In India, seven focus group discussions, nine in-depth interviews, and six

observations were documented. The study participants included in-country project staff, frontline workers, and community members/project beneficiaries. Additionally, SBC activities, training, and staff support interactions were documented by the research team.

The sampling and study participants consist of:

- Interviews with in-country project staff who had not been interviewed remotely (India n=6; Bangladesh n=4).

- Focus groups with frontline workers (India n=2; Bangladesh n=4).

- Focus groups with community members/project beneficiary groups (India n=5; Bangladesh n=6).

- Observation of any SBC activities, such as peer group meetings, community events, interpersonal communication, education sessions, demonstrations, media, etc. (Bangladesh n=8; India n= 6;).

- Training or staff support interactions (India n=3; Bangladesh n=3).

For each program, a program representative, typically the Chief of Party, provided written informed consent prior to sharing documents or participating in remote interviews. During field visits, participants in interviews and focus group discussions provided verbal or written informed consent prior to facilitation. Interactions such as focus groups and interviews were recorded in the local language with participant permission and later transcribed into English. In both countries, research assistants were hired to support translation and facilitation of focus group discussions and in-depth interviews and preparation of English notes and transcripts. These research assistants were not affiliated with the programs to reduce bias.

Data Analysis

After conducting fieldwork, a codebook was developed with six significant themes: intervention characteristics, organizational characteristics, staff characteristics, landscapes, targeted participants, and implementation processes. Each theme was further developed with subcodes based on the ongoing landscape analysis. The codes were determined based on the research question, definitions, inclusion criteria of the parent and subcodes. Codes used in the analysis for both projects can be found in Appendix 1. The ongoing landscape project initially utilized the Consolidated Framework for Implementation Research and the Implementation Science in Nutrition framework to frame their codebook and analysis of the thirteen selected projects. However, neither framework fully met the needs for the research. The project thus synthesized the key ideas from both frameworks into an adapted framework, called Research-informed Adapted Implementation Science framework for Interventions in Nutrition (RAISIN), to better fit the specific demands of implementing nutrition interventions. The RAISIN framework for analysis includes six domains: (i) intervention characteristics, (ii) organizational characteristics, (iii) staff characteristics, (iv) landscapes, (v) targeted participants, and (vi) implementation processes. However, for analysis of this thesis, the main domains used were intervention characteristics, organizational characteristics, staff characteristics, landscapes, and implementation processes. Intervention characteristics were used to differentiate between the static infrastructure of the interventions and the implementation processes, such as project activities, stakeholders, and integration into existing structures. Organizational characteristics focused on the norms and choices of the organization, particularly on the structure, capacity, and culture, while staff characteristics were a separate domain used to understand the impression of the intervention, the capacity of the workers, and job descriptions. The landscape domain was

used to understand the enabling and/or hindering factors within the environment, such as socio-cultural, political-economic, donor, and partnerships. Lastly, the implementation processes domain was used to understand the monitoring and evaluation of the program, as well as implementation barriers, facilitators, and training.

After completion of the codebook, de-identified transcripts were later coded and analyzed using the MAXQDA 2022 software. The coding process included inductive and deductive codes and memos. Focus group discussion, interviews, observations, informal chats, and document abstractions were coded, memo-ed, and reviewed of each code shown in Appendix 1. Thick descriptions were used to determine the depth, breadth, nuances, and comparisons of each code. After finalization of the thick descriptions, themes were generated after review and familiarization of the data. Themes were compared and categorized for patterns or similarities/differences between the two data sets: Bangladesh and India. A thematic analysis approach was determined as the best framework to consider when comparing the two projects.

Ethical Considerations

This project received approval on April 28, 2020 (STUDY00000479) approved by the Institutional Review Board (IRB) of Emory University in the United States. This study included human subjects, so IRB approval was required. Modifications have been approved since the project approval for inclusion of the research members. Madison Bearden was approved on January 26, 2022, to be a part of the study team (MOD0010-STUDY00000479) and conduct this research.

Chapter 4: Results

Both programs use multi-sectoral approaches and partnerships to obtain their objectives and implement their activities. The projects engage government, international organizations, academic institutions, private sector, and civil society partners. However, Bangladesh additionally involves in community and religious partners. The primary implementing institution is an NGO in Bangladesh, whereas in India, the government serves as the primary implementing agent.

The Bangladesh program aims to enhance nutrition through livestock productivity and women's empowerment. Bangladesh's program activities include training on animal and health nutrition and hygienic practices aiming to increase consumption and production of dairy products. It operates through an implementing NGO that disseminates information, such as training, monitoring and evaluation, and reports, to the project offices and staff. Many partners working with the Bangladesh program includes feed companies and local retailers for distribution of cattle products, public and private sectors for support, technology, and livestock production, and international organizations provide animal and human information to the project. In addition, the program works with religious structures to disseminate key messaging to target groups. The project coordinators work closely with the front-line workers, religious structures, retailers, and the government, which includes nutrition and livestock sector, extension services to achieve project aims and activities.

> *"We also started another functional relationship because districts have nutrition plan, and we are contributing a lot. The livestock department has different types of activities for nutrition. There are 10 types of activities within this project, and other activities with [international organization]. So, implementing the multi-sectoral nutrition plan, we are contributing and have a good relationship with them" (Bangladesh Project Staff IDI Participant)*

India's project activities include training on the health benefits of fish for consumption, aquaculture practices, and kitchen gardens. The main goal of the project is for women, adolescent girls, and children to eat and incorporate more fish in their diet, as well as increase household income by selling fish to the local markets. The Indian program operates alongside the government fisheries department and disseminates information to beneficiaries/stakeholders. International organizations and research institutions are used for nutrition and agriculture education, aquaculture technology, and initiatives for incorporating fish products into target groups diets in the India program. The program provides technical support to the Department of Fisheries, such as drafting policies, fish farming technologies, and management of monitoring and evaluation, and the fisheries department undertakes funds, state plans, extension services, and convergence programs.

Key themes that are associated with the multi-sectoral approaches and partnerships in the two NSA programs are the ability to increase capacity strengthening, integrate into existing structures, and collaborate to meet project objectives and activities. Other key findings are the increase in investment into these programs through different sectors and partnerships as well as increase and encourage women's empowerment in agriculture practices.

Theme 1: Multi-sectoral approaches and partnerships facilitated capacity strengthening.

Capacity strengthening is an approach to develop skills, knowledge, or abilities to implement activities and interventions at an individual level or organizational level. While the government plays a crucial role in capacity strengthening in both programs, other sectors also contribute to cross-sector and cross-partner capacity sharing.

In Bangladesh, the government uses multi-sectors, such as agriculture, livestock, nutrition, and finance, to strengthen the capacity of front-line workers by providing training, vaccinations for campaigns, and certifications. Private sectors also provide technology training to front-line workers on mobile apps to improve data collection and technical expertise. Female front-line workers are trained on artificial insemination by academic institutions to expand their technical services.

> *"We [program staff] facilitate activity training, how the [front-line workers] will collect data from farmers… [front-line workers] get technical training, like livestock ration, importance of fodder, how to prepare feed, water supply, a lot of technology. Also, food science, importance of milk meat, SBC materials, if women are rearing their cattle, selling milk but is not comfortable on it, how he/she facilitate these issues because it is sensitive issue. But [front-line workers] will facilitate in positive way." (Bangladesh Project Staff IDI Participant)*

In India, the Department of Fisheries certifies target group's solar drying of fish as hygienically dried and packaged for selling to the markets. The Indian government's various sectors, such as agriculture, fisheries, and nutrition, support and strengthen the program through training and education. The Indian government also instructs the India program on their efforts by providing training for staff and target groups.

> *"The government of [India] in partnership with [the India program] empowering women for aquaculture activities. We only give them technical support by organizing trainings at Block level. The presidents and Secretaries of the [self help group members] usually take part in the trainings, not all the members".*

Both programs work with various institutions and international organizations to provide training to front-line workers on relevant topics and skills to project activities. In Bangladesh and India, a memorandum of understanding was developed with several institutions, sectors, and stakeholders to work collaboratively to strengthen the capacity of their workers and activities.

Community engagement is another focus of capacity strengthening in both programs. Front-line workers are trained in how to communicate with the community and engage participants in project activities.

> *"For example, in the training we received printed materials that used some language, but when we deliver the training to local people, they told us to make it in the local language that they can understand. For example, there is local term to represent the pregnant cow which is different from the textual language. If we could use that textual language people would not understand. Similarly, people would not understand if we said artificial intelligence (AI) technique for breeding, but there is a local term to mean it. We used those local terms" (Bangladesh Front-line Worker FGD Participant)*

> *"Yes, the trainings of the field team members were organized in 2 ways – 1. Often through in house discussions were organized among the field team members during the review meeting or other specific meetings, 2. On spot/ field based trainings were organized while pretesting/community sharing. Also, specific trainings to bring clarity on the materials and the dissemination process as well. The trainings of the staff members were organized keeping the idea of the materials, community aspirations in mind." (India Document Abstraction Training Program or Curriculum)*

Theme 2: Bangladesh and India programs integrated into existing structures using sectors and partnerships.

Program integration into existing structures and platforms enhances acceptability, efficiency, targeting and reach. Both the India and Bangladesh projects effectively integrated into existing structures, such as extension services, agricultural research, and trainings, and this integration is facilitated by their multi-sectoral partnerships.

In Bangladesh, the program uses front-line workers already familiar to communities to go door-to-door to identify target groups to participate in project activities, such as livestock and nutrition education training and vaccination campaigns. Through vaccination campaigns in the community, the targeted communities begin to know more about Bangladesh program.

> *"I was a vaccinator in my village and then I met the [field coordinator] and found that this position has a lot in common with my job already. I learned that they would also*

work on improved methods of cattle rearing, vaccination, deworming medicines, and provide primary treatment for different diseases to the cattle. I did know about these things. Then [they] told everything again" (Bangladesh Front-line Worker FGD Participant).

Front-line workers disseminate their key messages through local veterinary offices and link front-line workers to private sector feed companies.

"In the first phase, [Bangladesh program] connected [front-line workers] with feed companies, so the [front-line workers] can get items at half price. Then the [front-line workers] can distribute/sell to farmers at the same price. So [front-line workers] become more popular and when they call people, they are more likely to come. This helps with other duties. There is a give and take, I give half price materials and you come when I call" (Bangladesh Front-line Worker FGD Participant).

Additionally, local milk processing entrepreneurs are taught by private sectors and local retailers how to hygienically make and sell dairy products, and target groups are connected to sell their milk to these processors. Also, linking farmers to vendors for selling milk. One of the key factors of the Bangladesh program is the integration into religious structures to disseminate their information into the targeted communities. This involved finding ways to connect key messages to the Quran since the majority religion is Islam. This approach highlights the importance of understanding the local context and leveraging existing structures to effectively reach the target population.

"In [Bangladesh program] we had great activity, religious leader workshop. In our context, the Muslim region, the mosque is a good place on Friday… the men will go to the mosque for prayer. We conducted a workshop of religious leaders in this area and facilitated them on intake of milk/meat and that protein is important for human body, so you need to collect milk to ensure protein…leader shares the message with those who come for prayer. In this area the women already receive the courtyard session, so men hear it from the mosque and women hear the message from the courtyard session. By both ways, the message is received by people to take milk and meat" (Bangladesh Project Staff IDI Participant).

The India program utilizes the government's Department of Women Empowerment to establish self-help group members, who were outputting hygienically solar dried fish to markets and government women and children centers. This approach demonstrates the importance of partnering with government entities to integrate nutrition-sensitive interventions into existing structures. The program staff/trainers advise target groups on number of dried fish required per month and package dried fish in monthly portion sizes for pregnant and lactating women and adolescent girls. Government centers are used to incorporate fish products into children's diets and provide nutrition education to mothers. In addition, private sector companies are used by the India program to integrate into markets and product development for self-help group members.

> *"Ongoing [fisheries] project of [India program] along with several new partnerships being developed by [fisheries] is providing significant leverage and cost sharing benefit to the [partnership] nutrition-sensitive fish food system project. These ongoing and new partnerships are also assisting the project to widely promote nutrition-sensitive messages in fish food systems" (India Document Abstraction Integration and Multi-sectoral Engagement).*

Theme 3: Effective collaboration between sectors and partners was key to meeting project objectives and implementing project activities.

While the Bangladesh and India programs use different strategies to communicate and collaborate across the multiple sectors and partners commonalities emerge including frequent multi-sectoral workshops, shared work planning, and clarification of roles and responsibilities. The Bangladesh and India program both hold workshops attended by multiple sectors and partners to provide feedback, communicate, and implement project activities. The government, institutions, NGOs, staff, and other key partners/stakeholders collaborate and develop a work plan for the project, which is reviewed among the project staff and stakeholders. Both the Bangladesh and India programs use different strategies to communicate and collaborate effectively amongst sectors and partners.

In Bangladesh, a "pause and reflection" workshop is held monthly with front-line workers, and data is collected quarterly from beneficiaries. After training, key informant interviews are conducted to gather data on onset, pre-training, and post-training with farmers and front-line workers. If a problem is found during feedback, visits are made, and decisions are made through communication. Many sectors participate in the program to initiate conversation and knowledge through workshops. Agreements are made at the beginning of the project through the government, institutions, NGOs, staff, and other key partners/stakeholders. The nutrition and agriculture sector of the government develops a work plan for the project, which is reviewed among the project staff and stakeholders. Project offices are situated throughout Bangladesh to maintain liaison and communication with local public and private partners. Assessments and reports are provided to partners for suggestions and feedback.

> *"I supervise four field coordinators. I also have to maintain relationship with government stakeholder[s]. Every month I also attend coordination meeting. We have many activities. Every month we plan different activities in four districts and not only that but I also provide assistance to them to implement activities. Different types of problems that come in the field, they talk with me, and I give assistance" (Bangladesh Project Staff IDI Participant).*

In India, workshops are attended by 100 stakeholders including, staff, institutions, the government, NGOs, the private sector, and other key partners/stakeholders. The project goals, objectives, and expected outcomes are discussed and familiarized with partners during the workshops. There is a formative memorandum of understanding between the 100 stakeholders on the project implementation. The government and India program partners communicate and collaborate effectively by meeting regularly and reaching agreements. When asked why the India program works differently here than in other countries, one participant said,

> *"We are working in a convergence…we have a good program. But here I am embedded in the government, so government is my client. I work for them. Even I am here on a*

Saturday. [The India organization] is off work today, but I am here because the government works on Saturday" (India Project Staff IDI Participant).

A significant difference between the Bangladesh and the India program is that the India program relies more on government efforts, indicating an organizational hierarchy. The difference allowed the India program to work through the government and be embedded in it, which ensures that they are in constant communication and could work together effectively. The India program also collaborates with different sectors, such as fisheries and nutrition, to implement a nutrition action plan using nutrition-sensitive approaches alongside the government. This strategy for collaboration is to second one organization into another to minimize siloed approaches. This approach can be useful to bring different organizations together and work towards the same, common goal.

Other Key Findings
Theme 4: Investment from multi-sectoral approaches and multiple partnerships were important for the program's efforts.

Another key finding is the investment of multi-sectoral approaches and multiple partnerships in the program's efforts. This is a crucial aspect of NSA programs for ongoing activities and sustainability. In both programs, investments are made through different sectors and actors whether through donation of materials, funding, time, policy, or human resources. In Bangladesh, the government provides training, vaccinations, donations to fodder production, and sanctions loans to farmers. Also, the government develops nutrition plans and policies for ongoing activities.

In the India program, the government highly invests in the program by providing loans for the construction of ponds and solar drying units for target groups. The government also began a nutrition action plan and policy incorporating the program's efforts to include dried small fish

products in government women and children centers. The Indian government, alongside the primary India NGO, aims to scale up the program with the target groups and front-line workers to hygienically dry and sell the fish to keep the money and labor in the region.

> *"The department of the fishery is mainly concerned with production, but more and more attention being given to nutrition, consumption, and malnutrition nowadays. Otherwise, the department of Women and Child Development is responsible for things related to nutrition. The department of fisheries gives the technology, for example, while the self-help group members are the human resources. So, the department of fisheries has given some solar dryers to self-help group members too. It is a convergence." (India Project Staff IDI Participant)*

In the Bangladesh program, local government officials are involved in the implementation of the project and providing feedback and recommendations for scaling up. Also, business corporations are invested within the program by providing loans, funding, and trade licenses. One participant discussed his partnership with the government in efforts to support their livestock campaigns:

> *"We collected vaccine from [government]. When we take it, we tell them… we will do the animal health [campaigns] in these areas to avoid duplication. Then our tracking sheet is submitted to the [government] office, so by this way, we are benefited" (Bangladesh Project Staff IDI Participant).*

Furthermore, the government provides incentives to target groups for the project activities, such as giving money to produce fodder for animal consumption and health. There is a shared interest between the government and the program beneficiaries because the government provides sanctioned loans to farmers.

Theme 5: Women's empowerment efforts have been strengthened by partnerships and multi-sectoral approaches.

The programs in India and Bangladesh aim to empower women through agricultural practices and have gained support from NGOs, government, academic institutions, and the private sector.

In Bangladesh, the focus is on training women in agricultural practices and providing them with resources, including training on hygienic practices and nutrition education. The female front-line workers, in the Bangladesh program, were specifically chosen to be trained on artificial insemination by academic institutions to expand their technical services and promote more female technicians. In India, self-help groups members are mainly of women, which incorporate fish into their diets and achieve economic stability by selling their dried fish products.

> "*The government of [India] in partnership with [the India program] empowering women for aquaculture activities. We only give them technical support by organizing trainings at Block level. The presidents and Secretaries of the [self help group members] usually take part in the trainings, not all the members" (India Project Staff IDI Participant).*

In the Bangladesh program, many of the implementing organizations help train women in fodder production and livestock management in particular, artificial insemination.

> "*Previously we worked with the market actors, if you consider [front-line worker] we worked them separately, private sector we worked separately. Now we are working with [front-line workers] who are also in the private sector. If their [private sector] budget is a sea, ours [small NGO] is a small glass. So, our way of thinking is how we are going to utilize our private sector employees in terms of delivering all the benefits to our farmers…If we can utilize our private sector, then we will be successful" (Bangladesh Project Staff IDI Participant).*

In the India program, many partners, particularly the Department of Women and Child Development and Department of Women's Empowerment, help support and train the self-help group members, which are mainly women. Some NGOs and women empowerment sectors donate, alongside the fisheries department, solar dryers for the members to hygienically dry fish. Women empowerment efforts are strengthened through partnerships with research foundations, government, and academic institutions either to train and provide materials to target groups on hygienic practices, aquaculture, and nutrition.

Barriers

The Bangladesh and India program face several barriers during implementation, including the

COVID-19 halting project activities. However, partnerships are able to mitigate these barriers

through feedback to the program.

> *"Also, during COVID we changed the whole strategy. Previously 30 people would come to the training and then people did not want to come so we organized trainings for 10-15 people and we gave masks, handwashing things, and social distancing… Different things we adapted after considering the feedback from market actors, farmers, government officials as well" (Bangladesh Project Staff IDI Participant)*

Another barrier is the limited access to the supply chain and materials for project activities,

such as vaccinations and grains, due to the pandemic and the War on Ukraine. The government

could have played a role in mitigating the crisis of the supply chain, but other international

NGOs partnering with the programs could have also provided the necessary materials.

Unfortunately, this did not happen.

> *"We don't get any facility from the government in making or selling dry fish. They told us that after six months they would help us in packaging and selling our dry fish but they did not come. We started this unit because of their assurance but they did not even buy one single dry fish from us. If they had helped us, then we would have increased our business" (India Project Beneficiary Group FGD Participant).*

This could be considered a barrier due to multi-sectoral work and multiple partnerships, possibly

to the lack of communication. Furthermore, the beneficiaries could have benefited from better

integration into markets to sell their products for economic stability as well as marketing and

technical support. Some participants stated the need for fair prices of selling their products to

make an income, which could be addressed by the government and private sectors.

> *"We are not having any profit from this, so we want a retailing center to see the milks at a good, fixed price. It will be a big help for us" (Bangladesh Project Beneficiary Group FGD Participant).*

R2. *"During any good season when we have bumper catch of fish then we would require support in storing the fish, but we don't get that support. The main problem is supply; we need support in marketing our product at a fair price. We don't have any fixed income; in one month, we are able to earn [enough] then in the other month, we are unable to earn anything. They had assured us to undertake this business, but they have failed to keep their commitment" (India Project Beneficiary Group FGD Participant).*

Once again, this could have been mitigated by government, the India NGO, and private sector efforts to provide incentives to local markets, connect local beneficiaries to these markets, and give credential, institutional, and technical support.

Chapter 5: Discussion/Conclusion

In both India and Bangladesh, these NSA programs prioritize multi-sectoral approaches and partnerships, which allow for projects to integrate into existing structures, collaborate effectively, and increase capacity strengthening. Through the two case studies presented, it is evident that multi-sectoral approaches and partnerships play a significant role in facilitating the implementation of project activities. This appears to be achieved largely through enhanced capacity strengthening, integration with existing structures, collaboration, investment, and women's empowerment.

The results presented in this thesis support the notion that **capacity strengthening** is an essential approach for the implementation of activities and interventions at an individual or organizational level, particularly in the context of NSA (Di prima et al., 2022; Bernet et al., 2018; Kurian et al., 2021). It is immensely important for NSA programs and interventions to utilize capacity strengthening through technical assistance of multi-sectoral approaches and partnerships (Levinson et al., 2013). Capacity strengthening through government efforts, such as training and materials, is crucial for achieving high success rates (Di Prima et al., 2022; Sharma et al., 2021; van de Bold et al., 2015). This finding is not uncommon in NSA literature because partnerships formed between the government and other sectors, such as agriculture, fisheries, and nutrition, are crucial in building capacity and strengthening the program (Di prima et al., 2022; Haselow et al., 2016; Kurian et al., 2021). Capacity-strengthening, through training, job aids, and feedback, is essential for front-line workers for good performance and building knowledge and skills (Baker et al., 2013). The need for shared insights and peer learning during training through stakeholder involvement is essential (Bernet et al., 2018). Multiple partners and sectors using implementing partners are good for providing technical expertise; however, a challenge is the

demand of time, especially front-line workers (Nordhagen et al., 2019). Demand for time is not specifically addressed in the results, which could benefit from further research. Di prima et al. (2022) attributed failure of NSA projects to lack of capacity strengthening, once again highlighting the importance. A gap in the literature is the need to enhance action and capacity in NSA programs and policies, of which capacity strengthening is a critical area for improvement (Aryeetey & Covic, 2020).

In both Bangladesh and India multi-sectoral partnerships facilitate integration. The existing research demonstrates that **integrating into existing structures** can be an effective approach to achieve project objectives and activities. Key building blocks identified for effective integration include functional supply chains, information, adequate financing, governance and accountability, and health workforce, with community workers being identified as an optimal integration method (Salam et al., 2019; Nordhagen et al., 2019). Integration into existing structures, such as institutions, extension services, and community groups, is a powerful strategy for NSA programs as well (Di prima et al., 2022). However, there is a need for more systemic and integrated intervention in NSA programs, encouraging more collaboration with institutions, private sector, civil society, and governments (Ruel et al., 2018; Gillespie et al., 2015). Additionally, religious, or faith-based structures are proven effective to implement project activities and interventions, which the Bangladesh program utilizes as an integration platform (Odukoya et al., 2022).

The findings from this thesis suggest that effective **collaboration** between partners and sectors is valued and prioritized in both projects. Collaboration among relevant stakeholders is a key to success, improving coherence between sectors and partners (Sharma et al., 2021; van de Bold et al., 2015). Collaboration with local partners and multi-sectors is a key impact of NSA

programs (Haselow et al., 2016). Coordination across sectors and partners with meetings and progress reports is demonstrated to improve performance, prioritizes interventions, and harmonize strategic plans (Nordhagen et al., 2019; Drewnoski et al., 2018). Many countries within South Asia initiate multi-sectoral approaches and use multi-stakeholder platforms but results of the effectiveness of these approaches is mixed; this lack of effectiveness is attributed to weak partnerships that lack synergies and coordination capacity (Aryeetey & Covic, 2020; Gillespie et al., 2015). There are doubts about long-term sustainability within NSA programs using multi-sectoral approaches and stakeholders due to challenges with coordination efforts (Matturi & Pain, 2016). Other studies refer to challenges with collaboration with partners due to lack of time, incentives, and interest or motivation (Nordhagen et al., 2019; Levinson et al., 2013; van de Bold et al., 2015; Aryeetey & Covic, 2020). However, our study demonstrates that many partners are interested in collaborating to scale up efforts to improve health and nutritional outcomes.

Multi-sectoral approaches and partnerships are found to be crucial for the ongoing activities and sustainability of two NSA programs, particularly through **investment**. Sustainability is also an important consideration, with the need for continued investment and incentives for beneficiaries to maintain target behaviors (Di prima et al., 2022). Long-term funding is necessary for sustainability, and investment in programs is shown to be beneficial (Di prima et al., 2022). There is a high need for investment in NSA programs, particularly in the shaping policy in the agricultural sector, which was demonstrated with the India program and government efforts in agriculture and nutrition policies (Ruel et al., 2018). However, governments and higher institutions are key "purse holders" when it comes to investment in NSA programs (Aryeetey & Covic, 2020; Salam et al., 2019). Some complications with investment from government and

higher education institutions can result in stopping of program activities, leading to more information on sustainability of long-term programs (Salam et al., 2019). Future programs should continue to observe the gaps of investment of partners and sectors in NSA programs and policies (Aryeetey & Covic, 2020).

Furthermore, understanding **women's empowerment** in NSA programs and its impact on nutrition across different cultural contexts is necessary (Ruel et al., 2018). This study contributes to this area by exploring women's empowerment in NSA programs using multi-sectoral approaches and partnerships. The importance of women's empowerment in NSA programs can help in development and leverage of agriculture (Ruel et al., 2018). Women's empowerment through agricultural interventions can improve maternal and children nutrition as well as provide autonomy (Pandey et al., 2016; Gillespie et al., 2019). Similar to the findings, women's empowerment can increase agricultural production and generate economic revenue (Levinson et al., 2013).

Recommendations

Based on the findings, it is recommended that NSA programs take a multi-sectoral approach that involves partnerships with multiple stakeholders and across sectors. Other recommendations include:

- NSA programs should consider and understand local and cultural contexts for activities to ensure that their interventions are culturally appropriate and contextually relevant. This understanding can be achieved through integration into existing structures by partnering with different stakeholders and sectors, such as extension services, institutions, religious structures, and local level partnerships. Integration into these existing structures can help the NSA program understand the enabling and/or hindering of an environment as well as

social dynamics. Situational and stakeholder analysis can help identify key partners and collaborators prior to implementation and for sustainability purposes. Implications of not integrating into existing structures can be significant, such as mistrust of beneficiaries, limit sustainability, and culturally irrelevant interventions.

- To combat the complexity of multi- sectoral approaches and partnerships, effective collaboration and communication are critical in NSA programs. Regular meetings and workshops with different partners and sectors should be held with different partners and sectors for coherence. These meetings and workshops can provide feedback and strategic plans for implementation and meeting project goals. Implications of not implementing meetings and workshops can significantly impact the program causing communication breakdowns and lack of consistency.

- Investment is essential for long-term sustainability of NSA programs, and multiple stakeholders and sectors are key investment opportunities. Involvement of the government, private sector, NGOs, and other stakeholders can ensure sustainable funding. However, if programs do not sustain investment in ongoing project activities, there may be a negative impact on program outcomes and sustainability efforts.

- Lastly, capacity strengthening of front-line workers should be implemented through multiple stakeholders and sectors. NSA programs should work with governments, NGOs, and academic institutions to develop front-line worker's skills through training and support. Capacity strengthening is essential in equipping front-line workers with the skills and knowledge to effectively implement project activities and meet program goals. Implications of not increasing capacity strengthening may result in poor productivity and investment.

Overall, taking a multi-sectoral approach and involving multiple partners, including government entities, private and NGOs, is essential for implementation in these programs.

Strengths/Limitations

This research has several strengths, including the ability to conduct research within countries. This allowed the research team to observe ongoing project activities and interactions of program staff. Physically seeing the implementation allows for a better understanding of the project's objectives, activities, partnership interaction, and areas for improvement. Another strength of the study is to fill the remaining gaps of multi-sectoral approaches and partnerships within NSA programs. This study contributes to the literature exploring the effectiveness and challenges of using multi-sectoral approaches and partnerships. Additionally, it shows more evidence on integration of NSA programs into existing structures using multi-sectoral approaches and partnerships. The research deepens the focus on using multi-sectoral approaches and partnerships within NSA programs to have a greater understanding of local context for project activities, a need for better collaboration between sectors and partners, and strengthen the capacity of the program. This qualitative study showed the value of using multi-sectoral approaches and partnerships in NSA programs, which can contribute to future use of implementing NSA programs.

However, the study has several limitations. One limitation is the possibility of social desirability bias among participants. Another limitation is the lack of discussion of power dynamics of the partnerships, as well as the constraint of building rapport with program staff. During the site visit to India, the research team contracted COVID-19, which is a significant limitation to the study. If additional time and funding were available, the team would have liked

to extend their stay for another week to conduct further research. A further limitation of current research is the inability to measure the nutritional outcomes resulting from multi-sectoral approaches and partnerships in NSA programs. To fill this gap, future research should focus on investigating the avenue of nutritional outcomes, which would provide a better understanding of the benefits of these approaches.

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Appendix 1: Codebook

Codes	Definitions
Integration into Existing Structures	Use this code for descriptions of the project's integration with any existing systems, programs, platforms, structures, or systems at national, sub-national, local, organizational, or community levels.
AStakeholders	We define stakeholders as people external to the project, specifically any person, organization, office, company, civic leaders, etc. with an interest or concern in the project and/or the recipient community. Use this code for references to any kind of stakeholders, and stakeholder participation or engagement related to project design, adaptation, or implementation or evaluation.
Target Behaviors	This code is meant to identify the behaviors within the project related to social behavior change aims, especially behaviors related to nutrition, consumption, or diet. These behaviors are the "goal" behaviors, where the project seeks to change from behavior X to this new target behavior.
Project Activities	This code is to be used to capture descriptions of any project activity that has been planned OR implemented, even if not explicitly defined as an SBC approach. Activities are what is done by/to/with the target population during the intervention and include a very wide range of activities (e.g., community drama groups, education in health centers, radio broadcasts, couples dialogue, etc.).
Structure	Use this code for any reference to the implementing organization's management structure, social architecture, age, maturity, size, or institutional networks. If multiple organizations are implementing together, consider information on all of them.

Culture	Use this code for any references regarding the vision, or mission of the organization. Additional references of the priorities of organization, organizational leadership, strategies for accountability, or "corporate culture"/norms/values could all be coded here. Innovativeness, attitudes towards change, learning climate, tolerance of different views, etc. Broader organizational pressures, policies, mandates, incentives. Also, code under peer pressure internally or externally to the organization to follow trends in developmental programming language or practice. Organizational culture as an idea broadly refers to the collection of values, expectations and practices that guide and inform the actions of all staff members.
Capacity	Use this code to capture references on staff, skills, knowledge, experience, organizational resources, including available funding (sources of funding, continuity of funding, scale of funding, etc.), access to information and support (including organizational features that facilitate internal and external communication and management
Front line workers> Job Description	Use this code to capture specific jobs of frontline workers in each project, including the specification of roles, responsibilities, and expectations that FLWs are expected to handle as well as the qualities, education, strengths, weaknesses, etc. that FLW have or are expected to have. Frontline workers are defined based on their direct role in implementing the intervention (whether paid or unpaid), and they are often members of the local community
Front line workers> Capacity	Use this code to capture references on the characteristics, skills, knowledge, and experience, that FLWs have, especially as it relates to the project being implemented. If skills are mentioned that seem unrelated, code them to be safe and we will differentiate in analysis. This reference can come from interviews directly with FLWs OR from others referencing the work of FLWs in their project.
Legal and Policy Landscape	Apply this code to policies, regulations, legal restrictions, or institutional barriers/requirements that may affect project implementation, whether to spread, to enable, or to hinder the process of implementation.
Donor Landscape	Apply this code to any references to the donor financing the project—dynamics, communication, expectations, challenges, etc.
Physical Landscape	Apply this code to any reference of geographical features, physical environment and resources, weather/climate, or agricultural concerns/capabilities related to water, soil, seeds, or other environmental factors.

Socio-cultural Landscape	Apply this code to any reference of socio-cultural features that may affect project implementation, including social movements, powerful norms, popular culture trends, cultural traditions, religious beliefs.
Political Economic Landscape	Apply this code to references regarding the ways that the local or national economy played a role in implementation, whether to enable or hinder. Additionally use this code to any reference of the role of governance structures or government entities that were involved with project implementation.
Partnership Landscape> Unspecified Partnership	Use this code when you're not sure about which type of partnership is present. Also use this code for organizations that are working in the same space, potentially even with the same population BUT are not actually partnering with the implementing organization
Partnership Landscape> Government	Use this code when government entities partner with the primary implementing organization(s) of interest
Partnership Landscape> CSO and FBO	Use this code when civil society and faith-based organizations partner with the primary implementing organization(s) of interest - focus here on the non-profit sector.
Partnership Landscape> Private Sector	Use this code for references to private sector companies partnering with the primary implementing organization(s) of interest. Private sector refers to any part of a national economy not under direct government control, businesses that are operating for profit.
Implementation Barriers	Apply this code to any factors that hinder, bar, or otherwise impede the process of implementing the intervention of interest.
Implementation Facilitators	Apply this code to any references to factors that facilitate, enable, or otherwise ease the process of implementation.
Training	Apply this code to any mention of training.