Article

# Responding to Increasingly Complex Nutrition Issues by Implementing Multi-sector/Multi-stakeholder Approaches

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**Abstract**

The nutritional status of people is directly and indirectly affected by the ongoing global dynamics through the interplay of compounded crises such as climate change, COVID-19, and conflicts, as well as changes in population structure and disease patterns. The global nutrition challenge is becoming increasingly complex. In addition to the nutrition transition—the change in the nutritional status of populations worldwide from undernutrition to overnutrition—malnutrition is also expected to worsen in the future. Climate change is exacerbating this situation by reducing food production and generating instability, leading to a compounded crisis currently referred to as the "global syndemic." As today's nutrition cooperation requires effective responses to these complex issues, it will be necessary to take a people-centered view and understand the rapid changes occurring in society from a human security perspective. In the future, a multi-sectoral and/or multi-stakeholder approaches must be implemented to develop a healthy food environment from a protection perspective and to empower individuals and populations to change their behaviors. It is also important to address unique complexity, locality, and diversity of current problems.

## Introduction

At the United Nations (UN) Food Systems Summit,[1] held in New York in September 2021, participants discussed the compounded crises affecting food and nutrition. The discussion noted the structural interaction between 3Cs (climate change, COVID-19, and conflict) and the five geopolitical influences (food, fertilizer, finance, fodder, and fuel), known as the 5Fs. This model is based on the assumption there is an interaction between the five geopolitical influences of food security, people's diet, nutrition and health, environmental sustainability, and livelihoods (Hendriks et al. 2022). As shown in **Figure 1**, the model demonstrates that a weak economy affects people's food security and that conflict influences not only the import and export of food but also fodder, fertilizer, and fuel. In turn, this impacts global food production and supply capacities. This can be seen in the recent war in Ukraine, which has resulted in changes to food access worldwide. In Yemen, wheat prices are 1.5 times higher than before the war began in Ukraine. This followed disruptions in the distribution of

[1] The United Nations Food Systems Summit (FSS) is a UN-organized summit based on an idea of UN Secretary-General Dr. Guterres that a shift to a sustainable food system is essential for achieving the UN Sustainable Development Goals (SDGs) (Ministry of Agriculture, Forestry and Fisheries, Government of Japan).

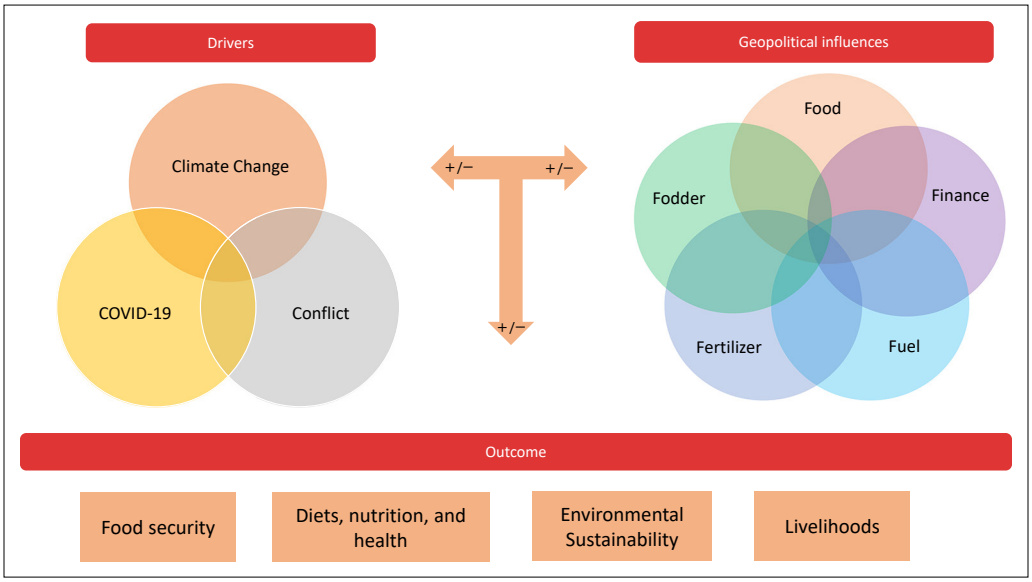


**Figure 1 The 3Cs and 5Fs of concern in food and nutrition in a compound crisis**

Source: Hendriks (2022)

Ukrainian grain, which provided the bulk of the UN aid to Yemen. Consequently, people in Yemen and other countries are unable to purchase wheat and grain due to the fuel supply crisis and high transportation costs. By December 2022, the number of people suffering from hunger and undernutrition (IPC[2] Phase 3 and above) in Yemen alone was projected to reach 19 million, or 53% of the total population.[3] This represents a sharp increase from 13.5 million in 2020 before the war in Ukraine. Thus, the interaction of the 3Cs with geopolitical influences—the 5Fs—is causing hunger and undernutrition as the final nutritional status of people's bodies.

The 3Cs can also lead to nutritional imbalance and overnutrition. The long-lasting restrictions of COVID-19 pandemic resulted in a drastic increase in energy consumption in many places, which, combined with mental stress, led to weight gain and limited access to regular healthcare services. This, in turn, affected blood glucose and blood pressure control (Stefan et al. 2021). Moreover, recent climate change has been affecting food production, with increases in overweight and obesity, as well as growing incidence of chronic diseases, caused by poor diet due to the disruption in food distribution and limited access to fresh food. This situation has become an urgent global issue, and consequently, there is a need to consider how to restructure the relationship between the global environment and human activities (Fanzo and Downs 2021).

Furthermore, simultaneously accelerating demographic changes cannot be ignored when addressing nutrition issues. Population growth in low- and middle-income countries (LMICs) will lead to a growing imbalance in the distribution of food and energy, exacerbating inequality and poverty not only in LMICs but also, with hunger and undernutrition expected to become an ever-greater challenge (FAO et al. 2020). Asian countries are also projected to age at a faster rate than Japan and other developed countries have already experienced. Population aging will increase malnutrition and frailty (aging-related weakness and lack of health or strength) among the elderly, as well as increase the prevalence of chronic diseases, resulting in an increased healthcare burden. However, many LMICs are not allocating

[2] The Integrated Food Security Phase Classification (IPC) classifies IPC Phase 1 as "none/minimal," IPC Phase 2 as "people in stressed," IPC Phase 3 as "people in crisis," IPC Phase 4 as "people in emergency," and IPC Phase 5 as "people in famine."

[3] The Integrated Food Security Phase Classification 2022; The Integrated Food Security Phase Classification (IPC), Yemen: Acute Food Insecurity Situation January–May 2022 and Projection for June–December 2022. Accessed January 5, 2023. Available at https://www.ipcinfo.org/

sufficient resources to disease prevention, so health and nutrition policies that emphasize the allocation of resources to disease prevention will be needed in the future (Wang and Wang 2021). In addition, people themselves need to be more involved in disease prevention and health care, including healthy eating.

Thus, the nutritional status of people is directly and indirectly affected—at all levels and from all directions—by today's global dynamics in the context of a compounded crisis, i.e., through the interaction of the 3Cs and 5Fs described above, as well as changes in the demographic and disease structure. It is well known that Amartya Sen, who contributed to the birth of the concept of human security, began his work with the economics of famine. He showed the cause of famine was not a lack of food supply but a structural problem of access to food (Sen 1983). However, as mentioned above, these structures are still the same, even in the present day, during these compounded crises. If this is the case, what perspective does human security bring to the nutrition problem in today's compounded crisis?

The first half of this article will review the key points of the global debate on nutrition issues in the context of today's compounded crises through the lens of human security. In doing so, the authors will rely on the report "Revisiting Human Security in Today's Global Context—JICA's Activities" (JICA 2019), a conceptual approach that is being explored as a means to address today's global challenges more effectively. The specific application of the multi-sectoral approach as a useful approach to solving today's nutrition problems will then be discussed through examples of JICA's cooperation. Through examining these projects, this paper will move back and forth between policy, history, field practice and concepts of multi-sectoral approaches to nutrition cooperation. It will also touch on the need for a multi-stakeholder approach while considering the current significance of human security under compounded crises, particularly those related to nutrition.

## 1. Overview of Nutrition Problems

In the Sustainable Development Goals (SDGs), nutrition is placed under Goal 2, "Zero Hunger." Goal 2 comprises eight targets, of which Target 2.1 aims at ending hunger and Target 2.2 calls for ending all forms of malnutrition (United Nations 2015).

In 2016, the World Health Organization (WHO) defined malnutrition as "deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients" (WHO 2021). In other words, malnutrition is a concept that encompasses both undernutrition (stunting, wasting, micronutrient deficiencies) and overnutrition (overweight and obesity, micronutrient excess, and diet-related noncommunicable diseases, or NCDs). In the past, undernutrition was the main nutritional problem in LMICs. However, lifestyle changes associated with socioeconomic development have led to the appearance of overnutrition, especially in urban areas. This change in the nutritional status of a population from undernutrition to overnutrition is referred to as the nutrition transition. In the process of the nutrition transition, the problem of overnutrition frequently grows rapidly without resolving the problems of undernutrition, and the simultaneous coexistence of undernutrition and overnutrition at the individual, household, community, and country level is known as the "double burden of malnutrition" (WHO 2017). For example, in many countries, the prevalence of diabetes and hypertension is higher in urban areas, while the proportion of wasting remains high in rural areas. Another example of a double burden is a family in which the mother is thin, and the children are obese. An individual can also be triple-burdened if they are obese (a state of overnutrition), have iron-deficient anemia (a state of micronutrient deficiency) and have an excessive salt intake (a state of micronutrient over-intake). This double and triple burden of malnutrition is a phenomenon that occurs in most countries and regions of the world (Development Initiatives 2018).

The relationship between food and nutrition is also crucial when considering nutritional issues. In general, nutrition is the process by which the body supplies itself with nutrients by converting food into energy and body tissues. Food, on the other hand, refers to something to eat that provides the necessary substances called nutrients. Diet is an intervention that can regulate food intake and eating behavior. However, since nutritional status is influenced not only by food but also by genetics, health status, and activity

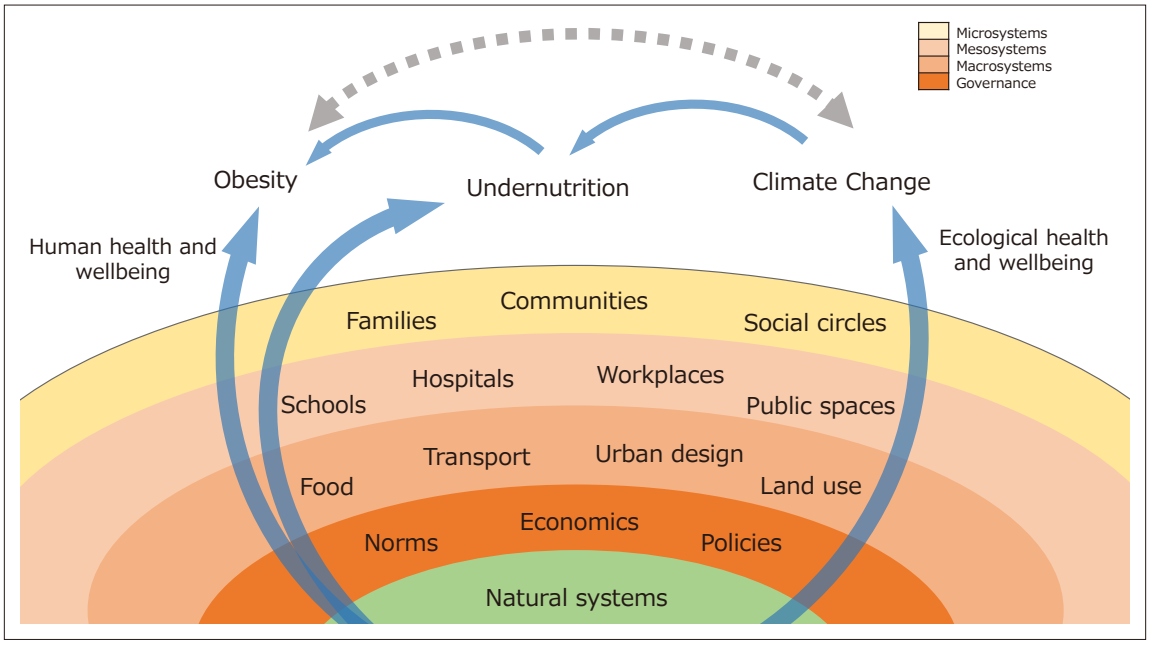


**Figure 2 Global syndemic: interactions between the three pandemics (obesity, undernutrition, climate change)**

Source: Swinburn et al. (2019)

level, an integrated approach is vital in the prevention and control of metabolic diseases. However, when the nutritional status is starvation, food as nutrient intake is essential for sustaining life and restoring balanced nutritional status.[4] Therefore, there is no superior or inferior relationship between these two terms. In this article, food will be considered one of the approaches to improving nutritional status.

## 2. Complexity of Nutrition Challenges, Global Syndemic and Double-duty or Triple-duty Actions

In recent years, nutrition issues have been discussed in the context of climate change. For example, in 2019, an extended 56-page report was published in the Lancet, "The Global Syndemic of Obesity, Undernutrition and Climate Change: The Lancet Commission Report" (Swinburn et al. 2019). The report warned that the three pandemics of obesity, undernutrition, and climate change constitute a "global syndemic[5]" and are the most serious threats to human health and survival today. This global syndemic is a phenomenon that has resulted from temporal and locational aggregation, interactions at the biological, psychological, and social levels, and common large-scale social factors and determinants. For example, as shown in **Figure 2**, escalating climate change will lead to reduced and destabilized food production and increased undernutrition. Pregnancy and childbirth under such conditions also result in newborns with low birth weight. Low birth weight newborns are at greater future risk of NCDs, such as cardiovascular disease, hypertension, or diabetes. In worth climate conditions, access to healthcare services to address chronic diseases will be hampered in various ways.

Thus, under climate change, nutritional problems will continue to deteriorate irreversibly and rapidly. Due to the speed and dynamics of these changes, it is essential to

[4] Encyclopedia Britannica "nutrition." Encyclopedia Britannica. https://www.britannica.com/science/nutrition

[5] The term "global syndemic" is a combination of the words "synergy" and "epidemic," a term and concept coined by medical anthropologist Merrill Singer in the 1990s. See Singer et al. (2017).

address the underlying causes, as there is insufficient time to address these challenges individually. To effectively address future nutrition challenges, it is crucial to move beyond isolated concerns such as undernutrition or obesity, nutrition challenges, or climate change, but instead adopt an approach that addresses these compounded challenges simultaneously. This approach is referred to as "Double- and triple-duty actions" for nutrition (Hawkes et al. 2020; Nomura et al. 2022). It is similar to the co-benefit approach (the concept that one activity leads to multiple benefits) in the field of environmental studies. For nutrition, this could mean the development of national dietary guidelines that place value on the prevention of obesity and diet-related NCDs while ensuring food security. Such guidelines are intended to generate improvements in multiple areas, such as human health and well-being, gender and other social equity, while promoting environmental sustainability in response to climate change challenges. These approaches have been applied in Sweden, Germany, Qatar, and Brazil, showing that implementation can be difficult but not impossible (Hawkes et al. 2020). Thus, the idea of a global syndemic gives suggestions on how to tackle compounded crises.

## 3. Nutrition Issues from a Human Security Perspective

JICA's approach to human security is based on two guiding principles. The first is to empower people, organizations, and society so that they can pursue their own potential (empowerment), while the second is to create a society and environment that is resilient to a variety of threats (protection) (JICA 2019). Through the implementation of these two principles of action, the realization of human security that we should aim for is precisely to "protect lives, livelihoods, and dignity" for each individual.

If we reconsider what is meant by protecting lives, livelihood, and dignity, for the purposes of this article, this entails securing the life of mothers, children, and other vulnerable populations from the threat of hunger and undernutrition. Consequently, if their lives are in danger, it means securing them by providing adequate treatment and nutrition is the most important goal for addressing nutrition issues. For example, in LMICs, the first breast milk (colostrum) given to a newborn serves as a preventive measure against infections, boosts immunity, promotes the newborn's growth, and contributes to the mother's postpartum recovery. Thus, safeguarding the lives of both mothers and infants requires the promotion of breastfeeding, with appropriate support from professionals when necessary. Daily life in communities—sites where dietary practices occur—needs to be optimized to support human body functions and maintain and promote health.

As noted above, today's nutritional problems are no longer limited to hunger and undernutrition but have expanded to obesity and chronic diseases, requiring urgent action. More recently, these chronic diseases have also been referred to as diet-related NCDs or just NCDs. While such diseases were once considered luxury diseases, many people are now obese and have acquired diet-related NCDs. This is partly due to limited food options in a compounded crisis within a geopolitically sensitive food environment. According to WHO, more than two billion people worldwide were overweight or obese in 2016, while 59% of adults in the Pacific region are overweight and 20% are obese (Helble and Francisco 2017). The food system permeates every corner of the islands, with empty calorie foods (processed foods, alcohol, sugary drinks, etc., that are high in energy but contain little or no nutrition). These products are easy to transport and store in a fragile environment like the Pacific. Advertisements run on the radio every day, and sugary drinks are sometimes cheaper than water in remote supermarkets. Despite this, it has been argued that diet-related NCDs should not be the subject of international cooperation (Templin et al. 2019).

In such an environment, is it realistic for people to think about their health tomorrow and make healthy choices? Looking at the nutrition challenge from a people-centered viewpoint and from a human security perspective, those who are not only undernourished but also overnourished, obese, and have diet-related NCDs are also vulnerable in terms of their lives, livelihoods, and dignity in the geopolitical consequences of a compounded crisis. In other words, in the

light of human security, it is a matter of dignity for us to be well-nourished every day, to have fresh and healthy food choices and, at the same time, to enjoy food until the end of life; in the contemporary context of the 21st century, the existence of people whose dignity is not protected is highlighted.

## 4. The Importance of a Multi-sectoral Approach in Addressing Nutrition Issues

JICA has identified five specific approaches (focusing on the needs of the vulnerable, a combination of protection and empowerment, new solutions for new problems, prevention and resilience, and a multi-sectoral and multi-stakeholder approach) to achieve human security (JICA 2021). Since single-sector efforts will not be sufficient to resolve nutrition problems, which are complicated by multiple factors, we will now consider nutrition issues through a multi-sectoral approach.

Nutrition problems occur in communities and people's daily activities. The unique complexity, local nature, and diversity of the problems have traditionally pointed to the need for a multi-sectoral approach. As hunger and undernutrition worsened in the 1970s, particularly in LMICs, the global community recognized the importance of improving nutrition and its various causes. According to one report, multi-sectoral nutrition plans were developed and implemented in more than 26 countries. However, these multi-sectoral plans were not as widely accepted outside of the health sector as originally envisioned. One of the reasons for this was that not all sectors wanted to abandon the process of planning and implementation based on their own authority (Levinson and Balarajan 2013). Later, when primary health care was proposed at Alma Ata in 1978, nutritional improvement in the community was implemented as tangible action, but the economies of many countries deteriorated due to debt from the economic recession caused by the 1970s oil shock. This led to a shift of focus of resources to what were considered more cost-effective and goal-oriented initiatives. As a result, in the 1980s and 1990s, the health sector began to focus more on nutrition-specific interventions,[6] an area in which it had a greater responsibility, and multi-sectoral efforts declined.

Thereafter, the Millennium Development Goals era brought some success in reducing maternal and child mortality through the selection and concentration of resources, and socioeconomic development progressed worldwide. Consequently, the global community began to take a renewed interest in improving nutrition. In the Lancet special issue on maternal and child undernutrition published in 2008, the period from conception to a child's second birthday was referred to as "the first 1000 days of life." Targeting this period, science-based, cost-effective nutrition interventions were organized, and there was a renewed emphasis on ensuring adequate nutrition for later physical and mental development and growth (Horton 2008). In 2010, Scaling Up Nutrition (SUN) was launched as a global framework to address nutrition issues, with national governments, UN agencies, development partners, civil society, business, and academic institutions playing a leading role in global discussions. Japan is sometimes referred to as the mother of SUN, as it was the Japan Social Development Fund (JSDF), established with contributions from the Japanese Government, that was used to launch SUN. The launch of SUN set up a governance function in the global nutrition sector, which had previously been seen as absent and problematic. In 2013, WHO identified specific nutrition issues (stunting, wasting, iron deficiency anemia, low birth weight, exclusive breastfeeding, and childhood obesity) that the global community should address. It also announced "Global Nutrition Targets" and published numerical targets (WHO 2013). The same year, the Lancet also published a special issue on "Maternal and Child Malnutrition," again highlighting the double burden of malnutrition and the importance of multi-sectoral and multi-stakeholder efforts to solve complex nutrition problems (Black et al. 2013). This led to the inclusion of Goal 2 on "Zero Hunger" in the Sustainable Development Goals (Nomura et al. 2015).

[6] Nutrition-specific interventions are direct nutrition interventions provided by health services. In contrast, indirect nutrition interventions outside of health services, such as in the agriculture, water and sanitation sectors, are referred to as nutrition-sensitive interventions.

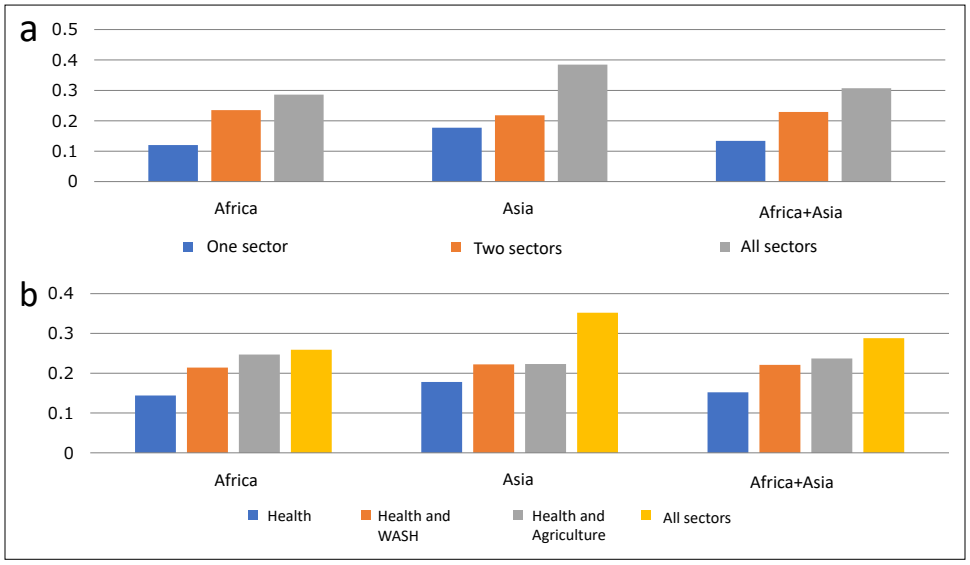


**Figure 3** a: Effectiveness in reducing stunting by number of sectors intervened
b: Effectiveness in reducing stunting by combination of sectors intervened

Source: JICA (2022)

Thus, the multi-sectoral approach, which has been essential in human security, has been reaffirmed as equally important in the nutrition sector. However, as described above, the nutrition sector has once failed to employ a multi-sectoral approach. What is different from the 1980s is that since 2000, various regimes have been put in place to identify cost-effective interventions, set numerical targets, establish a global framework for governance, and introduce monitoring—all of which were clearly missing before. Now, specific practices are needed to determine how they can be effectively combined. As yet, few studies have quantitatively demonstrated the effectiveness of multi-sectoral interventions in improving nutrition.

## 5. A Case Study on the Multi-dimensional Factors of Child Undernutrition

To address this lack of evidence, JICA conducted an analysis by expanding the target countries and variables initially used in a World Bank study (World Bank 2018). The original study demonstrated that multi-sectoral interventions are effective in reducing the prevalence of child stunting. A dataset was constructed for a total of 24 countries in Asia (7 countries) and Africa (17 countries) for which individual-level data from the Demographic and Health Surveys (DHS) program[7] were available.[8] In the final selection of target countries, priority was given to countries that are potential candidates for JICA's cooperation and countries with distinctive activities in nutrition improvement. The DHS is an international survey on demographics and health in many LMICs with a long history and a comprehensive data set used to produce representative statistical data for each country.

In the analysis, stunting of children under two years of age was selected as the objective variable. Variables related to the agriculture, water and sanitation, and health sectors were selected as explanatory variables used in the DHS. Minimum dietary diversity (MDD) was employed as a variable

[7] Demographic and Health Surveys (DHS) is a data collection frame operated by the United States Agency for International Development (USAID). Each DHS provides data at the individual and household level for LMICs worldwide. For more information, see the website. https://www.dhsprogram.com/

[8] For more information, see the publicly available Global 2020 Thematic Evaluation, "Improving Nutrition through a Multi-faceted Approach: Final Report." https://www.jica.go.jp/Resource/activities/evaluation/tech_ga/after/ku57pq00001cdfnb-att/202202_01_en.pdf

related to the agricultural sector. In the water and sanitation sector, safe water, improved sanitation facilities, open defecation, hand-washing facilities, feces disposal, and adequate and appropriate breastfeeding and early initiation of breastfeeding to prevent diarrhea were selected. The health sector included antenatal care, delivery assisted by the skilled birth attendants, postnatal care, diphtheria tetanus toxoid and pertussis (DTP3) vaccine, and use of mosquito nets. The DHS is a health sector survey and includes many variables related to the health and water and sanitation sectors but no variables related to the agricultural sector, therefore only one variable was adopted. Child sex, maternal height, multiple births, percentage of children under five years old among household members, birth order, number of household members, maternal marital status, maternal age at first birth, women's empowerment, maternal education level, household income, and residence were used as moderator variables.

In the results, the coefficients were larger in absolute value as the number of intervention sectors increased in all cases, whether analyzed in Africa, Asia, or both Africa and Asia, indicating a stronger impact on the outcome variable of stunting (**Figure 3a**). Next, regression coefficients were calculated for each combination of patterns to examine which combination of interventions was more effective (**Figure 3b**). The results were not significant for interventions in the agriculture or the water and sanitation sector alone. This was also the case with a multi-sector combination of the agriculture and water and sanitation sectors; however, they were significant for interventions in combination with the health sector. The absolute values of the coefficients were the largest for all three sectors. In other words, the results showed that nutrition-sensitive interventions, such as those in the agriculture and water and sanitation sectors, were less effective on their own, but when combined with nutrition-specific interventions in the health sector, they tended to have a positive effect on reducing stunting.

Stunting is a nutritional condition in which a person does not grow to an age-appropriate height due to chronic undernutrition caused by a long-term lack of adequate protein and other nutrients. The results of this study reaffirm the need for collaborative efforts among the three sectors to prevent chronic undernutrition and show that the health sector can be effective as a key player in the combination of the three sectors. The results suggest that, in order to improve stunting, the lives of mothers and children must first be protected through single-sector maternal and child health services, such as antenatal care, delivery assisted by skilled birth attendant, postnatal care, DTP3 vaccine, and the use of mosquito nets. It was suggested that mothers and children returning to the community after facility-based delivery should be supported in their daily lives through multi-sectoral efforts, such as breastfeeding, access to a variety of foods and safe water, and improved sanitation facilities.

## 6. A Case Study of JICA's Cooperation in the Solomon Islands: Food and Nutrition Practices from the Perspective of Human Security

This section introduces the Healthy Village Promotion Project, implemented in the Solomon Islands, as an example of a people-centered project.[9] The project focuses on community needs and addresses the multifaceted health issues of undernutrition, diet-related NCDs prevention, malaria prevention, and water and sanitation. In the Solomon Islands, due to recent changes in lifestyle and social environment, imported processed foods such as rice, wheat, sugar, salt, instant noodles, and snack foods have become common over the past 30 years. Even in rural areas far from the capital, imported processed foods have become more widely consumed than traditional foods, such as vegetables, potatoes, and fish cooked in coconut milk, as they are easily preserved, easy to prepare, and affordable. As a result, more than half of the population is overweight or obese, and more than 60% of all deaths are due to diet-related NCDs, such as cardiovascular disease and diabetes. On the other hand, in some areas, there are infectious diseases such as malaria,

[9] For more information, visit JICA Solomon Healthy Village Promotion Project website. https://www.jica.go.jp/oda/project/1500303/index.html

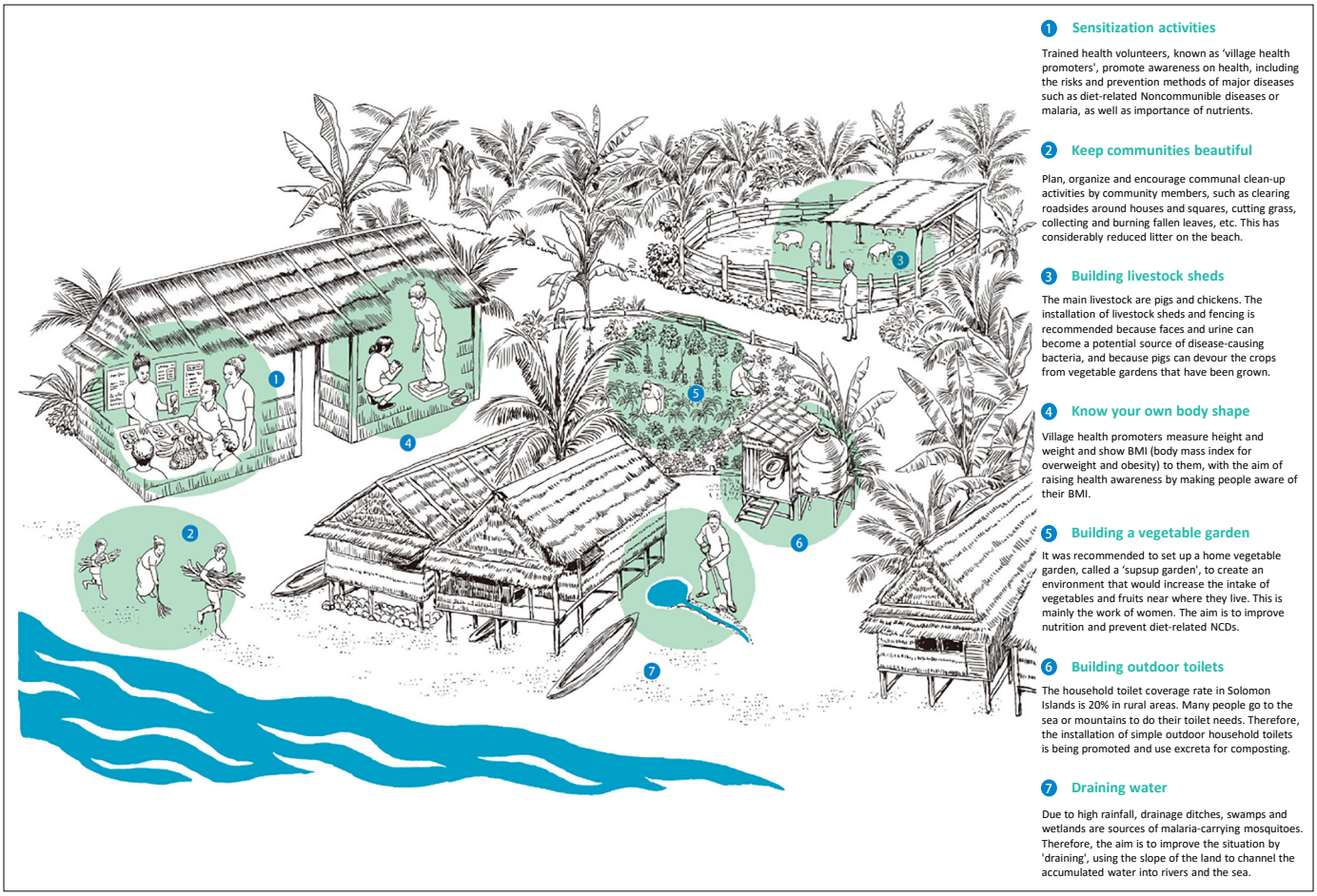


**Figure 4 Conceptual overview of healthy setting in the Health Promoting Village Project in Solomon Islands**

Source: JICA (2021)

while a significant number of children face impaired growth due to inadequate nutritional diets, resulting in a "double burden of malnutrition" that puts pressure on the budget of the Ministry of Health and Medical Services, which was in a serious situation.

In the Solomon Islands, 80% of the population lives on approximately 1,000 islands. Getting to a hospital or clinic can require walking for several hours through the forest or traveling by boat for several hours, making it difficult to receive health care services at night or in bad weather. Therefore, JICA provided support for five years—from 2016 to 2021—to train health promoters recommended by community residents, with the aim of enhancing the community's health capacity with limited healthcare resources (**Figure 4**).

The project targeted four health issues: malaria, child undernutrition, adult diet-related NCDs, and water and sanitation. It was led by the Health Promotion Department of the counterpart Ministry of Health and Medical Services in collaboration with other departments. The project focused on people's daily lives and worked with community organizations to identify their needs. For example, when the project surveyed the dietary habits of the village, the project found for the first time that vegetable consumption was unbalanced. Vegetables do not grow well in coastal villages because of the saltwater seeping into the soil, so local producers have to travel many miles into the mountains, with steep climbs often required to reach the fields. Consequently, the project partnered with the Ministry of Agriculture to conduct a training session taught by an agricultural instructor on how to prepare the soil and grow vegetables suitable for coastal environments. Leafy vegetables are now more readily available than before, and the favorite vegetable dish of mothers in the Solomons, *toroaoi*

cooked in coconut, is once again being prepared in villages.

Beyond the health impacts, garbage is a pervasive problem, as processed foods such as instant noodles, snacks, and sugary drinks are widely consumed even in rural areas far from the capital. Instant noodle packages, snack packages, and cans of sugary drinks litter the beaches and villages, causing the garbage to accumulate in the rivers flowing from the mountains, thereby obstructing the natural water flow. When the villagers highlighted the problem of malaria mosquitoes laying eggs on the stagnant water, as well as the increase in blowflies, the health promoters suggested cleaning the village waterways and collecting garbage to prevent malaria and reduce disease. In other words, a change in the island's diet was the cause of the malaria mosquito outbreak, and sanitation activities were needed to counteract the outbreak. Thus, a people-centered view of things from the perspective of human security leads to the need for a multi-sectoral approach, i.e., responding to community needs from multiple perspectives.

The Healthy Village Promotion Project not only empowered communities by strengthening the capacity of health promoters, who are directly selected by the community and work with villagers, but also created a mechanism to protect these communities in a sustainable manner. Policy and technical documents, guidelines, and awareness-raising materials were developed to systematize field experiences and findings, develop the Healthy Village Model, and scale up the project nationwide. These documents and materials were approved by the Ministry of Health and Medical Services, and healthy settings coordination committees were established in the capital and provinces to operationalize and manage the model—an approach that supported both empowerment and protection.

The Healthy Village Model is an example of a healthy settings approach. This well-established health promotion approach—which requires only limited healthcare resources—has been promoted by WHO Regional Office for the Western Pacific (WPRO).[10] Healthy Settings originated with the 1988 WHO "Ottawa Charter for Health Promotion," in which community participation, partnership, empowerment, and equity are key principles. The concept has been adopted by countries throughout the Pacific region, aiming to make not only villages but also schools, cities, workplaces, markets, and many other places healthy and hygienic. The Healthy Village Promotion Project, a JICA technical cooperation project, is an example of how this concept, proposed to the region by WPRO, was embodied and put into practice in villages together with the Solomon Islands Government and then translated into a policy from the bottom up.

## 7. Future Practice of the Multi-sectoral Approach

As seen in the above case study, the nutrition sector emphasis on implementing multi-sectoral efforts and is undertaking a variety of initiatives at the practical level. However, differences in the targets of each sector may be a barrier for implementation in multi-sectoral manner. For example, the target population most in need of nutrition interventions is often the most vulnerable. Thus, the health sector often targets mothers and children who lack geographic, economic, and social access to basic health services. The agricultural sector, on the other hand, targets farmers with a certain level of productive capacity and land with the goal of increasing productive capacity. Furthermore, for water supply projects in the water and sanitation sector, the availability of water sources is a condition for selecting target sites. For these reasons, close coordination is needed at the planning stage to coordinate the areas and timing of individual projects in different sectors. Target areas or target populations should overlap to ensure that the project planners understand the impact of each sector on people's food and nutrition at the planning stage and that nutrition reaches those who need it.

In Mozambique, communication with the "Project on Promoting Sustainability of Water Supply System and Sanitation in Niassa Province" was initiated during the planning stage of the "Project for Strenghening Maternal and Child Nutrition Services." Both projects set up a

[10] For more information, visit WHO Healthy Settings in the Western Pacific website. https://www.who.int/westernpacific/health-topics/healthy-settings

**Table 1 Classification of JICA nutrition cooperation based on multi-sectoral approach**

| Large-category | Sub-categories | Methods of multi-sectoral cooperation | Case studies in JICA nutrition cooperation |
|---|---|---|---|
| Multiple projects type | Type 1: Multiple projects within JICA | Multi-sectoral projects within JICA in the same country/region are linked. | • The Project for Strengthening Maternal and Child Nutrition Services (ProNUT) / Project on Promoting Sustainability of Water Supply System and Sanitation in Niassa Province(Mozambique)<br>• Project on Enhancing Community Resilience against Drought through Sustainable Natural Resources Management and Livelihood Diversification (ECoRAD2)/ Project for Improvement of Food and Nutrition Security through Building Adaptive Capacity to Climate Change in Arid and Semi-Arid Lands (IFNuS)/ Policy Advisor on Rural Water Supply (Kenya) |
| | Type 2: Collaboration with developing partners | In the same country/region, working with developing partners | • Food and Nutrition Improvement Project, collaboration with World Bank (Madagascar) |
| Single project type | Type 3: Multi-department | Within a single project, across multiple sectors within JICA | • Sector Policy Loan for Nutrition Improvement through Agriculture Transformation (Rwanda)<br>• Project for Supporting the Implementation of School Lunch Services (Mongolia) |
| | Type 4: Multi-counterpart | Counterparties in a single project across multiple sectors (several ministries, multiple departments, multiple divisions). | • The Project for Strengthening Maternal and Child Nutrition Services (ProNUT) (Mozambique)<br>• The Project for the Improvement of Maternal and Child Nutrition through Primary Health Care (Guatemala)<br>• Country Training Course LEP2.0 Healthy Central Kitchen Guideline (Malaysia)<br>• Nutrition Sensitive Agriculture Model Village Establishment Project (Ethiopia)<br>• Project on Capacity Development for Nutrition Improvement in Federal Capital Territory (Nigeria)<br>• Project for the Improvement of the Nutritional Situation through Agriculture (Burkina Faso) |
| | Type 5: Activity level | Multi-sectoral engagement at the activity level within a single project. | • Health Promoting Village Project (Solomon Islands) |

Source: Prepared by the author (as of July 2024)

common target village in their respective interventions. The project experts from both sector participated in JICA's training "Capacity building for nutrition improvement through multi-sectoral approach" and mutually confirmed the training contents to ensure there were no discrepancies in the training. Common illustrations are used to convey the same message and images to administrative officials across multiple sectors. Currently, plans are underway to construct water supply and sanitation facilities in the health centers targeted by the health project, and the people who use these health centers will subsequently receive multi-sectoral services.

At the country level, collaboration takes on distinct patterns, as outlined in **Table 1**. Type 1 is characterized by the collaboration of multiple sectors addressing overlapping populations and is exemplified by multiple projects within JICA. Type 2 involves target areas differentiated through collaboration with international organizations. Type 3 encompasses multiple departments within JICA collaborating on a single project. To illustrate Type 3, a project to support the introduction of school meal programs in Mongolia is a health sector project, but during the project formulation process, it became clear that establishing a sustainable food procurement system was essential, and therefore, the agriculture sector was asked to participate in the discussions. As a result, it was decided to organize the project structure into three components: outcomes from the health sector's efforts, outcomes from the agricultural sector's efforts, and outcomes from the collaborative efforts

**Table 2 Five conditions of collective impact**

| | |
|---|---|
| Common agenda | All stakeholders share a vision of change, build a common understanding of the situation and work together to solve problems through agreed activities. |
| Shared measurement systems | Regularly collect data and measure outcomes for all stakeholders to maintain overall direction and mutual accountability of activities. |
| Mutually reinforcing activities | Activities must be implemented in a coordinated manner, with each organization working independently and at the same time mutually reinforcing each other. |
| Continuous communication | Continuous and open communication between a large number of players to build trust, identify common goals and synchronization. |
| Backbone support organizations | In order to create and manage collective impact, a single or multiple organization made up of skilled personnel as a backbone, separate from the actors, supports and coordinates the whole process. |

Source: Kania and Kramer (2011)

**Table 3 Concepts of individual activity, collaboration, and collective impact**

| | Individual activity | Collaboration | Collective impact |
|---|---|---|---|
| Outcome | Individual outcome | Outcome as a group | Outcome as a community |
| Activities | Individual activities | Doing it together as a group activity | Each actor works individually, but ensure that they are interlinked through continuous communication. |
| Cooperation | Basically none | Become a member of the group | Coordination, cooperation and linkages to achieve a common agenda are a major prerequisite. |
| Decision-making | Independently carried out without influence of others | Group members act in accordance with the decision-making of the group | Each actor makes independent decisions and carries out activities. Individual actors or group develop system to naturally be influenced by others in the process of independent implementation. |
| Evaluation | Depends on the actor | Depends on the group | Visualize with a common agenda and evaluation methodology. |

Source: Prepared by the authors

linking the two. Besides these 3 types, two others can also be identified. Type 4 involves counterparts from several sectors (several ministries, several departments, several divisions) within a single project, while the fifth pattern entails several sectors involved at the activity level within a single project—these are multi-sectoral approaches that are often seen in previous JICA projects.

A term similar to multi-sector is multi-stakeholder. In the nutrition field, it is crucial for various sectors, such as agriculture, education, water and sanitation, as well as health, to work together; however, it necessitates the formation of partnerships with the participation of diverse stakeholders. Specifically in the context of nutrition, it is advantageous to engage with a range of parties: private food companies deeply embedded in the food system, academia fields generating evidence, civil society working in local communities, international organizations leading nutrition-related discussions and governance, as well as people themselves as actors in the nutrition practice, thereby participating in solving problems and fostering a sense of "solidarity." The United Nations Development Programme (UNDP) report in 2022 suggests that, in addition to the earlier conception of human security as protection and empowerment, the practice of human security in the Anthropocene should be based on the concept of "solidarity," thereby transcending stove-piping and involving all stakeholders (UNDP 2022).

So how can we be in solidarity today? As a redefinition of this solidarity, "Collective Impact" has received much attention in recent years. Collective impact was defined by John Kania and Mark Kramaer in 2011 in the Stanford Social Innovation Review. The term refers to a method that could be used to address today's increasingly complex social problems through cross-sectoral collaboration and is characterized by five conditions (Kania and Kramer 2011).

As shown in **Table 2**, Collective Impact takes place by setting a common agenda, conducting mutually reinforcing activities independently, and building a system in which the actors continuously communicate with each other, share a measurement system, and are supported by a backbone organization. In the traditional collaborative approach, each actor forms a group as a constituent member, making the group's decisions while working toward the group's results. By contrast, the most important feature of "Collective Impact" is that each actor works individually, making the most of their areas of expertise and not seeking close collaboration. As a group, they share an agenda and measurement system as a system function to bring solutions together. The crucial point that "Collective Impact" aims for is solving agenda identified from people-centered and community-centered perspective—and not a group outcome. Different sectors use different terms, cultures, and manners and naturally have diverse management conditions and materialities to apply. In today's world, where the aspirations and goals of key entities have diversified, the transaction cost of coordination is not negligeable to continue to work closely together to reconcile these unverifiable discrepancies. For this reason, the "Collective Impact" approach, in which each entity's area of expertise forms an aggregate within the system and implements problem-solving in a people-centered and community-centered manner, is attracting attention. The nutrition sector is also challenged to implement a multi-sectoral approach and a multi-stakeholder approach toward "Collective Impact."

## Conclusion

This article has moved back and forth between policy, history, field practice, and concepts of nutrition cooperation through a multi-sectoral approach to find the significance of human security in today's compounded crises. The premise is that people's food and nutrition are in the midst of a compounded crisis of climate change, COVID-19 pandemic, and conflicts. Their interaction with geopolitical influences, as well as changes in demographic and disease structures, are shifting today's nutrition problems from undernutrition to overnutrition. While undernutrition focuses on what (energy or nutrients) is lacking and by how much, overnutrition and diet-related NCDs now require consideration of what, how much, when, with whom, where, and how to eat.

In today's nutrition cooperation, which requires complex interventions to address these situations, we would like to emphasize the following two points as added values for human security: First, by looking at issues from the human-centered perspective that human security emphasizes, it is possible to address people and issues that were previously overlooked. For example, both overnutrition and diet-related NCDs can be included as issues to address. A human-centered view requires not only behavioral changes in lifestyles (empowerment) but also efforts to create resilient societies and environments (protection) that can counter the diverse threats that limit healthy choices from a geopolitical perspective. Second, to protect lives, livelihoods and dignity, a multi-sectoral approach is needed to address new nutritional challenges, as well as food, water, sanitation, education, and gender issues that cannot be solved by a health approach alone. To achieve substantial results in solving problems, it is necessary to implement a multi-sector and/or a multi-stakeholder approaches while reducing the costs of coordination through collective impact.

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