



Republic of the Philippines
Department of Education
DIGOS CITY DIVISION

Office of the Schools Division Superintendent

DIVISION MEMORANDUM

SGOD-2026-MeI

To : School Health and Nutrition Personnel
Public Schools District Supervisor
Elementary School Heads
Secondary and Senior High School Administrators
School Canteen Coordinators
All Others Concerned

Subject : **DISSEMINATION OF MEMORANDUM 045, S.2026 RE: 2026 NUTRITION MONTH CELEBRATION**

Date : July 16, 2026

1. In reference to the Regional Memorandum ESSD-2026-228, the field is hereby informed of the conduct of the 2026 Nutrition Month Celebration, to be observed throughout the month of July 2026.
2. This activity aims for the following:
 - a. Raise awareness of the importance of nutrition in addressing hunger;
 - b. Promote healthy diets, food security, and sustainable food practices; and
 - c. Strengthen support for climate-resilient food systems and environmental stewardship.
3. In view of the three-term school calendar, wherein July falls within the instructional period, schools are encouraged to integrate appropriate Nutrition Month activities into their regular learning engagements. These may include classroom discussions, advocacy campaigns, and other educational initiatives that promote healthy diets, food security, sustainable food systems, and environmental stewardship.
4. Enclosed are the 2026 Nutrition Month Talking Points for guidance and ready reference.



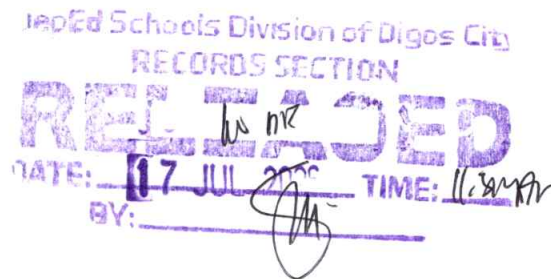
Republic of the Philippines
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DIGOS CITY DIVISION

Office of the Schools Division Superintendent

5. All schools are requested to submit their accomplishment reports, together with relevant documentation, through the School-Based Feeding Program group chat upon completion of their activities.
6. For information and strict compliance.

For and in the absence of the Schools Division Superintendent:


PETER JASON C. SENARILLOS
Senior Education Program Specialist
Officer-in-Charge





Republic of the Philippines
Department of Education
DAVAO REGION

July 10, 2026

REGIONAL MEMORANDUM
ESSD-2026-228

DISSEMINATION OF MEMORANDUM 045, S. 2026
RE: 2026 NUTRITION MONTH CELEBRATION

To: Schools Division Superintendents
Chief Education Supervisor, ESSD

1. Attached is a copy of Memorandum 045, S. 2026, re: 2026 Nutrition Month Celebration. This Office enjoins all Schools Division Offices (SDOs) and public and private schools in Region XI to actively participate in the **2026 Nutrition Month Celebration** throughout the month of July 2026.
2. The celebration aims to raise awareness on the importance of nutrition in addressing hunger and malnutrition, promote healthy diets and food security, encourage sustainable food practices, and strengthen support for climate-resilient food systems and environmental stewardship.
3. Schools are encouraged to conduct appropriate nutrition-related activities, including classroom discussions, advocacy campaigns, and other learning initiatives that promote healthy diets, food security, environmental stewardship, and sustainable food systems. Expenses relative to the conduct of the activities shall be charged against available local funds and other sources, subject to existing accounting and auditing rules and regulations.
4. Division offices are requested to submit relevant documents and highlights their division-wide Nutrition Month celebrations via <https://tinyurl.com/2026-ROXINutritionMonthReport> on or before August 28, 2026.
5. For further details, Reissa T. Silda, Regional SBFP Focal Person, and Jade T. Paraguya, Regional SBFP Technical Assistant II may be contacted at (082) 224-0748.
6. Immediate dissemination and strict compliance is required.

MARIA INES C. ASUNCION
Director IV

Encl.: As stated
ROE/SBFP/jtp



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SA PPAN
SAMA-SAMA SA
NUTRISYONG SAPAT
PARA SA LAHAT!



NATIONAL NUTRITION COUNCIL • JULY 2026

52nd Nutrition Month Talking Points

"Nutrisyon at Kalikasan, Ating Pangalagaan!"

Prepared by the National Nutrition Council

For more information, comments, and suggestions, please contact the NNC
Nutrition Month Secretariat at nied@nnc.gov.ph; 8843-0142;
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INTRODUCTION TO NUTRITION MONTH 2026

Nutrition Month is the annual nationwide campaign promote greater awareness and action on nutrition among Filipinos. It is mandated under Section 7 of Presidential Decree No. 491, otherwise known as the Nutrition Act of the Philippines, which officially declares July as Nutrition Month and designates the National Nutrition Council (NNC) to lead and coordinate the celebration.

Through this annual observance, the campaign highlights priority nutrition issues through a selected theme, encourages positive nutrition behaviors, and mobilizes multi-sectoral action among National Government Agencies (NGAs), Local Government Units (LGUs), partners, and communities to improve the nutritional status of Filipinos.

SECTION I

The 52nd Nutrition Month Theme

A. Overview of the 2026 Sub-theme

The 2026 National Nutrition Month carries the sub-theme "*Nutrisyon at Kalikasan, Ating Pangalagaan!*", a call that recognizes the deep and inseparable connection between nutrition and the natural environment. Simply put, the health of our food depends on the health of our planet, and protecting our environment is, at its core, an act of protecting our nutrition.

This year's sub-theme is straightforward and resonant: caring for nature is caring for ourselves. It emphasizes that climate-smart practices are not just environmental imperatives, they are nutritional ones. When our ecosystems are degraded, our food systems suffer. When our food systems suffer, so does the health of every Filipino. The sub-theme highlights three interconnected truths:

Nutrition is shaped by the environment. Climate change, through typhoons, droughts, floods, and erratic rainfall, disrupts agriculture, fisheries, and local food systems. These shocks reduce food availability, compromise dietary diversity, and deepen malnutrition, particularly among the most vulnerable: poor households, farmers, fisherfolk, women, and children. Rising atmospheric carbon dioxide further diminishes the nutritional quality of staple crops, reducing essential micronutrients such as iron and zinc even as food prices rise.

Food systems affect the environment. The relationship is not one-directional. Diets high in resource-intensive and ultra-processed foods contribute significantly to greenhouse gas emissions, unsustainable land and water use, and biodiversity loss. What we eat has a footprint, and Filipinos are called to make food choices that tread more lightly on the earth by choosing locally sourced, seasonal, whole, and plant-forward foods aligned with the *Pinggang Pinoy* and the 10 Kumainments.

Collective action is essential. The sub-theme affirms the shared responsibility of every sector of society, individuals, families, communities, local government units, national agencies, the private sector, and development partners, to advance food systems that are nutritious, climate-resilient, and sustainable. It is not enough to act alone; the campaign calls for multi-sectoral collaboration to protect both people and planet.

The 2026 campaign logo visually embodies this message: one half depicting the Earth, representing our natural systems of land, water, biodiversity, and climate, and the other half a basket of locally available Filipino foods such as rice, fish, *talong*, *labanos*, *kalabasa*, *malunggay*,

and *saging*. Together, the two halves convey that healthy diets are only truly sustainable when natural systems are protected and food systems are climate-resilient and nutrition-sensitive.

"Nutrisyon at Kalikasan, Ating Pangalagaan!" is ultimately a message of hope and collective responsibility, affirming that through sustainable food choices, stronger local food systems, and environmental stewardship, we can build a more resilient nation for present and future generations.

B. Link to the Philippine Plan of Action for Nutrition (PPAN) 2023-2028

The 2026 National Nutrition Month does not stand alone, it is firmly rooted in and aligned with the Philippine Plan of Action for Nutrition (PPAN) 2023–2028, the country's comprehensive roadmap for achieving nutrition security for all Filipinos.

From 2025 to 2028, the Nutrition Month campaign adopts the overarching theme *"Sa PPAN: Sama-Sama sa Nutrisyong Sapat Para sa Lahat!"*, a declaration that nutrition is a collective pursuit requiring whole-of-society commitment. This theme was agreed upon during the NNC Technical Committee meeting in November 2024, with the intent to sustain advocacy efforts across the remaining years of the PPAN cycle. Each year, a specific sub-theme is identified to spotlight a particular pillar or priority area of the PPAN, ensuring that Nutrition Month serves as an annual, focused amplification of the plan's goals.

For 2026, nutrition and climate change were chosen as the focal intersection, reflecting the PPAN's recognition that environmental sustainability is integral to achieving lasting nutrition outcomes.

The 2026 Nutrition Month activities are designed as a broad mobilization mechanism for the PPAN. Advocacy letters sent to NNC Governing Board and Technical Committee agencies, national government agencies, Scaling Up Nutrition (SUN) Networks, academic institutions, development partners, and the private sector all request participation aligned with the PPAN's implementation structure. Partner agencies are called upon to submit accomplishment reports to ensure monitoring across all levels, a mechanism that feeds directly into PPAN compliance tracking.

Furthermore, all NNC Regional Offices are directed to conduct parallel activities consistent with PPAN priorities, with regional accomplishment reports due by 18 August 2026, ensuring that the month-long campaign translates into documented, measurable contributions toward the PPAN 2023–2028 targets.

In essence, the 2026 Nutrition Month is both a celebration of and a strategic instrument for the PPAN, using the national spotlight of July to advance the plan's vision of a Philippines where every Filipino has access to adequate, safe, and nutritious food, in a healthy and sustainable environment.

C. Objectives of the 52nd Nutrition Month

The 2026 National Nutrition Month campaign aims to create greater awareness on nutrition among the public, particularly on the importance of adopting sustainable food systems and dietary practices that promote both human nutrition and environmental sustainability. Specifically, it aims to:

- i. **INFORM** – disseminate information on the impact of climate change on food systems and nutrition, as well as dietary practices on environmental sustainability;

- ii. **INSPIRE** – conduct activities that encourage individuals, families, and communities to adopt balanced, nutrient-rich, and environmentally conscious food and dietary practices;
- iii. **REVITALIZE** - involve and collaborate with relevant national government agencies, sectoral groups/organizations, private sector, and the local government units in adopting and mitigating sustainable, climate-responsive, and nutrient-rich products, practices, and policies that support public nutrition goals; and
- iv. **INVEST** - advocate to legislators, policymakers, and program managers to prioritize and strengthen existing nutrition and climate change policies and programs.

D. The Key Messages of the 52nd Nutrition Month

i. For individuals, families, schools, and communities

- a. Every Filipino should consume a balanced and varied diet that is sustainable and does not harm the planet, guided by the Pinggang Pinoy and 10 Kumainments.
- b. Choose locally sourced, sustainably produced, seasonal, and whole foods to support both your health and the environment.
- c. Reduce food waste by planning meals and storing food properly.
- d. Support the establishment and maintenance of school, home, and community gardens/farms to grow sustainable food.
- e. Promote good nutrition as early as the first 1000 days through exclusive breastfeeding for 6 months, and continue breastfeeding until 2 years or beyond, with appropriate complementary feeding.

ii. For legislators, policymakers, and program managers

- a. Climate action is nutrition action. Integrate double-duty actions like breastfeeding, healthier diets, and improved nutrition into climate and nutrition programs, policies, and community initiatives.
- b. Prioritize budgets for initiatives that increase access to healthy foods, support local production, reduce food waste, and strengthen climate-resilient food systems.
- c. Enact regulations that encourage the reduction of food loss and waste across the supply chain.
- d. Support research on nutrition, food system sustainability, and environmental impact.
- e. Strengthen monitoring systems, including data collection and dissemination, to include data on sustainability practices, nutrition outcomes, and environmental impacts.

iii. For industry and private sector stakeholders

- a. Reduce your carbon footprint. Adopt climate-friendly practices across production, processing, packaging, and distribution to minimize greenhouse gas emissions.
- b. Use responsibly sourced raw materials and shift toward plant-forward, nutrient-rich products that support both nutrition and the environment.
- c. Increase the availability of affordable, nutritious, and sustainable food products for all consumers.

- d. Report on sustainability initiatives and set measurable targets for reducing environmental impact.
- e. Partner with government, communities, and NGOs to scale up sustainable food systems and reduce negative environmental and health outcomes.

E. The Nutrition Month Logo



The logo, depicted as half Earth and half a basket of Filipino fruits, vegetables, rice, and fish, symbolizes the link between environmental protection, climate action, and nutrition security. The Earth represents our natural systems — land, water, biodiversity, and climate — that sustain food production and human health. It highlights that protecting the environment today includes both mitigating climate change and strengthening adaptation to its impacts, especially in a climate-vulnerable country like the Philippines.

The basket features locally available Filipino foods — rice, fish, talong, labanos, kalabasa, malunggay, and saging — aligned with the Pinggang pinoy which represents diverse, culturally meaningful, and nutrient-rich foods that form the foundation of healthy diets. These foods also reflect the importance of supporting local farmers and fishers, promoting seasonal and climate-resilient production, and encouraging sustainable dietary patterns that reduce environmental impact.

Together, the two halves convey that healthy diets are only sustainable when natural systems are protected, and food systems are climate-resilient and nutrition-sensitive. The logo reinforces the message that climate change mitigation and adaptation are essential to safeguarding food security, public health, and livelihoods. Ultimately, it expresses hope and collective responsibility, affirming that through sustainable food choices, strengthened local food systems, and environmental stewardship, we can build a more resilient country for present and future generations.

SECTION II

Understanding Climate Change: Environmental Degradation

A. What is Climate Change?

Climate change refers to long-term shifts in global temperatures and weather patterns, driven largely by the accumulation of greenhouse gases in the atmosphere as a result of human activities such as burning fossil fuels, deforestation, and unsustainable agricultural practices (Intergovernmental Panel on Climate Change [IPCC], 2023). While it is most visibly associated with stronger typhoons, rising temperatures, prolonged droughts, and more frequent flooding, these are symptoms of a far deeper and more complex environmental challenge. In the Philippines, one of the most climate-vulnerable countries in the world, these impacts are not distant threats, they are lived realities that disrupt agriculture, fisheries, and local food systems, reducing food availability, compromising dietary diversity, and deepening malnutrition particularly among poor households, farmers, fisherfolk, women, and children (World Food Programme [WFP], 2023; National Nutrition Council [NNC], 2022). Scientific evidence further shows that elevated atmospheric carbon dioxide not only reduces crop yields but also diminishes essential micronutrients such as iron and zinc in staple crops, while contributing to higher food prices and increased food safety risks (IPCC, 2023), making climate change not just an environmental issue, but a profound and urgent nutrition crisis.

Environmental degradation refers to the deterioration of natural systems, forests, soils, freshwater sources, coastal ecosystems, and biodiversity, due to a combination of unsustainable human activities and climate-related pressures. According to the Food and Agriculture Organization (FAO), this deterioration reduces the capacity of ecosystems to provide essential services such as food production, water regulation, nutrient cycling, and climate regulation (FAO, 2025). The relationship between environmental degradation and nutrition is often overlooked, yet it is critically important: healthy ecosystems support productive agriculture, thriving fisheries, and resilient food systems. When these ecosystems deteriorate, food production becomes less reliable, food prices rise, and access to nutritious and diverse foods becomes increasingly difficult, placing the health and well-being of millions of Filipinos, particularly the most vulnerable, at serious risk. Protecting and restoring our natural environment is therefore not merely an ecological imperative, but a fundamental act of safeguarding the nutrition and food security of every Filipino.



Figure 1: The Ecosystems to Food Systems to Nutrition and Health Outcomes

B. Ecosystems Shape Food Systems and Nutrition Outcomes

Food systems depend directly on ecosystem services. These services include fertile soils for crop production, freshwater for irrigation, forests that regulate rainfall, pollinators that support fruit and vegetable production, and healthy marine ecosystems that sustain fisheries.

FAO estimates that approximately 95 percent of global food production depends directly or indirectly on healthy soils. Likewise, more than 75 percent of the world's major food crops rely at least partly on animal pollinators (FAO, 2025; FAO, 2019).

When ecosystems function properly, they provide the environmental foundation needed for diverse and nutritious diets. However, when ecosystems become degraded, food systems become increasingly vulnerable to climate shocks, production declines, and disruptions in food availability.

Key Point

Nutrition outcomes are not determined solely by individual food choices. They are shaped by the health of the ecosystems that make food production possible.

C. Environmental Degradation and Food Security

i. Deforestation: Losing Nature’s Food Security Infrastructure

Forests are critical components of food systems. Beyond providing timber and livelihood opportunities, forests regulate rainfall, protect watersheds, maintain soil stability, and support biodiversity.

Globally, approximately 420 million hectares of forest have been lost since 1990 due to land conversion and other human activities (FAO, Global Forest Resources Assessment 2020).

Forests are closely linked to agricultural productivity because they protect watersheds that supply water for irrigation, domestic use, and other ecosystem services. According to the Department of Environment and Natural Resources and the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DENR and PCAARRD, 2023), approximately 14.2 million hectares of land are critical to the national irrigation system, while 6.8 million hectares of watershed areas are vulnerable to deforestation, biodiversity loss, soil erosion, flooding, landslides, and water pollution. The degradation of these forested watersheds can reduce water availability for agriculture, weaken ecosystem services, and increase the vulnerability of farming communities to climate-related disasters (DENR and PCAARRD, 2023).

For food systems, deforestation creates multiple risks. Reduced forest cover increases soil erosion, decreases water availability, alters rainfall patterns, and weakens ecosystem resilience. These impacts eventually affect agricultural productivity and food security.



DEFORESTATION

Loss of forests due to land conversion, logging, mining, infrastructure expansion, and fires.

Forests regulate rainfall, protect watersheds, and support biodiversity. When forests are lost, soils erode, water becomes scarce, and agricultural productivity declines.

KEY IMPACTS



Disrupts rainfall patterns and water cycles



Increases soil erosion and flood risk



Reduces water availability for communities and farms



Loss of forest foods and resources that support livelihoods

NUTRITION IMPACT



Lower crop productivity, food insecurity, and reduced dietary diversity.

ii. Soil Degradation: Weakening the Foundation of Food Production

Healthy soils support plant growth by supplying nutrients, retaining water, and storing carbon. However, soil degradation has become one of the most serious threats to global food security.

According to FAO, one-third of global soils are already moderately to highly degraded. Every year, soil erosion removes between 20 and 37 billion tons of fertile topsoil worldwide (FAO SOLAW, 2021).

Soil degradation is also a significant challenge in the Philippines, particularly in upland agricultural areas where unsustainable land management practices, deforestation, and intensive cultivation have accelerated soil erosion. The Department of Agriculture (DA) and the Bureau of Soils and Water Management (BSWM) estimate that millions of hectares of agricultural land are affected by varying degrees of soil erosion, nutrient depletion, soil acidity, and declining fertility (BSWM, 2023).

The Philippines loses substantial amounts of topsoil annually due to water-induced erosion, particularly in sloping and mountainous areas. Studies have shown that severe soil erosion can reduce agricultural productivity by removing nutrient-rich topsoil, lowering water retention capacity, and increasing dependence on fertilizers and other agricultural inputs (Department of Agriculture-BSWM, 2023; FAO, 2021).



SOIL DEGRADATION

Decline in soil health caused by erosion, nutrient depletion, overuse of chemicals, pollution, and unsustainable farming practices.

Degraded soils lose their fertility and ability to retain water, resulting in lower yields and reduced resilience to climate shocks.

KEY IMPACTS



Reduces soil fertility and productivity



Increases land degradation and desertification



Lowers water retention and increases drought risk



Releases stored carbon and worsens climate change

NUTRITION IMPACT



Lower yields and less nutrient-dense foods increase the risk of malnutrition.

Nutrient-depleted soils can produce crops with lower concentrations of essential micronutrients, affecting the nutritional quality of food. As agricultural productivity declines, food availability and affordability may also be affected, increasing the risk of food insecurity and malnutrition among vulnerable households (FAO, 2021).

iii. **Water Scarcity: A Growing Threat to Food Production**

Water is essential throughout food production systems. Crops, livestock, fisheries, and food processing all depend on reliable water supplies.

Agriculture currently accounts for more than 70 percent of global freshwater withdrawals (FAO, 2025). Climate change is expected to intensify droughts and alter rainfall patterns, increasing water stress in many regions.

The Philippines is highly vulnerable to both droughts and extreme rainfall events, making water security a growing concern for food production. While the country receives abundant rainfall annually, water availability is unevenly distributed across regions and seasons. Climate change is expected to increase the frequency and severity of extreme weather events, including prolonged dry spells associated with El Niño and more erratic rainfall patterns (Climate Change Commission, 2023).

During the 2023–2024 El Niño event, agricultural losses exceeded ₱15 billion, with rice, corn, and fisheries among the most affected sectors (Department of Agriculture, 2024). Water scarcity also affects fisheries and livestock production. Reduced water levels in rivers, lakes, and reservoirs can disrupt inland fisheries, while prolonged drought conditions can limit water supplies for livestock and forage production. These impacts threaten both food availability and livelihoods, particularly in rural communities that depend heavily on agriculture and fisheries.

The consequences extend beyond production. When droughts reduce agricultural output, food supplies decline and prices often increase. Staple foods such as rice and corn, as well as vegetables and livestock products, may become more expensive and less accessible. Low-income households are particularly vulnerable because they spend a larger proportion of their income on food and are more likely to reduce food quantity and dietary diversity during periods of rising prices.



WATER SCARCITY

Insufficient water for people, agriculture, livestock, and ecosystems due to overuse, pollution, and climate change.

Water stress limits irrigation, reduces agricultural production, and affects the health of communities and ecosystems.

KEY IMPACTS

-  Limits irrigation and agricultural production
-  Reduces fish stocks and aquatic productivity
-  Affects water quality and increases disease risk
-  Creates competition for water and social conflict

NUTRITION IMPACT



Lower food availability, higher food prices, and greater risk of undernutrition.

iv. **Biodiversity Loss: Shrinking the World's Food Basket**

Biodiversity provides the foundation for dietary diversity. It supports crop breeding, pollination, fisheries, livestock production, and resilience against pests and diseases.

FAO reports that only nine crop species account for approximately 66–70 percent of total global crop production. Rice, wheat, and maize alone provide more than half of all plant-derived calories consumed globally (FAO, 2019).

The Philippines is recognized as one of the world's megadiverse countries, hosting a rich variety of plant and animal species that support food production, fisheries, and ecosystem

services. However, biodiversity is increasingly threatened by habitat loss, deforestation, overfishing, pollution, and climate change (DENR-BMB, 2023).

Biodiversity loss poses significant risks to food and nutrition security. Many Filipino communities depend on diverse crops, fish species, and other natural resources for food and livelihoods. Declining biodiversity can reduce the availability of nutrient-rich foods, weaken ecosystem resilience, and increase vulnerability to climate-related shocks. In coastal areas, the degradation of coral reefs and mangrove ecosystems can reduce fish catches, affecting an important source of protein and micronutrients for many households.

Protecting biodiversity helps sustain diverse diets, resilient food systems, and long-term food security for present and future generations.



BIODIVERSITY LOSS

Decline in the variety of plants, animals, and microorganisms due to habitat loss, pollution, overexploitation, and climate change.

Loss of biodiversity reduces the resilience of food systems and limits the variety of nutritious foods available.

KEY IMPACTS

-  Reduces genetic diversity for crops and livestock
-  Declines pollination and ecosystem services
-  Lowers resilience to pests, diseases, and climate shocks
-  Shrinks the variety of foods available

NUTRITION IMPACT



Less diverse diets and fewer nutrient-rich foods increase malnutrition risk.

Section Summary

Environmental degradation is a major but often overlooked driver of food insecurity and malnutrition. Deforestation, soil degradation, water scarcity, and biodiversity loss weaken the ecosystems that support food production and human health. As these environmental systems deteriorate, food systems become less productive, less resilient, and less capable of providing nutritious diets. Protecting ecosystems is therefore not only an environmental imperative—it is also a critical investment in food security, nutrition, and sustainable development.

SECTION III

The Link Between Nutrition and Climate Change

A. How Climate Change Interacts with Food Systems and Food Security

i. What is a Food System?

A food system covers the full range of activities that bring food from the farm to the table, from production and processing, to distribution, retail, and final consumption. According to FAO (2018), food systems are not simply supply chains. They are complex, interconnected socio-ecological systems shaped by environmental conditions, market forces, infrastructure, and governance. In the Philippine context, this includes smallholder farmers growing rice, corn, and vegetables; fisherfold harvesting from coastal waters; millers and processors convering raw goods; traders moving produce across islands; and households making daily food decisions under real economic and environmental constraints.

As an archipelago, the Philippines faces compounded vulnerability. Food must travel across island chains via roads, ports, and shipping routes, all highly exposed to typhoons, flooding, and sea-level rise. A disruption at any point in this chain can trigger cascading food shortages, price spikes, and nutritional harm for millions of Filipinos.



Figure 2: The Philippine Food Sytem: From Farm to Table

ii. Food Systems Shape What We Eat and How Well-Nourished We Are

Nutrition outcomes are not simply a matter of personal food choices. They are determined largely by the structure and performance of food systems themselves. When food systems prioritize staple crop production — as the Philippines largely does with rice — they can address calorie needs but often fail to deliver the dietary diversity required for adequate micronutrient intake.

Key Point

When food systems fail to make diverse, nutrient-rich foods available and affordable, populations shift toward energy-dense but nutrient-poor diets. The result is widespread micronutrient deficiencies — even when calorie intake appears sufficient. (FAO, 2018)

FAO (2021) uses the broader concept of agrifood systems to capture the entire continuum, from primary production through food storage, processing, packaging, distribution, retail, consumption, and food loss and waste. Nutrition outcomes are shaped not just at the farm level, but across the whole chain. Poor processing practices, inefficient transport, and limited cold storage all reduce the nutritional quality and safety of what ultimately reaches

Filipino families. Agrifood systems are also deeply tied to environmental sustainability. When production practices degrade soil, water, and biodiversity, they reduce the long-term capacity of those systems to deliver nutritious food — creating a feedback loop where environmental decline drives malnutrition.

iii. Agrifood System

An agrifood system encompasses the entire continuum of activities involved in producing, transforming, and delivering food — from primary agricultural production and fisheries, through processing, storage, transport, and retail, to consumption and the management of food loss and waste (FAO, 2021). In the Philippine context, the nutritional quality of food reaching a family's table is shaped at every point along this chain: how rice is milled, how fish is stored and transported across islands, and how produce is handled in markets all affect what nutrients ultimately remain by the time food is eaten. Post-harvest losses, inadequate cold storage, and poor processing practices further reduce nutritional quality before food even reaches households. Equally important, agrifood systems are inseparable from the natural environment — when agricultural practices degrade soil, water, and biodiversity, they erode the long-term capacity of food systems to deliver nutritious food, creating a feedback loop where environmental decline drives malnutrition, and malnutrition deepens vulnerability to further climate shocks (FAO, 2021).

B. Climate Shocks Affect Every Stage of the Food System

Climate Shocks such as typhoons, floods, droughts, do not affect only one link in the food chain. They strike simultaneously across multiple stages, creating compounding crises:

At production: Typhoons, droughts, floods, and heat stress directly affect agricultural and fisheries outputs. Strong typhoons destroy standing crops, damage irrigation systems, erode fertile soils, and disrupt fishing activities. Prolonged droughts associated with El Niño reduce water availability, lower crop yields, and diminish livestock productivity. These impacts are particularly significant because agriculture remains a major source of livelihood for millions of Filipinos and is highly exposed to climate-related hazards. Between 2010 and 2019, approximately 63% of total disaster-related damages in the Philippines were incurred by the agriculture sector, underscoring its vulnerability to extreme weather events.

At distribution: Climate shocks disrupt the movement of food from farms and fishing grounds to markets. Flooded roads, damaged bridges, impassable ports, and power outages interrupt transportation and storage systems. Perishable commodities such as vegetables, fish, meat, and dairy products are particularly vulnerable to spoilage when cold-chain facilities and logistics networks are compromised. Recent typhoon events have demonstrated how successive storms can damage critical infrastructure across multiple regions simultaneously, delaying food deliveries and increasing post-harvest losses.

At the retail and market level: disruptions in supply chains often lead to reduced food availability and higher food prices. When agricultural production declines and transport systems are interrupted, markets experience shortages of essential commodities. Climate-related disruptions contribute to price volatility, especially for fresh produce, fish, and staple foods, making nutritious diets less affordable for low-income households. Studies have identified food price increases as a key pathway through which climate hazards affect food security in the Philippines.

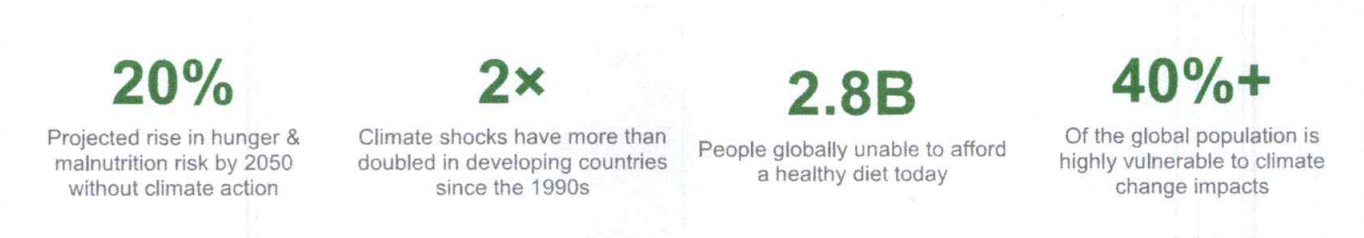
At consumption: Households face reduced physical and economic access to food. When food prices rise or incomes decline due to lost livelihoods, families often adopt coping strategies such

as reducing meal sizes, skipping meals, purchasing cheaper foods, or consuming less diverse diets. These responses can worsen nutritional outcomes, particularly among children, pregnant women, older persons, and other nutritionally vulnerable groups. Evidence from the Philippines shows that climate variability and droughts can reduce household food consumption and negatively affect welfare, especially in rural and agriculture-dependent communities.

The Intergovernmental Panel on Climate Change (IPCC, 2022) identifies extreme weather events as a major driver of global food insecurity. In the Philippine context, climate shocks demonstrate that food security is not solely an agricultural issue but a food systems issue. Strengthening resilience therefore requires interventions across the entire food system—including climate-resilient agriculture, resilient transport and storage infrastructure, improved market systems, social protection mechanisms, and nutrition-sensitive policies—to ensure that all Filipinos can access safe, affordable, and nutritious food even in the face of increasing climate risks.

C. Impact of Climate Change on Food Systems

The consequences of climate change on global food systems are already severe and are projected to worsen significantly without urgent action. Climate shocks — including extreme weather events, prolonged droughts, and erratic rainfall — have more than doubled in developing countries since the 1990s, threatening agricultural productivity and disrupting food supply chains at an alarming rate (FAO et al., 2024). Today, 2.8 billion people worldwide are already unable to afford a healthy diet, a crisis that climate change continues to deepen by reducing food availability, driving up food prices, and undermining the livelihoods of farmers and fisherfolk who depend on stable ecosystems (FAO et al., 2024). More than 40% of the global population lives in conditions of high vulnerability to climate change impacts, and without meaningful climate action, hunger and malnutrition risk is projected to rise by 20% by 2050 — a stark reminder that the climate crisis is inseparable from the nutrition crisis (WFP, 2021; IPCC, 2022). For a country like the Philippines, where millions already face food insecurity and malnutrition, these global realities are not abstract statistics but urgent calls to strengthen climate-resilient food systems and protect the nutrition of every Filipino.

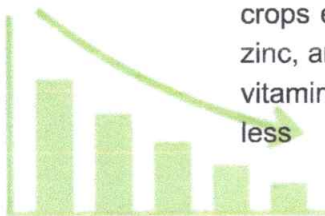


Sources: WFP, 2021; FAO et al., 2024; IPCC, 2022

i. Reduced Crop Yields

One of the most direct consequences of climate change is the measurable decline in agricultural productivity. IPCC (2022) confirms that rising temperatures and increased climate variability are already reducing yields of major staple crops in tropical regions, including the Philippines. Rice, corn, and vegetables, the backbone of Filipino food security, are particularly sensitive to temperature extremes, erratic rainfall, and water stress.

Beyond physical crop destruction during typhoons, climate change also alters growing seasons, increases pest and disease pressure, and reduces the nutritional content of food itself. Field studies cited by FAO (2025) found that crops exposed to elevated CO₂ concentrations show reduced levels of protein, zinc, and iron. Rice experiments showed up to 30 percent less folate and other B-vitamins under elevated CO₂ conditions — meaning that even harvested food may be less nutritious than it was decades ago.



ii. Disrupted Supply Chains

Even when food is produced, getting it to consumers requires functional roads, bridges, ports, and cold storage, and market infrastructure. In the Philippines, these systems are severely tested by every major typhoon. Damaged infrastructure stops food movement from production areas to urban and rural markets, even when supply in unaffected regions is adequate.

Perishable goods such as vegetables, fruits, fish, and dairy are most vulnerable. Without functioning cold chains and reliable transport, these high-nutritional-value foods spoil before reaching markets. This forces families to rely on shelf-stable, often less nutritious alternatives. The IPCC (2022) identifies infrastructure disruption as a major driver of food system instability, and for an archipelago like the Philippines, this risk is amplified by every storm that crosses the country.



iii. Increased Food Prices

When climate shocks reduce supply while demand stays the same, or rises, food prices increase. The IPCC (2022) links extreme weather events to both short-term price spikes and longer-term inflationary pressure. In the Philippines, this effect is amplified by repeated typhoon passages, which frequently disrupt both production and logistics simultaneously.

Vegetables, fruits, meat, and fish, the foods highest in micronutrients, tend to experience the greatest price volatility during and after climate events. Low-income households, which already spend a disproportionate share of income on food, respond by cutting food quantity, eliminating nutrient-rich foods, and increasing consumption of cheap, calorie-dense staples. Over time, this structural price pressure becomes a driver of chronic malnutrition.

Key Point

Following typhoons, vegetable prices in Metro Manila have been observed to rise sharply due to supply chain disruptions and crop losses, with documented increases ranging from moderate double-digit changes to over 100% for specific vegetables in severe cases, according to Department of Agriculture market monitoring reports and Philippine Statistics Authority price data.

D. Greenhouse Gas Emissions from Food Systems

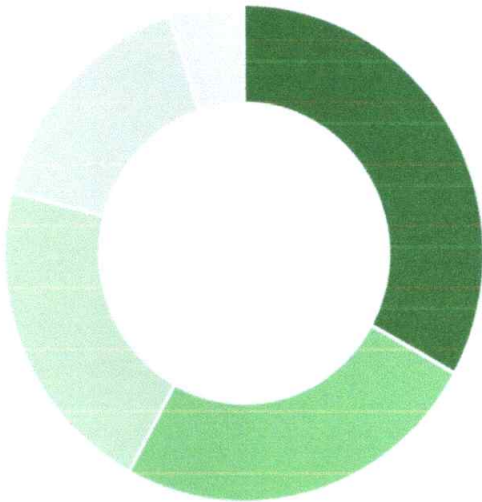
i. Food Systems Are Major Contributors to Climate Change

While food systems bear the brunt of climate change impacts, they are also significant contributors to it. FAO (2025) data shows that agrifood systems — including production, land use change, processing, packaging, transport, and waste — account for roughly one-third of all global greenhouse gas (GHG) emissions. This two-way relationship means that the way we produce and consume food is simultaneously making the climate crisis worse and making food systems more fragile.

■ Agrifood systems (~33%) ■ Energy sector (~25%) ■ Industry (~21%) ■ Transport (~16%) ■ Other (~5%)

Global Greenhouse Gas Emissions by Sector

Agrifood systems are the single largest sectoral contributor



Sources: FAO Climate-Nutrition Roundtable, 2025; Tubiello et al., 2021; UNICEF, 2025.

The main sources of greenhouse gas emissions within food systems include:

Agricultural production: Methane from rice paddies and livestock, nitrous oxide from fertilizers, and CO₂ from deforestation and land conversion for farming.

Transport and distribution: Fuel combustion from moving food across long distances, including the inter-island logistics critical to the Philippines.

Food processing and packaging: Energy-intensive processing facilities and plastic-heavy packaging contribute significantly to the carbon footprint of food.

Food loss and waste: Rotting food in landfills releases methane. Reducing food loss and waste is one of the most cost-effective ways to cut food system emissions while also improving food security. (FAO, 2025).

E. Food Systems Are Both Contributors AND Victims

This is a critical point: the food system is trapped in a destructive cycle. Unsustainable food production generates GHG emissions, which drives climate change, which in turn degrades the ecological conditions that food production depends on — reducing yields, degrading soils, and threatening water supplies. FAO (2025) is explicit: achieving climate goals requires transforming agrifood systems to simultaneously reduce emissions and build nutritional resilience.

The Feedback Loop:

Unhealthy diets derived from current agrifood systems caused an estimated 11.2 million diet-related deaths in 2020 — while those same systems contributed roughly 30 percent of all GHG emissions. Addressing both simultaneously is not just possible; it is necessary.
(Source: FAO Climate-Nutrition Roundtable, 2025)

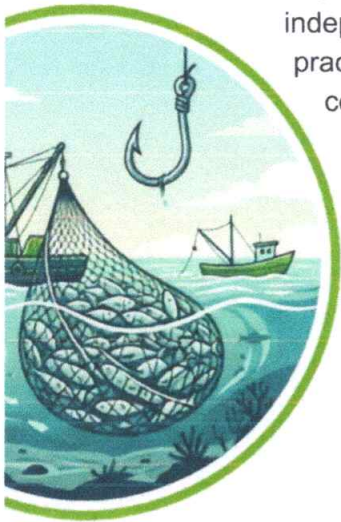
For the Philippines, this dual challenge is clear. A food system dependent on monoculture rice production, fossil-fuel-powered fishing vessels, and plastic packaging is both contributing to climate change and becoming increasingly vulnerable to it. Transitioning to lower-emission, more resilient food practices is both a climate imperative and a nutrition investment.

F. Unsustainable Practices and Environmental Degradation

i. How Unsustainable Practices Degrade the Food Base

Beyond the direct effects of climate change, unsustainable human practices are independently degrading the environmental systems that underpin food production. These practices accelerate environmental breakdown and intensify the vulnerability of communities to climate shocks. Three practices stand out in the Philippine context:

Overfishing is a critical concern in the Philippines, where coastal communities depend on marine resources for both livelihoods and dietary protein. FAO (2019) data cited in the Climate-Nutrition Roundtable (2025) warns that only nine food crops account for roughly 70 percent of global crop production, with rice, wheat, and maize alone providing more than half of all plant-derived calories. This over-reliance on a narrow food base reduces resilience, when any of these crops fail, there is little biological buffer to fall back on.



OVERFISHING

Excessive and unsustainable fishing practices that deplete fish stocks and disrupt entire marine ecosystems due to overuse and bycatch. Overfishing limits sustainable catches, reduces ocean biodiversity, and affects the stability of coastal communities.

KEY IMPACTS

- Depletes fish populations beyond recovery
- Disrupts and destroys marine habitats
- Alters entire aquatic food webs
- Threatens livelihoods of artisanal fishers

NUTRITION IMPACT



Lower food availability, higher food prices, and greater risk of undernutrition.

Monocropping, the repeated planting of a single crop on the same land, depletes soil nutrients, increases dependence on chemical fertilizers, and reduces biodiversity above and below ground. This compromises long-term agricultural productivity and makes farms more vulnerable to climate variability. By contrast, regenerative agricultural practices have been shown to increase the nutrient content of foods, including zinc in rice and vitamin C in tomatoes, demonstrating that how we grow food matters for both environmental health and nutritional quality. (FAO, 2025).



MONOCROPPING

The continuous cultivation of a single crop on the same land, replacing natural ecosystems and diverse farming. Leads to soil depletion, increased pest vulnerability, and heavy pesticide use.

KEY IMPACTS

- Soil erosion and nutrient loss
- Increased vulnerability to pests
- Heavy chemical pesticide and fertilizer runoff
- Reduced agricultural and ecosystem biodiversity

BIODIVERSITY LOSS



Loss of diverse native plant and animal species. Destroys pollinator habitats and food webs. Leads to fragile ecosystems.

Food waste is both an environmental and a nutritional failure. A significant portion of food produced never reaches a human mouth, lost during production, storage, transport, or discarded at the household level. Each unit of wasted food represents wasted land, water, labor, and energy. A study in the Gambia cited by FAO (2025) found that food loss and waste reduction initiatives were associated with a 30 percent decrease in malnutrition, a powerful argument for investing in food preservation, cold chain infrastructure, and household-level waste reduction in the Philippines.



FOOD WASTE IMPACTS

Significant waste at production, retail, and household levels due to poor infrastructure, overproduction, consumer behavior, and inefficient management. Food loss reduces global supply, increases costs, and has profound environmental and social consequences.

KEY IMPACTS

- Greenhouse gas emissions from landfills
- Wastes land and resources (water, land, labor)
- Significant economic losses for farmers and consumers
- Exacerbates global hunger and food insecurity

ENVIRONMENTAL IMPACT



Contributes directly to climate change, land degradation, and the unsustainable depletion of global resources.

ii. Why This Matters for Long-Term Food Security

Environmental degradation from unsustainable practices does not produce immediate crises, it produces slow, cumulative erosion of the systems that sustain food production. Degraded soils produce smaller harvests. Depleted fisheries produce less catch. Reduced agrobiodiversity means fewer alternatives when primary crops fail. Over time, these trends

compound climate vulnerability and create conditions for persistent, chronic food insecurity and malnutrition.

FAO (2025) emphasizes that siloed approaches, addressing crop production separately from fisheries, or nutrition separately from environment, will not be sufficient. Only integrated, systems-level approaches that simultaneously address environmental sustainability and nutritional outcomes can break the degradation cycle and build lasting food and nutrition security for Filipino communities.

Section Summary

Climate change interacts with Philippine food systems through reduced crop yields, disrupted supply chains, and higher food prices. Our food systems are also major contributors to the climate crisis — producing roughly a third of global GHG emissions. Unsustainable practices like overfishing, monocropping, and food waste further accelerate environmental degradation, creating a cycle that ultimately threatens long-term food security and nutrition outcomes for all Filipinos. The solution requires integrated action — transforming agrifood systems to be both lower-carbon and more nutritionally resilient.

SECTION IV

Nutrition Implications of Climate Change

A. Malnutrition and Food Insecurity

Climate change affects food security by disrupting food production, increasing food prices, and reducing access to nutritious foods. Extreme weather events, droughts, floods, and changing rainfall patterns can reduce agricultural productivity and threaten the availability of diverse and affordable foods. These impacts are particularly concerning for countries like the Philippines, where many households rely on agriculture and fisheries for food and livelihoods.

i. 2023 National Nutrition Survey Result

Despite progress in addressing malnutrition, undernutrition remains a significant public health concern in the Philippines. Results of the 2023 National Nutrition Survey (NNS) showed that among children under five years old, 23.6 percent were stunted, 15.1 percent were underweight, and 5.6 percent were wasted. In addition, 31.4 percent of Filipino households experienced moderate to severe food insecurity, while 2.7 percent experienced severe food insecurity. These findings indicate that many Filipino families continue to face challenges in accessing sufficient and nutritious food.

ii. Increased Risk of Undernutrition and Micronutrient Deficiencies

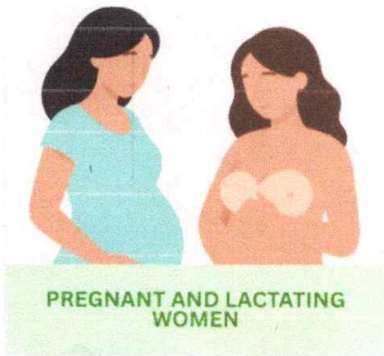
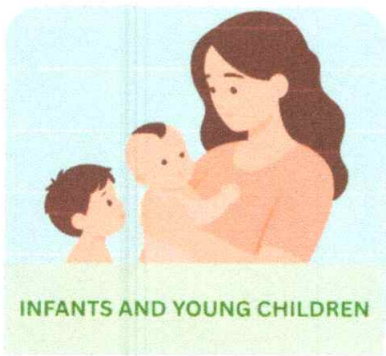
Climate change can worsen undernutrition and micronutrient deficiencies by reducing food availability, limiting dietary diversity, and increasing the cost of nutrient-rich foods such as fruits, vegetables, fish, eggs, and animal-source foods. When households experience food shortages or rising food prices, they often shift to less diverse diets that provide sufficient calories but inadequate vitamins and minerals.

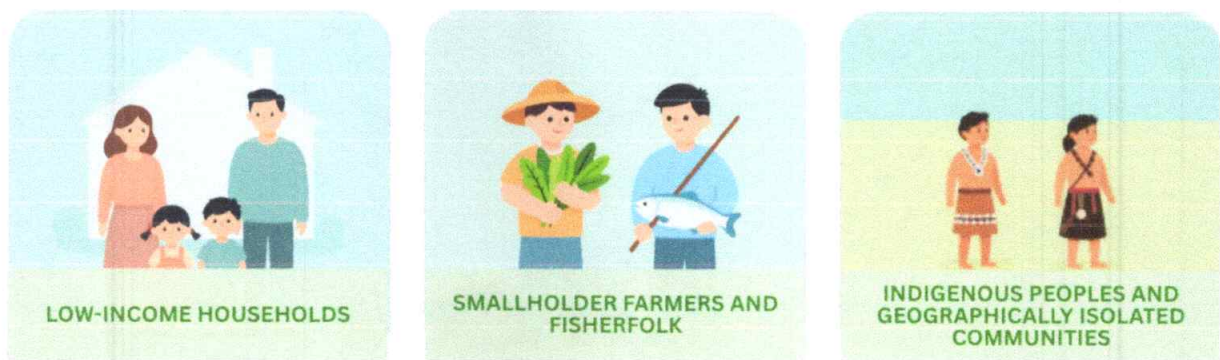
Micronutrient deficiencies, often referred to as "hidden hunger," remain a persistent concern in the Philippines. Inadequate intake of essential nutrients such as iron, vitamin A, calcium, zinc, and vitamin C continues to affect many population groups and may worsen when climate-related shocks disrupt food systems and livelihoods.

iii. Vulnerable Groups Most Affected

The nutritional impacts of climate change are not experienced equally. Certain population groups are more vulnerable because of their increased nutritional needs, limited access to resources, or greater exposure to climate-related risks.

These groups include:





For these groups, climate-related food insecurity can have long-term consequences on growth, development, health, productivity, and overall well-being.

B. Changes in Food Quality and Nutrient Composition

Climate change affects not only the quantity of food produced but also its nutritional quality. Rising atmospheric carbon dioxide (CO₂) concentrations, increasing temperatures, and environmental stress can alter the nutrient composition of crops and affect the quality of foods available for consumption.

i. Decline in Nutrient Density

Research has shown that elevated CO₂ levels can reduce the concentration of important nutrients in staple crops such as rice, wheat, and other cereals. Studies have documented declines in protein, iron, zinc, and several B vitamins under higher CO₂ conditions. These nutrients are essential for growth, immunity, cognitive development, and overall health.

For populations that rely heavily on staple foods, reductions in nutrient density may increase the risk of micronutrient deficiencies, particularly among children and women of reproductive age. The impact may be especially significant in developing countries where diets are already limited in diversity.

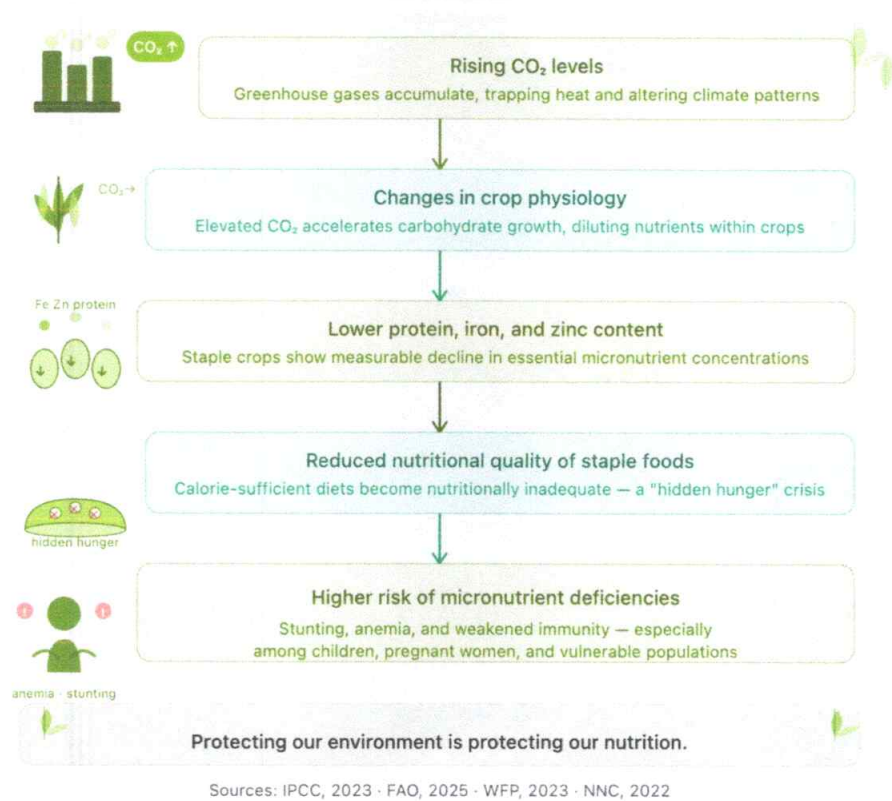


Figure 3: Climate Change and Nutrient Loss

ii. **Impact on Diet Quality**

The Food and Agriculture Organization (FAO) emphasizes that climate change affects diet quality, not just food quantity. Climate-related disruptions can reduce the availability and affordability of fruits, vegetables, legumes, fish, and other nutrient-dense foods that are essential for healthy diets.

When households are forced to rely on a narrower range of foods, dietary diversity declines and the risk of nutrient inadequacy increases. As a result, climate change can contribute to both undernutrition and micronutrient deficiencies even when food supplies appear adequate.

Section Summary

Climate change worsens malnutrition and food insecurity in the Philippines by disrupting food production, raising food prices, and limiting access to diverse, nutritious foods, as reflected in the 2023 National Nutrition Survey showing persistent undernutrition and high household food insecurity. It also increases the risk of micronutrient deficiencies, especially among vulnerable groups such as young children, pregnant and lactating women, the elderly, low-income households, farmers and fisherfolk, and Indigenous Peoples. In addition, climate change reduces the nutritional quality of staple crops and decreases the availability of nutrient-rich foods, leading to poorer diet quality and higher risks of both undernutrition and “hidden hunger.”

SECTION V

Toward Sustainable and Resilient Food Systems

Building sustainable and resilient food systems is essential to ensure long-term food and nutrition security, especially in the face of climate change, environmental degradation, and increasing health challenges. Sustainable food systems promote the availability, accessibility, affordability, and utilization of safe and nutritious food while protecting natural resources and supporting livelihoods. Strengthening resilience across agriculture, fisheries, food production, and consumer behavior can help communities better withstand climate-related disruptions and ensure healthier diets for present and future generations.



A. Climate-Resilient Agriculture and Fisheries

Climate change continues to affect food production systems through stronger typhoons, droughts, flooding, rising temperatures, and declining biodiversity. To address these challenges, climate-resilient agriculture and fisheries practices must be promoted to protect food supply, improve farmer and fisherfolk livelihoods, and strengthen community resilience.



Key strategies include diversification of crops and livelihood sources to reduce dependence on a single commodity and minimize risks from climate-related losses. Encouraging the production of indigenous, nutrient-rich, and climate-adaptive crops can improve both nutrition and sustainability. Climate-smart agricultural practices such as efficient water management, organic farming, agroforestry, integrated pest management, soil conservation, and sustainable fisheries management should also be strengthened.

Building sustainable and resilient food systems is essential to achieving long-term food and nutrition security, particularly amid the growing impacts of climate change, environmental degradation, disasters, and emerging public health challenges. Sustainable food systems ensure the availability, accessibility, affordability, and proper utilization of safe, diverse, and nutritious food while protecting ecosystems, conserving natural resources, and supporting the livelihoods of farmers, fisherfolk, and local communities (FAO, 2018; HLPE, 2020).

Strengthening resilience across agriculture, fisheries, food production, distribution, and consumer practices enables communities to better withstand climate-related disruptions such as droughts, floods, typhoons, and food supply instability (IPCC, 2022). In the Philippines, initiatives led by the Climate Resilient Agriculture Office and the Adaptation (CRAO) and the Mitigation Initiative in Agriculture Program (MIAP) of the Department of Agriculture (DA) play a vital role in promoting climate-smart and nutrition-sensitive agriculture. These programs support farming communities through sustainable agricultural technologies, diversified food production, disaster risk reduction strategies, and adaptive practices that enhance productivity while minimizing environmental impact (Department of Agriculture, 2023).

By integrating nutrition, environmental sustainability, and climate resilience into policies and local actions, communities and institutions can contribute to healthier diets, stronger local food systems, improved food security, and a more sustainable future for present and future generations (WHO, 2021).

B. Encourage Healthy and Sustainable Diets

Promoting healthy and sustainable diets contributes not only to improved nutrition outcomes but also to environmental sustainability and climate resilience. Sustainable diets emphasize food choices that are nutritious, culturally acceptable, affordable, safe, and environmentally responsible while supporting sustainable food systems and local livelihoods (FAO and WHO, 2019).

A plant-forward dietary approach, aligned with the principles of the National Nutrition Council’s Pinggang Pinoy, should be encouraged by increasing the consumption of vegetables, fruits, legumes, whole grains, and other minimally processed foods while maintaining balanced portions of animal-source foods. Prioritizing locally available and seasonal foods can help reduce greenhouse gas emissions and the environmental footprint associated with food production, processing, packaging, and transportation (FAO, 2018).

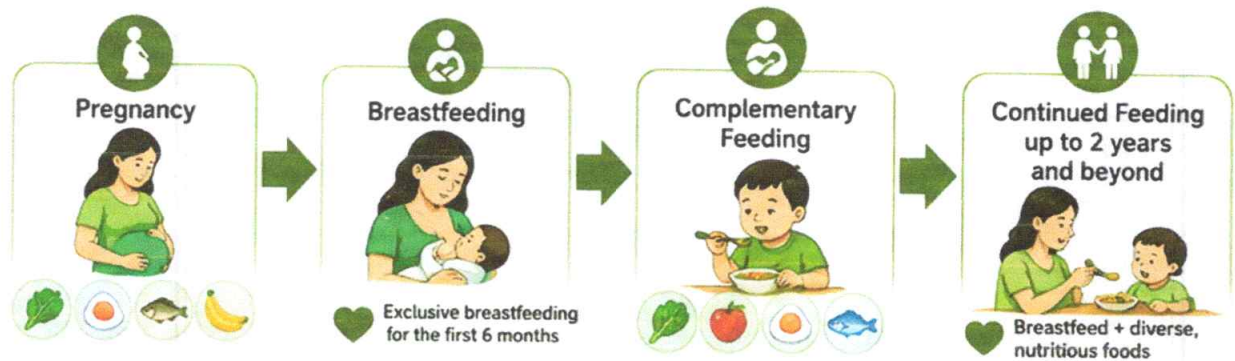


Within this broader dietary promotion, the First 1000 Days (F1KD) strategy serves as a critical entry point for ensuring optimal nutrition and long-term health outcomes. The period from conception to two years of age is a sensitive window of growth and development, where adequate nutrition significantly influences survival, cognitive development, and future health status (WHO, 2021; UNICEF, 2020). Strengthening nutrition interventions during this period helps translate sustainable diet principles into life-stage-specific actions.

Key interventions under the F1KD approach include ensuring adequate maternal nutrition during pregnancy and lactation, with emphasis on diversified diets rich in iron, folate, calcium, protein, and other essential micronutrients through accessible and locally available foods. This is complemented by the promotion of early initiation and exclusive breastfeeding for the first six

months, followed by continued breastfeeding alongside appropriate complementary feeding up to two years and beyond.

For infants and young children aged 6–23 months, appropriate complementary feeding practices should be strengthened, focusing on dietary diversity, safe food preparation, and age-appropriate meal frequency. These practices should align with sustainable and plant-forward dietary principles by encouraging increased intake of vegetables, fruits, legumes, and other minimally processed, locally available foods, while ensuring adequate inclusion of nutrient-dense animal-source foods when accessible and appropriate.



Nutrition education and behavior change interventions for caregivers are also essential, particularly in promoting responsive feeding practices, improving meal planning, and reducing reliance on ultra-processed foods during early childhood. These efforts can be reinforced through community-based nutrition counseling and health system integration.

In addition, Republic Act No. 11148 or the *Kalusugan at Nutrisyon ng Mag-Nanay Act* provides a strong legal foundation for prioritizing nutrition interventions during the First 1,000 Days (F1KD) of life, from conception to a child's second birthday, recognizing this window as the most critical period for lifelong health, cognitive development, and nutritional outcomes. Linking F1KD households to food security, agriculture, and social protection programs strengthens access to nutritious foods and supports sustainable dietary practices. Community and household food production initiatives such as home gardens, diversified cropping systems, and the use of nutrient-rich and biofortified crops further enhance dietary quality while supporting local food systems.

Reducing food waste is another important strategy for building sustainable food systems. Efforts should focus on improving food planning, storage, preparation, and consumption practices at the household, institutional, and community levels. Public awareness campaigns and behavior change initiatives can help encourage responsible consumption, proper food utilization, and resource conservation. Minimizing food loss and waste also supports food security and reduces unnecessary pressure on land, water, and energy resources (UNEP, 2021).

Supporting local and seasonal food consumption further strengthens local food systems, farmer livelihoods, and community resilience while reducing dependence on imported goods and long-distance food transport. Programs and initiatives of the Climate Resilient Agriculture Office (CRAO) and the Adaptation and Mitigation Initiative in Agriculture (AMIA) Program promote climate-smart agriculture, diversified food production, and sustainable farming practices that contribute to both environmental protection and improved nutrition outcomes. Encouraging

communities to consume locally produced and seasonal foods can improve freshness, affordability, sustainability, and support economic opportunities for local producers (Department of Agriculture, 2023).

C. Investments in Research

Research, innovation, and evidence generation play a critical role in developing effective and science-based strategies for sustainable and resilient food systems. Increased investments in nutrition-sensitive climate research are needed to better understand how climate change affects food production, food availability, dietary patterns, nutrition outcomes, and vulnerable populations. Recent studies have shown that rising temperatures, extreme weather events, and elevated atmospheric carbon dioxide levels can negatively affect crop yields and reduce the nutrient content of staple crops, posing risks to global food and nutrition security (Myers et al., 2014; IPCC, 2022).



Studies on food composition and nutrient changes are also important, particularly as changing environmental conditions may affect the nutritional quality of crops and other food sources. Research by Myers et al. (2014) found that elevated carbon dioxide concentrations significantly reduced levels of zinc, iron, and protein in staple crops such as rice and wheat. Similarly, Zhu et al. (2018) reported reductions in essential micronutrients in rice grown under future climate conditions. Monitoring these nutritional changes can support evidence-based policy development, food fortification strategies, agricultural adaptation measures, and nutrition programming.

Behavioral and consumer-focused studies on sustainable diets can provide valuable insights into food preferences, barriers, cultural influences, affordability concerns, and motivators related to healthy and environmentally sustainable food choices. Research by Willett et al. (2019) through the EAT-Lancet Commission emphasized that shifting toward sustainable and plant-forward diets can improve both human health and environmental outcomes. Findings from such studies can guide the development of more effective nutrition education campaigns, food policies, and social and behavior change interventions that promote sustainable consumption practices.

Strengthening early warning systems for food security, including predictive analytics, climate monitoring tools, and FAO-supported forecasting models, can improve preparedness and response during food supply disruptions, disasters, and climate-related emergencies. The Food and Agriculture Organization has emphasized the importance of integrated early warning and monitoring systems to support timely interventions and protect vulnerable populations from hunger, food insecurity, and malnutrition (FAO, 2023). In the Philippines, initiatives of the CRAO

and the AMIA Program contribute to climate adaptation, resilience-building, and evidence-informed agricultural planning through climate-smart technologies, risk assessments, and sustainable farming approaches.

Section Summary

Sustainable and resilient food systems help ensure food and nutrition security while addressing climate change and environmental challenges. Key strategies include promoting climate-smart agriculture and fisheries, encouraging healthy and sustainable diets, reducing food waste, and supporting local food systems. Investments in research, innovation, and early warning systems further strengthen resilience, improve nutrition outcomes, and support sustainable development.

SECTION VI

Innovations and Investments for Nutrition and Sustainability Food Systems, Environment, and Nutrition Outcomes

Innovations and strategic investments are essential in creating food systems that are sustainable, climate-resilient, nutrition-sensitive, and inclusive. As climate change, environmental degradation, and malnutrition continue to threaten public health and food security, there is a growing need to invest in solutions that improve agricultural productivity, protect ecosystems, and promote healthier diets. Strengthening collaboration among sectors and empowering communities can support long-term improvements in nutrition and sustainability outcomes.

A. Climate Resilient and Nutrient Dense Crops



Developing and promoting climate-resilient and nutrient-dense crops is essential to ensuring stable food production while addressing micronutrient deficiencies and improving dietary quality. Climate-resilient crops are better able to withstand environmental stresses such as drought, flooding, pests, salinity, and extreme temperatures, making them critical for strengthening food security and agricultural resilience in vulnerable communities (World Bank, 2021). Investments in climate-smart agriculture and resilient crop systems are increasingly recognized as key strategies for reducing the impacts of climate change on food systems and rural livelihoods.

Biofortified crops, which are conventionally bred to contain higher levels of essential nutrients such as iron, zinc, and vitamin A, provide a sustainable and cost-effective approach to addressing hidden hunger and micronutrient deficiencies. According to the World Bank, biofortification has strong potential to improve nutrition outcomes, particularly among low-income populations with limited access to dietary diversity, supplementation, and fortified foods (World Bank, 2019). Crops such as iron-rich beans, zinc-enriched rice, and vitamin A-rich sweet potatoes have demonstrated positive impacts on nutritional status and food security in several developing countries.

The promotion of **indigenous, traditional, and high-value crops** also contributes to biodiversity conservation, cultural preservation, climate adaptation, and sustainable livelihoods. Indigenous crops are often naturally adapted to local environmental conditions and ecosystems, making them more resilient to climate variability while requiring fewer chemical inputs, water resources, and intensive farming practices. These crops can provide valuable sources of vitamins, minerals, fiber, and other nutrients that support healthier diets and diversified food systems (World Bank, 2023). Encouraging the cultivation, processing, and consumption of locally adapted crops supports resilient food systems, strengthens local economies, and empowers farming communities through improved livelihood opportunities.

B. Improved Agricultural Practices

Sustainable agricultural practices are critical in maintaining environmental health while ensuring adequate and stable food production. Improved agricultural methods can reduce environmental degradation, conserve natural resources, enhance biodiversity, and strengthen resilience to climate change and disasters (Hobbs et al., 2007). Sustainable agriculture supports long-term food system sustainability by balancing productivity with environmental protection and resource conservation.

Sustainable land and water management practices include soil conservation, crop rotation, rainwater harvesting, efficient irrigation systems, agroforestry, conservation agriculture, and integrated farming systems. These approaches help improve soil fertility, reduce water waste, prevent soil erosion and land degradation, enhance carbon sequestration, and maintain ecosystem balance (Britannica, 2026). Research by Hobbs, Sayre, and Gupta (2007) highlighted that conservation agriculture practices such as minimal soil disturbance, crop residue retention, and diversified cropping systems can improve soil health, increase water-use efficiency, and reduce greenhouse gas emissions.

Agroforestry and integrated farming systems also contribute to sustainable livelihoods and ecological resilience by combining crop production, livestock, forestry, and natural resource management in ways that maximize productivity while protecting the environment. Case studies in the Philippines, such as the Binahon Agroforestry Farm documented by Espaldon (2008), demonstrate how diversified and conservation-oriented farming systems can support both food production and ecosystem sustainability.

Investments in sustainable technologies, farmer training, research, and agricultural extension services can further strengthen the adoption of environmentally responsible agricultural practices. According to studies on sustainable agriculture adoption, access to technical knowledge, climate information, financial support, and agricultural innovations significantly influences farmers' capacity to implement sustainable practices and improve farm resilience (Micabalo et al., 2024). Supporting farmers and fisherfolk with technical assistance, climate-adaptive tools, efficient irrigation technologies, and sustainable farming approaches enhance productivity while protecting long-term food system sustainability.



C. Policy and Governance Investments



Strong policies and governance mechanisms are necessary to create enabling environments for nutrition and sustainability initiatives. Governments play a critical role in integrating climate resilience, nutrition, agriculture, food security, and environmental sustainability into national and local development plans. Effective governance supports coordinated actions across sectors and ensures that policies respond to the interconnected challenges of malnutrition, environmental degradation, and climate change (Open Government Partnership, 2021).

Stronger climate–nutrition policies can help address the overlapping impacts of climate change and malnutrition through evidence-based, multisectoral, and community-responsive interventions. In the Philippines, the Philippine News Agency reported that government agencies continue to strengthen climate adaptation and food security measures through integrated agriculture and nutrition programs that support vulnerable communities affected by disasters and climate-related risks (PNA, 2024). Integrating nutrition objectives into environmental laws, climate adaptation plans, disaster risk reduction strategies, and agricultural policies helps ensure that food and nutrition security remain central to sustainable development efforts.

Supportive food and nutrition policies such as labeling, healthy food subsidies, taxation of less healthy products, school food standards, and regulations on the marketing of less healthy foods can encourage healthier dietary behaviors and improve public nutrition outcomes. Policies that promote sustainable food production, local food systems, equitable access to nutritious foods, and responsible food environments contribute to healthier populations and more resilient food systems (WHO, 2021).

Transparent, participatory, and accountable governance systems are also essential for advancing sustainable food systems. The Open Government Partnership emphasizes that open governance approaches, such as public participation, transparency, access to information, and multisectoral collaboration, can strengthen food system governance, improve policy implementation, and support more inclusive and sustainable development outcomes (Open Government Partnership, 2021). Engaging local government units, civil society organizations, academic institutions, farmers, fisherfolk, and communities in policy development and implementation helps ensure that nutrition and sustainability initiatives are responsive, inclusive, and effective.

D. Multisectoral Collaboration

Addressing complex nutrition and sustainability challenges requires coordinated action across multiple sectors and stakeholders. Governments, private sector institutions, academic organizations, civil society groups, development partners, and local communities all play important roles in strengthening food systems, improving nutrition outcomes, and promoting environmental sustainability. Multi-sectoral collaboration is essential because food systems are influenced by interconnected factors involving agriculture, health, education, trade, environment, social protection, and governance (PIDS, 2022).

FAO emphasizes the importance of systems approaches and strategic partnerships in addressing food security, environmental sustainability, and public health challenges. Collaborative and systems-based approaches enable sectors to integrate expertise, resources, technologies, and innovations needed to develop comprehensive, inclusive, and sustainable solutions for food and nutrition security (Frontiers, 2023). Research published in Frontiers in Sustainable Food Systems highlights that cross-sectoral collaboration strengthens resilience by linking nutrition-sensitive agriculture, climate adaptation, sustainable livelihoods, and public health interventions.



Strengthening partnerships among government agencies, research institutions, academic organizations, local governments, farmers' groups, and development partners can improve policy

implementation, knowledge generation, capacity building, financing, resource mobilization, and community participation. According to the Philippine Institute for Development Studies, multisectoral governance mechanisms and coordinated institutional actions are necessary to address persistent malnutrition and food insecurity challenges in the Philippines (PIDS, 2022).

Academic and research institutions also contribute significantly through innovation, policy research, extension services, and evidence of generation. Studies from the University of Illinois Urbana-Champaign emphasize that sustainable food systems require collaborative engagement among scientists, policymakers, producers, and consumers to achieve nutrition, environmental sustainability, and economic development goals simultaneously (University of Illinois Urbana-Champaign, 2021). Collaborative approaches promote shared accountability, strengthen local ownership, encourage inclusive participation, and support the long-term sustainability of nutrition and environmental programs.

E. Social and Behavioral Investments



Behavioral and social interventions are essential in promoting healthier, more sustainable, and climate-responsive food choices. Investments in nutrition education, social behavior change communication, and public awareness initiatives can empower individuals, households, and communities to make informed decisions regarding food consumption, health, and environmental sustainability. According to the World Bank, behavior-change interventions, combined with supportive policies and community engagement, can significantly improve nutrition outcomes and strengthen resilience among vulnerable populations (World Bank, 2021).

Nutrition education programs can improve knowledge and practices related to balanced diets, sustainable food consumption, food safety, food waste reduction, and healthy lifestyle behaviors. Public awareness campaigns may encourage increased consumption of local, seasonal, diverse, and nutrient-rich foods while discouraging excessive intake of highly processed foods high in sugar, salt, and unhealthy fats. Studies supported by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) emphasize that social and behavior change strategies are essential in shifting dietary practices and encouraging sustainable consumption patterns that benefit both human health and the environment (GIZ, 2022).

Community-driven and participatory approaches are also important in ensuring that interventions are culturally appropriate, locally relevant, inclusive, and sustainable. Engaging communities in planning, implementation, monitoring, and decision-making processes strengthens local ownership, social participation, accountability, and long-term impact. The World Bank highlights that community engagement and locally led development approaches improve program effectiveness by ensuring that interventions reflect the needs, priorities, and realities of target populations (World Bank, 2020).

Behavioral interventions are most effective when combined with supportive environments, social protection mechanisms, education systems, and policies that make healthy and sustainable food choices more accessible and affordable. Strengthening partnerships among governments, schools, healthcare systems, civil society organizations, and local communities can help create enabling environments that promote positive dietary and environmental behaviors while supporting resilient and sustainable food systems.

Section Summary

Innovations and investments are key to building sustainable, climate-resilient, and nutrition-sensitive food systems. This includes promoting climate-resilient and nutrient-rich crops, adopting sustainable farming practices, strengthening supportive policies, fostering multisectoral partnerships, and encouraging healthy food choices through education and behavior change. Together, these efforts improve food security, nutrition, environmental sustainability, and community resilience.

SECTION VII

Multisectoral Action for Nutrition and Environmental Protection

Addressing the interconnected challenges of malnutrition, food insecurity, climate change, and environmental degradation requires coordinated and collective action across all sectors of society. Nutrition and environmental protection are closely linked, as food systems affect both human health and ecosystem sustainability. Strengthening multi-sectoral collaboration ensures that policies, programs, and interventions are integrated, inclusive, and responsive to the needs of communities.

The transformation of food systems toward sustainability cannot be achieved by a single sector alone. Governments, private institutions, civil society organizations, academic institutions, development partners, and communities must work together to promote healthy diets, protect natural resources, and strengthen resilience against environmental and public health challenges.

A. Whole-of-Government Approach



A whole-of-government approach promotes strong coordination and collaboration among government agencies and sectors in addressing nutrition, food security, climate change, and environmental sustainability concerns. This strategy recognizes that food systems, public health, agriculture, fisheries, environment, education, social welfare, trade, disaster risk reduction, and local governance are interconnected and require unified, multisectoral action to achieve sustainable development outcomes. FAO emphasizes that integrated governance and policy coherence are essential for transforming food systems and addressing complex nutrition and environmental challenges (FAO, 2021).

Through interagency collaboration, governments can develop integrated policies, plans, and programs that simultaneously address nutrition outcomes, climate adaptation, food security, sustainable agriculture, environmental protection, and poverty reduction. National government

agencies and LGUs play critical roles in policy implementation, resource allocation, service delivery, monitoring and evaluation, and community engagement. Coordinated governance mechanisms help align priorities across sectors and ensure that interventions are evidence-based, inclusive, and responsive to local needs.

Examples of whole-of-government actions include:

- a. Integrating nutrition objectives into climate adaptation, disaster risk reduction, and environmental sustainability policies;
- b. Promoting sustainable and climate-smart agriculture and fisheries programs;
- c. Strengthening food safety, food security, and nutrition surveillance systems;
- d. Supporting school-, workplace-, and community-based nutrition initiatives;
- e. Implementing fiscal, regulatory, and educational policies that encourage healthy and sustainable diets; and,
- f. Enhancing social protection and livelihood programs that improve access to nutritious food.

In the Philippines, multisectoral platforms involving agencies such as the National Nutrition Council, Department of Agriculture, Department of Health, Department of Environment and Natural Resources, and local government units contribute to coordinated implementation of nutrition-sensitive and climate-responsive initiatives. Programs under the CRAO and the AMIA Program also support integrated approaches to sustainable agriculture, food security, and climate resilience.

Coordinated governance reduces duplication of efforts, improves resource utilization, strengthens accountability, and enhances the overall impact and sustainability of interventions. A whole-of-government approach also encourages policy coherence and long-term institutional commitment necessary for building healthier, more resilient, and sustainable food systems.

B. Whole-of-Society Approach

Communities play a central role in identifying local needs, shaping culturally appropriate solutions, and supporting behavior change initiatives that promote healthy and sustainable diets. Evidence from development practice shows that community-driven approaches improve relevance, ownership, and long-term sustainability of nutrition and food security interventions (World Bank, 2020). Civil society organizations further contribute through advocacy, capacity building, social mobilization, and direct service delivery, helping bridge gaps between government programs and grassroots implementation.



Academic and research institutions support the whole-of-society approach by generating evidence, conducting policy research, and developing innovations that inform nutrition-sensitive and climate-resilient interventions. The PIDS highlights the importance of inclusive stakeholder engagement and evidence-based policymaking in improving nutrition governance and food system outcomes in the Philippines (PIDS, 2022). Similarly, research from the University of Illinois Urbana-Champaign emphasizes that collaboration between scientists, policymakers, producers, and consumers strengthens food system sustainability and innovation (UIUC, 2021).

The private sector also plays a significant role in shaping food environments, improving food production systems, and supporting sustainable supply chains. Responsible private sector engagement can contribute to healthier food choices, product reformulation, responsible marketing, reduced food loss and waste, and lower environmental impact. Studies published in *Frontiers in Sustainable Food Systems* highlight that multi-stakeholder collaboration, including responsible industry participation, is essential for achieving sustainable dietary transitions and resilient food systems (Frontiers, 2023).

Public participation, transparency, and stakeholder engagement strengthen accountability and improve the effectiveness of nutrition and environmental programs. The Deutsche GIZ underscores that inclusive, participatory approaches in social and behavior change programs enhance sustainability outcomes by ensuring interventions are culturally appropriate, locally relevant, and widely accepted (GIZ, 2022).

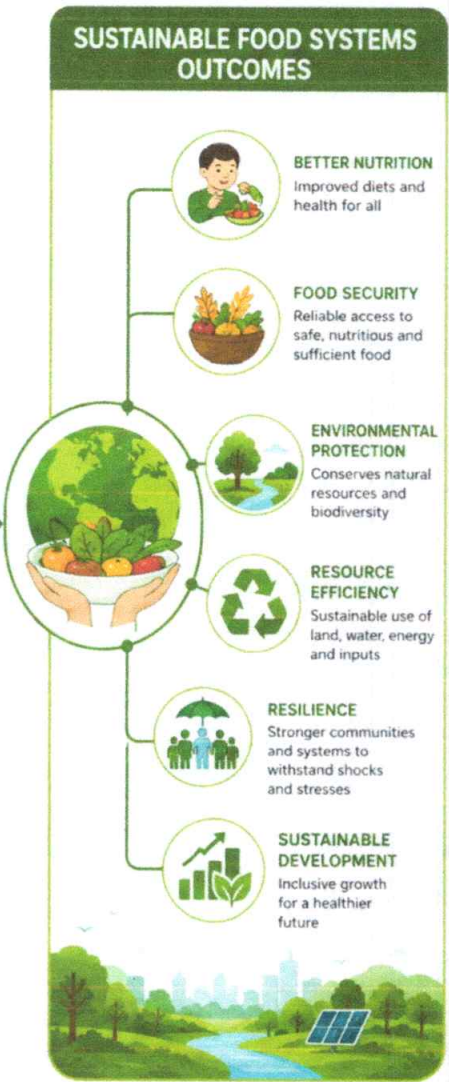
C. Collaboration for Food Systems Transformation

FAO emphasizes that collaboration and systems of thinking are essential in transforming food systems to become more sustainable, inclusive, resilient, and nutrition sensitive. Food systems transformation requires coordinated efforts across the entire food value chain, including production, processing, distribution, marketing, consumption, and food loss and waste management, to effectively address malnutrition, food insecurity, and environmental degradation (FAO, 2021).

FAO promotes multi-stakeholder partnerships that integrate nutrition, agriculture, climate action, biodiversity conservation, and social protection. This systems approach recognizes that food system challenges are interconnected and require coordinated interventions across sectors and levels of governance. Evidence from FAO shows that multi-sectoral collaboration helps ensure

interventions address the root causes of malnutrition, such as poverty, inequality, weak food environments, and environmental stress, while also promoting equitable access to safe, affordable, and nutritious diets (FAO, 2022).

By strengthening partnerships among governments, international organizations, research and academic institutions, civil society, private sector actors, and local communities, countries can build more resilient and sustainable food systems that support both human health and environmental sustainability. FAO further highlights that inclusive collaboration improves policy coherence, enhances resource efficiency, fosters innovation, and strengthens accountability in food systems governance, ultimately contributing to more effective and sustainable development outcomes.



Section Summary

Addressing nutrition and environmental challenges requires a coordinated multisectoral approach involving government, communities, civil society, academia, the private sector, and development partners. Through whole-of-government and whole-of-society collaboration, stakeholders can integrate nutrition, food security, climate action, and environmental sustainability into policies and programs. Strong partnerships, inclusive participation, and systems-based approaches help create resilient food systems, improve nutrition outcomes, protect natural resources, and support sustainable development.

SECTION VIII

Call to Action: Nutrisyon at Kalikasan, Ating Pangalagaan!

Protecting nutrition and the environment is a shared responsibility. Every individual, family, community, and institution has an important role in creating healthier and more sustainable food systems. Through collective action, we can help ensure food security, protect natural resources, reduce environmental impact, and improve the health and well-being of present and future generations.

A. Individual

Every person can contribute to better nutrition and environmental protection through informed and responsible choices. Individuals are encouraged to:

- a. Practice healthy and balanced eating based on Pinggang Pinoy principles;
- b. Choose local, seasonal, and minimally processed foods when possible;
- c. Reduce food waste through proper meal planning and food storage;
- d. Support sustainable products and environmentally responsible practices;
- e. Participate in nutrition, environmental, and community initiatives; and,
- f. Share accurate nutrition and sustainability information with others.

B. Family

Families play a major role in shaping eating habits, food practices, and environmental behaviors. A healthy and environmentally conscious home environment can promote lifelong healthy practices among children and family members.

Families are encouraged to:

- a. Prepare nutritious and balanced meals at home;
- b. Practice proper food handling and waste management;
- c. Encourage vegetable gardening and urban gardening activities;
- d. Teach children the importance of nutrition and environmental stewardship;
- e. Support responsible consumption and sustainable household practices; and,
- f. Limit excessive food waste and promote resource conservation.

C. Community

Communities are essential partners in promoting nutrition-sensitive and environmentally sustainable initiatives. Local participation strengthens collective action and supports long-term solutions that address community needs.

Communities can:



- a. Organize nutrition education and environmental awareness activities;
- b. Support local farmers, fisherfolk, and food producers;
- c. Promote community gardens and sustainable agriculture practices;
- d. Participate in clean-up drives, waste segregation, and recycling programs;
- e. Strengthen local food systems and emergency preparedness efforts; and,
- f. Advocate for healthy and sustainable food environments.

D. National Government Agencies

National government agencies have a critical role in developing policies, programs, and systems that support nutrition and environmental sustainability. Strong governance and multi-sectoral collaboration are necessary to address the interconnected challenges of malnutrition, food insecurity, and climate change.

Government agencies are encouraged to:

- a. Strengthen climate-resilient and nutrition-sensitive policies;
- b. Invest in sustainable agriculture, fisheries, and food systems;
- c. Support research, innovation, and early warning systems;
- d. Expand nutrition education and social behavior change campaigns;
- e. Strengthen food security and environmental protection programs; and,
- f. Foster partnerships among government, private sector, academe, civil society, and communities.

E. Local Government Units

Local Government Units play a vital role in implementing nutrition and environmental programs at the community level. Through local policies, resource allocation, and coordination among stakeholders, LGUs can help build resilient food systems and promote sustainable practices that improve nutrition outcomes.

LGUs can:

- a. Integrate nutrition and climate resilience into local development investment plans;
- b. Support community-based nutrition, agriculture, and environmental programs;
- c. Strengthen local food systems and promote access to nutritious foods;
- d. Enhance disaster risk reduction and emergency preparedness for food and nutrition security;
- e. Enforce environmental protection and sustainable resource management initiatives; and,
- f. Facilitate partnerships among communities, government agencies, civil society organizations, and the private sector.

F. Private and Business Sectors

The private and business sectors contribute significantly to food production, distribution, innovation, and economic development. By adopting sustainable practices and promoting healthier food environments, businesses can help address nutrition and environmental challenges while supporting long-term resilience.

The private and business sectors can:

- a. Promote sustainable and environmentally responsible business practices;
- b. Improve the availability, affordability, and accessibility of nutritious foods;
- c. Support local and sustainable sourcing of agricultural and food products;
- d. Invest in innovations that reduce food loss, food waste, and environmental impacts;
- e. Participate in nutrition education, environmental stewardship, and corporate social responsibility initiatives; and,
- f. Collaborate with government, academe, and communities to advance nutrition and sustainability goals.

G. Institutions

Institutions, including schools, universities, healthcare facilities, workplaces, and research organizations, serve as important platforms for promoting nutrition, environmental awareness, and sustainable practices. They help shape knowledge, behaviors, and policies that contribute to healthier and more resilient communities.

Institutions can:

- a. Integrate nutrition, environmental sustainability, and climate change topics into education, training, and capacity-building activities;
- b. Promote healthy and sustainable food choices within institutional settings;
- c. Support research, innovation, and evidence generation on nutrition and environmental issues;
- d. Implement sustainable resource management and waste reduction practices;
- e. Encourage participation in community-based nutrition and environmental initiatives; and,
- f. Foster partnerships that support nutrition security, environmental protection, and climate resilience.



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