



2026

LOCALISED ROADMAP: PHILIPPINES

Localised Roadmap: Just transition to equitable, humane, and sustainable food systems in the Philippines



Published by the Center for Energy, Ecology, and Development

Authored by: Polynne Dira

With contributions from: Jocelyn Bellin

Reviewed by: Aryanne De Ocampo, Ivan Andres, and Gerry Arances

Contributors

With gratitude to Contributors, who had taken part in focused group discussions, the national convening, and various modes of consultation:

Bacolod Fisherfolk Federation

Bukluran ng Mangingisda ng Batangas (BMB)

Convergence of Initiatives for Environmental Justice (CIEJ)

Kapatiran ng Malalayang Maliliit na mga Mangingisda sa Pilipinas (KAMMMPI)

LIMA sa VIP

Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG)

Marine Wildlife Watch of the Philippines

Munting Sambayanan Kristiyano

Oceana Philippines

Pamatan-on nga Mangunguma sng Negros Alliance (PAMANA)

Pambansang Koalisyon ng Kababaihan sa Kanayunan (PKKK)

Pambansang Katipunan ng mga Samahan sa Kanayunan (PKSK)

Pambansang Kilusan ng mga Samahang Magsasaka (PAKISAMA)

PANAGAT

Paro Institute

Partners for Indigenous Knowledge Philippines

Philippine Animal Welfare Society

Philippine Network of Food Security Programmes

Rare Philippines

Sagip Karagatan

SARILAYA

SAVE Rizal

Too Big To Ignore Philippines

Ugnayan ng Mangingisda at Mamamayan ng Rizal (UGMMARIZ)

UP Center for Integrative and Development Studies (UP CIDS)

World Animal Protection

Youth for Just Food Systems

This report is part of the Just Food Transition Network and is available at ceedphilippines.com and justfoodtransitionnetwork.com.

Table of Contents

Glossary	3
Executive Summary	7
I. Background: The urgency of food systems transformation globally and in the Philippines	10
From Traditional to Industrial Food Production in the Philippines	12
The Current State of Agri-Aquatic Food Systems in the Philippines	12
The Dominance of Transnational Corporations and Philippine Conglomerates in the Agri-Food System	17
Impacts of the Intensification of the Agri-Food Industry	18
Public Health	19
Environment	19
Labor Rights	20
Animal Welfare	21
Diet and nutrition of Filipinos	21
Governance and the plight of food producers	26
II. Transforming agri-aquatic food systems in the Philippines	28
Nexus of food, biodiversity, and the energy transition in the Philippines	30
III. Roadmap to an equitable, humane and sustainable food system in the Philippines	34
Our vision for an equitable, humane, and sustainable food system in the Philippines	34
Principles of a just transition in food and agriculture	35
Engaging Stakeholders	36
IV. Policy recommendations for a just transition of the Philippine food system	40
Lever 1: Policies to strengthen food system governance	40
Financial justice	40
Accountability and governance	40
Trade	41
Local food systems	42
Lever 2: Policies to promote agroecological practices	42
Financial justice	42
Accountability and governance	44
Producer support and empowerment of food-producing communities	44
Public education	45
Lever 3: Policies to shift towards diets within planetary and social boundaries	45
Financial justice	45
Accountability and governance	46
Dietary guidance and procurement	46
Public education	46
References	48

Glossary

Agroecology: A way of life that supports life-enriching systems and opposes life-alienating systems. It works together with nature and not against it, cherishing synergies between living beings and prioritising traditional farmer knowledge and participatory, transgenerational, and experiential learning processes. Agroecological principles are based on solidarity, circular, and regional economies within ecological boundaries that are truly beneficial for communities. It prioritises the rights of small-scale food producers and forms a movement towards equality and social justice for all people worldwide.¹

Agro-pastoral: A system where farmers are engaged in growing crops and raising livestock. They keep mainly indigenous breeds. Dairy production's objective can be self-consumption or commercial. Family labour is mainly used and animals rely on grazing on demarcated and controlled rangelands and supplementary feeds.

Artisanal fisheries: Sector of local fishermen and women who engage in fishing activities at subsistence level on a full-time or part-time basis. It is a heterogeneous, multi-species, multi-gear, multi-craft and multitechniques, non-industrial fishery that includes the activities of small-scale canoes in the coastal areas, creeks, lagoons, inshore water, and the inland rivers targeting exclusively brackish water, freshwater, and inshore pelagic fish stocks.

Aquaculture: Fishery operations involving all forms of raising and culturing fish and other fishery species in fresh, brackish and marine water areas.² Available government data on aquaculture currently does not disaggregate production based on farm size, making it difficult to differentiate small fishing from industrial-scale fish farming, and is thus used for purposes of this report to pertain to small and industrial scale.

Commercial Fishing: the taking of fishery species by passive or active gear for trade, business & profit beyond subsistence or sports fishing, to be further classified as:³

- Small scale commercial fishing - fishing with passive or active gear utilizing fishing vessels of 3.1 gross tons (GT) up to twenty (20) GT;
- Medium scale commercial fishing - fishing utilizing active gears and vessels of 20.1 GT up to one hundred fifty (150) GT; and
- Large commercial fishing - fishing utilizing active gears and vessels of more than one hundred fifty (150) GT.

Commercial Farm: Refers to:⁴

- Tending 51 cow or water buffalo level and above (large ruminants: dairy and beef);
- Tending more than 100 heads of does (small ruminants: dairy and meat);
- Tending 51 sow level and above or 501 heads and above (swine, including native pig);
- Raising 1,001 heads and above (rabbit);
- Raising 10,001 birds and above (broiler);
- Raising 5,001 birds and above (chicken: native/improved/free range);
- Raising 5,001 layers and above (layer and duck);
- Raising 10,001 birds and above (quail).

Diets within planetary and social boundaries: Balanced diets with low environmental impacts that contribute to food and nutrition security and to the health of present and future generations. Diets within planetary and social boundaries are protective and respectful of animal welfare, biodiversity and ecosystems. They are culturally acceptable, accessible, economically fair and affordable, nutritionally adequate, safe and healthy, and optimise natural and human resources. Such diets prioritise plant-based foods such as whole grains, fruits, vegetables, nuts, and legumes. While meat and dairy are included, they constitute a smaller proportion of the overall diet compared to plant-based foods.

Diversified protein system and protein diversification: Moving away from over-reliance on animal protein

from industrial systems to the production and consumption of plant-based proteins, particularly beans, lentils, nuts, seeds and minimally processed plant-based food and small amounts of food of animal origin (dairy, eggs, meat and fish) from equitable, humane and sustainable systems.

Equitable, humane and sustainable protein: Alternative and animal proteins produced in ways that protect human rights, the environment and animals, while ensuring food sovereignty fulfills food security and guaranteeing that food workers, smallholder farmers and small-scale fishers live in dignity and receive a sustainable livelihood. Animal proteins are from high-welfare systems where farm animals' physical, environmental and behavioural needs are met, where resource use is sustainable and where benefits flow across the value chain and to local communities.

Extensive System: A production system where cattle are allowed to trek long distances to graze freely on forage in rangelands, guided and controlled by herdsman or pastoralists along the grazing areas. In the extensive poultry production system, farmers keep indigenous birds left to roam around and scavenge for food and water.

Factory farming, intensive, industrial animal agriculture and industrial livestock production: Animal breeding, rearing, slaughtering, processing and/or feed operations involved in the mass production of meat, dairy and eggs. Typically controlled by multinational corporations, this production involves breeding and/or rearing from hundreds to hundreds of thousands of animals in concentrated feeding operations (mostly chickens, dairy cows, pigs and some fish farms), feedlots (beef cows) or extensive, controlled grazing systems (beef and dairy cows) that feed into massive vertically integrated supply chains. These production models do not acknowledge the sentience, or prioritise the welfare, of nonhuman animals. For the purpose of this paper, we consistently use the term 'industrial animal agriculture' to keep in mind the fact that we are talking about living beings.

Global South/Global North: There is no agreed definition. For the purpose of this paper, Global South refers to low and middle-income countries in Africa, Asia (excluding Japan, and South Korea), Oceania (excluding Australia and New Zealand), Latin America, and the Caribbean. The Global North comprises North America and Europe, Israel, Japan, South Korea, Australia, and New Zealand.

High meat- and dairy-consuming countries: Countries with annual per capita consumption over the recommended intake by EAT Lancet Commission to be in line with the planetary health diet. Consumption per capita should be no more than 98 grams of red meat (pork, beef or lamb), 203 grams of poultry and 196 grams (g) of fish per week, or 5.1 kilograms (kg), 10.5 kg and 10.2 kg a year respectively.

Industrial animal production: Industrial livestock, fish and aquaculture production.

Industrial aquaculture: Extensive, semi-intensive or intensive aquaculture, depending on the level of input and output per farming area and the stocking density. Intensive aquaculture refers to fish farms that rely predominantly on fish meal and fish oil in the growth process, whereas extensive aquaculture allows the stock to grow on its own, using natural food sources and conditions (e.g. oyster farming).

Industrial fishing: Large commercial fishing vessels (as opposed to artisanal fishing) that make long trips far out to sea and catch large volumes of fish in any waters.

Intensive poultry systems: Systems where farmers keep more than 2000 exotic birds of one species, producing either meat or eggs for the market. Livestock are confined to their shelter, and are not allowed to graze on pastureland or grazing land in case of cattle, goat, and sheep, or roam for poultry birds, but intensively managed on concentrated feed.

Just transition: A principle, a process and a practice. The principle of just transition is that a healthy economy and a clean environment can and should co-exist. The process for achieving this vision should be a fair one that should not cost workers or community residents their health, environment, jobs, or economic assets. Any losses should be fairly compensated. The practice of a just transition involves placing those most affected by pollution—such as frontline workers and fenceline communities—in leadership roles to develop policy solutions.⁵

Just transition of the animal production system: Shifting the global system of protein production from industrial animal production (which favours high-quantity, low-quality meat and seafood and maximising corporate profits at the expense of workers, animals, public health and the environment) to one that is based on agroecological practices that produce equitable, humane and sustainable proteins, in order to alleviate animal, human and environmental suffering on a global scale.

Marginalized population: Groups and communities who experience discrimination and exclusion due to unequal power relationships across economic, political, social and cultural dimensions. Marginalised populations include but are not limited to women, and Indigenous populations.

Municipal fishing: Refers to fishing within municipal waters using fishing vessels of three (3) gross tons or less, or fishing not requiring the use of fishing vessels.⁶

Pastoral: A system where farmers move cattle from place to place in search of pastures and water. Production is subsistence oriented and animals are kept on uncultivated pastures and rely on grazing without any feed supplements.

Plant-based protein: Protein derived from plants such as fruits, vegetables, legumes, grains, nuts and seeds; their derived processed counterparts such as breads, pasta, breakfast cereals, cooked and fermented vegetables and legumes, and fruit purées, juices and jams; and their derived ingredients such as oleaginous seed-derived oils, sugars and some herbs and spices. Plant-based proteins include protein- rich whole plant foods such as pulses, nuts and seeds, and minimally processed plant-based foods such as tofu, tempeh and seitan.

Private investment: Money invested by private actors, such as transnational corporations, investment banks, private equity firms, and other profit-driven entities, rather than by democratically- governed public institutions, local cooperatives, tribal collectives, or other community-centred initiatives.

Regenerative agriculture: There is no single scientific or legal definition of regenerative agriculture as opposed to agroecology. Further, according to the International Panel of Experts on Sustainable Food Systems' (IPES Food) analysis, the primary difference with agroecology concerns the human and social dimensions, social equity being one of the 3 pillars of agroecology, but not explicitly mentioned in the concept of regenerative agriculture. By contrast, definitions of regenerative agriculture tend to refer to a more confined scope in that they refer primarily to natural systems and technical practices, emphasizing environmental restoration, preservation, and sustainability in ways that downplay human dimensions and socio-technical relations. For these reasons, we will be using and promoting agroecological practices throughout this paper.

Semi-commercial farm: Refers to:⁷

- Tending six (6) to 50 cow or water buffalo level (large ruminants: dairy and beef);
- Tending 36 to 100 does (small ruminants: dairy and meat);
- Tending 11 to 50 sow level or 101 to 500 heads (swine, including native pig);
- Raising 101 to 1,000 heads (rabbits);
- Raising 501 to 10,000 birds (broiler);
- Raising 251 to 5,000 birds (chicken: native/improved/free range);
- Raising 251 to 5,000 layers (layer and duck);
- Raising 2,501 to 10,000 birds (quail).

Semi-Intensive System: A production system where cattle are provided housing and are also released for grazing. Supplementary feeding of crop residues after harvest or cut-and-carry is also practiced here.

Small-hold farm: Refers to:⁸

- Tending not more than five (5) cow or water buffalo level (large ruminants: dairy and beef);
- Tending not more than 35 does (small ruminants: dairy and meat);
- Tending one (1) to ten (10) sow level or one (1) to 100 heads (swine, including native pig);
- Raising 100 heads and below (rabbit);
- Raising 500 birds and below (broiler);
- Raising 250 birds and below (chicken: native/improved/free range);
- Raising 250 layers and below (layer and duck);
- Raising 2,500 birds and below (quail).

Small-scale fisheries: As with smallholders, although the definition may vary from country to country. For the purposes of this paper the term refers to producers fishing on a limited scale, independent of multinational agribusiness corporations. They may or may not own their boat and often rely on labour from family members. They retain some of the seafood they catch for household consumption.

Transnational Corporation (TNC): Large corporate enterprises that operate, invest, and coordinate production, processing, and distribution of products and services across multiple countries through globally integrated networks rather than a single national base. Beyond being economic actors, TNCs are powerful agents shaping global food systems and value chains, often prioritizing efficiency and profit over equity, justice, animal and people's welfare, sustainability, and social and planetary boundaries.

Unsustainable livestock production: Any method of animal agriculture that causes ongoing or escalating harm to the environment at any stage of production — both at the farm level and at scale—including but not limited to habitat destruction, desertification, eutrophication, water scarcity, biodiversity loss and excessive greenhouse gases (GHG). These forms of damage typically have long-term effects on both ecosystems and agricultural production. Exploitation and other harm to animals, workers, women and communities also defines unsustainable production, because sustainability can only be achieved through practices that protect animals, people and the planet.



Executive Summary

The industrial food system has produced food at odds with social justice and planetary boundaries, shaping an unequal system driven by unhealthy and wasteful consumption which ruins the physical health and welfare of the world's population, animals and ecosystems, and the climate.

In the Philippines, the Green Revolution in the 1960s marked the beginning of an industrial agriculture production that is reliant on genetically modified seeds and fossil-fuel based inputs from transnational corporations to increase crops for export to the Global North. This move to intensify production using machineries and chemical inputs, however, came at the expense of farmers who, receiving paltry support from the government, had to take out loans to buy the inputs required by high-yielding seeds. Farmers unable to pay back debts sell their lands; with some becoming workers for private plantations. After several years of state neglect and landlessness, the Philippines has become a net importer of agricultural goods.

While industrial production led by corporations is very much present in the agriculture sector, smallhold farms dominate the local production of livestock in the country, except for poultry. But just as with crops, Filipinos also rely on imported livestock to supply their consumption of the good. Meanwhile, the Philippines is a net exporter of fish and fishery products. Most fish are produced through aquaculture, which accounted for more than half of production, followed by municipal fishers. There are instances, however, when the Philippines also imports fish, mainly during closed fishing seasons. It is important to note that while livestock farms and fisheries might be held by mostly smallholders, the inputs and machinery—such as feeds and fishing gears—are mostly held by a few corporations.

The declining self-sufficiency of the country when it comes to staple food, and subsequent dependence on importation point to a perennially neglected agri-food sector, which is also apparent in the fact that the workers in the sector are the ones most fraught by poverty.

Despite intensive production, the industrial corporate-tied agri-food system has failed to sufficiently provide healthy meals to Filipinos. For one, in 2023, about one-thirds of households in the Philippines experienced moderate or severe food insecurity. Filipinos across all age groups are also currently not consuming enough to meet their recommended energy intake, and the intake of calcium, Vitamin A, and Vitamin C is also low in all age groups, except for infants and preschoolers.

An unhealthy diet—made up of food high in saturated and trans fats, sugar, and salt—has become more prevalent amid Filipinos' lack of access to healthy food. As a result of poor nutrition, nearly one in 10 children, and four out of 10 Filipino adults are classified as obese and overweight. Two in 10 Filipinos are also prediabetic, and high cholesterol levels are common among older adults.

As industrial food production failed to eradicate hunger, it also became a significant source of greenhouse gas (GHG) emissions. Agri-food systems account for a third of the total anthropogenic GHG from crop and livestock production, land-use change linked to land-clearance for agriculture, and pre- and post-production processes, including packaging, retail, and transport, consumption, and end-of-life (e.g. landfills, and composting, among others).

Fossil fuels, which are the main driver of global warming, are also embedded within our food chain: the industry accounts for 15% of total fuel use globally. Agribusiness corporations have been instrumental in deepening global dependency on fossil fuels and by-products of their extraction or processing through the use of fertilizers, plastics, and other petrochemical products. Agriculture has been the critical lifeline of oil and gas corporations to keep the fossil fuel industry alive amid a growing push for decarbonization.

The current climate emergency is highlighting the need to shift away from industrial food production. Likewise, the resulting energy crisis from the US and Israel's war on Iran is exposing the precarity of an agri-food system

dependent on fossil-fuel inputs controlled by only a few transnational corporations.

As oil prices increase, food producers also face higher production costs, including expenses for fertilizers and gasoline for farm machineries. Getting produce from the provinces to city markets would also be more costly, and would likely result in a spike of food prices borne by consumers.

In the Philippine and other Global South contexts, a just transition in food systems is also an opportunity to re-shape the intensive and corporate-led food systems into equitable, humane, and sustainable food production and consumption—a sustainable food system that works for people, animals, and the planet.

Transforming the food systems in the Philippines requires embracing the principle of just transition to protect, first and foremost, the security of livelihood of farmers, fisherfolk, and livestock producers. Ultimately, these agricultural workers cannot practice agroecology or sustainably produce food if they possess no power to decide how, when, and what to produce—there can be no agroecology if farmers have no land, or if fisherfolk lose the sea where they fish. It is critical to embed the Just Transition principle in the transformation of our food system to ensure that farmers, fisherfolk, and livestock producers have agency over their future and are in the leadership position of crafting policy solutions.

Shifting the agri-aquatic food system, hence, means democratizing governance and decision-making; empowering local communities and basic sectors to be stewards of natural resources, while ensuring they have access to nutritious food and are able to exercise choice over what they eat and how and where it is produced.

As we are forced to reckon with the socio-ecological impacts of this system, this paper outlines a local roadmap for the Philippines' transition to equitable, humane, and sustainable food systems while putting primacy on social justice and the welfare of the country's small food producers, who are also the sector most susceptible to poverty and food insecurity.

The global Just Transition roadmap demonstrates pathways to shift to a climate-resilient food system that is equitable, humane and sustainable, as well as locally and democratically-governed, while mitigating greenhouse gas emissions, biodiversity loss and food insecurity. It outlines three key levers of change to transform the food system:

- I. **Strengthen food system governance:** We must challenge the dominance of multinational corporations over the food system and put policies in place to foster transparency and hold them accountable for their social and environmental impacts. At the same time, we should protect and elevate traditional and local food systems, where producers and consumers themselves are part of decision-making processes.
- II. **Promote agroecological practices:** A just transition necessitates the embracing of agroecology to promote human rights, protect the environment and animals, ensuring food sovereignty meets food security needs while providing dignified and sustainable livelihoods.
- III. **Shift towards diets within planetary and social boundaries:** Filipinos' health will benefit from the shift to plant-rich diets; there is greater burden to shift food consumption, however, for countries with high per capita consumption of animal products to stay within planetary and social boundaries. This shift not only benefits public health and the environment but also frees up land and resources to support diversified agroecological production systems.



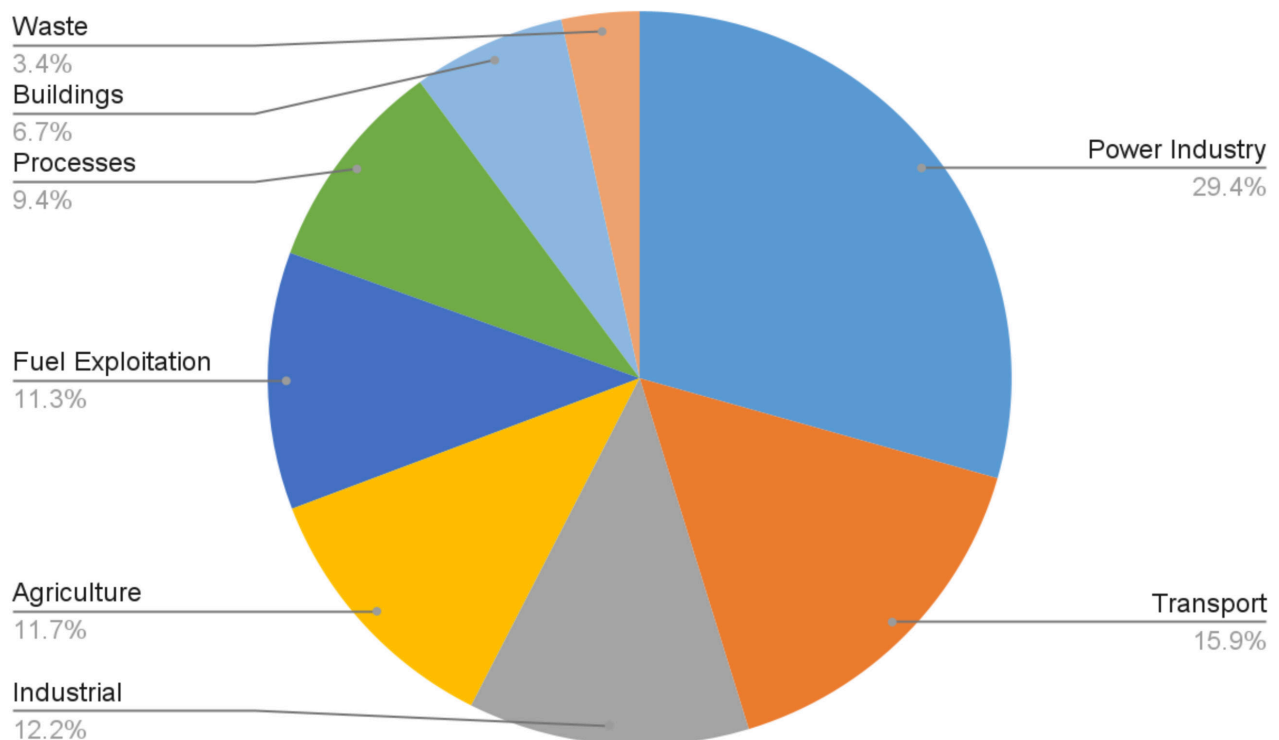
I. Background: The urgency of food systems transformation globally and in the Philippines

Humanity produces more food today per person than has ever been recorded, yet about 673 million people still experienced hunger in 2024 alone.⁹

The so-called Green Revolution promised to end world hunger as it promoted high-yielding varieties of hybrid seeds that are dependent on pesticides, fertilizers, irrigation, and mechanization to increase food production.¹⁰ The global industrial food system—dominated by large transnational corporations that patented and monopolized seeds and associated chemicals—promoted industrial farming and animal production that run counter to the metabolism of nature, leaving the land itself susceptible to erosion and pests.

As industrial food production failed to eradicate hunger, it also became a significant source of greenhouse gas (GHG) emissions. Agri-food systems—including post-production, consumption, and end of life processes—account for a third of the total anthropogenic GHG from crop and livestock production, land-use change linked to land-clearance for agriculture, and pre- and post-production processes, including packaging, retail, and transport, consumption, and end-of-life (e.g. landfills, and composting, among others).¹¹ The agriculture sector, by itself, accounted for 12% of the total global greenhouse gas emissions in 2024.¹² In the Philippines, the sector is the second-biggest contributor to emissions (19.53%), next to the power industry (36.92%).¹³

Figure 1. Global GHG emissions by sector, 2024¹⁴



Fossil fuels, which are the main driver of global warming, are also embedded within our food chain: the industry accounts for 15% of total fuel use globally. Agribusiness corporations have been instrumental in deepening global dependency on fossil fuels and by-products of their extraction or processing through the use of fertilizers, plastics, and other petrochemical products. Agriculture has been the critical lifeline of oil and gas

corporations to keep the fossil fuel industry alive amid a growing push for decarbonization.¹⁵

The precarity of an agri-food system that is interdependent with the fossil fuel industry is underscored by the current energy crisis stemming from US and Israel's war on Iran. With the closure of the Strait of Hormuz where about 20% of the world's oil and liquified natural gas passes through, oil and gas prices have skyrocketed, which did not only affect transportation and energy, but food production as well.

When oil and gas prices go up, the prices of food and fertilizers also increase, as the United Nations Conference on Trade and Development reported.¹⁶ Fossil fuels are part of the manufacturing and transportation of these products; for one, fossil gas is used to create urea, which is used as a fertilizer and feed supplement.

More than 400 gas stations have closed down temporarily due to supply constraints, with the hardest hit agricultural regions: 78 stations have closed in the Cordillera Administrative Region, 50 in Cagayan Valley, 42 in Central Luzon, 35 in Calabarzon, and 30 in Bicol Region. Calabarzon and Central Luzon are the top producing regions of swine, dairy, chicken, chicken egg, duck, and duck egg in 2025.¹⁷ Central Luzon is the fourth top producing region in fisheries, while Calabarzon and Bicol region are eighth and ninth, respectively, in 2025.¹⁸ Central Luzon is also the top producing region of palay in 2025.¹⁹

Filipino farmers have also reported that the price of gasoline for farm machineries has doubled, which could push them to decrease production for the current planting season.²⁰ Likewise, fisherfolk, who use diesel for their boats, could also cut down their fishing trips.

Increases in production costs, including that of transporting goods from provinces to urban markets, as well as fewer products due to farmers and fisherfolk cutting down on production, subsequently push food prices faced by consumers.

As the industrial food system contributes to exacerbating the Earth's warming, small farmers, livestock producers, and fisherfolk deal with the catastrophic impacts of climate change. The International Panel on Climate Change has warned of widespread food production losses due to extreme weather events or pest outbreaks triggered by a warming world.²¹ All these could further disrupt agricultural production, increasing prices, and making food more out of reach for the poor.²²

Through industrial farming and animal production, the world is producing more than 1.5 times enough food to feed everyone on the planet. The global agricultural system actually overproduces grains, fats, and sugars, but not enough fruits, vegetables, and protein to meet the nutritional needs of the global population.²³ Moreover, only 55% of food crop produced feed the population directly, while the rest are used as animal feed and biofuel feedstocks.²⁴

The Food and Agriculture Organization (FAO) of the United Nations (UN) stated that the cost of a healthy diet has risen in the past eight years. In 2024, around 2.6 billion people were unable to afford a healthy diet, most of whom reside in low-income countries.²⁵ At the same time, the UN Environment Programme (UNEP), found that the world wasted an estimated 1.05 billion tonnes of food in the retail, food service, and household sectors.

The current energy crisis will further impact and increase the millions of people who remain hungry despite exponential growth in food yields, underscoring the urgency of transitioning to an equitable, humane and sustainable food system that is climate-resilient, locally and democratically governed, while mitigating greenhouse gas emissions, biodiversity loss, and food insecurity. This transition is essential to prevent more people from being pushed into hunger by the impacts of the climate crisis.

From Traditional to Industrial Food Production in the Philippines

In the Philippines, agriculture serves as “a cultural and historical backbone that connects generations.”²⁶ Traditional farming in the Philippines consisted of knowledge and agricultural techniques passed down from generation to generation of peasant families.²⁷ Farmers weeded the land by hand, used organic fertilizers like animal manure and rice straw, and had a choice of over 3,000 traditional, indigenous varieties of rice seeds, each applicable to specific conditions of production, with resistance to particular pests and diseases.

This farming tradition differed from what was eventually promoted by the Green Revolution in the 60s, which involved the large-scale use of modern technology, chemicals, and hybrid seed varieties. In this period, American industrialists’ philanthropic endeavors provided funding for research in agricultural science and technology, which in turn shaped how modern agriculture currently operates.²⁸ Among the research centers the Ford and Rockefeller Foundations established is the International Rice Research Institution (IRRI) in 1960, during Ferdinand Marcos Sr.’s rule in the Philippines.²⁹ While IRRI drove the technical mechanics of the Green Revolution in the country, the Masagana 99 program rolled out by the president ensured the implementation of the new tools of control over food production.

Masagana 99 offered rice production packages to farmers that they could avail through credit programs from the government. The package includes chemical fertilizers, herbicides, and pesticides, as well as different hybrid high-yielding varieties of rice developed by IRRI. Ultimately, the goal of the Masagana 99 was to increase productivity in existing rice land to make newly opened land for foreign investment in export crops bananas and pineapples.³⁰

While the program indeed allowed the country to briefly have a period of self-sufficiency for rice, it did not necessarily translate into better conditions for farmers, as earnings from increased yield were offset by increasing input costs.³¹ The Green Revolution also led to diminishing diversity of produce which came from traditional farming, where farmers could plant different crops next to the main crop and use the harvests for subsistence. Intensive monocropping and the use of chemicals also degraded and eroded the soil and overexploited water and mineral resources.³²

The Green Revolution in the Philippines was a political move from Marcos and the US. The latter offered aid and loans to countries as a way to ensure political power and combat the rise of communism in the Global South, and Marcos framed the program to soften peasant unrest in rural areas, promising increased yields and government support for farmers.³³ At the same time, the Green Revolution tied the economies of producing nations to the American agriculture market through imported inputs and exported crops.³⁴ In 1984, for one, the World Bank provided a USD 150 million agricultural loan to the Philippines, where 99% of the funds were earmarked for the importation of agricultural inputs.³⁵

The Green Revolution in the Philippines did not end when Marcos Sr. was ousted in the ‘80s. Burdened by debt, succeeding president Corazon Aquino made it a priority to pay back the loans through structural adjustment programs (SAP). Under these programs, the Philippines conceded to fiscal policies that resulted in reduced subsidies, including to agriculture, and the promotion of exports to provide the foreign exchange needed to service debt obligations.³⁶ The latter opened Philippine agriculture to the global market, with transnational corporations (TNC) entering and ultimately transforming food production in the country.

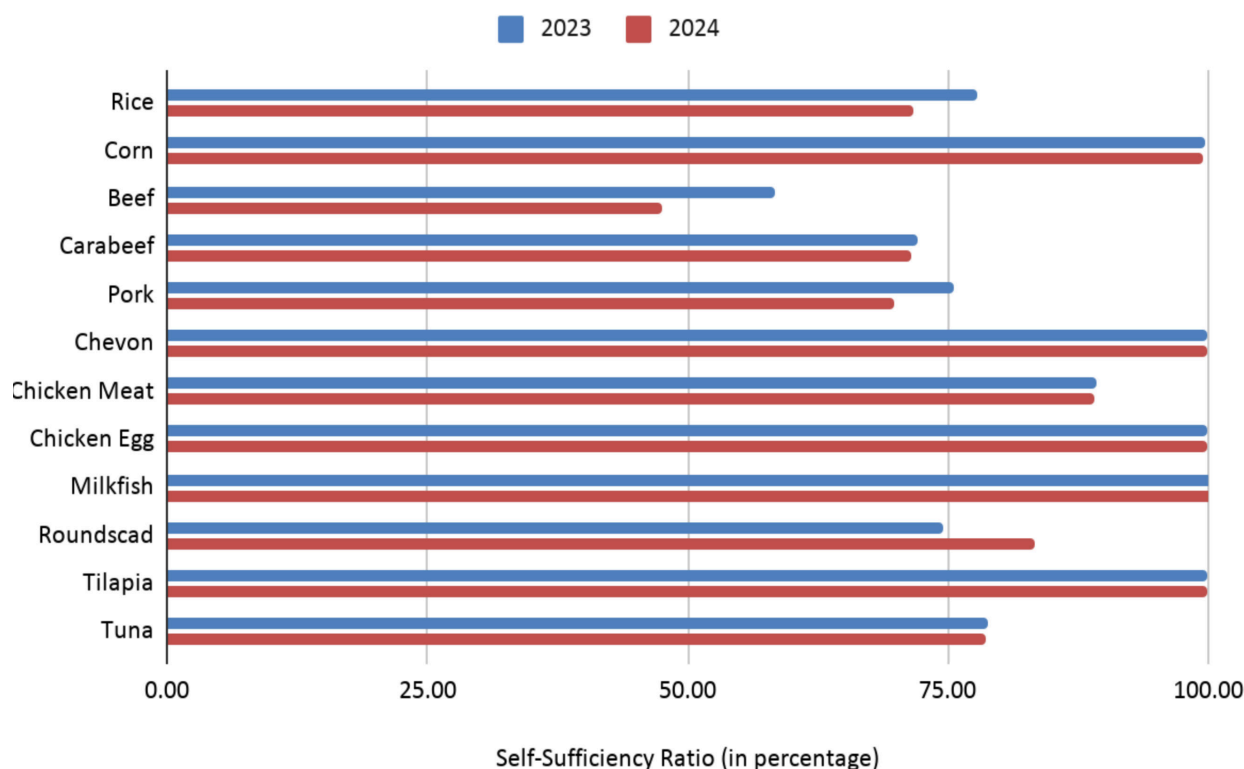
The Current State of Agri-Aquatic Food Systems in the Philippines

The Philippines abounds in natural resources, yet most of its population is poor and hungry. While 42.7% of the country’s land area is classified as agricultural land,³⁷ the Philippines remains a net importer of agricultural commodities, especially cereals such as rice grain, corn, or wheat.³⁸ In July 2025, agriculture trade deficit widened by 4.9%, amounting to USD 929.78 million.³⁹

Twenty four percent of the Filipino workforce, or over 10 million people, are agricultural workers. Agricultural workers are one of the major food producers, albeit operating on small landholdings and facing challenges on low productivity and limited markets. At 66%, more than half of the country's population who are poor are in agriculture, forestry and fisheries sector,⁴⁰ and concentrated in the rural areas (68%).

Filipino farmers are only able to supply 71.7% of rice consumed by households owing to the relatively small production dedicated to rice grain,⁴¹ which comprises only 19.9% of crop production, based on 2025 data.⁴² Meanwhile, export crops comprise around 63.4% of domestic production, largest of which are sugarcane (32.7%) and coconut (15.3%).

Figure 2. Self-sufficiency ratio of select agricultural commodities, 2023 and 2024.⁴³



As rising imports meet the population's demand for agricultural goods, farmers bear the burden of the influx of importation. As the country brings in foreign goods, particularly rice, local producers face tight competition versus relatively cheaper foreign produce. Farmers groups have decried the implementation of the Rice Liberalization Law in 2019, which removed the minimum access volume of rice and replaced it with tariffs. Farmers reported selling at farmgate prices as low as Php 16.71, which brought income losses as high as Php 60.48 billion in 2020.⁴⁴

Land tenure also remains elusive for the majority of farmers. Only 21.8% of Filipinos engaged in agriculture own or have rights to their farmland; this, despite a comprehensive agrarian reform program, which was meant to distribute land to farmers, having been passed 37 years ago.⁴⁵

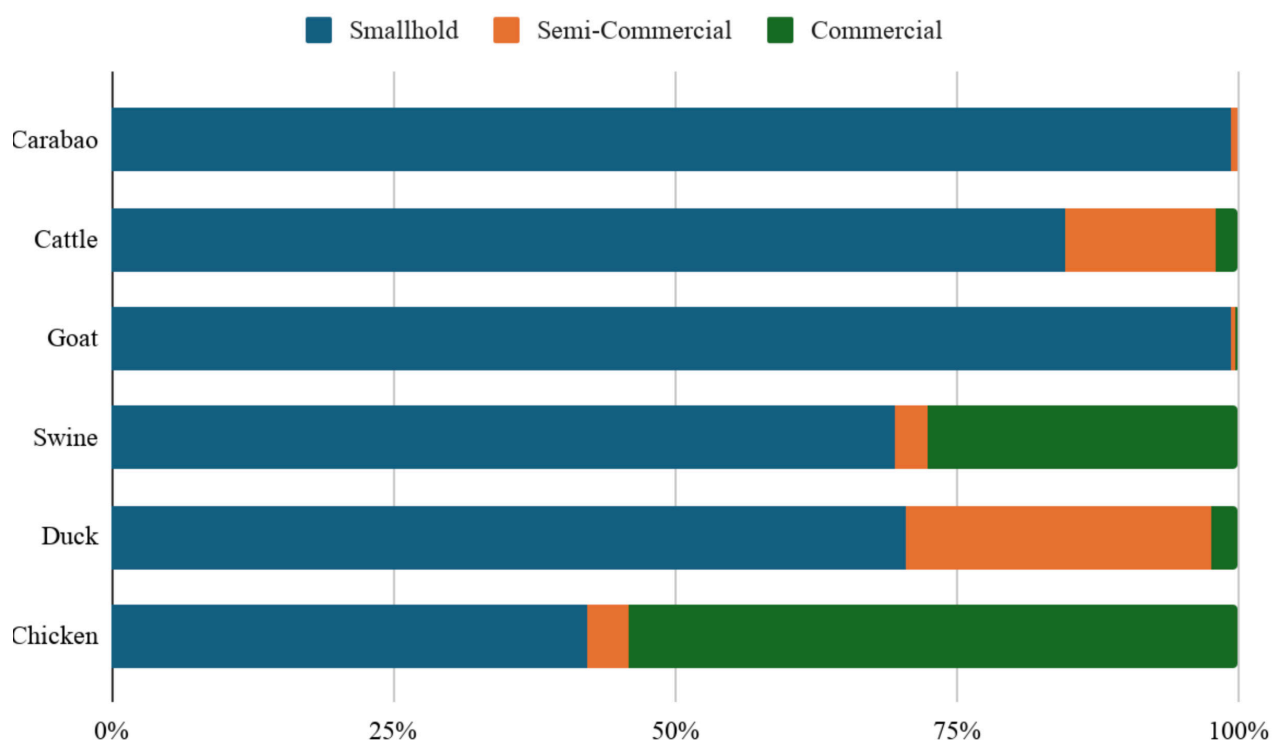
Without rights to their own land, farmers do not have the power to decide what seed to plant, when to till the land, and how to sow their crops, and are instead bound by the decision of the landowner, and what has been deemed "economically correct."⁴⁶ This is evident in the kind of crops grown in regions with the least amount of farmers with landownership—in Bicol Region with 16.8% of land tenure, the main crops were pineapple and sweet potato;⁴⁷ in Eastern Visayas with 17.6% of land ownership, the main commodities are coconut, rice, and corn;⁴⁸ and in Western Visayas with 18.2% of farmers owning their land, the main producers were rice grain, corn, and sugar cane.⁴⁹ Hence, rather than planting what Filipinos need on their table, what is sown are high-

value monocrops.

Filipinos also rely on imported livestock. Domestic production accounts for 47.6% of beef consumption, 69.8% of pork, and 89.1% of chicken meat.⁵⁰ The main livestock produced in the Philippines are swine (comprising 76.7% of livestock production), followed by cattle (12.2%). The Philippines also produces chicken (71.1% of poultry production), and chicken egg (26.2%), with the latter being produced sufficiently for domestic consumption.⁵¹ In 2025, the Bureau of Animal Industry reported that meat imports rose by more than 13%. Brazil remained the top meat supplier, followed by the United States and Spain.⁵²

There are millions of livestock farms in the country, most of which are backyard farms, or those with less than 41 heads of young animals, or a combination of fewer than 20 heads of adult and 22 heads of young animals. However, small-scale, semi-subsistence producers who rely more on local resources have greater contributions in the industry. These smallholder farmers provided 82% of the total stocks of carabao, cattle, goat, and swine in 2025, while commercial producers contributed only 14%.⁵³ Small hold farms also produced the majority (70%) of ducks last year.⁵⁴ On the other hand, small hold farms produced 42% of the total inventory of chickens in 2025, while commercial producers yielded 54% of the total production.⁵⁵

Figure 3. Inventory of livestock and poultry, by farm type, in 2025.⁵⁶



In 2014, only two Filipino companies controlled more than 50% of the chicken meat market: San Miguel Foods Inc., which had a market share of 40.62%, and Bounty Fresh Group of Companies, which held 12.05%.⁵⁷ These companies, along with local firms Vitarich Corporation and Robina Farms, among others are also the major input suppliers for chicken farms, providing integrators, feed millers, and hatcheries. San Miguel and Vitarich are also among the largest feed suppliers for swine in the Philippines.

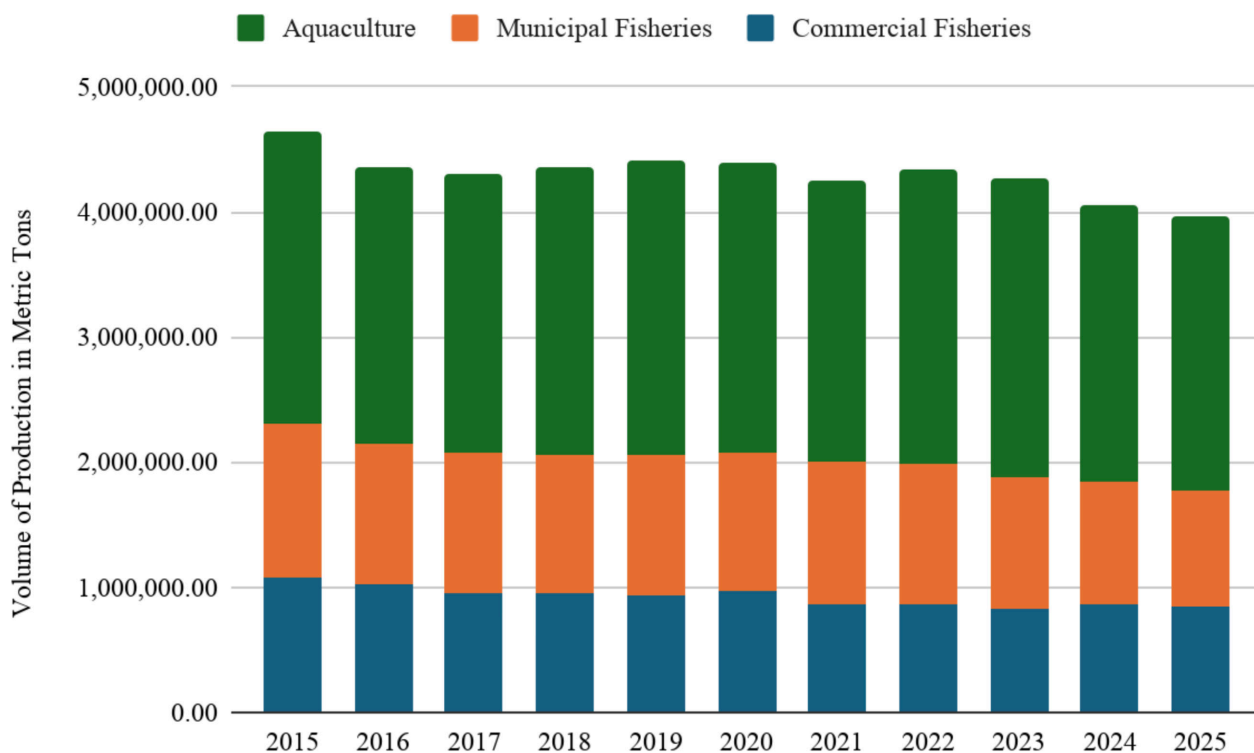
While the country is not self-sufficient in rice, corn, and livestock, the Philippines is a net exporter of fish and fishery products, supplying seaweed, tuna, and shrimp, among others. From 2019 to 2021, the country saw a decline in exports before picking up again in 2022. In 2023, exports once again declined by 10%. Fish importation saw an increase in 2020, with the Philippines importing tuna, mackerel, roundscad, and fishmeal,

among others. Among the top fisheries commodities produced by Filipinos are seaweed, tuna, sardines, milkfish, tilapia, and roundscad.⁵⁸

Most fish are produced through aquaculture, which accounted for 57.02% of production, followed by municipal fishers who are responsible for 24.74% of fish production in the first quarter of 2025.^{59,60} Unfortunately, available government data on aquaculture currently does not disaggregate production based on farm size, making it difficult to differentiate small fishing from industrial-scale fish farming.

With regards to capture fishing, a 2015 list published by the Maritime Industry Authority shows RBL Fishing Corporation has the biggest number of vessels in the country, followed by Irma Fishing & Trading, and Tuna Explorers, Inc.⁶¹ An investigative report by *Bulatlat* found that Gladery Fishing Incorporated, Marchael Sea Ventures Corporation, Rugela Fishing Industries, Inc., San Andres Fishing Industry Inc., and San Lorenzo Ruiz Fishing Ind. Inc. owned the most number of registered purse seines in the country.⁶² Frabelle, Mega Fishing Corporation, and Citra Mina are also among the biggest corporations in the fishing industry. All mentioned firms are based locally as the Fisheries Code governing the industry requires that fishing vessel license are issued only to citizens of the country or, concerning corporations registered in the Philippines, are 60% owned by Filipinos.⁶³

Figure 4. Volume of fisheries production by subsector, 2015 to 2025.⁶⁴



A recent report found that Philippine fish catch is declining by an average of 45,000 metric tons (MT) annually due to overfishing and illegal fishing.⁶⁵ In a span of over a decade, fish catch has plummeted from 2.6 million MT to 1.9 million MT.

An estimate of 107,176 MT annually of illegal, unreported, and unregulated (IUU) fishing was recorded in 2022 and 2023. This is equivalent to about a loss of Php 5.4 billion annual income for registered municipal fishers. Commercial fishing vessels that encroach on municipal waters were responsible for 54% of that loss, according to the government's IUU Fishing Assessment Report in 2023. Many local government units reported both local fishers and fishers from adjacent or nearby provinces engaging in IUU practices in their waters.

Fisheries Management Areas (FMAs) with richer marine resources were found to be more vulnerable to IUU fishing practices: in Palawan, for example, enforcers observed or apprehended violators not only from within the Philippines but also foreign vessels from China and Vietnam.⁶⁶ Fisheries monitoring group Karagatan Patrol reported in 2019 that there had been a dramatic increase since 2012 of foreign commercial fishing vessels encroaching in the country's seas, including municipal waters, threatening the depletion of marine resources.⁶⁷

A 2024 Supreme Court ruling, however, is now allowing large commercial operations in municipal waters, the first 15 kilometers (km) from shore that had been long reserved for small-scale fishers.⁶⁸ Fisherfolk groups estimate that small fishermen will lose around 90% of municipal fishing grounds due to this decision.⁶⁹ Fisher groups, along with civil society, argue that allowing large commercial vessels to fish within municipal waters could result in overfishing, and exhaust fishing resources beyond their ability to recover.

While a fifth of working Filipinos are employed in the sector, the Agriculture, Fisheries, and Forestry (AFF) sector as a whole only contributed 9.1% to the GDP in 2024.⁷⁰ Crops, livestock, and fishing and aquaculture subsectors all saw contractions in their gross value added to the economy last year, due to the effects of El Niño, as well as lingering effects of African Swine Fever, according to a report by the Department of Agriculture.⁷¹

The declining self-sufficiency of the country when it comes to staple food, and subsequent dependence on importation point to a perennially neglected agriculture sector.

Despite the significant role of the agriculture sector in sustaining the nation, its workers are the ones most fraught by poverty. Farmers and fisherfolk, along with indigenous peoples, record the highest poverty incidence among the basic sectors in the Philippines.⁷² In 2023, 27.4% of fisherfolk and 27% of farmers earned less than the poverty threshold of Php 12,030.00 (USD 206.99; USD 1 = PHP 58.12). Those in the agriculture sector receive the lowest average daily basic pay of about Php 350.18 compared to other workers in other industries,⁷³ with women earning less than men.⁷⁴

Moreover, financial assistance, especially for small farmers, hardly comes by. A 2017 survey of small-scale farmers and fisherfolk found that 52% of them availed some form of a loan. Of the total loans availed, only 18% were obtained from banks, 45% were from cooperatives, farmer associations, or micro-financing, and 37% were borrowed from informal sources such as family or friends.⁷⁵ Access to financing remains limited as lenders are uncertain about the borrowers' ability or willingness to pay.

Farming organizations have likewise disclosed attempts to gain access to credit through the Land Bank of the Philippines' (LandBank) micro-finance loans. However, they were not able to meet some of its requirements to be able to successfully obtain financing.⁷⁶ This paints only a partial picture of the state of agricultural financing in the Philippines through the banking sector.

The Department of Agriculture (DA), in its 2020 State of Agricultural Financing in the Philippines, affirmed that the "agriculture sector account for only 6% of total loans of banks amounting to P615 billion in 2020, way below the required lending banks must provide to the sector under Agri-Agra Reform Credit Act of 2009." The law mandates all banks to set aside at least 25% of their total loanable funds: 15% for agriculture in general and at least 10% for agrarian reform beneficiaries (ARBs). A policy forum in 2021 presented the DA's 2020 accomplishment in allocating a total of Php 9.3 billion to 115,848 farmers, fisherfolks, and micro and small enterprises; while LandBank disbursed Php 354.5 billion to 11,481 beneficiaries and the Development Bank of the Philippines released Php 13.6 billion that financed 257 accounts. Despite the reported amount of loans released to farmer-borrowers in 2020, the fragmented character of farm lands involving multitude of small farmers and their susceptibility to various disruptions and unfair market practices persisted.

The uncertainty of the agriculture sector, the lack of crop insurance, the small land-size held by farmers, which affect their ability to reach a viable economic scale, as well as documentary requirements such as personal financial statements, tax returns, and business plan, all contribute to the limited lending of banks to small-scale

farmers.⁷⁷ Hence, while there are farmers that own the land they tend, those riddled with debt and are unable to cover the high costs of farming may eventually end up selling their land rights to developers.

Emerging policies promise winds of change in financing: the newly enacted Republic Act 12308, or the Animal Industry Development and Competitiveness Act (AIDCA), commits an annual Php 200 billion over 10 years to strengthen and modernize the country's livestock, dairy, and poultry industries through providing support to farmers.⁷⁸ Fund allocations, however, primarily gear toward herd expansions, and would greatly benefit from being informed by the vision of a transition to equitable, humane, and sustainable food systems.

Records show that agricultural lands have been shrinking over the years. In 1980, the area of farm lands in the country spanned 9.73 million hectares (ha). In 2002, this decreased to 9.67 million ha., and was further reduced to 7.27 million ha. in 2012.⁷⁹ The number of farms, however, that share the available land jumped by 62.6%—from 3.42 million farms in 1980 to 5.56 million farms in 2012. The average farm size shrunk from 2.84 ha in the '80s to only 1.2 ha. by 2012.

A higher number of farms in the country should have brought greater farm diversification, which is related to better soil fertility, less soil erosion, increased tolerance of crops to pests and diseases, and better farm management, compared to monocrop plantation.⁸⁰ This did not happen, however, due to lack of financial support to small-scale farmers that would have capacitated them to apply the needed input more productively.⁸¹

The Dominance of Transnational Corporations and Philippine Conglomerates in the Agri-Food System

A report by GRAIN and ETC Group, which monitors the impact of emerging technologies and corporate strategies on biodiversity, agriculture, and human rights, shows that as of 2023, only four firms control 56% of the global commercial seeds market: Bayer (23%) from Germany, followed by Corteva (19%) from the US, Syngenta (10%) from China/Switzerland, and BASF (4%) also from Germany. These same corporations capture 61% of the global market share on pesticides. Meanwhile, Nutrien (8%) from Canada, The Mosaic Company (7%) from the US, and Yara (6%) from Norway are the top 10 corporations in the synthetic fertilizers sector.⁸²

In the Philippines, Bayer, Corteva, and Syngenta are among the seed industry leaders. Seeds produced by these corporations likely require costly fertilizers and pesticides, which are also sold by the same network of TNCs: Syngenta and Bayer are also among the top 10 companies with the most number of registered pesticide products in the Philippines.⁸³

In the case of farm machinery, giant corporations are positioning themselves in “regenerative agriculture,” focusing on managing emissions and carbon credits. America's Deere and Co, the biggest corporation in the farm machinery sector, partners with Cargill, an American multinational agri-food company, to buy and commercialize carbon credits from farms.⁸⁴

Kubota, the fourth biggest corporation in the sector, also partnered with Tokyo Gas to conduct a joint demonstration project on methane reductions in a rice paddy in the Philippines.⁸⁵ The project, also supported by the Asian Development Bank (ADB), aims to eventually be developed into a joint crediting mechanism where Japanese firms loan low-carbon technologies and products, systems, services, and infrastructure to reduce greenhouse gases in developing countries, and credits created from the results of these projects are given to the private firm. Ultimately, the mechanism could be rolled out in Southeast Asia, where states that are most susceptible to the impacts of global warming are urged to take on loans to buy machinery from TNCs hailing from countries most responsible for the climate emergency.

In another report, the ETC group showed that most of the world's leading meat companies as of 2020 are located in Brazil (JBS, Marfrig, and BRF), the United States (Tyson Foods, Cargill, Hormel Foods Group), and the Netherlands (Danish Crown, Vion).⁸⁶ As earlier noted, most of the Philippines' meat imports come from Brazil and the US.

In terms of food and beverage processing, leading global companies are also apparent in the Philippine market. Switzerland's Nestle, the second-biggest food and beverage company in the world by sales as of 2020, is among the top grossing companies in the manufacturing sector in the Philippines.⁸⁷ The United States' Pepsico, which was the biggest company by food and beverages sales in 2020, is also among the biggest food manufacturers in the Philippines.

Local and small food producers are at the losing end of food systems dominated by industry giants, who continue to dictate the price of farm commodities, leaving farmers with a paltry income. Large agricultural companies also dictate how many agricultural lands are used: rather than planting what Filipinos need on their table, what is sown are high-value monocrops, such as pineapple by Dole Philippines and Del Monte Philippines, bananas by Sumifru Corporation, or palm by Agumil Philippines Inc. These 'giants' also dominated maize and copra production and control the price of staple foods.

Even among Philippine players, the domination of conglomerations is also stark. San Miguel Corporation (SMC)—whose businesses range from alcoholic beverages to power generation and infrastructure—through its subsidiary San Miguel Foods, Inc. (SMFI) occupied a market share of over 40% as of 2014, out of 338 registered establishments.⁸⁸ Its expansion has advanced since: in 2023, SMC inaugurated a 900-hectare facility estimated to produce 80 million heads of chicken annually,⁸⁹ with plans for 12 more mega poultry farms across the country in the pipeline.⁹⁰ SMFI's portfolio of businesses also include fresh and processed meats, as well as feed processing, and occupy dominant shares in their respective markets. Its Protein and Animal Nutrition and Health businesses under SMFI are “engaged in integrated poultry and feeds [and] has the largest network of animal feed research facilities in the country and is responsible for the development of animal feed products for broilers, hogs, layers, pets, finfish, including innovations on feed milling technology, and packaging” which supply its own businesses and competitors alike.⁹¹

Clearly, large agricultural and food-manufacturing companies, many of whom are TNCs, sway the food sector in the Philippines, having a stake from seeds, fertilizers, pesticides, machineries, to processing and production, and are even positioning themselves to lead the “transition” of the food system.

Impacts of the Intensification of the Agri-Food Industry

In the Philippines, smallholders dominate livestock production. As such, studies on the unintended impacts of the livestock sector usually trace the externalities from these small farms. For one, swine raising, especially in backyard scale, is the source of most pollutants—mainly due to the conventional wash-and-flush mode of cleaning manure and indiscriminately conveying this on the ground or through waterways.

While the impacts of backyard farms is more pronounced in the Philippines given its context, there have been documentations of the environmental impacts of industrial farms in other countries. Animal waste from intensive production is disposed on agricultural land in amounts that the land cannot fully absorb. Hence, soils are over-fertilized, releasing toxic runoff that could also make its way in bodies of water. The intensive livestock production from large farms also increases demand for feed crops, hence the intensification of crop production, which results in increased soil erosion, lower soil fertility, and reduced biodiversity.⁹²

The Ecological Solid Waste Management Act, Clean Air Act, and Clean Water Act are the Philippines' overarching environmental regulations followed by the livestock industry, particularly the pig industry. Some municipalities have further ordinances requiring commercial pig farms to be located one kilometer away from public roads, and prohibiting raising pigs in populated areas. Effluent standards for major air and water pollutants also exist, and some farms whose wastewater is discharged in the Laguna de Bay pay environmental user fees or are mandated to adapt wastewater minimization technologies. These regulations, however, remain inadequate in the face of limited human and financial resources to enforce and monitor compliance.⁹³

In a field survey of 207 pig farms, about 78% of the sample stated they had measures to clean up farm

wastes, while the rest simply flushed out manure directly into rivers and creeks. Smallholders tend to have difficulty cleaning up their wastes due to lack of financial capacity to do so, or because they are exempted from regulations large farms are subjected to, or due to lack of information on how to properly contain their wastes.⁹⁴

Public Health

Without proper disposal and management, animal wastes become carriers of diseases. For instance, pig and hog waste has had direct adverse effects on human health through the pathogens, nitrates, and hydrogen sulfide that contaminated water and caused gastrointestinal diseases. The vicious cycle continues as hog population (specifically backyard raising) increases, further causing various environmental, health, and other problems.

In a 2016 World Bank report, Laguna was named as one of the provinces in which the boom in scale of poultry and swine farms operations led to public health threats, after these farms resorted to environmentally unacceptable ways of effluent management and disposal through its tributaries or by way of surface runoff. Animal wastes are carriers of parasites, bacteria, and viruses including *Salmonella*, *Campylobacter*, *E. coli*, *Cryptosporidium*, *Giardia*, *cholera*, *Streptococcus*, and *chlamydia*.⁹⁵

In one local case, residents from Barangays San Juan de Mata and Sto. Domingo in Tarlac complained about the stench coming from piggeries within a one-kilometer radius.⁹⁶ These swine farms, which raise about 30,000 heads each, also reportedly dump their wastes on the nearby river due to lack of waste treatment facilities in the area. As a result, people residing near the riverbank suffer from skin and eye irritation, headaches, nausea, and several report contracting hepatitis.

In a survey of 176 sample households in Majayjay, Laguna, about 12% of backyard pig raisers report experiencing respiratory problems such as asthma. Meanwhile, 24% of commercial swine raisers report suffering from the same illness. For the households near the piggeries, at least one for every 10 households report experiencing asthma.⁹⁷ Likewise, gastrointestinal problems such as diarrhea were common among households within the vicinity of the farms.

The agriculture sector can also be a pathway for antimicrobial resistance (AMR) in the Philippines through antibiotics administered in livestock, poultry, or industrial fishing and aquaculture. Industrial animal agriculture accounts for 73% of global antibiotic use. Antibiotic products are misused and overused to promote growth or to prevent diseases caused by overcrowding and unhygienic conditions in which farm animals are subjected to, increasing the risk of AMR. Eating the meat from an animal with antibiotic resistant bacteria may infect a human with that same bacteria. Likewise, consuming vegetables or similar products, wherein the manure of an animal with a resistant bacteria is used, can also be a pathway for AMR.⁹⁸

A study found that several antibiotics used on swine and poultry farms overlap with those critical in human medicine.⁹⁹ Large-scale commercial aquaculture, such as shrimp, tilapia, and milkfish farms, also use antibiotics to boost production. Lax monitoring systems and lacking veterinary oversight increase the dissemination of resistance from the livestock, poultry, and aquaculture to humans.

Environment

Residents from Tarlac claim that due to the dumping of waste by pig farms in the Benig River, there had been a significant quantity and quality reduction in marine life. Before the existence of the livestock farms, farmers were still able to use the river for irrigation.¹⁰⁰

The previously cited 2016 World Bank report also cites empirical evidence of soil toxicity for the provinces of Batangas and Laguna due to livestock ‘raising.’ In Batangas, many smallholder farms reportedly resorted to open dumping, or “release of manure by these enterprises into bodies of water, which collectively created potential environmental and health problems.” Similarly, the toxic content of the swine and poultry manure

reflected the presence of “metals such as copper and zinc (found in fortified feeds) to purportedly augment overall productivity, despite the risk of toxicity to plants and animals, passed on to humans.”¹⁰¹

Meanwhile, another local study in Laguna found that the intensification of livestock production in the province has led to overgrazing. With some land facing increased risk of soil erosion and degradation due to harsh climate conditions, some farmers have shifted to using feed concentrates.¹⁰² Moderate to severe land erosion is also observed in agricultural municipalities of Laguna, and these same sites are areas with moderate to high animal density.

On a more global scale, livestock and poultry systems are significant contributors in the agriculture sector’s GHG emissions. Latest government data on agriculture emissions show enteric fermentation and manure management accounted for 30% of the total GHG emissions from the sector.¹⁰³

Intensive agriculture is also threatening biodiversity in the Philippines. For one, a geographical analysis on banana and pineapple plantations in Mindanao found that many of these agricultural zones overlap with Protected Areas and Important Bird Areas (IBA).¹⁰⁴ Agricultural buffer zones overlapping with natural areas pose acute threats to biodiversity due to the loss of habitats from monocrop agriculture, the production system used by TNCs in the area. Within these buffer zones, impacts of agricultural production, such as surface runoff of pesticides, threaten endangered endemic birds which are known to be sensitive to chemical inputs.

A study on the socio-economic impacts of genetically modified (GM) corn in the Philippines showed that the use of the said seed has impacted biodiversity in farms.¹⁰⁵ These seeds were introduced in the Philippines to increase the production of yellow corn, which is also used as feeds in the livestock sector. According to personal anecdotes from farmers, wild vegetation has disappeared, and it has become impossible to plant other vegetables and rootcrops beside GM cornfields because the herbicide used on the corn kills vegetation in the immediate proximity. The fruits of trees and plants near GM corn farms also changed; cassava and sweet potatoes became fibrous making them hard and inedible, mangoes and bananas were also deformed.

Labor Rights

A study on labor exploitation within the tuna industry in General Santos City, Philippines, the largest producer of sashimi-grade tuna, and second-largest daily producer of tuna, found that some boat owners deem no employee-employer relationship between fisherfolk and vessel owners, to the extent that fishers lacked employment contracts.¹⁰⁶ These fishers are considered “passengers” of the boat rather than employees.

Because they have no contracts, fishers do not necessarily receive compensation based on the national minimum wage, but according to the agreed-upon percentage of the harvest. One of the common sharing schemes is *lilima*, where fishers get one-fifth of the gross sale of caught tuna. The financiers, sometimes the boat owners, who provide the capital for the trip, get a 10% commission on top of the capital repayment. The net sale of the fish is divided between the boat operator or the captain, who gets about 15% to 20%, and the owner, who gets the rest of the income.¹⁰⁷

The uncertainty of the catch and the unfair income distribution system has resulted in the irony that while tuna is the most commercially valuable export fish caught in the Philippines, its fishers are among the poorest of the sector.

Fishers also experience limited hours of rest as the nature of the work requires them to stay at sea for one month to 45 days. They also endure rough conditions at sea brought by strong winds, typhoons, and storms that lead to accidents, sickness, and even deaths. In such cases, vessel owners bear no responsibility toward the fisherfolk due to lack of employee-employer relationship.

On the agriculture side, in 2018, workers of Sumifru Corporation held a strike over the Japanese company’s violations of labor rights, including union busting, requiring employees to work for 12 to 18 hours per day

while only earning Php 365 daily without overtime pay, and failure to provide protective equipment to workers exposed to chemicals and health hazards.¹⁰⁸ During the strike, several workers reported being injured by the company's dispersal team. Then, some weeks later, Danny Boy Bautista and Jerry Alicante, both union members, were shot by unidentified hitmen. Bautista was instantly killed, while Alicante survived with a gunshot wound in his hand.

Animal Welfare

In the Philippines, the Animal Welfare Act, the Slaughter & Meat Regulation, the Agriculture and Fisheries Modernization Act, the Animal Quarantine Act, and the Local Government Code currently cover the laws and standards on farmed animal welfare in the country.

A study that surveyed 49 fish farms in Luzon showed that fish welfare practices are done in these farms, including stocking density, monitoring of water quality, quality feeds, and disease management, but the respondents did not identify these as relating to fish welfare. This shows the need for more information and education campaign regarding fish welfare.¹⁰⁹

Meanwhile, a scoping report that interviewed eight fish farms in Vizayas, four farms in Mindanao, and one in Luzon reveal a lack of water-quality monitoring systems, lack of access to veterinary care, and the use of inhumane slaughter procedures, among others.¹¹⁰ Most of the farms slaughtered through asphyxiation and ice slurries, methods considered inhumane, as they are unfamiliar with humane slaughter methods such as mechanical or electrical stunning.

While there is a lack in studies formally reporting about the current state of livestock welfare in the country, there are numerous groups in the Philippines advocating for the welfare of farmed animals. For one, the Philippine Animal Welfare Society is advocating for certain standards on space, litter flooring, enrichment, the use of slower-growing chickens, adequate light, rest hours and welfare-friendly stocking densities in chicken enclosures.¹¹¹ Meanwhile, as millions of pregnant pigs are confined in narrow metal enclosures that result in health issues, the Asia Farming Solutions lobbies for the group housing of pregnant sows to allow them to move, socialize, and engage in natural behaviors.¹¹²

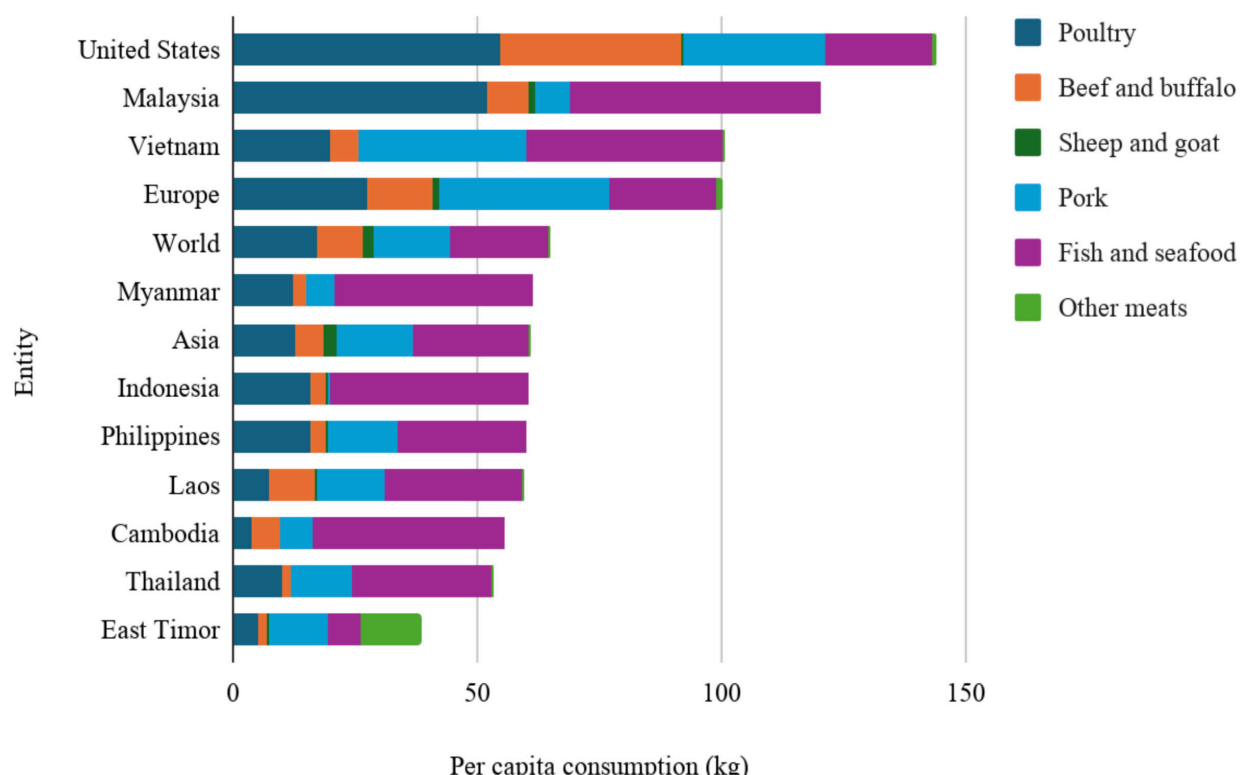
Diet and nutrition of Filipinos

The 2023 National Nutrition Survey revealed that the average Filipino household's daily food intake consists of rice (35.7%), vegetables (14.5%) and fish (10.8%).¹¹³ Cereals and products contributed 63.4% to the total supply of calories and 46.7% of proteins. Meat, meanwhile, contributed 6% of calories, 20.5% of proteins, and 28.6% of fats.¹¹⁴ Fish and seafood products are also an important source of cheaper and more accessible protein in the Filipino diet, accounting for 42.2% of total animal protein intake and 18% of total protein intake.¹¹⁵

Data also shows observable differences in the diets of higher and lower income households. Households in higher socioeconomic groups have been found to consume more fish, meat, and poultry products, which reflects greater access to animal-based protein sources. Meanwhile, poorer households have been found to depend more on rice as staple food, and consume more vegetables than rich households.¹¹⁶

The Philippines ranks fifth in Southeast Asia in meat and fish consumption per capita annually, and is slightly above the average in all of Asia

Figure 5. Per capita meat and fish consumption in 2023, Philippines and select geographies.¹¹⁷



Industrial and Production Trends

Amid food inflation, government surveys showed that many still rely on *sari-sari* stores and wet markets to source cheaper food, spending around Php 100 to 500 per visit to the stores. This is in contrast with procuring from grocery stores which can cost households Php 1,000 per visit. Data also shows that about two out of five households source their food from farms, rivers, or the sea a few times per week.¹¹⁸

Food demand in the Philippines is currently primarily satisfied by imports. This reliance on importation affects food security, since households become exposed to volatile food price increases in the global market.

In January 2025, the Philippines reported an increase in its annual meat imports by almost 50% amid the spread of animal diseases domestically. Pork accounted for more than half of the 137.999 million kilograms recorded, with chicken a distant second with 33.06%. Most importers procured meats such as deboned chicken or mechanically separated meat used for manufacturing various food products such as hotdogs, patties and sausages. At a market share of 40.13%, Brazil is the country's primary source of imported meat, followed by the United States at 16.5% and Spain at 10.7%.¹¹⁹

As of May 2025, the National Meat Inspection Service of the Philippines lists Argentina, Australia, Belgium, Brazil, Canada, Denmark, France, Germany, Ireland, Japan, Netherlands, New Zealand, Poland, Spain, Sweden, United Kingdom, and the United States of America as the only "system and traditional accredited countries" approved to export meat into the Philippines, alongside specific companies in select Asian, European, and South American nations.¹²⁰ The biggest processed meat producers in the country include San Miguel Foods, Century Pacific Food, and CDO Foodsphere.

Impacts of the climate crisis, economic shocks, rising food prices, and widening gaps among the rich and poor lead to diets that enable undernutrition, malnutrition, and obesity to co-exist among the Filipino population. Data shows that Filipinos across all age groups are currently not consuming enough to meet their

recommended energy intake, and the intake of calcium, Vitamin A, and Vitamin C is also low in all age groups, except for infants and preschoolers.

Unhealthy diet—food intake high in saturated and trans fats, sugar, and salt—is a key modifiable risk factor of non-communicable diseases (NCD), such as cardiovascular and chronic respiratory diseases, diabetes, and cancer. A report by the WHO found that sodium consumption in the country is twice as high as the agency’s recommendation.¹²¹ Another report by the United Nations Children’s Fund (UNICEF) also shows that sales of highly processed food have grown from 2014 to 2019.¹²² Within this period, the sales of salty snacks increased by 20%, sweet biscuits by 13.2%, and the number of fast food transactions also increased by 36.7%.

As a result of poor nutrition, nearly one in 10 children, and four out of 10 Filipino adults are classified as obese and overweight.¹²³ Two in 10 Filipinos are also prediabetic, and high cholesterol levels are common among older adults.¹²⁴

The share of NCD deaths to total deaths in the country has been steadily rising since 2000. In 2021, NCDs caused 68.5% of all deaths in the Philippines, with the probability of dying between ages 30 to 70 from such diseases being 32%, according to the World Health Organization.¹²⁵

The EAT-Lancet Commission, a group of experts in nutrition, climate, health, and social sciences, released a report detailing a planetary health diet (PHD), food group ranges for a healthy diet within sustainable planetary boundaries. The PHD is predominantly plant-based, with moderate inclusion of animal-sourced food and minimal sugar, saturated fats, and salt.¹²⁶

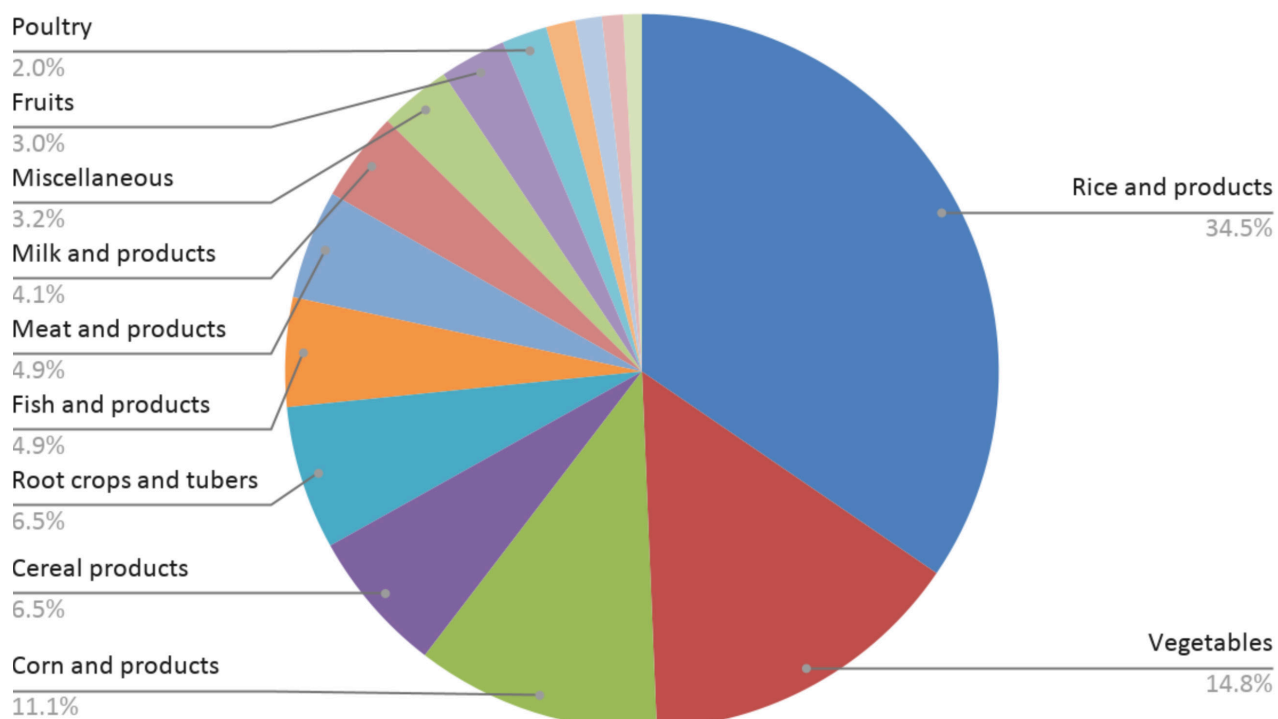
Table 1. Dietary targets for a healthy reference diet for adults, with possible ranges, for a population level energy intake of approximately 2400 kcal/day.¹²⁷

	Per capita recommended intake (gram per day [range])	Per capita recommended intake (kilocalories per day)
Plant foods		
Whole grains	210 (20-50% of daily energy intake)	735
Tubers and starchy roots	50 (0-100)	50
Vegetables	300 (200-600)	95
Fruits	200 (100-300)	145
Tree nuts and peanuts	50 (0-75)	275
Legumes	75 (0-150)	275
Animal-sourced foods		
Milk or equivalents (e.g. cheese)	250 (0-500)	145
Chicken and other poultry	30 (0-60)	60
Fish and shellfish	30 (0-100)	25
Eggs	15 (0-25)	20
Beef, pork, or lamb	15 (0-30)	45

	Per capita recommended intake (gram per day [range])	Per capita recommended intake (kilocalories per day)
Plant foods		
Fats, sugar, and salt		
Unsaturated plant oils	40 (20-80)	355
Palm and coconut oil	6 (0-8)	55
Lard, tallow, and butter	5 (0-10)	...
Sugar (added or free)	30 (0-30)	115
Sodium	< 2	...

Compared to the recommended mean one-day per capita intake, Filipinos in 2023 consumed more grain products, with rice and products intake amounting to 287g of Filipinos' mean daily meat intake, amounting 54g, and egg intake amounting 27g are also beyond the recommended range of the PHD.

Figure 6. Mean one-day per capita intake of food groups, 2023¹²⁸



While Filipinos, on a daily average, consume more fish than meat and poultry, fish consumption has been declining since 2008. Subsequently, meat products and poultry consumption have been increasing. Meanwhile, Filipinos' consumption of vegetables, tubers, fruits, and milk products all fall below the PHD's recommended intake.¹²⁹ Notably, fruit consumption has seen a significant decline since the 80s.

Figure 7. Trends in mean one-day per capita food consumption among Filipino households, body-building food, 1978 to 2023.¹³⁰

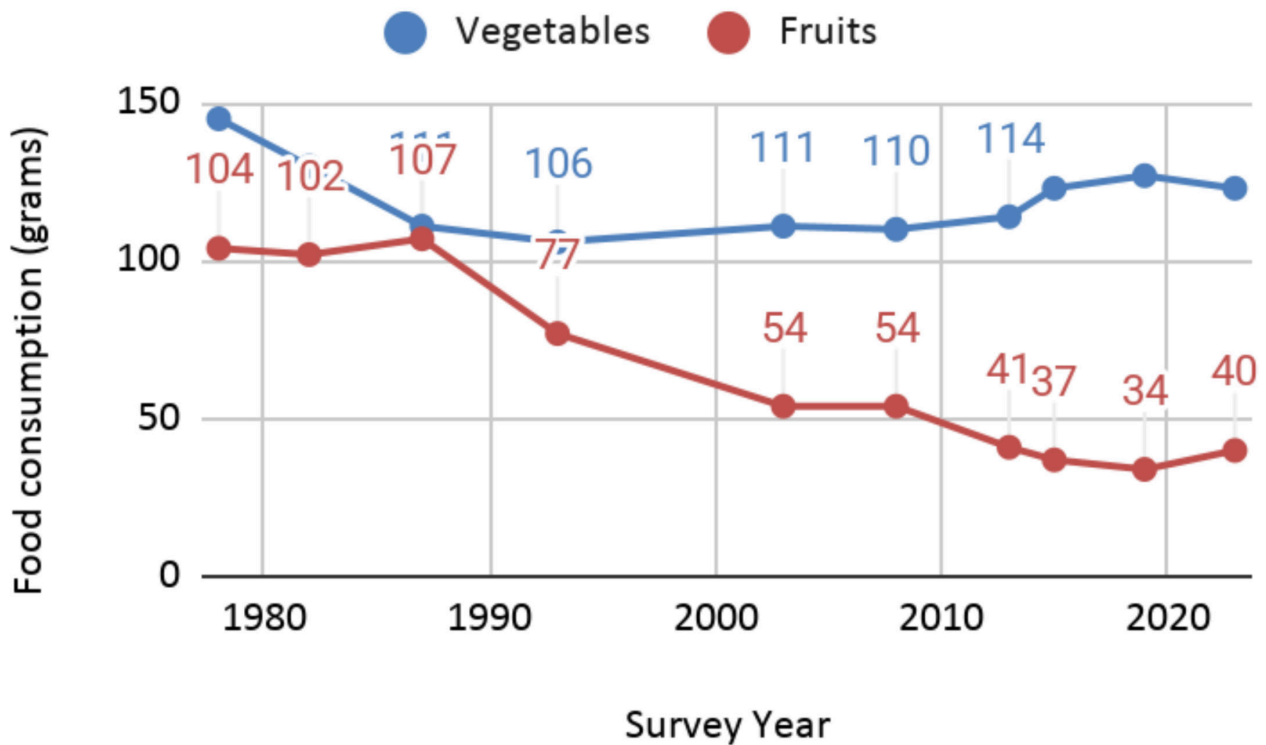
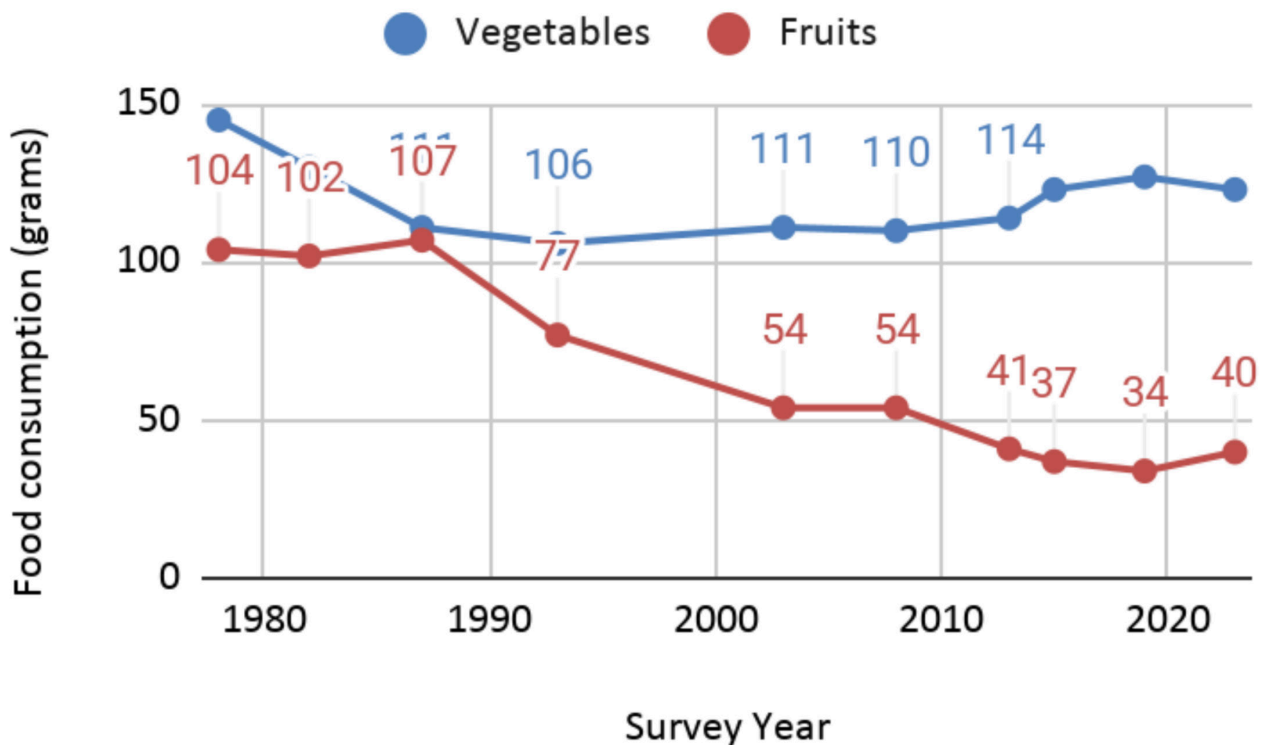


Figure 8. Trends in mean one-day per capita food consumption among Filipino households, body-regulating food, 1978 to 2023.¹³¹



Poorer households tend to rely more on rice as a staple food, compared to richer households. Fish, meat, and poultry also contribute a higher share in the daily food intake of more well-off families, while the poorest households showed higher vegetable consumption compared to other income groups.

Households located in rural areas were found to have higher intake of rice, fish, vegetables, corn, and sugar and sweets compared to urban households. Meanwhile, the latter has higher food intake of cereal products, meat, and poultry compared to their rural counterparts.

The urgent need to shift diets to be within social and planetary boundaries comes hand in hand with the need to ensure Filipinos' access to affordable, healthy and nutritious food. In 2023, data shows that 31.4% of households in the Philippines experienced moderate or severe food insecurity.¹³² The highest prevalence of food insecurity was recorded in the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) (48.2%), followed by the Zamboanga Peninsula (43.9%), and Soccsksargen (42%). In another survey done this year, the percentage of Filipino households that experienced hunger has been shown to rise to 27.2%, the highest since the Covid-19 pandemic.¹³³

Governance and the plight of food producers

The Philippine Constitution recognizes every Filipino's rights to well-being, inclusive development, social justice, livelihood, decent work, alongside their right to a healthy environment. At the same time, the government has enacted policies and encouraged activities that endanger these very rights: the Rice Tariffication Law and the Supreme Court ruling on municipal waters, the authorization of fossil fuel build out, and delaying of genuine land reform, among others. While the Philippines also continues to be battered by worsening typhoons, and suffer extreme heat at the same time, there remains a lack of policies and programs to strengthen the climate-resilience of small farmers, fisherfolk, and livestock producers.

At the same time, a climate of impunity and systemic corruption reigning in the country undermines the well-being of food producers. The Philippines has ranked as the deadliest country in Asia for environmental and land defenders for 12 consecutive years. Advocates, indigenous leaders, and communities face repression in various forms—often through the tactic of red-tagging, where they are falsely accused of being communist or terrorists and thus become targets for harassment, surveillance, and extrajudicial killings.¹³⁴

Meanwhile, the Philippines also confronts massive corruption among government ranks – a matter which the country saw an intensified unfolding of since President Bongbong Marcos committed to address corruption in flood control projects in his 2025 State of the Nation Address. The announcement has since illustrated the gravity of corruption in the country, which amounts potentially to the trillions and extends far beyond flood control efforts – including food programs and farm to market roads.¹³⁵ This situation exacerbates a sentiment of distrust among many agricultural and fishing communities, on top of an *ayuda* system in financial aid distribution, where financial support meant to support these communities in times of need are provided only to allies of politicians distributing said funds or utilized for the political gains of political dynasties.¹³⁶ This element of distrust is a reality that must be confronted in a food system transformation in the Philippines.



II. Transforming agri-aquatic food systems in the Philippines

The climate emergency requires the urgent shift towards equitable, humane, and sustainable food systems, as even if fossil fuel emissions were immediately eliminated, emissions from the global food system could still cause the planet to breach 1.5°C and even 2°C.¹³⁷

While there is a need to transition the agriculture sector and the diet of Filipinos to align according to what is within social and planetary boundaries, it is critical to discern the difference in the magnitude of contributions to planet-heating emissions by the Philippine agriculture sector vis-a-vis its Global North counterparts, as well as the distinction of large agribusinesses in the country compared to small farmers, fisherfolk, and livestock producers.

Ultimately, the Global North and the large agribusinesses must shoulder much of the burden in the transition as the prime contributors to the fossil fuel-dependent and unsustainable food system we have today. Hence, an equitable transformation of agri-aquatic food systems necessitates greater effort by the industrial food system to be accountable for their historical contribution to the climate chaos and transforming the way they are currently producing food, while ensuring massive support for small producers who bear the brunt of deleterious climate impacts and food insecurity.

In the Philippine and other Global South contexts, a just transition in food systems is also an opportunity to re-shape the intensive and corporate-led food systems into equitable, humane, and sustainable food production and consumption. A sustainable food system that works for people, animals, and the planet is necessarily one that must also work for the poor, marginalized communities, and small producers.¹³⁸

In truth, small producers are key to achieving an equitable, humane, and sustainable food system as they are the ones most capable of practicing agroecology, which counters industrial food production. Agroecology is a way of life that supports life-enriching systems and opposes life-alienating systems. It works together with nature and not against it, cherishing synergies between living beings and prioritising traditional farmer knowledge and participatory, transgenerational, and experiential learning processes. Agroecological principles are based on solidarity, circular, and regional economies within ecological boundaries that are truly beneficial for communities. It prioritises the rights of small-scale food producers and forms a movement towards equality and social justice for all people worldwide.¹³⁹

Transforming food systems in the Philippines requires embracing the principle of just transition to protect, and foremost, the security of livelihood of farmers, fisherfolk, and livestock producers. Ultimately, these agricultural workers cannot practice agroecology or sustainably produce food if they possess no power to decide how, when, and what to produce—there can be no agroecology if farmers have no land, or if fisherfolk lose the sea where they fish.

Shifting the agri-aquatic food system, hence, means democratizing governance and decision-making; empowering local communities and basic sectors to be stewards of natural resources, while ensuring they have access to nutritious food and are able to exercise choice over what they eat and how and where it is produced.

In achieving a just transition of the food system, it is critical that the Philippine government facilitate and support the shift to ensure that no community or sector is left behind. Policies and financial support must be in place to allow Filipinos to transform how they produce food, as well as how they consume these products.

Box I: Communities and organizations promoting sustainable and organic agriculture, indigenous practices, and climate resilience in the Philippines – advances and challenges

The agriculture sector confronts ever-present challenges, despite its much-vaunted contribution to the country's over-all economic growth. To respond to the myriad challenges faced by the sector, many communities and organizations have long been advancing sustainable and organic agriculture in the Philippines.

Scholars in agriculture have studied the differentiation between and reception of sustainable and organic agriculture in the country. Of the two, the former appears to have received more government support, is broader, and more popular than the latter.¹⁴⁰ Sustainable agriculture “encompasses organic farming, green agriculture, conservation farming, natural farming, ecological farming, etc. that aim to meet the goals of profitability, stewardship, and quality of life.” Meanwhile, organic agriculture “maintains certain principles such as biodiversity, ecological balance, sustainability, evolved in villages and farming communities over the past years and promotes environmentally, socially and economically sound production of food.”

Conversely, the practice of organic agriculture has faced a number of drawbacks vis-à-vis the state of the country's climate conditions. The Philippines' organic production area reported in 2009 is 52,546 hectares, employing around 70,000 producers and farmers scattered all over the country.¹⁴¹ Small-scale farmers were among the beneficiaries of organic agriculture, adopting more diversified farming systems and livestock including pigs, goats, carabaos, cows, chickens and ducks.

A parallel study differentiated between sustainable and organic agriculture, where the former is “ecologically sound, economically viable, socially just, and humane,” and the latter “promotes environmentally, socially and economically sound production of food and fibers and excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, livestock feed additives and genetically modified organisms.” Herein lies its major difference as regards permissible practices and those that can potentially harm the environment. Nonetheless, this study highlighted selected experiences of various local and successful organic agriculture practitioners or organizations in the Philippines.¹⁴²

One of these non-government organizations actively working with farmer organizations in the Philippines is Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG), established in 1986, which supports rural development projects anchored on sustainable or organic agriculture. MASIPAG has espoused organic farming which is being practiced by small-scale farmers. The practice of organic agriculture by MASIPAG was documented in a ten-year (1994-2004) case study conducted by the Philippine Rural Reconstruction Movement (PRRM) in Nueva Ecija. MASIPAG's rice technology underscored the gains achieved by the farmers through organic farming and have become “less vulnerable to economic losses resulting from pests and disease infestations. A significant number of farmers have integrated different kinds of crops and livestock in their farms.” Unlike typical farming practices, the PRRM study noted that “MASIPAG farmers also produced good eating quality organic rice in their farms, where poultry and livestock were also raised without the use of antibiotics.”

The Organic Agriculture Act of 2010 provides for the development and promotion of organic agriculture in the country, regarded as an alternative to conventional or ‘chemical’ agriculture. A number of literature attests to its ecological sustainability; however, its sustainability on the financial and the social/cultural aspects are being challenged.¹⁴³ Agroecology is being exemplified by an integrated diversified organic farming system (IDOFs), and the *Las Kuatras Marias Farm* in Oriental Mindoro has been practicing IDOFs which applies an extensive knowledge of indigenous and organic practices.¹⁴⁴ The *Las Kuatras Marias Farm* is supported by the Mindoro Ecological and Sustainable Agricultural Federation (MESAFED) and the National Confederation of Farmers and Fisher Organizations (PAKISAMA) through the development of

sustainable and self-reliant small-scale farming. It has also earned recognition as a Learning Site (LS) to provide on-the-field trainings as it fosters the preservation of indigenous biodiversity, while increasing currency circulation in the remote area.

Nexus of food, biodiversity, and the energy transition in the Philippines

The livestock sector is one of the largest contributors to greenhouse gas (GHG) emissions in Kenya. It is apparent that today's current systems and modes of production, where there is primacy on producing more, comes at the expense of ecological degradation—and even then, despite having an abundance of food, there remain populations that could not access quality and sufficient meals.

As shown in the previous section, the agri-food system is impacted by climate change; at the same time it also drives the climate emergency. Amid a worsening climate, there is an urgent need to do away with systems that exacerbate global warming and its impacts, and create a pathway towards an agri-food system that is equitable, humane, sustainable and climate resilient. But transforming the current intensive food system necessitates reckoning with fossil fuel consumption.

The increasing use of machines and chemicals in the agri-food system raises the energy intensity of food production. As more farms cater to industrial production through high-yield varieties and intensive farming, demand for fossil fuel-based inputs such as fertilizers and pesticide increases. Moreover, as the population becomes more dependent on cheaper ultra-processed food for their diets, there will be increases in mechanized food processing, manufacturing of food packaging—mainly plastics—and a greater need for fuels that will be used to transport products. Agribusiness corporations have been instrumental in deepening global dependency on fossil fuels through the use of fertilizers, plastics, and other petrochemical products. Agriculture has been the critical lifeline of oil and gas corporations to keep the fossil fuel industry alive amid a growing push for decarbonization.¹⁴⁵

As much as the current food system is energy intensive, it also has a role in energy production through biofuels. Despite being labeled a cleaner source of energy, it still has a large greenhouse gas footprint: mainly from the use of fossil-based fertilizers, animal manure management, and from land-use change, where forests and grasslands release emissions when cleared for biofuel crops to be planted.¹⁴⁶

At the same time, aside from commercial fishing vessels encroaching on the fishing area of small fisherfolk, coastal areas and marine habitats are also heavily impacted by the operation and continued expansion of fossil fuel-related operations throughout the value chain: from extraction, transport, construction, and generation.

The Intergovernmental Panel on Climate Change has underscored that “immediate and deep emissions reductions across all sectors,” including “substantial reduction in fossil fuel use,” is critical in limiting global warming to 1.5°C.¹⁴⁷ Hence, protecting the planet's biodiversity and human well-being entails transitioning away from a fossil-fuel-intensive agri-food production, and, ultimately, phasing out fossil fuels and shifting to cleaner and sustainable energy sources.

Moreover, the closure of the Strait of Hormuz resulting from the United States and Israel's war on Iran raises alarm bells on the urgency of a global transition away from fossil fuels – in energy applications and across all its entrenchments in modern day society. The deep reliance of global food production on fossil fuel-based products and services, and the strategic location of the Gulf region in fossil fuel and agrochemical value chains, effectively turned the ongoing fossil fuel crisis into one that is “potentially far more serious” than previous price shocks.¹⁴⁸

Box II: The plight of the Verde Island Passage and other fossil fuel-affected habitats and communities, and the common urgency of food and energy systems transformation

Sitting within the highly biodiverse Coral Triangle Region, the Verde Island Passage, dubbed as the Amazon of the oceans and the world's "center of the center" of marine shore fish biodiversity,¹⁴⁹ is currently the hotspot of fossil gas development in the Philippines, along with Palawan, whose waters are being disrupted to make way for oil and gas exploration. Fisherfolk have reported dwindling fish catch since fossil fuel power plants were built in their coasts. Aside from destroying the habitats of marine species during the construction phase of these infrastructures, these assets also churn out polluted and hot water into the sea as they clean and cool down their assets; all these affect marine biodiversity, as well as the livelihood of fisherfolk depending on the sea for sustenance.

The presence of fossil fuel plants in the Passage also increases the risk of toxic cargo disasters with the influx of cargo ships traversing the area. In 2023, a tanker carrying 900,000 liters of industrial fuel sank off the coast of Oriental Mindoro. Marine protected areas were damaged by the disaster. Residents reported getting sick as the oil slick reached the shores. Businesses relying on the sea had to be shut down, and fisherfolk had to go without income for months due to the oil spill.

Fossil fuels have dual impacts on the fishing sector. Aside from directly polluting the waters, the greenhouse gases-emitting industry also drives the climate emergency. Increasing global temperatures lead to ocean warming and acidification which could adversely affect fisheries production. More broadly, the climate emergency could also bring about more extreme weather events such as drought and flooding, that would negatively impact the agriculture sector.

Fisherfolk and community organizations such as Bukluran ng Mangangisda sa Batangas (BMB) and Lima sa Verde Island Passage (VIP), and community leaders have strongly expressed disapproval of liquefied natural gas (LNG) projects in the province of Batangas, south of the Philippine capital. Industry giant and largest conglomerate in the Philippines, San Miguel Corporation (SMC) is the primary champion of LNG expansion in the country in the past half a decade, and is also found to have been the charterer of the sunken MT Princess Empress. The already gloomy situation of fishers (i.e., declining fish catch, presence of fossil gas projects, and deteriorating human health, among others) stand to worsen if the current challenges of both climate- and human-induced pursuits are not resolved, and if comprehensive protection measures are not put in place for the marine corridor and the communities that rely on its waters for their living. Groups behind the campaign to Protect VIP have been advocating for the designation of the marine corridor as a protected seascape under the Expanded National Integrated Protected Areas System (ENIPAS) Act of 2018.

As an archipelagic country, the Philippines takes pride in its unique and strategic place in the world as regards marine biodiversity and ecosystems. Its archipelagic nature, however, also exposes it to pollution from a variety of maritime activity, such as fossil-based transport as had transpired with the oil spill in the VIP.

Prior to the MT Princess Empress spill, a total of 18 major incidents from have been documented since 1998, affecting the areas of Pangasinan, Semirara, Guimaras Island, La Union, Polilio Island, Cebu City, and Iloilo.¹⁵⁰

The oil spill in the Guimaras Strait in 2006 was the most detrimental of all. The Marine Environment Protection Command (MEPCOM), which is the key command responsible for oil spill response and operations in the Philippine Coast Guard, recorded a total of 466 offshore oil spills from 2000-2022.

These maritime-related incidents mostly involved sunken or capsized vessels, manufacturing industry, oil depots and refineries, power barge/plants, shipyards, oil exploration, and offshore mining. The causes of an oil spill were due to collision, grounded, hazards to navigations, unseaworthiness of vessels, negligence and incompetence of the owner/operation, and human errors,¹⁵¹ among others. The impacts of oil spill pollution can affect not only the coastal environment, but also the socioeconomic status and health of human beings. Common impacts include the loss of livelihood and income revenue of fisherfolks and tourism businesses, and significant damages to coastal areas, coral reefs, mangroves, and beach areas were also reported. As the coastal environment is intertwined with the communities' livelihood source, the contaminated marine life (including seagrasses, coral reefs, shellfish areas, and livelihood seaweed projects) exacerbates the nutrient-deficient status among these communities.

Threats imposed by fossil fuels to the food security, livelihood, and overall well-being of food producers and their communities are apparent across the country, especially as the Philippines remains reliant on coal and gas for its power needs in the national grid, including the National Capital Region, and in bunker fuel for island grids. Because of their water-intensive nature, these plants are located in coastal areas. There are power plants such as the Ilijan gas complex along the Verde Island Passage and Therma Visayas coal plant along Tanon Strait that are alarmingly located within close proximity to fish sanctuaries and other biodiverse areas and fishing grounds. The national government, especially the DENR and DOE, are instrumental in the establishment of these power plants by issuing approvals to private companies. Among these industry giants include San Miguel Corporation (SMC) Aboitiz Corporation, both of which are also major food industry players.





III. Roadmap to an equitable, humane and sustainable food system in the Philippines

Our vision for an equitable, humane, and sustainable food system in the Philippines

An equitable, humane, and sustainable food system in the Philippines would provide nutritious food through production systems founded on agroecology and human rights. It would protect the well-being, livelihood, traditional knowledge, health, and dignity of Filipino food producers and consumers, while also protecting the country's megabiodiversity and the welfare of animals through honoring the metabolism of nature and ending polluting practices.

This guarantees the food sovereignty of small agriculture workers to capacitate them to produce enough food for Filipinos using local resources and based on cultural and indigenous methods. For farmers, this means ensuring land tenure, being able to sow seeds according to local and cultural planting calendar, and ensuring their access to markets. For fisherfolk, this means the protection of marine areas that will allow for the regeneration of marine resources and rich fish catch that meets food security needs. Protection laws and measures would also serve to empower and bring local communities as stewards of nature, and not be implemented to serve the interests of few. Food production is not oriented on export nor tied with profits, but focused on providing healthy and nutritious food for the local communities at reasonable prices—both for the farmers and the consumers.

As transnational corporations are held accountable for the social and environmental damage of their intensive production, support is focused to small producers as they transition to agroecology with high welfare practices. Agriculture workers who will be affected by the shift should also be supported and re-skilled to ensure their livelihood.

Shifting towards an equitable, humane, and sustainable food system also requires that all Filipinos, especially the marginalized communities, receive a livable income that will allow them to access food that meets their nutritional needs, ensuring food security that is attained in line with social and planetary boundaries. The planetary health diet recommends the shift towards a predominantly plant-based diet, with moderate inclusion of animal-sourced food, and minimal consumption of added sugars, fats, and salt.¹⁵²

Animal-based food can still be part of an equitable, humane, and sustainable food system in the Philippines if it is based on high welfare and indigenous and traditional practices, knowledge, and consumption patterns. This is different from the industrialized, high-meat diets in the Global North, and where there is an urgent need to significantly decrease consumption of animal products.¹⁵³

The global Just Transition roadmap demonstrates pathways to shift to a climate-resilient food system that is equitable, humane and sustainable, as well as locally and democratically-governed, while mitigating greenhouse gas emissions, biodiversity loss and food insecurity. It outlines three key levers of change to transform the food system:

- I. Strengthen food system governance: We must challenge the dominance of multinational corporations over the food system and put policies in place to foster transparency and hold them accountable for their social and environmental impacts. At the same time, we should protect and elevate traditional and local food systems, where producers and consumers themselves are part of decision-making processes.
- II. Promote agroecological practices: A just transition necessitates the embracing of agroecology to promote human rights, protect the environment and animals, ensuring food sovereignty meets food

security needs while providing dignified and sustainable livelihoods.

- III. Shift towards diets within planetary and social boundaries: Filipinos' health will benefit from the shift to plant-rich diets; there is greater burden to shift food consumption, however, for countries with high per capita consumption of animal products to stay within planetary and social boundaries. This shift not only benefits public health and the environment but also frees up land and resources to support diversified agroecological production systems.

This Localized Roadmap adopts the Global Roadmap with policy recommendations grounded in the Philippine context.

Principles of a just transition in food and agriculture

Guided by climate justice and the principle of common but differentiated responsibilities, a just food system transition in the global context should recognize the bigger historical role of the Global North as the main contributor to the climate emergency. Hence, while the Global South faces the impacts of a warming planet, the Global North has a responsibility to aid the adaptation and sustainable development of the former.

In the local context, the planning and implementation of a just transition in food and agriculture necessarily involves small farmers, fisherfolk, livestock producers, other agriculture workers, as well as local consumers. This allows for the democratization of the food system, where inequality, exploitation, and environmental degradation rampant in an industrial and corporate-driven food chain are resolved and eradicated.

Aside from ensuring the right to land and livelihood of agriculture workers, the process of a just transition should also put a primacy on addressing other forms of discrimination such as sexism and ableism. Likewise, the transition should also consider the cultural differences of various regions and indigenous peoples in the country.

Although each locality has its own dynamics and needs during the transition, the following principles can serve as a guide for policymakers and other decision-makers on shifting towards equitable, humane, and sustainable food system:

1. **Protect livelihoods and the dignity of farmers and farm workers:** The independent livelihoods of those working in the food system, particularly smallholders, pastoralists, small-scale fishers, Indigenous people, and marginalized workers, must be protected through economic and policy support. This can range from job training and financial aid to mental health support and access to healthcare. Strong community support is essential, as is addressing the cultural impacts on communities from changes in livelihoods and diet.
2. **Advance human and labor rights and gender equity:** Every person has the right to safe working conditions free of exploitation, to livable wages, access to healthcare and to gender justice. Food and agriculture policy must be aligned with trade policy to avoid human rights violations caused by the displacement of industrial animal agriculture impacts via increased imports or exports constrained by few regulations. Additionally, food and trade policies should protect Indigenous communities from land-grabbing by ensuring the application of the right of Free, Prior and Informed Consent.
3. **Ensure food sovereignty that fulfills food security:** Food and agriculture policy must value the fundamental right to food as nourishment rather than as a commodity, and empower smallholders to decide what to grow and how to grow it. Additionally, it must support local food systems and ecosystem improvement through democratic decision-making by affected communities and through the application of the knowledge and skills of Indigenous peoples, livestock producers, peasant communities, fisherfolk, young people and women.
4. **Prioritize agroecology and diets within planetary and social boundaries:** Food and agriculture policies and practices should follow the polluter pays and precautionary principles. They must be

inclusive and enhance social justice and climate stability, ensure that there is healthy air and water, pollution mitigation, land restoration, animal welfare and wildlife conservation, and also ensure equitable access to land and to nutritious, sustainably-produced food.

5. **Enhance public health:** The public health threats caused by industrial animal agriculture including AMR, zoonotic disease risk, environmental pollution, pesticide exposure and chronic, diet-related diseases—must be addressed and reversed through policy shifts, corporate accountability, and healthcare while transitioning to a food system focused on advancing individual and community health.
6. **Improve animal welfare standards:** In areas where farmers depend on livestock for food and livelihoods it will be critical to adopt agroecological practices including high welfare standards in line with the Five Domains.

Engaging Stakeholders

A key principle of a just transition in food and agriculture is ensuring an inclusive process that engages those who are most impacted by the transition. These stakeholders representing the food system from farm to fork must be meaningfully involved early in the process, ahead of implementing any new policies. It is critical that this participatory process centres the voices of those most impacted by the transition along with those of marginalised populations, and does not allow corporations to dominate the discussion.

Mechanisms to achieve a just transition in food and agriculture in the Philippines include:

- Ensure early involvement and consultation with key stakeholders and marginalised groups.
- Use existing mechanisms and platforms to empower and engage producers and marginalized sectors.
- Create locally relevant resources highlighting the local benefits of transitioning away from industrial animal agriculture and showing how the just transition will protect and benefit the different groups impacted.
- Work with key stakeholders to set clear priorities.
- Co-create policies, programs, and pathways, and collaborate in the implementation and assessment of food systems transformation.

Who does the just transition impact?	Key stakeholders
Smallholder producers and their support systems	Smallholder farmers, small-scale fishers and aquaculture farmers, fisherfolk organizations, Fisheries and Aquatic Resources Management Councils, organisations that represent the interests of non-corporate farmers, civil society and people's organizations, environmental advocates, faith-based organizations, legal and paralegal aid groups
Industrial Producers and Related Industries	Corporations including San Miguel Corporation, Bounty Fresh Group of Companies, Vitarich Corporation, Robina Farms, Gladery Fishing Incorporated, Marchael Sea Ventures Corporation, Rugela Fishing Industries, Inc., San Andres Fishing Industry Inc., San Lorenzo Ruiz Fishing Ind. Inc., Frabelle, Mega Fishing Corporation, Citra Mina, Century Pacific Food, CDO Foodsphere; Transnational and international corporations present in the Philippines including Bayer, Corteva, Syngenta, and Kubota; Industry associations, and labor organizations in industrial agriculture, livestock, and fisheries sectors; adjacent communities
Workers Throughout the Supply Chain	Industrial farmers, farm workers in industrial production, smallholders, small-scale fishers, women, elderly and youth, indigenous peoples

Who does the just transition impact?	Key stakeholders
Communities Affected by Agricultural Production	Rural and coastal communities, autonomous communities, Indigenous Peoples, frontline and fence line communities
Innovators	Innovators working to improve agroecology
Researchers, advocates, and experts	Universities, research centres, think tanks, policy advocacy organisations, conservation organisations, nutrition experts
Government bodies and regulators	National government agencies including the Department of Environment and Natural Resources (DENR), Department of Agriculture (DA), Department of Labor and Employment (DOLE), Department of Trade and Industry (DTI), Department of Science and Technology (DOST), Department of Interior and Local Government (DILG), Philippine lawmakers
Investors and funders	Development agencies and banks, private investors and shareholders, debtors, insurers, economists, foundations
Consumers	Low-income/low-access urban populations, people whose meat consumption has increased with rising income or rise of convenience consumption, chefs, nutritionists, retailers and grocery stores
Animals	Farmed animals, wildlife, fish and crustaceans





IV. Policy recommendations for a just transition of the Philippine food system

Lever 1: Policies to strengthen food system governance

Financial justice

- Hold large agribusinesses and corporations accountable for social and environmental harms, and tax payments. Corporations that have been the source of harassment, displacement, land-grabbing, labor issues, and ecological harms, including damage to marine, coastal, and land ecosystems, should be held liable. The Philippine government must also end tax breaks and loopholes for corporations, and increase corporate tax rates for a just and equitable transition.
- Defund false solutions including biodigesters, carbon offsets, and carbon removal or ‘carbon farming’ schemes. Funding should not be granted to any schemes or practices that further entrench industrial food production models, increase harm to marginalised communities and sensitive environments, or grant licence to large corporations to continue polluting the environment.
- Fully fund agencies and programmes that enforce environmental and animal welfare protection laws and protections for farmworkers, fisherfolk, and food chain workers.
- Provide financial, technical, and policy support to smallholders, backyard farmers, small-scale fishers, historically marginalized producers, and micro and small enterprises, to ensure livable earnings and to help strengthen their capacity to implement healthy, sustainable, and humane food production practices.

Accountability and governance

- Public officials should face accountability for corrupt practices, especially regarding farm-to-market road funds, climate and disaster funds, and other funds that impact food justice in the Philippines. Government officers found guilty of misappropriating funds, which should have been allocated for climate and disaster efforts, as well as resources that should have gone into the development of or welfare of the agri-fisheries sector and its workers, should face the full force of the law.
- Policies that strengthen government transparency should be in place to uphold ethical integrity—such as guarding against conflict of interest or corporate interference in policy- and decision-making—and abate corrupt practices, including land-grabbing and abuse of power.
- Strengthen and enforce corporate accountability rules, including duty of care mechanisms and a ‘do no harm principle’ with mandatory disclosures. Corporations should be required to report on human rights and environmental impacts (including GHGs) along their entire supply chain, including subsidiaries, and compelled to perform duty of care throughout their business operations with appropriate enforcement and punishment for failure to do so.
- Implement stringent and science-based policies against greenwashing and false solutions. Reject carbon trading and offsetting, and caution against unproven technologies or mechanisms that promote business-as-usual practices and delay the much-needed transition.
- End red-baiting (‘red-tagging’) practices that exact extrajudicial violence against food producers, communities, and environmental and human rights defenders. Ensure that violators are brought to justice and that victimized communities and sectors are protected.
- Implement preferential rights for small-scale and municipal fisherfolk in municipal waters, restricting access of commercial vessels. The Supreme Court ruling allowing commercial vessels within 15km

from the shore should be reversed to protect the livelihood of small fisherfolk.

- Put an end to illegal, unreported, and unregulated (IUU) fishing. Provide sufficient funding, technical capacitation, resources, and empowerment for local government units and fishing communities to effectively challenge IUU operators, and penalize commercial vessels found poaching in municipal waters.
- Ensure ecological restoration and preservation of natural resources through cohesive and comprehensive protection policies. Degraded land, water, and other ecosystems threaten food security for the present and future generations. Restoration projects should be in place to buffer climate risks and sustain fishing and farming productivity. In particular with the fishing sector, marine biodiversity hotspots should be integrated in protected area systems to revitalize marine species and allow for sustainable fish catch. The discharge of toxic substances from industrial and fossil fuel plants should be strictly monitored and prohibited in critically biodiverse marine and coastal areas. Moratoriums, restrictions, and bans on the expansion of fossil fuel-based and extractive activities, reclamation, toxic cargo shipping, and other polluting activities must also be put in place.
- Protect and improve the condition of critical marine, land, and coastal habitats to ensure regenerative ecosystems and food sources.
- Expand the coverage of protected areas across the country, aligning to and going beyond national commitments of the Philippines to the 30x30 goal under the Convention on Biological Diversity. The designation of the Verde Island Passage (VIP), as a protected area under the Expanded National Integrated Protected Areas System (ENIPAS).
- Strengthen the enforcement of protected areas systems to address implementation gaps while prioritizing the enhancement of resilience in confronting complex impacts of the climate crisis and the empowerment of fisherfolk, farmers, and local and indigenous communities in the stewardship of these areas.
- Adopt a national action plan on business and human rights based on the UN Guiding Principles on Business and Human Rights.
- Strengthen and expand protection laws to guarantee basic human rights, healthcare, and collective bargaining of agricultural sector workers, and to strengthen the access of farmers and fishers to social protection and corresponding services.
- Strengthen and enforce environmental and animal welfare regulations for industrial animal production.
- Stop the revolving door between government agencies and multinational corporations and industry lobby groups. Restrict the eligibility of representatives of multinational corporations and lobby groups to serve in government roles that have any oversight or regulatory influence over their former industry, and vice versa.
- Strengthen rules to prevent corporate interference in government policy. Lobbying and corporate spending should be restricted and transparent. Reporting should be improved to prevent corporate influence over policy and elections.

Trade

- Adopt trade policies that prioritise domestic production, support local food systems and disincentivise multinational corporations.
- Establish policy coherence between trade, agriculture, finance, labor, and other policies and national commitments to international conventions and goals related to food systems.
- Allow context-specific trade standards for healthy and sustainable food and agricultural products. Communities should have the ability to set standards based on local and regional contexts to minimise trade impacts on their environment, public health, local customs and cultures, and local economies.
- Reject carbon or biodiversity offsetting schemes in national policy. Offset schemes, including carbon markets, shift the harm caused by industry to marginalised communities — particularly smallholders,

pastoralists, peasants, small-scale fishers, women, and Indigenous peoples — while destroying irreplaceable ecosystems and accelerating climate change.

- Reject human rights abuses in food supply chains in domestic and international policy. Trade policies must hold companies responsible for exploitation and abuse in their supply chains.
- Strengthen the application of Free Prior and Informed Consent.
- Protect smallholders, peasants, small-scale fishers and pastoralists from cheap food imports. Prioritising cheap food and international markets impedes the ability of smaller, local and marginalised producers to find market opportunities.
- Use mirror analysis to improve accountability in food and agriculture trade flows. Reconciling import and export data for meat, dairy and seafood can help identify fraud and other trade violations perpetrated by multinational corporations.

Local food systems

- Engage stakeholders in an inclusive process to identify and implement policies to protect food sovereignty. Marginalised and underrepresented producers and communities — including smallholders, pastoralists, peasants, small-scale fishers, women, youth, and Indigenous peoples— must be involved in the creation and implementation of local food policies and programmes.
- Promote decentralized market value chains to strengthen local economies. Reduce import dependence by supporting local production and shortening food chains.
- Ensure land tenure and access to other resources for farmers and indigenous peoples. Enact measures for genuine agrarian reform that will freely redistribute land to the tillers, and protect the ancestral lands of indigenous peoples. Programs should also be in place for farmers to have access to water, local seeds, and other productive resources that will allow them to sustainably produce food.
- Protect local food producers and strengthen local economies. Production of food should put primacy in feeding the nation, rather than prioritizing crops for export. In the same line, directives that prioritize importing products sans support for the local producers should be rectified. The rights of agri-fisheries food producers should also be protected in the face of development aggression, pressure and displacement from transnational agribusinesses, commercial and IUU fishers, along with the fossil fuel industry.
- Tackle gender and socioeconomic inequalities in the agrifood systems in a comprehensive way.
- Address food-deprived areas by increasing access to fresh food.
- Discourage the expansion of fast food establishments, and support local food establishments and traditional cuisines and food customs.
- Increase support for regional production and protection of local food systems. Providing financial, regulatory and technical support for regional food hubs along with public outreach campaigns in support of local producers can help increase both the availability and markets for local food.
- Improve regulation of private procurement practices to ensure fair payment to local food producers. Stronger regulatory frameworks for purchasing by meat processing companies, grocery stores, food service companies, restaurants and other businesses can ensure that smallholders, backyard farmers, small-scale fishers, and pastoralists have more opportunities and receive fair payment in these sectors.

Lever 2: Policies to promote agroecological practices

Financial Justice

- Promote and strengthen access to finance and technical assistance of communities and producers championing agroecological practices. The just transition of the agriculture sector towards an equitable,

humane, and sustainable food system should be given ample financial and technical support from public institutions. Agricultural workers that will be affected by the shift from industrial farming to agroecology should be given financial buffers as they re-skill and move to more sustainable livelihood.

- Implement inclusive and transparent processes for access to and distribution of financial assistance, and ensure that financial resources, especially public funds, are not used for politicking by duty-bearers in government or for the interests of industry lobbyists.
- Strengthen financial incentives towards producers transitioning to agroecological practices. Financial assistance can help remove the barriers associated with the costs of transitioning production practices and diversifying crops. Subsidies can also be used to increase the market for agroecological and organic products to support widespread adoption of these practices.
- Increase resilience of small producers against extreme weather events by increasing access to farming insurance. Farming insurance is an emerging tool providing smallholders with the security to replant in the next season despite current crop failures, or helping them replace animals lost during extreme weather events.
- Establish strategic grain reserves and other supply management programmes to ensure fair prices for smallholder farmers. In addition to eliminating feed subsidies, supply management makes larger producers pay market costs, supports fair prices for smaller producers, improves job security and increases resilience.
- Provide incentives and technical support to help meat, dairy and seafood producers to shift to plant-based production. Governments and technical agencies can support companies, investors, and farm workers transitioning from animal production to plant-based production.
- Link climate and development funding to the guiding principles of agroecology. Agroecological principles should be mainstreamed into environmental and development agreements to ensure equity and sustainability are integrated into related funding and policies.
- Invest in local infrastructures based on community needs. Local and regional infrastructure needs to support agroecological production, land ownership, distribution and markets will vary at different levels and in different locations and must be identified in consultation with local communities, including marginalised stakeholders.
- Provide financial support for entrepreneurs and small businesses in rural areas. Fostering thriving rural communities improves access to information, services and markets for smallholders, pastoralists and farmers transitioning to agroecological practices. Investing in rural communities can also aid the transition from industrial animal production facilities to a more resilient, diversified and just local economy.
- Implement participatory budgeting and planning for food and agriculture programmes. Participatory budgeting engages community stakeholders in deciding how to spend part of the public budget, including evaluation of the process.
- Provide financial resources to maximise restoration opportunities for former agricultural land. Funds should be allocated for pollution mitigation and land restoration, including rewilding projects, in addition to exploring alternative uses for former agricultural land and ensuring equitable management of changes in land availability.
- Fund research and academic courses to institutionalise agroecology in science and education. Research and extension funding at public institutions should be shifted away from industrial animal production to identifying research gaps and increasing knowledge of and resources for scaling up agroecological production and farm transitions.
- Implement the true cost accounting for food and agriculture. Working with economists to identify and quantify the environmental, social, public health and animal welfare costs of food systems would better inform agricultural and economic policy interventions and improve public understanding of the true costs of food production.
- Incentivise agroecological, integrated livestock systems. Funding can be used to incentivise the

transition to agroecological, high-welfare, integrated livestock systems that meet specific, science-based metrics and standards for minimising greenhouse gas emissions and promoting biodiversity.

- Compensate agricultural workers and producers to retire and rewild land previously used for industrial meat and dairy production. Government funding programmes can support farmers with long-term funding and technical assistance to convert land used for pasture and feed crops into native habitats that can store carbon and restore nature.

Accountability and governance

- Institutionalize agroecology, incorporating indigenous food and resilience-building systems in the context of the climate crisis. Strengthen research on and programs supporting traditional and indigenous practices and solutions, including the use of local seeds, and production operations that allow the regeneration of soil, marine, and other natural resources. Patenting and corporate monopoly of seeds should also cease, not only to protect the livelihood of farmers, but also preserve the biodiversity of seeds. Likewise, industrial fossil-based pesticide and fertilizer use, linked to these high-yield variety seeds, should also be eradicated in preference for organic farming.
- Implement policy coherence across agencies and agreements that have direct or indirect impacts on food systems. Food and agriculture policies and programmes should be aligned with environmental, human rights and development commitments and processes, including economic recovery and growth plans, and coordinated across agencies such as agriculture, health and environment.
- Ensure and enforce labour rights and living wages for all food and agriculture workers. Equalise labour laws to make sure farmworkers and other food chain workers are covered by all worker protection and fair wage laws.
- Establish clear biodiversity metrics for food and agriculture policies and programmes. In addition to emissions-reduction and deforestation-free targets, food and agriculture policies and programmes should include measurable science-based goals for protecting and promoting native plants and animals and ecosystem health.
- Implement initiatives and environmental metrics to reduce food loss and waste.
- Uphold access to food as a basic human right and explore the development of programmes that reject the commodification of food, which further marginalizes the impoverished sectors.

Producer support and empowerment of food-producing communities

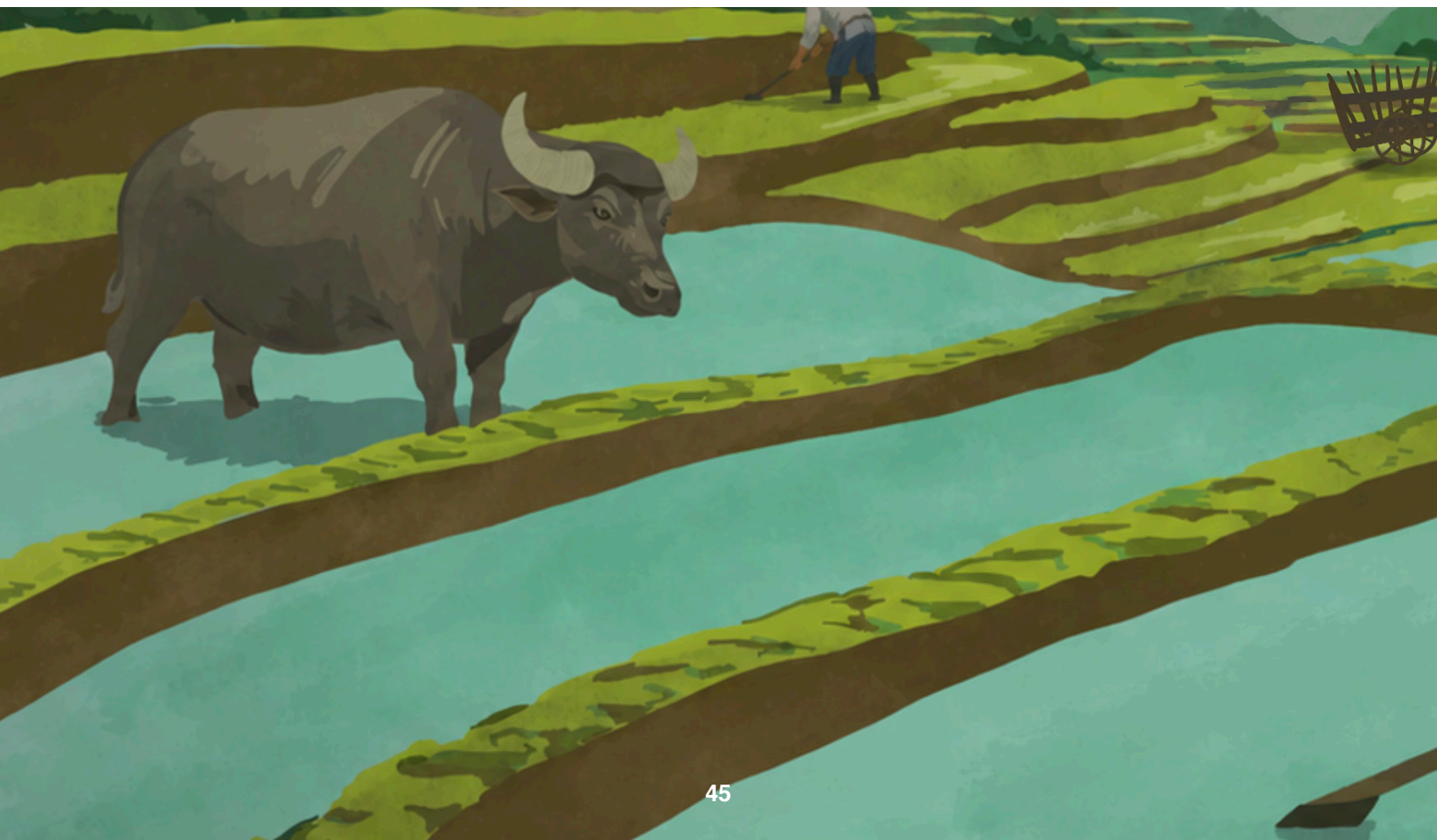
- Strengthen and support Fisheries and Aquatic Resources Management Councils (FARMCs) in all levels. Ensure the active participation of fisherfolk in decision-making, and advance transparent and accountable governance in all policies and programs on fisheries.
- Increase market support for small farmers, fisherfolk, and producers implementing agroecology. Initiatives that promote these products in the local market and raise awareness on existing agroecological practices should be recognized and replicated. Agroecological producers should also be given preferential trading to support local and regional food systems; therefore, the Rice Tariffication Law should be scrapped as local price production is strengthened.
- Provide appropriate (i.e., financial, technical, entrepreneurial) support to farmer- and fisherfolk-led organizations to strengthen food producer to food producer networks. Create platforms that give rise to collective learning and sectoral capacity building through the sharing of best practices and cooperation within the sector.
- Ensure meaningful and genuine participation of local communities and stakeholders in decision-making, primarily at the local level. Local sectoral participation must be invoked and take into account the right of sectors' representation, especially the marginalized and underrepresented, must be part of the creation and implementation of local ordinances. These would include policies and processes regarding just transition programs, including the management, restoration, and preservation of natural

resources.

- Increase access to social protection, esp. healthcare services, for people employed across the food system. Statistics have shown that agricultural, including slaughterhouse, workers lacked access to these services, including mental health issues. Policies and programs are needed to expand access to comprehensive healthcare and mental health support across the sector workers.
- Establish women-led participatory processes in food and agriculture spaces, particularly in the just transition process. The unique experiences and roles of women in agriculture (which were mostly regarded as ‘invisible and unimportant’) need to be strongly considered and acknowledged, both in policies and practices. There is an urgent need to address gender inequity in agriculture.
- Increase support for urban and sub-urban agriculture – this would involve the cultivation, processing, and distribution of agricultural products in urban and suburban areas. Achieving food security both in rural and urban areas would balance the just transition system.
- Provide support for collective learning and capacity building, such as farmer-to-farmer or fisher-to-fisher networks and platforms. Food producer-led democratic and community organizations with open, voluntary membership, are instrumental in fostering inclusion, knowledge sharing, capacity building and cooperation among food producers, researchers and policymakers.
- Increase support for community-driven and farmer-led economic models, such as food and land cooperatives, which operate for the benefit of their members instead of outside investors or corporate interests. Cooperatives help create shared resources and prosperity among its members.

Public education

- Create public education initiatives to build support for agroecology and related practices. Government agencies should work with healthcare professionals and institutions to develop education and outreach programs to increase public knowledge on the health benefits of agroecologically-produced products for people, animals and the planet. Elevating traditional regional foods can strengthen community buy-in



for dietary shifts while improving public health.

- Public education should also emphasise the benefits and process of agroecology, its best practices, as a tool for increasing and climate resilience.
- Engage/Involve veterinarian and animal professionals in promoting welfare of agricultural animals to support food security.
- Mandate food production manufacturers to indicate food items that practice and uphold agroecological principles to enhance public understanding of their impacts. Studies have shown that informing consumers by using on-package labels influence their purchasing decisions.

Lever 3: Policies to shift towards diets within planetary and social boundaries

Financial justice

- Increase access to food by addressing the mismatch of wages and soaring commodity prices. As primary food producers, agricultural workers' demand for decent living and working standards have been a steady concern to ensure continued production of the basic commodities.
- Invest in programmes to bring back ancient crops, increase access to seeds, and support seed banks.
- Incentivise farmers' markets to increase availability of fresh food and ensure food sovereignty. National and local governments can support the establishment of farmers markets, particularly in low-access areas, to increase the availability of fresh food and incentivise the participation of marginalised food producers to increase their access to markets and their ability to sell in their own communities. Nutrition assistance benefit programmes must also be expanded and strengthened in the context of farmers markets and local food systems.
- Incentivise the practice of healthy diets within planetary and social boundaries. The Philippine



government can encourage purchases of fresh fruit and vegetables and plant-based proteins through programmes that increase the price parity and affordability of plant-based foods, increase available funds for these foods in assistance programmes, and provide grants for innovative programmes such as produce prescriptions. Governments can also use their own purchasing power through procurement programmes that focus on plant-based foods.

Accountability and governance

- Integrate food and nutrition security in development goals and outcomes. Diets within planetary and social boundaries advance food and nutrition security while improving public health, mitigating pollution, and increasing community resilience. Overall, these help achieve meeting several sustainable development goals or SDGs.
- Hold corporations accountable for overproduction and food waste.

Dietary guidance and procurement

- Update national, state, and municipal government procurement policies to emphasise diets within planetary and social boundaries, promote a reduction in food waste, and purchase culturally-appropriate and regional and seasonal foods.
- Update policies governing procurement programs to support the prioritization of sourcing from producers with strong worker protection agreements, high environmental protection, and animal welfare standards in place.
- Provide ample government funding and appropriate technical assistance to help agricultural-oriented institutions that support the shift towards culturally-appropriate and plant-centered food service.
- Promote and encourage the consumption of foods that are grown locally and produced using agroecological practices.

Public education

- Promote local, traditional, seasonal, and sustainable food. Local food, rooted in cultural identity and heritage, and tied to a specific origin, plays a key role in strengthening the sustainability of local food systems if it is preserved and granted better market access. Protein sources should also be diversified to include plant-based options.
- Increase public access to education and information on nutrition by undertaking public education initiatives to raise awareness on the need to shift to diets within planetary boundaries, and to reconnect or strengthen traditional foodways.
- Engage and include health and nutrition professionals and experts in promoting healthy diets and food consumption within planetary and social boundaries. Protein sources should also be diversified to include plant-based options.
- Expand environmental and nutrition education programs especially in schools where students are given options or choices on healthy and nutritious meals.
- Mandate the inclusion of environmental-impact labels in the packaging of food products.

References

- ¹ La Via Campesina, “Agroecology, a Way of Life, Struggle, and Resistance against Capitalism! I Via Campesina,” - *EN*, October 17, 2017, <https://viacampesina.org/en/2017/10/agroecology-way-life-struggle-resistance-capitalism/>.
- ² The Philippine Fisheries Code of 1998, Pub. L. No. Republic Act No. 8550 (1998), https://lawphil.net/statutes/repacts/ra1998/ra_8550_1998.html.
- ³ The Philippine Fisheries Code of 1998.
- ⁴ Animal Industry Development and Competitiveness Act, Pub. L. No. Republic Act No. 12308 (2025), https://lawphil.net/statutes/repacts/ra2025/ra_12308_2025.html.
- ⁵ Just Transition Alliance, *Just Transition Alliance Principles*, n.d., accessed March 11, 2026, <https://jtalliance.org/what-is-just-transition/>.
- ⁶ The Philippine Fisheries Code of 1998.
- ⁷ Animal Industry Development and Competitiveness Act.
- ⁸ Animal Industry Development and Competitiveness Act.
- ⁹ “Global Hunger Declines, but Rises in Africa and Western Asia: UN Report,” World Health Organization, July 28, 2025, <https://www.who.int/news/item/28-07-2025-global-hunger-declines-but-rises-in-africa-and-western-asia-un-report>.
- ¹⁰ Philip McMichael, *Food Regimes and Agrarian Questions*, Agrarian Change and Peasant Studies 3 (Fernwood Publishing, 2013).
- ¹¹ M. Crippa et al., “Food Systems Are Responsible for a Third of Global Anthropogenic GHG Emissions,” *Nature Food* 2, no. 3 (2021): 198–209, <https://doi.org/10.1038/s43016-021-00225-9>.
- ¹² Crippa, M., Guizzardi, D., Pagani, F., Banja, M., Muntean, M. et al., *GHG Emissions of All World Countries: 2025*. (Publications Office of the European Union, 2025), <https://doi.org/10.2760/9816914>.
- ¹³ Crippa, M., Guizzardi, D., Pagani, F., Banja, M., Muntean, M. et al., *GHG Emissions of All World Countries*.
- ¹⁴ Crippa, M., Guizzardi, D., Pagani, F., Banja, M., Muntean, M. et al., *GHG Emissions of All World Countries*.
- ¹⁵ IPES-Food, *Fuel to Fork: What Will It Take to Get Fossil Fuels out of Our Food Systems?* (2025), <https://ipes-food.org/wp-content/uploads/2025/06/FuelToFork.pdf>.
- ¹⁶ *Strait of Hormuz Disruptions: Implications for Global Trade and Development* (United Nations Conference on Trade and Development, 2026), https://unctad.org/system/files/official-document/osgtinf2026d1_en.pdf.
- ¹⁷ Philippine Statistics Authority, “Livestock: Volume of Production by Animal Type, Region and Quarter, 2000-2025,” January 26, 2026, openstat.psa.gov.ph.
- ¹⁸ Philippine Statistics Authority, “Fisheries: Volume of Production by Species, Geolocation, Year and Quarter,” January 24, 2026, openstat.psa.gov.ph.
- ¹⁹ Philippine Statistics Authority, “Palay and Corn: Volume of Production in Metric Tons by Ecosystem/Croptype, Quarter, Semester, Region and Province, 1987-2025,” January 21, 2026, openstat.psa.gov.ph.
- ²⁰ Joey A. Gabieta, “Abuyog, Leyte Farmers’ Group Seeks Urgent Gov’t Aid amid Oil Price Hikes,” *INQUIRER.Net*, March 28, 2026, <https://newsinfo.inquirer.net/2202905/abuyog-leyte-farmers-group-seeks-urgent-govt-aid-amid-oil-price-hikes>.
- ²¹ International Panel on Climate Change, “Summary for Policymakers,” in *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (Eds.)]* (IPCC, 2023), https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf.
- ²² Food and Agriculture Organization et al., *The State of Food Security and Nutrition in the World 2025: Addressing High Food Price Inflation for Food Security and Nutrition*, The State of Food Security and Nutrition in the World (SOFI) 2025 (FAO, 2025).
- ²³ Krishna Bahadur Kc et al., “When Too Much Isn’t Enough: Does Current Food Production Meet Global Nutritional Needs?,” *PLOS ONE* 13, no. 10 (2018): e0205683, <https://doi.org/10.1371/journal.pone.0205683>.
- ²⁴ Emily S. Cassidy et al., “Redefining Agricultural Yields: From Tonnes to People Nourished per Hectare,” *Environmental Research Letters* 8, no. 3 (2013): 034015, <https://doi.org/10.1088/1748-9326/8/3/034015>.
- ²⁵ *The State of Food Security and Nutrition in the World 2025* (FAO; IFAD; UNICEF; WFP; WHO, 2025), <https://doi.org/10.4060/cd6008en>.
- ²⁶ Ichwandiani and Hassan (2025). “Industry Analysis: Agriculture in Philippines”. ARC BCS ID: BCS010. <https://asb.edu.my/faculty/research-publication-database/> Kuala Lumpur: Asia School of Business.
- ²⁷ Maenen, “Contesting Neoliberal Hegemony in a Food Security’s Paradigm: A Case Study of Agricultural Approaches and Opposition in the Philippines.” (MSc Thesis, Wageningen University - Department of Social Sciences, 2016), <https://edepot.wur.nl/386656>.
- ²⁸ Scott Slater et al., “How Has the Global Food Governance System Evolved, and What Challenges Does It Currently Pose for Food Systems Transformation? A Narrative Review and Synthesis of the Literature,” *Globalization and Health* 22, no. 1 (2026): 17, <https://doi.org/10.1186/s12992-025-01172-x>.
- ²⁹ Robert F. Jr. Chandler, *An Adventure in Applied Science: A History of the International Rice Research Institute*, with International Rice Research Institute (IRRI, 1992).
- ³⁰ Patricio N. Abinales and Donna J. Amoroso, *State and Society in the Philippines*, State and Society in East Asia Series (Rowman & Littlefield Publishers, 2005).
- ³¹ Ed Tadem, “How Marcos Undermined Philippine Agriculture and Marginalized Further the Peasantry,” UP-Center for Integrative and Development Studies, 2022, <https://cids.up.edu.ph/wp-content/uploads/2022/04/Tadem.-2022-How-Marcos-undermined-PH-agriculture-1.pdf>.
- ³² Henk Hobbelink, *Biotechnology and the Future of World Agriculture* (Zed Books, 1989).
- ³³ Maenen, “Contesting Neoliberal Hegemony in a Food Security’s Paradigm: A Case Study of Agricultural Approaches and Opposition in the Philippines.”
- ³⁴ Slater et al., “How Has the Global Food Governance System Evolved, and What Challenges Does It Currently Pose for Food

Systems Transformation?”

³⁵ Tadem, “How Marcos Undermined Philippine Agriculture and Marginalized Further the Peasantry.”

³⁶ Maenen, “Contesting Neoliberal Hegemony in a Food Security’s Paradigm: A Case Study of Agricultural Approaches and Opposition in the Philippines.”

³⁷ World Bank, “Agricultural Land (% of Land Area) - Philippines,” n.d., <https://data.worldbank.org/indicator/AG.LND.AGRI.ZS?locations=PH>.

³⁸ Statistics Authority, “International Merchandise Trade Statistics of the Philippines for Agricultural Commodities, 2024,” March 27, 2025, <https://psa.gov.ph/statistics/agricultural-export-import/annual>.

³⁹ Andre Christopher Alampay, “Agriculture Trade Deficit Widens 4.9% in July to \$929.78 Million,” *BusinessWorld*, September 2, 2025, <https://www.bworldonline.com/economy/2025/09/02/695402/agriculture-trade-deficit-widens-4-9-in-july-to-929-78-million/>.

⁴⁰ de Guzman, Zamora, and Bernardo (2015). Diversified and Integrated Farming Systems (DIFS): Philippine Experiences for Improved Livelihood and Nutrition. *Journal of Developments in Sustainable Agriculture* 10: 19-33.

⁴¹ Philippine Statistics Authority, “Self-Sufficiency Ratio (SSR) of Selected Agricultural Commodities, 2024,” September 26, 2025.

⁴² Philippine Statistics Authority, “Volume of Crops Production by Commodity, Philippines April to June 2023 – 2025,” August 6, 2025, https://psa.gov.ph/system/files/fsd/Volume%20of%20Production%20of%20Agriculture%20and%20Fisheries%2C%20April%20to%20June%202025_0.pdf.

⁴³ Philippine Statistics Authority, “Self-Sufficiency Ratio (SSR) of Selected Agricultural Commodities, 2024.”

⁴⁴ Cathy Estavillo, “The Onslaught of the Rice Tariffication Law and the Current Rice Crisis,” paper presented at Save Our Rice! Resist Agrochemical TNCs! The Peoples’ Conference Against Corporate Onslaught on Rice and Food, October 17, 2023, <https://cids.up.edu.ph/wp-content/uploads/2024/10/Save-Our-Rice-Resist-Agrochemical-TNCs-04222025.pdf>.

⁴⁵ Justine Irish Tabile, “Farmer Land Ownership Rate Only 21.8%, Agriculture Census Finds,” *BusinessWorld*, January 2, 2025, <https://www.bworldonline.com/economy/2025/01/02/644547/farmer-land-ownership-rate-only-21-8-agriculture-census-finds/>.

⁴⁶ Lorenz Bachmann et al., *Food Security and Farmer Empowerment: A Study of the Impacts of Farmer-Led Sustainable Agriculture in the Philippines* (Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG), 2009), <https://masipag.org/wp-content/uploads/2024/01/Food-Security-and-Farmer-Empowerment.pdf>.

⁴⁷ Lovella Guarin, “Bicol’s High Value Crops Grow by as High as 13% in the First Half of 2020,” Department of Agriculture RFO 5, September 2, 2020, <https://bicol.da.gov.ph/bicols-high-value-crops-grow-by-as-high-as-13-in-the-first-half-of-2020/>.

⁴⁸ “Agricultural Profile,” Department of Agriculture Regional Field Office - Eastern Visayas, <https://easternvisayas.da.gov.ph/regional-profile/>.

⁴⁹ “Agricultural and Agrarian Reform,” Regional Statistics Committee Region VI - Western Visayas, <https://rsc6.gov.ph/statistics/economic-statistics/agricultural-and-agrarian-reform/>.

⁵⁰ Philippine Statistics Authority, “Self-Sufficiency Ratio (SSR) of Selected Agricultural Commodities, 2024.”

⁵¹ Philippine Statistics Authority, “Volume of Livestock and Poultry Production by Commodity, Philippines April to June 2023 – 2025,” August 6, 2025, https://psa.gov.ph/system/files/fsd/Volume%20of%20Production%20of%20Agriculture%20and%20Fisheries%2C%20April%20to%20June%202025_0.pdf.

⁵² *Volume (Kgs) of Meat and Meat Products Importation Arrivals in the Philippines from Jan to Dec 2025 per Origin* (Department of Agriculture - Bureau of Animal Industry, 2025), <https://www.bai.gov.ph/Reports/PreviewFile?Id=110&num=16>.

⁵³ Philippine Statistics Authority, “Livestock: Inventory by Animal Type, Classification, Province, and Quarter, 2010-2026,” January 27, 2026, openstat.psa.gov.ph.

⁵⁴ Philippine Statistics Authority, “Ducks: Inventory by Type, Classification, Province, and Quarter, 2010-2026,” January 27, 2026, openstat.psa.gov.ph.

⁵⁵ Philippine Statistics Authority, “Chicken: Inventory by Type, Classification, Province, and Quarter, 2010-2026,” January 27, 2026, openstat.psa.gov.ph.

⁵⁶ Philippine Statistics Authority, “Livestock: Inventory by Animal Type, Classification, Province, and Quarter, 2010-2026”; Philippine Statistics Authority, “Ducks: Inventory by Type, Classification, Province, and Quarter, 2010-2026”; Philippine Statistics Authority, “Chicken: Inventory by Type, Classification, Province, and Quarter, 2010-2026.”

⁵⁷ Cenon Elca et al., “Competition Issues in the Chicken Meat, Chicken Egg, and Pork Markets of the Philippines,” *Journal of Public Affairs and Development* 5 (2018): 1–33.

⁵⁸ “Fisheries Country Profile: Philippines 2025,” Southeast Asian Fisheries Development Council, 2025, <https://www.seafdec.org/fisheries-country-profile-philippines/>.

⁵⁹ DA-BFAR, “2025 Quarterly Fisheries Industry Performance: 1st Quarter,” Department of Agriculture - Bureau of Fisheries and Aquatic Resources, 2025, <https://www.bfar.da.gov.ph/2021-fisheries-industry-performance-1st-2nd-3rd-and-4th-quarter/>.

⁶⁰ Philippine Statistics Authority, “Fisheries: Volume of Production by Geolocation, Subsector, Year and Quarter,” 2026, openstat.psa.gov.ph.

⁶¹ Maritime Industry Authority, “Top 50 Companies (By Number of Vessels), as of December 2015,” 2015, https://marina.gov.ph/wp-content/uploads/2018/07/top50companies_number.pdf.

⁶² Mavic Conde, “Billions for Commercial Tuna Industry, Crumbs for Fisherfolk,” *Bulatlat*, March 24, 2024, <https://www.bulatlat.com/2024/03/25/billions-for-commercial-tuna-industry-crumbs-for-fisherfolk/>.

⁶³ The Philippine Fisheries Code of 1998.

⁶⁴ Philippine Statistics Authority, “Fisheries: Volume of Production by Geolocation, Subsector, Year and Quarter.”

⁶⁵ Alice Joan Ferrer et al., *Philippine Fisheries Assessment: A Glimpse of RA 10654’S 10-Year Implementation* (Oceana, 2025), <https://ph.oceana.org/wp-content/uploads/sites/16/2026/02/Philippine-Fisheries-Assessment.pdf>.

⁶⁶ DA-BFAR, *Philippine IUU Fishing Assessment and Report 2023* (Department of Agriculture- Bureau of Fisheries and Aquatic Resources (DA-BFAR), 2024), <https://www.bfar.da.gov.ph/wp-content/uploads/2024/11/Philippine-IUU-Fishing-Assessment-Report->

2023-300dpi.pdf.

⁶⁷ Jheset O. Enano, "Foreign Fishing Vessels Crowd PH Waters," *Philippine Daily Inquirer*, July 5, 2019, <https://globalnation.inquirer.net/177516/foreign-fishing-vessels-crowd-ph-waters>.

⁶⁸ Understood to be Filipino or primarily (at least 60%) Filipino-owned companies, as the Philippine Fisheries Code of 1998 declares it "unlawful for any foreign person, corporation, or entity to fish or operate any fishing vessel in Philippine waters." Further information to determine the extent of foreign co-ownership and other linkages, such as corporate financing, is not currently available at the time of writing; IUU however also remains a pertinent threat.

⁶⁹ Joel San Juan and Jonathan Mayuga, "Municipal Governments Join Groups vs Ruling Favoring Big Fishers," *BusinessMirror*, January 3, 2025, <https://businessmirror.com.ph/2025/01/03/municipal-governments-join-groups-vs-ruling-favoring-big-fishers/>.

⁷⁰ Philippine Statistics Authority, "Gross National Income and Gross Domestic Product, by Industry, Percent Share to GDP and GNI," April 3, 2025, openstat.psa.gov.ph.

⁷¹ Department of Agriculture, *2024 Annual Report* (2024).

⁷² Philippine Statistics Authority, "Poverty Incidence among the Basic Sectors (in Percent): 2018, 2021, and 2023," March 31, 2025, <https://psa.gov.ph/statistics/poverty>.

⁷³ Philippine Statistics Authority, "Average Daily Basic Pay of Wage and Salary Workers by Major Industry Group, Philippines: 2016 to July 2025 (in PhP) by Major Industry Group, Year and Quarter," October 1, 2025, openstat.psa.gov.ph.

⁷⁴ Ibid.

⁷⁵ Magdalena Casuga, "An Overview of the State of Agricultural Credit in the Philippines," paper presented at ACPC Policy Forum, *The 2020 State of Agricultural Financing in the Philippines*, 2021, <https://acpc.gov.ph/wp-content/uploads/POLICY-FORUM.pdf>.

⁷⁶ October 2025 focused group discussion organized by CEED.

⁷⁷ Jane Lynn Capacio et al., "Bridging the Agriculture Credit Gap: A Case Study of the Farmer Entrepreneurship Program of Jollibee Group Foundation," *Philippine Journal of Public Policy: Interdisciplinary Development Perspectives* 2021 (2022), <https://doi.org/10.54096/AZCZ1645>.

⁷⁸ Pam Pascual, "New Law Sets ₱200-B Fund to Strengthen PH Livestock, Dairy, and Poultry Industries," *Agriculture Monthly*, October 4, 2025, <https://agriculture.com.ph/2025/10/04/new-law-sets-%e2%82%b1200-b-fund-to-strengthen-ph-livestock-dairy-and-poultry-industries/>.

⁷⁹ Ted Cordero, "PSA: Farm Lands Shrank in Past Decades," *GMA News Online*, August 30, 2023, <https://www.gmanetwork.com/news/money/economy/880525/psa-farm-lands-shrank-in-past-decades/story/>.

⁸⁰ Bachmann et al., *Food Security and Farmer Empowerment: A Study of the Impacts of Farmer-Led Sustainable Agriculture in the Philippines*.

⁸¹ Cielito Habelito, "Small Farms, Large Farms," *Philippine Daily Inquirer*, May 29, 2020, <https://opinion.inquirer.net/130246/small-farms-large-farms>.

⁸² *Top 10 Agribusiness Giants: Corporate Concentration in Food & Farming in 2025* (ETC Group & GRAIN, 2025), https://www.etcgroup.org/sites/www.etcgroup.org/files/files/top_10_agribusiness_giants.pdf.

⁸³ *2024 Annual Report* (DA - Bureau of Animal Industry - Fertilizer and Pesticide Authority, 2024).

⁸⁴ *Top 10 Agribusiness Giants: Corporate Concentration in Food & Farming in 2025*, 10.

⁸⁵ Kubota Corporation, "Joint Demonstration Project to Reduce Methane Emissions from Paddy Fields in the Philippines | News 2024," Kubota Global Site, accessed March 12, 2026, <https://www.kubota.com/news/2024/20240228.html>.

⁸⁶ *Food Barons 2022. Crisis Profiteering, Digitalization and Shifting Power* (ETC Group, 2022), https://www.etcgroup.org/files/files/food-barons-2022-full_sectors-final_16_sept.pdf.

⁸⁷ Lourdes Pilar, "Philippines' Top 1,000 Firms Post P17.8 Trillion in Revenues in 2023," *BusinessWorld Online*, January 6, 2025, <https://www.bworldonline.com/top-stories/2025/01/06/644764/philippines-top-1000-firms-post-p17-8-trillion-in-revenues-in-2023/>.

⁸⁸ Elca et al., "Competition Issues in the Chicken Meat, Chicken Egg, and Pork Markets of the Philippines."

⁸⁹ "BIZ BUZZ: San Miguel mega poultry plant," *Philippine Daily Inquirer*, October 12,

⁹⁰ Richmond Mercurio, "SMC eyes more mega farms to boost Philippines poultry production," *Philippine Star*, September 10, 2024.

⁹¹ San Miguel Corporation Annual Report 2025.

⁹² Susan J. Kraham, "Environmental Impacts of Industrial Livestock Production," in *International Farm Animal, Wildlife and Food Safety Law*, ed. Gabriela Steier and Kiran K. Patel (Springer International Publishing, 2017), https://doi.org/10.1007/978-3-319-18002-1_1.

⁹³ Maria Angeles Catelo et al., *Structural Changes in the Philippine Pig Industry and Their Environmental Implications*, IFPRI Discussion Paper 00781 (International Food Policy Research Institute, 2008).

⁹⁴ Catelo et al., *Structural Changes in the Philippine Pig Industry and Their Environmental Implications*.

⁹⁵ A. D. Calub et al., *An Overview of Agricultural Pollution in the Philippines: The Livestock Sector*. (Prepared for the World Bank, 2016), <https://documents1.worldbank.org/curated/en/640711516770288512/pdf/122930-WP-P153343-PUBLIC-Philippines-Livestock.pdf>.

⁹⁶ Ma. Angeles Catelo et al., *Backyard and Commercial Piggeries in the Philippines: Environmental Consequences and Pollution Control Options*, EEPSEA Research Report 2001-RR6 (International Development Research Centre, 2001), <https://doi.org/10.13140/RG.2.2.26210.89288>.

⁹⁷ Catelo et al., *Backyard and Commercial Piggeries in the Philippines: Environmental Consequences and Pollution Control Options*.

⁹⁸ *White Paper: The Just Transition from industrial Animal Production to Equitable, Humane, and Sustainable Food Systems* (Center for Biological Diversity, World Animal Protection, Global Forest Coalition, Brighter Green, Aquatic Life Institute, 2024), https://www.biologicaldiversity.org/programs/population_and_sustainability/pdfs/a_just_transition_white_paper_final.pdf.

⁹⁹ Charmaine Ng et al., "Antibiotic Resistance in the Philippines: Environmental Reservoirs, Spillovers, and One-Health Research Gaps," *Frontiers in Microbiology* 16 (December 2025), <https://doi.org/10.3389/fmicb.2025.1711400>.

¹⁰⁰ Catelo et al., *Backyard and Commercial Piggeries in the Philippines: Environmental Consequences and Pollution Control Options*.

¹⁰¹ Calub et al., *An Overview of Agricultural Pollution in the Philippines: The Livestock Sector*.

- ¹⁰² Antonio Alcantara et al., “GIS-Aided Animal Production Impacts Analysis on the Environment in Laguna Province,” *ResearchGate* 11, no. 2 (2008): 42–57.
- ¹⁰³ Calub et al., *An Overview of Agricultural Pollution in the Philippines: The Livestock Sector*.
- ¹⁰⁴ Andrea Monica D. Ortiz and Justine Nicole V. Torres, “Assessing the Impacts of Agriculture and Its Trade on Philippine Biodiversity,” *Land* 9, no. 11 (2020): 403, <https://doi.org/10.3390/land9110403>.
- ¹⁰⁵ *Socio-Economic Impacts of Genetically Modified Corn in the Philippines* (Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura, 2013), <https://masipag.org/wp-content/uploads/2013/05/MASIPAG-Book-low-res.pdf>.
- ¹⁰⁶ Michelle Ann A. Ruiz et al., *Exploring Innovative Approaches To Address Labor Exploitation In The Fishery Supply Chain: The Case Of The Tuna Industry In The Philippines*, Working Paper (Department of Labor and Employment – Institute for Labor Studies, 2024), <https://ils.dole.gov.ph/2023-research-papers/exploring-innovative-approaches-to-address-labor-exploitation-in-the-fishery-supply-chain-the-case-of-the-tuna-industry-in-the-philippines>.
- ¹⁰⁷ Conde, “Billions for Commercial Tuna Industry, Crumbs for Fisherfolk.”
- ¹⁰⁸ *Bananas and Bullets: A Special Report on the Struggle of Banana Workers in Sumifru in Compostela* (Center for Trade Union and Human Rights, 2018), <https://ctuhr.org/wp-content/uploads/2018/11/BANANAS-AND-BULLETS.pdf>.
- ¹⁰⁹ *Fish Welfare Study in the Philippines: The Gap Analysis* (Animal Kingdom Foundation Inc., n.d.), accessed March 27, 2026, https://a82e4c59-f998-4eb0-8508-99d13601e6a8.filesusr.com/ugd/99cb8a_a99015fab0624d17a65524d75f688d05.pdf?index=true.
- ¹¹⁰ Ethel C. Wagas et al., *Fish Welfare Scoping Report: The Philippines* (Fish Welfare Initiative, 2020), https://files.fwi.fish/Philippines_Scoping_Report.pdf.
- ¹¹¹ “Farm Animals • The Philippine Animal Welfare Society,” The Philippine Animal Welfare Society, August 11, 2023, <https://paws.org.ph/farm-animals/>.
- ¹¹² “9.77 Million Pigs in Backyard Farms in the Philippines,” Asia Farming Solutions, accessed March 30, 2026, <https://www.asiafarmingolutions.org/our-campaigns>.
- ¹¹³ Abigail Omaña, “DOST-FNRI Unveils 2023 Filipinos State of Health and Nutrition,” *Dost.Gov.Ph*, July 3, 2025, <https://www.dost.gov.ph/knowledge-resources/news/86-2025-news/4067-dost-fnri-unveils-2023-filipinos-state-of-health-and-nutrition.html>.
- ¹¹⁴ Philippine Statistics Authority, “Food Balance Sheets of the Philippines,” June 2023, https://psa.gov.ph/system/files/aad/%28ons-cleared%29_2.%20FBS%202020-2022%20Report_ONSF-signed_0.pdf.
- ¹¹⁵ MRAG Asia Pacific, *The State of Fish in Nutrition Systems in the Philippines* (2022), https://fnri.dost.gov.ph/images/images/publication/MRAG-AP_State-of-FINS-PH.pdf.
- ¹¹⁶ Omaña, “DOST-FNRI Unveils 2023 Filipinos State of Health and Nutrition.”
- ¹¹⁷ “Per Capita Meat and Fish Consumption, 2023,” Our World in Data, n.d., accessed March 26, 2026, <https://ourworldindata.org/grapher/per-capita-meat-type>.
- ¹¹⁸ Omaña, “DOST-FNRI Unveils 2023 Filipinos State of Health and Nutrition.”
- ¹¹⁹ Jordeene B. Lagare, “Meat Imports up 50% as PH Battles Animal Diseases,” *Philippine Daily Inquirer*, March 17, 2025, <https://business.inquirer.net/513286/meat-imports-up-50-as-ph-battles-animal-diseases>.
- ¹²⁰ Roberto Umali, “Updated List of Accredited Countries and Foreign Meat Establishments Approved to Export Meat to the Philippines (As of May 1, 2025),” Memorandum, DA - National Meat Inspection Service, May 6, 2025, https://www.nmis.gov.ph/images/pdf/accredited_list/2025/fme20250507.pdf.
- ¹²¹ Ministry of Health of the Philippines, *Prevention and Control of Noncommunicable Diseases in the Philippines. The Case for Investment, Philippines, 2019*, WHO/UHC/CDS-NCD/19.90 (World Health Organization & United Nations Development Programme, 2019), <https://www.who.int/docs/default-source/wpro---documents/countries/philippines/reports/prevention-and-control-of-noncommunicable-diseases-in-the-philippines---the-case-for-investment.pdf>.
- ¹²² *The Market for Highly Processed Food and Drink: Driving Children’s Diets* (United Nations Children’s Fund, 2021), <https://www.unicef.org/philippines/reports/market-highly-processed-food-and-drink-driving-childrens-diets-philippines>.
- ¹²³ “Stronger Food Policies Needed to Combat Obesity in the Philippines,” World Health Organization, 2025, <https://www.who.int/philippines/news/detail/04-03-2025-stronger-food-policies-needed-to-combat-obesity-in-the-philippines>.
- ¹²⁴ Omaña, “DOST-FNRI Unveils 2023 Filipinos State of Health and Nutrition.”
- ¹²⁵ World Health Organization, “NCD Data Portal,” <https://ncdportal.org/CountryProfile/GHE110/PHL#risk-factor3>.
- ¹²⁶ Johan Rockström et al., “The EAT–Lancet Commission on Healthy, Sustainable, and Just Food Systems,” *The Lancet* 406, no. 10512 (2025): 1625–700, [https://doi.org/10.1016/S0140-6736\(25\)01201-2](https://doi.org/10.1016/S0140-6736(25)01201-2).
- ¹²⁷ Rockström et al., “The EAT–Lancet Commission on Healthy, Sustainable, and Just Food Systems.”
- ¹²⁸ *2023 National Nutrition Survey: Overview and Methodology* (DOST FNRI, 2025), https://enutrition.fnri.dost.gov.ph/uploads/2024%20National%20Nutrition%20Summit_Part%202.pdf.
- ¹²⁹ *2023 National Nutrition Survey: Overview and Methodology*.
- ¹³⁰ *2023 National Nutrition Survey: Overview and Methodology*.
- ¹³¹ *2023 National Nutrition Survey: Overview and Methodology*.
- ¹³² Philippine Statistics Authority, “Prevalence of Moderate or Severe Food Insecurity among Household (Based on the Food Insecurity Experience Scale),” February 27, 2025, openstat.psa.gov.ph.
- ¹³³ James Patrick Cruz, “Hunger among Filipinos Rises to 27.2%, Highest since Pandemic – Survey,” *Rappler*, March 29, 2025, <https://www.rappler.com/philippines/hunger-highest-level-since-september-2020-pandemic-sws-survey-march-2025/>.
- ¹³⁴ *Roots of Resistance: Documenting the Global Struggles of Defenders Protecting Land and Environmental Rights* (Global Witness, n.d.), accessed March 12, 2026, <https://globalwitness.org/en/campaigns/land-and-environmental-defenders/roots-of-resistance/>.
- ¹³⁵ Ada Pelonia, “Farm Trade Gap Narrows 26.9% to \$668.35M | Ada Pelonia,” *BusinessMirror*, February 3, 2026, <https://businessmirror.com.ph/2026/02/03/farm-trade-gap-narrows-26-9-to-668-35m/>.
- ¹³⁶ As reflected by participants in FGDs and convenings organized for purposes of this report.

- ¹³⁷ Michael A. Clark et al., “Global Food System Emissions Could Preclude Achieving the 1.5° and 2°C Climate Change Targets,” *Science* 370, no. 6517 (2020): 705–8, <https://doi.org/10.1126/science.aba7357>.
- ¹³⁸ Teresa Anderson and Maria Ron Balsera, “Principles for a Just Transition in Agriculture,” Action Aid, December 2019, https://actionaid.org/sites/default/files/publications/Principles%20for%20a%20just%20transition%20in%20agriculture_0.pdf.
- ¹³⁹ As defined by La Via Campesina. See The Just Transition from Industrial Animal Production to Equitable, Humane and Sustainable Food Systems.
- ¹⁴⁰ Maghirang RG, De La Cruz RD, and Villareal RL. 2011. “How sustainable is organic agriculture in the Philippines?” *Transactions NAST PHL* 33(2): 289-321. doi. org/10.57043/transnastphl.2011.3765
- ¹⁴¹ Maghirang RG, et al. “How sustainable is organic agriculture in the Philippines?”
- ¹⁴² Lucille Elna Parreño-de Guzman, Oscar B. Zamora, and Dora Fe H. Bernardo (2015). Diversified and Integrated Farming Systems (DIFS): Philippine Experiences for Improved Livelihood and Nutrition. *Journal of Developments in Sustainable Agriculture* 10: 19-33.
- ¹⁴³ Maghirang RG, et al. “How sustainable is organic agriculture in the Philippines?”
- ¹⁴⁴ Profiles on Agroecology: Integrated Diversified Organic Farming System
- ¹⁴⁵ IPES-Food, *Fuel to Fork: What Will It Take to Get Fossil Fuels out of Our Food Systems?* (2025), <https://ipes-food.org/wp-content/uploads/2025/06/FuelToFork.pdf>.
- ¹⁴⁶ Angela Scafidi and Haley Leslie-Bole, “Increased Biofuel Production in the US Midwest May Harm Farmers and the Climate,” World Resources Institute, June 10, 2025, <https://www.wri.org/insights/increased-biofuel-production-impacts-climate-change-farmers>.
- ¹⁴⁷ “The Evidence Is Clear: The Time for Action Is Now. We Can Halve Emissions by 2030. — IPCC,” The Intergovernmental Panel on Climate Change, accessed March 12, 2026, <https://www.ipcc.ch/2022/04/04/ipcc-ar6-wgiii-pressrelease/>.
- ¹⁴⁸ Hanieh, Adam. “The coming global food crisis,” *The Financial Times* (April 2026), <https://www.ft.com/content/36343e24-b06f-434d-a7e5-6046e7bcb3df>.
- ¹⁴⁹ Carpenter, Kent and Springer, Victor. “The center of the center of marine shore fish biodiversity: The Philippine Islands,” *Environmental Biology of Fishes* 467-480. https://www.researchgate.net/publication/227112122_The_center_of_the_center_of_marine_shore_fish_biodiversity_The_Philippine_Islands
- ¹⁵⁰ James Somoza Barandino, Hong-Yeon Cho (2023). “Oil Spill in the Philippines: Its Impact, Response, Practices, and Challenges.” *International Journal of Science, Engineering and Management (IJSEM)* Vol 10, Issue 10, October 2023. ISSN (Online) 2456 -1304.
- ¹⁵¹ James Somoza Barandino, Hong-Yeon Cho (2023). “Oil Spill in the Philippines: Its Impact, Response, Practices, and Challenges.”
- ¹⁵² Rockström et al., “The EAT–Lancet Commission on Healthy, Sustainable, and Just Food Systems.”
- ¹⁵³ Center for Biological Diversity, World Animal Protection, Global Forest Coalition, Brighter Green, Aquatic Life Institute, “White Paper: The Just Transition from Industrial Animal Production to Equitable, Humane and Sustainable Food Systems,” 2024.

