

Fitting Food to Circumstances: Potential Contributions of Philippine Culinary Heritage to Disaster Risk Reduction

FELICE PRUDENTE STA. MARIA

INDEPENDENT RESEARCHER

Abstract

Cultural legacies include a society's emergency preparedness. Geological hazards such as the movement of the West Valley Fault will result in a metadisaster. Food security is fundamental to community resilience, a strategy for disaster risk reduction. Heritage food practices may contribute to food security during emergencies and disasters. Seasonal weather conditions and natural calamities have forced continuing developments in Philippine cuisine. Convenience foods, home and urban gardening, as well as food preservation continue to be altered appropriately to variations in societal anxieties, aspirations, and hopefully now, disaster preparedness.

Keywords: *community resilience, convenience food, disaster preparedness, food preservation, food security, urban gardening*

In times of disaster, food is essential to sustain life, counteract shock, raise the moral of evacuees and provide energy for workers laboring under stressful conditions.¹

Since prehistoric and colonial times, Philippine residents have conserved food to sustain them through droughts, floods and typhoons, invasions by locusts and giant worms, raids by slave raiders and pirates, colonial subscription under duress, predicaments of war, geological hazards, and pandemics such as cholera. Today, the Philippines is among the world's top disaster hot spots.² Contemporary emergencies, vulnerability to climate change and multiple hazards, as well as chronic hunger and malnutrition from unabated poverty prove the urgency to redesign food security strategies and sustainable action for them with disaster risk reduction in mind.

¹ Public Health Agency of Canada, Emergency Food Service: Planning for Disasters (Canada: Minister of Health, 2007), 13, <https://www.interiorhealth.ca/YourEnvironment/Emergency/MajorEvents/Documents/Emergency-Food-Services-Planning-for-Disasters.pdf>.

² H. Kit Miyamoto, *Forum on Safe and Resilient Infrastructure: Proceedings Report, October 1-2, 2013, Manila, Philippines* (Washington, DC: The World Bank, 2014), 10, <http://documents1.worldbank.org/curated/zh/107781468244547858/pdf/906440WP0P13100lient0Infrastructure.pdf>.

Disaster Risk Reduction

The eruption of Taal volcano and the spread of COVID-19 both in 2020 reveal the native desire for tastes of fresh food and home cooking during emergencies. Perhaps they offer comfort thereby abating and tempering psychological trauma. In both situations, emergency evacuation centers and quarantined or locked down neighborhoods received food and drinking water from local government units (LGUs), church organizations, NGOs, nearby businesses and charities. In many cases, daily cooking was possible. Electricity, running water, transportation, and communication services functioned in affected areas or nearby. Emergency rations were a combination of ingredients including fresh vegetables and rice to be cooked by recipients, freshly prepared meals, convenience food like instant noodles needing rehydration, and canned goods. Food lanes were kept functioning. Usually, local resources can handle emergencies that are short-term.

But disasters result in calamitous havoc far beyond what emergencies cause. The United Nations Office for Disaster Risk Reduction (UNDRR) defines disaster as “a serious disruption of the functioning of a community or society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability

of the affected community or society to cope with using its own resources.”³

Perhaps one of the most devastating disasters predicted for the future is the movement of the 100-kilometer-long West Valley Fault Line (or what I will refer to as the Fault) that runs across high-density Metro Manila with a daytime population of about 15 million persons.⁴ It is the center of Philippine government, business, and finance. The Fault is part of an interrelated system of faults that incorporates a 1,200-kilometer fault zone stretching from northwestern Luzon to Mindanao.⁵ Science-based modeling warns that buildings including residences and schools will collapse, roads will buckle, bridges will fall, port areas will sink from storm surges, fires will break out, internet facilities will fail along with other utilities, airports will be compromised, thousands of people will die or be wounded instantly, and widespread pandemonium will proliferate. Millions will be homeless immediately. The normal food delivery system will flounder, and foreign aid will not be able to sail or fly in at once. A return to normalcy

³ United Nations, Office for Outer Space Affairs, “Risks and Disasters,” UN-Spider Knowledge Portal, accessed August 7, 2020, <http://www.un-spider.org/risks-and-disasters>.

⁴ Manila City, a part of Metro Manila, “is the world’s most densely populated city with 42,857 people per square kilometer, or 111,002 people per square mile.” “Manila Population 2020,” World Population Review, accessed May 5, 2020, worldpopulationreview.com.

⁵ Ibid.

will require the rebuilding of basic infrastructures and thus cannot be immediate.⁶

In October 2019, the first simulation exercise focused on a 7.2 magnitude earthquake generated by the Fault, the government's emergency operations center was situated in New Clark City, Tarlac. Following predictions, it was presumed that Metro Manila, Calabarzon, and Central Luzon would be devastated.⁷

Since 1999, UNDRR (formerly United Nations International Strategy for Disaster Reduction, UNISDR) has been working with governments to analyze and manage causal factors of disasters that include exposure to hazards, vulnerability of people and property, management of land and the environment as well as preparedness for adverse effects. In addition to vulnerability and risk assessment, disaster reduction strategies include addressing social and

⁶ In under-resourced Haiti, the relief phases following the 2010 earthquake went into a second year. "It has endured even longer for the many Haitians who were living in vulnerable conditions even before the earthquake struck. . . . By contrast, the emergency relief phase lasted only a few months after the February 2011 earthquake in Chile because the country, being accustomed to earthquake activity, was better prepared to respond." United Methodist Committee on Relief, "Phases of Disaster Recovery: Emergency Response for the Long Term," April 30, 2013, accessed August 9, 2020, <https://reliefweb.int/report/world/phases-disaster-recovery-emergency-response-long-term>.

Permanent resettlement for evacuees is one post-disaster action. If the resettlement area is known ahead of time it can be prepared sustainably with growing food sources usable when evacuees move in.

⁷ Office of Civil Defense, "First Simulation Exercise for Top Government Officials in the Philippines and in ASEAN Region," accessed August 8, 2020, <https://ocd.gov.ph/news/568-1st-simulation-exercise-for-top-government-officials-in-the-philippines-and-in-asean-region.html>.

economic infrastructures, the use of early warning systems and the application of diverse types of scientific, technical, and other skilled abilities.⁸ The risk to disaster is reduced when the coping capacity of people, organizations, and systems is enhanced, coordinated, and resilient. Disaster is trans-disciplinary in nature and so are its solutions. Because disaster is a “societal commonality,” risk reduction requires multi-stakeholder participation as well as collaboration of civil society, the private sector, and the government.⁹ A decline in ecosystems and their regulation is another risk driver.¹⁰

Designed in tandem with a Disaster Risk Reduction (DRR) plan is a Disaster Risk Management (DRM) plan. The former is focused on a strategic level of management while the latter is the tactical and operational implementation of risk reduction.¹¹ DRR includes prevention, mitigation, preparedness, and early warning. DRM handles rescue, relief, rehabilitation, and reconstruction. Eradication of poverty is crucial to vulnerability reduction, although impoverished communities are observed to have inherent internal social and economic structures aiding their coping

⁸ United Nations International Strategy for Disaster Risk Reduction, *Disaster Risk Reduction in the United Nations: 2009 Roles, Mandates and Areas of Work of Key United Nations Entities* (2009), https://www.preventionweb.net/files/9866_DisasterRiskReductionintheUnitedNat.pdf; *United Nations International Strategy for Disaster Reduction (UNISDR) Secretariat Evaluation: Final Report* (Dalberg: Global Development Advisors, February 2, 2010), https://www.unisdr.org/files/12659_UNISDRevaluation2009finalreport.pdf.

⁹ Ibid.

¹⁰ United Nations, Office for Outer Space Affairs, “Risks and Disasters.”

¹¹ The World Bank, *Forum on Safe and Resilient Infrastructure*, 13–14.

capacity and resilience.¹² In urban settings, the lack of purchasing power to buy food, a constant challenge among the poor, adds to complications in the absence of food.¹³

Community Disaster Management Capacity

Updated scientific studies by the Philippine government, Japan International Cooperation Agency (JICA), the World Bank, and other institutions recommend “community resilience” as a fundamental strategy for disaster risk management. Community resilience is the continuous ability of a group or neighborhood to anticipate, prevent, respond to, withstand, and recover from adverse situations using available resources.¹⁴ It is the partner to structural resilience and retrofitting of the built-up environment. Community resilience foresees challenges and promotes adaptability to solve social needs when the hazard occurs and during immediate post-recovery. One challenge is food security.¹⁵

¹² The World Bank, *Forum on Safe and Resilient Infrastructure*, 11–12.

¹³ *Ibid.*, 17. As COVID-19 required extended or repeat community quarantines and even lockdowns, local governments were unable to feed everyone in need. People begging for food increased although this author has no statistical data on the concern.

¹⁴ Lee Boshier and Ksenia Chmutina, *Disaster Risk Reduction for the Built Environment* (New York: John Wiley & Sons, 2017), 32.

¹⁵ The Food and Agricultural Organization of the United Nations describes resilience as “protecting, restoring and improving livelihoods systems in the face of threats that impact agriculture, nutrition, food security and food safety.” “Building Resilience for Food Security and Nutrition,” FAO Regional Office for Near East and North Africa, accessed May 5, 2020, <http://www.fao.org/neareast/perspectives/building-resilience/en/>.

The United Nations defines food security as “all people, at all times, [have] physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life.”¹⁶ During emergencies, food security leaders coordinate four components: availability, access, utilization, and stability. Availability includes food produced in the challenged area; food stocked by sellers, producers, and the government; food traded through the market mechanism; and bulk transfers introduced by the government and aid agencies.

Households can access food through their own production; hunting, fishing, gathering of wild foods; purchases at shops; barter exchange; gifts from individuals and communities; safety net programs that transfer food from government and aid agencies. Food utilization refers to how households use accessed food for nutritional needs and the good health of household members. Stability prevents loss of food due to “sudden shocks or cyclical events.”¹⁷ The sustainable food supply during normal times and emergencies offers some support during disasters, especially as they stretch out and victims decide whether to evacuate or stay in the ravaged zone.

¹⁶ International Food Policy Research Institute (FPRI), “Food Security,” accessed May 5, 2020, <https://www.ifpri.org/topic/food-security#:~:text=IFPRI's%20work%20on%20food%20security,ecological%20costs%20of%20its%20production,par.1>.

¹⁷ Food Cluster Security, “Food Security in Emergencies,” accessed May 5, 2020, <https://fscluster.org/food-security-emergencies>.

Among conclusions regarding Enhanced Community Disaster Management Capacity in the Final Report for the *Earthquake Impact Reduction Strategy for Metropolitan Manila in the Republic of the Philippines*, it states that

In the case of large disaster[s] such as a major earthquake, most of the community members will not be reachable by public assistance immediately. Therefore, to protect community members from large earthquake impacts, it is important to maximize the preparedness and disaster response capacity of the community beforehand, through [the] enhancement of social capital. Social capital in Metropolitan Manila communities can be developed while recognizing community autonomy, local leadership and community dynamics. This enhancement will be promoted through self-reliant and mutual-help risk management including disaster awareness through education and enlightenment.¹⁸

Assuring household capacity for food and water security requires sustained home and neighborhood commitment with a view to emergency and disaster preparedness.

¹⁸ Japan International Cooperation Agency (JICA), Metropolitan Manila Development Authority (MMDA), Philippine Institute of Volcanology and Seismology (PHILVOCS), “Chapter 3: Master Plan,” in the *Final Report: Earthquake Impact Reduction Strategy for Metropolitan Manila in the Republic of the Philippines*, Volume 1 (PASCO Corporation: March 2004), 3-3, https://openjicareport.jica.go.jp/pdf/11763737_02.pdf.

Meta Feeding¹⁹

Table 2.2.2 Earthquake Damage Scenario of the *Final Report* on earthquake impact reduction strategies for Manila charts the earthquake damage scenario from the movement of the Fault.²⁰ The Action Plan for Risk Management Strategies to enhance effective DRM includes two items of interest to this paper: risk management frameworks 9 and 10 (RMS 9 and RMS 10).

RMS 9, where one should “Secure [the] evacuation route and evacuation site,” predicts that mass migration will occur. In the worst case scenario, “3.15 million people will become refugees” because their homes will have collapsed or burned from the many fires that will certainly break out.²¹ Hunger needs to be avoided in homes residents refuse to abandon along evacuation routes leading to evacuation sites, at evacuation sites, and one can imagine, along evacuation routes north, east, and south leading away from Metro Manila. In addition, food and water will be needed at hospitals, emergency hospitals, first aid facilities, temporary morgues, and centers where professional military and trained

¹⁹ I utilize the term “meta feeding” to encapsulate the possibility of a metadisaster that will result in meta hunger. If the Fault moves, the needed food relief will be on a meta scale.

²⁰ JICA, MMDA, PHILVOCS, “Chapter 2: Earthquake Damage Scenario,” in the *Final Report: Earthquake Impact Reduction Strategy for Metropolitan Manila in the Republic of the Philippines*, Volume 1 (PASCO Corporation: March 2004), 2-12, https://openjicareport.jica.go.jp/pdf/11763737_02.pdf.

²¹ JICA, MMDA, PHILVOCS, “Chapter 3: Master Plan,” 3-18.

emergency response teams are quartered. The government will set up an emergency headquarters safely outside the disaster zone also in need of feeding.

Food and water requirements will be immediate, prolonged, and extensive should the West Valley Fault move. RMS10, where one should “Secure water, food, and other [necessities]” explains:

Earthquake disaster leaves many people out of the normal life. People would need daily necessities to maintain their basic life. For that purpose, an emergency service delivery plan of water, food, clothes, drugs and so forth are necessary. LGUs must at ordinary time[s], estimate the needs of such necessities for the emergency situation and stockpile them as much as possible. Many LGUs have no stockpiles at all in preparation for emergency. However, even some LGUs with stockpiles like Marikina [C]ity, which are kept in preparation for floods at present, [have a] small amount [that is] not enough in case of earthquakes.²²

The action plan to secure food during disasters includes securing a large-scale water source; formulating an emergency supply system of water, food, and other necessities; and

²² JICA, MMDA, PHILVOCS, “Chapter 3: Master Plan,” 3-18.

formulating an emergency aid agreement.²³ Humanitarian and (public and private) development groups such as Red Cross and Red Crescent provide emergency aid. The manufacture of relief food has grown into a multimillion-dollar enterprise with suppliers around the world bidding for the requirements of humanitarian organizations.²⁴

For instance, USAID introduces its call for bids to supply an innovative High-energy, Nutrient Dense Emergency Relief Product (ERP): “The energy value, nutritional composition, and sensory appeal of emergency food rations are of utmost importance in meeting the nutritional needs of recipients.”²⁵ Law confines the organization to only American made ERP that has traditionally been bulk foods such as grains or corn or wheat-based mixes requiring preparation prior to consumption. The new product is described as “stand-alone.” It “can be delivered and used as a sole source of food while a more permanent, stable food relief system is established.”²⁶ Reliefgoods.org has created a procurement platform to aid relief operators source trustworthy and reliable suppliers for

²³ JICA, MMDA, PHILVOCS, “Chapter 3: Master Plan,” 3-18.

²⁴ Institute of Medicine, *High-Energy, Nutrient Dense Emergency Relief Food Product* (Washington, DC: The National Academies Press, 2002). www.nap.edu. Accessed August 6, 2020.

In 1999, USAID responded to 65 disasters in more than 63 countries. Its budget in 1998 was US\$ 186 million. In 1999, it was increased to US\$ 294 million. In addition, the Office of Food for Peace provided US\$ 513 million for those declared disasters. *Ibid.*, 14.

²⁵ *High-Energy, Nutrient-Dense Emergency Relief Food Product*, 10.

²⁶ *Ibid.*, 11.

the relief chain. It subscribes to being “auction based, as local as possible, as international as needed.”²⁷

Philippine culinary heritage documents emergency food strategies but not on the scale of a metadisaster. What was eaten, however, may effectively impact the sensory appeal of relief food rations. Philippine production of relief goods for domestic and even regional Asian use would not only aid vulnerability reduction but offer expanded profitable opportunities for agriculture, husbandry, fishing, packaging, and food manufacturers. In addition, botanicals traditionally eaten during times of hardship may be considered for planting heavily around evacuation camps and along evacuation routes alongside growing food gardens at residential and business domains as well as vacant properties. Providing for disaster relief through emergency food production can be incorporated into the early twenty-first-century national master plan for sustainable food security.

Convenience Food

Philippine heritage convenience foods are easily carried, accessible, affordable, made at home or nearby, and do not spoil quickly. They are easy to consume and easy to dispose of when done. They generally conform to current environment friendly demands. A review of them may have a bearing on emergency and disaster feeding.

²⁷ reliefgoods.org, “Who we are,” accessed August 6, 2020, <http://reliefgoods.org/about/>.

Parcels of cooked rice and cooked millet wrapped in leaves served as ceremonial offering and portable food in central Philippines during the late Renaissance. Europeans on the pioneering circumnavigation observed them in 1521.²⁸ Pedro San Buenaventura, OSA, explained in 1613 that Tagalog *soman* was similar to Mexican *tamal*.²⁹ Spanish missionaries became familiar with tamal during their required layover in Mexico while waiting anywhere from five months to a year and a half to take passage on a galleon leaving Acapulco for Manila.

Tamal, an ancient prehispanic Nahuatl food, is made of ground maize cooked while wrapped in corn leaves. Soman, likewise a prehispanic preparation, is rice cooked while wrapped in banana or buri palm leaves.³⁰ Today, there are numerous variations of sweet and savory soman eaten as snacks throughout insular Southeast Asia. Soman ready for immediate consumption and overseas shipment is exported from the Philippines. It is packed in plastic bags fitted into boxes and found at Filipiniana souvenir stores.

Individual meal-size servings of rice cooked in woven palm-leaf containers are a native convenience food all over the archipelago. In Boholano, Cebuano, Davaoño, and

²⁸ Antonio Pigafetta, "First Voyage Around the World," in *The Philippine Islands, 1493-1898*, Volume 33: 1519-1522, ed. Emma Helen Blair, trans. James Alexander Robertson (Mandaluyong: Cachos Hermanos, Inc., 1973), 169.

²⁹ Pedro San Buenaventura, comp. *Vocabularios de Lengua Tagala*. Pila: Thomas Pinpin and Domingo Laog, 1613. In facsimile. Archivo del Franciscano Ibero-Oriental de Madrid. (Valencia: Libreria Patis-Valencia, 1994), 566.

³⁰ San Buenaventura, *Vocabularios de Lengua Tagala* 696.

Waray, these are called “*puso*” (meaning heart) for their shape. In Ilonggo or Hiligaynon these are *bugnay*; in Tausug, Zamboanga Chavacano, and Jolo the term is *tamu*. One carries a parcel or several when cooking cannot be done on a journey. The rice can partner with a brined egg brought, raw or roasted fish freshly caught, or whatever is sourced during the journey. When low forests, mangroves, and beach forests were still lush, there was plenty of food for free picking.

The native, complete, ready-to-eat meal packed in a banana leaf is called “*pastel*” in Maguindanao, *pater* or *patel* in Maranao, and *paster* in Iranun. It is a personal parcel of rice topped by spicy fish or chicken. Tagalogs have *binalot sa dahon*, literally meaning “wrapped in leaf.” Favored as rice toppings for the wrapped meal are viands that do not spoil quickly: fried beef jerky (*tapa*), cured ham-like pork (*tosino*), poultry or pork cooked in vinegar (*adobo*). A popular and affordable restaurant interpretation is called a “toppings” meal because one orders what viand to put atop a bowl of rice. Philippine manufactured tuna paella sold at supermarkets is a contemporary example of a ready-to-eat rice meal in a can. Other Philippine foods might be used as rice toppings to expand the variety of canned rice meals. They can be eaten as everyday fare and stored at home for emergencies.

Filipinos so desire rice that throughout history the grain is stored temporarily in-land and hidden in low forests when raiders threaten. During the Philippine Revolution and the Philippine-American War, rice was donated to Filipino

soldiers for their rations. At that time, the military depended on food from supporters of the freedom movement. Evacuees from war-torn areas wanted to eat rice and likewise depended on the charity of supporters; hunger became rampant as rice ran out. Non-perishable, canned, plain cooked rice that need not be heated could be part of today's emergency and disaster food supply. Japanese and South Korean military rations include rice and noodles. As they require rehydration and heating, heating technology that must be lightweight, disposable, and environment friendly continues to be invented and improved. Rice at mealtime freshly cooked or preserved in cans or pouches would surely be welcome during disasters as recent emergencies have shown.

Boiled yam, sweet potato, corn on the husk, as well as fresh banana or boiled saba banana are also Philippine portable sustenance. Tubers have been a fallback when rice is unavailable. Young coconut still in its shell is carried as a complete meal having juice and soft inner flesh; but that is also when its weight and bulk are manageable.³¹ Root crops and bananas have sturdy varieties that can be planted in diverse soil types. The Department of Agriculture, the Department of Environment and Natural Resources and the

³¹ Galleons heading east stocked coconuts as provision. The western coast of the Americas grows the coconut variety found in the Philippines and the Pacific, while its eastern coast grows the coconut variety common to India and Africa.

Department of Science and Technology can study which types can grow at evacuation areas, along evacuation routes, and in the emergency headquarters of the government.

Convenience food includes *pansit*,³² wok-fried noodle dishes introduced by Chinese overseas workers in the seventeenth century, if not earlier. There is even the ultra convenient *pansit habbab* in Lucban and Sariraya towns of Quezon Province. A ration of stir-fried brown noodles is served on palm-sized pieces of banana leaves to be held in the hand and slurped (*habbab*) straight off. A wide variety of dehydrated noodles in a cup are widely sold and popular, although their nutritional value and sodium content have been questioned. New noodle products without need for rehydration and heating could be studied for relief food as well as for non-emergency situations.

Foreign-introduced portable foods that can be consumed without utensils or re-heating—such as empanada, hamburger, machang, pizza, siopao, stuffed bread bun, and tamales—have been transformed according to native sensibilities from snacks into full and filling meals. Their strongly punctuated savors are typical of contemporary convenience foods, many from fast food chains. They surely influence what savors and mouth feels satisfy hunger

³² *Pansit* is the Filipino word for noodle. It is based on Hokkien *pian* (ready) *e sit* (food), appropriately describing it as a prepared food for immediate take-out. Gloria Chan-Yap, “Hokkien Chinese Influence on Tagalog Cookery,” *Philippine Studies: Historical & Ethnographic Viewpoints* 24, no. 3 (1976): 288–302.

today. Emergency rations seek to approximate favored textures and tastes in addition to providing the appropriate calorie count and nutritional requirements for the foreseen physical and emotional stress of disasters. One meal for soldiers of the United States Armed Forces even includes a slice of pizza. Emergency Filipino rations might benefit from pizza too, don't you think?

The Department of Social Welfare and Development (DSWD) is the line agency providing food and non-food packs to affected households during seasonal and unexpected emergencies. It manages a National Resource Operations Center where they pack relief items and deliver these to affected LGUs. In 2015 and after Super Typhoon Yolanda of 2013, DSWD with assistance from the UN World Food Programme and the United Kingdom Department for International Development modernized its Center so it can produce 50,000 emergency family food packs per day. This is enough to feed more than 250,000 people for three days. One box contains rice, canned goods, and coffee.³³ The Center is located in Pasay City, but it is notably within the Fault's hazard zone. A network of disaster response facilities is planned for Clark City, Cebu, and General Santos.

³³ World Food Programme, "Revamped Response Centre Ready to Produce 50,000 Emergency Family Food Packs," September 30, 2015, accessed August 9, 2020, <https://www.wfp.org/news/revamped-response-centre-ready-produce-50000-emergency-family-food-packs>.

Home Urban Gardening

Native life in the sixteenth century was self-sustaining with food cultivated nearby, hunted, and foraged. There was trade of rice, honey, and betel nut within the archipelago and insular Southeast Asia. Spanish colonization disturbed the balance in 1565 by increasing food needs for foreign settlers, military operations, and additional demands of global trade and maritime voyages. Native villages with residences lining riverbanks or coastlines were redesigned gradually into mission-pueblos with a central plaza. Each family was assigned a plot of land where they would live in the planned town laid out like a gridiron. Tribute was originally collected in products including food. Families were ordered, therefore, to raise fruits, poultry, and swine at home in addition to rice in fields.³⁴

Attention to agriculture picked up in the nineteenth century with sights set on export. From 1894 to 1896, the monthly *Boletín Oficial Agrícola de Filipinas* was published with reports on research done at government agricultural stations in Manila, Cebu, La Carlota (Negros Occidental), and Ilagan (Isabela). Kitchen gardens with vegetables for

³⁴ For instance, in 1768 and in response to the British Occupation of Manila (1762–1764), a Manila Ordinance required each town to identify vegetables and other botanicals that grew well on its terrain. Every home was to have them as well as fruit trees. Onofre D. Corpus. *An Economic History of the Philippines* (Quezon City: University of the Philippines Press, 1997), 113.

sale continued to be tended since the sixteenth century by Chinese immigrant workers near areas where Spanish and foreign businessmen lived. Guests during the Spanish era were proudly served products from the host's agricultural lands whether owned or rented. Cacao, mango, stuffed turkey, and baked goods introduced during colonial times were among them.

Farming and fishing continued to dominate Filipino careers. Growing food at home continued as a socio-economic effort of the American colonial regime that replaced Spain when the twentieth century began. In areas where the US Army had used scorched earth tactics during the Philippine-American War, agricultural lands needed to be revitalized. During World Wars I and II, America and its ally, the United Kingdom, established a Victory Garden movement in their homelands that significantly provided food for citizens.

Home gardening with emergencies in mind also became a movement in the Philippine Islands. When the Philippine Commonwealth started in 1935, still under American rule, formal home economics graded classes and informal adult education for provincial residents, most of whom were farmers, introduced scientific applications to increase agricultural yield for home gardens and fields. They included suitable crop selection, crop rotation, intercropping, selecting plants for seeds,

and replenishing soil nutrients.³⁵ Return on investment for planting imported popular vegetables was also shared with folk, hoping they would grow the new produce. Trees with edible leaves, flowers, and fruits were recommended as fencing for homes and schools. Among them were malunggay (*Moringa oleifera*), katuray (*Sesbania grandiflora*), kamatsili (*Pithecellobium dulce*). They were to be combined with hardy ornamentals like bougainvillea and hibiscus.³⁶

³⁵ *Ang Pagpapaunlad ng Gawain ng Isang Magsasaka* (Widening Our Farmers' Horizon) was an adult education booklet released in 1937 by the Commonwealth government's Office of Adult Education. It was one in a published series promoting the increase of cultivated areas and responding to low agricultural productivity. The Office of Adult Education activated a network for the grassroots that included the Bureaus of Education, Health, Science, Plant Industries, and Labor as well as private civic groups such as National Federation of Women's Clubs and the 4H Club, among others.

The Commonwealth sustained an information campaign about food security using the communications tools of its era to reach multiple stakeholders.

The role of informal adult education for literacy, lifelong learning, and community resilience must not be undervalued. In 1939, the Philippine population of persons over 10 years old totaled 10,903,879; only 48.8 percent was literate. *The Handbook of Adult Education in the Philippines for the Use of Adult Education Workers* (Manila: Office of Adult Education, Department of Instruction, Republic of the Philippines, 1947), 151.

The total Philippine population according to the 1939 census was 16,000,303 persons. United States Department of Commerce, *Statistical Abstract of the United States* (Washington, United States: Bureau of the Census Library, 1941), Accessed September 8, 2014, census.gov, PDF.

When World War II broke out, there were already 5,053 adult schools in operation with a total enrollment of 289,449 adult pupils. They were under the sponsorship of 6,432 local adult education committees manned by 45,000 volunteer workers who served without remuneration. There were also study circles, public forums, community assemblies, and vocational guidance groups throughout the country attended by over 288,528 persons. United States Department of Commerce, *Statistical Abstract of the United States*, 5.

³⁶ *Mga Halamang Pangbakod* (Manila: Office of Adult Education, 1939), 11–14.

Nutritious menus were publicized archipelago-wide through newspapers, magazines, the radio, cooking demonstrations at department stores and groceries, home economics and health education textbooks, as well as a special set of learning material for adult education. Vegetables and fruits were highly recommended for health benefits. Among common fruits promoted for growing in kitchen gardens were atis (sugar apple), avocado, banana, cahel (a Philippine citrus), cashew, calamansi, chico, dayap (a kind of Philippine lime), duhat (Java plum), guava, guyabano (soursop), langka (jackfruit), mango, melons, papaya, pineapple, sampaloc (tamarind), siniguelas (Spanish plum), and suha (pomelo). It was emphasized that newly picked fruit and newly made fruit juices offered the best sustenance.³⁷

Through home economics in public schools, eating vegetables was encouraged vigorously since 1904. Over 30 combinations of them for a dish were being popularized by a widely used adult education recipe pamphlet, *Mga Pagkain sa Ikalulusog ng Katawan* (Foods for Health). They included “sitaw at kalabasa; kalabasa at ampalaya; mga dahon ng kalabasa, patani at ampalaya; labong at okra o saluyot; sinkamas, dahon ng kamote at kamatis; malunggay frutas, bulaklak, dahon; mga dahon ng malungay at kamote; hilaw na papaya at dahon ng kamote” (long beans and squash; squash and bitter melon; squash leaves, patani bean, and bitter melon; bamboo shoots and ladies’ fingers or jute mellow; jicama turnip, squash leaves

³⁷ *Mga Pagkain sa Ikalulusog ng Katawan* (Manila: Office of Adult Education, 1938), 77.

and tomatoes; moringa fruits, flowers, leaves; moringa leaves and squash; unripe papaya and leaves of squash).³⁸ The value of beans for protein and, therefore as a meat and fish substitute, was also championed.

The Commonwealth's country-wide movement for kitchen gardens gave the public several reasons that could also appeal to twenty-first century sensibilities: it was major assistance for a family's food supply; home-grown was cheaper than market buys; there is pride in growing one's own food; vegetables were good for the body and delicious; vegetables strengthened the body; it would decrease Philippine foreign purchases;³⁹ it made a home beautiful; it offered convenience and lessened worries from having to go to market.⁴⁰

By the 1940s the threat of another world war was increasing and publicized in local media. "Food is a munition of war. Don't waste it," warned the National Federation of Women's Clubs. The clubs promoted civic spirit and mutual cooperation among women. Its community activities were to be preventive rather than remedial for the betterment of women and children. They included home economics instruction, setting

³⁸ *Pagkain*, 11-12.

³⁹ In 1931, the Philippine Islands had imported 1,031,049 kilos of fresh cabbage, valued at P191,596. It was mostly imported from the USA to supplement locally grown cabbage planted over 1,541 hectares that produced 1,432,020 kilo worth P249,110. Bombay onion was a recent crop with rising consumption. From 1921 to 1930, imports totaled 4,466,229 kilos valued at P583,900; in 1931, 13,962,147 kilos was worth P626,152. The Bureau of Agriculture recommended their local planting. *Ang Gulay ay Pangpababa ng Buhay* (Manila: Office of Adult Education, 1937), 39–41, 101.

⁴⁰ *Ibid.*, 11.

up home industries, and establishing puericulture centers among others. The Diet Kitchen was a community center introduced nationwide by the Federation to avoid “breadlines” during disasters. A dietician explained nutrition and how to cook vegetables and other healthy foods so women of a community could manage a Diet Kitchen.⁴¹ Food production, supply, and conservation were considered a triumvirate and publicized as part of National Defense. Foodstuffs were needed for the defense force and the entire population to meet present requirements and storage for future use.

Women’s clubs and community organizations were also rallied to increase the food supply. The Bureau of Plant Industry led by Maria Orosa was the contact agency for seeds and information to learn about home gardening, food production, and food conservation. It had subsidiary stations around the islands.⁴² She had invented a high-protein soy

⁴¹ *The Tribune National Federation of Women’s Clubs Supplement* [N.P.]. It is a 20th anniversary issue with reports on activities of 1935.

⁴² National Women’s Clubs members allied with each through clubs and other organizations to assist in National Defense. They listed what they could do.

Make everybody unoccupied with public duties or defense activities do something to produce foodstuffs.

Make every vacant lot a home garden.

Plant all kinds of vegetables and rotate production as rapidly as possible.

Plant short-term and root crops such as potato, corn, and cassava.

Raise poultry and hogs in your backyard.

Harvest all standing crops as rapidly as possible to prevent destruction and wastage.

Conserve all you cannot use and devise uses for waste materials ordinarily thrown away.

Save foodstuffs by using only what is absolutely necessary for the day.

Educate every member of the family to economize and to conserve everything that is useful as food.

Remember that wasting of foodstuffs today is as dastardly a crime as treason.

powder, a “magic powder” that would save many prisoners of war from starvation. After World War II, re-capitalizing food factories and re-starting food production were major challenges.

Food security has continued as a country concern. The Philippines established International Rice Research Institute (IRRI) at Los Baños town, south of Manila in 1960 with the Ford and Rockefeller Foundations. The country joined the global Green Revolution that used high-yield cereals in conjunction with chemicals, synthetic fertilizers, agro-chemicals, irrigation, and new technology. By using IRRI’s IR8 cultivar of 1966, the Philippine annual rice production increased from 3.7 tons to 7.7 tons, the highest in two decades. Such efforts to stem hunger, however, would unleash criticism against pesticides, seeds that could only be bought, and the manipulation of plant genes. The ethics of agriculture and food were challenged actively from the mid-twentieth century. Sustainable agriculture, public health, updated nutrition, and food-poor figures are affecting what and how people will eat during times of harmony and periods of emergency in the twenty-first century.

The challenge today in the Philippines and other countries with megacities is urban farming. Balconies, terraces, rooftops, community spaces and leisure areas, parking lots, roadsides, boulevard islands, parks, school campuses, and business estates offer possibilities to integrate edibles and ornamentals into greenspace. From the 1990s some company canteens, restaurants, public schools, and subdivisions

experimented with urban organic gardening guided by ideas from the Slow Food Movement, Zero Waste, composting, and efforts to lower the carbon footprint.

Recently, a prescient, high-end condominium in Bonifacio Global City has turned its rooftops into vegetable gardens that were harvested for residents during the COVID-19 quarantine.⁴³ The pandemic triggered widespread concern about the need for home and community gardening. Local and national government agencies, NGOs, and parishes have quickly started or restarted (preferably organic) community vegetable gardening. The Department of Agriculture began distributing free seeds for kitchen gardens in Metro Manila through local government networks.

But these efforts are not enough to provide fresh vegetables and grow other ingredients for use by residents of condominiums, subdivisions, relocation sites, and barangays. Innovative, all-weather food gardening, and storage strategies need to consider the threats of severe, unexpected disasters and how to feed refugees flocking to areas designated as mass public shelters. Food needs to be consistently grown, processed, and stockpiled at those evacuation centers before and perhaps even after emergencies occur. Traditional food crops used as seasonal emergency foods can be resurrected in their localities. They are generally hardy and suited to the local

⁴³ Arya Residences in Bonifacio Global City have thriving vegetable gardens on its rooftops.

environs. Agriculturists using hydroponics and other innovative farming technologies and skills, artificial intelligence, computer technology, MSMEs in the food sector, and labor from the unemployed may discover new strategies to sustain food availability for densely populated city neighborhoods and communities projected to become the worst affected during catastrophes, especially disasters. New business models for smallholders and unemployed farmers may offer expanded economic opportunities in urban pocket farms. The tilling and harvesting could be useful in strengthening disaster resilience.

Neighborhoods and evacuation centers must be prepared to handle feeding immediately after a disaster occurs. Evacuation centers within and outside the disaster zone will need access to preserved food. If and when cooking becomes possible, fresh ingredients from around the sites will be needed because overland food lanes and probably airdrops too will be compromised. A selection of nutritious varieties can be planted so that whatever season a disaster occurs there is harvestable food. Farming inside earthquake and weather-proof structures near where the food will be consumed and where appropriate technology will be found can be innovated.

Food Preservation

Like many prehistoric societies worldwide, Philippine communities annually sun-dried, smoked, salted, and brined animal protein during good weather. Tapa is the Tagalog

term for jerky. Cow, carabeef, venison, and wild boar were commonly made into tapa as documented by early seventeenth century sources. "*Lukmâ*" is a Tagalog term for thin tapa, which has slipped out of usage. Vegetables were dried, pickled, and brined. Fruit edibility was extended when pickled, plumped, and stored in syrup or plumped in syrup then dried. Fruits containing Vitamin C such as quince and lemons became available as preserves and syrups to prevent scurvy. Eggs were also brined for longevity, although live hens were carried on board for fresh eggs. Breads for international military and marine use were developed. By being double-baked, moisture that causes spoilage was considerably lessened. Baked goods called biscocho were made in the Philippines as galleon provisions for crew and paying passengers alike on the eastbound passage in addition to being food for fighters. An English term for them is "hard tack" because even when pounded with a small hammer they did not pulverize. Eating required pre-softening by standing them in liquid like a soup.

Canning and hermetical sealing were substantial discoveries in 1809 for food preservation. In the last half of the nineteenth century, the Philippines imported condensed milk and other canned products. From 1916, many canned American food products began flooding the Philippines having been encouraged by free trade policies. Canned goods reached provinces. As the islands clearly moved onto a track of independence adhered to by the United States government, native leaders envisioned how best to increase

nationwide earning power; maximize agriculture, fisheries, and husbandry; prioritize where to use limited foreign currency reserves; and minimize unneeded expenses for imported food.

The Philippine Commonwealth's master plan for the incoming Philippine Republic that it was squiring included the setting up of canning factories to increase markets and profits for farmers, fishers, ranchers, and breeders. It would decrease dependence on imported canned fish, vegetables, and fruits that had become popular in city and rural homes alike. They were convenient to use and provided a relief from what some claimed was a monotony of flavors in the common diet. National Foods led the way with sterilized canning of popular native foods like adobo, bangus, bangus tinapa, beef caldereta, estofado, morcon, papaitan, salseado de carne, mango tamarind jam, mango in syrup, santol in syrup, mango pineapple nips, and tomato. The government considered canned goods as emergency supplies if war broke out. Home-canning and sterilized bottling were simultaneously encouraged. Women were encouraged to consider food preserving as a cottage industry that would augment their family income.

"A soldier travels on his stomach" is a common saying. Before World War II, the Philippine Army served chicken, lechon (spit-roasted pig), and ice cream as part of its regular diet on Wednesdays, Saturdays, and Sundays. Military rations in the United States of America evolved into the K-ration—a self-contained kit with everything one needed for one day's

breakfast, lunch, and dinner. By World War II, the contents differed for mountain and jungle combat. As fighting stretched on, innovative lightweight packaging had to be replaced by the cost-effective original but heavy can. Millions of canned SPAM was sent to the Pacific. American canned goods became civilian relief goods in the Philippines during the war's postlude. Canned goods are still used as post-disaster fall back rations from international humanitarian aid organizations.

Canned goods continued their popularity when peace returned. However, in the late twentieth century, it was discovered that some ingredients for preserving and flavoring foods cause ill-health when consumed continuously over long periods. Bisphenol A (BPA) used as internal plastic lining for cans was found to be carcinogenic. Poisonous lead soldering was still used by some can makers in coating steel with tin. In addition to new discoveries about traditional containers, food safety advocates warned that there was a correlation between high levels of sodium chloride (salt) used as a preservative and gastric cancer. New research and technology continue seeking improvements for canned foods. The food sector continues research and development in food preservation for popular everyday use with diverse techniques that include freeze drying and updated methods for dehydrating food.

The value of safe and healthy preserved foods needs to be researched and communicated for the Philippine setting at the popular level as was done during the Commonwealth.

Texas A&M University has AgriLife Extension. It is one example of a disaster education network. Its “Preparing for the Unexpected” primer covers concerns of families and the state’s 229,000 farms and ranches. It warns that fresh fruits, vegetables, and garden produce exposed to flood water, smoke, and fire fighting chemicals should not be consumed. Its food safety section recommends: “Be prepared for an emergency by having items on hand that don’t require refrigeration and can be eaten cold or heated on the outdoor grill.”⁴⁴ It adds: “Canned goods are the best choice for an emergency food supply. Glass containers might break.”⁴⁵

Other websites for disaster survival recommend: “You will need ready-to-eat foods”; the electricity grid might be down, and you might have to leave carrying food. Stockpiling military Meals Ready to Eat (MREs) and extra virgin coconut oil are recommended. The oil “has a shelf life of at least 7 to 15 years. It’s one oil that should be considered for its high nutritional value as well as its ability to be solid at room temperature. It has both antifungal and anti-bacterial properties.”⁴⁶ MREs have an average shelf life

⁴⁴ Janie Harris et al., “Preparing for the Unexpected,” Texas A&M AgriLife Extension, accessed June 21, 2020, <https://agrilifeextension.tamu.edu/library/disasters-safety/preparing-for-the-unexpected/>.

⁴⁵ Texas A&M AgriLife Extension, “Emergency Food and Water Supplies,” accessed June 21, 2020, <https://texashelp.tamu.edu/browse/disaster-preparedness-information/emergency-food-and-water-supplies/>.

⁴⁶ SS Contributor, “Best Survival Foods: The Must Have Non-Perishables,” Skilled Survival (blog), accessed June 21, 2020, <https://www.skilledsurvival.com/5-things-to-consider-for-the-best-survival-foods/>.

of five years in 75 degrees Fahrenheit and can last well over ten years in cooler conditions.⁴⁷ Honey, smoked or dried meats like jerky, peanut butter, dried fruit, and trail mix are other high-energy foods recommended for stocking.⁴⁸ These are already being made in the Philippines but their value to emergency food aid has not been promoted nor studied for market expansion.

Ready-to-Eat Rations

The Philippine National Disaster Risk and Reduction Management Plan of 2011 to 2028 works toward “safer, adaptive and disaster-resilient Filipino communities towards sustainable development.”⁴⁹ The Department of Science and Technology (DOST) is the overall agency in charge of the Plan’s Thematic Area 1: Disaster Prevention and Mitigation.⁵⁰

⁴⁷ Armynavyoutdoors.com, “How Long do MRE’s Last. Meals Ready to Eat Expiration,” Army Navy Outdoors (blog), post on July 3, 2019, accessed August 9, 2020, <https://armynavyoutdoors.com/blog/how-long-do-mres-last-meals-ready-to-eat-expiration/#:~:text=The%20average%20MRE%20shelf%20life,stored%20in%20120%20degrees%20F.&text=The%20date%20on%20an%20MREs,rather%20than%20an%20expiry%20date>.

⁴⁸ Texas A&M AgriLife Extension, “Emergency Food and Water Supplies.”

⁴⁹ National Disaster Risk Reduction and Management Council. *National Disaster Risk Reduction and Management Plan* (NDRRMP) 2011-2028, accessed June 25, 2020, nndrrmc.gov.ph.

⁵⁰ Ibid. The other thematic areas are: 2) Disaster Preparedness led by Department of Interior and Local Government; 3) Disaster Response, Department of Social Welfare and Development (DSWD); 4) Disaster Rehabilitation and Recovery, National Economic Development Agency. DSWD handles evacuation shelter needs and provision of social services. The four thematic areas incorporate regional and local chains of disaster management.

In 2014 DOST announced having developed its “Pack of Hope” nourishment for hungry disaster victims. The Department’s Packaging Technology Division (PTD) had created a lightweight, handy pouch, some metalized, and others of nylon polyethylene (or PE)⁵¹ that can withstand aerial distribution drops from 800 to 1,000 feet and flooded areas.⁵² The nutritional value of food for disasters is scientifically calculated for the general user as well as infants, children, pregnant women, nursing mothers, the elderly, people with severely compromised health, people with religious food taboos, military workers, and emergency volunteers.

Relief foods are being developed by DOST for four categories.

Category A – Food requiring no preparation and consumed without drinkables. . . . Products under this category are provided to survivors in this first stage of a disaster, in which food can satisfying [sic] hunger for two days after the disaster.

Category B – Food requiring no preparation and consumed with a drinkable. Biscuits/ crackers can be eaten with an accompanying drinkable.

⁵¹ “Nylon is the generic designation for a family of synthetic polymers, based on aliphatic or semi-aromatic polyamide. Nylon is a thermoplastic silky material.” Whereas PE is a blend of ethylene polymers with various types of nylon. Ask Difference, “Polyethylene” vs. Nylon,” accessed June 25, 2020, <https://www.askdifference.com/polyethylene-vs-nylon/>.

⁵² Reliefweb, “DOST Cooks Up a ‘Pack of Hope’ for Hungry Disaster Victims.”

Category C – Food eaten after adding or immersing in hot water like instant noodles or pre-gelatinized rice.

Category D – Food that must be cooked such as rice [so it can be eaten].⁵³

By March 2015 the Philippine Council for Industry, Energy and Emerging Technology and Research and Development announced that DOST had made nutrition-packed emergency foods. The foods are matched to three stages.

The first stage is immediately after a disaster where power, gas and water are cut off. Survivors need food that can be eaten without water and drinkables, and without cooking.

The second stage is upon the restoration of power and other utilities. Survivors can make use of emergency instant food requiring hot water and cooking.

The third stage is when all utilities are back on line [*sic*] allowing survivors to use their equipment and prepare foods sent as relief [goods] from outside the disaster zone. It is at

⁵³ “DOST Cooks Up a ‘Pack of Hope’ for Hungry Disaster Victims,” May 27, 2014, accessed June 25, 2020, <https://reliefweb.int/report/philippines/dost-cooks-pack-hope-hungry-disaster-victims>.

this stage that nutritious foods or supplements are provided to survivors.⁵⁴

The Department's Industrial Technology Development Institute (ITDI) and Food Nutrition Research Institute (FNRI) created ready-to-eat (RTE) meals that meet nutritional requirements. For children aged six months to three years old, an RTE paste was made. "They are high energy with a rich, nutty chocolate flavor, provides minerals and vitamins such as folate, iron, calcium, zinc, vitamins A and C. They are suitable in improving the nutritional needs of moderately to severely malnourished children."⁵⁵

Brown rice is used for RTEs. Whole grain hulled or unmilled rice has high dietary fiber content and a lower glycemic index and higher satiety value than well-polished rice. Of concern was "[food] safety, tastiness or palatability, shelf-life, easy-to-open packaging and complete nutrition."⁵⁶ The longest shelf-life of DOST's RTEs is currently one year. Foreign made MREs can last even 25 years. DOST products are tested according to established protocols for warehousing, aerial drop, floating and submerging in water. The following foods are available according to category.

⁵⁴ Maria Elena A. Talingdan, "DOST's Nutrition-Packed Emergency Foods Get Market Share," March 4, 2015, accessed June 25, 2020, <https://pci.eerd.dost.gov.ph/news/latest-news/141-dost-s-nutrition-packed-emergency-foods-get-market-share>.

⁵⁵ Talingdan, "DOST's Nutrition-Packed Emergency Foods Get Market Share."

⁵⁶ *Ibid.*

For Category A, the following are dishes:

1) RTE Chicken Arroz Caldo

- 200 g per pouch
- About 180 calories/pouch
- Lightweight and very handy packaging
- Designed to withstand aerial distribution of about 800–1000 ft.

2) RTE Corn Soup

- 200 g per pouch
- About 100 calories/pouch
- Shelf [life] for at least one year

For Category B, disaster victims can nibble the following:

1) RTE Brown Rice Bar

- Functional food from brown rice
- 25 g with 110 calories per pack
- Provides vitamins and minerals such as phosphorous, iron, zinc, manganese, magnesium, vitamins B1 and B
- Lightweight and handy
- Shelf [life] for 8 months

2) Vegetable-Rich Choco Bar: A Compact Nutri Food

- Available in two varieties - semi-sweet green chocolate bar using white chocolate and brown chocolate bar
- 30 g/pack

- Packed in metalized pouches to withstand floods and aerial drop
- Appropriate for all age groups
- Shelf-life of 12 months at room temperature

3) Vegetable-Rich Baked Polvoron: A Compact Nutri Food

- 30g per pack
- Packed in metalized pouches to withstand floods and aerial drop
- Shelf-life and storage of twelve months at room temperature
- For ages 5 years and above

4) Micronutrients Growth Mix (MGM)

- Small sachets (2g) containing blends of micronutrients in powder (MNP) form
- Similar to MNP distributed by DOH, UNICEF, and WFP
- Shelf life of 1 year

5) Instant Meals

- Available in 3 variants: pork adobo, beef steak, and seafood mix
- Ideal for children and adults particularly during [an] emergency
- Already produced commercially by Five N and One Food Corporation

6) RTE Rice Meals

- Includes chicken adobo rice meal, beef tapa rice meal, and smoked fish rice meal in 200 g per pouch
- Considered as shelf stable for at least 1 year
- Packaging is lightweight and very handy
- Designed to withstand aerial distribution of about 800–1000 ft.

Category C, just add hot water and eat!

The DOST-ITDI also came to the rescue and developed ready-to-serve nutrifood that is versatile reserve food in calamity-stricken areas.

1) Nutri Flour: Sagip Powder

- 250 g or 1 kg per pack
- Packed in nylon PE pouches to withstand floods and aerial drop
- Shelf life and storage of 5 years at room temperature;
- Estimated product cost is P80.00/kg
- Could be made into food bars, cookies, cakes, puddings, porridges or soups
- Convenient! Just add hot water

2) DOST-FNRI Rice-Mongo Complementary Foods

- Rice-mongo instant blend
- Rice-mongo-sesame ready-to-cook blend

- Rice-mongo curls
- Already commercially-produced⁵⁷

DOST survival sustenance is designed to assuage Filipino taste preferences. It incorporates heritage foods into its contemporary emergency food products. Food during emergencies feeds physical hunger and offers solace. Can the Philippines manufacture enough RTEs with an extended shelf life to provide initial succor during a metadisaster? The enterprise would expand markets for farmers, fishers, and a range of food producers as well as related enterprises.

Country-owned and country-led strategies and plans of action for food security are generally geared to times of normalcy. They customarily are concerned with chronic hunger and undernourishment, small-scale producers, rural infrastructure, relevant technologies, high levels of food waste, social safety nets, and the sustainability of natural resources and healthful agriculture. UN member states like the Philippines seek to design their national food security with the Global Strategic Framework for Food Security and Nutrition in mind. It is synchronized with the UN's 2030 Agenda that builds on Millennium Development Goals that are accomplished and not accomplished. Its second Sustainable Development Goal is to "End hunger, achieve

⁵⁷ Talingdan, "DOST's Nutrition-Packed Emergency Foods Get Market Share.

food security and improved nutrition and to promote sustainable agriculture.”⁵⁸

Like the Commonwealth period, today’s food security requires a holistic plan involving the government; private sector; civic and humanitarian organizations; neighborhood groups; as well as education and media employing science, innovative technology, and folk knowledge. The *Philippine Development Plan, 2017–2022* reports “methodologies for determining resilience levels of areas to natural hazards have also been developed.” They are to be the basis for incorporating strategies to ensure safety and resilience of people and communities.⁵⁹ In an archipelago prone to emergencies and threatened by disasters like the movement of the Fault, it would be wise for the Philippine food security master plan to incorporate disaster risk management action.

A Mind for Survival

Regional weather systems and localized ecosystems have conditioned residents to prepare for seasonal food scarcity and even natural emergencies over centuries. For instance, in Batanes, a group of islands off northeastern Luzon located along the typhoon path, natives wisely stockpile rootcrops, dried fish, and firewood per household annually.

⁵⁸ United Nations, *Transforming Our World: The 2030 Agenda for Sustainable Development*, sustainabledevelopment.un.org.

⁵⁹ National Economic Development Authority, *Philippine Development Plan, 2017-2022* (Philippines: NEDA, 2017), 42. accessed August 7, 2020, <http://pdp.neda.gov.ph/wp-content/uploads/2017/01/PDP-2017-2022-07-20-2017.pdf>.

Philippine vocabularies include words for danger: “*panganib*” in Filipino, Kapampangan, and Tagalog; “*peggad*” in Ilocano; “*siksá*” in Maranaw; “*kaatapan*” in Pangasinan. In Cebuano and Hiligaynon the term used is “*katalagman*.”⁶⁰ “Panganib” was documented in 1613 as the synonym for Spanish “*peligro*,” meaning danger from thieves and other causes of fear, for instance.⁶¹ Emergency today is “*kagipitan*,” a time of difficulty, often financial.⁶² Calamity is *kalamidad*, *katastrope*, *disgrasya*, and *sakuná*.⁶³ The latter is a word from Pampangan, Ilocano, and Tagalog. It has variations such as “*bala*” in Maranaw, “*disgo*” in Pangasinan, and “*katalagman*” in Cebuano.⁶⁴ In 2019, the theme for National Disaster Resilience Month was “Kahandaan sa Sakuna’t Peligro para sa Tunay na Pagbabago” (Preparedness for Calamity and Danger toward Real Change).

There have been many causes of danger, emergency, and calamity. “*Lindol*” appears as the 1613 Tagalog word for “*terremoto*,” earthquake.⁶⁵ “*Bulkan*” entered via the Spanish “*volcán*.” “*Salot*” meant *pestilencia*⁶⁶ that came to include epidemics, pestilence, and plague. Synonyms for “*salot*” include “*salul*” in Kapampangan; “*angol*” in Ilocano; “*siksá*”

⁶⁰ Jose V. Panganiban, *Pilipino-Ingles Diksyunaryo-Tesaurus* (Lungsod Quezon: Manlapaz Publishing Co., 1972), 774.

⁶¹ San Buenaventura, *Vocabularios de Lengua Tagala*, 473.

⁶² Panganiban, *Pilipino-Ingles Diksyunaryo-Tesaurus*, 443.

⁶³ *Ibid.*, 223.

⁶⁴ *Ibid.*, 857.

⁶⁵ San Buenaventura, *Vocabularios de Lengua Tagala*, 573.

⁶⁶ *Ibid.*, 480.

also used for danger and “*lansak*” in Maranaw; “*sakit*” in Cebuano; “*panakit*” in Samar-Leyte Waray.⁶⁷ “Salot” was “*malubhá*,” excessive, grave, serious.⁶⁸ The Spanish “colera” was “*yacap*” with vomit and suffering noted,⁶⁹ although later the terms “colera” and “cholera” were used.

Despite a history of calamities, the general public may not grasp the intensity and the destruction metadisasters from climate change, terrorism, earthquakes, biochemical accidents, and social unrest are certain to cause. They are beyond the common imagination even if movies have depicted them realistically to offer warning. Readiness and prevention efforts seem to lack sufficient sustainability. In a culture where disaster preparedness can be stop-go-restart, as has been the case with home gardening and even emergency drills for the West Valley Fault threat, it appears important to sustain “a sense of urgency.”

There does not appear to be a Philippine-originated word for “a sense of urgency.” It can be defined as “ang magkaroon ng ugali para sa pagkukusang gawin ang kailangan kailangan magawa.”⁷⁰ A sense of urgency, foresight (*pagintindi sa kinabukasan*), and good teamwork known in Filipino as “*bayanihan*” can cushion or mitigate disaster trauma. It is

⁶⁷ Panganiban, *Pilipino-Ingles Diksiyunaryo-Tesaurus*, 872.

⁶⁸ *Ibid.*, 655.

⁶⁹ San Buenaventura, *Vocabularios de Lengua Tagala*, 706

⁷⁰ Florentino Hornedo, Rainier Ibana, Felice Prudente Sta. Maria. *Fact Finding on Social and Human Science Education in the Philippines*. (Pasay City: UNESCO National Commission of the Philippines, 2010), 148–149.

within a framework for disaster management that food security and survival sustenance need a jolt from the concept of urgency. The government is strengthening its disaster management from national to neighborhood and domestic levels. Without sustained people participation, populations are put at heightened risk, and resources for response and recovery are stressed beyond their capacities.

While efforts at organic community gardening and emergency rations storage have re-started as a result of the COVID-19 pandemic, we must ask how long can they be sustained? If and when a disaster will strike is not often predictable to the day. People generally lose interest and forget about disasters. Psychological preparedness for disaster is not only post-trauma management but regular discussion about the threat, about the reality that can affect families and neighborhoods. How food and water supplies are most likely to be affected must be proven, explained, discussed regularly, and acted upon by the government and stakeholders.

Research into disaster management and food security repeatedly note the importance of social connectedness, social learning, self-organization, and skills for adaptation. The Philippine *National Disaster Risk and Reduction Management Plan* of 2011 to 2028 is a paradigm shift from earlier plans. It seeks to empower communities as proactive rather than reactive. Communities are to develop the right mindset toward reducing and managing risks and

lessening the effects of disasters.⁷¹ Food security is one pillar of disaster management that benefits from people for people initiatives.

Agsaganatayo para iti kakaruan

No masiribtayo.

(If we are wise, we will prepare for the worst.)

Ilocano saying ⁷²

Bibliography

Armynavyoutdoors.com. "How Long do MRE's Last. Meals Ready to Eat Expiration." Army Navy Outdoors (blog). Posted on July 3, 2019. Accessed August 9, 2020. <https://armynavyoutdoors.com/blog/how-long-do-mres-last-meals-ready-to-eat-expiration/#:~:text=The%20average%20MRE%20shelf%20life,stored%20in%20120%20degrees%20F.&text=The%20date%20on%20an%20MREs,rather%20than%20an%20expiry%20date>.

Ask Difference. "Polyethylene" vs. Nylon." August 6, 2019. Accessed June 25, 2020. <https://www.askdifference.com/polyethylene-vs-nylon/>.

Bosher, Lee, and Ksenia Chmutina. *Disaster Risk Reduction for the Built Environment*. New York: John Wiley & Sons, 2017.

⁷¹ National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028.

⁷² Damiana Eugenio, comp. and ed., *The Proverbs*. Philippine Folk, Literature Series: Volume VI (Quezon City: The UP Folklorists, Inc., 1992), 388.

- Bureau of Agriculture. *Ang Gulay ay Pangpababa ng Buhay*. Manila: Office of Adult Education, 1937.
- Chan-Yap, Gloria. “Hokkien Chinese Influence on Tagalog Cookery.” *Philippine Studies: Historical & Ethnographic Viewpoints* 24, no. 3 (1976): 288–302.
- Commonwealth Government, Office of Adult Education. *Ang Pagpapaulad ng Gawain ng Isang Magsasaka* (Widening Our Farmers’ Horizon). 1937.
- Corpus, Onofre D. *An Economic History of the Philippines*. Quezon City: University of the Philippines Press, 1997.
- “DOST Cooks Up a ‘Pack of Hope’ for Hungry Disaster Victims.” Reliefweb, May 27, 2014. Accessed June 25, 2020. <https://reliefweb.int/report/philippines/dost-cooks-pack-hope-hungry-disaster-victims>.
- Eugenio, Damiana, comp. and ed. *The Proverbs*. Philippine Folk Literature Series: Volume VI. Quezon City: The UP Folklorists, Inc., 1992.
- Food and Agricultural Organization of the United Nations. “Building Resilience for Food Security and Nutrition.” FAO Regional Office for Near East and North Africa. Accessed May 5, 2020. <http://www.fao.org/neareast/perspectives/building-resilience/en/>. United States Department of Commerce. *Statistical Abstract of the United States*. Washington, United States: Bureau of the Census Library, 1941. Accessed September 8, 2014. census.gov. PDF.
- Food Security Cluster. “Food Security in Emergencies.” Accessed May 5, 2020. <https://fscluster.org/food-security-emergencies>.
- Food Security Cluster. “Food Security in Emergencies.” fscluster.org. Accessed May 5, 2020. <https://fscluster.org/food-security-emergencies>.
- Harris, Janie, Lisa Norman, Bruce Lesikar, and David Smith. “Preparing for the Unexpected.” Texas A&M AgriLife Extension.

Accessed June 21, 2020, <https://agrilifeextension.tamu.edu/library/disasters-safety/preparing-for-the-unexpected/>.

Hornedo, Florentino, Rainier Ibane, and Felice Prudente Sta. Maria. *Fact Finding on Social and Human Science Education in the Philippines*. Pasay City: UNESCO National Commission of the Philippines, 2010. Institute of Medicine. *High-Energy, Nutrient Dense Emergency Relief Food Product*. Washington, DC: The National Academies Press, 2002.

International Food Policy Research Institute (IFPRI). “Food Security.” Accessed May 5, 2020. <https://www.ifpri.org/topic/food-security#:~:text=IFPRI's%20work%20on%20food%20security,ecological%20costs%20of%20its%20production.>

Japan International Cooperation Agency (JICA), Metropolitan Manila Development Authority (MMDA), Philippine Institute of Volcanology and Seismology (PHILVOCS). “Chapter 3: Master Plan.” In *Final Report: Earthquake Impact Reduction Strategy for Metropolitan Manila in the Republic of the Philippines*. Volume 1. PASCO Corporation, March 2004. PDF. https://openjicareport.jica.go.jp/pdf/11763737_02.pdf.

Miyamoto, H. Kit. *Forum on Safe and Resilient Infrastructure: Proceedings Report, October 1-2, 2013, Manila, Philippines*. Washington, DC: The World Bank, 2014. <http://documents1.worldbank.org/curated/zh/107781468244547858/pdf/906440WP0P13100lient0Infrastructure.pdf>.

National Economic Development Authority. *Philippine Development Plan, 2017-2022*. Philippines: NEDA, 2017.

National Disaster Risk Reduction and Management Council. *National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028*. Accessed June 25, 2020. https://www.ndrrmc.gov.ph/attachments/article/41/NDRRM_Plan_2011-2028.pdf.

Office of Adult Education. *The Handbook of Adult Education in the Philippines for the Use of Adult Education Workers*. Manila: Office of Adult Education, Department of Instruction, Republic of the Philippines, 1947.

- . *Mga Halamang Pangbakod*. Manila. Office of Adult Education, 1939.
- . *Mga Pagkain sa Ikalulusog ng Katawan*. Manila. Office of Adult Education, 1938.
- Office of Civil Defense. “First Simulation Exercise for Top Government Officials in the Philippines and in ASEAN Region.” Accessed August 8, 2020. <https://ocd.gov.ph/news/568-1st-simulation-exercise-for-top-government-officials-in-the-philippines-and-in-asean-region.html>.
- Panganiban, Jose V. *Pilipino-Ingles Diksyunaryo-Tesaurus*. Lungsod Quezon: Manlapaz Publishing Co., 1972.
- Pigafetta, Antonio. “First Voyage Around the World.” In *The Philippine Islands, 1493-1898*. Volume 33. Translated by James Alexander Robertson. Mandaluyong: Cachos Hermanos, Inc., 1973.
- Public Health Agency of Canada. *Emergency Food Service: Planning for Disasters*. Canada: Minister of Health, 2007. <https://www.interiorhealth.ca/YourEnvironment/Emergency/MajorEvents/Documents/Emergency-Food-Services-Planning-for-Disasters.pdf>.
- reliefgoods.org. “Who We Are.” Accessed August 6, 2020. <http://reliefgoods.org/about/>.
- San Buenaventura, Pedro, comp. *Vocabularios de Lengua Tagala*. Pila: Thomas Pinpin and Domingo Laog, 1613. In facsimile. Archivo del Franciscano Ibero-Oriental de Madrid. Valencia: Libreria Patis-Valencia, 1994.
- SS Contributor. “Best Survival Foods: The Must Have Non-Perishables.” Skilled Survival (blog). Accessed June 21, 2020. <https://www.skilledsurvival.com/5-things-to-consider-for-the-best-survival-foods/>.
- Talingdan, Maria Elena A. “DOST’s Nutrition-Packed Emergency Foods Get Market Sales.” Accessed June 25, 2020. <https://pciard.dost.gov.ph/news/latest-news/141-dost-s-nutrition-packed-emergency-foods-get-market-share>.

Texas A&M AgriLife Extension. "Emergency Food and Water Supplies." Accessed June 21, 2020. <https://texashelp.tamu.edu/browse/disaster-preparedness-information/emergency-food-and-water-supplies/>.

The Tribune National Federation of Women's Clubs Supplement. [Philippines, 1935?].

United Methodist Committee on Relief. "Phases of Disaster Recovery: Emergency Response for the Long Term." reliefweb.int accessed August 9, 2020.

United Nations. *Transforming Our World: The 2030 Agenda for Sustainable Development*. sustainabledevelopment.un.org.

United Nations, Office for Outer Space Affairs. "Risks and Disasters." UN-Spider Knowledge Portal. Accessed August 7, 2020. <http://www.un-spider.org/risks-and-disasters>.

United Nation Internatiol Strategy for Disaster Risk Reduction. *Disaster Risk Reduction in the United Nations: 2009 Roles, Mandates and Areas of Work of Key United Nations Entities*. 2009. https://www.preventionweb.net/files/9866_DisasterRiskReductionintheUnitedNat.pdf.

———. *United Nations International Strategy for Disaster Reducation (UNISDR) Secretariat Evaluation: Final Report*. Dalberg: Global Development Advisors, February 2, 2010. https://www.unisdr.org/files/12659_UNISDRevaluation2009finalreport.pdf.

World Food Programme. "Revamped Response Centre Ready to Produce 50,000 Emergency Family Food Packs." September 30, 2015. Accessed August 9, 2020. <https://www.wfp.org/news/revamped-response-centre-ready-produce-50000-emergency-family-food-packs>.

World Population Review. "Manila Population 2020." Accessed May 5, 2020. [https://worldpopulationreview.com/world-cities/manila-population#:~:text=Manila%20is%20the%20world's%20most,kilometers%20\(16.56%20square%20miles\)](https://worldpopulationreview.com/world-cities/manila-population#:~:text=Manila%20is%20the%20world's%20most,kilometers%20(16.56%20square%20miles)).