

# The COVID-19 Pandemic in Between Climate Change and the Philippine Rice Supply Chain

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**Abstract:** Climate change is the dominant environmental issue of our time with the United Nations listing Climate Action as its 13<sup>th</sup> Sustainable Development Goal. Climatic variables have an inseparable link to agriculture, but abiotic stresses like climate change threaten Southeast Asia's agricultural sector. The sub-region's agro-system, particularly the rice sector, is one of the most vulnerable to changing global temperatures. Rice is the most important food crop of the world's population and the dominant crop in the sub-region. This places the Philippines in a precarious position considering that it is one of the biggest rice importers in the world as shown by its low total factor productivity and negative trade balance. With the onset of the COVID-19 pandemic in the Philippines on January 2020 and the imposition of a Luzon-wide lockdown in March of the same year, the food availability in the rice commodity was disrupted. This is most especially felt in the National Capital Region (NCR) which is acknowledged to have experienced the worst health impact of the pandemic and supply chain disruptions with reference to food demand and consumption. Using secondary research and semi-structured interview as methodologies, the study analyses the COVID-19 pandemic's reinforcement of the rice sector's struggle in adapting to climate change's pre-existing challenges. It argues that despite the disruption, the pandemic did not cause shortage in the supply of rice.

**Key Words:** COVID-19; climate change; agriculture; rice sector; rice supply

## 1. INTRODUCTION

Climate change transitioned from a mere subject of future speculation to a taxing reality of the present. Climate change concerns pertain to increases in events such as floods, landslides, fire, and droughts; as well as rising sea levels that threaten coastal and marine resources. Worse, it impacts all aspects of the food system including food production and food availability. It can disrupt the latter and reduce access to food.

Dabi and Khanna (2018) stated that the

inseparable link between climatic variables and agriculture has placed its impact on food systems at the forefront of the research and policy agenda in recent times. In agriculture, rice is the most important food crop and is well-adapted to monsoon Asia's warm and humid climates. It is consumed as a staple food by approximately 557 million people.

In a study by Redfern et al. (2012), the sub-region of Southeast Asia has a humid tropical climate that is extensively covered in tropical forests, yet its rice production systems have become increasingly threatened by the adverse effects of climate change

as a huge portion of the rice-growing areas are situated in especially vulnerable regions. Southeast Asian countries have made major efforts to build adaptive capacity, but this proved insufficient. The Philippines is one of the countries in the sub-region whose rice sector is most affected by this environmental crisis and this is exacerbated by other vulnerabilities such as low total factor productivity and imports exceeding exports.

Prior to the COVID-19 pandemic that began to infiltrate the country by the end of January 2020 when the Philippine government recorded its first case, the expansive rice sector was already struggling to cope with the effects of climate change. Ewing-Chow (2020) described how logistical stoppages caused by nationwide lockdowns have also made it difficult for farmers to acquire needed farm inputs such as seeds, fertilizers, and field labour. With the elderly more susceptible to the virus, productivity is also threatened given the increasing average age of rice farmers today. The pandemic has coincided with a time when climate change impacts are already undermining the yields of major food crops.

### 1.1 Scope and Limitation

Balié and Valena (2020) explained that COVID-19 has the potential to throw into disarray agriculture and food systems. However, Palo et al. (2020) clarified that health and food systems are not the same in spite of the established linkages between them, and that agricultural productivity is highly variable across the Philippines. It is for this reason that the study focused only on NCR with reference to the rice supply disruptions as it is home to almost 14 million individuals or 12.7% of the country's total population. It is also the single largest local food market with \$9.3 billion equivalent every year, capturing 18.5% of the total annual food expenses of the country.

## 2. METHODOLOGY

The study utilized secondary research, also known as desk research, in collecting existing data about climate change and its link to Southeast Asia's rice sector, and the pandemic's implications on the Philippines' already vulnerable rice sector. The data were derived from academic journals; government websites such as those of the Department of

Agriculture (DA) and the Bureau of Agricultural Research (BAR); intra-pandemic reports published by international organizations such as the United Nations Environment Programme (UNEP) and Food and Agriculture Organization (FAO), and foreign research institutions like the Australian Centre for International Agricultural research; and online news articles.

To underpin the study's main argument and to increase its overall effectiveness, the researcher also conducted a semi-structured interview with Dr. Ricardo F. Orge – the Chief Science Research Specialist of the Philippine Rice Research Institute (PhilRice) of Muñoz, Nueva Ecija. The pre-determined questions were formulated to collect qualitative and open-ended data. The online interview was conducted and recorded via Zoom due to logistical constraints and the current threat to health of the pandemic.

## 3. RESULTS AND DISCUSSION

### 3.1 Climate change effects on the rice sector have long been felt prior to the COVID-19 pandemic

According to FAO, rice is the staple food of about 80% of Filipinos and is the biggest contributor to energy intake. The effects of climate change have therefore been felt even prior to the pandemic and this is evident by the numerous occurrences of droughts, strong typhoons, rising temperatures, crop sensitivity, rising seawater level, and other extreme events that have affected many of the country's rice fields and rice production systems.

The Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) notes that an average of 20 typhoons enters the Philippine Area of Responsibility annually with some of them causing highly damaging landfall. Buan et al. (1996) found that from 1968 to 1990, tropical cyclones and floods comprised 48% of the losses in both rice and corn: 38% due to droughts and 18% due to pests and diseases. In *The Philippine Strategy for Climate Change Adaptation 2010-2022*

document, the report revealed that agricultural damage from the worst typhoons in the Philippines from 1990-2007 amounted to ₱95.8B.

Stuecker et al. (2018) explained that planting dates in the Philippines vary between regions, which are mostly based on climate differences. Although rice is grown throughout the year, it is during the wet season when the largest production share is grown. Farms are generally small, or less than 2 hectares on average, which potentially limits the implementation of advanced farming technologies.

The dominant climate influence on inter-annual timescales is from the El Niño-Southern Oscillation (ENSO) which has pronounced effects on global rainfall and temperature variability, particularly in the Indo-Pacific Region. El Niño events (warm phase of the ENSO) have a negative effect on farming in the tropical western Pacific region (Naylor et al., 2001). Previous work on ENSO in the Philippines has shown that rice production during the dry season is negatively impacted on Luzon island by El Niño (Roberts et al., 2009).

Dr. Orge mentioned that in 1998, rice production was reduced due to El Niño and a decade later, in 2008, the surge in rainfalls caused flooding in many rice production areas. The crisis resulted in an initiative of then PhilRice Executive Director Ronilo A. Beronio in 2011 to create a Climate Change Centre that will help farmers adapt to the crisis such as developing water-saving technologies during seasons of drought, and to encourage them to plant short duration crops instead of relying on rice production.

### 3.2 The Department of Agriculture created programs to combat climate change before and during the COVID-19 pandemic to ensure food availability

RA No. 9729 known as the Climate Change Act of 2009 was enacted as the Philippines' response to changing global conditions. The law mandates "mainstreaming of climate change in policy formulation of programs and projects, plans and

strategies, and policies, the creation of a Climate Change Commission, and the establishment of a Framework Strategy and Program for climate change". Aiming to reinforce the implementation of RA 9729 under the agriculture and fisheries sector, then DA Secretary Proceso Alcala issued in 2013 the memorandum "Mainstreaming Climate Change in the Department of Agriculture Programs, Plans, and Budget". Through this, the Adaptation and Mitigation Initiative in Agriculture (AMIA) Program was launched under the leadership of the Systems-Wide Climate Change Office (SWCCO). The BAR, which is one of the staff bureaus of the DA, crafted in 2011 the Climate Change Research, Development and Extension Agenda and Program (CC RDEAP) for Agriculture and Fisheries. The agenda follows the policy thrust of "Philippine Adaptation and Mitigation in Agriculture Knowledge Toolbox", which is one of the seven Systems-Wide Climate Change Program of the DA.

When the novel coronavirus reached the Philippines in late January 2020, the DA decided to implement nationwide the Duterte Administration's "Plant, Plant, Plant Program" or "Ahon Lahat, Pagkaing Sapat (ALPAS) Laban sa COVID-19" program to benefit farmers, fishers, and consumers alike. Incumbent DA Secretary William Dar stated that the program is guided by the 'Whole of Nation' approach as advocated by President Rodrigo Duterte to increase the country's level of food adequacy during the emergency situation resulting from the pandemic. He added that "of the ₱31 billion additional budget, the government will pursue a ₱8.5 billion 'Rice Resiliency Project' targeting to produce more rice to increase the sufficiency level from 87% to 93%".

### 3.3 NCR experienced food supply disruptions but not food shortage during the COVID-19 pandemic

On March 8, 2020, the State of Public Health Emergency to address COVID-19 was declared by the Philippine government, and then on March 13 the government imposed enhanced community quarantine (ECQ) over the entire Luzon.

Similar measures were subsequently imposed throughout the country. Although the pandemic is mainly a health concern, the requisite measures set in place to contain the virus, especially the restrictions on the movement of people and goods, did have a considerable impact on all levels of the agricultural chain.

A report published by FAO in January 2021 revealed that this impact includes farmers reporting difficulties in securing farm inputs because of the closure of agro-trading shops, as well as closure of banks and non-operation of financiers. Workers also had a strenuous time reporting to their workplace due to local government unit-level quarantine regulations and suspension of public transport. Some elderly business operators decided to stay at home instead of opening their business.

The local enforcement of transport restrictions created supply chain bottlenecks. However, it is worth noting that the DA's food pass and the Department of Trade and Industry's (DTI) cargo pass succeeded in assuring the movement of goods and agricultural inputs. Input and credit support from the government was also cited by farmers as helpful. In addition to these helpful mechanisms, the DA-National Food Authority (NFA) has completed the prepositioning of rice stocks as early as March 2020, which are ready for delivery and disbursement in strategic areas in Metro Manila. NFA administrator Judy Carol Dansal reported to Secretary Dar that the grains agency has sufficient rice at hand that can meet the consumption requirement of the National Capital Region for the next two weeks – with additional supply available depending on the demand.

Dansal further reported that NFA's market share is expected to increase by 20% once LGUs start buying their rice requirements from government-owned warehouses because of the ECQ imposed in Metro Manila. LGUs were given the go-ahead to coordinate with any NFA warehouse that service their respective jurisdictions. For example, CAMANAVA can go to the North District Office, while Quezon City and Manila can buy from the Central District Office. It is to be recalled that Secretary Dar crafted an action plan on the food availability and supply, particularly staple food like

rice, as a pre-emptive intervention in the event that the COVID-19 situation gets worse.

RA No. 11469 known as 'The Bayanihan to Heal as One Act' allowed local government units to access their Calamity Funds to purchase fresh rice directly from the farmers and in some cases, at an even higher price than would be found at the market. National agencies also purchased large volumes of rice from cooperatives and other farming groups for distribution as integral to the distribution of relief packages in areas without rice production such as NCR and other highly urbanized areas. These relief packages contained 2-5 kilograms of rice per family, and were distributed with varied frequency from March to June 2020.

There have been disruptions, but there was no shortage in the densely populated NCR. This is documented in the NFA's 2020 Annual Report highlighting its services during the pandemic period from March 16 to December 31, 2020 including its distribution of 588,083.75 MT of rice which is equivalent to 175% accomplishment of the year's target of 336,650 MT, with an 11.85% market participation rate. The NFA initiated weekly rice caravans to supplement the rice stock inventory in NFA-NCR during the pandemic's height from March to May 2020 where a total of 149,800 bags or 7,490 MT were dispersed by the NFA provincial offices in Regions I, II, and III to NFA-NCR.

### 3.4 The other “shock” apart from climate change is not the COVID-19 pandemic but trade liberalization

Dr. Orge explained during the course of the interview that the other shock alongside climate change is economic in character. With the passage of the RA No. 11203 or the Philippine Rice Trade Liberalization Law, the quantitative restriction (QR) on rice import was lifted and replaced with a 35% tariff for ASEAN imports and a 50% tariff for non-ASEAN imports. With these rates, imported rice, especially those coming from Thailand and Vietnam, sell at very low prices against which our local farmers are unable to compete.

In an article by Purugganan (2019), pro-farmer groups have argued consistently that the already fragile rice sector will further be weakened by the pursuit of liberalization without adequate government support for local agriculture. The passage of the bill into a law would only serve to discourage farmers from engaging in agriculture due to low incomes, and would reduce local rice production. With the liberalization in place, traders have been hesitant in purchasing *palay* from local farmers since imported rice is more low-priced.

#### 4. CONCLUSIONS AND RECOMMENDATIONS

Climate change remains to be the most adverse challenge to the Philippine rice sector. The COVID-19 pandemic merely reinforced it as seen in the rice supply disruptions in NCR caused by the imposed lockdowns, but it did not cause shortage in the supply of rice. Although there is a link between the strain of climate change and the pandemic, the latter did not affect the sufficiency level of the country's rice production, but only its movement.

Methods that can help the rice sector in climate adaptation include alternate wetting and drying (AWD) of wider rice farming areas. AWD is a water-saving technology that can change practices to improve the livelihoods of many rice farmers. Another method for rice farmers to increase and protect their production is building agricultural or multi-purpose farm structures that are typhoon-resilient. Local government units and farmer cooperatives can bolster this by procuring needed machineries such as tractors that will significantly increase rice farmers' level of production while decreasing the effort force required to doing the work.

The International Rice Research Institute (2018) recommended the deployment of technologies, especially postharvest technologies, at farm or village level that can lead to farm sufficiency and empowerment of farmers in their transactions with millers and traders. To ensure an efficient and effective technology transfer, investing on research and development is a must. Agricultural policies that are science-based will result in the improvement of farm productivity and enhancement of overall food quality while

simultaneously protecting the environment.

#### 5. ACKNOWLEDGMENTS

It is a privilege to meet the Chief Science Research Specialist of the Philippine Rice Research Institute, Dr. Ricardo F. Orge. I am grateful for his time and the abundance of information he shared which significantly contributed to the shaping of this study.

Special thanks to the Office of the Executive Director of the Philippine Rice Research Institute for their kind assistance.

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