

58 hectares of land and a young farmer of nearby Plaridel who noted the increasing hectare of prime agricultural land in his area being lost to conversion into industrial and commercial projects such as property development.

The research focused on these two areas in Bulacan because of the clear example of land conversion of prime agricultural land into commercial developments that benefited big business.

These interviews were complemented by discussions with non-government organizations as well as research of pertinent government data needed to shed light on the phenomenon of land conversion. An online Focus Group Discussion (FGD) to discuss the case and discuss potential courses of action was organized with farmers and civil society support groups last 8 March 2021.

More interviews and visits to the pertinent government offices would have been conducted but it became impossible to do so because of the lockdown protocols put in place since March 2020 to halt the spread of COVID-19 that led to limited government operations, bans on face-to-face meetings, and strict controls over people's mobility.

Also, financial data were difficult to come by as non-listed or private corporations in the Philippines have long been reluctant to share their data to the public. Plus, the quarantine measures made it impossible to personally go to the offices of the Securities and Exchange Commission (SEC) to conduct a more in-depth study. Private companies can also hide behind stringent data privacy and protection and bank secrecy laws, allowing them to keep potentially incriminating evidence of wrongdoing beyond the reach of regulators.

Shrinking agricultural lands in Central Luzon and Bulacan

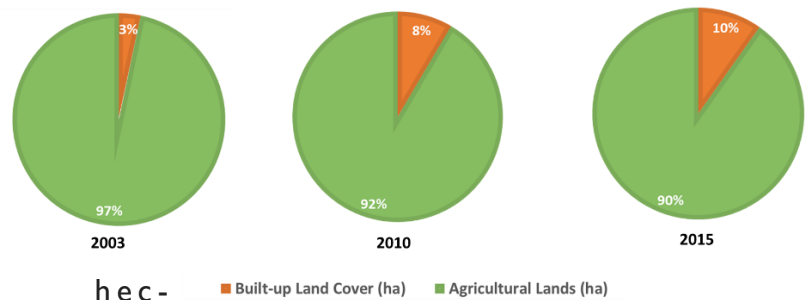
In Central Luzon and particularly in the province of Bulacan, the trend of declining agricultural land is unmistakable.

As is the trend for the rest of the country, the number of farms considerably increased while the size of farms and average farm area (in hectares) decreased in Central Luzon from 2002 to 2012, thus pulling down potential productivity. As per the 2012 Census of Agriculture and Fisheries, the total number of farms in the region was 361,545 (from 341,466 in 2002), totaling 446,176 hectares (from 552,104 in 2002), with an average farm area of 1.2 hectares (from 1.6 hectares in 2002) (PSA, 2012a).

This general trend may be attributed to three factors: a) land division among families, b) the implementation of agrarian reform, and c) conversion of agricultural lands into other uses for urban development (PSA, 2012b).

As the region is where most of the country's primary food staple is produced, agriculture is also a significant livelihood source in Central Luzon. As of April 2020, around 213 thousand individuals in the region² are employed in agriculture – more than 201,000 males and over 11,000 females (PSA, 2020f).

Share of Built-up Areas and Agricultural Lands Among Total Alienable and Disposable Lands: Central Luzon, 2003 to 2015



Authors' computation. Data sources: Philippine Forestry Statistics (2003, 2010, 2015), NAMRIA Land Cover shape files (2003, 2010), Central Luzon Regional Development Plan: 2017-2022 Midterm Update (from NAMRIA's partial 2015 Land Cover)

Figure 2. Share of Built-Up Areas and Agricultural Lands in Central Luzon

² 6.6% of the total working population of around 3.2 million

However, as Figure 2 shows, the decrease in agricultural lands in favor of built-up areas has been becoming more apparent in recent years. Spatial data from the National Mapping and Resource Information Authority (NAMRIA) exhibit how the share of agricultural lands has been shrinking from comprising 97 percent (1.14 million hectares) of the total alienable and disposable (A&D) lands in 2003, to 90 percent (1.09 million hectares) of the total A&D lands in 2015.³

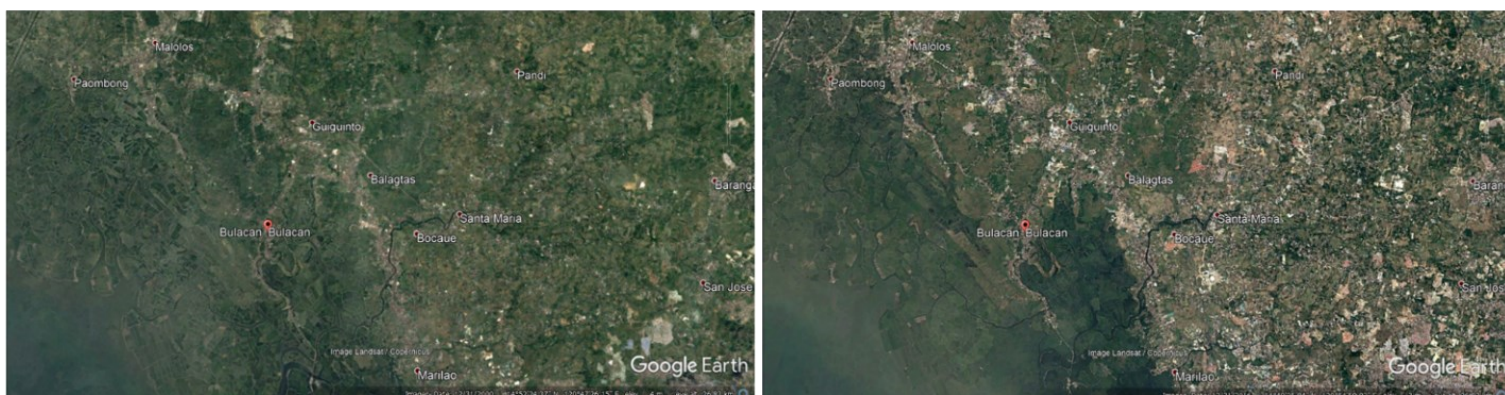
It is not difficult to see that decreasing agricultural lands and increasing population are closely correlated. With a growth in population comes the need to satisfy demand for housing and urban infrastructure. Such is evident in Central Luzon.

As early as 1995, the forces that would exert pressure on the rapid industrialization of the area to the detriment of the agriculture were already at play. The administration of former President Fidel V. Ramos, who then advocated the rapid industrialization of the Philippine economy, sought Japan's help to put together the Central Luzon Development Program (CLDP). Central Luzon was given special focus because it was deemed a rapidly urbanizing region, a receiving area of spillover from Metro Manila and with highly established agriculture as the mainstay of its regional economy, putting it in a position to contribute a great deal to the country's gross domestic product. The CLDP "paradigm" espoused by the Japan International Cooperation Agency that prepared the master plan indeed spelled out the vision to make Central Luzon an "industrial heartland."

Sitting just above Metro Manila, the region continues to be more populous and urbanized. The most recent population census revealed that the population of Central Luzon grew by over one million from 2010 to 2015, reaching over 11.22 million individuals with a 1.95 percent growth rate.

Bulacan — a peri-urban province that begins where Metro Manila ends — had the highest population with 3.2 million people dwelling in the area. It was also the fastest-growing province in Central Luzon, with an average annual population growth rate of 2.28 percent from 2010 to 2015 (PSA, 2016). A quick bird's eye view of the province through satellite images (see Figure 3) will confirm how the landscape of the province changed over the course of a few years, due to increasing population and the growth of built-up areas.

Satellite Image: Province of Bulacan, 2000 (left) and 2016 (right)



Source: Google Earth Pro

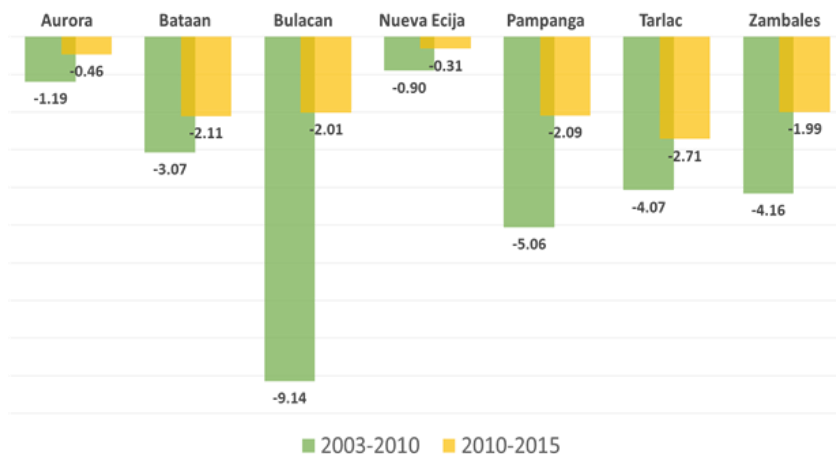
Figure 3. Satellite Images of the Province of Bulacan

³ Computed by Naungayan using data from Philippine Forestry Statistics (2003, 2010, 2015), NAMRIA Land Cover shape files (2003, 2010), Central Luzon Regional Development Plan: 2017-2022 Midterm Update (from NAMRIA's partial 2015 Land Cover)

Unsurprisingly, Bulacan is also the province with the highest percentage of decline of agricultural lands among the provinces of Central Luzon. From 2003 to 2015, Bulacan shed 19 thousand hectares of agricultural lands (about 11 percent of the 176 thousand hectares of agricultural lands in 2003). Figure 4 shows this comparative decrease from 2003 to 2010, and from 2010 to 2015.

Palay is the primary crop planted in the farmlands of Bulacan and in the rest of Central Luzon. Since 1978, the areas harvested for *palay* in Bulacan ranged from a low of 40 thousand to 88 thousand hectares. In 2019, *palay* was harvested in almost 78 thousand hectares of land in Bulacan -- the smallest annual area harvested since 2011. From 2014 to 2019, the area harvested for *palay* also decreased by 4.84 percent as is shown in Table 2. By contrast, although the hectares are small compared to those for *palay*, area planted for high value crops (such as banana, mango, string beans, ampalaya, and papaya) increased substantially.

**Percentage of Decline of Agricultural Lands:
Provinces of Central Luzon, 2003-2010 and 2010-2015**



Author's computation. Data sources: Philippine Forestry Statistics (2003, 2010, 2015), NAMRIA Land Cover shape files (2003, 2010), Central Luzon Regional Development Plan: 2017-2022 Midterm Update (from NAMRIA's partial 2015 Land Cover)

Figure 4. Percentage of Decline of Agricultural Lands in the Provinces of Central Luzon

Table 2. Area Harvested and Volume of Production of Selected Crops in Bulacan

Selected crops in Bulacan	Area Harvested		Volume of Production	
	2019 (in hectares)	% of Change (2014-2019)	2019 (in metric tons)	% Change (2014-2019)
Palay	77,990	-4.84	368,658	-0.93
Corn	1,158	-0.77	5,008	36.61
Banana	1,540	16.73	20,257	6.76
Mango	8,926	1.87	9,218	6.26
String beans	835	25.00	17,769	-1.19
Ampalaya	305	6.64	4,801	15.87
Papaya	278	42.78	3,854	78.51

Author's computation. Data source: Philippine Statistics Authority (2020d, 2020e, 2021a, 2021b)

The trends in the volume of production are less straightforward. The annual volume of *palay* production in Bulacan dipped to as low as 119 thousand metric tons in 1998. In recent years however, the production volume has been swinging stably between 350 and 380 thousand metric tons per year. The production volume in 2019 was 368 thousand metric tons, almost three thousand metric tons higher than the volume for the previous year. Compared to 2014 though, the 2019 figure was almost one percent lower. Meanwhile, corn and other high value crops have significantly increased their production volume as may be gleaned from Table 2 above.

When put into the context of the Philippines being an agricultural, rice-eating country who also happens to be the world's top rice importer (Ocampo, 2020), the decline in area harvested for *palay* and the stagnation of *palay* production in Bulacan are causes for concern.

Relying on imports for a food staple makes the country vulnerable to uncertainties. Rice-exporting countries are not immune to the effects of climate change, extreme weather events, and sudden economic shocks that may affect the quantity and prices of their rice (Almojuela-Tolentino and Tolentino, 2015). As we witnessed during the COVID-19 pandemic, major exporters like Vietnam may decide to restrict trade should they need to keep supplies abundant for their own citizens.

Drivers of land conversion in Bulacan

While Bulacan's, Central Luzon's, and the country's populations continue to rise, the *total* land area remains the same. Hence, increased pressure to feed more people with decreasing areas for cultivation may lead to increased conflicts related to access to resources and food (Almojuela-Tolentino and Tolentino, 2015).

Housing and Infrastructure Needs

Due to its proximity to the National Capital Region, housing and infrastructure projects proliferate in Bulacan as a contributing solution to decongest Metro Manila.

Box 2. Expansion of Real Estate Projects in Bulacan

Bulacan is described as the *Gateway to the North*, being the province that first greets travelers as they move past the northern tip of Metro Manila. The province, with three component cities and 21 municipalities, is the fastest growing economy in Central Luzon. Being in close proximity to Metro Manila, it has been a favorite destination for property developers and investors looking to capitalize on the desire of urban workers for decent dwellings away from the congestion of Metro Manila. The province is a haven for low-, mid-, and high-end real estate projects.

Informal settlers from Metro Manila cities of Makati, Manila, Taguig, and Quezon City are offered affordable housing units in Bulacan. Areas like San Jose del Monte City and the municipality of Pandi are where many of the National Housing Authority's resettlement sites are.

Meanwhile, big real estate companies such as Senator Villar's Vista Land — under which is Camella, the Philippines "largest homebuilder;" Ayala Land; Avida Land; Asian Land; and Rockavilla Realty and Development have developed and continue to develop multiple subdivisions and housing projects in Bulacan. Camella for one, has a 300-hectare residential site in Malolos, three subdivisions in San Jose del Monte, and an ongoing project in the municipality of Bulacan.

Responding to investor interest in Bulacan, several infrastructure projects and development plans will make the province more accessible to families in search of a home, everyday commuters, and businesspersons alike. Among such projects are the Stage 3 of the Metro Manila Skyway System, Metro Rail Transit System Line 7, proposed 2,500-hectare Bulacan International Airport, Bulk Water Supply Project, and 50 billion PHP Mega City. □

Source : Lamudi, 2019

The more specific drivers of land conversion in Bulacan are shown through the case studies in Baliuag and Plaridel in Bulacan (to be presented in the next section).

DAR and LGU favoring local elites

This issue is particular to the case in Baliuag, Bulacan where a land development proceeded within the more than 57-hectare landholdings in Sta. Barbara, Baliuag despite an ownership issue pending for around 50 years between the farmers and the landowner.