03 Overlay of Economic Growth, Demographic Trends, and Physical Characteristics

CHAPTER 3

Overlay of Economic Growth, Demographic Trends, and Physical Characteristics

The Philippine Development Plan (PDP) 2017-2022 incorporates a national spatial strategy (NSS) that sets the direction of the physical development of the country. It promotes sustainable human settlements development, access to social services, integration of leading and lagging regions, and building resilience. The health risk brought about by the COVID-19 pandemic has given prominence to the need to improve living standards in cities and promote regional development, ensure connectivity and safe mobility, and manage disaster risks—which are addressed to a large extent by the NSS. As a planning framework, the NSS is complemented by more detailed sectoral plans such as those for transport and other infrastructure, as well as master plans for specific metropolitan areas.

The complexity of development problems, policy agenda-setting, current institutional setups, and financial resource availability and allocation are major challenges that need to be addressed. It is crucial that each government entity understands and seriously takes on its role, with technical, managerial, and financial assistance from development partners, in implementing the NSS to enable all Filipinos to enjoy comfortable and secure lives wherever they choose to locate.

Supporting regional agglomeration. The NSS seeks to decongest the National Capital Region (NCR) and direct growth to regional centers where high growth potentials have greater chances of being realized sooner. In urban areas where population and enterprises concentrate, the NSS will support agglomeration by making cities livable and efficient. Strategies will thus aim to expand and improve social services, fast-track investments in transportation infrastructure, and promote "smart city" principles in urban development.

The COVID-19 pandemic has also amplified other vulnerabilities of the current geospatial structure of cities. We have seen the dangers of high population density, poor air quality, and lack of green spaces. During the lockdown, people in the cities have become food-vulnerable, largely because of difficulty in access to food. These additional considerations will be factored in enhancing the NSS.

Increasing connectivity. Increasing connectivity between production areas and market centers, and providing the missing links for municipal/city, provincial, and national road networks are some of the goals under the NSS. The approved National Transport Policy (NTP), which envisions a Philippine transport system that is "safe, secure, reliable, efficient, integrated, intermodal, affordable, cost-effective, environmentally sustainable, and people-oriented," will be an important instrument in achieving this goal. The subsequent formulation of a transport system master plan will guide the rational development of an intermodal transport network in the country.

Reducing vulnerability. Considering the climate change projections and threats of geologic hazard events, as well as public health emergencies, the government will continue to invest in disaster risk reduction (DRR) and climate change adaptation (CCA) initiatives to reduce vulnerability to multiple hazards. Recent disaster and risk information generated by science agencies and the evaluation of COVID-19 response will lay the groundwork for institutional and community-level resilience for prospective optimality of result.

In the remaining years of the implementation of the updated PDP 2017-2022, the government will continue to pursue the NSS to promote inclusive and sustainable growth, and enable Filipinos to live comfortable lives wherever they choose to locate.

Economic and Demographic Trends

The population size and distribution determine the magnitude and structure of an economy. This can result in varying concentrations of production and consumption in cities and municipalities, and in their respective regions. For the Philippines, the noticeable trends are as follows:

- Total population continues to increase. While the overall growth rate is decreasing, population will remain high given the large base population of the country.
- NCR has the highest share in gross domestic product (GDP), but its growth is slower compared to some other regions.
- Most regions with larger population also have larger gross regional domestic product (GRDP), with few exceptions. The cities or group of cities within these regions contribute largely to the regions' population size and economic development.

These imply that certain locations tend to generate more economic activities as they attract establishments and people looking for opportunities. Thus, economic growth also tends to be concentrated in few locations, leaving other areas behind. Yet, growth in urban areas can also cause pollution and congestion, as seen in NCR despite the slowdown in its population growth in recent years.

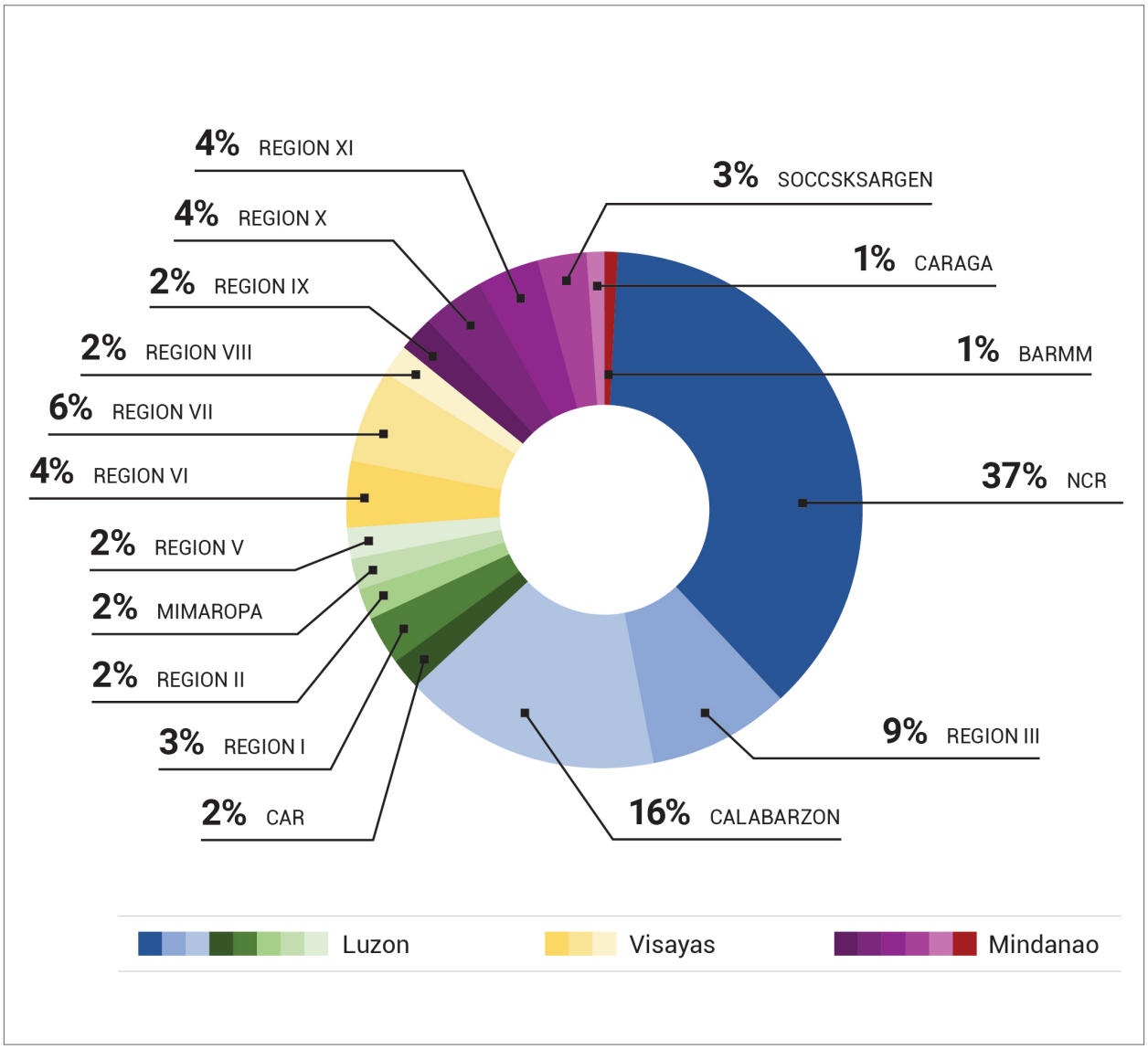
Regional shares

Accounting for 37 percent of GDP from 2010 to 2018, NCR had the highest average regional share in the national economy for the same period; CALABARZON had the second largest share with 16 percent, followed by Central Luzon with 9 percent. These regions account for 62 percent

of the GDP while the rest of Luzon, Visayas, and Mindanao contributed 11 percent, 12 percent, and 15 percent, respectively.

Central Visayas, which posted an average growth rate of 7.8 percent from 2010 to 2018, was the fastest-growing economy among the 17 regions. This was followed by Central Luzon and Davao Region which both grew at an average of 7.7 percent. Caraga Region and NCR also grew higher than the 6.3 percent national average, at 6.8 percent and 6.4 percent, respectively. The slowest growth rates were observed in MIMAROPA (3.8%), Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) (3.1%), and Eastern Visayas (2.7%).

Figure 3.1 Average Regional Share in GDP, 2010-2018



Source: Philippine Statistics Authority (PSA)

Table 3.1 GRDP Growth Rate, 2010-2018

REGION	GRDP GROWTH RATE									Average 2010-2018
	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Philippines	7.6	3.7	6.7	7.1	6.2	5.9	6.9	6.7	6.2	6.3
NCR	7.4	3.2	7.0	9.1	5.9	6.6	7.4	6.2	4.8	6.4
Cordillera Administrative Region (CAR)	6.5	1.3	(2.9)	5.4	3.3	3.7	2.3	12.2	7.3	4.3
I (Ilocos Region)	6.8	2.5	7.2	7.0	6.4	5.0	8.5	5.8	6.5	6.2
II (Cagayan Valley)	(0.8)	5.7	7.2	6.6	7.2	3.7	3.8	7.1	3.3	4.9
III (Central Luzon)	10.0	7.1	7.2	4.5	9.3	5.3	9.5	9.2	7.1	7.7
CALABARZON	11.7	1.6	7.0	6.6	5.1	5.9	4.8	6.7	7.3	6.3
MIMAROPA	(0.3)	3.1	4.1	1.3	8.3	1.7	2.6	5.2	8.6	3.8
V (Bicol Region)	3.5	1.9	8.8	8.2	4.3	8.4	5.5	5.0	8.9	6.1
VI (Western Visayas)	4.5	6.2	7.0	3.4	5.2	8.3	5.9	8.6	6.1	6.1
VII (Central Visayas)	12.9	6.8	9.4	7.4	7.8	4.8	8.6	5.2	7.6	7.8
VIII (Eastern Visayas)	3.0	2.1	(6.8)	4.6	(2.4)	3.9	12.0	1.8	5.9	2.7
IX (Zamboanga Peninsula)	1.4	0.1	12.4	4.2	6.6	7.2	4.6	2.4	6.3	5.0
X (Northern Mindanao)	6.5	5.8	6.5	5.4	7.1	5.5	7.5	5.8	7.0	6.3
XI (Davao Region)	5.6	3.7	7.0	6.7	9.3	7.9	9.5	10.7	8.6	7.7
SOCCSKSARGEN	2.2	5.3	7.3	8.4	6.2	3.3	4.9	8.3	6.9	5.9
Caraga	10.7	8.5	11.5	8.2	9.4	4.2	2.0	3.6	3.2	6.8
BARMM	6.7	(0.3)	0.0	3.8	3.0	(0.8)	0.4	7.5	7.2	3.1

Source: PSA

Real per capita GRDP

NCR had the highest per capita GRDP in 2018 at PHP253,893, which was nearly thrice the national average of PHP86,370. It increased by 8 percent from PHP232,739 in 2016. CALABARZON and CAR have also posted per capita GRDP higher than the national average, with PHP104,708 and PHP87,722, respectively. On the other hand, BARMM had the lowest real per capita GRDP among the regions in 2018 with only PHP14,657, a slight increase from 2016 (PHP13,366). Following BARMM, Bicol Region and Caraga Region posted the lowest real per capita GRDP in 2018 with PHP29,369 and PHP36,651, respectively. The three lowest-ranking regions have consistently fared poorly in terms of per capita GRDP. This indicates that inequality in per capita GRDP across regions persists over time. As such, the government has been increasing efforts in pushing for policies that will improve the socioeconomic conditions in lagging regions.

Table 3.2 Per capita GRDP, 2010-2018

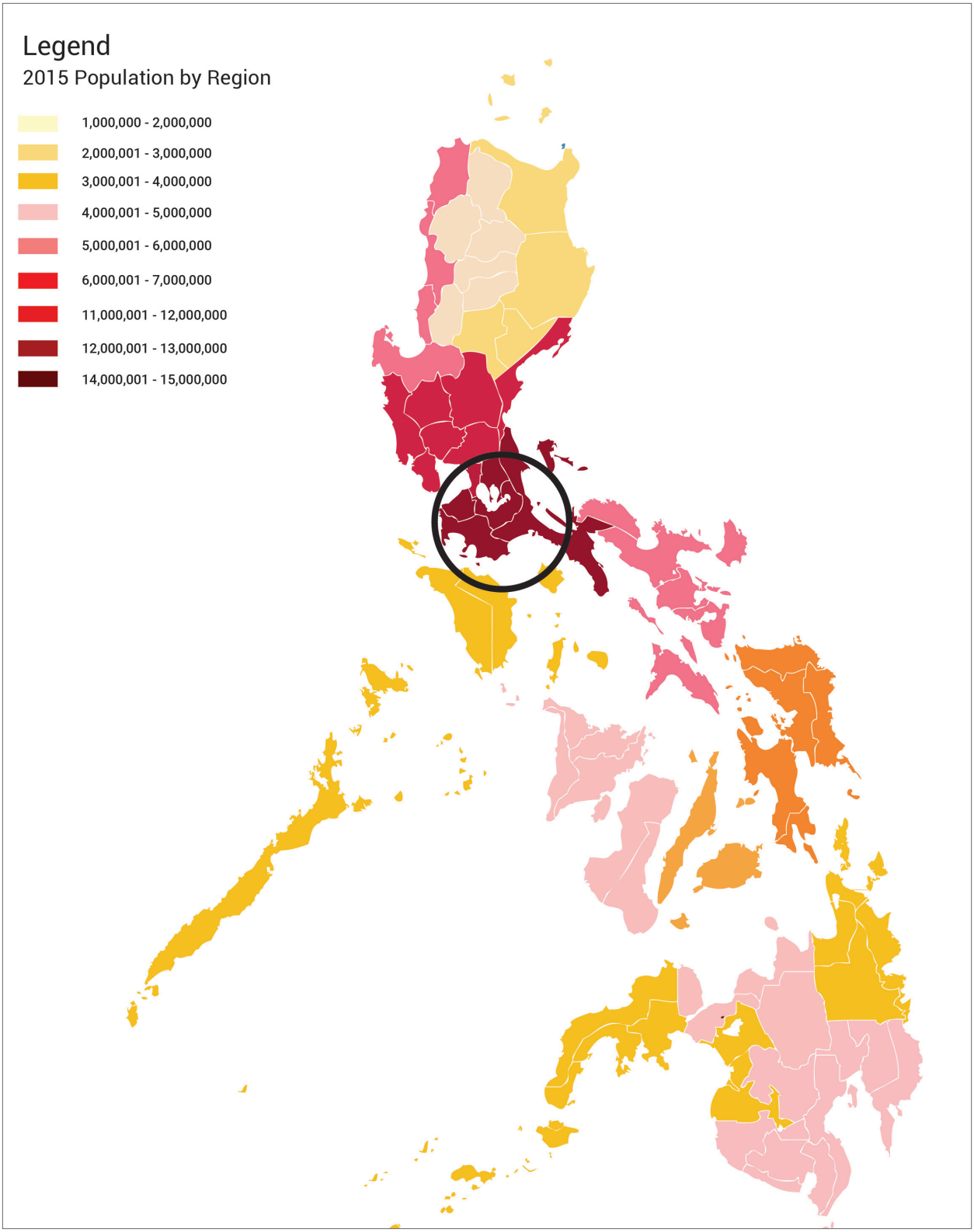
REGION	2010	2011	2012	2013	2014	2015	2016	2017	2018
NCR	171,442	173,975	181,748	195,070	202,904	218,987	232,739	244,589	253,893
CAR	74,107	73,945	70,156	72,759	73,971	75,048	75,401	83,153	87,722
I	37,819	38,287	40,325	42,588	44,894	46,180	49,474	51,703	54,434
II	30,851	32,167	33,816	35,462	37,645	38,436	39,344	41,571	42,387
III	50,207	52,766	55,163	56,528	60,670	63,641	68,634	73,863	78,016
CALABARZON	79,699	78,966	81,562	84,687	86,644	92,184	94,811	99,346	104,708
MIMAROPA	37,002	37,540	38,239	38,138	40,706	39,575	39,837	41,069	43,715
V	21,004	21,112	22,502	24,005	24,719	25,770	26,686	27,487	29,369
VI	31,927	33,499	35,139	35,874	37,289	39,653	41,420	44,368	46,440
VII	49,966	52,528	56,061	59,211	62,743	64,846	69,322	71,743	76,024
VIII	36,694	37,006	33,850	34,952	33,771	33,771	37,144	37,121	38,598
IX	34,245	33,726	37,077	37,991	39,887	41,873	43,043	43,326	45,265
X	48,940	50,838	52,842	54,678	57,609	60,290	63,771	66,408	70,000
XI	48,487	49,431	51,657	54,188	58,256	61,335	65,913	71,621	76,378
SOCCSKSARGEN	36,688	37,813	39,417	41,814	43,493	44,178	45,459	48,277	50,644
Caraga	26,504	28,362	30,985	33,037	35,672	35,553	35,679	36,235	36,651
BARMM	14,588	14,348	14,052	14,380	14,613	13,646	13,366	14,012	14,657

Source: PSA

Human Development Index (HDI)

The Philippines' HDI, a measure of average achievement in key dimensions of human development (health, education, and standard of living), increased from 0.693 in 2015 to 0.712 in 2018. The Philippines ranked 106th out of 189 countries, an improvement from its rank of 115th in 2015. There is no available HDI estimates by region in 2018. Using the regional estimates based on 2015 and 2017 data, NCR recorded the highest HDI in 2015 with 0.750 and even improving in 2017 with 0.759. Other regions with HDI values higher than the country's HDI were CALABARZON (0.724), CAR (0.722), Central Luzon (0.712), and Ilocos Region (0.705). BARMM had the lowest HDI value at 0.583. These results point to the need to improve and equalize access to basic services to improve the quality of life across regions.

Figure 3.2 Population by Region, 2015



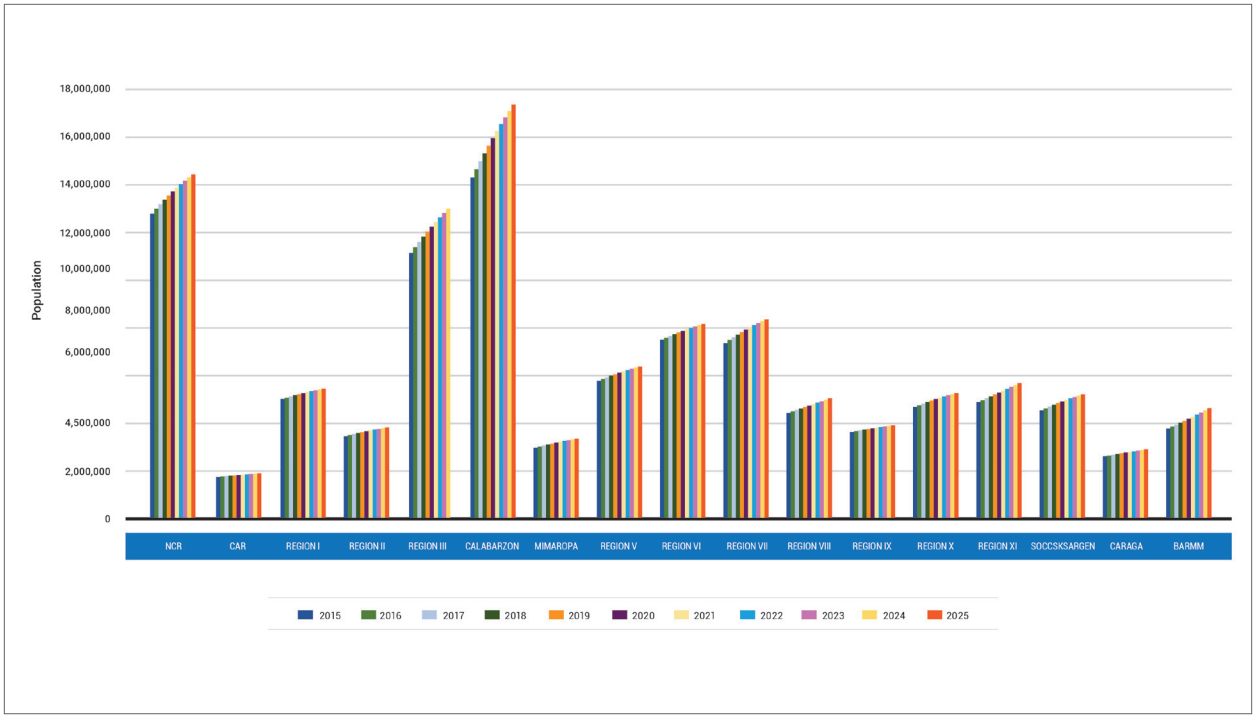
Source: PSA

Population trends

Based on the 2015 Census of Population, the country's population was 100,979,303. This is expected to increase to 115 million by 2025 despite the projected slowdown in average annual population growth rate from 1.73 percent (2010-2015) to 1.41 percent (2020-2025). By region, CALABARZON had the largest population with 14.4 million, followed by NCR (12.9 million), Central Luzon (11.2 million), and Western Visayas (7.5 million). CAR was the least populated region with a total population of 1.7 million. Other less populated regions were MIMAROPA (3 million) and Caraga (2.6 million).

Projections show that CALABARZON will still have the largest population with 17.5 million in 2025, followed by NCR (14.5 million), and Central Luzon (13.2 million). CAR will remain as the least populated region with 1.9 million by 2025.

Figure 3.3 Regional Projected Population, 2015-2025

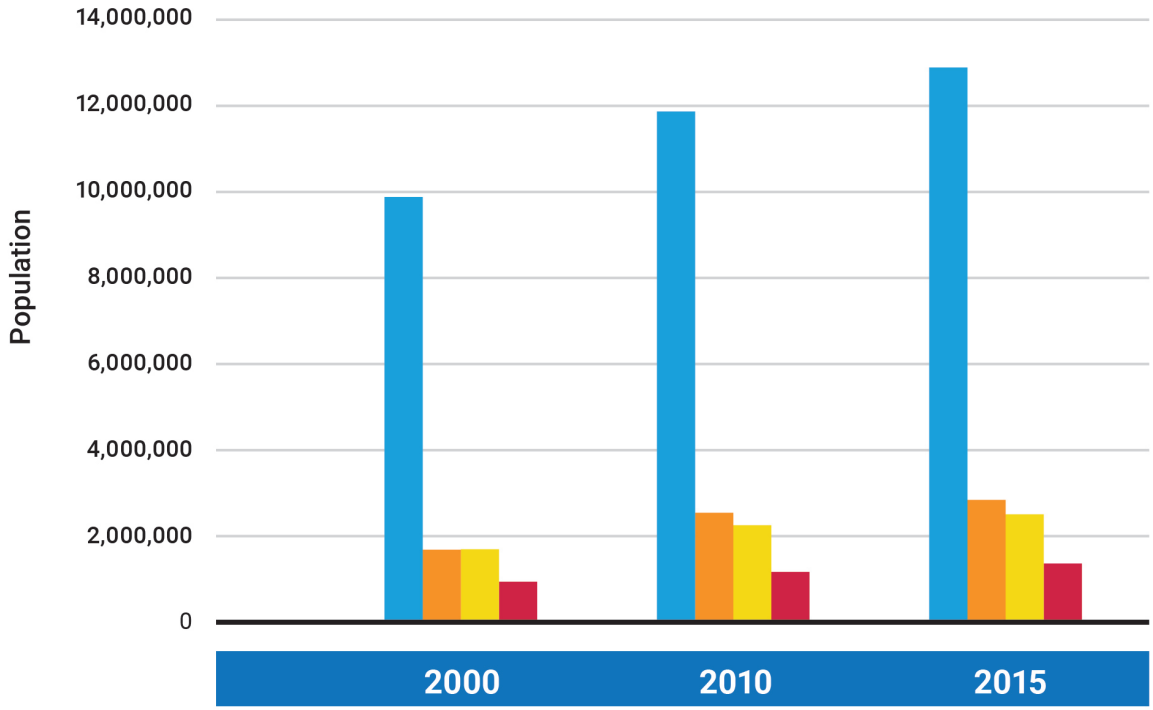


Source: PSA

Population growth of metropolitan areas and major cities

NCR had the largest population with 12.9 million among the metropolitan areas in 2015, followed by Metro Cebu (2.9 million), Metro Davao (2.5 million), and Metro Cagayan de Oro (1.4 million).

Figure 3.4 Population of Metropolitan Areas: 2000, 2010, and 2015

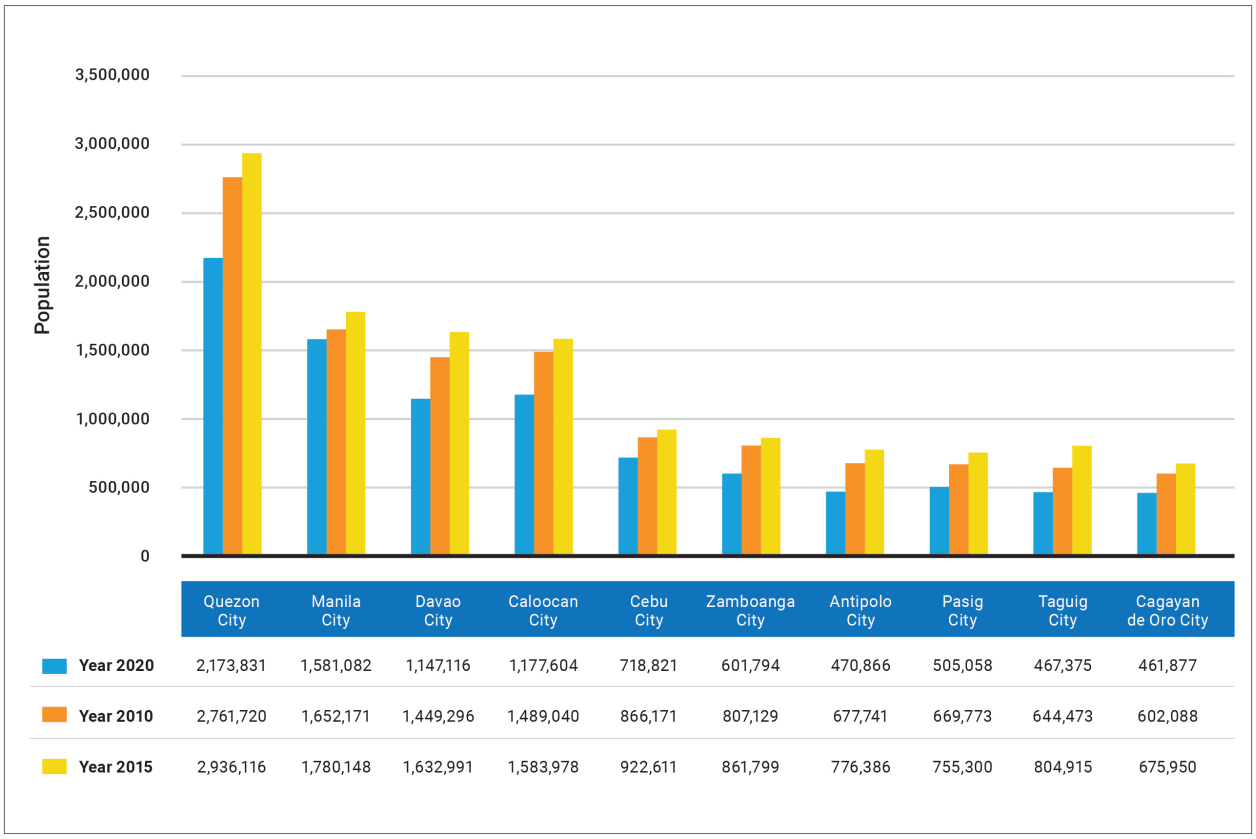


	2000	2010	2015
Metro Manila	9,873,397	11,855,875	12,877,253
Metro Cebu	1,693,881	2,551,100	2,849,213
Metro Davao	1,704,501	2,262,518	2,516,216
Metro Cagayan de Oro	953,101	1,180,943	1,376,343

Source: PSA

In the same year, cities with the highest population in NCR were Quezon City (2.94 million), Manila City (1.78 million), and Caloocan City (1.58 million). Outside of NCR, Davao City (1.63 million), Cebu City (922,611), and Zamboanga City (861,799) were the most populated cities in the country.

Figure 3.5 Population of Major Cities: 2000, 2010, 2015



	Quezon City	Manila City	Davao City	Caloocan City	Cebu City	Zamboanga City	Antipolo City	Pasig City	Taguig City	Cagayan de Oro City
Year 2020	2,173,831	1,581,082	1,147,116	1,177,604	718,821	601,794	470,866	505,058	467,375	461,877
Year 2010	2,761,720	1,652,171	1,449,296	1,489,040	866,171	807,129	677,741	669,773	644,473	602,088
Year 2015	2,936,116	1,780,148	1,632,991	1,583,978	922,611	861,799	776,386	755,300	804,915	675,950

Source: PSA

With few exceptions, more populated regions also have larger shares in GDP and real per capita GRDP, and have higher HDI value. This can be observed in NCR and its neighboring regions that have the highest population and economic development at the same time.

Given these economic and population trends, it is important to manage the development process such that access to social services and growth opportunities will be more equal across areas and that the economy and the people are resilient.

The National Spatial Strategy

The NSS aims to contribute to inclusive growth by improving physical connectivity and providing equal access to quality social services across regions. It also seeks to decongest NCR and direct growth to key centers throughout the country where the benefit of agglomeration can have greater potential of being realized. An overlay of the geographic characteristics, population, and economic growth shows the areas where growth has been taking place and the characteristics of these growth centers. This guides the identification and development of strategic solutions such as the location of transportation linkages, high-quality urban services, as well as social development programs to improve the quality of life of Filipinos.

Implementing the NSS requires cooperation across national and local governments to ensure coherence of development plans and efforts. The NSS also provides a basis for identifying more specific projects that can serve as the catchment and market or service areas of the various centers. It can then be a reference for sectoral plans, spatial development frameworks of Regional Development Plans (RDPs), provincial development and physical framework plans, and Comprehensive Land Use Plans (CLUPs) of cities and municipalities.

Network of settlements

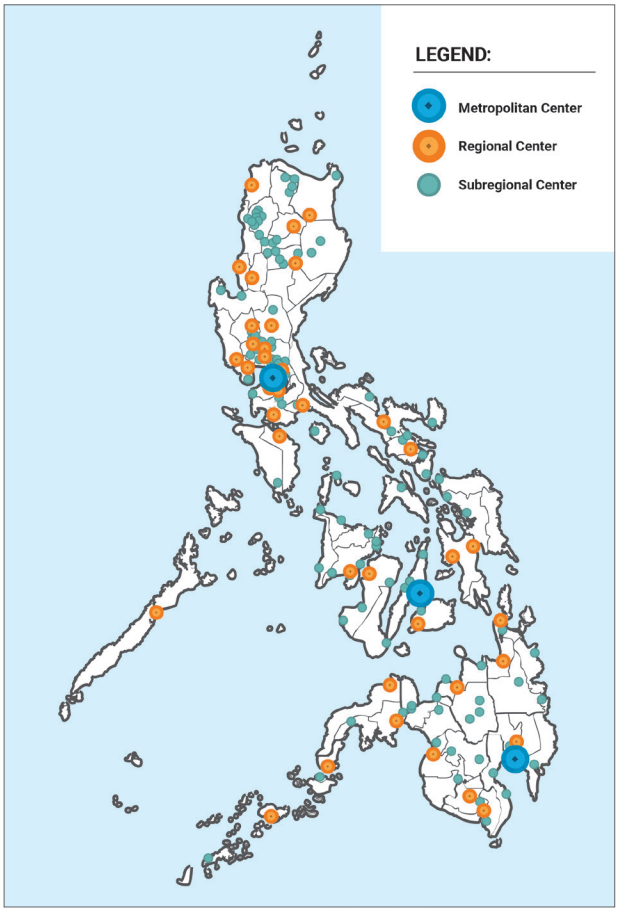
The country has a three-tiered network of settlements: (a) metropolitan centers; (b) regional centers; and (c) sub-regional centers. These centers form an efficient network of settlements with distinct functional roles contributing to the flow of economic activities within the network.

Metropolitan centers

Metropolitan centers provide higher forms of economic services and facilities, including innovation and advanced services, culture and tourism, education and research, transportation and trade, manufacturing, and technology development.

Metro Manila, Metro Cebu, and Metro Davao are the three major metropolitan centers in the country that serve as centers of commercial, financial, and administrative activities. Metro Manila continues to function as the country's premier metropolitan center—the seat of the national administration and the center of commerce and trade. Metro Manila's influence to its adjacent cities and municipalities has become more evident with new and important developments in the past three years. Notable of these is the New Clark City in Central Luzon, which is proposed to be a major business district with complete facilities for offices, housing, and sports and leisure. Moreover, Executive Order (EO) No. 119, s. 2020 mandated the establishment of the national government administrative center in Capas, Tarlac to serve as an integrated government center outside of the NCR, and, in case of a disaster, a recovery center and back-up administrative center. It has the locational advantage of being at the convergence points of North Luzon Expressway (NLEX), Subic–Clark–Tarlac Expressway (SCTEX), Gapan-San Fernando-Olongapo (GSO) road, the Manila-North Road, and the new North-South Commuter Railway.

Figure 3.6 Major Urban Centers



Second to NCR is Metro Cebu which serves as the natural economic, commercial, and logistics center for the Visayas. The Metro Cebu Development and Coordination Board has completed its road map study for urban development highlighting competitiveness, mobility, livability and metropolitan management. It has also identified its priority project packages such as the Mega Cebu expressway, Cebu bus rapid transit, the new Cebu international container port, the third Cebu-Mactan bridge, and coastal road.

The third metropolitan center is Metro Davao, which is a major international gateway and serves as Mindanao's premier commercial hub and center for education and health services. This role will be enhanced by the construction of the first phase of the Mindanao Railway Project in the first quarter of 2021. Furthermore, the institutionalization of the Metro Davao Development Authority will strengthen coordination among the component cities and municipalities in the planning, implementation, and monitoring of priority projects.

By 2025, Metro Cagayan de Oro is expected to be the fourth metropolitan center. It currently functions as a major gateway and transshipment hub and a key educational center in Northern Mindanao with potential growth of banana, rubber, bamboo, cacao, coco coir, coffee, agribusiness, and tourism.

Regional centers

Regional centers serve as regional markets and service centers to several provinces. Markets can support a range of services and investments and have direct linkages to metropolitan centers. They host government administrative centers, industrial and commercial areas, and transportation and tourism hubs.

Sub-regional centers

Sub-regional centers connect to, and serve as service centers of, smaller provincial and local centers. Considering the network of settlements listed below, the Updated PDP 2017-2022 will continue to pursue regional agglomeration, connectivity, and vulnerability reduction.

Table 3.3. Network of Settlements

NETWORK	REGION/PROVINCE/CITY/MUNICIPALITY		
Metropolitan Centers	• NCR • Metro Cebu • Metro Davao	• By 2025, Metro Cagayan De Oro (CDO City, Jasaan, Villanueva, Tagoloan, Claveria, Manolo Fortich, Opol, El Salvador, Alubijid, Laguindingan, Gitagum, Libertad, Initao)	
Regional Centers	• Laoag City • San Fernando City • Dagupan City • Tuguegarao City • Santiago City • Baguio City-La Trinidad-Itogon-Sablan-Tuba-Tublay • Eastern Kalinga (Tabuk City-Pinukpuk-Rizal) • Cabanatuan City • Tarlac City • Subic-Olongapo City • Balanga City • Clark (Angeles City-San Fernando City-Mabalacat City-New Clark City) • Baliuag	• Malolos City • Dasmarinas City • Antipolo City • Calamba City • Batangas City • Lucena City • Calapan City • Puerto Princesa City • Legazpi City • Naga City (Camarines Sur) • Iloilo (Iloilo City -Pavia- Oton-Leganes, Santa Barbara-Cabatuan-San Miguel) • Bacolod (Bacolod City-Bago City-Talisay City-Silay City-Murcia)	• Tagbilaran City • Tacloban City • Ormoc City • Zamboanga City • General Santos City • Butuan City • Cotabato City • Dipolog City • Jolo • Surigao City • Pagadian City • Koronadal City • Tagum City
Sub-regional Centers	• Alfonso Lista (Potia) • Banaue • Bangued • Bauko • Besao • Bontoc (Mountain Province) • Danglas	• Flora • Kiangan • La Paz (Abra) • Lamut • Langiden • Luna (Apayao) • Peñarrubia	• Pidigan • Pudtol • San Jose City • San Jose del Monte City • San Miguel (Bulacan) • Santa Maria (Bulacan) • Bacoor City

NETWORK	REGION/PROVINCE/CITY/MUNICIPALITY		
Sub-regional Centers	• Baras (Rizal) • Biñan City • Cabuyao City • Cainta • Gen. Mariano Alvarez • General Trias City • Imus City • Trese Martires City • Lipa City • Nasugbu • Santo Tomas (Batangas) • Kabankalan City • Estancia • Dumangas • San Jose (Antique) • Miag-ao • Catbalogan City • Calbayog City • Jordan • Kalibo • Dumaguete City • Bogo City • Toledo City • Tubigon • Iligan City • Passi City • Panabo City • Marawi City • Ozamiz City • Sadanga • San Isidro (Abra) • Santa Marcela • Tayum • Tubo • Alaminos City • Urdaneta City • Vigan City • Cauayan City	• Ilagan City • Santa Ana (Cagayan) • Arayat • Capas • Concepcion (Tarlac) • Hagonoy (Bulacan) • Lubao • Mabalacat City • Marilao • Mariveles • Mexico • Meycauayan City • San Fernando City (Pampanga) • San Ildefonso (Bulacan) • Binangonan (Rizal) • Rodriguez (Montalban) • San Mateo (Rizal) • San Pablo City • San Pedro City • Santa Rosa City • Sariaya • Silang • Tanauan City • Tanza • Taytay (Rizal) • Boac • Romblon (Capital) • San Jose (Occidental Mindoro) • Daet • Iriga City • Ligao City • Masbate City • Matnog • Pili • Sorsogon City • Tabaco City • Virac	• Roxas City • Malay • San Carlos City (Negros Occidental) • Malaybalay City • Valencia City • Digos City • Polomolok • Midsayap • Mati City • Kidapawan City • Gingoog City • Bislig City • Tandag City • Tacurong City • Bongao • Parang (Maguindanao) • San Francisco (Agusan del Sur) • Tubod (Lanao del Norte) • Maramag • Ipil • Glan (Saranggani) • Malita • Laguindingan • Isabela City - Lamitan • Aurora (Zamboanga del Sur) • Bayog • Buug • Dumalinao • Dumingag • Kabasalan • Mahayag • Margosatubig • Molave • Sindangan

Functions of centers

The metropolitan centers of NCR, Metro Cebu, and Metro Davao provide domestic and international services and facilities. Meanwhile, regional and sub-regional centers have distinct sizes, services, natural physical features, and strategic locations that enable them to host certain activities or functions.

Regional Centers

- ***Regional administrative centers***: Baguio City, Tuguegarao City, San Fernando City (La Union), Calamba City, Legazpi City, San Fernando City (Pampanga), Calapan City, Tacloban City, Iloilo City, Butuan City, Pagadian City, and Koronadal City

- ***International gateways (examples)***: Iloilo City, Bacolod City, Metro Clark Area, Zamboanga City, Legazpi City, Laoag City, Puerto Princesa City, and General Santos City

- ***Tourism hubs (examples)***: Legazpi City, Naga City, Calapan City, Puerto Princesa City, Laoag City, Tagbilaran City, and Surigao City

Sub-regional Centers

- ***Tourism hub (examples)***: Alaminos City, Matnog, Malay, Kalibo, Jordan, and Tubigon
- ***Agri-industrial centers (examples)***: Midsayap, Mati, Cauayan City, Polomolok, Kidapawan City, Bislig, Tacurong City, and Calbayog City
- ***Industrial centers (examples)***: Biñan City, Sta. Rosa City, Lipa City, Tanauan City, San Carlos City, Iligan City, Subic, and Mariveles
- ***Higher education (examples)***: Marawi City and Dumaguete City

These centers share the same characteristics as some of the existing economic zones identified in the Special Economic Zone Act and the tourism circuits identified in tourism plans.

Regional agglomeration

Regional agglomeration aims to improve urban efficiencies and maximize the benefits of scale and agglomeration economies. It recognizes the role of cities as engines of growth and sites of innovation. It will build on the current trends of growth such as the faster growth in some regions. The spatial strategy aims to manage the growth of key centers in the country for them to function more efficiently.

Manage the growth process through an integrated approach to urban planning. Cities face various urban challenges such as congestion, pollution and waste, lack of green spaces, and increasing demand for social services including housing, health, sanitation, and education. Addressing these requires an integrated approach to urban planning and development. To this end, master plans have been formulated to address urban inefficiencies and guide sustainable urban development. The Roadmap for Transport Infrastructure Development for Metro Manila and its Surrounding Areas and the Urban Transport Master Plan of Metro Cebu and the Davao City Infrastructure Development Plan and Capacity Building Project (IM4Davao) in Metro Davao are being implemented to reduce traffic, enhance competitiveness, improve safety and disaster response, and contribute to sustainable urban development of the areas covered.

Other master plans are now being formulated for 11 cities which will guide the preparation and implementation of programs and projects for sustainable infrastructure development *(see Chapter 19)*. These plans also adopt the smart city principle in urban mobility, natural and built environment, sustainable energy, and economic competitiveness. The implementation of these plans will require retooling of current government institutions and advancements in planning approaches and urban management practices.

Pursue sustainable rural development and ensure better access to opportunities. The development gap between urban and rural areas manifests in the lack of economic opportunities and access to social services and facilities including health, education, and water and sanitation in the countryside. These are issues that the government needs to address to ensure that no one is left behind, whether they live in urban or rural areas. Balancing regional development entails the transformation of rural communities into productive agri-industrial or tourism areas with improved delivery of social services including education, health, and housing *(see Chapters 8, 9, 10, and 12)*.

With this in view, the *Balik Probinsya, Bagong Pag-asa* (BP2) program was created through EO No. 114, s. 2020 to bring about a more equitable distribution of wealth, resources, and opportunities to the countryside. It involves the convergence of national government and local government unit (LGU) programs and projects that will not merely bring back people to the provinces, but promote sustainable communities in the countryside.

Linking rural areas to urban areas physically through transportation systems or virtually through information and communications technology (ICT) will enable people in rural areas to gain more access to alternative opportunities for employment, and bigger markets for their products. Moreover, better connectivity will make it easier for people in rural areas to have access to higher levels of services such

as universities and specialized health institutions which may not be feasible in smaller communities.

Increase investments and spending efficiency to expand and improve the quality of social services to meet growing demand. Growth centers attract people seeking better opportunities and access to amenities. To meet growing demands that come with continuous increase in population, the government will expand and improve facilities and provide additional human resources in the sectors of housing, health, sanitation, and education *(see Chapters 10, 12, and Chapter 19)*. As centers of consumption, cities are also the main producers of waste, hence, the need to promote waste reduction and management.

Fast-track investment in transport infrastructure and traffic management system to reduce congestion and ensure mobility. The government will continue to fast-track investment in transportation infrastructure to reduce traffic congestion and shorten distance and travel times between business and industrial centers, tourism areas, services, and residential areas. The immediate remedial measures will be the enforcement of traffic laws, traffic management measures, and transport demand management schemes. Application of intelligent transportation systems will also be explored to help manage traffic flow in growth centers efficiently, minimize accidents, and provide transport and traffic information to passengers and decision-makers *(see Chapter 19)*.

Adopt "smart city" principles and increase technical, managerial, and financial capability of national and local institutions to implement such. Improved urban environment and quality of life will be pursued through urban renewal and urban redevelopment projects. The current pandemic has brought greater consciousness on urban development designs and housing standards, considering that the most number of cases are in cities with higher population densities and where physical distancing is a challenge. This does not necessarily invalidate the agglomeration strategy as co-location promotes efficiency in service delivery, land use, and urban development. However, the aspect of livability will be given more emphasis by promoting healthier lifestyles, environmental consciousness, and sustainable urban design. The government will pursue and apply "smart city" principles such as urban mobility to include cycling lanes and walking paths, greener city, sustainable energy, public safety, and economic competitiveness to achieve sustainable urban development. This will require new or higher level technical, executional, and financial management skills among national agencies and local governments. Capacity building will therefore be encouraged through partnerships with academic and training institutions, private sector, and international development agencies.

Improve social service delivery of LGUs. LGUs need to be able to provide access to adequate and high-quality social services, set up appropriate facilities, and institute waste management schemes. The national government and development partners will be able to provide technical and financial assistance to them. Collaboration and complementation between national and local governments will be crucial to ensure coherence of development plans so that there will be no gaps in service delivery.

Connectivity

As agglomeration takes place, socioeconomic inequalities across space can be reduced through improved inter-connection of settlement areas. Rather than forcing a uniform dispersal of development which can create inefficiencies, the strategy is to establish better transport networks that will enable urban centers with high growth potentials to further expand growth while providing better access to opportunities to lagging areas. With more efficient network of settlements, more opportunities for production and employment are expected to be generated, thus increasing family incomes and savings for investment and growth, and reducing poverty. Beyond physical connectivity through transport systems, investments in telecommunications, technology, and innovation will ensure that even lagging or conflict-affected areas will have access to services and employment opportunities.

Flesh out and swiftly implement policies and plans for promoting connectivity and guiding infrastructure development in the country. The NEDA Board has already approved the NTP which will guide the rational development of an intermodal transport network, promote sub-regional cooperation on multimodal transport system, and create a transport database. Harmonized efforts of various government agencies and instrumentalities will be key in ensuring that such policies will be properly implemented. Timely completion of transport infrastructure projects under the Build Build Build (BBB) program will be pursued by addressing implementation bottlenecks under the new normal *(see Chapter 19)*.

Identify the remaining missing links in local and national road networks. An integrated approach to transport planning and project implementation will be pursued through closer engagement between national transport agencies and LGUs. With their expertise, the Department of Public Works and Highways (DPWH) and the Department of Transportation (DOTr) can provide assistance in coming up with their local transport and traffic management programs that are aligned with national priorities *(see Chapter 19)*. These can then be integrated in the spatial and development plans of LGUs. For hazard-prone areas, road networks for redundancy have to be constructed to establish alternative routes for disaster response and evacuation.

Ensure the accessibility, availability, affordability, convenience, and reliability of public transport (e.g., railway, bus, etc.). This will involve rationalization of the public transport design or transport routes to serve new and emerging origins and destinations. Public transport terminals that integrate different modes of public transportation will be established in strategic locations. The nautical highway of the country will be strengthened through the improvement of existing Roll-on, Roll-off (RORO) ports and the establishment of new ones. Improvements and expansion of airport facilities across the country will also be continued to meet the demand and improve the quality of air travel *(see Chapter 19)*.

Develop an efficient logistics system. The COVID-19 pandemic has brought forth the importance of efficient logistics system, particularly in ensuring undisrupted delivery of food and essential goods. Efficient transport systems are also critical in times of crises. Moreover, concerned agencies such as the Department of Agriculture (DA) and the Department of Trade and Industry (DTI) will collaborate in mapping out supply chains in their respective sectors and identify bottlenecks and the corresponding measures so that the goods will be delivered to their destinations on time *(see Chapter 9)*. Private logistics companies can also utilize ICT to monitor incidents that can delay or disrupt the movement of raw materials and manufactured products, including medicines and medical equipment.

Increase investment in ICT infrastructure. Reliable ICT infrastructure has become vital in ensuring continued government and private sector services, particularly as physical distancing and quarantines have prevented on-site activities *(see Chapter 19)*. Hence, connectivity under the new normal will rely more on digital infrastructure to support online businesses and personal transactions, as well as online education and health services *(see Chapters 9 and 10)*. Flexible work arrangements such as work from home and compressed work weeks in government and private sector offer relief to the congested transport networks but will also require more ICT investments for faster digital connectivity.

Reduction of vulnerability

The NSS seeks to make vulnerability reduction an integral part of development. This involves instituting prevention and mitigation measures to reduce the impact of climate change and disasters. These measures include redundancy routes to provide access to areas affected by disasters.

Due to its geographical location, the country is susceptible to geologic and hydrometeorological hazards. Disaster risk is also aggravated by uncontrolled development, particularly within ecologically-sensitive and hazard-prone areas.

Based on the 2019 World Risk Index, the Philippines ranked 9th among countries with the highest disaster risk, a slight improvement compared to 2018 where the country ranked 3rd. This can be attributed to the country's continuous effort to strengthen its capacity to prepare for and mitigate the negative effects of disasters and climate change.

Despite this gain, the country still needs to maintain substantial investments in vulnerability reduction initiatives given the level of risk. According to the latest Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) climate change projections, we can expect (a) continuous warming at a rate of 0.1˚C per decade; (b) increasing trends in annual rainfall and seasonal rainfall in many parts of the country associated with extreme rainfall events; (c) minimal increase in the frequency of very strong tropical cyclones exceeding 170 kilometers per hour; and (d) a 20-centimeter increase in sea level rise by the end of the 21st century.

Mainstream DRR and CCA in identified growth centers, considering the expected increase in population and economic activities in these areas. Locations of new development projects and urban expansions will be guided by hazard maps and information to minimize exposure to hazards. This will also entail ensuring that alternate or redundant access are in place to prevent isolation during disasters, and ensure that there are properly placed and designed evacuation sites.

Promote extensive use of recently developed information technologies to manage disaster risks. The Department of Science and Technology–Philippine Institute of Volcanology and Seismology (DOST-PHILVOLCS) is currently implementing its GeoRiskPH program. The HazardHunter application developed under this initiative can quickly generate an initial geologic and hydrometeorological hazards assessment for specific locations. Its GeoMapper feature, which stores hazard and disaster exposure information, is intended to serve as the central source of information for accurate disaster risk assessments, and its GeoAnalytics application performs hazards and risk assessment that provides a visualization through maps and charts.

Given the significant accomplishments of the national government in generating scientific information on hazards and disaster risks, the continuous data build-up and updating of relevant databases and platforms of DOST and other agencies will be pursued and supported. Disaster risk assessments will be undertaken, utilizing more recent information on hazards and elements exposed to it. These will be used to update local development and sectoral plans. These updated assessment results can also guide adjustments or recalibrations of DRR and CCA interventions.

LGUs and citizens must be able to access, appreciate, and make full use of these information technologies for disaster preparedness and mitigation actions. In this regard, LGUs will be trained and assisted using these for planning and identifying, designing, financing, and implementing the initiatives to increase their resiliency. Inter-LGU cooperation will also be pursued to address the impacts of natural hazards that affect multiple municipalities, cities, and provinces.

Build capacities to mitigate and respond to disease outbreaks and pandemics. Past efforts on disaster risk reduction and management (DRRM) have focused on geologic and hydrometeorological hazards. COVID-19 has exposed the need to build the capacities of national and local governments to prepare for and respond to a disease outbreak of such a magnitude of pandemic. The traditional DRRM and crisis management frameworks will be reviewed and updated to ensure the country's readiness to prepare, mitigate, and respond to public health emergencies, given also the possibility that disease outbreaks can occur simultaneously with natural hazards such as typhoons or floods. Disaster management agencies such as the Office of Civil Defense (OCD), and LGUs will be adequately provided with equipment and medical supplies and evacuation centers and quarantine facilities that will be designed and constructed to meet the varying requirements of such hazard events.

Providing the Spatial Directions to the *Balik Probinsya Bagong Pag-asa* (BP2) Program

The BP2 program was established in May 2020 through EO 114. The program aims to promote balanced regional development and equitable distribution of wealth, resources, and opportunities. This involves complementary strategies of enabling economic growth in areas with high potentials, and providing better opportunities to the countryside, thereby achieving inclusive growth.

The program, which will have short-, medium-, and long-term components, will provide the mechanism for convergence among regional agencies and local governments in investing in sustainable rural development projects. Specifically, the BP2 program is expected to evolve from government-assisted relocation to voluntary relocation of people from congested urban communities to more progressive rural communities. This can be achieved through empowering local industries, enhancing agricultural productivity, providing quality and efficient social services, and upgrading infrastructures.

The NSS will guide the implementation of the BP2 program by providing the trends in settlements development and the roles of various urban centers in the country. These will inform more detailed planning and analysis of BP2 interventions such as the possible locations of agri-industrial areas, housing projects, and infrastructure facilities that will address the immediate needs of communities, the connectivity among urban centers and production centers, and other critical spatial functions that will determine comparative advantages of specific areas.