



**Central Luzon**  
**Regional Development Plan**  
2017-2022



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Regional Office 3

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## **Central Luzon Regional Development Plan 2017-2022**

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"Isang batang lansangan na  
naghahangad ng isang  
maginhawa, matatag, at  
panatag na buhay"

Image Courtesy:

**Jhoecas A.C. Inocillas**

Nueva Ecija University of Science and Technology

1st Place Winner, Ambisyon Natin 2040

Poster Making Contest of NEDA Regional Office 3





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## Foreword

Earlier this year, we launched the **Philippine Development Plan (PDP) 2017-2022** through the initiative of the **National Economic and Development Authority (NEDA)**. The PDP serves as our medium-term blueprint towards attaining a better and more secure life for our people in the next 25 years.

To complement the PDP, we are now launching the **Regional Development Plans (RDPs) 2017-2022**. This will provide direction in policy formulation for the next six years as we steer public and private investments to the regions.

We intend to place regional development at the center of our socioeconomic development strategy. By creating more jobs, improving social services, encouraging innovation and connecting the countryside to growth centers, we will reduce poverty and accelerate development in rural areas.

The RDPs will also prioritize accelerating infrastructure development, protecting our natural resources, addressing criminality and illegal drugs, and ensuring peace and security in the regions.

I commend the Regional Development Councils for aligning their respective regional plans to our PDP through fruitful collaboration with local government units and the private sector. I am confident that through the RDPs, we can realize our goal of laying a solid foundation for a stronger and more resilient nation for future generations.

  
**RODRIGO ROA DUTERTE**  
President  
Republic of the Philippines

**MANILA**  
May 2017

## Message

With regional and local development being one of the main thrusts of President Rodrigo R. Duterte's socioeconomic development agenda, the Philippine Development Plan (PDP) 2017-2022, the first medium-term plan anchored on a long-term vision (AmBisyon Natin 2040), was specifically designed to cultivate growth and reduce inequality between the regions. This can be achieved by directing development to key areas throughout the country and connecting these growth centers to rural areas.



As such, the Regional Development Plans (RDPs), as accompanying documents to the PDP, will be an important tool in guiding both public and private investments that will catalyze growth in the regions. It will also serve as our blueprint in laying down the three main pillars of *Malasakit*, *Pagbabago*, at *Patuloy na Pag-unlad* that will help us build a secure, comfortable, and strongly rooted life for all Filipinos by 2040.

I would like to express my gratitude to the Regional Development Councils (RDCs) for their leadership in the crafting of the RDPs, and in coordinating various development efforts in the regions. Finally, we seek the support of our local government units, regional institutions, and private institutions to support the realization of our plans as we venture towards the creation of prosperous, peaceful and resilient communities.

A stylized, handwritten signature in black ink, appearing to read 'Ernesto'.

**ERNESTO M. PERNIA**

Secretary of Socioeconomic Planning



## Message

Greetings!

The role of Central Luzon in national development is not only defined by its infrastructure assets, endowment of natural resources and level of human capital development but also by its proximity to Metro Manila and it being the third largest regional economy in the country next only to CALABARZON and the National Capital Region. Its development pathway therefore cannot be compromised as a consequence of poor planning.

It is with this premise that the Regional Development Council III (RDC III) led and harmonized a top-down and bottom-up approach in the formulation of the Central Luzon Regional Development Plan (CL-RDP) for the period 2017-2022. National priorities were given regional dimensions while subnational and local challenges also assessed and provided with appropriate strategies and interventions.

Following the principle of participatory planning, the CL-RDP was prepared through a series of stakeholder consultations with regional line agencies, local government units, private sector organizations, business groups and other key development partners. Overall, it embodies ambitious and aggressive plan of actions to steer growth and ensure that benefits spread to everyone.

While we have witnessed a robust economic performance of the regional economy in the past six years, a lot remains to be done particularly in ensuring that climate hazards and other natural disasters do not undermine our gains.

With the strong support of the Central Luzon Regional Development Council, together let us build a vibrant and brighter future for the entire region.

A handwritten signature in dark ink, appearing to be 'Edgardo D. Pamintuan'.

**EDGARDO D. PAMINTUAN**

RDC Chairman &  
Mayor, Angeles City

## Preface

Towards the end of 2016, we started to formulate the region's development blueprint for the period 2017-2022. To continue the planning cycle, a thorough assessment of the implementation of the previous medium-term Plan was done to identify key accomplishments during the period as well as areas needing further improvement.



The Central Luzon Regional Development Plan (CL-RDP) 2017-2022 is anchored on the country's Long-Term Vision for 2040 of a "*Matsatag, Maginhawa at Panatag na Buhay*" or popularly known as the *AmBisyon Natin 2040*. The CL-RDP is also a regional translation of the thrusts and priorities of the Philippine Development Plan. The Plan reflects the development agenda of the current administration highlighting the role of the region in achieving the overall goal of inclusive growth, a high trust society, and a competitive knowledge economy. Development strategies needed to sustain Central Luzon's growth trajectory to further advance the regional economy are likewise embodied in the Plan.

The strategies deemed vital in achieving the region's development will then be translated into concrete actions in the form of programs and projects. These will be identified and contained in the accompanying document of the CL-RDP which is the Central Luzon Investment Program (CLIP).

I therefore call on every stakeholder to support the region's pursuit for development using the CL-RDP 2017-2022 as guide. Together, let us build the future of Central Luzon today. Mabuhay ang Gitnang Luzon!

Maraming salamat po.

A handwritten signature in black ink, appearing to be 'Santos' with a stylized flourish.

**SEVERINO C. SANTOS**  
NEDA Regional Director





Republic of the Philippines

## **CENTRAL LUZON REGIONAL DEVELOPMENT COUNCIL (RDC III)**

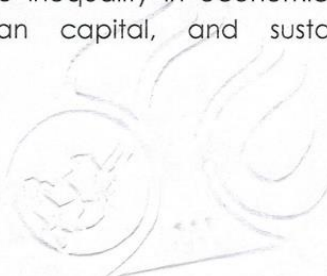
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(Excerpts from the Minutes of the Second Meeting of the 15<sup>th</sup> Regional Development Council (RDC) III held on 28 March 2017 at NEDA Regional Office III Building, DMGC, Maimpis, City of San Fernando, Pampanga)

### **15<sup>th</sup> RDC III Resolution No. 03-01-2017**

#### **APPROVING AND ADOPTING THE CENTRAL LUZON REGIONAL DEVELOPMENT PLAN (CL-RDP) 2017-2022**

- WHEREAS, through Memorandum Circular No. 12, s. 2016, the President directed the formulation of the country's national and regional development plans and the accompanying investment programs, and to monitor their implementation;
- WHEREAS, in line with Section 3 of Executive Order No. 5, s. 2016, the Philippine Development Plan (PDP) 2017-2022 shall be the first of four medium-term development plans that shall be anchored on the country's 25-year Long-Term Vision (LTV), also known as *AmBisyon Natin 2040*;
- WHEREAS, the national and regional development plans shall also take into account the 2030 Sustainable Development Agenda (SDA) and the President's 0-10 point Socio-economic Agenda to ensure coherent, sustainable, and focused strategies;
- WHEREAS, the CL-RDP follows the development agenda of the PDP 2017-2022 highlighting the role of the region in achieving the national overall goal of an inclusive growth, a high-trust society, and a globally competitive knowledge economy;
- WHEREAS, the overall strategies in realizing the goal are categorized into three pillars: (i) to enhance the social fabric "*Malasakit*", (ii) to reduce inequality "*Pagbabago*", and (iii) to increase potential growth of the economy "*Patuloy na Pag-unlad*" supported by a strong foundation in security, infrastructure development and ecological integrity;
- WHEREAS, the CL-RDP 2017-2022 reflects the potential of Central Luzon to create massive opportunities for all segments of society through a transparent and responsive governance determined to accelerate infrastructure development and technological progress, maintain peace and security, reduce inequality in economic development opportunities, improve human capital, and sustain a healthy and well-



functioning environment that can foster socio-economic growth for future generations; and,

WHEREAS, by virtue of Executive Order No. 325 on the Reorganization of the Regional Development Councils (RDCs), the RDC is vested with the authority to coordinate the preparation, implementation, monitoring and evaluation of short and long-term regional development plans and investment programs;

NOW, THEREFORE, ON MOTION DULY SECONDED, BE IT

RESOLVED, AS IT IS HEREBY RESOLVED, That the RDC III approves and adopts the Central Luzon Regional Development Plan, 2017-2022; and,

RESOLVED FINALLY, That copies of this resolution be furnished to all concerned;

UNANIMOUSLY APPROVED;

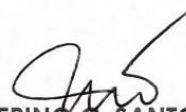
Done this 28<sup>th</sup> day of March in the year of our Lord two thousand and seventeen at NEDA Regional Office III Building, DMGC, Maimpis, City of San Fernando, Pampanga.

Certified Correct:



**AGUSTIN C. MENDOZA**  
RDC III Acting Secretary  
NEDA III Assistant Regional Director

Attested:



**SEVERINO C. SANTOS**  
RDC III Vice-Chairman  
NEDA III Regional Director

Approved:



**EDGARDO D. PAMINTUAN**  
RDC III Chairman  
Mayor of Angeles City





# Executive Summary

The Central Luzon Regional Development Plan (CL-RDP) 2017-2022 was crafted following the format of the PDP, except for some slight adjustments. As it is, the CL-RDP has 21 chapters, which are as follows:

## ***Part I: Introduction***

- Chapter 1 – The Long View
- Chapter 2 – Regional Trends and Prospects
- Chapter 3 – Overlay of Demographic Trends and Physical Characteristics:  
The Central Luzon Spatial Development Framework
- Chapter 4 – The Overall Framework

## ***Part II: Enhancing the Social Fabric (“Malasakit”)***

- Chapter 5 – Ensuring People-Centered, Clean, and Efficient Governance
- Chapter 6 – Pursuing Swift and Fair Administration of Justice
- Chapter 7 – Promoting Philippine Culture and Values

## ***Part III: Inequality-Reducing Transformation (“Pagbabago”)***

- Chapter 8 – Expanding Economic Opportunities in Agriculture and Fisheries
- Chapter 9 – Expanding Economic Opportunities in Industry and Services  
through *Trabaho at Negosyo*
- Chapter 10 – Accelerating Human Capital Development
- Chapter 11 – Reducing Vulnerability of Individuals and Families
- Chapter 12 – Building Safe and Secure Communities

## ***Part IV: Increasing Growth Potential (“Patuloy na Pag-unlad”)***

- Chapter 13 – Reaching for the Demographic Dividend
- Chapter 14 – Vigorously Advancing Science, Technology, and Innovation

## ***Part V: Enabling and Supportive Economic Environment***

- Chapter 15 – Ensuring Sound Macroeconomy
- Chapter 16 – Leveling the Playing Field through a National Competition Policy

## ***Part VI: Foundations for Sustainable Development***

- Chapter 17 – Attaining Just and Lasting Peace
- Chapter 18 – Ensuring Security, Public Order, and Safety
- Chapter 19 – Accelerating Infrastructure Development
- Chapter 20 – Ensuring Ecological Integrity, Clean, and Healthy Environment

## ***Part VII: From Plan to Action***

- Chapter 21 – Plan Implementation and Monitoring

The full realization of the long term vision will be supported by strategies to (i) enhance the social fabric, (ii) reduce inequality in economic development opportunities, (iii) increase potential growth, (iv) create an enabling and supportive economic environment, and (v) build foundations for inclusive and sustainable development.

Central Luzon held a steady performance in terms of its Gross Domestic Product (GDP), with a six-year average growth rate of 7 percent (at constant prices) from 2010 to 2015. In 2015, the region placed third among the regions in the country with the highest GDP, contributing a 9.3 percent share to the national figure. Although Central Luzon experienced highs and lows during the said period, all major sectors contributed to the increase in the regional output with Agriculture, Hunting, Forestry and Fishery (AHFF) growing by 5.43 percent from 2010-2015, Industry by 9.6 percent, and Services by 6.8 percent. In terms of sector share, Industry provided the biggest contribution at 42.3 percent, while Services and AHFF shared 41.7 percent and 16.0 percent, respectively.

The region's economic growth underscores its capacity to create jobs and to alleviate poverty. Poverty and subsistence incidences among the population in 2015 were recorded at 11.5 percent and 3.0 percent, respectively, making Central Luzon the region with the third lowest poverty and subsistence incidence rates in the country. However, the sub-regional picture of poverty remains less desired, with two (2) out of seven (7) provinces having poverty incidences in more than a fifth of their population.

Central Luzon's vision (as stated in the Regional Physical Framework Plan) is ***“To have globally competitive human resources, a highly productive and profitable agricultural sector, seamless and integrated physical access and, a transshipment and logistics hub in the Asia-Pacific Region.”***

In the said pursuit, the region could contribute to the attainment of the country's long term vision guided by the following strategic framework:

Goal	Sector	Outcomes	Strategies
<b>(1) Enhancing the Social Fabric ("Malasakit")</b>	Ensuring People-centered, Clean, and Efficient Governance	Citizenry fully engaged and empowered	<ul style="list-style-type: none"> <li>Strengthen participatory governance</li> <li>Modernize public access to government information</li> <li>Intensify feedback mechanisms</li> <li>Strengthen anti-corruption efforts</li> </ul>
		Corruption reduced	<ul style="list-style-type: none"> <li>Improve LGU competitiveness</li> <li>Enhance public service through human resource development</li> </ul>
		Seamless service delivery achieved	
	Pursing Swift and Fair Administration of Justice	Access to civil, criminal, commercial justice system enhanced	<ul style="list-style-type: none"> <li>Improve access to justice information</li> </ul>
		Sector efficiency and accountability improved	<ul style="list-style-type: none"> <li>Reduce backlogs and ensure good governance in the justice system</li> <li>Improve judicial systems and infrastructure</li> </ul>
	Promoting Philippine Culture and Values	Diverse cultures valued	<ul style="list-style-type: none"> <li>Generate, develop, produce, disseminate, and improve access to information about Filipino culture</li> <li>Expand inclusive cultural structures as civic spaces for dialogue and cultural exchange</li> </ul>

Goal	Sector	Outcomes	Strategies
<b>(2) Inequality-Reducing Transformation ("Pagbabago")</b>		"Pagkamalikhain" or creative excellence advanced	<ul style="list-style-type: none"> <li>• Build appreciation of Filipino creativity</li> </ul>
		Values for the common good inculcated and lived	<ul style="list-style-type: none"> <li>• Determine a set of core values that foster the common good</li> <li>• Mainstream cultural education in basic, technical, vocational, and higher education</li> </ul>
		Culture-sensitive governance and development strengthened	<ul style="list-style-type: none"> <li>• Strengthen the protection of the rights of vulnerable sectors of society and free them from discrimination and fear through the strict implementation of laws</li> <li>• Pursue institutional reforms for cultural development</li> </ul>
	Expanding Economic Opportunities in Agriculture and Fisheries	Agriculture and fishery sector productivity improved  Agriculture and fishery-based enterprises increased  Marketing and financing services increased  Adaptation to climate change improved	<ul style="list-style-type: none"> <li>• Increase access to credit</li> <li>• Provide access to technology</li> <li>• Rationalize land use allocation</li> <li>• Promote value-adding agricultural products</li> <li>• Establish regional and local trading centers</li> <li>• Promote co-operative farming</li> <li>• Increase support for research and development in disaster risk reduction climate change adaptation</li> <li>• Provide comprehensive infrastructure support</li> </ul>
	Expanding Economic Opportunities in Industry and Services through <i>Trabaho at Negosyo</i>	Competitiveness and innovativeness of the Industry and Services sectors increased  Local and foreign investments increased  Productivity, innovative capacity and resilience of MSMEs improved	<ul style="list-style-type: none"> <li>• Simplify and harmonize regulatory requirements in business registration and licensing, and loan processing</li> <li>• Improve access to market, technology and innovation, and connectivity</li> <li>• Strengthen government-industry-academe linkages</li> <li>• Promote green economy</li> <li>• Strengthen value and supply chain linkages</li> <li>• Pursue development of emerging industries</li> <li>• Strengthen linkages between MSMEs and large corporations</li> <li>• Increase access to finance and technology</li> <li>• Provide a window for rehabilitation of MSMEs during disaster</li> <li>• Promote consumer welfare</li> </ul>
	Accelerating Human Capital Development	Enhanced and sustained quality care for all life stages guaranteed  Access to functional service delivery network ensured  Health financing sustained	<ul style="list-style-type: none"> <li>• Scale-up preventive, promotive, curative, rehabilitative, and, palliative health care programs</li> <li>• Elicit multi-sector, multi-stakeholder support for health</li> <li>• Expand health insurance coverage and benefits</li> </ul>

Goal	Sector	Outcomes	Strategies
		Quality, accessible, relevant, and liberating basic education for all ensured	<ul style="list-style-type: none"> <li>• Raise the quality of education and make it accessible</li> <li>• Make education relevant to urgent needs and opportunities</li> </ul>
		Quality of higher and technical education for equity and global competitiveness improved	<ul style="list-style-type: none"> <li>• Promote excellence among higher education institutions</li> <li>• Ensure globally competitive training programs</li> </ul>
		Employability increased and productivity improved	<ul style="list-style-type: none"> <li>• Promote skills development and retooling through continuing education and training</li> <li>• Encourage women's active participation in the labor market</li> <li>• Ensure safety in the workplace</li> <li>• Strengthen employment facilitation services</li> </ul>
		Labor mobility and income security enhanced	<ul style="list-style-type: none"> <li>• Provide income support and emergency employment</li> </ul>
	Reducing Vulnerability of Individuals and Families	Universal and transformative social protection (SP) for all achieved	<ul style="list-style-type: none"> <li>• Strengthen convergence mechanism for SP programs at the national and local levels</li> <li>• Establish comprehensive and efficient data management system for vulnerable sectors</li> <li>• Intensify social protection programs for OFs and their families</li> </ul>
	Building Safe and Secure Communities	Access to affordable, adequate, safe, and secure shelter expanded	<ul style="list-style-type: none"> <li>• Strengthen housing as a platform to address poverty and improve social outcomes</li> <li>• Establish stronger partnerships with stakeholders</li> <li>• Support the creation of a Department of Housing and Urban Development (DHUD)</li> </ul>
<b>(3) Increasing Growth Potential ("Patuloy na Pag-unlad")</b>	Reaching for the Demographic Dividend	Quality of human capital improved	<ul style="list-style-type: none"> <li>• Push for the full implementation of the Responsible Parenthood and Reproductive Health (RPRH) Law</li> <li>• Improve quality of education</li> </ul>
		Unemployment and underemployment among the young population reduced	<ul style="list-style-type: none"> <li>• Ensure that job opportunities for the youth match the skills requirement of industries</li> </ul>
	Vigorously Advancing Science, Technology, and Innovation	Increased STI utilization in Agriculture, Industry, and Services sectors	<ul style="list-style-type: none"> <li>• Promote commercialization and utilization of technologies from publicly funded R&amp;D.</li> <li>• Develop a vibrant Intellectual Property Rights (IPR) culture</li> </ul>
		Increased investments in STI-based start-ups, enterprises, and spin-offs	<ul style="list-style-type: none"> <li>• Encourage more innovative financing mechanisms and private sector investments</li> <li>• Provide support mechanisms for startups and MSMEs in the region</li> </ul>
		Enhanced creative capacity for knowledge and technology generation,	<ul style="list-style-type: none"> <li>• Support research and development agenda</li> <li>• Increase funding for human resource development</li> <li>• Tap foreign and Overseas Filipinos (OFs) expertise</li> </ul>

Goal	Sector	Outcomes	Strategies
		acquisition, and adoption	<ul style="list-style-type: none"> <li>Strengthen STI infrastructure</li> <li>Establish and promote innovation hubs and other similar mechanisms</li> <li>Foster STI culture</li> <li>Strengthen Tri-partite collaboration</li> <li>Intensify international cooperation in STI</li> </ul>
		Strengthened open collaboration among actors in the STI Ecosystem	<ul style="list-style-type: none"> <li>Strengthen Tri-partite collaboration</li> <li>Intensify international cooperation in STI</li> </ul>
<b>(4) Enabling and Supportive Economic Environment</b>	Ensuring Sound Macroeconomy	Governance improved	<ul style="list-style-type: none"> <li>Improve public financial management</li> </ul>
		Access to financing improved	<ul style="list-style-type: none"> <li>Expand coverage and simplify loan processes</li> </ul>
	Leveling the Playing Field through a National Competition Policy	Anti-competitive practices diminished	<ul style="list-style-type: none"> <li>Review potentially anti-competition legislation and policies that may substantially prevent, restrict, or lessen competition</li> </ul>
		Barriers to entry reduced	<ul style="list-style-type: none"> <li>Promote competition-related policies and best practices</li> </ul>
		Limits to entrepreneurship reduced	<ul style="list-style-type: none"> <li>Conduct capacity building activities for government agencies and other institutions</li> </ul>
<b>(5) Foundations for Sustainable Development</b>	Attaining Just and Lasting Peace	Just and lasting peace achieved	<ul style="list-style-type: none"> <li>Strengthen peace initiatives and activities</li> <li>Empower communities and increase their capacity to address conflicts and reduce their vulnerability</li> <li>Intensify Barangay Peacekeeping Action teams</li> </ul>
		National Security, Public Order, and Safety ensured	<ul style="list-style-type: none"> <li>Intensify campaign against organized crime groups</li> <li>Strengthen police force</li> <li>Modernize and decongest jails and detention centers</li> <li>Strengthen campaign against illegal drugs</li> <li>Intensify fire hazard management capabilities</li> </ul>
	Accelerating Infrastructure Development	Enhanced growth and productivity	<ul style="list-style-type: none"> <li>Improve internal access and interregional connectivity</li> <li>Increase supply of clean and renewable energy</li> <li>Modernize agriculture and fishery infrastructures</li> <li>Strengthen the digital infrastructure</li> </ul>
		Improved basic and social infrastructure services	<ul style="list-style-type: none"> <li>Ensure water security</li> <li>Provide health, education, and housing facilities</li> <li>Address gaps in basic, governance, and protective infrastructures</li> </ul>
		Improved resiliency	<ul style="list-style-type: none"> <li>Increase resilience to climate and geologic hazards</li> <li>Improve response and hasten early recovery</li> </ul>
		Enhanced environmental quality	<ul style="list-style-type: none"> <li>Improve sanitation and wastewater disposal</li> <li>Improve solid waste disposal and management</li> <li>Improve air quality</li> </ul>

Goal	Sector	Outcomes	Strategies
	Ensuring Ecological Integrity, Clean, and Healthy Environment	Enhanced infrastructure planning and management	<ul style="list-style-type: none"> <li>• Improve infrastructure governance</li> <li>• Optimize resources and investments in infrastructure</li> </ul>
		Sustained functioning of ecosystem services	<ul style="list-style-type: none"> <li>• Intensify sustainable management of natural resources through adoption of ridge-to-reef approach</li> <li>• Expand development of resource-based enterprises or industries</li> <li>• Mainstream ecosystem valuation into national and local development planning</li> </ul>
		Improved environmental quality	<ul style="list-style-type: none"> <li>• Strengthen enforcement of environmental laws</li> <li>• Promote sustainable consumption and production</li> </ul>
		Increased adaptive capacities and resilience of communities and ecosystems	<ul style="list-style-type: none"> <li>• Implement risk and climate-sensitive land use</li> <li>• Strengthen implementation of prevention, mitigation, and preparedness, particularly at the local levels across sectors</li> <li>• Strengthen implementation of response, recovery, and rehabilitation efforts</li> </ul>



PART I

# INTRODUCTION





# 01 The Long View



# The Long View

The President issued Memorandum Circular (MC) No. 12, s. 2016 directing the National Economic and Development Authority (NEDA) to coordinate the preparation of the Philippine Development Plan (PDP), Public Investment Program (PIP), and Regional Development Plans (RDPs)/Investment Programs (RDIPs) for the period 2017 to 2022.

## The Long Term Vision

On October 11, 2016, the President issued Executive Order (EO) No. 5, approving the adoption of “*Ambisyon Natin 2040*” as the twenty-five (25)-year Long Term Vision (LTV) for the country and guide for development planning. Section 3 of EO 5 states that the four (4) Philippine Development Plans (PDPs) to be crafted and implemented until 2040 shall be geared towards the country’s LTV. This approach in development planning is in response to stakeholders’ clamor for a forward-looking approach that goes beyond a single political administration.

The LTV includes aspirations of the Filipino people for themselves, and for the country. The vision for self or the “The Life We Want” is stated as “*Matatag, Maginhawa at Panatag na Buhay Para sa Lahat*” – strongly-bonded relationships, comfortable and secure life for all. For Filipinos, a simple and comfortable life is described as having a medium-sized home, owning at least one car/vehicle, having enough earnings to support everyday needs, having the capacity to provide for their children’s college education, and going on local trips for leisure. As such, the simple and comfortable life reflects middle-class aspirations.

In response to these individual aspirations, the vision for the country, as specified in the LTV is that “*by 2040, the Philippines shall be a prosperous, predominantly middle-class society where no one is poor. Our peoples will enjoy long and healthy lives, are smart and innovative, and will live in a high-trust society*”.

Achieving this vision is possible within 25 years, if not sooner, provided that the country changes some of its current practices and develops effective, efficient, and transparent governance. Good governance is important in attaining priority economic and resilience goals. The priority areas are: increased labor productivity to reduce poverty, elimination of backlogs in infrastructure and housing, improved access and quality of education to make the people more adaptive and able to take advantage of opportunities for high productivity work, a health system that provides sufficient and high quality medical care to all, an inclusive financial system, and proper environmental management to underpin the building of resilient communities.



# The Development Agenda

In line with the country's *Ambisyon Natin 2040*, the PDP/RDP and PIP/RDIP focus on translating the President's 0-10 point Socioeconomic Agenda into strategies, policies, programs, and activities for 2017-2022. The Plan shall substantially focus on meeting the 0-10 point Agenda as follows:

0. *Promote peace and order*
1. *Continue and improve current macroeconomic policies, including fiscal, monetary, and trade policies.*
2. *Institute progressive tax reform and more effective tax collection, indexing taxes to inflation. A tax reform package will be submitted to Congress by September 2016.*
3. *Increase competitiveness and the ease of doing business. This effort will draw upon successful models used to attract business to local cities (e.g., Davao) and pursue the relaxation of the Constitutional restrictions on foreign ownership, except as regards land ownership, in order to attract foreign direct investment;*
4. *Accelerate annual infrastructure spending to account for 5% of GDP, with Public-Private Partnerships playing a key role.*
5. *Promote rural and value chain development toward increasing agricultural and rural enterprise productivity and rural tourism.*
6. *Ensure security of land tenure to encourage investments, and address bottlenecks in land management and titling agencies.*
7. *Invest in human capital development, including health and education systems, and match skills*

*and training to meet the demand of businesses and the private sector.*

8. *Promote science, technology, and the creative arts to enhance innovation and creative capacity towards self-sustaining, inclusive development.*
9. *Improve social protection programs, including the government's Conditional Cash Transfer program, to protect the poor against instability and economic shocks.*
10. *Step up implementation of the Responsible Parenthood and Reproductive Health Law to enable especially poor couples to make informed choices on financial and family planning.*

The PDP/RDPs 2017-2022 also take into account the 2030 Sustainable Development Agenda adopted by the United Nations in September 2015, known as the Sustainable Development Goals (SDGs). The agenda identifies the eradication of poverty in all its forms and dimensions as the greatest global challenge and as an indispensable requirement for sustainable development. The SDGs consist of 17 goals in areas such as poverty, health, education, gender equality, water and sanitation, energy, employment, industry, climate change, peace, and global development, among others.

For the first PDP/RDP geared towards LTV, the goal is to lay down the solid foundation for a more **inclusive growth, a high-trust and resilient society, and a globally competitive knowledge economy**, with emphasis on “*Malasakit, Pagbabago para sa Patuloy na Pag-unlad.*” The overall

strategies are categorized into three (3) pillars, namely: (i) enhance the social fabric, (ii) inequality-reducing transformation, and (iii) increase growth potential of the economy. These 3 pillars are supported by a strong foundation in security, infrastructure development, socio-economic resiliency, and ecological integrity. The development agenda is illustrated in the overall strategic framework in *Chapter 4*.



# 02 Regional Trends and Prospects



## Regional Trends and Prospects

Given the trends of the last six years, key economic indicators project a robust Central Luzon economy from 2017 to 2022. Growth records across major productive sectors, namely Agriculture, Industry, and Services are expected to continue this upward momentum and sustain the 7.1 percent average Gross Regional Domestic Product (GRDP) expansion registered from 2011-2016, which is higher than the national six-year average growth of 6.1 percent.

Recognized as the “Rice Granary of the Philippines”, the Agriculture sector is expected to run a 5.0-6.0 percent average growth rate and continue to contribute a bigger share to national output, bringing the country closer to achieving rice self

sufficiency by 2018. The Industry and Services sectors continue to strengthen the regional output, with an average growth of 10.7 and 5.6 percent, respectively. The region is one of the three largest contributors to national output in the Industry and Services sectors.

Given its strategic location and socio-economic trends, Central Luzon is expected to improve its share in the Gross Domestic Product (GDP), to create jobs, and to alleviate poverty if the following targets are achieved in the next six years:

*Table 2-1: Central Luzon Macroeconomic Targets, 2017-2022*

Indicator	Actual (2015)	2017	2018	2019	2020	2021	2022
<b>GRDP growth rate (%)</b>	<b>5.6</b>	<b>5.9 -6.9</b>	<b>6.3 -7.3</b>	<b>6.3 -7.3</b>	<b>6.3 -7.4</b>	<b>5.8 -6.8</b>	<b>6.3 -7.3</b>
AHFF	0.6	3.0 -4.0	5.0 -6.0	5.0 -6.0	5.0 -6.0	3.0 -4.0	5.0 -6.0
Industry	7.1	7.2 -8.2	7.2 -8.2	7.2 -8.2	7.2 -8.2	6.7 - 7.7	7.2 -8.2
Services	6.2	5.7 -6.7	5.7 -6.8	5.7 -6.8	5.7 -6.9	5.7 -6.7	5.7 -6.8
<b>GRDP per capita (Php)</b>	<b>63,455</b>	<b>68,327</b>	<b>71,773</b>	<b>75,748</b>	<b>80,336</b>	<b>85,459</b>	<b>91,020</b>
<b>Employment rate (%)</b>	<b>93.4</b>	<b>93.7</b>	<b>94.0</b>	<b>94.3</b>	<b>94.6</b>	<b>94.8</b>	<b>95.1</b>
<b>Unemployment rate (%)</b>	<b>6.6</b>	<b>6.3</b>	<b>6.0</b>	<b>5.7</b>	<b>5.4</b>	<b>5.2</b>	<b>4.9</b>
<b>Poverty Incidence (percentage among population)</b>	<b>11.2</b>	<b>10.6</b>	<b>10.2</b>	<b>9.8</b>	<b>9.4</b>	<b>8.9</b>	<b>8.5</b>
Aurora	26.3	24.8	23.8	22.7	21.6	20.4	19.3
Bataan	2.0	1.5	1.2	0.9	0.7	0.5	0.4
Bulacan	4.5	3.8	3.4	3.0	2.6	2.2	1.9
Nueva Ecija	22.6	21.6	21.0	20.4	19.6	18.9	18.2
Pampanga	4.9	4.3	3.9	3.4	3.0	2.6	2.3
Tarlac	18.1	18.8	19.3	19.8	20.4	21.1	21.8
Zambales	16.8	17.2	17.4	17.7	18.0	18.3	18.6



**The region will contribute to making the Philippines an upper middle income country by 2022.** In the medium-term, GRDP growth is expected to strengthen further to 6.3 to 7.3 percent in real terms. This means that the region's economy will expand by 38 percent in 2022 from its baseline in 2015. Per capita income will increase from Php 63,420 in 2015 to Php 91,020 in 2022.

**Growth will be more inclusive as manifested by a lower poverty incidence, from 11.2 in 2015 to 8.5 in 2022.** Overall poverty incidence in Central Luzon will decline to a single digit, as most provinces are expected to have a declining rate (except for Tarlac and Zambales). The province of Bataan had the least poverty incidence rate in the whole country in 2015, and is targeted to have an almost-zero incidence by 2022. Efforts will be focused on provinces with high incidences (i.e. Tarlac, Aurora, Nueva Ecija, Zambales).

**The unemployment rate will decline from the current 6.6 percent in 2016 to 4.9 percent in 2022.** The government will continuously exert efforts to expand employment opportunities in the region. It will generate more jobs through all forms of employment by creating an environment attractive to investors, implementing investment promotion activities, and enhancing labor skills to meet the requirements of industries and services.

**There will be greater trust in government and in society.** The PDP 2017-2022 proposes that the Philippine Statistics Authority develop indicators to measure this target.

**Individuals and communities will be more resilient.** Central Luzon's topographic characteristics determine its vulnerabilities to different climate-related and geologic hazards such as flooding, and both rain-induced and earthquake-induced landslides. This is on top of risks from human-induced hazards such as criminality, and house fires, among others. Building up resilience involves reducing exposure to hazards, mitigating the impact of risks, and accelerating recovery if and when the risk materializes.

**Filipinos will have a greater drive for innovation.** More individuals will be encouraged to obtain knowledge and acquire skills and expertise. More young adults will be engaged in productive employment, education, and training.

# 03

## Overlay of Demographic Trends and Physical Characteristics



# Overlay of Demographic Trends and Physical Characteristics: The Central Luzon Spatial Development Framework

## Regional Profile

### Politico-administrative Subdivision, Location, and Physical Characteristics

Central Luzon consists of seven (7) provinces, two (2) highly urbanized cities, 11 component cities, 20 Congressional Districts, 117 municipalities, and 3,102 barangays. Its regional administrative center—the City of San Fernando, Pampanga—is about 65 kilometers north of Metro Manila. The base map of Central Luzon is shown in Figure 3-1.

Central Luzon has a total land area of about 2.13 million hectares; some 1.11 million hectares (51.9%) are Alienable and

Disposable (A & D) lands while the remaining 1.02 million hectares (49.1%) are forest and unclassified lands of the public domain (Table 3-1). If the existing built-up areas in 2014 are extracted from A & D land, the gross area for agricultural lands is 824.0 thousand hectares, which represent 38.6 percent of the region's total land area. From these agricultural lands, the Department of Agriculture (DA), through the Bureau of Soils and Water Management (BSWM), identified Strategic Agriculture and Fisheries Development Zones (SAFDZs) in order to set these aside for agri-industrialization and food security purposes. These zones have an estimated area of 434.3 thousand hectares.

**Table 3-1: Land and marine resources of Central Luzon**

Province	Land Resources (ha)					Marine Resources (ha)	
	Forest	Built-up/ A&D	SAFDZ	Total	% share	Municipal Waters	% share
Aurora	255,511.85	33,022.27	28,348.38	316,882.50	<b>14.86</b>	353,095.00	<b>43.65</b>
Bataan	57,631.54	44,006.20	31,454.62	133,092.36	<b>6.24</b>	176,709.43	<b>21.85</b>
Bulacan	99,931.01	99,028.42	67,650.29	266,609.72	<b>12.50</b>	36,105.38	<b>4.46</b>
Nueva Ecija	199,284.00	266,517.47	75,104.95	540,906.42	<b>25.36</b>	—	--
Pampanga	48,827.08	83,237.17	76,240.51	208,304.76	<b>9.77</b>	4,473.26	<b>0.55</b>
Tarlac	116,505.82	89,241.06	97,923.33	303,670.21	<b>14.24</b>	—	--
Zambales	248,028.33	57,961.53	57,620.41	363,610.27	<b>17.05</b>	238,452.32	<b>29.48</b>
<b>Total</b>	<b>1,025,719.63</b>	<b>673,014.13</b>	<b>434,342.49</b>	<b>2,133,076.25</b>	<b>100.00</b>	<b>808,835.39</b>	<b>100.00</b>
<b>% share</b>	<b>48.09</b>	<b>31.55</b>	<b>20.36</b>	<b>100.00</b>	--	--	--

Source: NAMRIA, DENR III, & NEDA III GIS Team

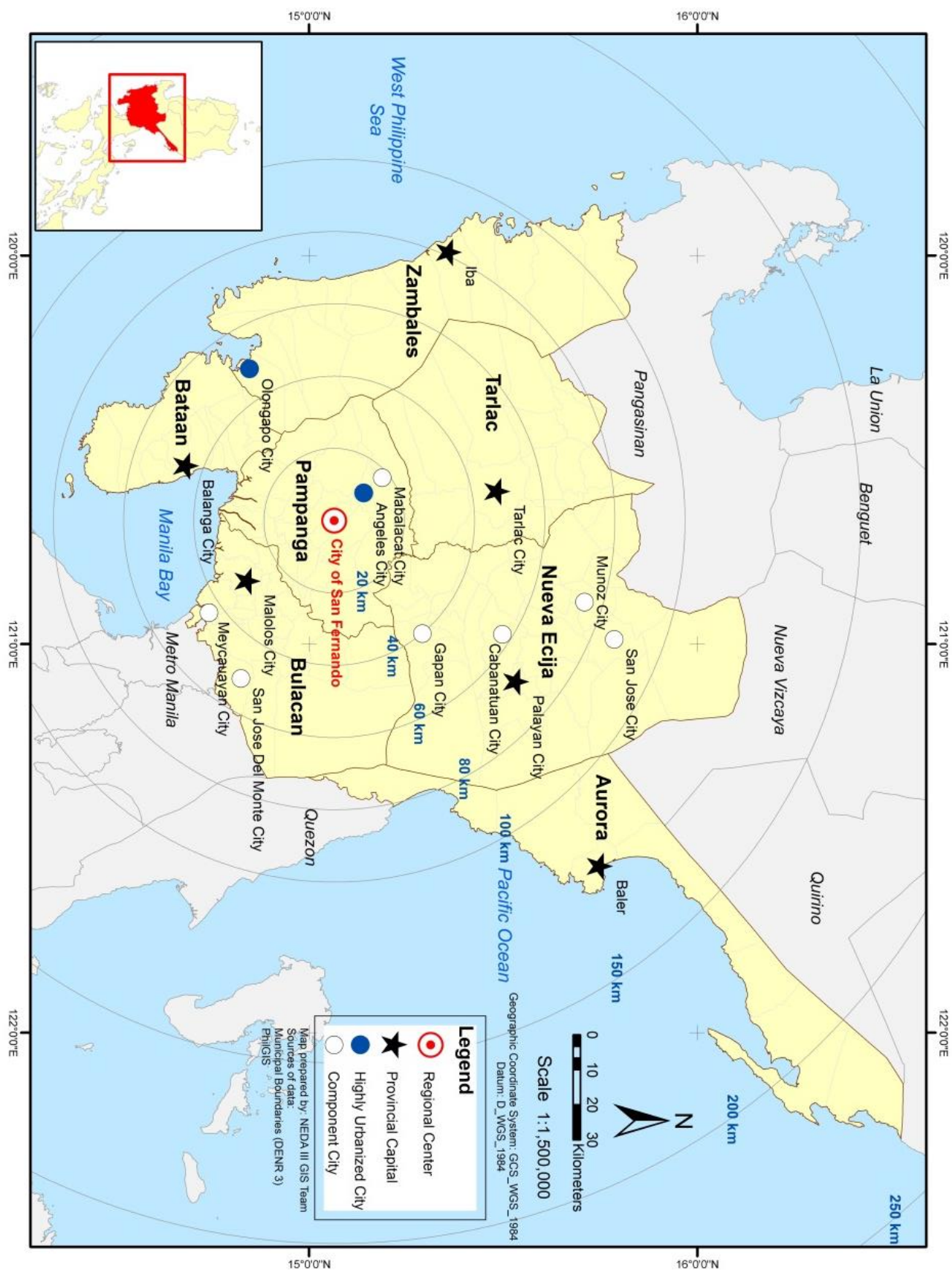


Figure 3-1: Map of Central Luzon



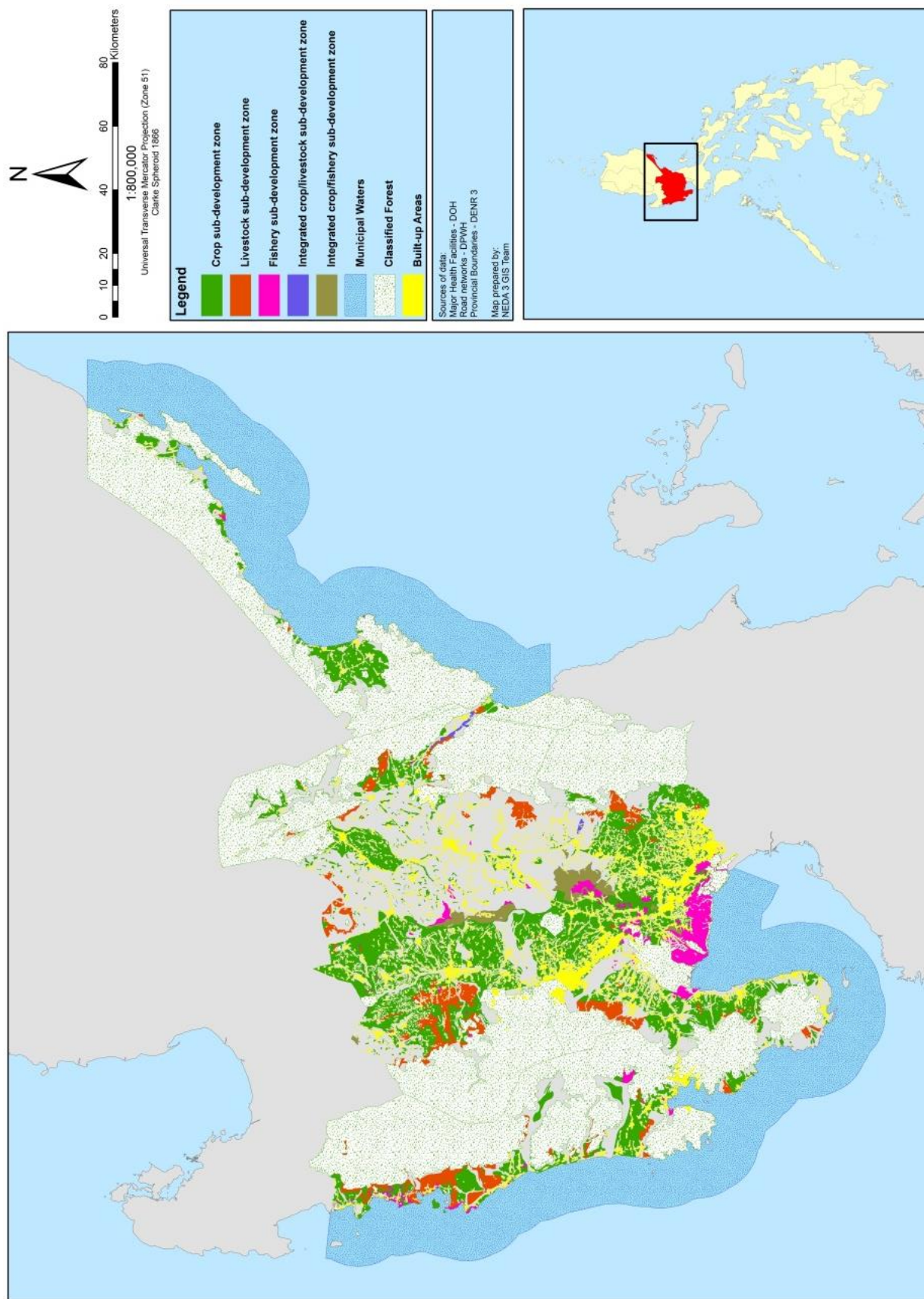


Figure 3-2: Land and marine resources map of Central Luzon



Measured 15 kilometers from the shoreline, the region has about 808.84 hectares of municipal waters that are being utilized for mariculture, aquaculture, fishing, and other coastal livelihood activities. Shown in Figure 3-2 are the SAFDZ areas and municipal waters of Central Luzon.

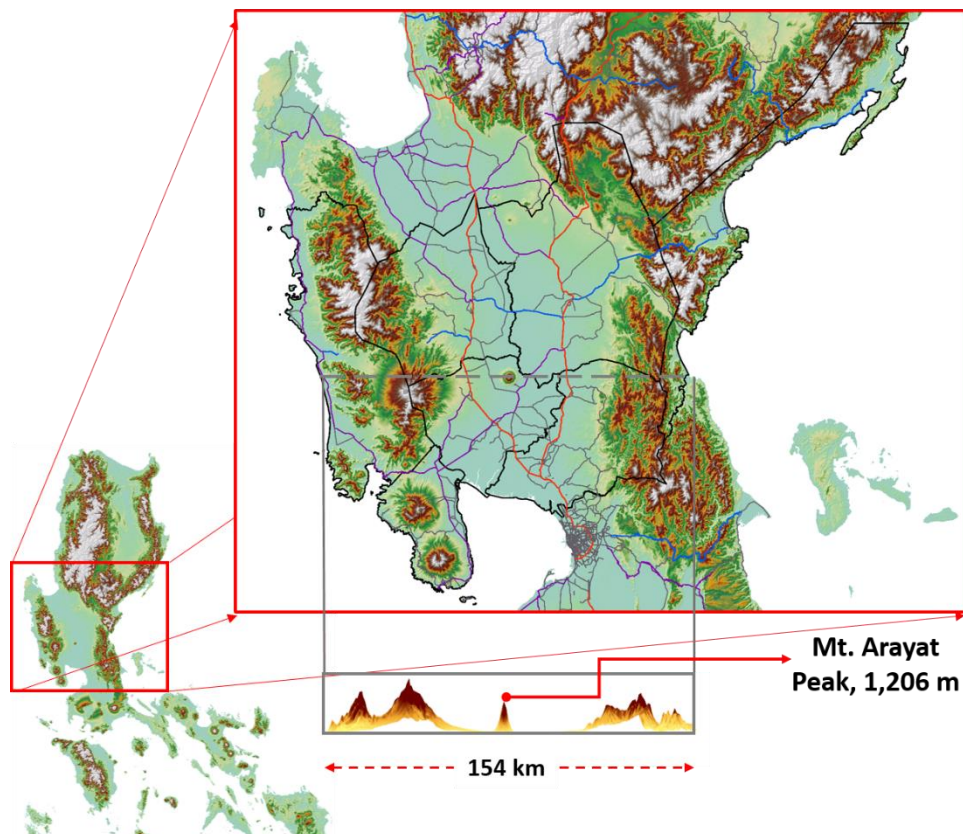
Central Luzon occupies a major part of a floodplain that extends from Manila bay to Lingayen Gulf. The plain is the country's top food basket and a leading center for settlement and agri-industrial development. The area is naturally provided with a protective shield against strong typhoons by the Sierra Madre mountain range and Zambales mountain range in the Pacific and West Philippine seaboards, respectively (Figure 3-3).

At the central portion of Region III stands Mt. Arayat.

## Population and Urban Hierarchy

The population of Central Luzon in 1990 was 6.3 million. It increased to 8.2 million in 2000 and further expanded to 10.1 million in 2010. Based on the mid-decade census of Philippine Statistics Authority (PSA), the region's population stood at 11.2 million in 2015. It increased to 8.2 million in 2000 and further expanded to 10.1 million in 2010. Based on the mid-decade census of Philippine Statistics Authority (PSA), the region's population stood at 11.2 million in 2015. If the annual growth rate of 2.0 percent between 2010

**Figure 3-3: East-West topographic slice of Central Luzon**



**Table 3-2: Population of Central Luzon, Metro Manila, CALABARZON, and Philippines, 1990 - 2015**

Area	Census Year				Doubling Time	
	1990	2000	2010	2015	Year	No. of Years
<b>Population (in million)</b>						
Central Luzon	6.3	8.2	10.1	11.2	2049	34
Metro Manila	7.9	9.9	11.9	12.9	2057	42
CALABARZON	6.0	9.1	12.3	14.4	2037	22
GCR	20.3	27.2	34.3	38.5	2045	30
Philippines	60.7	76.5	92.3	100.9	2054	39
<b>Growth Rate (%)</b>						
Central Luzon	--	2.6	2.1	2.0	--	--
Metro Manila	--	2.3	1.8	1.7	--	--
CALABARZON	--	4.2	3.1	3.2	--	--
GCR	--	3.0	2.3	2.3	--	--
Philippines	--	2.3	1.9	1.8	--	--
<b>Share to Philippines (%)</b>						
Central Luzon	10	11	11	11	--	--
Metro Manila	13	13	13	13	--	--
CALABARZON	10	12	13	14	--	--
GCR	33	36	37	38	--	--

Source: PSA; GCR – Greater Capital Region comprises Central Luzon, CALABARZON, and Metro Manila

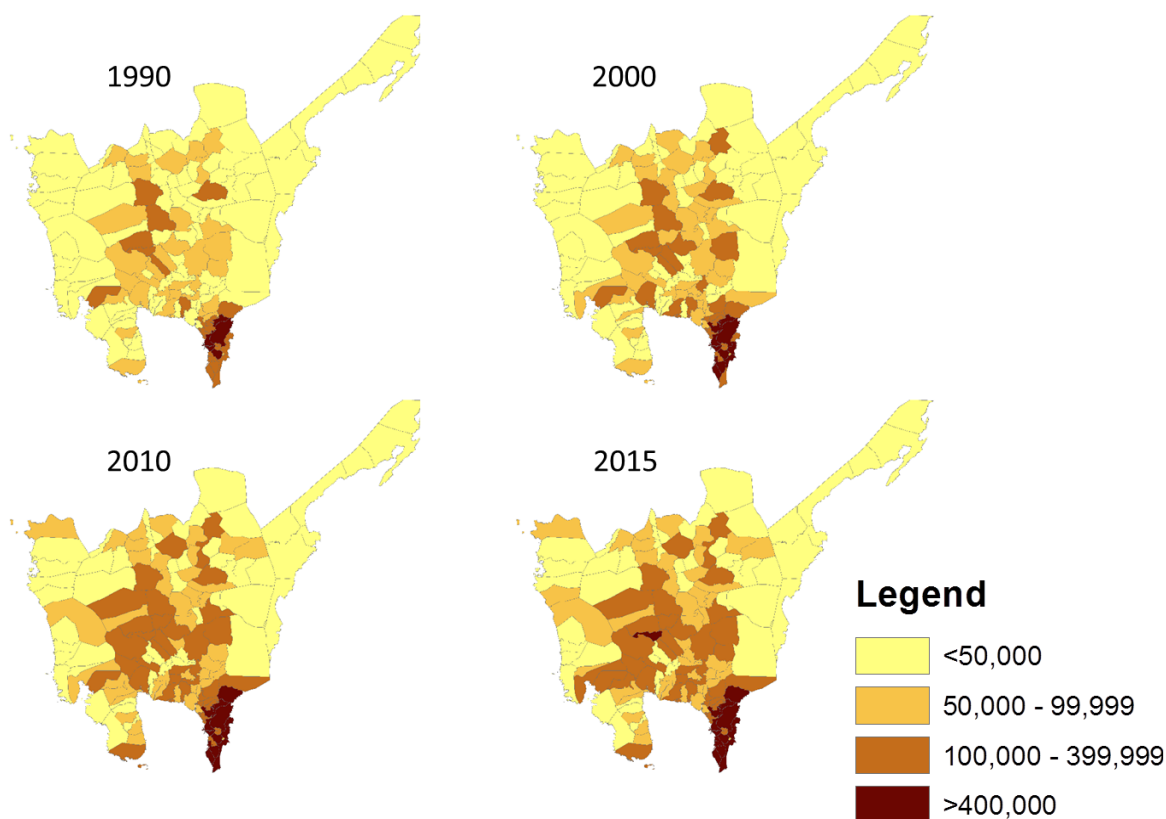
and 2015 remains constant, Central Luzon's population will double its 2015 figure in 34 years or in the year 2049 (Table 3-2). Meanwhile, CALABARZON, at the growth rate of 3.2 percent per annum over the same census periods, will double its population in 22 years (2037). Metro Manila may double its population in 42 years, but this may be extended by a few more years because of its declining population trajectory (i.e. 2.6 percent per annum between 1990 – 2000 down to 1.7 percent per annum from 2010 to 2015). Greater Capital Region (GCR) (the spatial regional grouping of Central Luzon, CALABARZON, and Metro Manila) may double its population in 30 years, which is faster than the Philippines' 39 years. Knowing the population doubling time is useful in determining the length of time to work on the urban services, infrastructure systems, social services, and commodity demands needed by the expanding population.

Central Luzon's and CALABARZON's share of the Philippine population both stood at 10 percent in 1990. Because of higher population momentum however, CALABARZON's share of total population increased to 14 percent in 2015 compared to Central Luzon's 11 percent. Metro Manila's share of the country's total population levelled at 13 percent since 1990. The aggregate population of the three regions comprising the GCR reached 38.5 million in 2015, which is equivalent to 38 percent of the country's total population.

Figure 3-4 shows the municipal population maps of Central Luzon vis-à-vis Metro Manila in four (4) census years (1990 to 2015) using the following population categories:

<u>Population</u>	<u>Category</u>
i. < 50,000	= Small town
ii. 50,000 – 99,999	= Medium town
iii. 100,000 – 399,999	= Large town
iv. =>400,000	= Metropolitan center

**Figure 3-4: Population distribution of cities and municipalities in Central Luzon and Metro Manila in four (4) census years—1990, 2000, 2010, 2015**



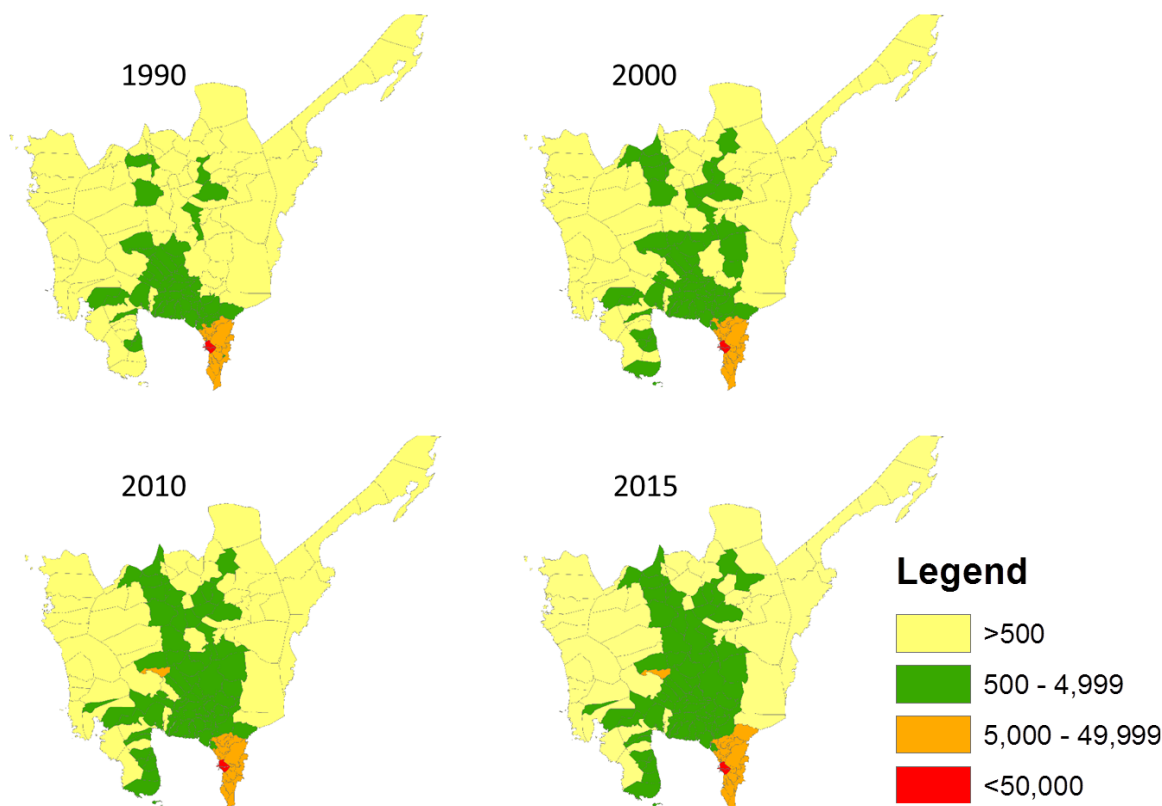
Back in 1990, metropolitan towns or cities could only be found in Metro Manila. It was only in 2015 that two cities in Central Luzon—Angeles City and San Jose Del Monte City—reached the 400,000 population mark. Almost all domains in Metro Manila in 2015 were already in the largest town category. Central Luzon’s medium to large towns converge at the central part of the region along the north-south axis, within the influence areas of major arterial roads such as MacArthur highway, Cagayan Valley Road, JASA, Tarlac-Sta Rosa road, NLEX, and SCTEx among others. This indicates that most LGUs in the region are already reaching a certain population threshold that can give them economies of scale on supply chains and higher urban services. To further enhance complementation, contiguous

municipalities and cities may be clustered into a metropolitan area similar to what is currently happening in the cities of San Fernando, Angeles, and Mabalacat, now known as the Metropolitan Clark Area (MCA).

Shown in Figure 3-5 are the population density maps of towns and cities in Central Luzon and Metro Manila in four (4) census years from 1990 to 2015 using the following categories:

<u>Density (persons/ km<sup>2</sup>)</u>	<u>Category</u>
i. < 500	Low
ii. 500 – 4,999	Moderate
iii. 5,000 – 49,999	High
iv. =>50,000	Very high

**Figure 3-5: Population density maps of cities and municipalities in Central Luzon and Metro Manila in four (4) census years—1990, 2000, 2010, 2015**



Gross population density measured as the number of persons per square kilometer is a measure of urban compaction and concentration. The maps show that by comparison, the municipal population densities of cities in Metro Manila are several times higher than those in Central Luzon. The region's population tends to converge in the middle part of the locality, along major arterial road linkages. This presents a major challenge in improving the levels of service (LOS) access roads in the region that will provide internal and interregional connectivity.

## Access and Proximity

Shown in Figure 3-6 are the estimated travel time through air and sea from

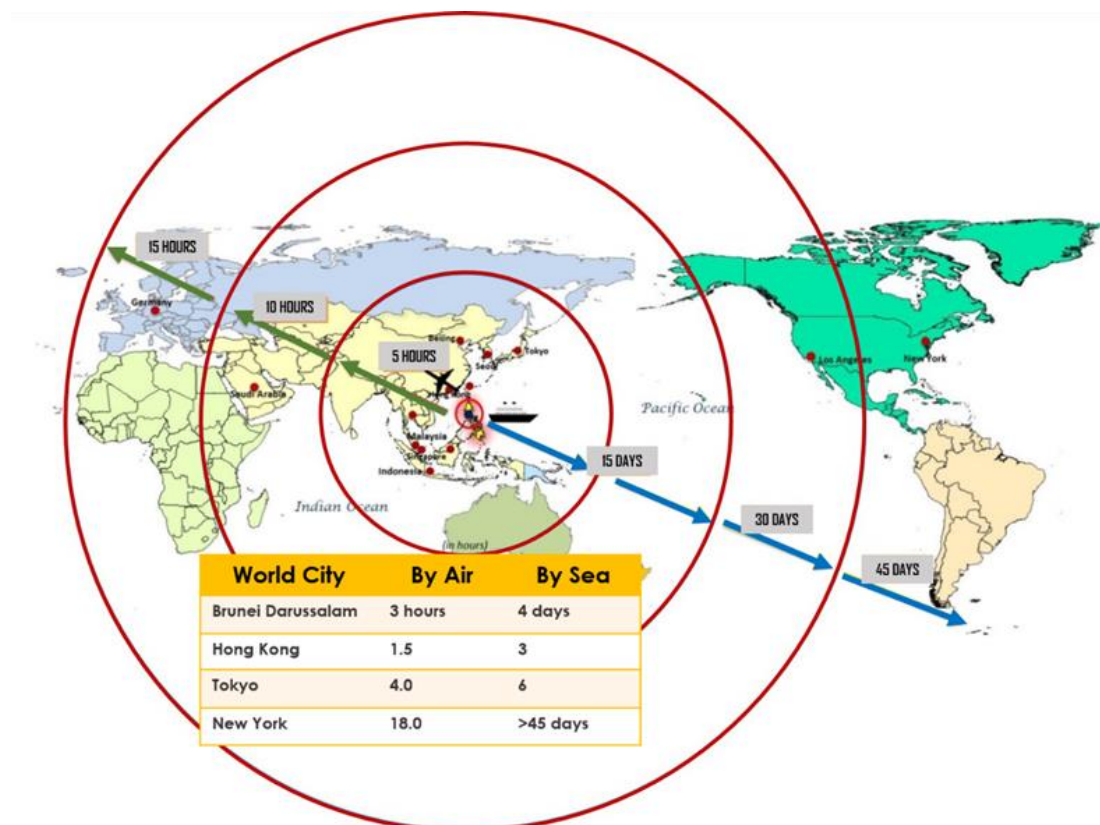
Central Luzon to the rest of the world. Using Clark airport or Subic port as gateways, neighbouring Asian cities or countries such as Singapore, Hong Kong, Brunei Darussalam, and Japan can be accessed by air within four hours (4) and by sea within 10 days, while the east coast (e.g. New York) of the United States can be reached in 18 hours by air and by about 45 days by sea. The strategic location of Central Luzon within South East Asia and the Asia-Pacific regions should be fully taken advantage of through the modernization of its gateways and inland transportation systems. This will allow better access to regional markets and global supply chains.

The proximity of Central Luzon, Metro Manila, and CALABARZON creates a

natural synergy among the three regions. Figure 3-7 shows the 50-60-kilometer radius from Manila City, sometimes referred to as Mega Manila, and the areas covered by distances of up to 100 kilometers from Manila City commonly called Greater Capital Region (GCR). GCR is a huge domestic market where two-thirds of the country's gross economic output is produced. It is also a compact urban agglomeration with a total population of 38.5 million (2 of 5 Filipinos live in GCR) with the highest income per

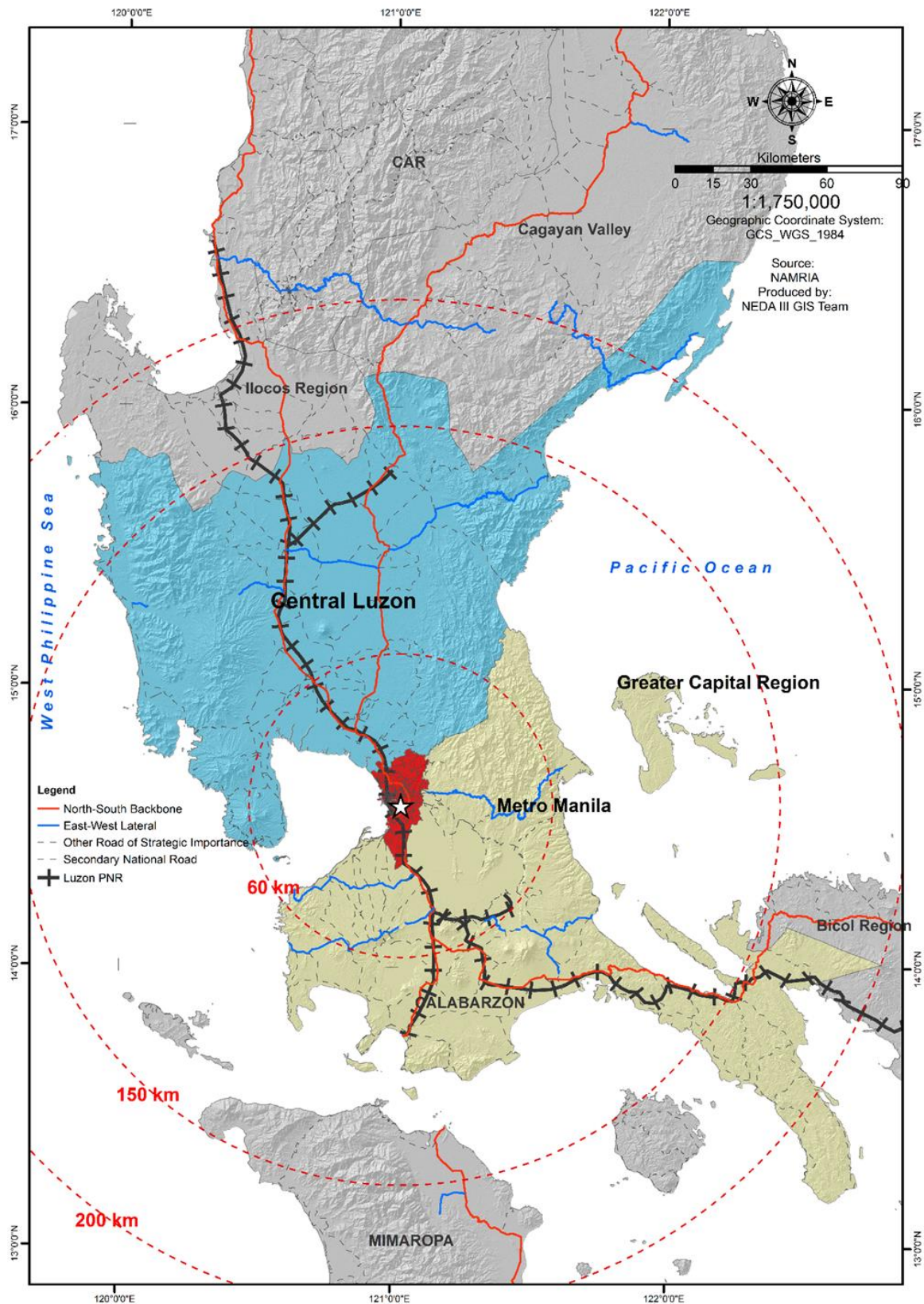
capita. Economic complementation between Central Luzon and the rest of GCR can be further enhanced if the necessary infrastructure systems are delivered.

**Figure 3-6: Estimated air and sea travel time from Central Luzon to the world**





**Figure 3-7: Proximity map of Central Luzon up to 200 kilometers from Manila City**





# Development Issues and Challenges

## Urban/Settlement Expansion and Food Security

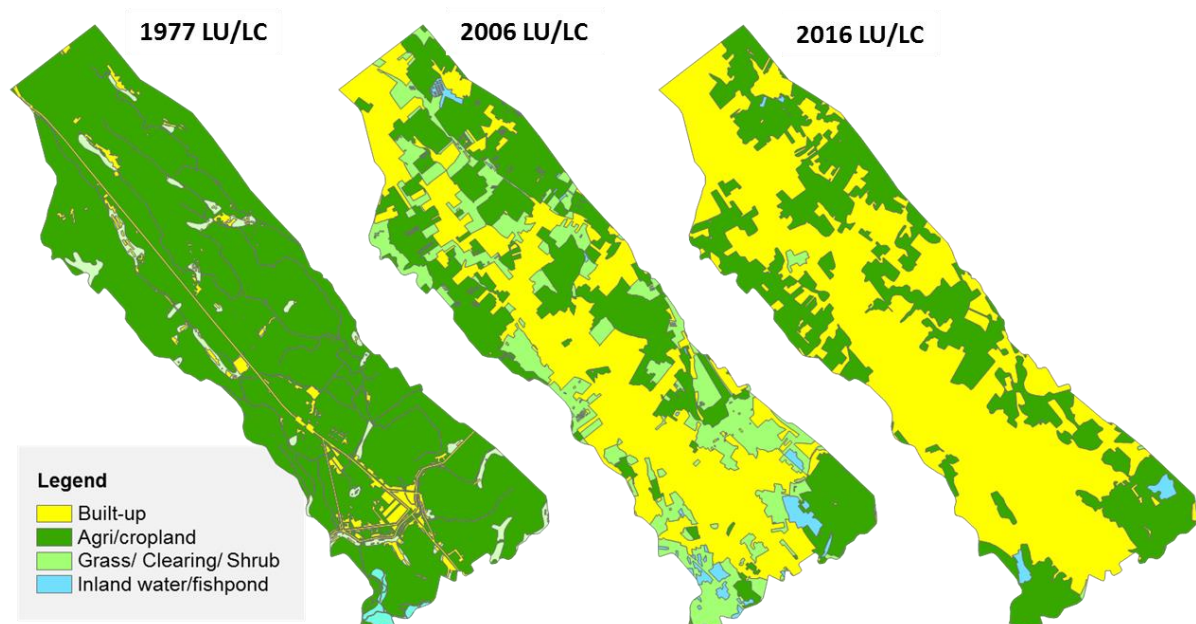
The food security and food sufficiency programs of the government hinge on the production capacities of the regions north of Metro Manila such as Central Luzon. However, the strong population momentum in Central Luzon towns and cities is resulting in sprawl-type development. This reduces areas devoted to agriculture and food production, which can hinder the achievement of the region's food security objectives.

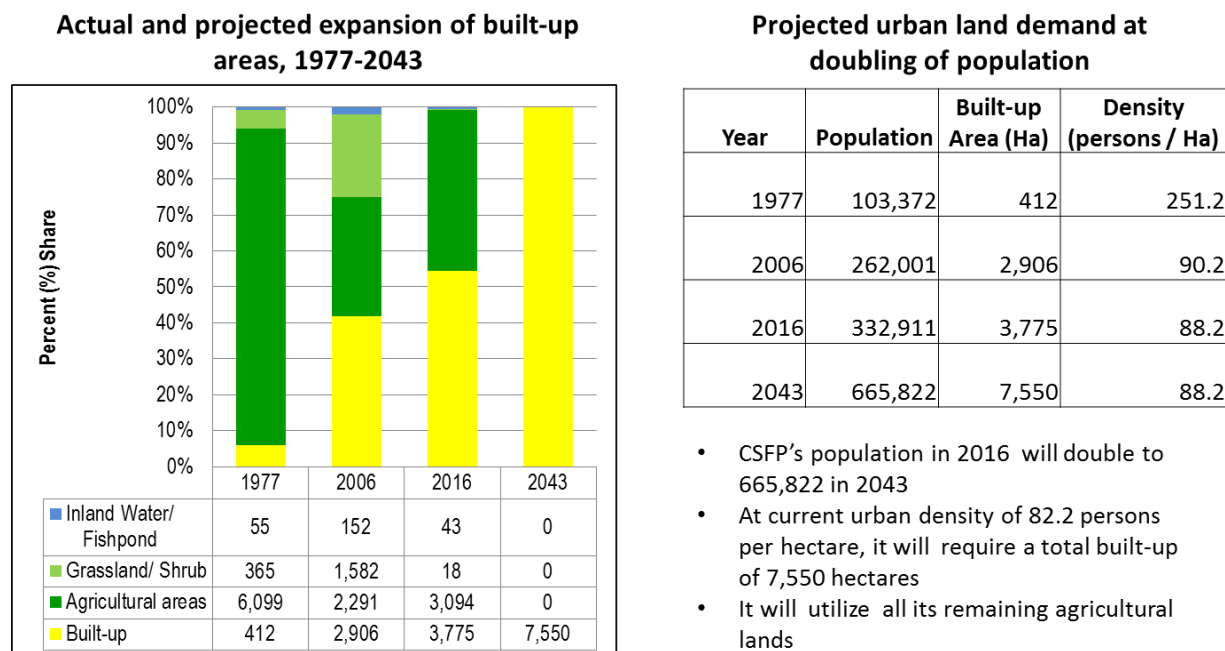
A case in point is the City of San Fernando, Pampanga. The land use and land cover maps of the city from 1977 - 2016

(Figure 3-8) reveals that a predominantly agri-based town in the seventies has turned into a sprawling urban center. In a span of 39 years (1977 to 2016), built-up areas expanded ten (10) times, outpacing the population expansion which multiplied 3.06 times.

In 1977, the town of San Fernando had a population of a little more than 100 thousand, a total built-up area of 412 hectares, and a population density of about 251 persons per hectare (Figure 3-9). In 2006, its population grew more than twice but its urban density dropped to 90.2 persons per hectare. By 2016, its population tripled (332,911), but urban density further declined to 88.2 persons per hectare. If CSFP's population in 2016 of 332,911 would double in 2043 (27 years), it will utilize all its remaining agricultural land for urban expansion at current urban density of 88.2 persons per hectare.

**Figure 3-8: Changes in land use and land cover (LU/LC) in CSFP from 1977-2016**





**Figure 3-9: Land supply-demand accounting for CSFP from 1977-2043**

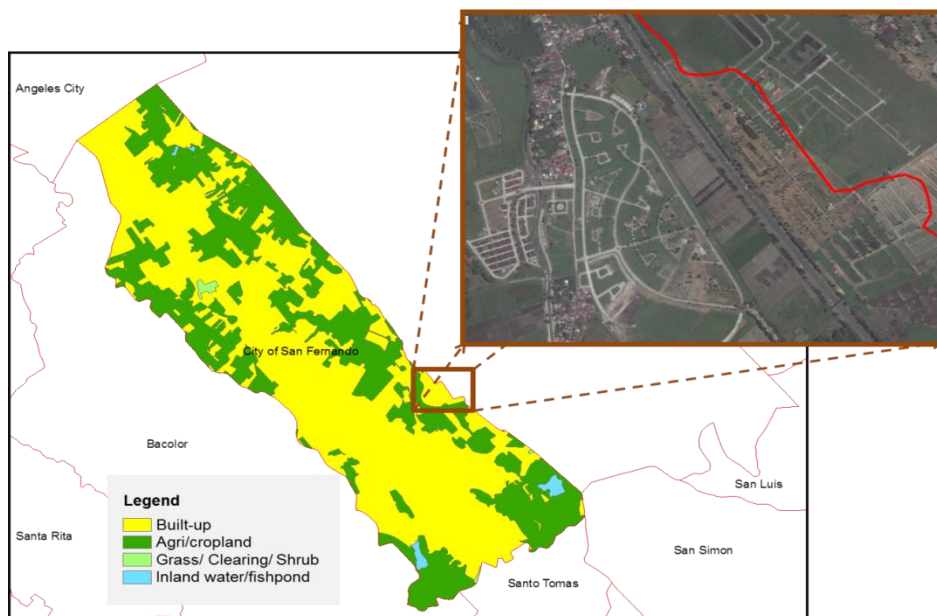
CSFP's urban land demand of about 2,614 hectares could produce about 26,140 metric tons (MT) of rice at yield level of 10 MT per year. This is equivalent to 16,207 MT rice at milling recovery rate of 62 percent. At annual per capita rice consumption of 110 kilograms, the same can potentially supply the annual rice requirements of more than 147 thousand people - the population of one large town.

Declining urban density may be the result of land banking and idling. Shown in Figure 3-10 is a Google Earth satellite image of a planned unit development (PUD) in CSFP where only few dwelling structures are erected. This particular condition is not unique to CSFP since it is also happening in other urban centers all over the region.

At the community or neighborhood level, these land use or land cover changes seem negligible, but the impact could be large if aggregated at the municipal, provincial,

and regional levels. To address these development challenges, various land optimization schemes such as infilling, densification, and urban compaction must be implemented. PUD and other forms of settlement expansion must be regulated on the premise that urbanization does not happen overnight. Land banking and speculation may be addressed by implementing the Local Government Code (LGC) of 1991 provision of imposing five (5) percent real property tax on idle lands. Increasing the density of the urban centers in the upper tiers of the settlement hierarchy will reduce the demand for raw land. If land conversion can be minimized, then Central Luzon's food production objectives will not be compromised. Moreover, the delivery of services is much easier in compact and high density areas. Careful planning and management of high density settlements will ensure that the benefits of compaction are realized and the impacts of congestion are minimized.

**Figure 3-10: A Google Earth satellite image of a planned unit development (PUD) in CSFP with very few dwelling structures erected**



## Urban Efficiency and Capacity

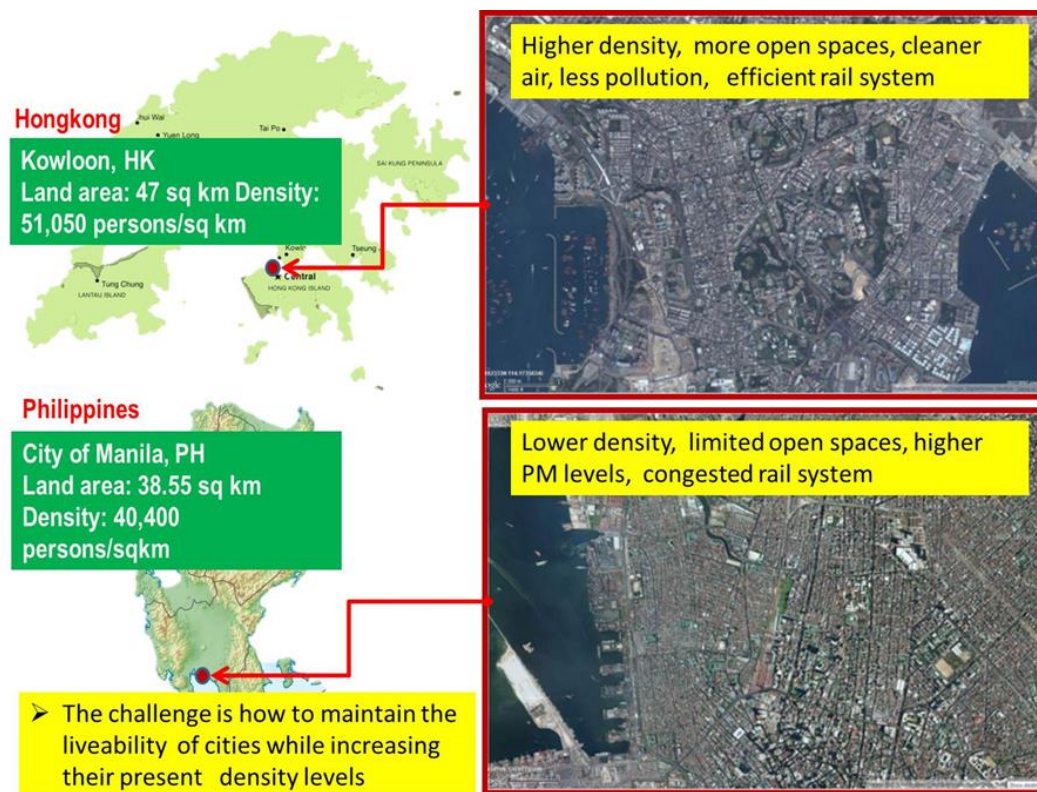
While urban compaction may effectively preserve the agricultural production areas in the region, it could exacerbate the region's problems with pollution and congestion. Manila City and Metro Manila, for example, may not be among the most livable metropolitan areas in the world. However, as illustrated in Figure 3-11, high population level and density, if properly managed, will not impact the livability of a city. Kowloon, Hong Kong has a density of 51,050 persons per square kilometer, which is higher than Manila City's 40,400 persons per square kilometer, but it has more open spaces, cleaner air, and a more efficient railway system. In contrast, Manila City has a lower population density, but it has higher particulate matter (PM) levels, fewer open spaces, and a congested railway system.

## Land Use Conflicts and Vulnerability

Addressing conflicting land use demands particularly in the expansion of urban areas in protected agricultural lands and other protected areas (e.g. forests, road right-of-ways) should be resolved both at the policy level and at the local level where actual land-using activities are taking place.

The National Land Use Act (NaLUA) is yet to be passed by the Philippine Congress, while zoning administration and land use planning and management have yet to be utilized by LGUs as a serious development regulatory tool. Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) measures as mandated by the Disaster Risk Reduction and Management (DRRM) Act and Climate Change Act, as amended, are still being mainstreamed into various government processes and instrumentalities.

**Figure 3-11: Comparative urban density between Kowloon, Hong Kong and Manila City, Philippines**



Another major challenge is how to prevent settlements from encroaching areas highly susceptible to geologic and hydro-meteorologic hazards. Existing settlements in hazard-prone areas such as those on

steep slopes or along bodies of water must be relocated or provided with the necessary engineering interventions, whichever is economically viable and/or socially acceptable.

## Luzon Spatial Development Framework

The Luzon Spatial Development Framework (LSDF) provides the overarching framework on which land use and development activities in the Luzon island group will be anchored. LSDF adopted the following strategies:

- i. **Concentration** – Distribution of population in existing urban areas

and metropolitan centers according to urban hierarchy, and following the principles of densification, compaction, and smart growth.

- ii. **Connectivity** – Seamless integration of urban centers, production areas, and protection areas through infrastructure development.



- iii. **Vulnerability Reduction** – Hazard mitigation, exposure minimization, protection of elements at risk, and enhancement of adaptive capacity.

## Concentration Strategy

The proposed spatial structure of settlements in Central Luzon is a five-tiered hierarchy that follows the principle of concentration (Figure 3-12). Larger settlements in terms of population are positioned in the upper tiers while centers with smaller populations occupy the lower tiers of the urban hierarchy. However, not all settlements can fit in the hierarchy according to this general principle. Smaller settlements, specifically those identified to have strategic roles (e.g. eco-tourism developments; transportation hubs; gateway, industrial, freeport, and science cities, etc.) are placed in the upper levels of the hierarchy. Settlements strategically located in clusters and whose aggregate population satisfies the population threshold are also placed in the upper tiers.

In a two-tiered hierarchy, Metro Manila acts as the primary metropolitan center with all other urban centers acting as local centers. The primacy of Metro Manila will remain, but congestion due to the concentration of urban services will further worsen. Under LSDF, regional centers outside Metro Manila will be developed, supported by sub-regional, provincial, and local centers in a cascading manner. This strategy will reduce congestion in the upper tiers of the hierarchy, promote the specialization of urban functions, and support the emergence of new urban centers outside Metro Manila. Through agglomeration and economies of scale, the

following benefits associated with urbanization may be achieved:

- Increased innovation, creativity, and economic activities and, in particular, greater opportunities for employment and poverty reduction;
- Availability of a larger variety and higher levels of services; and
- Reduced encroachment into agricultural land and other environmentally-sensitive, constrained, or protected areas (compared to low density sprawl).

Metro Manila or the National Capital Region will continue to function as the premiere metropolitan center of Luzon and the Philippines. This time, however, its immediate sphere of influence will be expanded to a radius of 60 kilometers to cover adjacent regional centers such as Metro Dasmariñas, Metro Antipolo, Metro Calamba, and Metro Malolos. This spatial grouping is now popularly known as Mega Manila. Mega Manila's immediate hinterland, which are the areas within a radius of 100 kilometers from Manila City, is now referred to as the Greater Capital Region (GCR). It covers NCR, Region III, and CALABARZON.

Central Luzon's major urban centers will play major roles under this development scenario. Metro Cabanatuan and Metro Tarlac are necessary components of the north-south link that extends to Metro Laoag in the northwestern seaboard and Metro Tuguegarao in the northeastern seaboard. Agglomeration between these two urban centers was strengthened by





the completion of Subic – Clark–Tarlac Expressway (SCTEx) and Tarlac- Pangasinan-La Union Expressway (TPLEx). It will be further boosted by the on-going construction of the Central Luzon Link Expressway (CLLEx), which will directly link Tarlac City, Cabanatuan City, and San Jose City.

Metro Angeles a.k.a. Metro Clark Area (MCA) is an emerging conurbation (i.e. urbanized area) that consists of the cities of Angeles, Mabalacat, and San Fernando in the inner core and the municipalities of Magalang, Arayat, Mexico, Sto. Tomas, Bacolor, Lubao, Porac, including the municipalities of Bamban and Concepcion, Tarlac in the urban fringe. MCA is strategically located at the convergence points of NLEX, SCTEX, GSO road, the Manila-North Road, and the soon to be constructed North-South Commuter Railway (NSCR). MCA hosts the Clark Freeport and Special Economic Zone (CFSEZ) and the Clark International Airport (CIA). These important physical attributes combined with a compact and massive population of more than a million based on the 2015 census year makes it an important provincial market outside NCR. MCA is the industrial and residential heartland of Central Luzon.

The W-growth corridor spatial strategy of Central Luzon hastened the development of the following emerging regional growth centers: Metro Subic, Metro Balanga, and Metro Baliuag. Metro Baliuag is one of the key expansion centers of Mega Manila while Metro Subic and Metro Balanga are critical to the development of GCR.

## Connectivity Strategy

The connectivity framework for Central Luzon aims to enhance the linkages of communication, transportation (land, air, and sea), and economic infrastructure systems to:

- a) Increase access and to improve the efficiency of markets,
- b) Manage the growth and development of settlements according to specific urban and regional plans, and
- c) Reduce vulnerability during emergency situations by increasing redundancy of transportation routes, communication, and other infrastructure facilities.

The National Spatial Strategy (NSS) also recommended the use of the gravity model to prioritize urban linkages that are intended to further improve the agglomeration of urban areas and improve economies of scale in the market systems. Strongest linkages take place between the largest settlements that are closest to each other while the weakest linkages occur between the smallest settlements that are farthest apart.

At the national scene, NSS envisions a twin-spine, three-corridor network of settlements. The west and east spines frame the spatial development of Central Luzon-Mega Manila-South Luzon or the Greater Capital Region (GCR). GCR extends upward to Northern Luzon and downward to the MIMAROPA-Bicol area. The spines then move further south onto Visayas, where they converge with Metro Cebu - via Sorsogon and Masbate in Bicol, and then branch off into three corridors

that cover Mindanao. The schematic diagram of the national spatial form as applied in Luzon is presented in Figure 3-13. The Connectivity Framework of the LSDF and the “Transport Dream Plan for Mega Manila” that was prepared by the Japan International Cooperation Agency (JICA) in March 2014 are complementary. The Dream Plan aims to eliminate barriers for the seamless mobility within Mega Manila and adjacent areas. The integrated transport sub-urban development conceptual framework for GCR is presented in Figure 3-14. The transportation backbone of the Mega Manila Dream Plan is an integrated network of sub-urban railway and toll way systems that will seamlessly link settlements within Mega Manila, and immediately connect Mega Manila to GCR, and GCR to the rest of Luzon.

Another conceptual tool that can be used to implement the national spatial spine is the High Standard Highways (HSH) framework currently being used by DPWH to prioritize public works development. The schematic diagram is presented in Figure 3-15. The HSH system will connect the various regional centers in Luzon through various types of toll ways and regional high-standard highways. These highways will provide high levels of traffic services by assuring high speed mobility and safe travel to support vital socio-economic activities in Luzon.

Access and circulation between and among the different sub-regional, provincial, and town centers will be facilitated through the development of backbone, lateral, and strategic all-access roads (Figure 3-16). The critical sections of the existing MacArthur

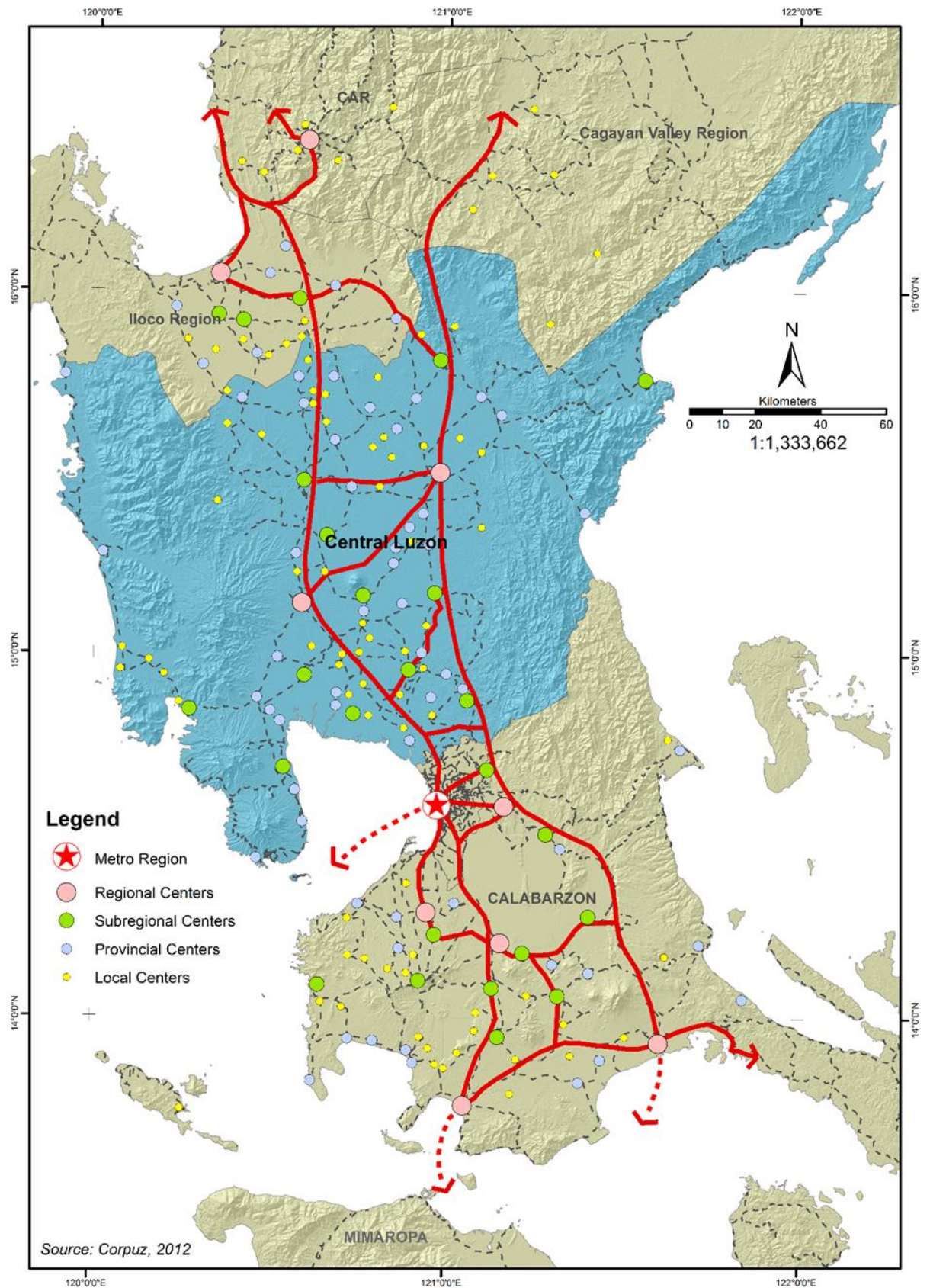
Highway and Pan-Philippine Highway (North-South arterial backbone roads) will be rehabilitated and/or widened to improve capacity.

## Vulnerability Reduction Strategy

Vulnerability reduction efforts will be integrated with Concentration and Connectivity objectives. Securing the safety of settlements and ensuring the sustainable operation of production and value-chain processes during geologic and hydrometeorologic threats may be straightforward but not necessarily easy to achieve. The following principles on vulnerability reduction and land use conflict resolution will be adopted in the region:

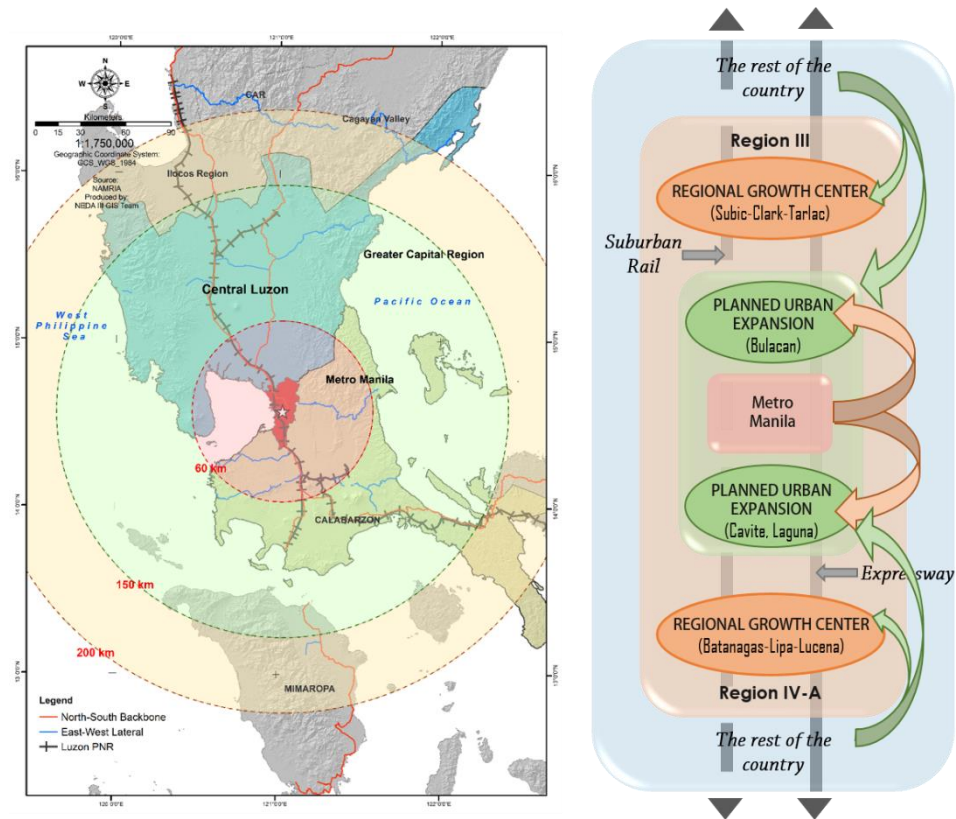
- Safety cannot be compromised. Settlements in danger zones or areas highly restricted from urban development have to be relocated or provided with necessary mitigating measures (Figure 3-17).
- Conflicts between urban expansion and key production areas should be resolved in favor of the latter, provided that provisions for expansion are recognized and are in place. Transportation routes and facilities need to be an integral part of protection plans in order to channel growth into areas that can accommodate them. As mentioned earlier, the preferred way of accommodating future growth is through higher densities within the existing built up areas, with appropriate infrastructures and services.

Figure 3-13: The twin-spine connectivity framework showing linkages between urban centers

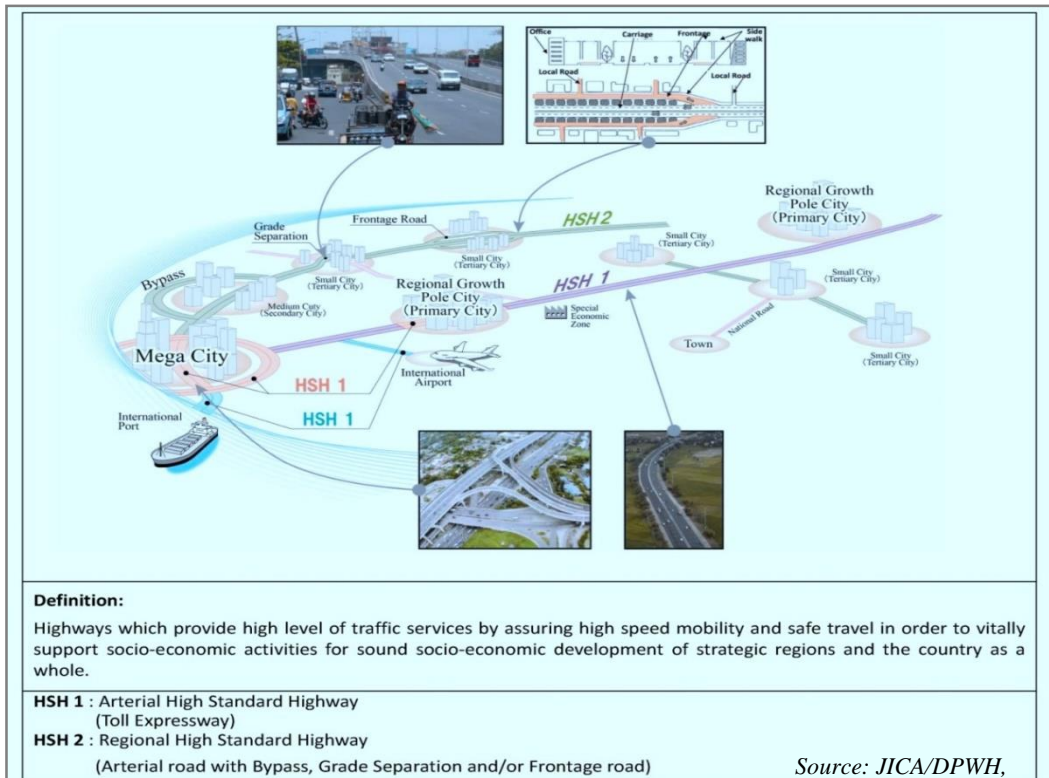




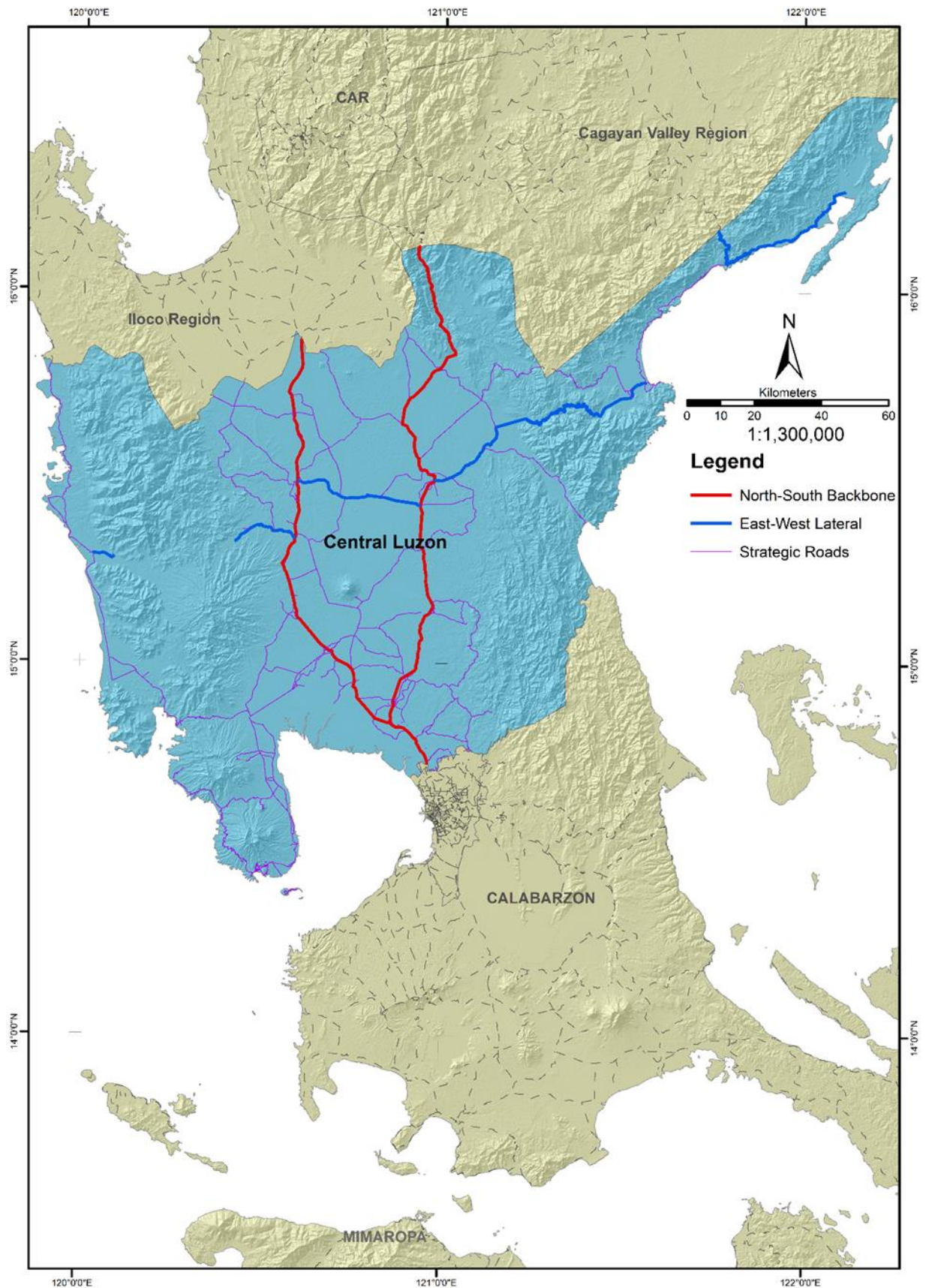
**Figure 3-14: The integrated development concept of Greater Capital Region (GCR)**



**Figure 3-15: Concept of High Standard Highways (HSH)**



**Figure 3-16: North-South Backbone/ East-West Lateral/ Strategic Road Development Framework**



- Eco-tourism, agri-forestry, and urban amenities can be part of the resolution involving conflicts between production and protection areas. Both should have market values that reinforce their respective roles.
- Where infrastructure and transportation routes cannot avoid passing through a disaster-prone area (Figure 3-18) or protected area, alternative routes through an alignment that is not subject to the same threat should be built. Ideally, all major regional and provincial routes should have such redundancy.
- Land use planning and zoning cannot fully address vulnerability issues. They can limit densities in areas susceptible to disasters, channel the direction of growth to avoid hazard-prone areas, and encourage de-concentration of service networks to reduce the possibility of total damage or disruption during emergency periods. However, they need to be augmented by other measures that are more effective in dealing with potential disasters.



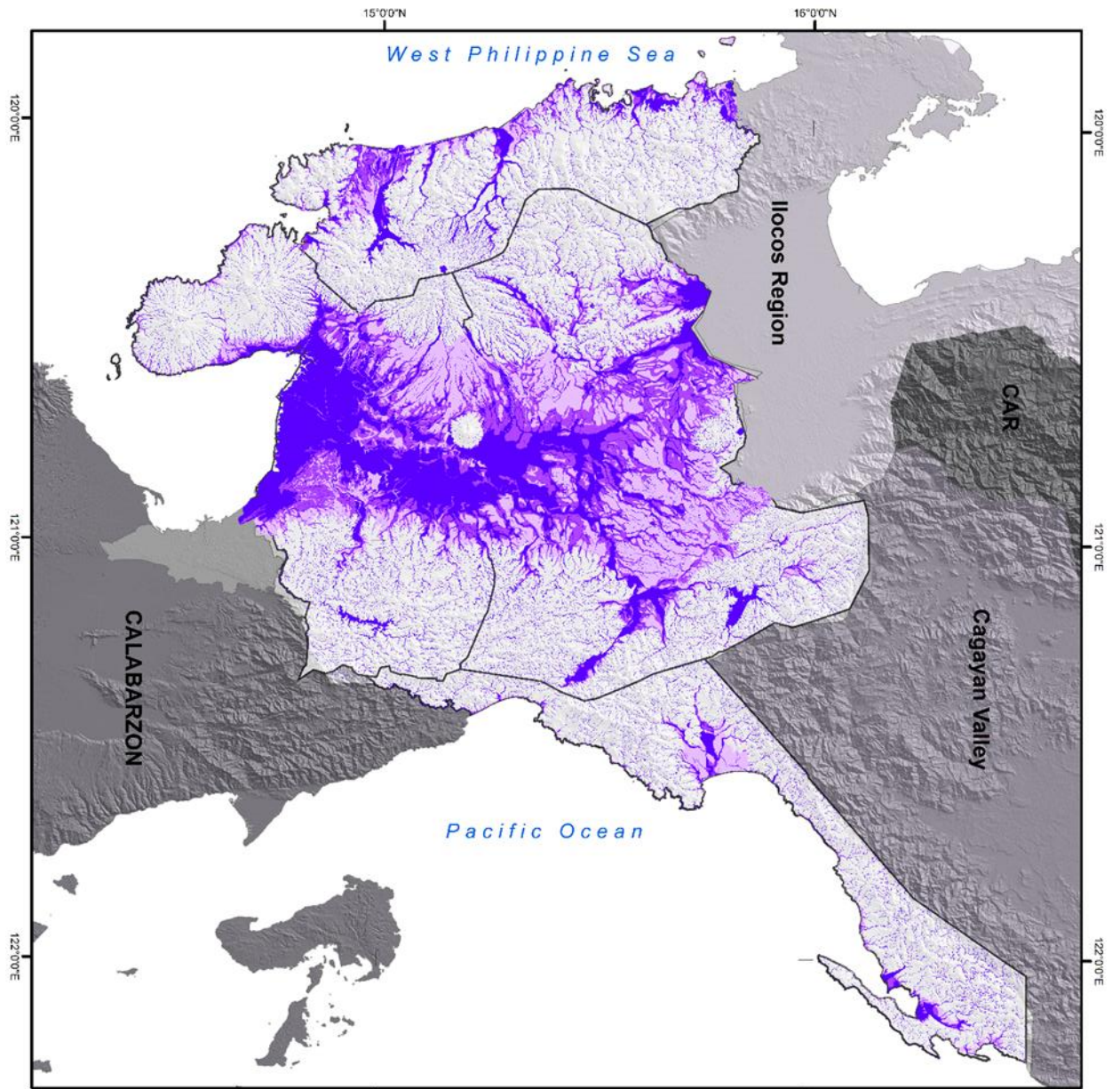
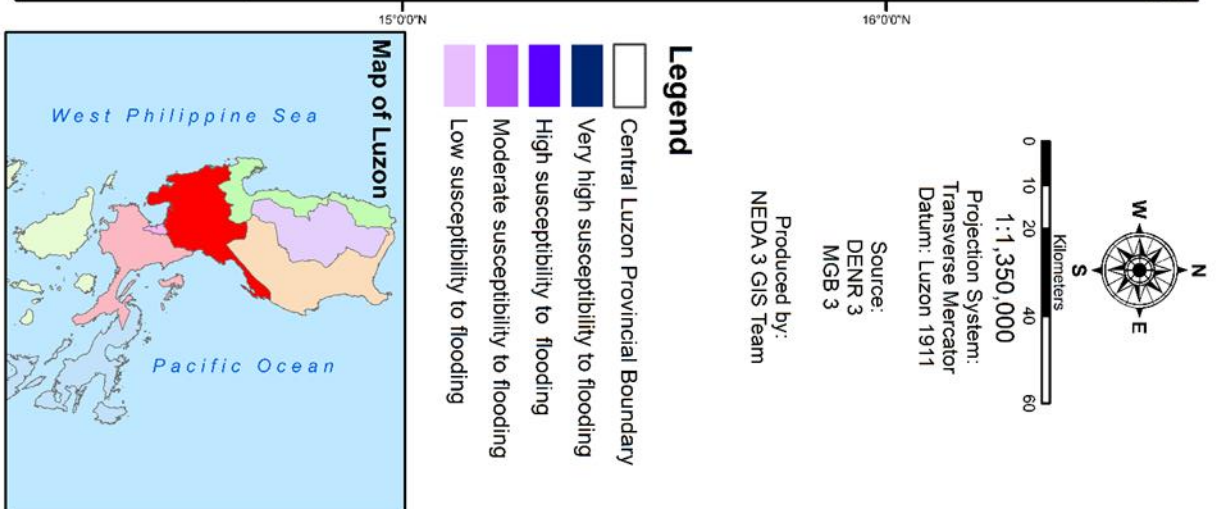


Figure 3-17: Flooding Map of Central Luzon





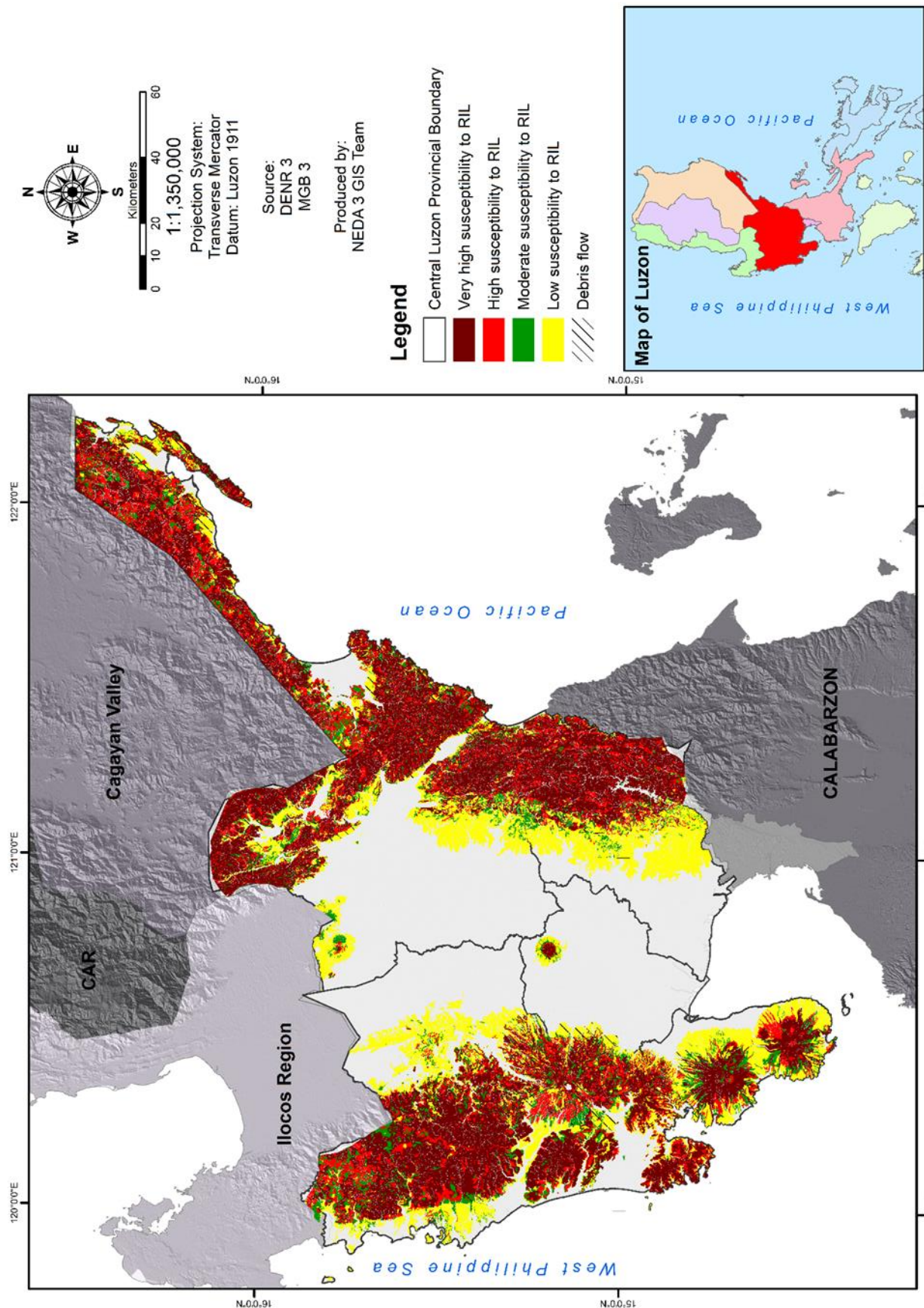


Figure 3-18: Rain-induced Landslide (RIL) Map of Central Luzon



# 04 The Overall Framework



# The Overall Framework

The Central Luzon Regional Development Plan (CL-RDP) 2017-2022 was formulated in consonance with the Philippine Development Plan (PDP) 2017-2022. The PDP is anchored on the President's 0-10 point Socio-economic Agenda, geared towards the attainment of the country's Long Term Vision (LTV): *Ambisyon Natin 2040*.

The CL-RDP follows the development agenda of the Philippine Development Plan 2017-2022, highlighting the role of the region in achieving national development goals and objectives. The framework that was adopted is shown in Figure 4-1.

The PDP 2017-2022 lays down a solid foundation for a more inclusive growth, a high trust and resilient society, and a globally-competitive knowledge economy through its emphasis on "*Malasakit, Pagbabago para sa Patuloy na Pag-unlad*."

## Assessment and Challenges

On the whole, Central Luzon showed positive socio-economic performance from 2011-2016 although some of the plan targets were not fully achieved.

The region's gross domestic product grew at an average of 7.1 percent from 2011-2016, which is well within the target range of 7 – 8 percent. It was only in 2015 that the GRDP fell below the target as shown in Table 4-1. This was attributed mainly to the onslaught of El Niño-induced drought and tropical cyclones that caused severe damage to the Agriculture sector, negatively affecting the other sectors. The Services sector managed to grow 5.7 percent during the year, but this was offset by the Industry sector which slowed down in 2015 to 6.7 after growing impressively by 15.9 percent in 2014.

The period also registered a decrease in inflation in the region brought about by the negative annual rates in the indices of

housing, water, electricity, gas and other fuels, health, recreation and culture, food, and transportation. The slower mark ups in food and non-alcoholic beverages, health, and education likewise contributed to the decrease in inflation in Central Luzon from 2011-2016.

Major social indicators such as poverty incidence and unemployment rates also showed an improvement. From a baseline of 13.7 percent in 2009, poverty incidence went down to 11.2 percent in 2015. Subsistence incidence also declined from 4.3 percent of individuals in 2009 to 3.0 percent in 2015.

In addition, the improvement of the labor market in the region was reflected in the decline of the unemployment rate. In 2016, the unemployment rate was estimated at 6.6 percent, surpassing the target of 7 percent. High youth unemployment has kept Central Luzon's

unemployment rate high. However, although the unemployment rate decreased, underemployment remains a major challenge. Employed persons who expressed their desire to have

additional jobs or longer hours of work increased by 146,000 in 2016. The underemployment rate rose from 13.5 percent in 2015 to 16.1 in 2016.

**Table 4-1: Socio-economic Targets vs. Accomplishments, 2014-2015**

Indicator	Target			Accomplishment		
	2014	2015	2016	2014	2015	2016
<b>GRDP Growth Rate</b>	6.1-7.1	6.6-7.6	7.1-8.1	9.3	5.3	9.5
<b>Agriculture</b>	5.5-6.5	6.0-7.0	6.5-7.5	6.0	0.6	0.6
<b>Industry</b>	5.5-6.5	6.0-7.0	6.5-7.5	15.9	6.7	16.0
<b>Services</b>	7.0-8.0	7.5-8.5	8.0-9.0	4.1	5.7	5.9
<b>Unemployment rate</b>	8.0	7.5	7.0	8.1	7.8	6.6
<b>Poverty incidence among population</b>		17.75			11.2	

Note: Figures in red imply that the accomplishment is below target

## Strategies

In line with the current administration's agenda, the CL-RDP will focus on three pillars: i) "Malasakit" (to enhance the social fabric), ii) "Pagbabago" (to reduce inequality), and iii) "Patuloy na Pag-unlad" (to increase the potential growth of the economy). These pillars, supported by a strong foundation in national security, infrastructure development, socioeconomic resiliency, and ecological integrity, will enable the region to achieve its overall goal.

### i) Enhancing the social fabric: Regaining peoples' trust in public institutions and cultivating trust in fellow Filipinos

Government agencies will be seen as people-centered, efficient, and aboveboard. These agencies will be equipped with adequate facilities, their personnel will be trained, and their systems will be improved to ensure the

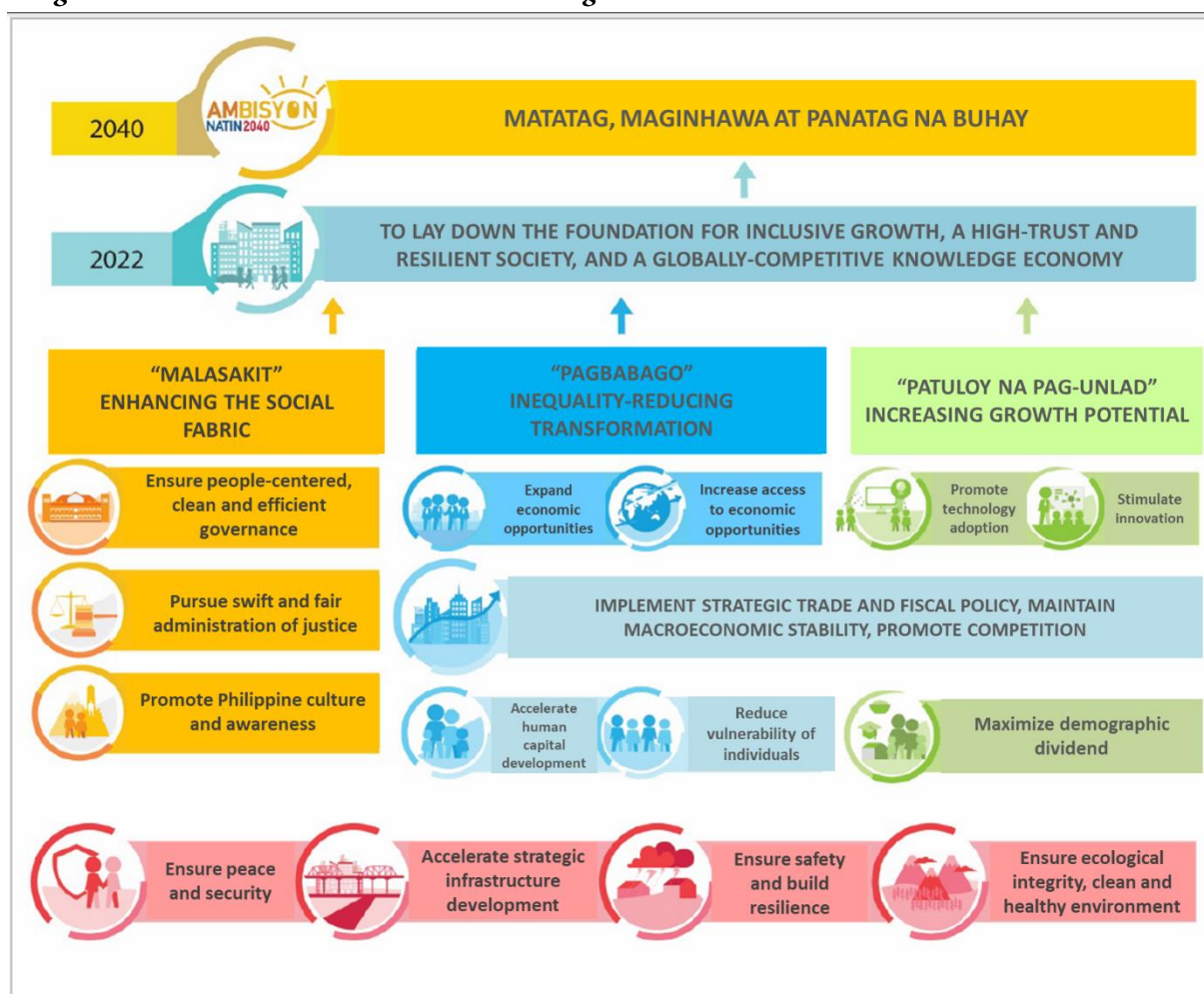
prompt delivery of services. The people will also be empowered to engage with the government.

The administration of justice will be perceived as swift and fair. From a fragmented mode of delivering justice, a "sector approach" will be adopted. Processes—from lodging of complaints to investigation, prosecution, and conviction—will be streamlined and harmonized across the different agencies in the executive and judiciary branches of government. Systems to exact accountability (including indicators of efficiency) will be put in place (*Chapters 5 and 6*).

Filipinos will have increased awareness of and will learn to value cultural diversity and shared heritage. Heritage conservation plans will be formulated and implemented. Cultural education



**Figure 4-1: The Overall PDP 2017-2022 Strategic Framework**



will be mainstreamed in basic and higher education.

Values for the common good, including “*malasakit*” values, will be promoted using several media and integrated in school curricula. Personnel in government will also be taught these values and how these may be demonstrated in public service. The aim is to regain people’s trust through “*Malasakit*” (Chapter 7).

**ii) Inequality-reducing Transformation: Enabling ordinary Filipinos**

**to feel the “Pagbabago”**

There will be more opportunities for the growth of output and income. The sub-sectors and economic groups that used to lag behind (i.e., small-time farmers and fisherfolk and MSMEs) will directly benefit from these opportunities. By expanding economic opportunities and increasing access to these opportunities, ordinary Filipinos will feel the “*Pagbabago*”. Their vulnerability will be reduced through social protection and human capital development by means of health, nutrition, and education programs.

The Agriculture sector will be expanded by fostering linkages with the Industry and Service sectors for more efficient value-adding processes and more effective commercialization. This may happen by raising productivity in agriculture. There is a need to first develop an integrated agricultural map to identify the comparative advantage of particular areas. Then, collaboration between and among the science, technology, and extension systems in agriculture will be strengthened. Greater farm mechanization and technology adoption will be promoted. Organized farm management will be encouraged to achieve economies of scale. Climate-resilient small-scale irrigation systems will be constructed or retrofitted, as necessary.

The governance framework for fisheries management will be improved to make it effective. This includes, among others, undertaking regular fish stock inventory, strictly enforcing measures against illegal, unreported and unregulated fishing, and regulating fishery structures. The Fishery subsector will also benefit from stronger linkages with the Industry and Service sectors for value-adding, packaging, storage, transport, distribution and marketing, and even financing (*Chapter 8*).

The Industry and Service sectors will be globally competitive as the country strengthens its economic ties with other countries. Domestic suppliers, including MSMEs, will be encouraged to maximize the benefits of existing

free trade agreements and other cooperative arrangements (*Chapter 9*).

The nutritional and health status of the people will be improved by ensuring access to proper care at all life stages. Health financing programs will be sustained.

Lifelong learning opportunities will be made available to all. The government will invest in soft and hard infrastructure for basic education to make the facilities more accessible and the curriculum more relevant. The quality of higher and technical education will be improved so that they produce highly capable individuals and an extremely competent workforce. Policies and programs will be put in place to increase the income-earning ability of individuals. These include apprenticeship and internship programs, opportunities for re-tooling and skills enhancement, and policies to promote work-life balance and ensure that workers receive decent wages (*Chapter 10*).

The vulnerability of individuals will be reduced. Policies and programs will be initiated to ensure that their social, cultural, and economic rights are protected, and that they are empowered to participate in the development process (*Chapter 11*). Building safe and secure communities is also a priority of the administration (*Chapter 12*).

### iii) Increasing potential growth:

#### **Accelerating and sustaining economic growth for “*Patuloy na Pag-unlad*”**

A major strategy to sustain and further increase growth is by graduating to a knowledge economy. Science, technology, and innovation (STI) in the Agriculture, Industry and Services sectors will be promoted and even accelerated. Policies and programs to facilitate the flow of knowledge and protect intellectual property rights will be established or enhanced. A culture of creativity will be created, beginning with the very young students in basic education and continuing through higher and technical education. Innovation hubs will be established as a way of providing venues to nurture creativity and innovation (*Chapter 14*).

Potential growth can be further enhanced by accelerating the full harvest of the demographic dividend. There will be aggressive efforts to ensure that families will be of the size that can be adequately cared and provided for. Age-appropriate sexuality education will be integrated into the school curriculum. Full information and orientation programs on responsible parenthood and reproductive health will be made widely available. This will be complemented by measures to increase the labor market participation of women by encouraging them to defer childbearing and attain ideal birth spacing (*Chapter 13*).

#### **Enabling and supportive economic environment**

Growth will be supported by maintaining macroeconomic stability, developing a strategic trade and fiscal policy, and enhancing access to financial services. The tax system, including its administration, will be made simpler, fairer, more equitable and internationally competitive (*Chapter 15*).

Market competition will be enhanced. There will be broad-based communication and advocacy efforts to increase awareness about the benefits of market competition. Reporting and feedback mechanisms will also be developed through which consumers can report the anticompetitive behavior and practices of firms. At the same time, government policies and regulations will be reviewed to ensure competition-neutrality (*Chapter 16*).

#### **Foundations for sustainable development**

The physical environment will be characterized by a balanced and strategic development of infrastructure, while ensuring ecological integrity and a clean and healthy environment.

The next six years will be characterized as the “golden age of infrastructure” in the Philippines. Spending on infrastructure will increase to at least 5 percent of GDP from less than 3

percent previously. The program will be rationalized based on strategic masterplans effecting inter-regional connectivity and integrated province-level plans, some of which will be developed and some updated. There will be greater complementation of the different modes of financing infrastructure projects—locally-funded, foreign assisted, and projects under public-private partnership. Major infrastructure projects will be implemented by adopting a 24/7 work schedule to fast-track the infrastructure program. Other issues will be addressed by better governance, and policy and regulatory reforms such as the creation of an apex body to coordinate efforts in the water resource sector, ensuring availability of right-of-way, and streamlining processes in the issuance of permits necessary to implement the projects (*Chapter 19*).

A top priority of the current administration is the reduction of all forms of criminality and an end to the proliferation of illegal drugs. This will be done through a holistic program that involves not only combatting crimes but also the corruption that perpetuates such acts. The approach will be comprehensive and will include information and education campaigns, community organization and mobilization, and police-community partnerships to ensure public order and safety (*Chapter 17 and 18*).

The PDP 2017-2022 contains strategies to rehabilitate and restore degraded natural resources and protect fragile

ecosystems. Even in urban areas, green spaces will be expanded. At the same time, there will be programs to improve the welfare of resource-dependent communities as they take on the role of primary stewards of the environment and natural resources (ENR). The interventions will be designed following a ridge-to-reef approach and a sustainable area development framework so that the interdependence of the different ecosystems are considered. Policies to define property and usufruct rights will be put in place so that the responsibilities for the care and management of the ENR are identified (*Chapter 20*).

The next chapters are structured like this overview chapter. Each chapter begins with an assessment and challenges, followed by strategies to address the said problems, and lastly by an enumeration of the medium-term targets. All these bolster the attainment of the 0-10 point Socioeconomic Agenda and *AmBisyon Natin 2040*.

PART II

# **ENHANCING THE SOCIAL FABRIC ("MALASAKIT")**







05

Ensuring People-Centered,  
Clean, and Efficient  
Governance



# Ensuring People-centered, Clean, and Efficient Governance

The active participation of the civil society through citizen engagement and empowerment plays a key role in furthering the best interest of the whole community. This reinforces the PDP 2017-2022 pillar of “*Malasakit*” or enhancing the social fabric. In order to ensure credibility and reliability at all levels of development administration, transparent, accountable, and responsive governance must be delivered. The present administration's desire for a corrupt-free government entails strictly following the rule of law and effectively and efficiently implementing processes that the community expects and deserves.

This chapter attempts to assess these elements and provide strategic solutions to achieve the region's goal of building effective, accountable, and inclusive institutions at all levels, one of the Sustainable Development Goals advocated by the United Nations.

## Assessment and Challenges

### Citizen engagement and participation

***Voter turn-out during the 2016 national and local elections was relatively high.*** One of the targets of electoral reform is ensuring the greater involvement of educated and responsible voters. The participation of voters and the provision of “quality votes” are essential in producing competent public officials that lead the community towards good governance and development administration. Based on the final report of the Commission on Elections (COMELEC), there were 6,056,392 registered voters in Central Luzon for the 2016 polls. A relatively high 4,986,380 or 82.33 percent of the voting population in the region actually

took part in the 2016 elections (COMELEC, 2016).

***The need to strengthen participatory budgeting in providing Assistance to Disadvantaged Municipalities (ADM) is crucial.*** The 1987 Constitution guarantees the right of citizens to participate in governance. The Bottom-up Budgeting (BuB) System, now known as Assistance to Disadvantaged Municipalities (ADM), allows citizens, local Civil Society Organizations (CSOs) and LGUs to contribute directly in deciding how the national budget must be allocated. According to the Department of the Interior and Local Government (DILG)

Program, its ultimate goal is to bring genuine equity, development, and empowerment to the poor households and communities (DILG, 2016). The Central Luzon – Regional Poverty Reduction Action Team (CL-RPRAT) headed by DILG, annually validates the Local Poverty Reduction Action Plans of all LGUs in the region. In 2016, about 1,342 BuB Projects were identified with a total cost of Php1,953.91 million vis-à-vis 1,196 BuB Projects amounting to Php1,626.35 million in 2015 (DILG, 2016). This corresponds to a 12.2 percent increase and a 20.2 percent increase in the number of projects and amount of funding, respectively. Shown in Table 5-1 is a comparative presentation of the BuB Projects per province from 2014 – 2016.

In 2016, the province of Bulacan listed the highest number of projects with 297, followed by the province of Pampanga with 293. In contrast, the province of Bataan had the least number of projects with 108.

***The Citizens’ Satisfactory Index System was rolled out.*** To further collect and generate citizens’ feedback on LGUs’ service delivery performance, the Citizen

Satisfaction Index System (CSIS) was established by DILG. This feedback system, as a planning and control mechanism, will help improve the delivery of accountable, transparent, and responsive governance. As of 2015, DILG has conducted Citizen’s Satisfactory Index Survey in 5 cities in the region, namely: Gapan City, San Jose City, Palayan City, Malolos City, and San Jose Del Monte City. The said cities were also able to submit CSIS reports and conduct utilization conferences.

## Access to government information

***As of 2015, only 67 out 130 LGUs in the region have established their websites.*** To improve government procedures and processes, the government utilized information and communications tools to strengthen the linkage between the government and its citizens and to promote a more active and participatory political deliberation and decision-making. As of 2015, 67 out of 130 cities and municipalities in the region have already established their respective websites. Table 5-2 shows the number of LGUs with and without websites.

**Table 5-1: Number of BuB Projects by province, 2014-2016**

Provinces	2014		2015		2016	
	No. of Projects	Amount (in Php million)	No. of Projects	Amount (in Php million)	No. of Projects	Amount (in Php million)
Aurora	78	51.66	106	101.34	111	119.24
Bataan	57	37.44	126	150.00	108	180.00
Bulacan	95	79.85	215	269.57	297	363.99
Nueva Ecija	144	226.80	219	400.70	239	475.70
Pampanga	158	149.69	234	275.00	293	329.99
Tarlac	87	96.96	149	230.00	119	274.99
Zambales	39	52.43	147	172.74	175	209.98
<b>TOTAL</b>	<b>658</b>	<b>693.84</b>	<b>1,119</b>	<b>1,626.35</b>	<b>1,342</b>	<b>1,953.91</b>

Source: Department of the Interior and Local Government 3

Although the government endeavors to make public information available, information accessibility and data management have remained problematic in the region. Local government operations or transactions and procedural constraints in government-to-government and government-to-citizen dealings limit the availability and accessibility of information. Moreover, the unavailability of internet access and the poor quality of computer units in most barangays in the region impede their capacity to publish their financial information, programs, and profile, among others. These issues hinder LGUs from adhering to certain government policies such as Local Governance Performance Management System, Full Disclosure Policy, and Seal of Good Local Governance. Because of these issues, there is a need to modernize the means through which the local government shares necessary information and data to the public. Doing this also addresses the call for transparency and responsiveness.

***All LGUs in the region have complied with required data uploads for the Local Governance Performance Management System (LGPMS).*** The government has been persistent in enhancing the delivery of services. The Local Governance

Performance Management System (LGPMS) of the DILG was implemented to enable performance assessment and identify development gaps in local governance. As of 2014, 100 percent of LGUs in the region have inputted their data into the system. These include their profile, financial performance, and disaster preparedness checklist.

## Delivery of public goods and services

The need to strengthen the role of the local government in the delivery of public goods and services must be prioritized. The region shall continue to enhance civil service and human resource management in LGUs to further deliver public goods and services seamlessly.

***Four out of 7 provinces were conferred the Seal of Good Local Governance.*** With the successful implementation of the Seal of Good Housekeeping (SGH), the DILG launched the Seal of Good Local Governance (SGLG) or *Pagkilala sa Katapatan at Kahusayan ng Pamahalaang Lokal* in 2014. This SGLG measures not only the indicators of accountability and transparency but also the LGU's disaster preparedness and responsiveness and sensitivity to the needs of the vulnerable and marginalized sectors of the society. As of 2015, the provinces of Bulacan, Nueva Ecija, Tarlac, and Zambales were conferred SGLG awards. In addition, Balanga City and Mabalacat City were conferred the SGLG at the city level, while 27 municipalities were awarded the SGLG at the municipal level.

**Table 5-2: Number of LGUs with and without websites per province (2015)**

Provinces	Total no of LGUs	No. of LGUs with website	% Share
Aurora	8	1	13
Bataan	12	7	58
Bulacan	24	16	67
Nueva Ecija	32	12	38
Pampanga	22	13	59
Tarlac	18	11	61
Zambales	14	7	50
<b>TOTAL</b>	<b>130</b>	<b>67</b>	<b>52</b>

Source: Department of the Interior and Local Government 3

***LGU availment of the Performance Challenge Fund has increased.***

LGUs that were awarded the Seal of Good Local Governance (SGLG) are eligible for the Performance Challenge Fund (PCF). This fund is an incentive provided to LGUs in the form of financial grants for local development projects such as projects classified under the Millennium Development Goals (MDG). The PCF aims to recognize good governance performance particularly in the areas of transparency, accountability, participation, and service delivery. In 2015, thirty-three LGUs in the region were able to benefit from the 2015 PCF. A total of 58 projects were provided with a PCF Project Subsidy amounting to Php119 million. These LGUs included San Luis in Aurora; Balanga, Mariveles, and Orion in Bataan; Balagtas, Bustos, and Plaridel in Bulacan; Cuyapo, Gabaldon, General Tinio, Guimba, Llanera, Nampicuan, Penaranda, Santo Domingo and Zaragoza in Nueva Ecija; Bacolor, Floridablanca, Guagua, Mabalacat, Macabebe, Porac, San Luis, San Simon, and Santa Rita in Pampanga; Camiling, Capas, Paniqui, and Victoria in Tarlac; and Zambales province (DILG, 2016)

***More than half of the LGUs in the region are yet to prepare/update major development plans such as the CLUP and CDP.***

One of the requirements of LGUs under the Local Government Code is the formulation of comprehensive development plans (CDP) and comprehensive land use plans (CLUP). The said plans are important to effectively implement programs and projects at the national level. The CDP is an action plan utilized to develop and implement priority

sectoral and cross-sectoral programs and projects. On the other hand, CLUP provides a spatial framework which guides the physical development and land use resources of a city. As of 2016, 53 cities and municipalities in the region have not yet crafted their updated CDPs/CLUPs, although the rest have updated and approved CDPs/CLUPs or are currently in the process of updating them. Moreover, 70 percent of LGUs in the region have already completed or drafted their Executive and Legislative Agenda (ELA) (DILG, 2016).

Aside from the development plans of the cities and municipalities, the provinces are also mandated to prepare the Provincial Physical Framework Plan (PPFP) and Provincial Development Plan (PDP). The LCG of 1991 doesn't prohibit the provinces from integrating the two plans into a Provincial Development and Physical Framework Plan (PDPFP). The PDPFP serves as a key vertical influence linking provincial development objectives with regional and national policies and programs. To check the consistency of PDPFPs with the Regional Physical Framework Plan (RPF) and NEDA Board (NB) – National Land Use Committee (NLUC) guidelines, the Regional Land Use Committee (RLUC) reviews the PDPFP of provinces prior to the Sangguniang Panlalawigan (SP) approval. In 2015, RLUC III endorsed the PDPFPs of the seven provinces in Central Luzon.

Through the RLUC and the PDPFPs of the provinces, the region may effectively access the changes and evaluate the impacts of the programs and projects on land use, environment, and other physical resources.



## Anti-corruption efforts

***The Anti-Red Tape Act has been strictly implemented.*** The fight against corruption is one of the advocacies of the present administration. To monitor the agencies' performance in delivering frontline services, the Civil Service Commission (CSC) annually conducts the Anti-Red Tape Act Report Card Survey (ARTA RCS) which is also in compliance with RA 9485 or Anti-Red Tape Act of 2007. The ARTA program aims to further improve government service delivery by stamping out bureaucratic red tape and warding off graft and corruption. As of 2015, 57 (46%) out of 123 offices in Central Luzon assessed in the ARTA RCS were rated excellent, 61(50%) offices were rated good, 4 (3%) were acceptable, and 1 (less than 1%) was rated failed (Table 5-3).

Overall, Central Luzon ranked second among the regions with the highest percentage of offices rated excellent. Compared to the 113 offices in 2014, the region showed an 8 percent increase in the number of offices (RLAs) assessed as ARTA compliant in 2015. Other ARTA requirements include the presence of

Citizen's Charter, Anti-fixer campaign materials, manned public assistance and complaints desk, and the "No Noon Break" policy. The agencies with an excellent rating will be qualified for the Citizen's Satisfactory Center Seal of Excellence. The said awardees should also have demonstrated exemplary frontline service delivery with no valid and unresolved ARTA-related complaint based on the Contract Center ng Bayan data. Twenty one (21) service offices in the region earned the Citizen Satisfaction Center – Seal of Excellence Award. The list of the government offices with this award is listed in Table 5-4.

***The implementation of the Full Disclosure Policy has improved.*** The Full Disclosure Policy, which requires LGUs to fully disclose particular transactions, and keep their constituents informed, promotes the honest, transparent, and orderly management of public funds. As of 2015, 90 percent of LGUs in the region are fully compliant with this program. Only one province, two cities, and 11 municipalities remain partially compliant. This shows an improvement compared to the 87 percent compliance of LGUs in 2014.

**Table 5-3: ARTA Rating as of 2015**

Agency	Rating				Total
	Excellent	Good	Acceptable	Failed	
Bureau of Internal Revenue	5	5			10
Government Service Insurance System	6				6
Home Development Mutual Fund	10				10
Land Bank of the Philippines	4	1			5
Selected Local Government Units	1	6			7
Land Registration Authority	3	9	1		13
Land Transportation Office	7	21	2	1	31
Philippine Health Insurance Corporation	10	10			20
Philippine Statistics Authority	1	5			6
Social Security System	10	4	1		15
<b>TOTAL</b>	<b>57</b>	<b>61</b>	<b>4</b>	<b>1</b>	<b>123</b>

Source: Civil Service Commission 3

## LGU Competitiveness

*The region exhibited an improvement in its Competitive Index.* The Central Luzon Regional Development Council (RDC) 3 adopted Resolution No. 03-76-2014 “Enjoining all 130 Cities and Municipalities of Central Luzon to enroll in the 2015 Cities and Municipalities Competitiveness Index

**Table 5-4: Citizen Satisfactory Center – Seal of Excellence Awardees in Central Luzon, 2015**

Agency/Office	Date Conferred
1. BIR - RDO No. 21A North Pampanga	February 06, 2015
2. BIR - RDO No. 23A Talavera, Nueva Ecija	February 06, 2015
3. GSIS - Malolos, Bulacan	February 06, 2015
4. LTO - Angeles District Office	February 06, 2015
5. SSS - Balanga City Branch	February 06, 2015
6. SSS - San Fernando, Pampanga Branch	February 06, 2015
7. BIR Paniqui	July 03, 2015
8. GSIS - Tarlac Branch	July 20, 2015
9. GSIS - Bataan Branch	July 20, 2015
10. HDMF Angeles MSB	December 15, 2015
11. HDMF Cabanatuan MSB	December 15, 2015
12. HDMF Malolos MSB	December 15, 2015
13. HDMF Marilao-Meycauayan MSB	December 15, 2015
14. HDMF San Fernando MSB	December 15, 2015
15. HDMF San Fernand HBC	December 15, 2015
16. HDMF Subic MSB	December 15, 2015
17. HDMF Tarlac MSB	December 15, 2015
18. PHIC Iba LHIO	December 15, 2015
19. PHIC Olongapo LHIO	December 15, 2015
20. PHIC San Fernando LHIO	December 15, 2015
21. SSS Camiling Branch	December 15, 2015

Source: Civil Service Commission 3

(CMCI) in preparation for the ASEAN Integration in 2015. As a result, the total number of LGUs in the region that participated in the 2016 CMCI increased to 123 cities/municipalities from 82 cities/municipalities in 2015. This annual ranking is based on the overall competitive score of the cities/municipalities which is based on three main pillars: economic dynamism, government efficiency, and infrastructure (NCC, 2016).

Aside from the improved accessibility of information, the index serves as a diagnostic tool in assessing the competitiveness of the LGUs in the country. Through the index, LGUs may identify their development potentials and areas for improvement which can guide their policy-making, development planning, and investment promotion.

For the year 2016, the province of Bataan jumped from rank 13 in 2015 to rank 7. Likewise, the provinces of Aurora, Bulacan, Nueva Ecija, and Tarlac ranked higher than their previous year’s rank as shown in Table 5-5.

**Table 5-5: Competitiveness Ranking of Provinces in Central Luzon, 2015-2016**

Province	Ranking	
	2016	2015
Aurora	20	49
Bataan	7	13
Bulacan	24	44
Nueva Ecija	39	47
Pampanga	32	18
Tarlac	51	62
Zambales	71	28

Source: National Competition Council

Other LGU awardees were: 1) City of San Fernando, Pampanga as the 2nd Most Competitive Component City; 2) Sta. Maria, Bulacan as the 7th Most Competitive 1st and 2nd Class Municipality; and Baler, Aurora as the 2nd Overall Most Competitive 3rd to 6th Class Municipality (NCC, 2016).

**All LGUs have streamlined their Business Processing and Licensing System.** To reduce the cost of doing business, the DILG and the Department of Trade and Industry (DTI), implemented the Business Processing and Licensing System (BPLS) Program to adopt a single and unified form which reduces steps, days, and signatories

for new applications and business renewals. One hundred percent of LGUs in the region have already streamlined their business processing and licensing systems. Under the Simplification and Regulatory Services Program of DILG 3, cities/municipalities in the region are continuously provided with assistance and support in BPLS automation. As of 2015, a total of 45 cities/municipalities were assisted with their BPLS automation.

**Internal Revenue Allotment (IRA) dependency remains.** Aside from empowering the administrative structure, each LGU is also mandated to focus on the generation of resources and the optimal utilization of these available resources.

The Local Government Code (LGC) of 1991 empowered LGUs to utilize available and potential sources of revenue and to improve their income generating capacity in order to efficiently and effectively provide and deliver public services. Through tax collection, LGUs in the region are able to respond to the demands of their citizens. The Bureau of Local Government Finance (BLGF) annually monitors the tax collection from Real Property Tax (RPT), Business Tax, fees and charges, and

Economic Enterprise. Based on their report, the region collected PhP14, 044.22 million in 2015, which exceeded the year's target of PhP 13,902.35 (101% collection efficiency). This is a marked improvement from the 88 percent collection efficiency recorded in 2013 (see Table 5-6). Moreover, revenue generation aims to promote the fiscal autonomy that strengthens the capacity of the LGUs to operate within their allotted

**Table 5-6: Tax Collection and Collection Efficiency of Central Luzon, 2013 - 2015**

Year	Collection	Collection Efficiency (%)
2013	11,408.07	88
2014	13,141.17	92
2015	14,044.22	101

Source: Bureau of Local Government Finance 3

budget without too much reliance on the Internal Revenue Allotment (IRA) provided by the national government. However, as of 2015, most of the provinces in the region exhibited high dependency on their IRA. As presented in Figure 4-1, the province of Aurora was the most IRA-dependent in the region, at 94 percent for the years 2014 and 2015. In contrast, the province of Bataan was the least IRA-dependent province, at 63 percent in 2014 and 67 percent in 2015.

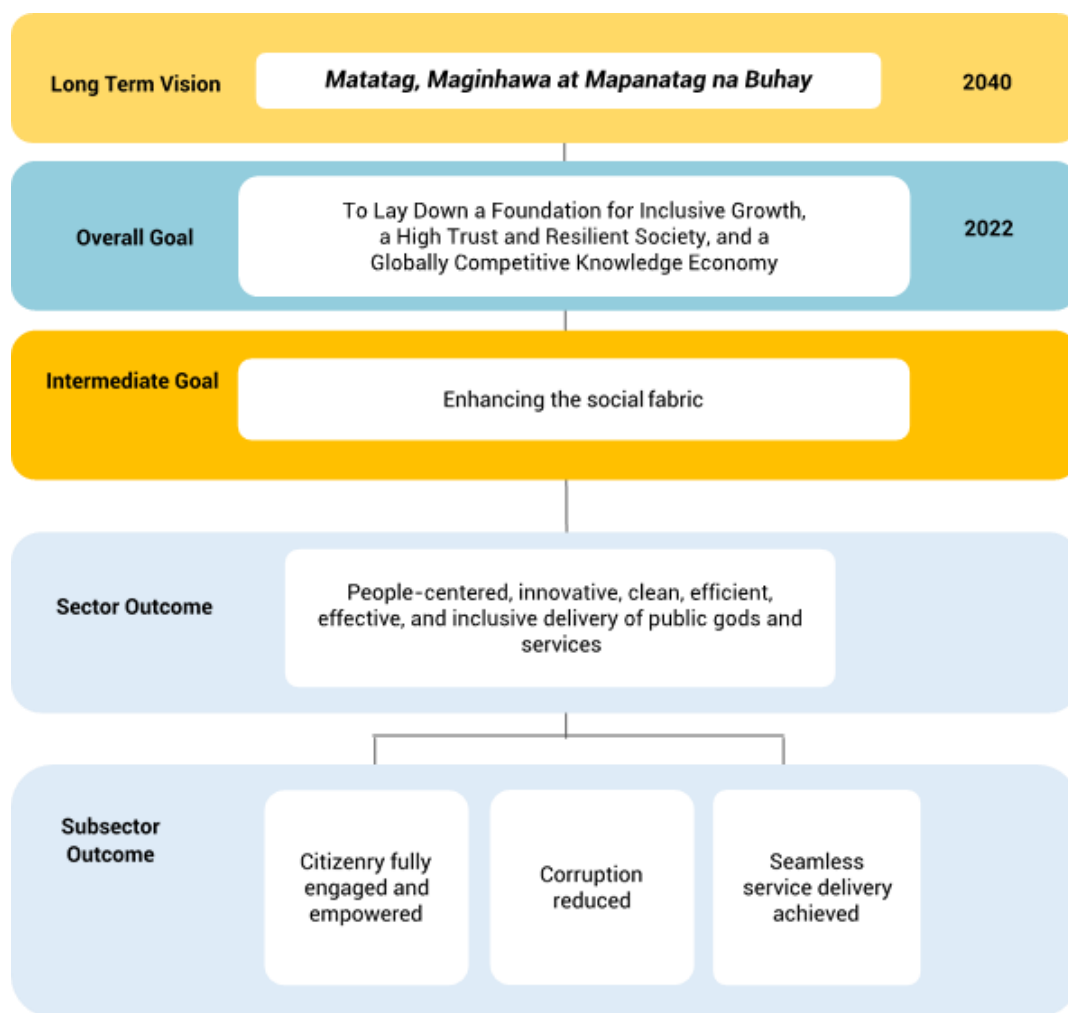
## Strategic Framework

Presented here is the strategic framework which guides the region to achieve clean, effective, efficient, and citizen-centered delivery of public goods and services. In order to attain sector outcomes, the region shall fully enhance and empower citizenry, reduce corruption, and deliver public goods and services seamlessly.

### Subsector Outcome 1: Citizenry fully engaged and empowered

#### Strategy 1: Strengthen participatory governance

One of the items in the reform agenda of the current administration is the promotion of participatory governance.



The region seeks to strengthen existing programs and implement new ones to further engage and empower citizens. For this end, the following shall be prioritized: i) promote volunteerism in the private and public sector to harness citizen engagement in government affairs, decision-making processes, financial management, and development of programs and projects; ii) intensify participation of Civil Society Organizations (CSOs) and; iii) pursue implementation of *Mamamayang Ayaw Sa Anomalya, Mamamayang Ayaw sa Iligal na Drogra* (MASA MASID) Program to empower barangays in the region and

encourage multi-sectoral partnership. Through MASA MASID, ordinary citizens and other concerned sectors can help the government in its campaign against crime, corruption, and illegal drugs.

#### **Strategy 2: Modernize public access to government information**

The accessibility of government information and data helps citizens to make informed decisions and actions in enhancing public policies. If easy access to information is pursued, citizens may fully participate in governance, which may result in a more accountable and responsive

government. In order to ensure the accessibility of the public to government information, the following shall be pursued: i) sustain existing initiatives such as FDP, Transparent Seal, PhilGEPs, Citizen Participatory Audit, Citizen Charter and ii) prioritize improvement of ICT infrastructure and systems among the LGUs. With enhanced internet connection and upgraded computer equipment, LGUs can make their information easily accessible to the public.

### **Strategy 3: Intensify feedback mechanisms**

The local government shall be prepared to facilitate citizen participation through the intensification of feedback mechanisms such as the ARTA Report Card Survey and Citizen Satisfactory Index System. Also, the citizens in the region shall be encouraged to maximize the responsible use of social media as a form of feedback mechanism. The Citizen Hotline (8888) introduced in the National Government shall also be made available in the region.

### **Subsector Outcome 2: Corruption reduced**

### **Strategy 4: Strengthen anti-corruption efforts**

Enforcement of anti-corruption laws and policies must be bolstered to lessen inappropriate and illegal practices in local government service. The government shall pursue all initiatives from different sectors of the government to ensure that these corrupt activities are checked, monitored, prevented and stopped. Monitoring of the implementation of the R.A. 9485 (ARTA of 2007), R.A. 9184 (Procurement Law), among others, shall be strictly enforced. In

addition, Citizens' Participatory Audit shall be pursued to strengthen COA's capability in enforcing accountability in the government.

### **Subsector Outcome 3: Seamless service delivery achieved**

### **Strategy 5: Improve LGU competitiveness**

Public service delivery shall be improved by optimizing the economic dynamism, government efficiency, and infrastructure capabilities of LGUs. The Cities and Municipalities Competitive Index under the National Competitive Council is the main tool used to assess the competitiveness of cities and municipalities in the Philippines. Moreover, the index comprehensively evaluates the economic dynamism of an LGU, a characteristic influenced by activities that create the stable expansion of business and industry, higher employment, better government efficiency (i.e. better quality and reliability of government services and government support for effective and sustainable productive expansion) and finally, infrastructure development, which focuses on the physical building blocks that connect, expand, and sustain a locality and its surroundings to enable the adequate delivery of goods and services. These indicators under the index can be carefully analyzed and improved to aid in the administration of seamless public services.

### **Strategy 6: Enhance public service through human resource development**

The region shall improve its human resources. The inadequacy of public servants in all government establishments results in long waiting lines and delays. This



shall be remedied by: a) enhancing performance management systems; b) improving the workforce through competency-based recruitment, selection, and placement systems and capacitating human resources; c) promoting

competency- rewards and recognition mechanisms; d) using ICT effectively in HR management; and e) improving career development and succession planning.

## Research and Development Agenda

### *Future Competitiveness Scenarios of Central Luzon Provinces*

Becoming more competitive is the only way to improve an area's economic position and respond to challenges. The competitiveness indices and rankings are used to encourage local decision makers, planners, businesses and communities to endeavor to raise their respective area competitiveness.

The aim of the study is to develop a methodology to compute future competitiveness indices for Central Luzon provinces which will be used to determine the competitiveness scenarios of the seven provinces in 2025. The future competitiveness indices will benchmark the competitiveness of the seven Central Luzon provinces at two distinct points in time: 2015 (baseline data) and 2025 (projections). It is also expected to assess competitive issues in the identified priority sectors of Central Luzon provinces, which will serve as a basis for formulating strategies to enhance and sustain their competitiveness in the future.

### *Public-Private Sector Partnership (PSRs) in Local Development*

As members of the RDC, PSRs partner with public officials in development planning, policy formulation, investment

programming/budgeting, and program and project monitoring and evaluation. After almost three decades of engagement, the effectiveness of PSR participation in the RDC has not yet been systematically evaluated.

This study is expected to develop an evaluation framework and appropriate measurable indicators which will be useful in evaluating the engagement of PSRs in the RDC. It is also expected to come up with recommendations which will help better implement and manage PSR participation in the RDC.

### *Assessment of e-Governance in Central Luzon Local Government Units (LGUs)*

Among the government's initiatives to improve e-Governance at the local level are the implementation of Integrated Government Philippines (iGovPhil) and e-LGU projects of the Department of Science and Technology (DOST). The projects are being developed to achieve a higher level of e-Governance or the application of information and communication technologies (ICT) to rationalize government processes and operations.

The aim of this study is to assess the effectiveness of e-Governance at the local

level, and to conceptualize an interoperability and standard development framework for ICT applications to enhance e-Governance in LGUs. Other objectives are as follows: to harmonize ICT systems among LGUs, to increase transparency and accountability using ICT to strengthen performance management, to ensure and

monitor compliance with government policies pertaining to the use of ICT (i.e. Full Disclosure Policy) and prioritize programs/projects that would enhance e-Governance, and to identify problems encountered and set corrective measures to solve them.

## RDP Targets

Indicators	Year	Baseline Value	End of Plan Target	Agency Responsible
Percentage of Provinces, Cities, and Municipalities fully compliant with FDP	2015	90%	Increasing	DILG
Number of LGUs that conducted Citizen Satisfactory Survey	2015	5	Increasing	
Number of Barangays with MASA MASID Institutionalization of Citizen Participatory Audit (CPA)			Increasing	DILG COA
Number of LGUs with websites	2015	67%	Increasing	DILG
Service offices passing the ARTA Report Card Survey	2015	Excellent: 57; Good: 61; Acceptable: 4	Increasing (Excellent)	CSC
Number of LGUs awarded the Seal of Good Local Governance	2015	4 provinces; 2 cities; 27 mun.	Increasing	DILG
Improved percentile ranking in the Cities and Municipalities Competitiveness Index	2016		Higher ranking and scores	NCC
Number of LGUs with CDP and/or CLUP	2016	77	Increasing	DILG, HLURB
Percentage of LGUs with ELA	2016	70%	Increasing	DILG
Number of LGUs that availed the Performance Challenge Fund (PCF)	2015	33	Increasing	DILG
Number of LGUs assisted with Business Permit and Licensing System Automation	2015	45	Increasing	DILG, DTI
Tax collection efficiency	2015	101%	Increasing	BLGF



# 06 Pursuing Swift and Fair Administration of Justice





# Pursuing Swift and Fair Administration of Justice

To further enhance the social fabric, the region seeks to uphold the Sustainable Development Goal (SDG) of promoting the rule of law and providing equal accessibility to justice. This is in keeping with the pledge of the Department of Justice to provide every person with equal access to justice, faithfully safeguard constitutional rights, and ensure that no one is deprived of the due process of law.

This chapter provides the framework for effectively and efficiently accomplishing Central Luzon's objective of providing swift and fair justice. In pursuing this goal, it is very important to advocate partnerships between the stakeholders and other concerned offices in the justice sector in order to encourage responsiveness and consistency.

## Assessment and Challenges

**High case loads and fragmented justice system.** Case congestion has been the toughest challenge in the judiciary. Fragmentation is believed to directly affect the amount and type of crimes and cases.

The five pillars of the criminal justice system in the Philippines are i) law enforcement, ii) prosecution, iii) the courts, iv) the penal system, and v) the community itself. All of these must be observed and monitored so that they may administer fair and swift justice. The region reinforces efforts to enhance its justice system. In 2015, the region received a total of 45,393 cases which is 4.4 percent higher compared to the total cases received in 2014. Moreover, Central Luzon recorded a disposition rate of 76 percent in 2014. Table 6-1 shows the disposition rate in Central Luzon, which is the total number of cases resolved or disposed over the total number

of cases received. Thus, the disposition rate of the region improved in 2015 with 38,048 or 84 percent cases resolved.

**Table 6-1: Case statistics and disposition rate in Central Luzon, 2014 - 2015**

	2014	2015
Number of cases received	43,495	45,393
Number of cases resolved/disposed	33,222	38,048
Disposition rate	76%	84%

Source: Department of Justice 3

### **Strengthened Katarungang Pangbarangay.**

To promote the swift administration of justice, the Barangay Justice System was established to segregate cases which can be peaceably and amicably settled between the parties from those which are truly irreconcilable and require formal adjudication before the courts and other government offices. Its primary purpose is to provide the conciliation mechanism as

**Table 6-2. Katarungang Pambarangay Statistics in Central Luzon, 2016**

Province/City	Nature of Dispute				Settled Cases	Unsettled Cases	Estimated Gov't Savings (in thousand Php)
	Criminal	Civil	Others	Total			
Aurora	1,037	1,023	315	2,375	1,835	540	17,43.50
Bataan	2,712	4,658	2,312	9,682	8,142	1,540	77,349
Bulacan	12,494	21,009	11,158	44,661	31,503	13,158	299,278.50
Nueva Ecija	4,481	5,897	2,285	12,663	11,250	1,413	106,875
Pampanga	1,940	6,329	2,866	11,135	8,682	2,453	82,479
Tarlac	381	914	311	1,606	1,403	203	13,328.50
Zambales	2,921	3,512	2,064	8,617	6,416	2,201	60,952
Angeles City	1,617	1,575	609	3,801	2,296	1,505	21,812
Olongapo City	3,104	3,096	88	6,288	3,980	2,308	37,810
<b>TOTAL</b>	<b>30,687</b>	<b>48,013</b>	<b>22,008</b>	<b>100,828</b>	<b>75,507</b>	<b>25,321</b>	<b>717,316.50</b>
% Share to total	<b>30.44%</b>	<b>47.62%</b>	<b>21.83%</b>	<b>100%</b>	<b>75%</b>	<b>25%</b>	<b>100%</b>

Source: Department of the Interior and Local Government 3

an alternative to litigation in dispute settlement, to members of the responding barangay who are actually residing therein. Under the Presidential Degree 1508, the Lupong Tagapamayapa is created to serve as a consolation body separate and distinct from the barangay council or sanggunian. It also helps decongest regular courts. It is composed of the Punong Barangay as the chairman and 10 to 20 members.

As of 2016, all barangays of the seven provinces in Central Luzon have organized

Lupong Tagapamayapa. A total of 75,507 (75 percent) cases were settled which generated PhP717million in government savings in 2016 (See Table 6-2).

#### ***Need to improve data on justice system.***

The limited information available on the justice system are not sufficient to examine how the problems across its divisions are related. Information and data about the administration of justice in the region must be made more accessible. The availability and accessibility of data shall facilitate strategic planning and decision-making.

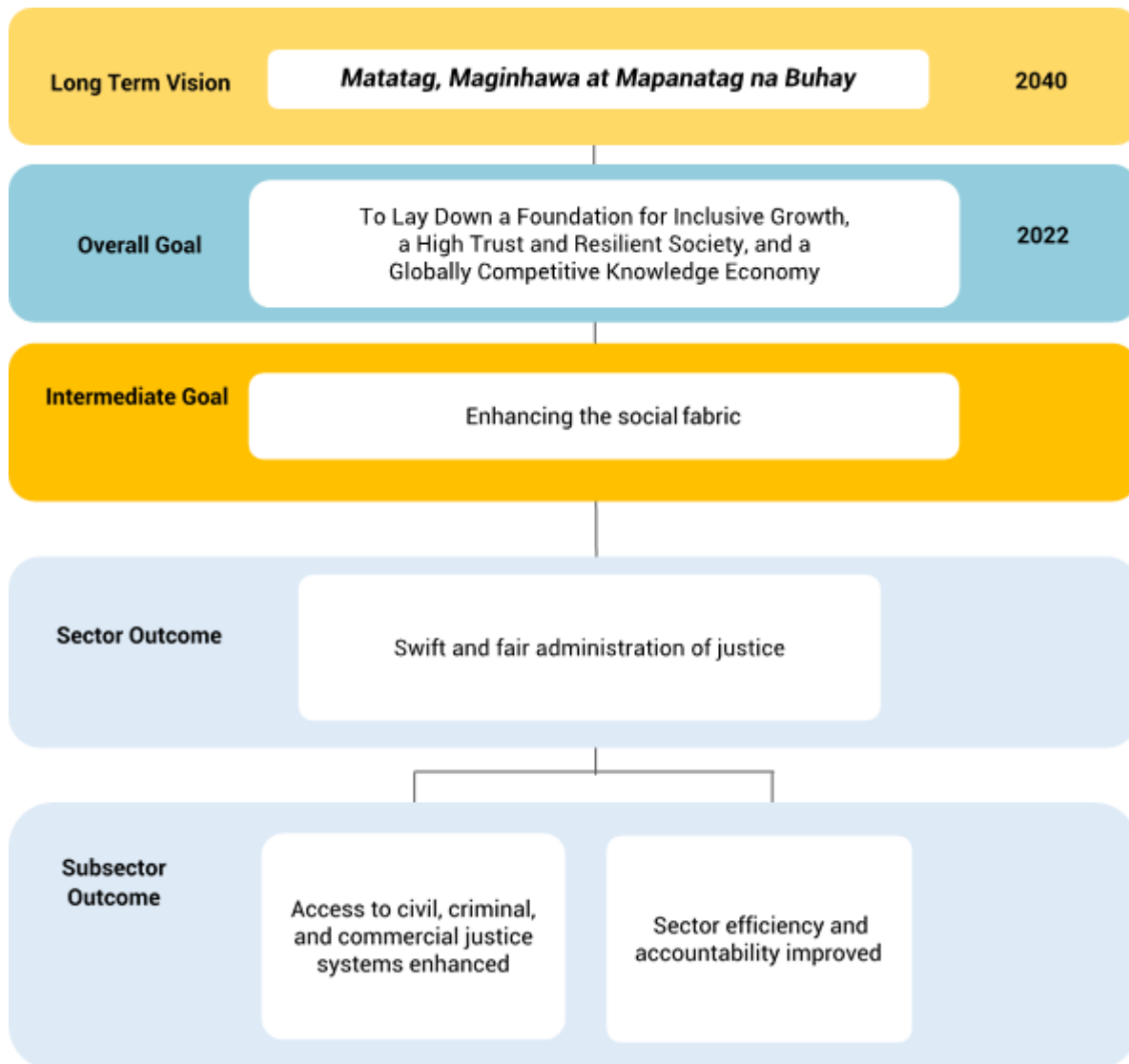
## Strategic Framework

Presented below is the strategic framework which guides the region in the swift and fair administration of justice. In order to attain the different sector outcomes, the region shall fully enhance accessibility to civil, criminal, and commercial justice systems and improve the efficiency and accountability of the justice sector.

### ***Subsector Outcome 1: Access to civil, criminal, commercial justice system enhanced***

#### **Strategy 1: Improve access to justice information**

Constant coordination and data sharing among the justice sector agencies is crucial in analyzing and achieving the delivery of



fair and swift justice. Agencies such as DOJ, DILG, and the Judiciary shall develop an open database system to ensure accessibility and transparency. The establishment of a National Justice Information System (NJIS) shall be pursued to enhance information management across different agencies.

### *Subsector Outcome 2: Sector efficiency and accountability improved*

#### **Strategy 2: Reduce backlogs and ensure good governance in the justice system**

Given the limited resources related to the growing case congestion in the region, efforts in reducing case backlogs must be strengthened to facilitate an efficient and accountable justice system. Interventions such as the following shall be pursued: a) optimizing Alternative Dispute Resolution System; b) strengthening the five pillars of

the judiciary system; c) encouraging citizen involvement and providing feedback mechanisms; and d) intensifying the Barangay Justice System.

### Strategy 3: Improve judicial systems and infrastructure

The connectivity of all courts and the entire justice system shall be improved to intensify

the efficiency of the sector. The following activities shall be prioritized in order to attain the desired sector outcome: a) providing additional courts and/ or personnel, b) Institutionalizing eCourts, and c) Streamlining court operations.

## Research and Development Agenda

### Review of the region's current justice system

Many view the criminal justice system as complex and remote, with processes that seem vague. It is said that justice needs to be swift if it is to be effective. Offenders need to face the consequences of their actions quickly, and the public has the right to expect cases to be dealt with promptly and efficiently.

This study will look into the effectiveness of reform programs that deal with delays, increase accountability and transparency, and improve public confidence, which are already in place across criminal justice services

## RDP Targets

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
Case disposition rate	2015	84%	Increasing	DOJ
Govt. Estimated Savings (due to settled cases)	2016	717.3 Million Php	Increasing	DILG
Cases settled (Katarungang Pambarangay)	2016	75,507	Increasing	DILG

# 07 Promoting Philippine Culture and Values





# Promoting Philippine Culture and Values

Another way to enhance the social fabric and build better relations among the people is to engender an awareness of and an appreciation for the culture that drives people's attitudes and behavior.

This chapter discusses the priority areas of the cultural agenda, which include the following: i) safeguarding and enshrining fundamental cultural rights, ii) achieving equity and inclusion in the access of cultural resources and services to empower communities and create harmony while recognizing cultural diversity, and iii) sustaining and enhancing cultural assets to foster creativity and innovation for socio-economic growth.

## Assessment and Challenges

Culture is “that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by an individual as member of society” (Tylor, 1871). Currently, there is increasing recognition of the interlinkage between culture and development.

Central Luzon has a rich culture with seven (7) provinces of diverse traditions, languages, music, art, recreation, religion or beliefs, dress, stories and folklore.

The region hosts four ethnolinguistic groups, namely: 1) Ayta, 2) Sambals, 3) Kapampangan, and 4) Tagalog. The Ayta (Aeta) are found in the provinces of Bataan, Zambales, Pampanga, Tarlac, and Nueva Ecija. Based on the group listing of the National Commission for Culture and the Arts (NCCA), the recognized dialect groups of the Aytas are: Ambala, Magbaken, Abelen, Aberlen, Magganchi, and Maggindi. Many of the Aytas were

resettled in different areas of the region after the eruption of Mt. Pinatubo. The Sambals occupy the northwestern part of the Zambales mountain range in the region. Sambal is similar to Tagalog, known as “*Sinaunang Tagalog*”, widely spoken in Tanay, Rizal. The Kapampangans are one of the largest ethnic groups in the region, with some affinity with the Sambal. They are known for their culinary and artistic talents.

There are several distinct indigenous peoples (IPs) in the region. Based on the 2007 NCIP 3 data, the estimated IP population is at 2% of the total population in the region (Table 7-1).

Zambales has the most number of IPs, with 55,943 or 10.5% of its population followed by Nueva Ecija with 54,318 (or 2.8% of its 2007 population), and Tarlac with 38,535 (or 3% of its population). Bataan has the smallest IP population with 6,612 or 1% of the province's total population. The

distribution of indigenous cultural communities in Central Luzon are as follows: 1) Dumagat/Remontado and Ilongot/ Bugkalot in Aurora, 2) Dumagat/Remontado/ Kalanguya in Nueva Ecija, 3) Ayta/Aeta/ Abelling in Tarlac, 4) Ayta/Aeta in Pampanga, 5) Dumagat/ Remontado in Bulacan, 5) Ayta/ Aeta/ Abelling in Zambales, and 6) Ayta/Aeta in Bataan (National Commission for Culture and the Arts, 2015).

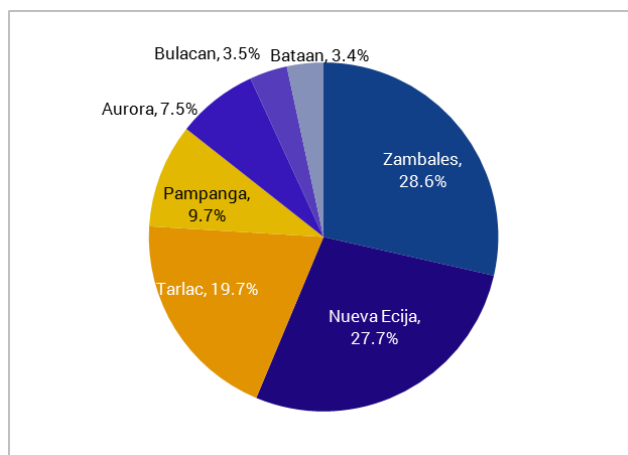
Figure 7-1 shows the IP distribution in the region. Zambales has the highest IP population at 28.6% of the total IP population, followed by Nueva Ecija and Tarlac at 27.7% and 19.7%, respectively.

**Table 7-1: Estimated IP Population in Central Luzon**

Province	Total IPs	Total Population (2007)	% IPs
Aurora	14,678	201,233	7.3
Bataan	6,612	687,482	1.0
Bulacan	6,861	2,924,433	0.2
Nueva Ecija	54,318	1,955,373	2.8
Pampanga	18,920	2,014,019	0.9
Tarlac	38,535	1,273,240	3.0
Zambales	55,943	534,443	10.5
<b>TOTAL</b>	<b>195,867</b>	<b>9,590,223</b>	<b>2.0</b>

Source: National Commission on the Indigenous Peoples, 2007

**Figure 7-1: Estimated IP Distribution in Central Luzon, 2007**



At the regional level, Indigenous Peoples actively participate in development-related activities. Among the various regional committees and councils the IPs are involved in are: the Regional Development Council, Sectoral Committee on Social Development, Regional Peace and Order Council, Regional Youth Advisory Council, and Intersectoral Committee on Human Rights, and Local Development Councils.

At the sub-regional level however, the IPs, as culture bearers are sometimes denied of or limited in their rightful representations in local councils despite the requirement of a mandatory representative at all levels of decision-making that affect their community (IRR of RA 8371, and AO No. 1, s. 2009). The underrepresentation of marginalized cultural communities in local councils may degrade the quality of the implementation and mainstreaming of culture in governance and policy reforms. Other vulnerable groups such as the PWDs, older persons, youth and women, who may also have their own culture, often lack this level of representation. Issues of discrimination and exclusion may at times be traced to the absence of policies on the representation of vulnerable groups.

**Data on culture and its dimensions is erratically gathered.** A complete assessment of Central Luzon's diverse culture is not only a challenge for the region, but for the whole country as well. Data on culture, covering both tangible and intangible aspects, are sparse, scattered, and erratically gathered. Efforts to establish a database are largely constrained by a lack of cultural experts to conduct research and gather data in a

culture-sensitive and ethical manner. Furthermore, funding for such activities is not a priority. As shown in the assessment above, the latest data available from the NCIP are from 2007. Allocating resources for more frequent data gathering about culture is necessary.

***Various creative and artistic talents remain unrecognized.*** Central Luzon is home to several national artists in the country. The province of Bulacan is proud of the legendary poet *Francisco Balagtas*, the musician *Nicanor Abelardo*, and the national sculptor *Guillermo Tolentino*. The famous painter/illustrator *Vicente Manansala* is from Pampanga. Other artists in the region who became famous abroad include *Elmer Borlongan* (painter), *Claude Tayag* (chef), *Plet Bolipata* (painter), *Gromyko Semper* (digital artist), and *Rain Libiran* (visual artist).

Infrastructure to promote awareness of cultural heritage such as museums, monuments, libraries, cultural centers, art galleries and other cultural facilities are tangible aspects of culture that can symbolize local history and identity. Moreover, cultural infrastructure provides physical space for dialogue and community interaction, allowing the preservation of culture and hence fostering cohesion and enhancing the social fabric. There is a need to promote the continued development of the arts and creativity. The government must provide more opportunities for people to participate in creative and artistic processes. Filipino creativity and artistic excellence exist but are under-recognized.

Table 7-2 lists major heritage/historical sites and traditions in the seven provinces of the region. While the economic value of heritage sites can be seen mostly in the revenue generated from tourism, their greater value lies in what they symbolize in the local community and the key cultural/historical/spiritual messages attached to them. In the province of Bataan for instance, the historical sites are mostly symbols of democracy and freedom. Pampanga, as the culinary capital of Luzon, celebrates several food festivals in honor of sisig, duman, and exotic food. Bulacan prides itself for its rich cultural heritage in terms of history and tradition.

***Awareness of cultural values is wanting.***

Increasing awareness of culture and embedded values is a challenge for the country as a whole. Based on Republic Act (RA) No. 7356, “the level of consciousness of our people about our own cultural values in order to strengthen our culture and to instill nationhood and cultural unity, shall be raised formally through the educational system and informally through extra-scholastic means, including the use of traditional as well as modern media of communication.” However, the said provision of the law was not complied with, as the government focused resources on economic development and social welfare. Valuing culture had minimal support and attention, which led to a society disconnected from its culture and characterized by fragmented identities. Instilling positive values that are rooted in the Filipino culture needs to be emphasized.

**Table 7-2: Major Heritage/Historical Sites and Traditions in Central Luzon, by province**

Name		Location	Description
AURORA			
1.	Aurora Quezon Marker	Baler	This historic marker was built in honor of Doña Aurora Aragon Quezon, the wife of Commonwealth President Manuel L. Quezon. Aurora Quezon was known for her untiring efforts in social welfare, especially for the benefit of the people of Aurora province. Like her husband, she was born in the town of Baler. She died in an ambush on the mountain roads of Nueva Ecija leading to the province that now bears her name.
2.	Baler Catholic Church		The structure is an old church with a simple facade. Here, the last Spanish garrison of four officers and 50 men was besieged by Filipino insurgents from June 27, 1898 to July 2, 1899. This was the last pocket of resistance of the Spanish Armed Forces to surrender to American troops. This is also where the La Campana de Baler, an ancient bell, was used and later stored as a relic.
3.	Quezon Memorial Park		This quiet park of trees and lawns was developed in honor and in memory of the late president Manuel L. Quezon. A marker fenced by concrete and set on a circular cement platform serves as a landmark of Baler, the birthplace of Quezon.
BATAAN			
1.	Bankal Settlements	Abucay	This is a barangay created for the Aetas to maintain their traditional customs and practices.
2.	Philippine-Japanese Friendship Tower	Bagac	A landmark symbolizing peace, friendship and reconciliation between the Philippines and Japan, this monument tower was built in 1975 by the Risho Kosekei Group.
3.	Fall of Bataan Marker	Balanga	A landmark which commemorates the Fall of Bataan in memory of the war veterans during World War II, the marker symbolizes the courage and the enduring commitment of a Filipino soldier to his country.
4.	Surrender Site Marker	Balanga	This is the place where the last defense of Bataan was given up during World War II. On 9 April, 1942, Maj. Gen. Edward King Jr., commander of the U.S. forces in Luzon officially surrendered to Col. Hakaru Haf at the compound of Balanga Elementary School under a mango tree.
5.	Death March Marker	Limay	This landmark commemorates the infamous death march.
6.	Lamao World War II Marker	Limay	This marker, found in a town overlooking Manila Bay and Corregidor, commemorates the bravery of those who fought in WW II.
7.	Dambana ng Kagitingan (Shrine of Valor)	Pilar	A national shrine atop Mt. Samat, this immortalizes the agony of the Filipino and the Americans against the forces of aggression and articulates the commitment of the Filipino people to freedom and human dignity.
BULACAN			
1.	Barasoain Church	Malolos	A national shrine, it is the site of the Constitutional Convention of the First Philippine Republic. In its convent the University of the Philippines was first

Name	Location	Description
2. Barasoain Museum	Malolos	housed. Today, it has become the symbol of the province's glorious past and the site of great events.  A museum managed by the National Historical Institute, it displays the religious artifacts of the province.
3. Obando Fertility Dance	Obando	This is celebrated from May 15-19. Couples who are childless can take this occasion to appeal for heavenly intercession and dance to please the Virgin of Salambao, St. Pascual de Bailon, and Sta. Clara. Maidens and bachelors who want to find spouses can also dance for mates. Farmers also thank the Virgin for bountiful harvests.
4. Biak na Bato National Park	Bocaue	A huge split boulder which is the mountain hideout of the revolutionary forces during the Spanish regime and the place where the Malolos Constitution was signed by Gen. Emilio Aguinaldo and Pedro Paterno. It is where the historic Biak-na-Bato Republic was established.
5. Pulilan Fiesta Carabao Festival	Pulilan	Thousands of work animals, mostly carabaos, are led on a parade on the streets of the town every May 1415 to honor its patron saint, St. Isidro Labrador. The carabaos genuflect or kneel in front of the church and are decorated with garlands and shaved for the occasion.
<b>NUEVA ECIJA</b>		
1. Camp Pangatian	Cabanatuan City	The shrine now honors the brave rescue of 512 allied prisoners of war by Filipino guerillas led by the late Governor Eduardo L. Joson. The camp is a popular tourist destination area for veterans of World War II and their families who visit the country under the Reunion of Peace Program.
2. General Luna Statue and Marker	Cabanatuan City	A statue of General Luna astride a horse stands at the plaza of Cabanatuan City in front of the Cathedral. Gen. Luna was assassinated in the city which subsequently adopted him.
3. Dalton Pass	Carranglan	Located in Capintalan, Carranglan, Nueva Ecija the place is about 5 hectares and accessible to any kind of transportation along the Maharlika Road. The place has a monument of General Dalton with the historical accounts of World War II.
<b>PAMPANGA</b>		
1. San Pedro-Cutud Lentern Rites	San Fernando (Cutud, San Pedro)	A re-enactment of Christ's passion and death is done every year during the lenten season. The re-enactment is complete with the passion play and culminates with the actual nailing of at least three flagellants on wooden crosses atop a makeshift calvary.
2. Piyestang Tugak (Frog Festival)	San Fernando	Pyestang tugak started in 2003 to perpetuate the beautiful traditions that emerged through the years in catching and cooking frogs that used to abound in the rice fields of Pampanga. The citizens of San Fernando have reserved a special day every year to honor this amphibian because of its important contributions to the environment, the economy and culture. It also resembles the Fernandino in many ways, including its resiliency.



Name	Location	Description
3. Sisig Festival	Angeles City	The annual "Sisig Festival" (Sadsaran Qng Angeles) is held every year during the month of December in Angeles City, Pampanga, celebrating the Kapampangan dish. It started in 2003 and was made an annual festival to promote the city's culinary prowess.
4. Sinukwan Festival	San Fernando	The Sinukwan Festival relives the Kapampangan spirit with a week-long calendar of cultural revivals capped by a grand street-dance parade in the streets of San Fernando, with towns outdoing each other to the tune of "Atin Cu Pung Singsing." The festival memorializes Aring Sinukwan, god of the ancient Kapampangans.
5. Archdiocesan Museum & Archives	San Fernando	This contains antiques and exquisite works of art depicting cultural heritage, inclination to humanities, artistic skills and Roman Catholic inspiration of the Pampangos. The museum is at the second floor of Guerero building in the University of the Assumption. The archdiocesan archives can be found at the ground floor of the Mother of Good Counsel Seminary.
6. Giant Lantern Festival	San Fernando	Days before Christmas, giant lanterns made of colored crepe and japanese paper with frames of intricate tinwires, structures containing electrical mechanisms, and a thousand bulbs highlight the San Fernando Giant Lantern Festival. The lanterns dance, blink and brilliantly twinkle in kaleidoscopic pattern in cadence with the band music.
7. Apo Fiesta	Angeles City	Celebrations begin with consecutive masses at the Holy Rosary Cathedral after which the faithful kiss the feet of the image of the reclining Christ.
<b>TARLAC</b>		
1. Sto. Domingo Death March Marker	Capas	This is the site where about 60,000 Filipino soldiers were cramped like sardines in closed box-cars that were unloaded to start the second phase of the tragic Death March, which was about 1.5 km. north from Capas town proper. Even from the "disembarkation" point, more than 30,000 of these defenders of democracy perished from the inhuman treatment they were subjected to during the trip from Abucay and Mariveles, Bataan to San Fernando, Pampanga.
2. Capas Death March Monument	Capas	This monument is a historical marker of the infamous concentration where nearly 30,000 Filipino and American soldiers that participated in the Death March perished in 1942. It depicts the endurance and heroism of valiant soldier-defenders three kilometers from the town proper along the highway.
3. Camp O'Donnell		A name that rings a familiar if sad chord in the hearts of World War II veterans and orphans, O'Donnell is a sentimental must in the itinerary of history. A concentration camp and subsequently serving as burial grounds for thousands of Filipino soldiers who perished during the World War II, the site was the ultimate destination of the infamous Death March.

Name	Location	Description
4. Tarlac Provincial Capitol and Maria Cristina Park	Tarlac	<p>An imposing historical landmark in the province is the seat of the provincial government, the Capitol Building. Constructed atop a hill, it provides a panoramic view of the town of Tarlac and its surrounding environs. It has ornamental plants abloom during most of the year.</p> <p>The construction of this edifice work was initiated by Governor Manuel de Leon in 1906, and it was completed under the governorship of the late Hon. Jose Espinosa in 1909. True to the vision of its founders, the CAPITOL today is a must in the provincial travel itinerary of domestic and foreign tourists.</p>
<b>ZAMBALES</b>		
1. Mt. Pinatubo	Botolan	Made famous for its catastrophic eruption in 1991, it is now a source of travel and study among tourists and travelers visiting Central Luzon. Among the travel destinations covered by Mt. Pinatubo are Botolan Resettlement Sites in Taugtog, Loob-Bunga and Baquilan where one may indulge in community immersion with the culture-bound native Aetas; Bucao River, now completely covered with lahar, where one may engage in a walking Safari towards the foothills of the dreaded volcano; Pinatubo lake in San Marcelino, Zambales to see a panoramic vista of the volcano and an opportunity to walk up to the Pinatubo crater.
2. Binabayani	Subic	A Zambales version of Ati-atihan, this is a war dance between the Christians and the Aetas, and is being celebrated every 30th of November during the feast of San Andres, patron saint of Masinloc. People believe that with Binabayani they are assured of bountiful harvest.
3. Kalighawan	Subic	Kalighawan, which means happiness, is a province wide festival of Zambales where in all the thirteen (13) municipalities participate. It includes a cleanliness and beautification contest and some other projects. It is celebrated every 2nd week of February at the capital town of Iba.
4. Magsaysay Ancestral House	Castillejos	An old house of late President Ramon Magsaysay that is found in Castillejos, Zambales, it is in need of being restored as a historical landmark and probable museum for Zambales.

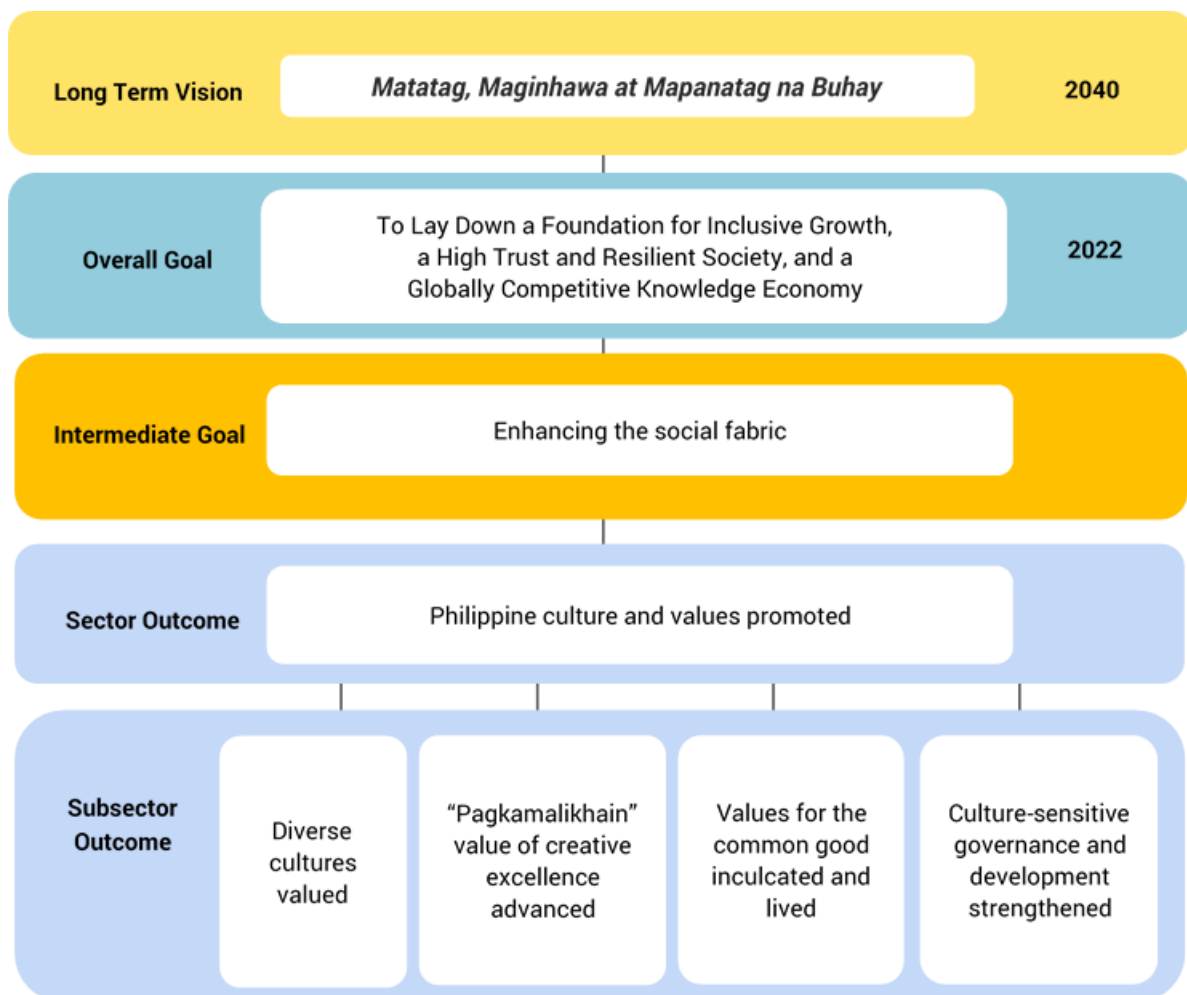
***An independent coordinating body on culture for development is deemed necessary.*** As identified at the national level in the PDP, the implementation of applicable laws is largely weakened by the lack of resources allotted for cultural development. Many culture agencies rely

on contractual workers due to inadequate permanent positions. There is no coordinating body with regional presence to push cultural development and address concerns at the regional levels.

## Strategic Framework

Under the PDP 2017-2022 framework's pillar of "Malasakit", the government aims to establish a high trust society by promoting Philippine culture and values and nurturing culture-sensitive development. Effectively promoting Filipino culture and values means that by the end of 2022, the enumerated subsector outcomes will have been achieved.

Strategies that will realize these subsector outcomes will address the growing issues and challenges faced by the sector. The "malasakit" value contributes to enhancing the social fabric and subscribes to the principles of the United Nations Sustainable Development Goals (SDGs). The identified strategies were mostly adopted from the national context.



### *Subsector Outcome 1: Diverse cultures valued*

#### **Strategy 1: Generate, develop, produce, disseminate, and improve access to information about Filipino culture**

To raise awareness of the country's cultural diversity, learning materials will be developed in collaboration with various agencies. These materials will be disseminated in all public offices, including Philippine embassies abroad to reach overseas Filipinos. There is a need to strengthen social and cultural awareness. The people need to be conscious of their history and heritage, and take part in ensuring its preservation. Public institutions shall conduct various events to strengthen awareness in the region, such as lectures, workshops, exhibits, mandatory visits to museums and other cultural centers. Only with increased awareness can the people have the capability to integrate cultural values in their lives and contribute to development.

#### **Strategy 2: Expand inclusive cultural structures as civic spaces for dialogue and cultural exchange**

The existing cultural infrastructures and facilities will be used as venues for fostering social cohesion and valuing cultural diversity. Cultural structures such as museums, cultural centers, archives, libraries, and art galleries will be made more accessible to allow for dialogue and cultural exchange.

### *Subsector Outcome 2: "Pagkamalikhain" or creative excellence advanced*

#### **Strategy 3: Build appreciation of Filipino creativity**

"Pagkamalikhain" or creativity and artistic excellence can be advanced through various strategies. These include but are not limited to the following: i) encouraging the youth to engage in creative arts through the National Youth Commission, ii) building audience and public appreciation of Philippine arts through social media, iii) establishing recognition for exemplary artistic and culture bearers, and iv) sustaining the arts production to reinforce the region, as well as the nation's identity.

### *Subsector Outcome 3: Values for the common good inculcated and lived*

#### **Strategy 4: Determine a set of core values that foster the common good**

Inculcating "mapagmalasakit" values in families, communities, schools, media and workplace will provide the positive transformative change that will contribute to attaining a high trust society. With "mapagmalasakit" values, social divides brought about by cultural differences may be addressed. Hence, significant efforts are needed to instill "mapagmalasakit" values, which foster the common good. Several channels including the formal education system will be tapped to inculcate these desired social values in all stages of human development.

The concept and practice of volunteerism will be a significant aspect of “malasakit” values and will be incorporated in all levels of public and private institutions. Government agencies, LGUs, the private sector, and media organizations will be encouraged to include volunteerism in their advocacy and educational materials, in the conduct of human resource development activities, and in relevant programs and projects of the institutions. This will reinforce the innate Filipino character trait of “bayanihan” and nurture and sustain a culture of service especially among the young generation of public and private servants and future leaders of the country.

Since there is no existing baseline to evaluate “mapagmalasakit” values, the first step is to conduct a study to examine how social (core) values are being tackled in all institutions (schools, media, and public agencies, among others). These core values may include discipline, persistence, and positivity, a disposition for which Filipinos are known. Once the evaluation is established, families, local communities, formal and informal education systems, the workplace, and media platforms shall be tapped to ultimately instill “mapagmalasakit” values in the general population of the region.

**Strategy 5: Mainstream cultural education in basic, technical, vocational, and higher education**

In mainstreaming culture in the education system, there shall be close coordination and support from the Department of Education and the Commission on Higher Education. One of the priority strategies of DepEd is to make education truly

liberating (see Chapter 8: Accelerating Human Capital Development). The intervention for this strategy is to foster critical thinking and enrich appreciation of culture through the following: i) reflecting on the rich historical experiences of the people, ii) complementing curricular content on culture and arts through greater actual exposure to them by teachers and students, and iii) encouraging an openness to new ideas and innovative teaching practices that can maximize the full potential of learners, for an education that truly liberates. In addition, other means and channels for values formation will be explored and utilized to cover all stages of human development.

**Subsector Outcome 4: Culture-sensitive governance and development strengthened**

**Strategy 6: Strengthen the protection of the rights of vulnerable sectors of society and free them from discrimination and fear through the strict implementation of laws**

There is a need to intensify the protection of the rights of vulnerable sectors (IPs, women, older persons, youth and children, and PWDs). The government needs to be open to drawing in and engaging marginalized groups such as the IPs in development discourse to enrich and broaden development perspectives. This is a way to prevent the confusion and tensions that may flare up among government agencies, local communities, and civil society organizations during the implementation of cultural protection initiatives. Moreover, indigenous knowledge and practices provide valuable insights and tools for ensuring

environmental sustainability. Prior to implementation, cultural laws need to be strongly advocated.

#### **Strategy 7: Pursue institutional reforms for cultural development**

Stakeholders in the region pushed for the creation of the Department of Culture and the Arts by merging all culture-related agencies. The clamor is to have a stronger fiscal position in recommending and implementing government policies and programs for the promotion of culture and the arts. The creation of the said department aims to provide equitable access to cultural resources and services,

improve the conservation of cultural resources, and achieve culture-driven sustainable development. At the national level, it is recognized that a coordinating body is needed to streamline services and enable a systematic launch of cultural initiatives nationwide.

Culture-sensitivity will be enhanced in government bureaucracies so that policymakers will not only focus on deriving economic benefits from cultural assets, but also recognize the intangible value of the creative process that pushes its people to imagine, create, and innovate.

## Research and Development Agenda

### *Study on how social values are being tackled in public institutions (i.e. schools)*

Since there is no existing baseline for the study of cultural values, the first step is to examine the core social values being tackled in all institutions (schools, media, public agencies, among others). Once the evaluation is established, families, local communities, formal and informal education systems, the workplace, and media platforms shall be tapped to ultimately instill “mapagmalasakit” values in the general population of the region.

### *Integration of Families Displaced by Armed Conflicts*

The aim of this research is to study the extent of assimilation of Badjao families that resettled in the region. The study will aid in designing programs to improve the living conditions of Badjao families, ensure their successful integration, and protect their cultural heritage.



## RDP Targets

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
Sector Outcome: Philippine Culture and Values Promoted				
Subsector Outcome 1: Diverse cultures valued				
Number of cultural events and festivals			Increasing	DOT
Number of cultural infrastructures			Increasing	
Number of established cultural or tribal centers showcasing indigenous culture, arts, crafts and music			Increasing	DOT-LGUs
Subsector Outcome 2: Values for the common good inculcated and lived				
Percentage of schools conducted with culture-sensitivity and/or volunteerism trainings			100%	DepED
Percentage of schools conducted with culture-sensitivity and/or volunteerism trainings			100%	CHED
Percentage of RLAs conducted with culture-sensitivity and/or volunteerism trainings			100%	CSC
Subsector Outcome 3: "Pagkamalikhain" or creative excellence advanced				
Documentation of local artists			Increasing	LGUs
Number of local exhibits of creative arts			Increasing	DOT-LGUs
Subsector Outcome 4: Culture-sensitive governance and development strengthened				
Percentage of LGUs with Local Culture and Arts Councils			Increasing	DOT-LGUs

PART III

# **INEQUALITY- REDUCING TRANSFORMATION ("PAGBABAGO")**





# 08

## Expanding Economic Opportunities in Agriculture and Fisheries



# Expanding Economic Opportunities in Agriculture and Fisheries

Another pillar that supports PDP 2017-2022 is “Pagbabago”. This pillar seeks to reduce inequality among the people by providing equal economic opportunities to everyone. One way of accomplishing this goal is by ensuring food security, which is often associated with self-sufficiency especially for key food commodities such as rice, corn, livestock and poultry, fishery resources, among others. The Philippines has been increasing its efforts in providing affordable and accessible food. Central Luzon, as one of the country's food baskets, has a major role in helping the country reach this goal.

This chapter considers the different elements of the Agriculture and Fisheries subsectors and recommends strategies to guarantee the sectors' growth for the improvement of the well-being of poor farming/fishing communities particularly in the rural and coastal areas.

## Assessment and Challenges

***The region is the top producer of various agriculture and fisheries commodities.*** In 2015, Central Luzon was the top producer of rice, onion, pork, chicken meat, duck meat, and duck eggs (Table 8-1). While the region ranked 10th in corn production, it ranked first in terms of yield, at an average of 5.73 metric tons per hectare. As for fisheries, the region was also the top producer of tilapia and black tiger prawns in 2015, with a percentage share to national production of about 48% and 49% respectively.

***There is a need to improve palay production.*** From 2011-2015, the total rice yield in Central Luzon ranged from 2,616 thousand metric tons (MT) to 3,765 thousand MT as shown in Table 8-2. The

highest yield level was achieved in 2014 due to favorable weather conditions. The said yield is equivalent to 2,334 thousand MT of rice at milling recovery rate of 62%.

**Table 8-1: Central Luzon top agricultural and fishery commodities and percentage share to national, 2015**

Commodity	Production (MT)	Contribution to National (%)	Rank
Rice	3,304,310	18	1
Corn	271,319	4	10
Onion	142,344	64	1
Lowland Veg.	117,696	23	1
Pork	422,534	20	1
Chevon	8,968	12	3
Chicken Meat	609,509	37	1
Chicken Eggs	91,125	21	2
Duck Meat	14,239	42	1
Duck Eggs	15,703	37	1
Tilapia	124,410	48	1
Black Tiger Prawn	24,165	49	1
Mudcrab	4,154	25	2
Milkfish	55,539	14	3

Sources: Department of Agriculture (DA) 3 and Bureau of Fisheries and Aquatic Resources (BFAR) 3



**Table 8-2: Palay: Yield in '000 MT and Area Harvested in '000 has., by Province, by Year**

Province	2011		2012		2013		2014		2015		Total		Average	
	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area
Aurora	85	23	91	24	88	22	95	23	87	22	446	114	89	23
Bataan	124	31	135	31	140	32	155	32	152	32	705	159	141	32
Bulacan	228	60	351	80	367	82	372	82	351	79	1,669	383	334	77
Nueva Ecija	1,313	287	1,587	304	1,673	315	1,931	318	1,581	308	8,085	1,533	1,617	307
Pampanga	310	69	388	84	420	91	433	92	426	90	1,977	426	395	85
Tarlac	451	117	549	124	585	135	639	136	570	134	2,794	646	559	129
Zambales	105	30	119	30	137	33	140	33	138	34	639	161	128	32
<b>Total</b>	<b>2,616</b>	<b>617</b>	<b>3,221</b>	<b>677</b>	<b>3,409</b>	<b>711</b>	<b>3,765</b>	<b>717</b>	<b>3,304</b>	<b>700</b>	<b>16,316</b>	<b>3,421</b>	<b>3,263</b>	<b>684</b>

Source: CountrySTAT, Philippine Statistics Authority (PSA)

At annual per capita consumption of 112 kilograms, the region had a rice surplus of about 1,078 thousand MT. This could supply the rice requirements of Metro Manila for 9 months in 2014. Therefore, the region's palay production should be further improved through the partnership of the government and the private sector in providing services to the farmers.

The area harvested for palay had a 2.5% drop compared to the previous year's, or from 717,191 hectares in 2014 to 699,646 hectares in 2015 (Table 8-2). Palay production also dropped by 13% from 3,765 thousand MT in 2014 to 3,304 thousand MT in 2015. The unrealized planting brought about by inadequate irrigation water and late rains due to El Niño caused a reduction in the volume of production. In closing the gap, more investments are needed in areas most vulnerable to climate change. In 2015, the damage caused by the onslaught of Typhoons Lando and Nona

amounted to Php 6 billion or 392.97 thousand MT of palay.

In 2015, the region's average yield for palay of 4.72 metric tons per hectare (MT/ha) was close to achieving the sector target of 5.53 MT/ha. Palay productivity varies from province to province (Table 8-3). With the provision of adequate irrigation and other infrastructure facilities, and affordable inputs, among others, the region would have achieved its sector target. The province of Nueva Ecija, likewise, almost achieved its sector target despite going through El Niño in 2015.

Improving productivity is vital not only to increase production but also to augment the incomes of farmers and fisherfolk. Growth in the sector's productivity has been hampered by constraints such as limited access to formal credit and insurance especially during disasters, and the government's poor provision of infrastructure support such as irrigation facilities, and post-harvest facilities, among others. Most of the subsector production barely met the sector's targets for the past five years due to the following productivity constraints:

- i. Limited access to credit and insurance,
- ii. High cost of production inputs,

**Table 8-3: Palay: Productivity (MT/ha), by Province, by Year**

	2010	2011	2012	2013	2014	2015	Average
Aurora	3.66	3.73	3.93	3.98	4.10	3.96	3.89
Bataan	4.16	3.97	4.33	4.34	4.80	4.76	4.39
Bulacan	3.77	3.78	4.41	4.47	4.54	4.43	4.23
Nueva Ecija	4.58	4.58	5.22	5.30	6.07	5.12	5.15
Pampanga	4.64	4.51	4.61	4.61	4.73	4.71	4.64
Tarlac	4.21	3.86	4.46	4.34	4.68	4.25	4.30
Zambales	3.81	3.46	3.94	4.14	4.19	4.10	3.94
<b>Central Luzon</b>	<b>4.34</b>	<b>4.24</b>	<b>4.77</b>	<b>4.80</b>	<b>5.25</b>	<b>4.72</b>	<b>4.69</b>

Source: Computed based on PSA data

- iii. Low farm mechanization and inadequate post-harvest facilities,
- iv. Inadequate irrigation,
- v. Illegal and premature land conversion, and
- vi. Unregulated fishing activities (DA, 2011).

***The supply of corn is still insufficient to meet the region's requirement.*** In terms of corn production, the region has exceeded its target for the past three years (from 2013 to 2015), as presented in Figure 8-1. Corn production had an average growth rate of 9.57% from 2011 to 2015. Area harvested increased by 8.8% or from 45,535 hectares in 2014 to 47,368 hectares in 2015.

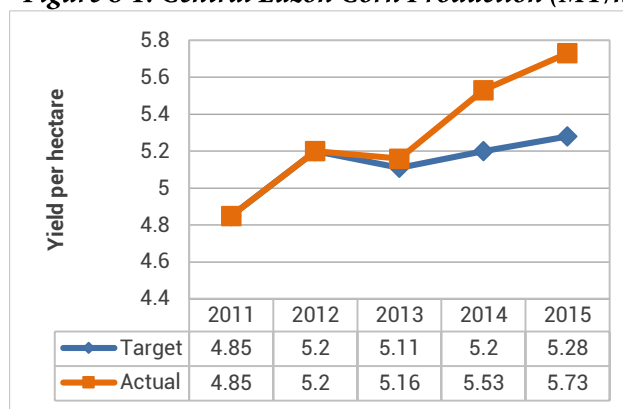
Despite the promising performance of the corn subsector, the region can only produce two weeks' demand of the feeds in the region. Swine and poultry production entails about 70% of the production cost from feeds alone (NEDA, 2011)

Enhancing the region's corn production to realize the demand of the feeds milling industry and reduce their operating cost is another challenge. Although the region is the center of swine and poultry production and has a good concentration of feed mills, bulk of the corn requirement of the said industries are imported from other regions and sources outside the country. This is because the region is able to supply only about two weeks' demand of the crop.

The limited information about access to processing firms together with the high cost of transporting goods to processors has been an issue for farmers and fisherfolk, especially small-scale A&F producers. This is true in the case of Central Luzon's mango

growers, corn and coconut farmers, tilapia growers, and many others in the farming or fishing community. Another problem is that they cannot generate the volume and quality of produce required by processors and food outlets. The challenge therefore is to organize small-time farmers so that they can work collectively and get the necessary marketing information to increase the access of rural communities to processors (NEDA, 2011).

**Figure 8-1: Central Luzon Corn Production (MT/ha)**



Source: CountrySTAT Philippines, PSA

***High Value Crops production surpassed its target.*** The region remains the major source of onion in the country, with production accounting for 64% of the national output in 2015. The said share amounts to about 115.91 thousand MT, which was produced mainly in the province of Nueva Ecija. Area harvested for onion declined by 13 percent or from 8,522 hectares to 7,407 hectares in 2015. Despite the drop in area harvested, Central Luzon has surpassed its target for production by 72% (15.65 MT/ha actual vs. a 9.1 MT/ha target) (PSA, 2015).

The region is also a major producer of garlic, sweet potato, tomato and okra. Other crops being produced in the region include

**Table 8-4: Comparative farm income analysis between high value crops and rice in Central Luzon, 2015**

Crops	Yield/Ha (MT)	Farmgate Price per Kg (Php)	Gross Value (Php '000)
Okra	13.74	22.82	313.54
Onion	13.25	31.43	416.54
Garlic	3.80	81.48	309.38
Eggplant	11.08	17.75	196.74
Rice	4.72	18.56	87.66

Source: CountrySTAT Philippines, PSA

eggplant, peanut, mongo, cashew, mango, sugarcane, and cassava.

In terms of income generation, planting cash crops or high value crops (HVC) is more practical than planting rice. Table 8-4 shows the comparative income analysis between HVCs (e.g. okra, onion, garlic, and eggplant) and rice in Central Luzon at the farmer level. It can be observed that onion farming generates the highest gross income of Php416.54 thousand among the HVCs. In contrast, rice farming provides the lowest gross income of Php87.66 thousand, which is 79% lower than the income from planting onions. Compared to HVCs, rice farming has the lowest income due to low productivity (4.72 MT/ha) and low farmgate price (Php18.56) per kilogram.

***There is a need to improve livestock production to meet growing demand.*** The livestock subsector had been robust from 2013 to 2015, with the hog industry accounting for 92% of the total regional

**Table 8-5: Volume of Production in Livestock: Central Luzon 2013-2015 (MT)**

Commodity	2013	2014	2015	Total	Share to Grand Total (%)
Hog	362,341	380,674	422,534	1,165,549	92
Cattle	18,938	18,411	18,314	55,663	4
Goat	8,030	8,635	8,968	25,633	2
Carabao	6,537	6,914	6,886	20,337	2
<b>Total</b>	<b>395,846</b>	<b>414,634</b>	<b>456,702</b>	<b>1,267,182</b>	<b>100</b>

Source: CountrySTAT Philippines, PSA

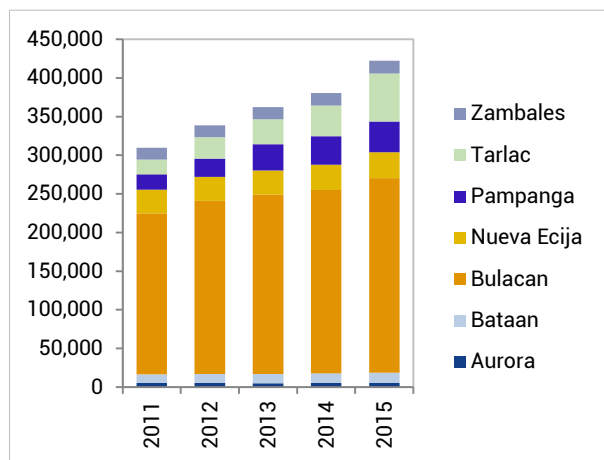
output (Table 8-5). Hog production increased by 11% from 2014 to 2015 as a result of the expansion of hog farms in response to the growing demand for pork. Therefore, further improvements in the technological processes involved in swine production are needed to sustain the supply of pork.

The province of Bulacan, which is strategically located neighboring Metro Manila, the main market for agricultural products, posted the highest production in the region, with a total produce of 251 thousand MT of swine. The rest of the region produced less than 100 thousand MT (Figure 8-2).

***The region continues to be the top source of poultry in the country.*** Central Luzon leads in the production of broiler products such as chicken and duck meat. From 2013 to 2015, chicken meat production accounted for 83% of the total regional output (Table 8-6). Furthermore, it ranked high in the production of layer products: first in duck egg production and second in chicken egg production.

The chicken industry had an average growth rate of 5 percent from 2011 to 2015. The increase in commercial farms, particularly for broiler production, has been driving the uptick in the subsector. Also, the adoption of tunnel ventilated system (tunnel-vent) or controlled climate poultry houses contributed to the increase in production. Bulk of the production came from the provinces of Bulacan and Pampanga with 24.04 percent and 23.92 percent shares, respectively, followed by Tarlac with 19.80 percent (Figure 8-3). However, the subsector remains to be

**Figure 8-2: Swine: Volume of Production, by Province, by Year (MT)**



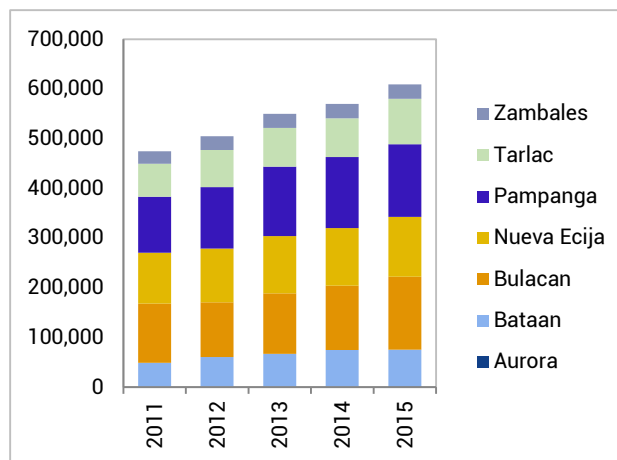
Source: CountrySTAT Philippines, PSA

challenged by inefficiencies in the production process and high cost of production (NEDA, 2011).

Additional investment in poultry production is needed to be able to meet the demand of industrial markets. Areas of expansion have been identified for poultry production that could augment the region's poultry supply and fortify its position as the leading producer in the industry.

***There is an unstable production in the fisheries sector.*** As shown in Figure 8-4, fisheries production in the region had been erratic from 2012 to 2016. Production increased by 10,161 MT and 8,487 MT in 2013 and 2014, respectively. It grew by an average of 3.4 percent during that period. However, production declined by 14,765 MT in 2015 and rose again by 9,370 MT in 2016. The sharp decline in 2015 can be attributed to the typhoons and heavy monsoon rains in key producing areas of the region.

**Figure 8-3: Chicken: Volume of Production, by Province, by Year (MT)**

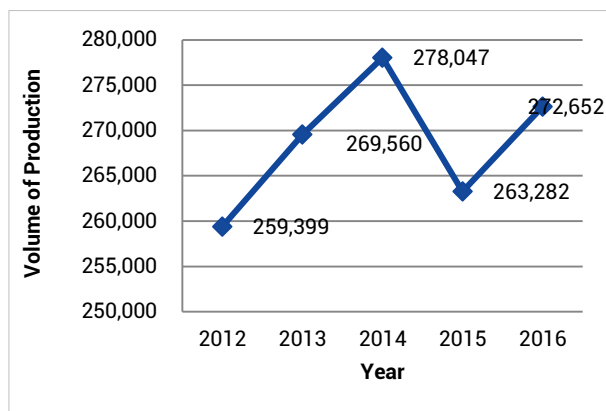


Source: CountrySTAT Philippines, PSA

The Aquaculture subsector accounted for 83 percent of the total production in 2016 or 226,139 MT, while municipal fisheries contributed 15 percent or 41,623 MT. Commercial fisheries accounted for only 2 percent of the share which is equivalent to 4,890 MT.

As of 2015, the region has had a total of 37,352.76 hectares of fishpond areas (Table 8-6). Of the total, 16,491.07 hectares or 44 percent are found in the province of Pampanga while 12,284.01 hectares are

**Figure 8-4: Central Luzon Fisheries Production, 2012-2016 (MT)**



Source: CountrySTAT Philippines, PSA

located in the province of Bulacan. Most fishponds for mudcrab and shrimp culture are also situated in the province. The region's top aquaculture commodities are tilapia, milkfish, tigerprawn and mudcrab.

The growth of the tilapia industry has been sluggish for the past five years, increasing only by an average of 1.31 percent due to the damages caused by the occurrence of El Niño and typhoons, among others. Bulk of the production is from the province of Pampanga accounting for 87 percent or 107.51 thousand MT, followed by the provinces of Tarlac and Bulacan with shares ranging from 3 to 5 percent or 6.8 and 3.94 thousand MT, respectively.

**Table 8-6: Fishpond Areas in Central Luzon (ha), 2015**

Province	Freshwater Fishpond	Brackishwater Fishpond	Total
Aurora	76.47	33.92	110.39
Bataan	94.22	4,097.8	4,192.02
Bulacan	605.43	11,678.58	12,284.01
Nueva Ecija	1,480.10		1,480.1
Pampanga	4,812.73	11,678.34	16,491.07
Tarlac	1,089.01		1,089.01
Zambales	153.18	1,552.98	1,706.16
<b>Total</b>	<b>8,311.14</b>	<b>29,041.62</b>	<b>37,352.76</b>

Source: Bureau of Fisheries and Aquatic Resources 3

The region is one of the smallest contributors of capture fisheries, both municipal and commercial with only a two percent share of the total national capture fisheries production. The decline in the catch of commercial fisheries in 2016 as compared to 2015 may be attributed to several factors, one of which is dwindling stock. This remains to be a challenge not only for the region but also for the whole country. However, production from municipal fisheries posted an increase of 14,669 MT or 35 percent in 2016. The strict implementation of fishery laws particularly in municipal waters may have contributed a

lot in the improvement in catch of municipal fisheries. The major fishing grounds in Central Luzon include the (i) Manila Bay covering the provinces of Bataan, Bulacan and Pampanga, (ii) West Philippine Sea on the western side (Zambales area), and (iii) Pacific Ocean on the eastern side (Aurora area). Another potential fishing ground in the region is the Benham Rise in the Pacific side, which can contribute significantly to the commercial fisheries production of the region (BFAR, 2016).

Marketing transactions between traders or processors and fisherfolk take place at fish landing centers. There are a total of 22 community fish landing centers in the region (see Chapter 16: Infrastructure Development). The region's major marine produce are squid, sardines, tuna, mackerel and blue swimming crabs. Major processors and exporters of seafood are mostly found in Pampanga and Bulacan.

The demand for fishery products as an alternative source of protein has been increasing due to the growing awareness of health care among Filipinos. Fishery or seafood products have less fat content and also cost cheaper compared to pork and chicken meat. However, the profitability of fishfarming is affected by the increasing cost of feeds, which account for almost 73 percent of the total production cost. Hatcheries are also challenged by the high electrical utilization rate of the equipment they use in maintaining water levels, thus affecting fishery prices in the market (BFAR, 2016).

***There is a need to improve the sector's adaptation to climate change.*** The sector's

susceptibility to climate change and disaster risks subverts the increments of the sector to the disadvantage of small-time farmers and fisherfolks. Because of this, R & D on climate change adaptation is essential to mitigate the impacts. This is important given Central Luzon's position as the major supplier of agricultural products. Any downturn in the region's production also affects the country's rice supply and the rice farming sector, the country's poor and most vulnerable to climate change impact.

Proof of the region's vulnerability is the cost of damage it incurred from previous calamities. In 2015, the total damage to agriculture for both typhoon Lando and Nona was Php8.95 billion, with more than Php428 million losses in fisheries along with 385 boats needing repairs. The total cost required to rehabilitate the damage is estimated at around Php1, 558.41 million. Moreover, the sector is also susceptible to hotter and drier periods, especially the poultry and fisheries subsectors. For poultry, broiler producers have adapted the use of the tunnel-vent system, while layer producers have yet to identify a suitable technology to be able to adapt to changes in temperature. For aquaculture, higher costs will be entailed in maintaining water level and quality.

***The sector's growth is being hampered by the lack of financing support for farmers and fisherfolk.***

Small-time farmers and fisherfolk lack the necessary means to access credit, particularly from formal lenders and financing institutions. They usually gain their financing support from relatives or informal lenders whose credit support entails higher interest rates. There is a need to make credit accessible to farming and fishing households by providing them with financing programs which can be availed without the stringent requirements and large collaterals needed by credit institutions. Expanding non-financial services in the form of technical assistance, techno-demo, and provision of equipment from agencies will also increase the number of potential agri-based enterprises.

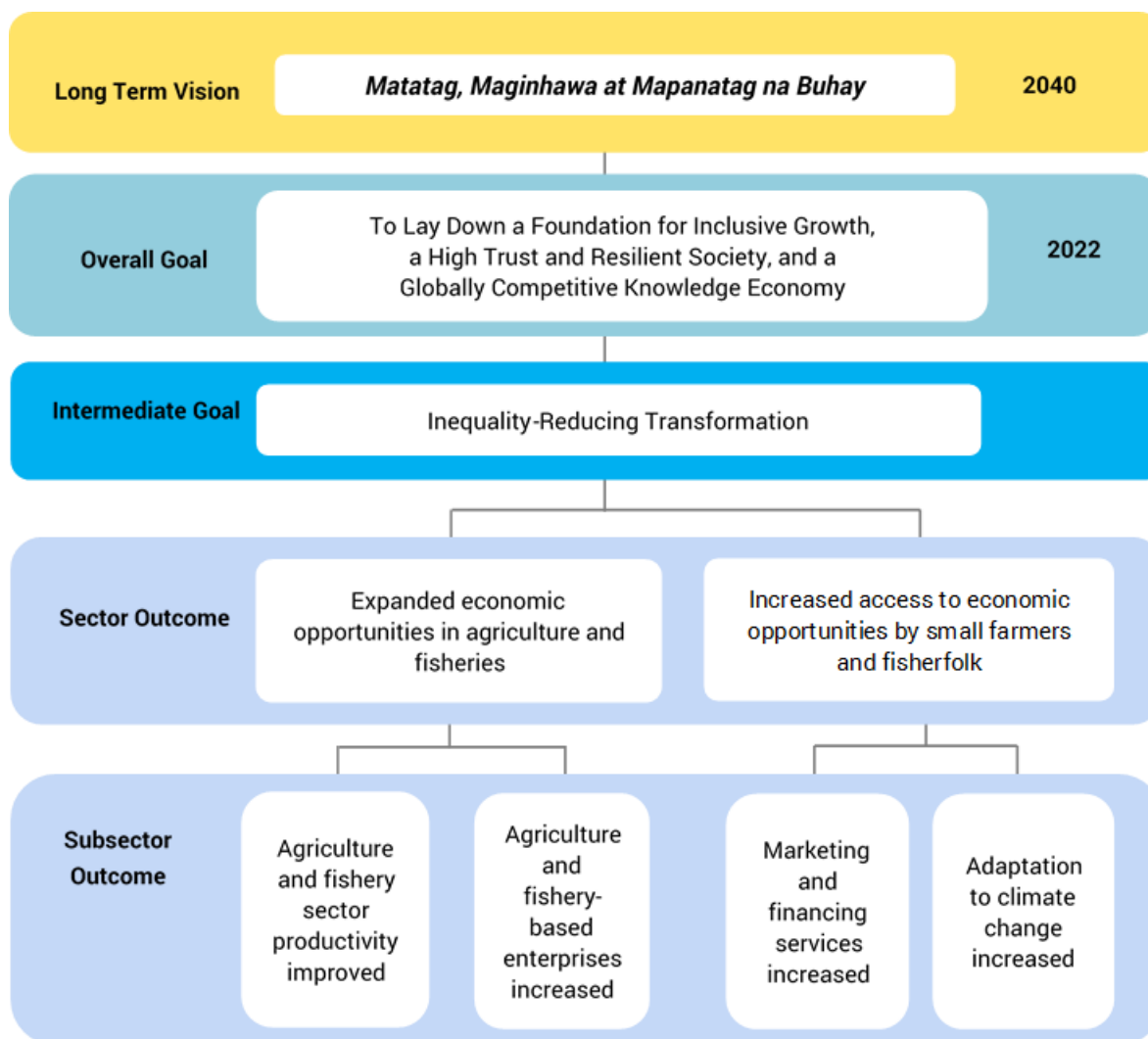
The marketing of agriculture or fishery products should also be improved in order to increase income, especially in the rural and coastal communities. Accessibility should likewise be enhanced as farm-to-market roads in these farming and fishing communities are yet to be fully rehabilitated.

## Strategic Framework

The region aims to reduce inequality in economic opportunities in this sector as it is one of the region's pillars of growth and the source of livelihood for many. The outcomes desired for this sector are the

following: i) Expanded economic opportunities in Agriculture and Fisheries and ii) Increased access to economic opportunities by small-time farmers and fisherfolk.





### *Subsector Outcome 1: Agriculture and Fishery Sector Productivity Improved*

#### **Strategy 1: Increase access to credit**

Increasing the number of farmers, fisherfolk, and even A&F-based enterprises/processors with access to financing will enhance their purchasing power to acquire the necessary inputs they need for operations, thus improving production. This can be done by:

- i. Developing and implementing innovative loan products with a responsive credit delivery mechanism,

- ii. Conducting capacity building for borrowers as well as information dissemination on available loan products, and

- iii. Assessing the effective credit demand of the Agriculture sector to come up with a more accurate indicator of how much credit the sector really needs.

#### **Strategy 2: Provide access to technology**

Hybrid rice is one of the technological advances on input provisions created by various research institutions in the region (e.g. Philippine Rice Research Institute, Philippine Carabao Center). Production per hectare accelerated with the

introduction of high yielding varieties of rice. Similar interventions can also be done in other A&F subsectors, namely:

- i. Expanding DA's coverage in the distribution of high yielding varieties and trainings in planting rice varieties,
- ii. Promoting the use of open pollinated varieties (OPVs) of corn and cassava,
- iii. Fostering the production of quality high-value crops seeds,
- iv. Improving genetic materials of livestock and poultry and identifying alternative sources of yellow corn as feeds inputs or importing from nearby top-producing regions;
- v. Advocating the adoption of polyculture in mariculture parks and of sustainable aquaculture practices, and
- vi. Promoting the use of appropriate and updated technology (e.g. greenhouses, the tunnel-vent system, and air-conditioned pen houses)

### **Strategy 3: Rationalize land use allocation**

Agricultural production areas are taken over by urban sprawls, primarily commercial and settlement expansion. If neglected, this expansion would lead to a decline in the region's agricultural output, which in turn may lead to significant consequences on the national output. The Department of Agrarian Reform (DAR) 3 reported a total of 21 cases filed against illegal conversion offenders in Pampanga and Tarlac, with a total land area of about 140.35 hectares. Majority of these cases were dismissed due to lack of jurisdiction

and lack of probable cause, among others, while some cases are still under investigation and evaluation. The region shall advocate the rational speculation, allocation, and conversion of land uses, emphasizing the protection of prime and marginal agricultural lands. The comprehensive land use plan and zoning ordinances of cities and municipalities shall be updated pursuant to the Housing and Land Use Regulatory Board (HLURB) guidelines, Agriculture and Fisheries Modernization Act of 1997 (Republic Act No. 8435), and Fisheries Code of the Philippines (Republic Act No. 8550) on agricultural land conversion including the delineation of municipal waters (see also Chapter 20: Ensuring Ecological Integrity, and a Clean and Healthy Environment).

### **Subsector Outcome 2: Agriculture and Fishery-based Enterprises Increased**

#### **Strategy 4: Promote value-adding of agricultural products**

Increasing the value of agricultural products shall be taken into consideration. This strategy involves skills and knowledge transfer or training of the farming or fishing communities in raw agricultural products processes and packaging their byproducts as value-added goods. Another approach is by vertically integrating farmers with users of agricultural products such as processors and input suppliers.

### **Subsector Outcome 3: Marketing and Financing Services Increased**

#### **Strategy 5: Establish regional and local trading centers**

Strategically located market access shall be

prioritized to enable small-time producers to capture their just share of profits, while also lowering prices for consumers. A regional center can be established in MetroClark, as the business center of the region. This will also provide a market for agricultural produce from remote provinces without the need to actually visit those places. The establishment of community fish landing centers can also serve as a hub for fish landing and auction of freshly caught marine species, a venue for skills development training in post-harvest of fish traders and processors, value-adding and fishery conservation, and resource management. (See also Chapter 19: Accelerating Infrastructure Development)

**Strategy 6: Promote co-operative farming**

Farmers with limited means are not capable of producing the sufficient volume of goods required by buyers. Organizing these farmers to combine their resources is vital for them to achieve their common goals. Some of the advantages of co-operative farming are: (i) consolidation of marginal lands and produce, (ii) increased access to facilities and equipment to increase productivity, (iii) acquisition of cheaper wholesale inputs, (iv) competitive pricing capacity, and (v) access to technical assistance from public and private stakeholders. The challenge, however, will be in encouraging farmers to work collectively and adopt mechanization given that they usually chose to work individually and prefer their traditional ways of farming. The region shall further advocate said actions to ensure that the objectives set for sustaining the sector's growth and profitability will be achieved (Study Points: Easy Needs and Assignments, 2011).

**Subsector Outcome 4: Adaptation to Climate Change Improved**

**Strategy 7: Increase support for Research and Development in Disaster Risk Reduction and Climate Change Adaptation**

The region, having a flood-plain area, shall strive harder to find ways for adapting to climate change given its inevitability and impact to the sector. The regular and frequent occurrence of climate change makes R and D vital because of the region's role in the country's food supply. It is also necessary in reducing the cost of damage the sector has to bear because of weather disturbances. A comprehensive study on how to mitigate the effects of climate change on the priority commodities of the region will be a substantial input.

**Strategy 8: Provide comprehensive infrastructure support**

Sufficient infrastructure and facilities support shall be provided and improved to not only enhance the sector's production but also mitigate the effects of climate change (See also Chapter 19: Accelerating Infrastructure Development). The following interventions will be pursued:

- i. Increasing the service area of the national and communal irrigation systems particularly in areas planted with rice and corn,
- ii. Providing farm-to-market roads to enable efficient transportation of A&F produce in the market,
- iii. Providing production facilities and equipment such as combined harvesters, drum seeders, tractors, hatcheries and nurseries to farmer associations and cooperatives, and

- iv. Providing post-harvest and processing facilities or equipment such as mechanical and solar dryers, granulators, hermetic cocoons which are more efficient

and better than traditional storage systems, threshers, warehouses, smokehouses and mills.

## Research and Development Agenda

### *Study of Rural Transportation Issues*

The high transportation cost of farm produce is a common complaint among farmers. This study will focus on rural transportation issues and their effect on rural communities, with an emphasis on agricultural transportation. It will look in depth into each of the four major modes of transportation commonly used by the Agricultural sector in Central Luzon and analyze each in the light of its ability to meet rural transportation needs now and in the future. It will identify major issues that merit attention from policy makers.

### *Water Management in Agriculture*

This research involves the development and/or adoption of new technologies, such as models and remote sensing to increase

the efficiency of water use and agricultural productivity during dry periods. Safely reusing wastewater for agriculture shall also be studied. The research will develop water and nutrient management strategies, water conservation strategies and protection of water quality.

### *Industry analysis of Priority Agricultural Products of Central Luzon i.e., Bamboo and Cacao, and Other High Value Crops/Commodities*

Investments in the region's priority crops and commodities will require updated industry analysis. The analysis will look into market size and characteristics, current performance, competitive landscape, major producers, key risk and success factors and growth forecasts.

## RDP Targets

Indicators	Year	Baseline Value	End of Plan Target 2022	Agency Responsible
<b>Yield of major commodities (in metric tons per hectare)</b>				
a. Palay	2016	4.75	Increasing	PSA
b. Corn	2016	5.47	Increasing	PSA
c. Onion	2015	15.65	Increasing	PSA
d. Mango	2015	2.05	Increasing	PSA
<b>Volume of production (in thousand metric tons)</b>				
a. Hog	2016	462.43	Increasing	PSA
b. Carabao	2016	6.77	Increasing	PSA
c. Cattle	2016	18.79	Increasing	PSA
d. Goat	2016	8.84	Increasing	PSA
e. Chicken	2016	590.99	Increasing	PSA
f. Chicken eggs	2016	93.56	Increasing	PSA
g. Duck	2016	12.39	Increasing	PSA
h. Duck eggs	2016	17.51	Increasing	PSA
i. Tilapia	2015	124.41	Increasing	PSA
j. Milkfish	2015	24.17	Increasing	PSA
k. Tiger prawn	2015	4.15	Increasing	PSA
l. Mudcrab	2015	55.54	Increasing	PSA
m. Municipal	2015	26.95	Increasing	PSA
n. Commercial	2015	6.60	Increasing	PSA

# 09

Expanding Economic Opportunities in Industry and Services through *Trabaho at Negosyo*





# Expanding Economic Opportunities in Industry and Services through *Trabaho at Negosyo*

The CLRDP 2017-2022 aims to reduce inequality by expanding economic opportunities in Industry and Services through continuous support for the various sub-sectors that provide immense contributions to the regional output and that exhibit potential success in developing a globally competitive and resilient economy.

This chapter provides insights on how the different segments of society in Central Luzon may participate in the development process and share in the benefits of the strong growth of the Industry and Services sectors.

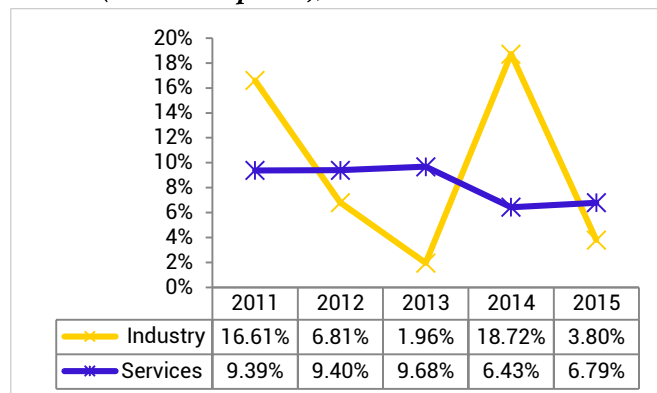
## Assessment and Challenges

**Sector Gross Value-Added.** The Industry sector's intermittent growth is evident in its 1.9 percent growth rate in 2013, a significant increase of 18.7 percent in 2014, and a drop to 3.8 percent in 2015 (at current prices) as presented in Figure 9-1. Sluggish growth in manufacturing pulled down overall Industry performance, although The Construction sub-sector fairly stepped up during the period. The Services sector likewise showed a decline from 9.7 percent in 2013 to 6.8 percent in 2015 due to the slower growth of all sub-sectors except Transport, Storage, and Communication.

Enabling greater contribution of the Industry and Services sector to economic growth entails addressing a number of constraints in development. The Manufacturing sub-sector accounts for

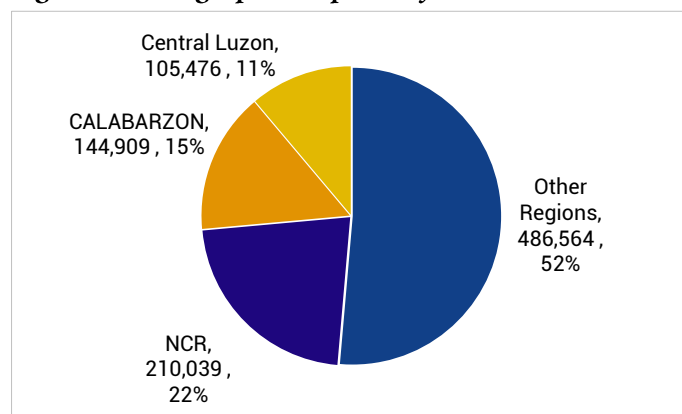
more than 30 percent of the region's gross domestic product (GDP). The region shall capitalize in accelerating the sector's competitiveness; this will lead to higher employment, income, and output. Improving the capacity of existing

**Figure 9-1: Growth Rate of I&S Sectors in Central Luzon (at current prices), 2011-2015**



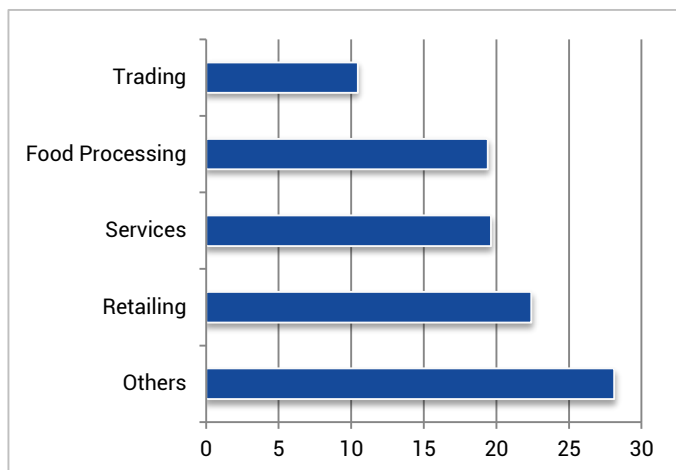
Source: Philippine Statistics Authority

**Figure 9-2: Geographical Spread of MSMEs, 2014**



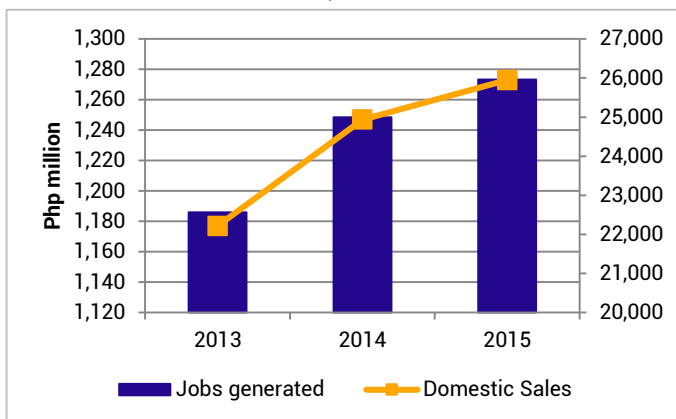
Source: Department of Trade and Industry 3

**Figure 9-3: Percentage Distribution of MSMEs by Industry, 2015**



Source: Department of Trade and Industry 3

**Figure 9-4: Jobs and Domestic Sales Generated by MSMEs in Central Luzon, 2013-2015**



Source: Department of Trade and Industry 3

industries and strengthening emerging industries in the region will elevate the sub-sector's contribution to regional output.

**Increasing productivity and resiliency of MSMEs.** The Micro, Small, and Medium Enterprise (MSME) Sector continues to be a major economic growth driver in the region. Majority of business establishments in the region are made up of MSMEs which constituted 105,476 in 2014, increasing by only one percent since 2011. Most enterprises in the country are strategically converged around Metro Manila. Provided in Figure 9-2 is the geographical spread of MSMEs in 2014. Together with NCR and CALABARZON, Central Luzon makes up 48 percent of the total number of MSMEs in the country (Department of Trade and Industry, 2013-2015).

Access to finance and access to markets play a critical role in the inability of most MSMEs to penetrate and expand in the local and global business network. There have been huge improvements in government financing programs to make it more affordable to MSMEs. However, limited awareness about these programs and procedures interferes with establishing start-up businesses and upgrading the technology of existing ones. Moreover, investment promotion is focused on large investments by large companies (Nomura Research Institute Ltd., 2016). MSMEs become more vulnerable to challenges in penetrating the regional and global market in the ASEAN economic arena if they are not at the forefront of the government's trade policy making (Department of Trade and Industry).

In terms of distribution of MSMEs by industry across the region, business enterprises engaged in retailing accounted for 22.40 percent of the total MSMEs in the region, which increased by more than 40 percent for the two consecutive years (Figure 9-3).

The number of jobs and domestic sales generated by MSMEs improved over the three year period from 2013 to 2015 as shown in Figure 9-4. Jobs generated had an annual average growth of 15 percent during the period while sales increased by 8 percent.

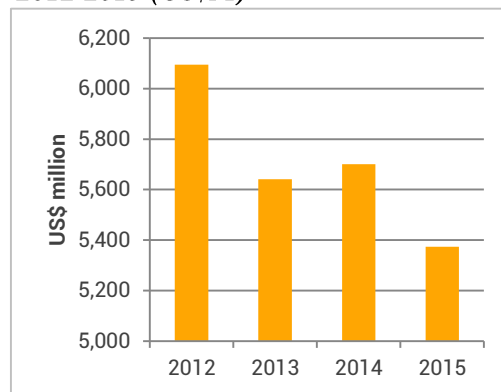
The limited resources of micro and small businesses and vulnerability to natural disasters and weather events inhibit them from immediately recovering from the damage. Based on the submitted reports of the provinces of Bulacan, Nueva Ecija, and Pampanga, around 300 SMEs were affected and damaged in terms of their finished goods, raw materials, and equipment during the onslaught of Typhoon Lando and Nona in 2015. Hence, financial support to recuperate is a constant need. The business continuity and resiliency of SMEs was not completely considered in the national planning and consultation process. The overall Philippine Disaster Risk Reduction and Management (DRRM) Framework focuses more on household recovery than on economic resilience; hence, there is no specific center for programs that would immediately respond to the business needs of SMEs (Ballesteros & Domingo, 2015)

**Developing new products.** The region needs to constantly develop new products in order to entice new investments and create more jobs, but this is a challenge

primarily for products with export and investment potential. The ASEAN community is essentially a prospective market for established products and a driver for product range development that should be taken advantage of; hence, it may pose to be a challenge for domestic market players in the region if innovation and technology upgrading are not top priorities.

Exports exhibited a robust performance from 2010 to 2012, though it spiraled to a sharp drop in 2013. Its performance has not regained momentum in succeeding years (Figure 9-5). Although they are the site of economic zones, the provinces of Tarlac and Zambales experienced a major share of decreasing export performance. The decrease in the export performance of Tarlac is attributed to the decline in exports of International Wiring Systems Corp. and Electric Wires Philippines Corp. amounting to \$50.2 million as well as a slowdown in the export of okra products to Japan which dropped by \$2.1 million.

**Figure 9-5: Exports in Central Luzon, 2012-2015 (US\$M)**



Source: Department of Trade and Industry 3

Electronic products (70.94%), which account for the bulk of the region's merchandise exports and Machinery,

Transport Equipment/Apparatus (12.68%) continue to exhibit increasing demand in the global market and garnered the biggest share in terms of the region's export revenues. Other industries that contributed to Central Luzon's export revenue are: Garments/Textile (4.40%), Other Construction Materials (2.51%), and Fashion Accessories/Leather Goods (2.34%). However, medium-term targets were not achieved in terms of exports of the aforementioned commodities except for Electronics. Exports of Garments/Textiles only attained 61 percent of the target while Machinery, Transport Equipment/ Apparatus was behind its target by more than 31 percent.

In terms of export destination, China, with its 34.07 percent share of export value, has now surpassed the United States of America (USA), with its 22.17 percent share, as the top export buyer for the region. Hong Kong is third at 11.55 percent. The region should capitalize on the ongoing trade measures offered by the Association of South East Asian Nations (ASEAN) economic integration in order to increase market penetration and develop new products, therefore taking advantage of new sources of domestic and global demand.

***Increasing investment.*** The region is pegged to be one of the three regions to receive majority of foreign investments. Despite being the host to premier economic zones, ready infrastructures, and increasing regional economy, investments have exhibited lethargic growth for the last five years. Vast tract of lands in economic zones remain unoccupied and unproductive. Hence, it remains a challenge for the region to further improve

its investment climate favorably for both foreign and domestic investors.

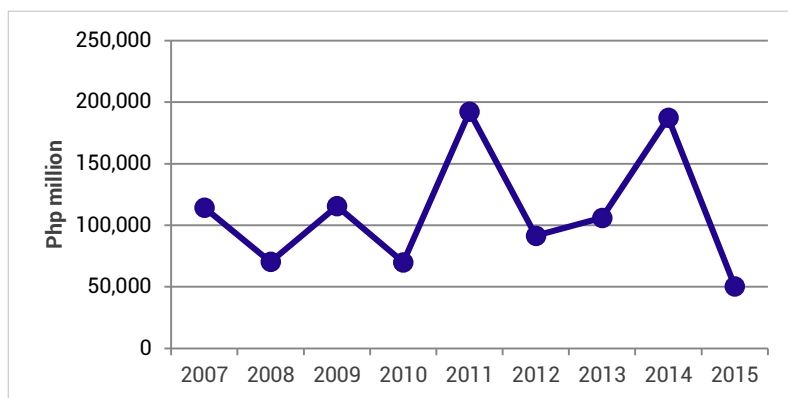
A roller-coaster cycle is evident in investments in the last decade. Investments in the region experienced a significant decline from Php105.97 billion in 2013 to Php50.42 billion in 2015 plummeting by 52 percent, as shown in Figure 9-6. The region reached its all-time high investment volume in the years 2011 and 2014. The Board of Investments (BOI) accounts for the major source of investment of the total approved investments in 2012 and 2013 while the Authority of the Freeport Area of Bataan (AFAB) received more than half of the investments in 2014 as seen in Figure 9-7. Other sources are Philippine Economic Zone Authority (PEZA), Clark Development Corporation (CDC), Subic Bay Metropolitan Authority (SBMA), and businesses registered with DTI.

Manufacturing accounted for the largest share of the total approved investments in the region. Despite this share, the value added by Manufacturing is decreasing, experiencing a negative growth rate in 2013 and declining from 21.8 in 2014 to 3.3 percent in 2015.

For BOI-approved investments in 2015, majority of investments are for manufacturing, real estate and accommodation. Real estate projects include low cost and mass housing projects. There are also investments that will be used to finance alternative energy such as solar power plants and biomass energy projects.

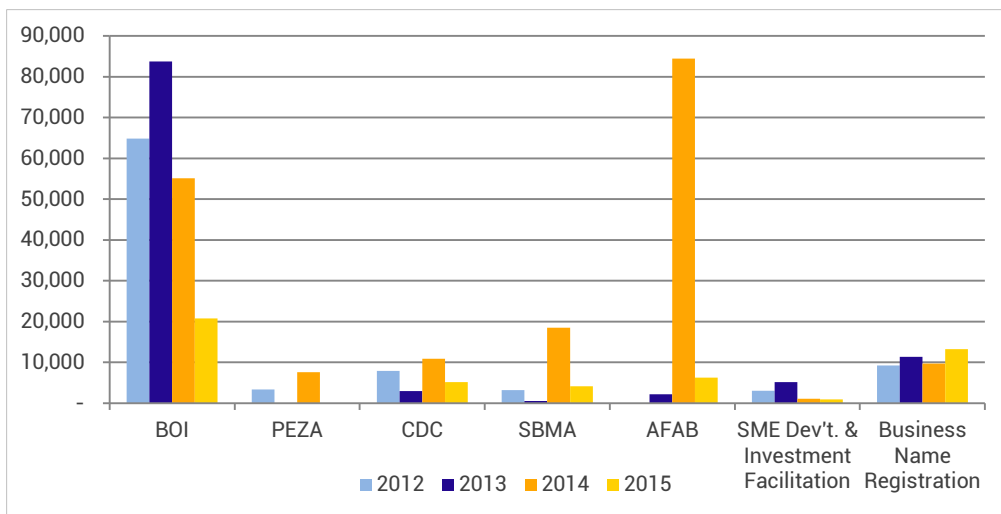
Growth in Construction activities in the region in terms of the number of new residential buildings decreased by

**Figure 9-6: Investments in Central Luzon 2012-2015**



Source: Department of Trade and Industry 3

**Figure 9-7: Approved Investments by Source, 2012-2015**



Source: Department of Trade and Industry 3

8 percent from 2010 to 2015, while the approved building permits also went down by 15 percent. At the national level, investments in public and private construction are expected to sustain the growth of the Industry sector.

**Strengthening competitiveness of existing and emerging industries.** Integration in the national and global production network is a continuing challenge for the region. It needs to be addressed in order to identify which industries will be given much-needed government support in

terms of industry upgrading. Gaps in the supply and value chain pose as major restrictions for industries to participate in regional and global trade. Inputs for production needed by large companies located in the region are sourced outside the region, consequently pushing down potential regional output. High production and marketing costs especially in the Manufacturing sub-sector and inadequate infrastructures put the region at a competitive disadvantage. The current daily minimum wage rate in the region is



second to NCR, which makes it the second highest among the regions.

Emerging industries in the country may provide a window of opportunity for Central Luzon. This is also part of the government efforts to sustainably strengthen the Manufacturing industry. One of these emerging industries is the Aerospace industry, which is expected to provide paramount investments in the region if the country will capitalize on this growing market. The Philippines is currently providing flight control actuation systems to large aircraft manufacturers globally.

Export earnings on aerospace and aviation products and services continue to show significant progress. Currently, the domestic aerospace manufacturing industry has an estimated 0.15 percent share of 2013 GDP, and a projected 0.57 percent share of 2022 GDP (Department of Trade and Industry-Board of Investments).

Clark Freeport Zone is envisioned as the country's aviation gateway hub. It is one of the recognized areas of the industry's three target segments: a) aerospace parts manufacturing, b) aircraft maintenance and repair (MRO), and c) aviation trainings.

DTI-BOI, and Civil Aviation Authority of the Philippines (CAAP) publicized the aforementioned segments at the 2016 Singapore Air Show, the largest air show in Asia. On the national level, the industry is projected to export an estimated \$2.57 billion of aerospace parts and components by 2022 and employ around 15,000 workers (DTI, 2016).

On the other hand, components of the Automotive industry, which include existing resources such as electronics, transmission parts, machinery, and transport equipment, are widely manufactured in the region. As such, it will provide additional market opportunities primarily with national efforts to develop the country as a regional automotive manufacturing hub in the ASEAN Economic Community.

#### ***Sustaining the growth of tourist arrivals.***

The region's strategic location and its natural geographic make-up constitute a huge potential in terms of offering various tourism products and services. The region's newly improved infrastructures such as airports, seaports, and road networks provide better opportunities for attracting more tourists and elevating the region's tourism market.

Tourism continues to be one of the fastest growing industries not only in the country but in the region as well. It holds its position as a driver for job creation and as a channel for the promotion of local culture and history.

Visitor arrivals in the past four years continue to be in the upswing, growing at an annual average of 29.2 percent from 1.7 million in 2012 to 3.5 million in 2015 as presented in Figure 9-8. The region welcomed a total of 782,499 foreign visitors in 2015 surpassing the recorded arrivals of 147,170 in 2012. Despite the pull out of some international airlines due to weak passenger demand in 2014, Clark International Airport (CRK) continued to hold its position as an alternative port of

entry to Ninoy Aquino International Airport (NAIA).

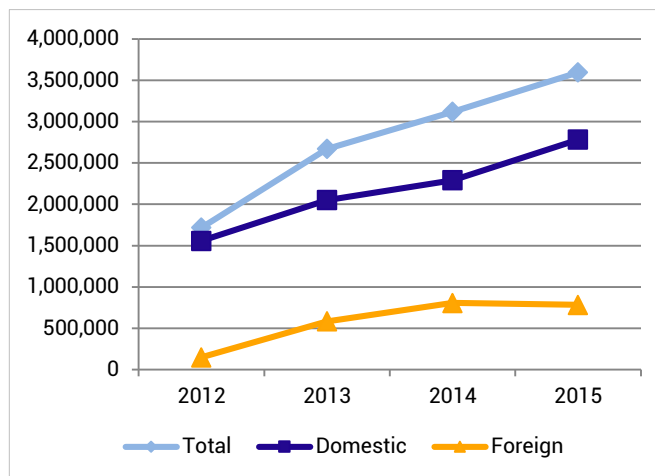
The region reached more than its medium-target of 3.3 million. Chinese tourists remain the biggest source market in the total inbound arrivals followed by Americans, Koreans, and Japanese. In November 2016, CRK shared around four percent to the 98.62 percent air arrivals in the country. The increase in the number of flights followed by the launch of other airline companies and expansion projects in Clark International Airport's infrastructures also facilitated the surge of tourists in Central Luzon.

Domestic tourists account for 78 percent of the region's visitors. Majority of tourist arrivals, both foreign and domestic, are from Subic-Clark and the provinces of Pampanga and Bataan (Figure 9-9 and Table 9-1). The growth of tourist arrivals contributes largely to the thriving economy of the region through consumer spending.

The number of DOT-accredited establishments in the region increased from 88 in 2012 to 143 in 2015, though falling behind its target of 350.

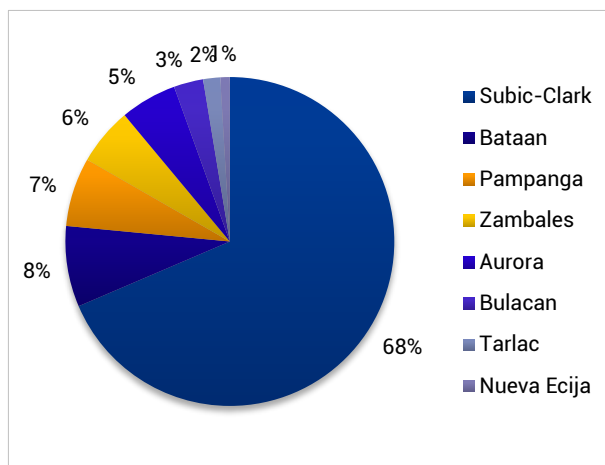
The tourism sector has shown accelerating growth over the years. However, there is still a need to look more closely at the region's tourism products, services, and activities as these remain fragmented across the region. Tourism promotions are dependent on the resources and capabilities of local government units. Some LGUs are left lagging behind in terms of promotional efforts and inadequate infrastructures therefore restricting the potential tourism market.

**Figure 9-8: Visitor Arrival in Central Luzon, 2012-2015**



Source: Department of Trade and Industry 3

**Figure 9-9: Domestic Visitor Arrival by Province/Tourism Development Area, 2015**



Source: Department of Tourism 3

**Table 9-1: Foreign Visitor Arrival by Province/Tourism Development Area,**

Area	Number
Aurora	255
Bataan	23,233
Bulacan	701
Nueva Ecija	18
Pampanga	224,481
Tarlac	952
Zambales	6,385
Subic-Clark	526,474

Source: Department of Tourism 3

**Enhancing skills and labor capacities.**

Providing the right skills in the labor market is necessary to generate jobs and improve labor productivity. Jobs-skills mismatch or skills gap contributes to the inefficiency of the region in producing the right quantity and quality of output. Hence, it is a challenge for the region to identify the skills needed by the industries already located and to attract more investments (See also Chapter 10: Accelerating Human Capital Development).

Industry accounted for 20 percent of the total employment from 2012-2014. Manufacturing accounted for an average of 11 percent of its total. Services accounted for the largest share of 60 percent in the same period particularly attributed to wholesale and retail trade, and repair of motor vehicles and motorcycles with 21 percent of the total. The number of employed persons in the Industry and Services Sector increased from about 2,305 million in 2012 to 2,456 in 2014 as seen in Table 9-2.

**Table 9-2: Employment per Major Industry Group ('000 persons), 2012-2014**

Region and Major Industry Group	2012	2013	2014
<b>Region 3 - Central Luzon (All Industries)</b>	<b>3,877</b>	<b>3,990</b>	<b>4,118</b>
Agriculture, Hunting and Forestry	753	777	769
Fishing and Aquaculture	67	68	63
<b>Agriculture, Hunting and Forestry</b>	<b>820</b>	<b>845</b>	<b>832</b>
Mining and Quarrying	12	13	17
Manufacturing	419	435	439
Electricity, Gas, Steam and Air Conditioning Supply	13	15	10
Water Supply; Sewerage, Waste Management and Remediation Activities	9	6	6
Construction	299	332	358
<b>Industry</b>	<b>752</b>	<b>801</b>	<b>830</b>
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	800	812	876
Transportation and Storage	372	369	393
Accommodation and Food Service Activities	188	187	202
Information and Communication	40	36	44
Financial and Insurance Activities	52	54	60
Real Estate Activities	14	16	17
Professional, Scientific and Technical Activities	19	19	25
Administrative and Support Service Activities	104	121	111
Public Administration and Defense; Compulsory Social Security	176	169	161
Education	131	130	139
Human Health and Social Work Activities	46	49	51
Arts, Entertainment and Recreation	65	68	67
Other Service Activities	269	288	281
Activities of Households as Employers; Undifferentiated Goods and Service-producing Activities of Households for Own Use	29	26	29
Activities of Extraterritorial Organizations and Bodies	-	-	-
<b>Service</b>	<b>2,305</b>	<b>2,344</b>	<b>2,456</b>

**Source of Basic Data: Philippine Statistics Authority**

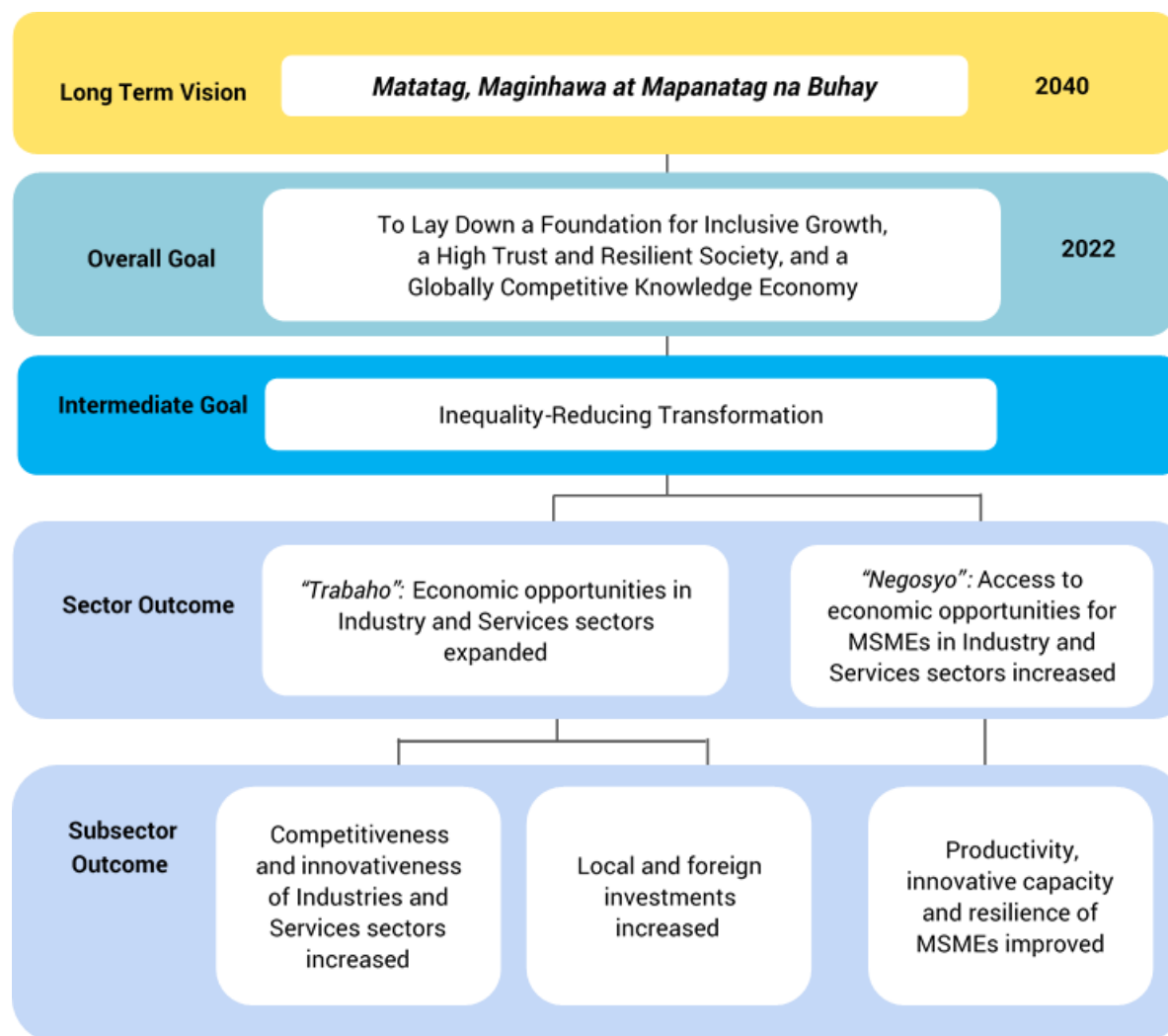
Notes: 1. Data are averages of four (4) survey rounds of the Labor Force Survey except for 2014 wherein data for this year refer to the average of April, July and October survey rounds.

2. Details may not add up to totals due to rounding.

3. Industry grouping is in accordance with the 2009 Philippine Standard Industrial Classification (PSIC).

4. For more information about the changes in the survey that may have affected the estimates, please refer to the Explanatory Notes on the Labor Force Survey (LFS) at the last part of this book.

# Strategic Framework



This section shall focus on the pillar *"Pagbabago"*. The sector outcome of expanding economic opportunities in the Industry and Services sector will be realized through: (i) increasing competitiveness and innovativeness of the I&S sectors, and (ii) increasing local and foreign investments. The sector outcome of increasing access to economic opportunities for MSMEs will be achieved by improving their productivity, innovative capacity, and resiliency. Strategies across these subsector outcomes

incorporate the harmonization of various government programs, technology and infrastructure support, and strategies contributing to the sustainable growth of the I&S sectors.

## Subsector Outcome 1: Competitiveness and Innovativeness of the Industry and Services Sectors Increased

**Strategy 1: Simplify and harmonize regulatory requirements in business**

**registration and licensing, and loan processing**

Streamlining and harmonizing the regulatory requirements in terms of business registration and licensing, and loan processing will help encourage investments and start-up businesses. Part of the initiatives of DTI and the National Competitiveness Council (NCC) is to amend certain department issuances and regulations that are considered to be outdated and redundant, so as to eliminate if not eradicate red tape and corruption. Policies, incentives and other support measures of the national and local government shall also be coordinated and harmonized. A mechanism should be created to coordinate the approval and implementation process of investment projects between national and LGUs including tax incentives, and right-of-way acquisition, among others (American Chamber of Commerce, Inc., n.d.).

**Strategy 2: Improve access to market, technology and innovation, and connectivity**

Clark, Subic, the rest of the freeports, economic zones, and industrial parks that are strategically located across the region, as well as the growing number of micro, small, and medium enterprises (MSMEs) are expected to trigger rapid industrialization given the proper infrastructure support. Infrastructure support for industrial development, which includes physical and ICT, shall be well coordinated to lower costs of production (i.e. power, logistics, or shipping), improve tourism potential, enhance regional markets and improve value chain linkages through transportation infrastructures (see also Chapter 19: Accelerating

Infrastructure Development). Lowering the logistics cost and streamlining the process of transporting goods shall be addressed to heighten the growth of domestic production, distribution and trade. Development or rehabilitation of the region's gateways, such as seaport and airports, shall also be pursued along with flood control. This is to further promote the region as an investment site and tourism hub in the country.

**Strategy 3: Strengthen government-industry-academe linkages**

Collaboration of the government, industry, and academe shall be strengthened to assess future skills needs and to develop a competitive workforce, thus eliminating future job-skills mismatch, which has been a longstanding issue in the sector. Better labor market information is necessary in guiding students or the academic sector in determining what industries need especially in the global context. More so, mechanisms for streamlining industry and academe research and S&T efforts shall be pursued to increase the competitiveness and efficiency of the economy as well to assist in identifying and developing new products. Innovation undertakings and new technologies that will be adopted by the region shall similarly be aligned with the needs of existing and emerging industries to meet international and environmental standards in the global market (see also Chapter 14: Vigorously Advancing Science, Technology, and Innovation).

**Strategy 4: Promote green economy**

Green economic development promotions shall be enhanced to increase awareness and to encourage industries to consider

environment friendly and climate sensitive strategies, measures, and systems. Provision of climate incentives for manufacturing to shift to energy efficient technologies shall be pursued in order to link green business practices with the ability of firms or enterprises to improve their competitiveness, taking into consideration greenhouse gas emissions mitigation, waste management, and appropriate use of natural resources. Furthermore, the Department of Labor and Employment (DOLE) in coordination with Philippine Statistics Authority (PSA) is mandated to maintain a database of business enterprises which generate and sustain green jobs through the Green Jobs Act.

### *Subsector Outcome 2: Local and Foreign Investments Increased*

#### **Strategy 5: Strengthen value and supply chain linkages**

Value and supply chain linkages shall be strengthened by maximizing the resource-potential of the region, with emerging industries and small and medium enterprises taken into consideration. More so, among such measures is the continued promotion of the region's OTOP (One Town, One Product) industries and linking these to markets and suppliers of inputs within the region. The Comprehensive National Industrial Strategy (CNIS) will upgrade and integrate manufacturing with agriculture and services sectors to strengthen backward and forward linkages primarily in high growth potential sectors.

#### **Strategy 6: Pursue development of emerging industries**

The region shall continue to recognize the

emergence of industries that have strong potential to generate employment and to further revive the Manufacturing sector. The Manufacturing Resurgence Program (MRP) of DTI aims to rebuild the existing capacity of industries, strengthen new ones, and maintain the competitiveness of industries with comparative advantage. The Aerospace and Automotive industries both play a vital role in bringing the region to greater heights if partnership between the government and the industries is strengthened through capability building, training and education, and supply chain linkages.

### *Subsector Outcome 3: Productivity, Innovative Capacity and Resilience of MSMEs Improved*

#### **Strategy 7: Strengthen linkages between MSMEs and large corporations**

Linkages between MSMEs and large corporations are directed to be strengthened in order to encourage large corporations to include small firms in the value chain which could provide MSMEs and cooperatives access to information, inputs, skills, markets, and technology. DTI encourages support for its Inclusive Business Model in order to mainstream MSMEs primarily from poor and low-income communities in the production network and supply chains ("Inclusive Business for Inclusive Growth", n.d.).

#### **Strategy 8: Increase access to finance and technology**

MSMEs constitute the largest share of the region's industrial fabric and are a key component in regional economic growth.



Improving the production efficiency of MSMEs shall be a continuous priority through technological innovations and capacity building programs which shall include financial literacy trainings for micro enterprises. Harmonizing and simplifying loan processes as well as other government support programs for MSMEs and cooperatives will encourage entrepreneurship or starting up of businesses especially in rural areas.

Further, establishing an innovation center is recommended to support the region's innovation system. It is also through this that MSMEs can access innovation undertakings and new technologies on design and creativity that are adapted by large enterprises and other countries (see also Chapter 14: Vigorously Advancing Science, Technology, and Innovation). Upgrading the technological capabilities of industrial sectors shall help achieve the Sustainable Development Goals (SDG) through the Small Enterprise Technological Upgrading Program (SETUP) of the Department of Science and Technology (DOST) which aims to assist enterprises in improving their operations through scientific processes and technological innovations. SDG's inclusive and sustainable industrialization shall be propelled through the efforts of the government to expand beneficiaries of its technological transfer, financial access, and capability building programs especially in the far-flung corners of the region.

**Strategy 9: Provide a window for rehabilitation of MSMEs during disaster**

Provision of safety nets for MSMEs to recover and rehabilitate in the aftermath of a disaster will increase business confidence and supply chain resilience. A thorough look at certain provisions in the Magna Carta for SMEs and Barangay Micro Business Enterprises (BMBEs) Law shall be done to consider DRRM for SMEs. Government institutions directed to assist enterprises on their financing requirements should explore on new sources of credit to facilitate their rehabilitation. Financing facilities such as grants and concessionary loans intended for SMEs and a special credit line in the form of Business Disaster Loans for medium size companies must be put in place (Ballesteros and Domingo, 2015).

**Strategy 10: Promote consumer welfare**

The region shall ensure that consumers are protected from substandard products and unfair trade practices through an intensified consumer awareness and information campaign and strict implementation of consumer protection regulations and standards. The proactive collaboration of the government with media channels and various consumer non-government organizations shall be enhanced to advocate products and services of high quality and of affordable prices.

# Research and Development Agenda

## Growth of MSMEs

This study will analyze the growth of MSMEs in Central Luzon to provide answers to questions about which MSMEs grow, what the drivers of growth are, and what their impact on creating employment has been.

## Promoting Entrepreneurial Learning

This will investigate how entrepreneurship is supported and delivered within Central Luzon Higher Education Institutions.

## Impact of Financing Programs for Start-ups in Central Luzon

This will assess the impact of financing programs available for start-ups such as the Small Business Corporation Financing for Start-Up Enterprises and the Land Bank of the Philippines Easy Pongong Pang-Asenso.

# RDP Targets

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
Sector Outcome 1: Economic Opportunities in Industry and Services Sectors Expanded				
Manufacturing GVA as a proportion of GDP	2015	32.2	Increasing	PSA
Employment generated from Industry sector (in thousands)	2014	830	Increasing	PSA
Employment generated from Services sector (in thousands)	2014	2,456	Increasing	PSA
Subsector Outcome A: Competitiveness and innovativeness of Industries and Services sectors increased				
Industry and Services exports (US\$ million)	2015	5,374.25	Increasing	DTI on monitoring
Number of tourist arrivals ('000 persons)	2015	3,596	Increasing	DOT
Number of DOT-accredited establishments	2015	143	Increasing	DOT
Subsector Outcome B: Local and Foreign Investments Increased				
Total approved investments (Php million)	2015	50,243.19	Increasing	DTI on monitoring
Business Name Registration (BNR)	2015	13,267.92		
Board of Investments	2015	20,785.52		
Philippine Economic Zone Authority (PEZA)	2014	7,548.35		
Subic Bay Metropolitan Authority (SBMA)	2015	4,095.80		
Authority of Freeport Area of Bataan (AFAB)	2015	6,228.40		
Others (SME Development, Big Tickets both Direct and Monitored)	2015	881.56		
Sector Outcome 2: Access to economic opportunities for MSMEs in Industry and Services Increased				
Subsector Outcome: Productivity, innovative capacity and resilience of MSMEs increased				
SME assisted (number)	2015	10,390	Increasing	DTI
Jobs generated from MSMEs ('000 persons)	2015	25,963	Increasing	DTI
Domestic sales generated by SMEs (Php million)	2015	1,273	Increasing	DTI



# 10 Accelerating Human Capital Development



# Accelerating Human Capital Development

In support of the PDP 2017-2022 pillar “Pagbabago,” Central Luzon seeks to increase access to economic opportunities, particularly among subsectors and economic groups that lag behind. This may enable ordinary Filipinos to feel a “pagbabago” or change in their lives. One of the components of reducing inequality is strengthening human development outcomes.

This chapter provides strategies for accelerating human development by focusing on three sectors, namely: i) Nutrition and health, ii) Basic, Higher, and Technical Education, and iii) Labor and Employment.

## Assessment and Challenges

### Nutrition and Health

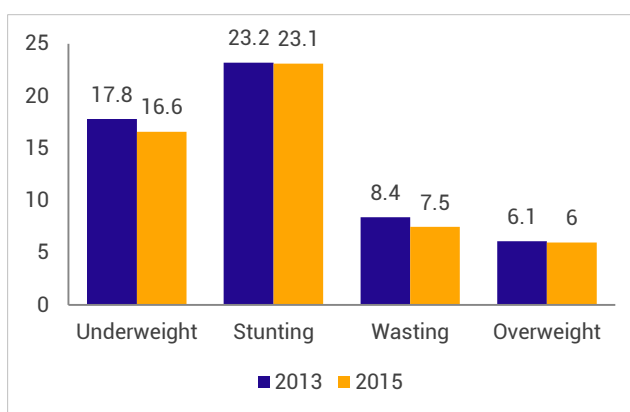
The attainment of “*All for Health towards Health for All*” is the main agenda of the health sector. Based on the national health agenda framework, the goals are to attain the following: 1) health-related Sustainable Development Goals (SDG) targets, 2) financial risk protection, 3) better health outcomes, and 4) responsiveness of the health sector.

#### ***Malnutrition rates improved slightly.***

Based on the National Nutrition Survey, the malnutrition indicators showed slight improvements. The prevalence of underweight children under-five, declined from 17.8 percent in 2013 to 16.6 percent in 2015, which is a better picture than the national figure of 20 percent and 21.5 percent, respectively. Although stunting (short-height- for- age) remains almost unchanged, the region has lower prevalence rates than the national data. Wasting (low-weight-for-height) slightly improved from

8.4 percent in 2013 to 7.5 percent in 2015. For overweight cases, almost no progress has been made, and the region has higher rates than the national figure in both years. At the national picture, the trends for malnutrition showed very slight improvements over the years from 1990 to 2015 (DOST-FNRI, 1990-2015).

**Figure 10-1: Prevalence of malnourished children, under-five (0-59 mos): Central Luzon, 2013 vs 2015**



Source: National Nutrition Council



### **Health infrastructure increased.**

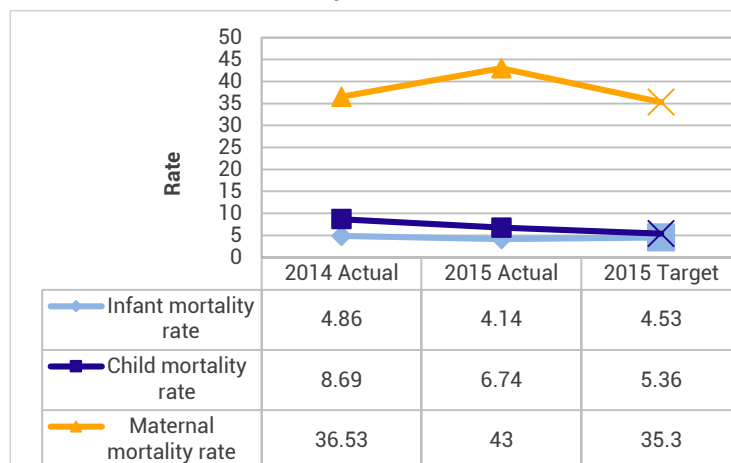
For Central Luzon, a total of 82 projects (65 DOH-implemented and 17 DPWH-implemented) under the Health Facilities Enhancement Program (HFEP) were programmed for implementation in 2015 with a total project cost of P335.64 million. As of December 31, 2015, 75 of 82 projects (58 DOH-implemented and 17 DPWH-implemented) were already completed.

The province of Bulacan had the most number of health programmed facilities in 2015 (with 22 DOH and DPWH implemented projects). It was followed by Nueva Ecija and Pampanga with a total of 21 programmed facilities and 17 programmed facilities, respectively. On the other hand, Aurora had only 3 HFEP implemented by DOH which were all completed by the end of the year (See also Chapter 19: Accelerating Infrastructure Development).

### **The triple burden of disease remains a public health concern.**

The leading causes of mortality are predominantly non-communicable diseases (NCD). Based on the 2015 DOH III Annual Report, these are: *diseases of the heart, renal failure, cancer, cerebrovascular accident/stroke, pneumonia, COPD, diabetes, tuberculosis, accidents, and hypertension*. The ten leading causes of morbidity include both communicable and non-communicable diseases such as *acute respiratory infection, urinary tract infection, hypertension, skin diseases, wounds (all forms), diarrhea, bronchitis, gastrointestinal problems, asthma, and diabetes*. The situation of communicable diseases dominating the top causes of morbidity and NCD topping the list on the leading causes of mortality is called the double burden of disease. With the increase in incidence of injuries, mental health issues, and alcohol and drug abuse, the region is now faced with the triple burden of disease, which is also a national health concern.

**Figure 10-2: Infant, Child, and Maternal Mortality Rates, Actual 2014-2015 and Target 2015, Central Luzon**

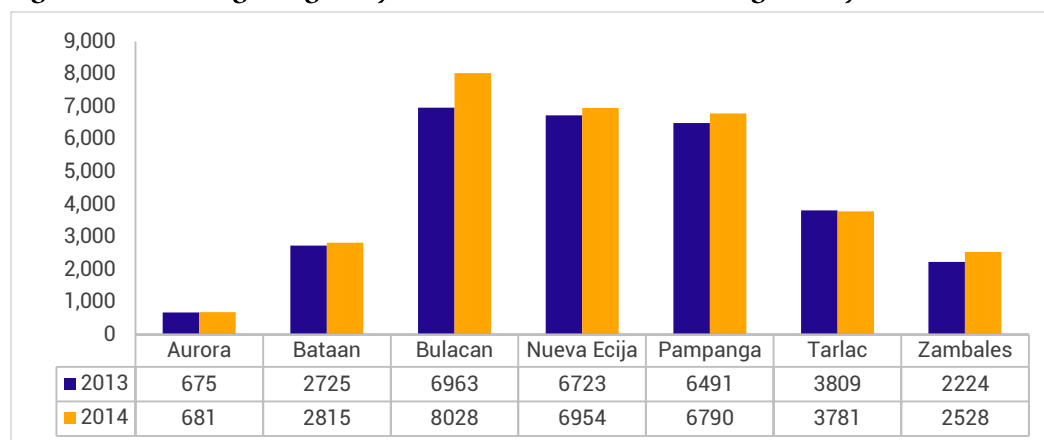


Source: FHSIS, Department of Health 3

### **Mortality rates are not within the target.**

Reducing mortality rates is among the indicators being consistently monitored by the health sector. For 2015, the infant mortality rate (IMR) slightly declined from 4.86 in 2014 to 4.14 in 2015. This rate has already surpassed the 4.53 target set in 2015. The child mortality rate (CMR) also decreased by around 22 percent, from 8.69 deaths in 2014 to 6.74 in 2015. However, the 2015 target of 5.36 was not achieved. On the contrary, maternal mortality rate increased from 36.53 cases in 2014 to 43 in 2015 or a 17.71 percentage increase. Although this figure is below the national figure

**Figure 10-3: Teenage Pregnancy Cases in Central Luzon among 10-19 year old, 2013-2014**



Source: Department of Health 3

of 149 deaths, it is still far from the 2015 target of 35.3 percent. The high incidence of maternal mortality stresses the need to require maternal health care from skilled health professionals in well-equipped hospitals (facility-based delivery).

***HIV/AIDS cases are among the highest in the country.*** There has been a continuous increase in the number of newly-diagnosed HIV cases since 2010. The region has the highest number of cases among the regions in the country. The DOH recorded 2-3 new cases daily, while the national figure is 26 new cases daily. As of June 2016, Central Luzon has a total of 19 HIV mother-to-child transmission cases, and the national figure is 95 cumulative cases. Although HIV prevalence is still below 1 percent of the population, it remains a grave public health concern given that the newly diagnosed HIV cases since 2010 can be found among the youth (15-24 years old). Out of the 20,976 HIV cases among the youth, 2,038 or 9.7 percent are in Region 3. The increase in reported cases may be attributed to a better testing and surveillance system.

***High-risk behavior prevalent among adolescents.*** On teenage pregnancy, the region had an increasing trend from 2013 to 2014. Bulacan posted the most number of cases in both years, followed by Nueva Ecija and Pampanga. Survey also showed that 3.6 percent of women aged 15-19 years old are already mothers (NDHS, 2013). The result of the Young Adult Fertility and Sexuality Survey (YAFSS) 4 (UPPI/DRDF and POPCOM) revealed that 39.3 percent of young people in Central Luzon have had sexual experience, and majority of this proportion happened before the age of 18 (56.3 percent). Other alarming results reveal the following about the youth of Central Luzon: i) they have the second highest number of smokers, ii) they show the third biggest proportion of those who visited websites with sexually explicit content, iii) they are the second most sexually experienced in the country, and iv) they have the second highest number of youth who engage in early sexual encounters. Poor access to RH services among the youth may have led to the increasing incidence of teenage pregnancy in the region; this is at levels of public health significance.

**Slow progress on reproductive health indicators is evident.** Based on the 2013 National Demography and Health Survey (NDHS), the contraceptive prevalence rate (CPR) for any method was at 61.2 percent, higher than the national average of 55.1. The 2013 CPR was a slight improvement from the 2011 data of 54.9 percent. The unmet need for family planning (defined as the sum of unmet need for spacing plus limiting) was at 13.1 percent (6.3 for spacing and 6.8 for limiting). This figure showed a little improvement from the 2011 unmet need of 14.8 percent. In terms of total fertility rate (TFR), the region posted a figure of 2.8 percent, which is the same as the 2011 data, and lower than the national TFR of 3.0. The low use of family planning (FP) methods may be attributed to the weak FP service delivery network and lack of nationally led advocacy campaign.

**Philhealth coverage is below the target.** The Philhealth coverage rate (defined as members and dependents with posted qualifying contribution over total projected population) declined from the average of 76.5 percent in 2015 to 72.5 (as of November 2016). The target set for 2015-2016 is at 90 percent, while a higher target was set for 2017 at 95 percent. This picture shows that efforts are needed to expand coverage in order to attain the health agenda of universal health care for all.

## Basic, Higher, and Technical Education

**The region has high literacy rates compared to other regions.** Basic literacy refers to the ability of a person to read or write a simple message with understanding in any language or dialect. On the other hand, functional literacy is a higher level of literacy which includes not only reading and writing but also numeracy skills. For Central Luzon, both basic and functional literacy rates slightly increased from 2008 to 2013. In both years, the region has higher literacy rates compared to the national figure (Table 10-1).

**There is declining trend in most performance indicators.** Among the performance indicators in government elementary education, the cohort survival, completion and repetition rates showed improvements in SY 2014-2015 compared to previous school year (Figure 10-4). The cohort survival and completion rates increased by 0.57 percentage points and 0.78 percentage points, respectively while the repetition rate decreased by 0.42 percentage points. On the other hand, the net enrollment and retention rates slightly declined by 0.58 percentage points and 0.25 percentage points, respectively and the school leaver rate marginally increased by 0.31 percentage points. Based on the 2015 MDG targets set, net enrolment rate is way below the target of 100 percent, while cohort survival rate is close to reaching the target of 83 percent. These two indicators are the only indicators with set targets for 2015. For secondary education, data also revealed a decreasing trend for the same period from SY 2013-2014 to SY 2014-2015, except for repetition rate (Figure 10-5). The

**Table 10-1: Basic and Functional Literacy Rates, Philippines and Central Luzon, 2008 and 2013**

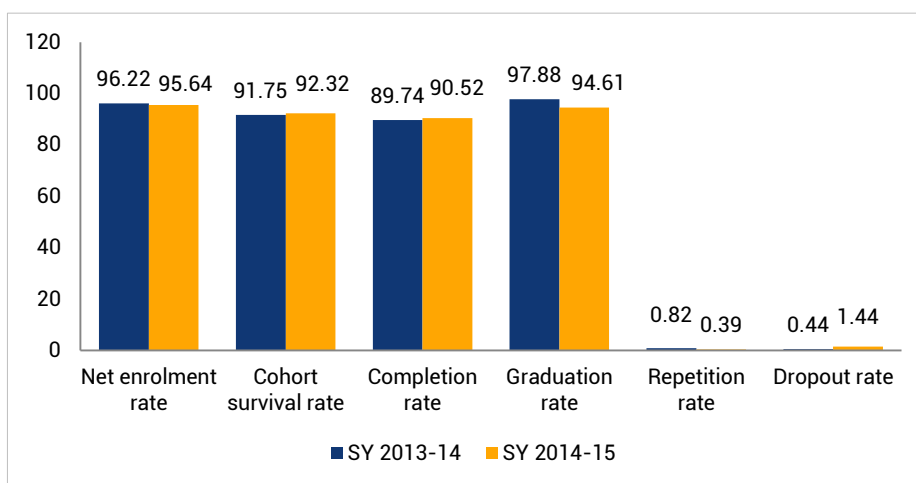
Literacy Rate	2008		2013	
	Philippines	Central Luzon	Philippines	Central Luzon
Basic	95.6	97.8	96.5	98.2
Functional	86.4	92.1	90.3	92.3

Source: Functional Literacy, Education and Mass Media Survey, 2008 and 2013

net enrollment rate dropped by 1.43 percentage points while the cohort survival rate by 2.88 percentage points. The completion rate and retention rate also declined by 2.57 percentage points and 1.10 percentage points, respectively. The school leaver rate slightly increased by 0.21 percentage points, while the repetition rate went up by 1 percent.

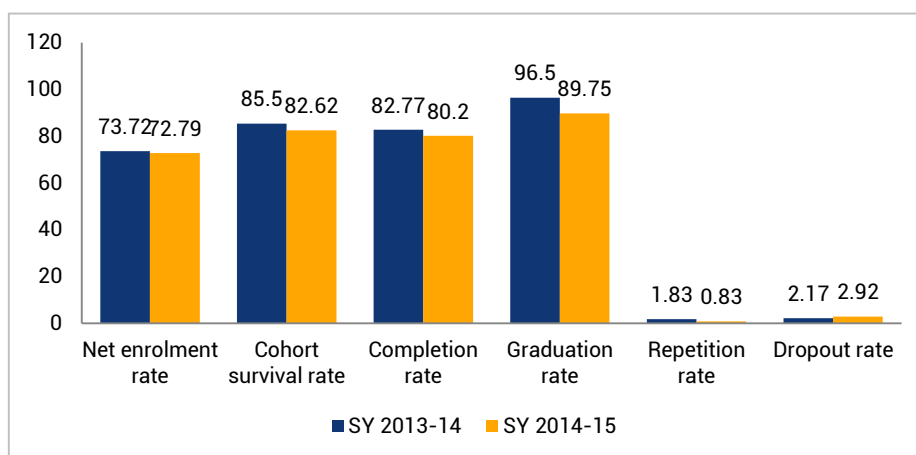
**Low NAT results.** The national achievement test (NAT) conducted towards end of every school year assesses the level of knowledge of students and further propose concrete actions and recommendations to improve the quality of education in public schools. For elementary level (SY 2014-15), Gapan City ranked highest in the over-all mean percentage score (MPS), followed by Nueva Ecija and Tarlac. The highly urbanized cities, Olongapo and Angeles got

**Figure 10-4: Performance Indicators in Government Elementary Education, SY 2013-2014 and SY 2014-2015**



Source: Department of Education 3

**Figure 10-5: Performance Indicators in Government Secondary Education, SY 2013-2014 and SY 2014-2015**



Source: Department of Education 3

**Table 10-2. National Achievement Test Results, Elementary and Secondary Levels, SY 2012-2015**

Division	Elementary Level			Secondary Level		
	SY 2012-2013	SY 2013-2014	SY 2014-2015	SY 2012-2013	SY 2013-2014	SY 2014-2015
Aurora	70.34	72.09	71.97	51.88	53.91	49.39
Bataan	77.19	77.22	74.42	51.68	53.07	45.81
Balanga City	79.19	76.18	74.22	51.91	51.3	50.23
Bulacan	75.53	78.3	80.57	52.92	56.64	50
San Jose Del Monte City	63.27	59.2	59.24	48.62	49.26	45.32
Malolos City	73.92	66.26	65.63	47.96	49.69	42.85
Meycauayan City		63.59	60.09		45.91	52.91
Nueva Ecija	82.69	83.96	84.31	54.17	51.62	52.68
Cabanatuan City	60.22	62.21	58.27	50.96	51.53	45.82
Gapan City	85.3	86.95	85.27	58.12	56.31	44.23
Science City of Muñoz	73.96	75.22	77.4	46.42	46.58	42.43
San Jose City	71.36	73.48	68.41	51.75	49.67	45.5
Pampanga	72.92	73.94	73.98	48.68	51.2	47.3
Angeles City	68.32	65.39	53.53	48.25	48.48	46.86
San Fernando City	54.92	61.53	55.58	51.5	55.24	48.77
Mabalacat City		68.98	66.93		48.33	44.46
Tarlac	81.42	85.02	84.03	56.93	62.84	55.08
Tarlac City	70.2	70.25	63.21	51.22	51.32	46.3
Zambales	76.57	77.43	68.01	52.54	52.38	45.41
Olongapo City	48.32	54.79	52.77	46.31	48.4	44.09
<b>AVERAGE</b>	<b>71.84</b>	<b>74.87</b>	<b>73.39</b>	<b>51.85</b>	<b>53.45</b>	<b>48.89</b>

Source: Department of Education 3

the lowest average score (Table 10-2). From school years 2012-13 to SY 2014-15, although the average MPS in Central Luzon was below the 75 percent minimum standard, it is still higher than the average national figures of around 69 percent. The national target for 2016 (PDP) is at 77 percent.

As shown in Table 10-2, for secondary level, the average MPS is way below the 75 percent passing rate for three consecutive

school years (SY 2012-13 to SY 2014-15), and not one school division had attained the minimum standard. Central Luzon NAT results for secondary education are almost similar to the national level results for the given school years. The 2016 national target for secondary NAT is lower at 65 percent.

**Table 10-3: SUCs Faculty Student Ratio, AY 2015-2016**

SUC	Number of students	Number of faculty	Faculty/ Student Ratio
Aurora State College of Technology	2,136	87	1:25
Bataan Peninsula State University	17,138	507	1:34
Bulacan Agricultural State College	4,523	142	1:32
Bulacan State University	49,853	1103	1:45
Central Luzon State University	13,458	493	1:27
Don Honorio Ventura Technological State University	18,866	403	1:47
Nueva Ecija University of Science and Technology	35,745	442	1:81
Pampanga Agricultural College	7,431	200	1:37
Philippine Merchant Marine Academy	929	82	1:11
Ramon Magsaysay Technological University	10,037	423	1:24
Tarlac Agricultural University	4,093	164	1:25
Tarlac State University	20,893	407	1:51

Source: Commission on Higher Education 3

## Higher Education

Central Luzon has a total of 229 higher education institutions (HEIs): 174 private institutions, 12 state universities and colleges (SUCs), 15 local community colleges, and 28 SUC campuses/satellites.

**There is high faculty-to-student ratio.** Most SUCs in Central Luzon have a faculty-to-student ratio higher than the standard ratio of 1:25 (Table 10-3). Only 4 out of 12 SUCs are within the standard ratio. The Nueva Ecija University of Science and Technology has a faculty to student population ratio of 1:81 which is far beyond the standard. Creating more positions for full-time faculty in SUCs is deemed important, not only to ensure delivery of quality education, but also to give attention to research and extension in order to keep pace with the demands of the 21<sup>st</sup> century.

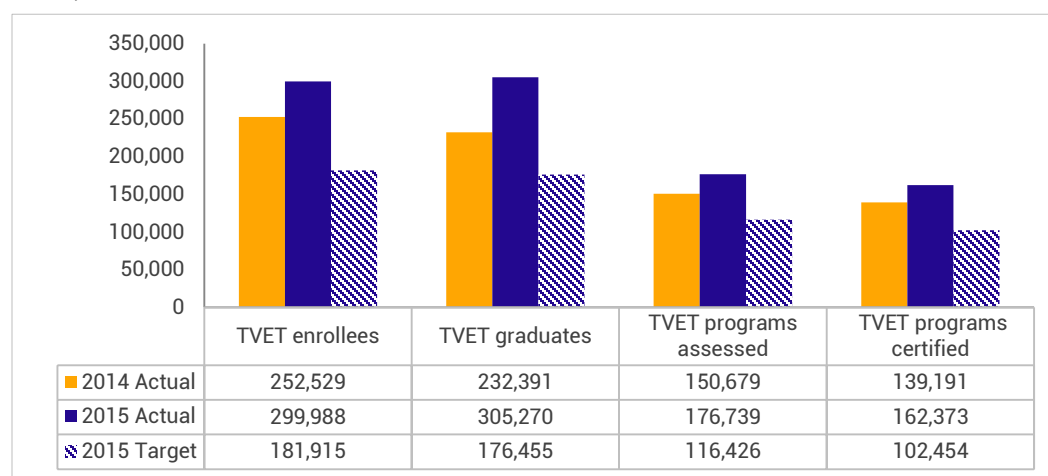
## Technical Education

The Technical Education and Skills Development Authority (TESDA)

implements Technical and Vocational Education and Training (TVET) programs which provide education or training in the study of technologies and related sciences for students to acquire practical and specialized skills needed for work. Central Luzon is the top region in terms of bulk of enrollees and graduates for the period 2011-2016.

**There is a need to sustain progress in TVET.** Figure 10-6 shows TVET improvement in terms of enrollees, graduates, and programs assessed and certified for 2014-2015. The number of enrollees of TVET providers in 2015 totaling 299,988 was 18.79 percent higher compared to 2014 enrollees or an additional 47,459 enrollees. The total number of TVET graduates in 2015 also grew by 31.36 percent or an increase of 72,879 graduates. In the same way, TVET programs assessed and certified increased by 17.30 percent and 16.65 percent, respectively. An additional 26,060 TVET programs were assessed while 23,182 were certified.

**Figure 10-6: TVET Enrollees and Graduates and TVET Programs Assessed and Certified, 2014-2015**



Source: Technical Education and Skills Development Authority 3

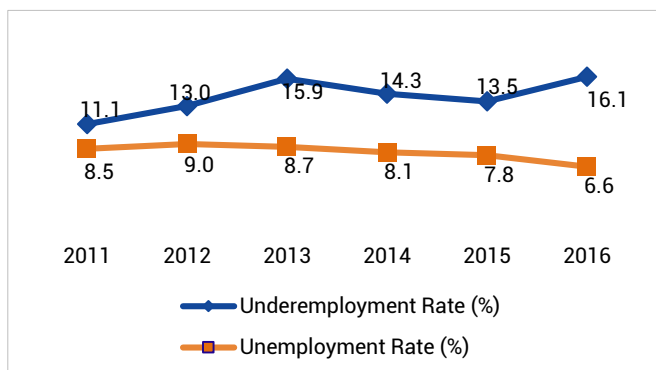


Other technical education support programs include the following: Private Education Student Financial Assistance (PESFA), Training for Work Scholarship Program (TWSP), Special Training and Employment Program (STEP), Dual Training System (DTS) and Apprenticeship/Learnership Program. These programs under TESDA aim to encourage students to enroll in TVET to enhance their proficiencies and build expertise in their chosen career. TVET therefore not only increases global competitiveness but also improves social equity. This helps alleviate poverty and enables workers to secure more decent employment.

region has been achieved. However, the unemployment rate is still higher than the national figure, and has the same level with the National Capital Region at 6.6 percent in 2016.

The region's underemployment rate increased drastically in 2016. From the 2011 level, it rose by 5 percentage points in the latest survey (2016). In most regions, underemployment is higher than unemployment, and is most prevalent in the Agriculture sector. Many parts of the region are predominantly agriculture-based areas; hence, there is seasonality of work, part-time engagement, and low productivity and wages in the said sector.

**Figure 10-7: Unemployment and Underemployment Rates, Central Luzon 2011-2016**



Source: Labor Force Survey 2014-2016, PSA

## Labor and Employment

**Levels of unemployment and underemployment are high.** The employment situation generally improved for the period 2011 to 2016, with the employment rate showing an increasing trend. As shown in Figure 10-7, the unemployment rate showed a significant decline from 2011 to 2016. The 2016 target for unemployment rate of 7 percent for the

The government continuously exerts efforts to expand employment opportunities. It aims to generate more jobs through all forms of employment by creating an environment attractive to investors, implementing investment promotion activities, and enhancing labor skills to meet the requirements of industries and services.

The Department of Labor and Employment (DOLE) is currently implementing various short and long term programs and projects, which include among others, the DOLE Integrated Livelihood and Emergency Employment (DILEEP), *Tulong Panghanapbuhay sa Ating Disadvantaged Worker (TUPAD)*, and Special Program for the Employment of Students (SPES).

The DILEEP is a livelihood and a wage employment program for the poor, vulnerable, and marginalized sectors. According to DOLE Region 3, the program's budget increased to PhP36 million and served more beneficiaries. The TUPAD, a community based program

offering short term relief by providing emergency employment for a period of 10 to 30 days to displaced, underemployed workers and to those who were affected by calamities, also helped improve the employment situation in the region. The SPES likewise generated more jobs as deserving students of financially distressed families were provided assistance and referred to government agencies for employment. These programs and projects indeed optimized productivity, improved income, and created more jobs.

***Limited employment opportunities are forcing Filipinos to migrate by necessity and not by choice.*** Based on the PDP 2017-2022, Many Overseas Filipinos (OFs) have been pushed to take on low-skilled jobs abroad. In 2015, 37.8 percent were employed as household workers. Despite the resilience of these low-skilled jobs and being a steady source of employment for many Filipinos, OFs employed in these kinds of jobs remain vulnerable to abuse and exploitation. Regional integration initiatives such as the ASEAN Economic Community and the government's efforts to strengthen ties with other countries such as China and Russia could present opportunities to diversify the destination of OFs.

## Strategic Framework

This section focuses on attaining the following human development outcomes: i) nutrition and health for all improved; ii) lifelong learning opportunities for all ensured, and iii) income earning abilities increased.

Providing adequate and appropriate services to reduce inequality in human capacities is the focus of this section. Investments in health and education will concentrate on achieving the following: guaranteed care for all life stages; ensured access to functional service delivery network; sustained health financing; quality, accessible, relevant and liberating basic education for all; and improved quality of higher and technical education and research for equity and global competitiveness.

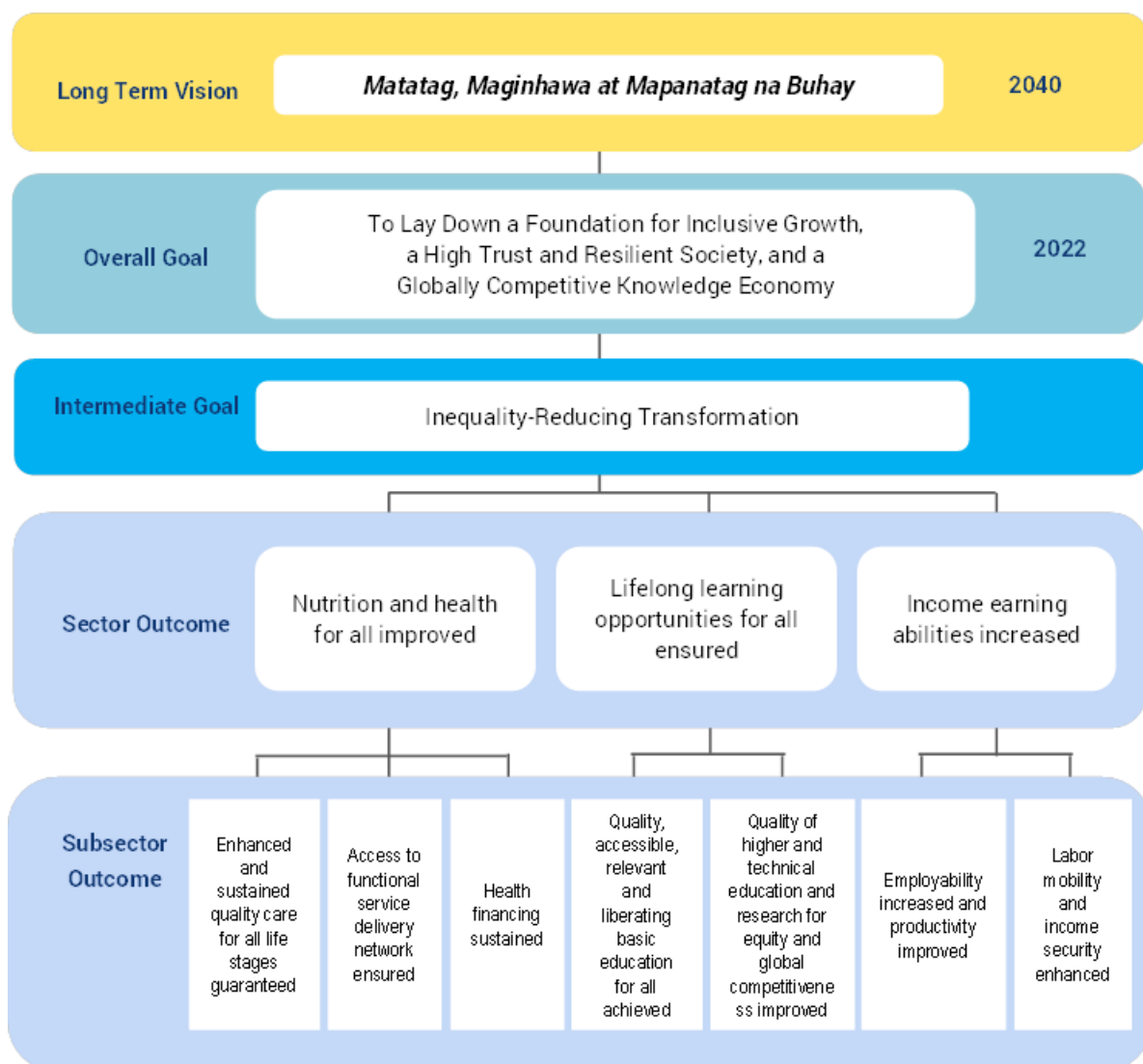
Increased income earning abilities will be attained by: i) improving employability and

productivity, and ii) enhancing labor mobility and income security. Specific strategies for each subsector outcome are presented as follows:

### ***Subsector Outcome 1: Enhanced and sustained quality care for all life stages guaranteed***

#### **Strategy 1: Scale-up preventive, promotive, curative, rehabilitative, and palliative health care programs**

The provision of health care services in the region shall be focused on all life stages and will cover the following: reproductive and sexual health; maternal, newborn, and child health; breastfeeding, and food and micronutrient supplementation; immunization; adolescent health; and health screening, promotion and information. For non-communicable diseases, interventions will be focused on health-seeking behavior and addressing



specific diseases such as cancer, diabetes, and heart diseases. Interventions will also include assessing risk factors such as obesity, smoking, diet and a sedentary lifestyle. Efforts shall be exerted to address the triple burden of disease (injuries, mental health issues, alcohol and substance abuse), and addressing malnutrition in all its forms. In addressing reproductive health (i.e. HIV/AIDS) and family planning concerns, the government will ensure that values-laden and age-and-development-appropriate education about sexuality and reproductive health is urgently

implemented in formal and non-formal learning.

### *Subsector Outcome 2: Access to functional service delivery network ensured*

#### **Strategy 2: Elicit multi-sector, multi-stakeholder support for health**

To achieve better health outcomes, the following shall be pursued by the government: i) harnessing and aligning the private sector in service delivery network,

intervention, and supply side investments; ii) ensuring convergence of various government agencies such as DOH, DENR, DSWD, DepED and HUDCC, in delivering services which include among others, advocating for health in all policies and undertaking multi-sectoral work with different agencies to build healthy living, working, and school environments and cities; iii) mandating health impact assessment for large scale, high risk development projects (e.g. mining, power plants); and iv) building partnerships with civil society organizations (CSO) in governance in the areas of budget development and monitoring and evaluation.

Furthermore, there is a need to strengthen the functionality of nutrition committees at all levels to ensure quality management of nutrition programs. The DILG, in partnership with the NNC, is authorized to establish functioning nutrition committees at different administrative levels (barangay, municipality, city, province, and region).

### **Subsector Outcome 3: Health financing sustained**

#### **Strategy 3: Expand health insurance coverage and benefits**

Expanding health insurance coverage and providing an adequate benefit package is a cornerstone of the Universal Health Care—the overall goal of the health sector. Effectively applying government subsidies for PhilHealth enrollment shall be pursued so that the poor are effectively registered, and then informed and guided on their benefits and entitlements. A parallel strategy to protect Filipinos from the ill-effects of high health care costs is by expanding the benefit coverage. The

coverage will also include cases under mental health, drug abuse, and psychiatric health. Furthermore, the implementation of expanded primary care benefits will better finance the more serious conditions of members.

### **Subsector Outcome 4: Quality, accessible, relevant, and liberating basic education for all ensured**

#### **Strategy 4: Raise the quality of education and make it accessible**

The dismal performance of both elementary and secondary students in achievement tests point to the urgent need to improve the quality of basic education. The full implementation of the K-to-12 Basic Education Program needs to be pursued by the Department of Education. As the DepEd emphasized, K-to-12 is not simply adding school years for basic education to reflect the international norm. Rather, it is about upgrading the quality of education in the country.

The following interventions need to be done to improve the quality of education: (a) implementing capacity building programs for basic education teachers to properly implement the curriculum, (b) providing additional classrooms and teachers to meet the demand of increased population, and (c) prioritizing the provision of learning resources such as computers, textbooks, and other equipment.

To improve accessibility, there is a need to employ the following strategies: i) providing school-based interventions to incentivize, and to reduce the burden of, school participation; ii) continuing school feeding programs and ensuring that school

facilities are conducive to school attendance and learning; iii) intensifying and expanding Alternative Learning System (ALS) programs.

**Strategy 5: Make education relevant to urgent needs and opportunities**

The current administration aims to strengthen and enrich curricular reforms on anti-illegal drug campaigns, reproductive health awareness, and disaster preparedness. As such, DepEd will endeavor to: i) Strengthen the drug education component in Science and Health by providing real-life lessons via alternative learning methods, starting in Grade 4; ii) Strengthen the gender and development component of school curricula especially in relation to sex education and teenage pregnancy; iii) Give special emphasis to environmental awareness, disaster preparedness, and climate change adaptation and mitigation; and iv) Contribute to addressing poverty and inequality, meeting the challenges of climate change, and keeping pace with advanced knowledge and information.

*Subsector Outcome 5: Quality of higher and technical education for equity and global competitiveness improved*

**Strategy 6: Promote excellence among higher education institutions**

The academic programs of HEIs shall be aligned with international standards to make them globally competitive. Continued support shall be provided to the Centers for Excellence (7) and Centers of Development (10) in the region. Academe-industry linkages for research and development shall be enhanced to foster technological

innovation. Other interventions in higher education include the following: i) upgrading faculty qualifications, ii) revising policies, standards, and guidelines for Board programs, iii) forging partnerships with the Philippine Regulations Commission (PRC) and other institutions, and iv) tightening admission and retention policies.

**Strategy 7: Ensure globally competitive training programs**

The TVET programs that are being provided by TESDA need to be at par with international standards and technology. The integration of 21<sup>st</sup> century skills and competencies is deemed important in order to improve the employability of graduates, as well as to develop social, ethical, and moral characteristics (UNESCO, 2015). The TVIs' partnership with foreign training institutions is also necessary to gain competencies in modern technologies. Furthermore, training programs need to be aligned with the DOLE's identified regional priority sectors and key employment generators to ensure job placements.

*Subsector Outcome 6: Employability increased and productivity improved*

**Strategy 8: Promote skills development and retooling through continuing education and training**

Improving the employability of workers can be done by encouraging further skills enhancement and retooling before and during employment. The provision of opportunities for skills development and retooling is necessary, especially for the youth who are not in education, employment, and training (NEET). Continuing education

and training will allow workers to be employed in more stable and higher paying jobs. The Philippine Qualifications Framework (PQF) of TESDA should not only focus on school-to-work transition but should be able to guide employees and employers in skills upgrading and professional development.

#### **Strategy 9: Encourage women's active participation in the labor market**

To increase the labor participation of women, the following strategies need to be pursued: i) fully implementing the Responsible Parenthood and Reproductive Health Law, ii) improving access to and affordability of child care services, iii) formulating policies that promote work-life balance, iv) providing re-training services for women returning to the workforce, v) enhancing maternal as well as paternal benefits, and vi) improving women's access to entrepreneurial opportunities.

#### **Strategy 10: Ensure safety in the workplace**

Among the interventions that will be implemented to ensure safety in the workplace are the following:

- Integrating occupational safety and health (OSH) practices in local health development plans,
- Implementing a comprehensive health and safety program for government workers,
- Integrating OSH in the secondary and tertiary educational curriculum, and
- Implementing enhanced workplace emergency plans and disaster risk reduction programs.

#### **Strategy 11: Strengthen employment facilitation services**

Assistance to workers entering the labor market, especially first-timers, will be strengthened. Career advocacy, coaching, and counseling will be enhanced, both for those seeking employment locally or overseas. Online services for OFs should also be included. There is a need to capacitate Local Government Units (LGUs) to respond to the challenges in their respective areas. In particular, Public Employment Services Offices (PESOs) need to prepare for the needs of Senior High School graduates and the differently-abled, and consider opportunities beyond their localities.

#### **Subsector Outcome 7: Labor mobility and income security enhanced**

#### **Strategy 12: Provide income support and emergency employment**

Among the social protection programs that need to be pursued is protection through income security, in the form of unemployment benefit system (unemployment insurance or unemployment savings). Furthermore, to contribute to the outcome of increased income earning abilities, the Community-based Employment Program (CBEP) which provides immediate employment to skilled, semi-skilled, and skilled workers in the community, will be enhanced to provide additional income opportunities for seasonal workers and the long-term unemployed.

The government needs to leverage employment as a tool for sustaining the momentum of reducing poverty. In doing



this, both demand and supply should be addressed to raise the job-preparedness of the labor force. Maintaining rapid economic growth that increases the incomes of poor households is a critical factor in sustaining poverty reduction

efforts. Strategies that are deemed necessary include: improving the business climate, boosting competitiveness of the productive sectors, easing restrictions on foreign investments, and improving access to financing (Edillon, 2016).

## Research and Development Agenda

### *Survey on Public Basic Emergency Obstetric and Newborn Care (BEmONC) services*

Basic Emergency Obstetric and Neonatal Care (BEmONC) is a high-impact priority intervention for improving maternal and neonatal health outcomes. This study will provide information on the current state of BEmONC in the region and its effectiveness in decreasing both maternal and infant mortality. The information gathered will be used to identify gaps in BEmONC infrastructure, essential medicines and supplies, manpower and caseloads, providers' knowledge and competence, and design appropriate interventions.

### *Curriculum restructuring: technology-enriched, value-laden, community-involved, and industry-linked*

Restructuring the curriculum is one way to address jobs-skills mismatch. The gap

between job skills and the demands of the job market widens as job seekers do not have the necessary skills required by employers.

This study seeks to review and assess the need for Central Luzon state universities and colleges (SUCs) and higher education institutions (HEIs) to restructure their curriculum to be more technology-enriched, value-laden, community-involved and industry-linked. Restructuring the curriculum involves making adjustments to their academic programs in order to respond to changes in the labor market. The study will also provide information on the specific skill requirements of the labor market in order for educational institutions to develop the most in-demand skills. The study also aims to discover the implications of changing the curriculum, the possible problems that may arise during the transition period, and the appropriate solutions to these problems.

## RDP Targets

Indicators	Year	Baseline Value	End of Plan Target	Agency Responsible
<b>Sector Outcome 1: Nutrition and health for all improved</b>				
Prevalence of underweight under five years of age	2015	16.7	10.7	Regional Nutrition Committee (RNC)
Stunting	2015	22.9		RNC/NNC 3
Wasting	2015	7.5		RNC/NNC 3

Indicators	Year	Baseline Value	End of Plan Target	Agency Responsible	
Overweight	2015	5.9	Decreasing or No increase in prevalence	RNC/NNC 3	
Maternal mortality rate	2015	43		DOH 3	
Infant mortality rate	2015	4.14		DOH 3	
Under-five mortality rate	2015			DOH 3	
Child mortality rate	2015	6.74		DOH 3	
Contraceptive prevalence rate (%)	2015	36.38	65	DOH 3	
Facility-based delivery ratio (%)	2015	89.55	90		
HIV/AIDS cases	2015	0.03	Maintain less than 1% of the population prevalence rate	DOH 3	
Teenage pregnancy cases (no.)	2015	23,674			
NHIP coverage rate	2015	76.5		100%	PhilHealth 3
Total fertility rate	2013	2.8		2.1	DOH 3,
Unmet need for family planning		13.1	Zero unmet need by 2018 (poor population) and by 2022 (all population)	POPCOM, RPRH-RIT Members, LGUs and other concerned stakeholders	
For limiting	2013	6.8			
For spacing		6.3			
Sector Outcome 2: Lifelong learning opportunities for all ensured (Basic, Higher and Technical Education)					
Net enrolment rate (%)					
• Elementary	SY 2015-	93.85	98.67	DepED 3	
• Secondary	2016	75.47	80.08		
Completion rate (%)					
• Elementary	SY 2015-	89.14	89.06	DepED 3	
• Secondary	2016	72.44	76.87		
Cohort survival rate (%)					
• Elementary	SY 2015-	93.16	98.86	DepED 3	
• Secondary	2016	80.52	85.44		
Achievement rate (%)					
• Elementary	SY 2015-	73.39	84.19	DepED 3	
• Secondary	2016	48.89	77.69		
Drop-out rate (%)					
• Elementary	SY 2015-	1.31	1.01	DepED 3	
• Secondary	2016	3.28	1.78		
Literacy rate					
• Simple	2013	98.2	Increasing	DepED 3	
• Functional		92.3			
Higher education enrolment (no.)	AY 2015-2016	362,743	Increasing	CHED 3	
Higher education graduates (no.)	AY 2015-2016	67,503	Increasing	CHED 3	
No. of enrolled in TVET programs	2016	226,054	256,708	TESDA 3	
No. of graduates in TVET programs	2016	224,467	231,037	TESDA 3	
No. of persons assessed in TVET programs	2016	121,587	161,726	TESDA 3	
No. of persons certified in TVET programs	2016	103,349	137,467	TESDA 3	
TVET certification rate (%)	2016	85	85		
TVET employment rate (%)	2016	61	65	TESDA 3	
Sector Outcome 3: Income earning abilities increased (Labor and Employment)					
Employment rate	2016	93.4	95.1	DOLE 3/ NEDA 3	
Unemployment rate	2016	6.6	4.9	DOLE 3/ NEDA 3	
Underemployment rate	2016	16.1	Decreasing	DOLE 3/ NEDA 3	



11

Reducing Vulnerability  
of Individuals and  
Families



# Reducing the Vulnerability of Individuals and Families

Reducing inequality also entails reducing the vulnerability of individuals and families (social protection), and communities (housing) because vulnerability and poverty are closely linked.

This chapter contributes to the desired goal of reducing inequality in human development by providing guidelines in building socio-economic resiliency through the following sectors: i) Social Protection, and ii) Shelter Security.

## Assessment and Challenges

Vulnerability has been associated with poverty. With the occurrence of risks and shocks, the poorest of the poor are among the most vulnerable. Other factors that determine the ability to withstand shocks are linked to age, gender, class, ethnicity, and disability. These factors affect the constitution of vulnerable groups: children, older persons, women in especially difficult circumstances, indigenous peoples (IPs), persons with disabilities (PWDs), and workers in the informal sector (WIS). Risk and uncertainty may come in different forms, such as economic, individual and life cycle risk (*Chapter 10*), environmental and natural risk (*Chapter 20*), and governance and political risk (*Chapter 5*). In any type of risk that individuals face, it is necessary to have a social protection mechanism in place.

### Social Protection

***Declining poverty rates need to be sustained.*** Central Luzon's poverty incidence among its population dropped to

11.2 percent in 2015 from 13.7 percent in 2009. On the other hand, subsistence incidence among the population or the proportion of Filipinos whose incomes fall below the food threshold went down to three (3) percent in 2015 from 4.3 percent in 2009. Subsistence incidence is often referred to as the proportion of the population in extreme or subsistence poverty. Comparing the region's poverty levels with the 2015 MDG targets, it may be said that the region has succeeded in reducing poverty as the proportion of poor people has dropped to levels below the MDG targets as shown in Table 11-1. If the downward trajectory of subsistence and

**Table 11-1: Subsistence and Poverty Incidence among Population, Central Luzon: 2009, 2012, 2015**

MDG target by 2015	Year	Subsistence Incidence among population	Poverty incidence among population
6.6% subsistence incidence among population	2015	3	11.2
17.75% poverty incidence among population	2012	3.8	12.9
	2009	4.3	13.7

Source: Philippine Statistics Authority



poverty incidences from 2009-2015 will not rebound, hunger and poverty in Central Luzon may be fully addressed by 2028 and 2040, respectively.

However, the sub-regional picture of poverty remains less desired, with two (2) out of seven (7) provinces having poverty incidences in more than a fifth of their population. The said provinces are Aurora (26.3 percent) and Nueva Ecija (22.6 percent). Meanwhile, Bataan, Bulacan and Pampanga, considered as the region's industrial and commercial areas, have poverty incidences that are among the lowest in the country, with 2 percent, 4.5 percent, and 4.9 percent respectively in 2015.

The United Nations (UN) defined social protection (SP) as the programs and policies implemented to decrease poverty and vulnerability to various risks which come in various forms: *social insurance, labor market policies and programs, social welfare, and social safety nets*. The Department of Social Welfare and

Development (DSWD) is the lead agency in the implementation of the government's social protection programs. Below are the big ticket SP programs implemented by the DSWD Field Office 3 (FO3).

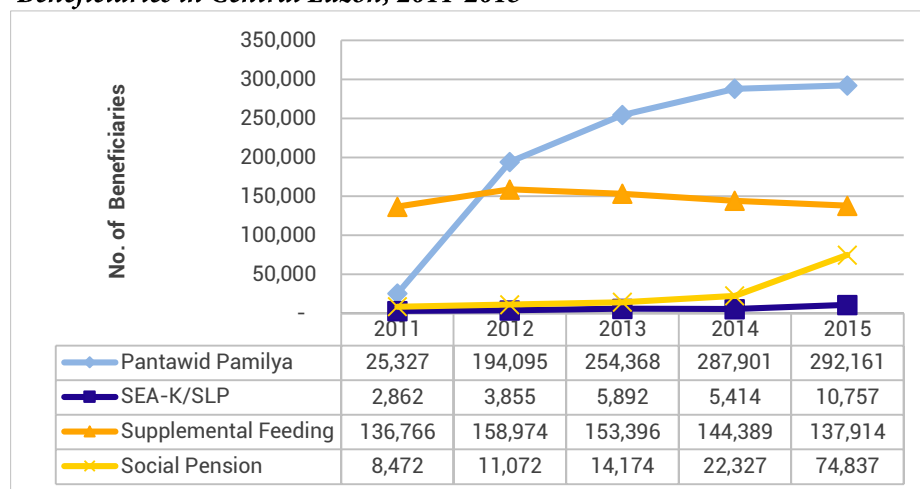
***Pantawid Pamilya Pilipino Program (4Ps) beneficiaries expanded since its first year of implementation.*** The *Pantawid Pamilya* commonly known as 4Ps has been successful in the region since the start of its implementation in 2010. Patterned after the conditional cash transfer scheme in developing countries, the 4Ps is instrumental in improving access to health services, keeping children in school, and

**Table 11-2: 4Ps Beneficiaries by Province and Program Amount, 2015**

Area	No. of Beneficiaries	Program Amount (Php)
<b>Central Luzon</b>	<b>292,161</b>	<b>3,035,963,500.00</b>
Aurora	8,231	95,392,100.00
Bataan	17,723	188,111,200.00
Bulacan	69,012	724,220,700.00
Nueva Ecija	85,797	847,505,300.00
Pampanga	52,418	559,354,100.00
Tarlac	39,770	422,011,600.00
Zambales	19,210	199,368,500.00

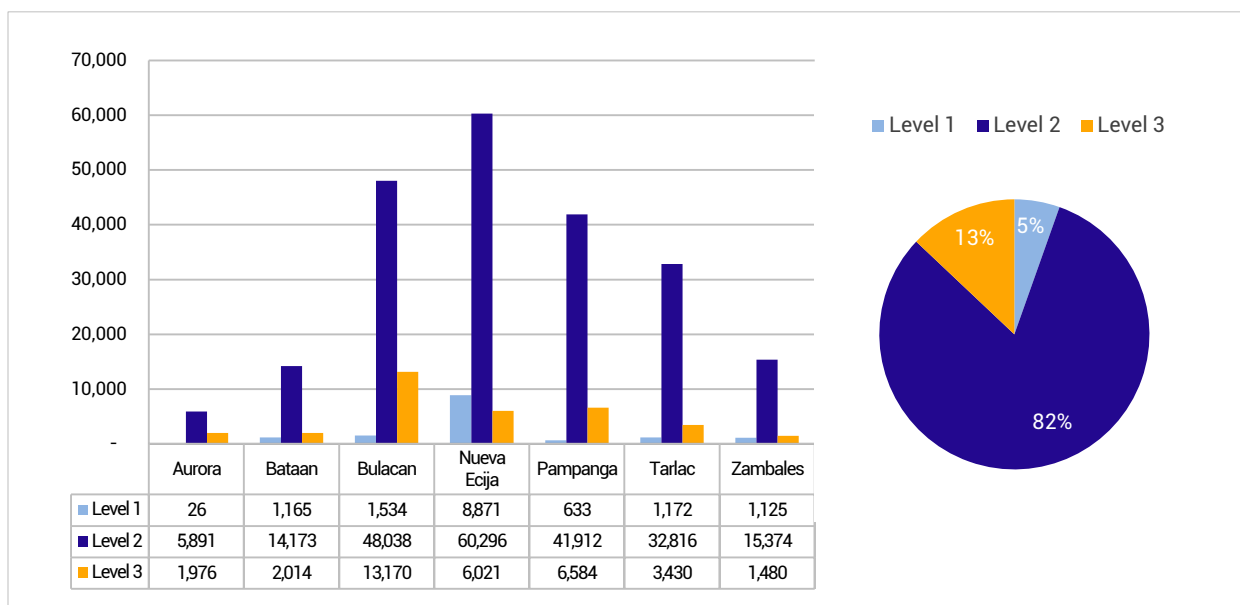
Source: Department of Social Welfare and Development 3

**Figure 11-1 Big Ticket Social Protection Programs: Number of Beneficiaries in Central Luzon, 2011-2015**



Source: Department of Social Welfare and Development 3

**Figure 11-2: Well-being of Pantawid Families in Central Luzon, 2015**



Source: SWDI, Department of Social Welfare and Development, 2015

reducing child labor, among others, as confirmed by impact evaluation studies held in 2012 and 2014 by the DSWD in 2014.

Based on DSWD FO3 data, the program already catered to 292,161 families as of 2015, which is more or less about 14 times more than the number of beneficiaries it had during its first year of implementation.

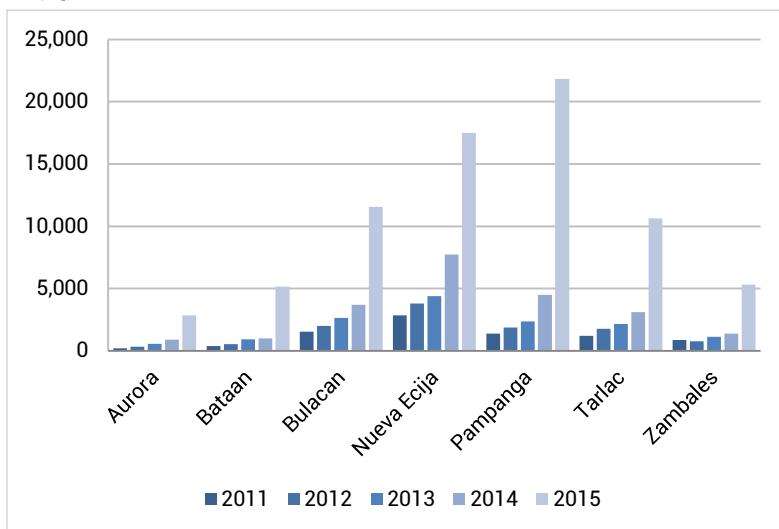
The DSWD developed the Social Welfare Development Indicators (SWDI), a tool for assessing *Pantawid* beneficiaries in order to (1) determine and monitor the progress of the families' wellbeing, and (2) facilitate grassroots case management. In 2015, the nationwide SWDI baseline assessment was conducted, covering registered and active *Pantawid* families as of 31 December 2014. The levels of well-being are: Level 1 (Survival), Level 2 (Subsistence), Level 3 (Self-sufficient). For Central Luzon, majority of beneficiaries (218,500 or 82%) are classified in Level 2 (Subsistence).

Around 13% were in Level 3 (Self-sufficiency) while only 14,526 or 5% remains in Level 1 (Survival).

**Self-Employment Assistance – Kaunlaran (SEA-K) or Sustainable Livelihood Program (SLP) serves as a convergent strategy to 4Ps.** The Sustainable Livelihood Program (SLP), formerly known as Self-Employment Assistance-Kaunlaran (SEA-K) is one of the core SP programs included in the convergence strategy geared to combat poverty. The program aims to serve the beneficiaries of the *Pantawid Pamilya* to enhance and sustain their socio-economic skills through the organization of community-based associations for entrepreneurial development. The DSWD 3 reported that the SEA-K/SLP provided capital assistance to 10,757 poor families in 2015. This number is a substantial increase from the 5,414 beneficiaries in 2014.

One of the major factors in the improvement of poverty reduction is the increased budget in government's social protection programs, which significantly augmented the income of the poorest households. The expanded implementation of the 4Ps at the national level recorded a 91.3 percent growth in terms of coverage from 2011 to 2015. The regularity of the cash transfer sustained for three years has accorded the *Pantawid* beneficiaries some resiliency against certain shocks. Through the program, economic activity was increased in poor areas given the presence of a cash economy (Edillon, 2016).

**Figure 11-3: Social Pension Program: Number of Beneficiaries, by provinces, 2011-2015**



Source: Department of Social Welfare and Development, 2015

**Supplemental Feeding Program (SFP) implemented to address hunger and malnutrition.** Malnutrition is seen as one of the reasons behind high dropout rates in both the elementary and secondary education levels. As part of the Early Childhood Care and Development (ECCD) Program, the Supplemental Feeding Program (SFP) of the DSWD is a program which provides food in addition to the

regular meals of day care children. This program is a measure geared towards fighting hunger and malnutrition which at the same time serves as an incentive to day care students to attend their classes. For SY 2014-2015, a total of Php 157.78 million was spent by the DSWD FO3 for the provision of meals to a total of 137,914 daycare children in the region. The number of day-care student beneficiaries is well within the average over the past five years since its implementation.

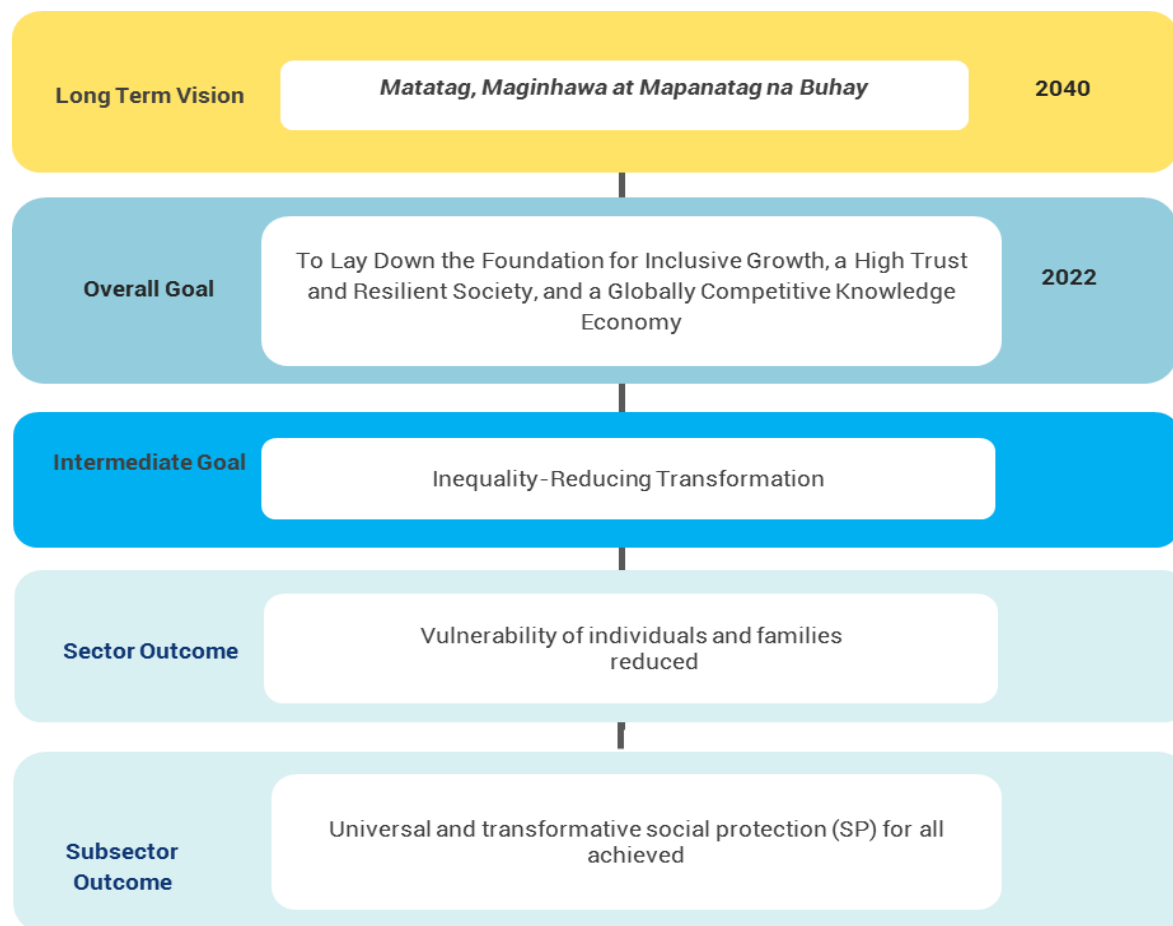
**Social Pension Program benefits indigent senior citizens.** The Social Pension Program which started implementation in 2011, targets indigent senior citizens as its beneficiaries. Through this program, senior citizens who are 65 years old and above receive an additional 500 pesos cash allowance which they can use to augment their daily subsistence and other medical needs. According to DSWD, there is a proposal to lower the age requirement to 60 years old. In 2015, the DSWD FO3 recorded 74,837 indigent senior citizens in Central Luzon who received a monthly stipend of Php500.00. During the first year of implementation of the program, there were only 8,472 beneficiaries, which show a 783 percent increase in the number of indigent senior citizens benefitting from the program in 2015.

**Limited coverage of social protection programs for Overseas Filipinos and their families.** The Overseas Workers Welfare Administration (OWWA) provides social protection programs for OFWs covering disability, death and burial benefits, education and livelihood, and relief assistance. The Department of Social Welfare and Development (DSWD), in

coordination with the Department of Foreign Affairs (DFA), and other partner agencies, also provide services to OFs through the International Social Welfare Services for Filipino Nationals. The Migrants Workers and Overseas Filipino Act (RA 10022) mandates the provision of

compulsory insurance to OFs. However, this insurance excludes direct hires, and is effective only during their stay in destination countries. In times of death and disability, OWWA members and their families receive benefits and assistance.

## Strategic Framework



This section focuses on improving the socioeconomic resiliency of individuals and families against shocks. The intended

outcome is reduced vulnerability by providing universal and transformative social protection programs for all.

### *Subsector Outcome: Universal and transformative social protection for all achieved*

#### **Strategy 1: Strengthen convergence mechanism for SP programs at the national and local levels**

Convergence of SP programs is already in place in the region such as the *Pantawid Pamilya* and the SLP. To fully realize this strategy, there is a need to identify specific activities requiring partnership and to define the roles of participating agencies and stakeholders. Furthermore, strengthening the implementation of social protection programs through complete roll-out and capacity building of LGUs needs to be prioritized. All LGUs need to be trained in the recently developed SP Handbook (Volume 2 on SP Vulnerability and Adaptation Manual), which informs LGUs about the conduct of local situational analysis and identification of risks, vulnerabilities and adaptation strategies. The Joint Memorandum Circular between the DSWD and DILG needs to be implemented for the effective utilization of the SP Handbook. This ensures that social protection will be mainstreamed in the local planning process.

#### **Strategy 2: Establish comprehensive and efficient data management system for vulnerable sectors**

The generation and management of data for vulnerable sectors such as the indigenous peoples, PWDs, and child laborers are deemed important to allow more informed development planning and programming.

#### **Strategy 3: Intensify social protection programs for OFs and their families.**

Social security benefits will be included in the standard employment contract for all types of OFs. The government will establish additional SSS, PAG-IBIG, and PhilHealth Representative Offices overseas, alongside massive information dissemination campaigns. There will be a review of existing state-to-state government mechanisms and identification of prospective bilateral agreements to maximize benefits and minimize costs of international migration. Additionally, to address the vulnerabilities caused by global developments, social safety nets will be extended alongside the conduct of reintegration programs, skills upgrading, and skills matching with domestic opportunities.

## Research and Development Agenda

### *Assessment of management of social protection institutions in Central Luzon (i.e. GSIS, SSS, ECC, PhilHealth, HDMF, OWWA)*

This study shall cover the current state of and challenges facing social protection in the region. To provide a comprehensive view of the extent of social protection in Central Luzon, the study will be thorough

in terms of describing institutions and schemes. However, it will be selective in its assessment of the schemes, focusing only on old age security, disability, and health care.

### *Key Drivers of Poverty Reduction*

Five of the seven provinces in the region (Aurora, Bataan, Bulacan, Nueva Ecija, and Pampanga) posted decreases in poverty

incidences in 2015 compared to incidences in 2012. Notably, the incidence of poverty in the province of Bataan was cut by 5.1 percentage points, from 7.1 percent in 2012 to 2.0 in 2015. This study will seek to

understand the successful attempt of Bataan to reduce poverty. It will extract lessons that can be applied by the provinces with persistent poverty problems in the Central Luzon region.

## RDP Targets

Indicators	Year	Baseline Value	End of Plan Target (2022)	Agency Responsible
<b>Subsector Outcome: Universal and transformative social protection program for all Filipino</b>				
Poverty incidence				DSWD/ PSA/ NEDA 3
Among population	2015	11.2	7.9	
Among families		8.9	6.4	
Subsistence incidence				
Proportion of poor senior citizens covered by social pension	2016	69,352 beneficiaries	110,380 beneficiaries (3% increase per year)	DSWD 3
Percentage of poor families covered by Philhealth as identified under the <i>Listahanan</i> and LGU Sponsored Program	2016	100% or 322,622 of the <i>Listahanan</i> I identified HHs (PhilHealth, GAA, DSWD <i>Listahanan</i> II data)	100% or 244,593 of the <i>Listahanan</i> II identified HH (PhilHealth, GAA, DSWD <i>Listahanan</i> II data)	DSWD 3
Coverage of emergency employment programs during crisis (economic, financial, disaster-related)	2016	13,436 HH for microenterprise development and 6,591 HH for employment facilitation		
Proportion of individuals affected by natural and man-made calamities provided relief assistance	2016	100% of the affected families provided with relief assistance (30% from the DSWD and 70% from the affected LGUs as per guidelines)	100% of the affected families provided with relief assistance (40% from the DSWD and 60% from the affected LGUs)	DSWD 3





# 12 Building Safe and Secure Communities



# Building Safe and Secure Communities

The quality of shelter and the kind of communities people live in can be either a source of vulnerability or a means to enhance both development opportunities and human development outcomes.

This chapter contributes to the desired goal of reducing inequality in human development by highlighting strategies to support marginalized sectors, local governments, and the private sector in building safe and secure communities that will allow more families to enjoy a *matatag, maginhawa, at panatag na buhay*—strongly-rooted, comfortable and secure—as part of building socioeconomic resilience.

## Assessment and Challenges

*The enormous housing need and proliferation of informal settlements should be addressed.* The housing sector envisions expanding access to affordable, adequate, safe, and secure shelter through well-planned communities.

On housing demand, Table 12-1 shows that the total estimated housing need (defined as the housing backlog plus new households) for Central Luzon for 2011 to 2016 is at 498,809 units. The region is among the top 3 regions with the greatest housing need. The growth rates of Region

**Table 12-1: Housing needs across regions, in number of households, 2011 to 2016**

Regions	Initial needs (as of Jan 1, 2011)	Incremental housing need						Total
		2011	2012	2013	2014	2015	2016	
<b>PHILIPPINES</b>	<b>1,225,343</b>	<b>688,318</b>	<b>701,396</b>	<b>714,723</b>	<b>728,302</b>	<b>742,140</b>	<b>756,241</b>	<b>5,556,463</b>
NCR	292,234	56,087	57,153	58,239	59,346	60,473	61,622	645,154
CAR	10,861	9,060	9,233	9,408	9,587	9,769	9,954	67,872
Region I	55,312	36,135	36,822	37,521	38,234	38,961	39,701	282,686
Region II	30,323	25,964	26,457	26,960	27,472	27,994	28,526	193,696
<b>Region III</b>	<b>101,441</b>	<b>63,151</b>	<b>64,351</b>	<b>65,574</b>	<b>66,820</b>	<b>68,089</b>	<b>69,383</b>	<b>498,809</b>
CALABARZON	135,068	82,250	83,813	85,406	87,028	88,682	90,367	652,614
MIMAROPA	28,931	27,491	28,013	28,546	29,088	29,641	30,204	201,914
Region V	61,738	46,599	47,484	48,386	49,305	50,242	51,197	354,950
Region VI	85,425	55,426	56,479	57,552	58,646	59,760	60,896	434,185
Region VII	79,815	50,248	51,203	52,176	53,167	54,177	55,207	395,993
Region VIII	41,081	37,380	38,090	38,814	39,551	40,303	41,069	276,288
Region IX	38,322	31,411	32,007	32,615	33,235	33,867	34,510	235,967
Region X	52,094	35,347	36,019	36,703	37,401	38,111	38,836	274,512
Region XI	66,099	42,139	42,940	43,756	44,587	45,435	46,298	331,255
Region XII	54,442	36,344	37,035	37,739	38,456	39,186	39,931	283,133
Caraga	29,572	23,011	23,448	23,894	24,347	24,810	25,281	174,362
ARMM	62,584	23,886	24,340	48,370	25,274	25,754	26,243	236,451

Source: Housing and Urban Development Coordinating Council (December 2013)

4A, Region 3, and NCR account for almost a third of the projected housing need for 2011 to 2016.

Data from the National Housing Authority (NHA) show that Central Luzon is third among the regions with the most number of informal settler families (ISF), with 117,670. Expanding access to affordable, adequate, safe, and secure shelter has been challenging for the housing sector primarily due to the proliferation of informal settlements, thereby increasing the demand for housing. Central Luzon's housing need is one of the biggest in the country and has incremental housing requirements higher than the National Capital Region's for the period 2011 to 2016. The region is faced with the inability of LGUs and/or barangays to prevent the invasion of public lands and open spaces by illegal occupants.

The region's proximity to NCR exacerbates this problem. The province of Bulacan, particularly the city of San Jose del Monte has received around 750,000 informal settlers, half of which came from danger zones in Metro Manila. While the government addresses the influx of informal settlements through relocation, this strategy becomes a problem due to delays in provision of electricity and water connection in off-city resettlement areas. Moreover, there is difficulty on the part of informal settlers to voluntarily relocate

because of lack of livelihood opportunities in off-city resettlement areas, as well as slow payment of their financial assistance.

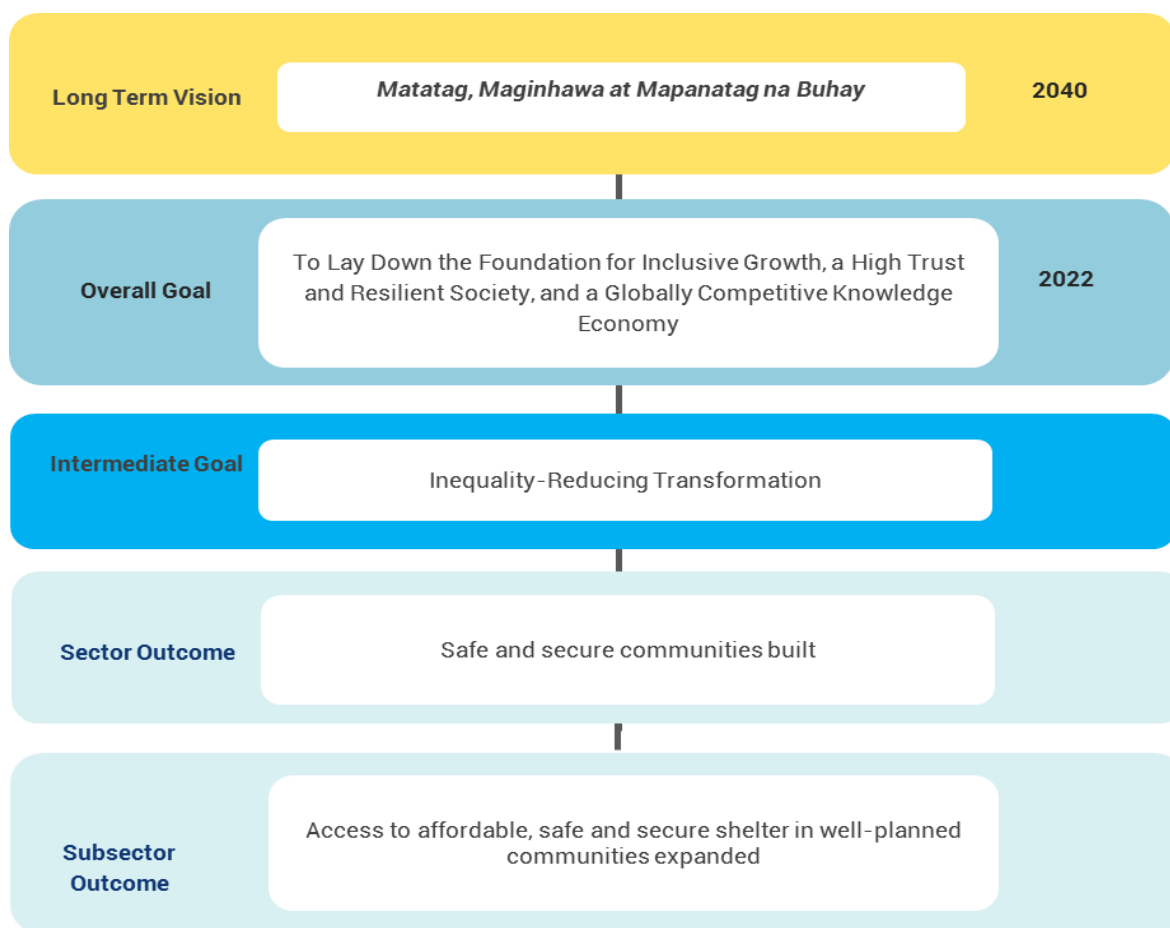
On housing finance, the Home Development Mutual Fund (HDMF) has several programs to address the housing requirements not only of its members but also of the private developers as well (HUDCC). Some of these include:

- i. Credit Facility for Individual Members: This is a financing program for active Pag-IBIG members here and abroad who have completed the required monthly contributions. The housing loan may be used for the following purposes: to purchase a fully developed lot or house and lot, to purchase a lot and construct a residential unit thereon, to construct or complete a house on a lot owned by the member, to make home improvements, and to refinance an existing mortgage with an institution accepted by Pag-IBIG.
- ii. Developmental Housing Loan program for local government units: This program is geared towards sustaining the capabilities of LGUs to track the development and implementation of housing projects in their respective localities and to make housing accessible and affordable to its employees and constituents.

## Strategic Framework

Under the pillar *Pagbabago*, the PDP/CL-RDP 2017-2022 aims to strengthen socioeconomic resiliency by building safe and secure communities. This section

focuses on expanding access to affordable, adequate, safe and secure shelter in well-planned communities.



*Subsector Outcome: Access to affordable, adequate, safe, and secure shelter expanded*

**Strategy 1: Strengthen housing as a platform to address poverty and improve social outcomes**

The housing programs need to be strongly linked with other social development programs since improving living conditions is crucial to reducing poverty and uplifting quality of life. As mentioned in the PDP, there is a need to assess the “multiplier effect” of the provision of housing units as a means to alleviate poverty, generate employment, and spur downstream economic activities. A study may be conducted to assess the impact of the provision of adequate and decent housing

in the region on poverty and social outcomes (e.g. health).

**Strategy 2: Establish stronger partnerships with stakeholders**

The housing sector shall continue strengthening coordination with stakeholders, particularly the local government units in addressing the proliferation of informal settlements, while ensuring effective and efficient provision of housing services. The LGUs need to be fully equipped as they vigorously pursue their role in the prevention of encroachment of public land and open spaces as contained in R.A. 7279 (Urban Development and Housing Act). The civil society as well as NGOs may also be involved to fully address the problem with informal settlements.

### Strategy 3: Support the creation of a Department of Housing and Urban Development (DHUD)

To address the enormous housing need of Central Luzon, the Regional Development Council (RDC) III will support the creation of a strong and well-funded Department of Housing and Urban Development (DHUD) that will pursue the national and regional

housing and urban development goals and objectives. With the creation of an independent housing agency (merging of all key shelter agencies (KSAs)), the implementation of housing programs can be fast-tracked, and housing backlog can be addressed.

## Research and Development Agenda

### *Assessment of Various Socialized Housing Programs in Central Luzon*

This study will look at the region's current state of socialized housing subsidy programs (low interest mortgages, exemptions from taxes or levies, and underpriced and tax-exempt guarantees or risk insurance) and supply answers to the following: 1) What is the current and future demand and supply gap in low cost housing market? 2) What are the accomplishments and shortfalls of the program? and 3) How can the gaps and issues in the programs be addressed?

### *Impact assessment of the provision of adequate and decent housing on poverty and social outcomes in the region*

The key objective of the study is to assist in the development of more logical and integrated policies in relation to the provision of adequate and decent housing in the region. The study will narrate the state of the Housing sector in the region, including current efforts of the government, and then explain what the right to adequate and decent housing is, illustrate what it means for specific individuals or groups, and elaborate on the related responsibilities/obligations of leaders (local government units). It will conclude with an overview of suggested recommendations.

## RDP Targets

Indicators	Baseline Year	Baseline Value	End of Plan Target (2022)	Agency Responsible
<b>Subsector Outcome: Access to affordable, adequate, safe, and secure shelter expanded</b>				
Total housing need	2011-2016	498,809	Decreasing	HUDCC
Number of informal settler families	2016	117,670	Decreasing	NHA
Proportion of urban population living in slums			Decreasing	

PART IV

# **INCREASING GROWTH POTENTIAL ("PATULOY NA PAG-UNLAD")**







# 13

## Reaching the Demographic Dividend



# Reaching for the Demographic Dividend

"Patuloy na Pag-unlad" or Increasing Growth Potential is the third development pillar that supports PDP 2012-2017. This intermediate goal can be further accelerated by maximizing the gains from the demographic dividend—economic growth fuelled by population growth. The United Nations Population Fund (UNFPA) defined demographic dividend as "a boost in economic productivity that occurs when there are growing number of people in the work force relative to the number of dependents."

As stated in the PDP 2017-2022, the demographic dividend stems from the demographic transition when fertility (birth) and mortality (death) rates decline. Because of this transition, the age distribution changes to an extent that less spending is required to meet the needs of the youngest and oldest age groups. This demographic transition needs to be observed and carefully planned for in order to enable the economy to harvest the demographic dividend. Optimizing the demographic dividend is one of the key strategies to be implemented at the national and sub-national levels.

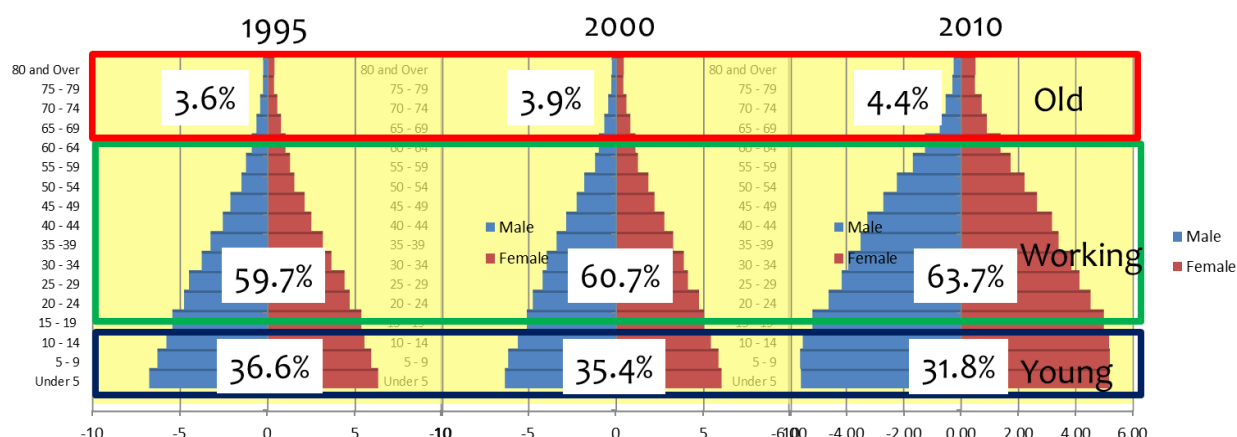
This chapter provides an overview of the key challenges and corresponding strategies to ensure that as the demographic window opens, human capital will become highly productive and not only boost economic growth but also reduce poverty.

## Assessment and Challenges

Central Luzon's population as of August 1, 2015 was 11,218,177 based on the 2015 Census of Population. It is the third largest in the country accounting for 11.1 percent of the national population. In comparison, the 2015 population of the region is higher by 1,080,440 than its 2010 population of 10.14 million, translating to a 1.95 percent annual increase for the period 2010 to 2015. This increase was lower than the population growth rate during the period 2000 to 2010, which was at 2.14 percent.

***Need to manage increasing working-age population.*** In 2015, the country entered the demographic window, a period when a great majority of the population is of working age. In this case, the workforce is greater than the number of dependents, a state which may lead to a considerable increase in income if proper government policies are in place such as increasing the budget for human capital development and establishing a competent labor force.

**Figure 13-1: Change in Population Pyramid (Actual)**



Source of basic data: Philippine Statistics Authority

Figure 13-1 shows a change in the population pyramid from 1995 to 2010. The proportion of the young population (under 5 to 14 years old) declined over the years, while the proportion of older persons (65 above) slightly increased. Noteworthy is the increasing proportion of the working age population (15-64 years old): from 59.7 percent in 1995 and 60.7 percent in 2000, to 63.7 percent in 2010. The median age of the population in the region in 1995 was 21 years old, and 22 years old in 2000. The age-disaggregated data for the latest census in 2015 is not yet available.

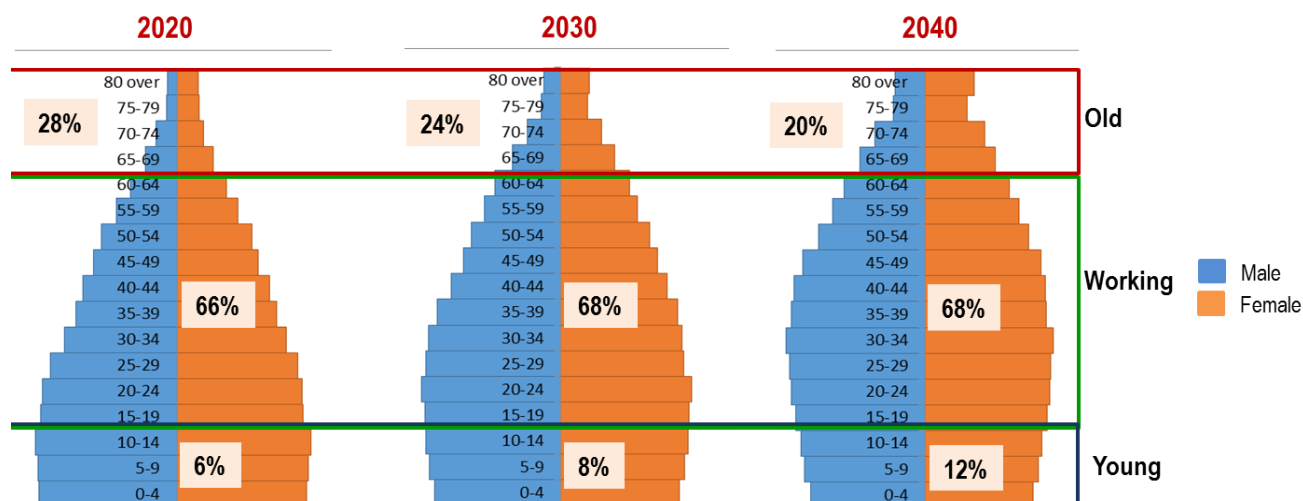
Figure 13-2 shows a change in the pyramid using projected population for 2020 to 2040 (in 10-year intervals). The young dependents are expected to decline drastically from the actual census of population of only 31.8 percent to only 6 percent of the projected 2020 population. On the other hand, old dependents are expected to increase significantly from 4.4 percent in 2010 to 28 percent in the 2020 projection. Over the projected years, old dependents will decline gradually, and young dependents will increase slowly

come 2040, showing a low fertility rate during this period. The working-age population (15 to 64 years old) will increase from 63.7 percent (actual 2010 population) to 68 percent in 2040. By 2040, the proportion of those aged 15 to 29 is expected to comprise about 33 percent of the working-age population, hence the need to improve the access of the young population to quality employment.

**Slow reduction in fertility rates.** The total fertility rate (TFR) (2.8) in the region remains unchanged for the period 2011 to 2013. In the national picture, fertility rates are higher in rural areas than in urban areas, and peaks at age 20-24 (NSO, 2013). The disparity in fertility between urban and rural areas may be attributed to factors of urbanization, such as better education, better access to health and family planning, and better services.

Based on the projected fertility rate, Central Luzon will reach the replacement fertility rate (the rate consistent with maintaining a stable population) of 2.1 by 2025-2030. The total wanted fertility rate is 2 children,

**Figure 13-2: Change in Population Pyramid (Projections)**



Source of basic data: Philippine Statistics Authority, 2010 Census-based Population Projections,  
Figure generated by NEDA Regional office 3

which is 28 percent lower than the actual total fertility rate. As explained in the survey, if all unwanted births could be eliminated, the TFR would drop to 2 children per woman, reaching a wanted fertility level lower than the replacement fertility rate.

In order to fully realize the benefits of the demographic dividend, the government needs to create a policy environment on how the people, particularly the poor, can attain voluntary reduction of fertility rates.

**Increasing incidence of teenage pregnancies.** Data from surveys indicate that teenage pregnancies increased from 29,610 cases in 2013 to 31,577 cases in 2014. Based on the 2013 National Demographic and Health Survey, 25.9 percent of young women aged 15-24 in Central Luzon have begun childbearing; 22.3 percent of young women have given birth, and another 3.6 percent are pregnant with their first child.

Highlights of the results of the Young Adult Fertility and Sexuality Survey 4 (UPPI and

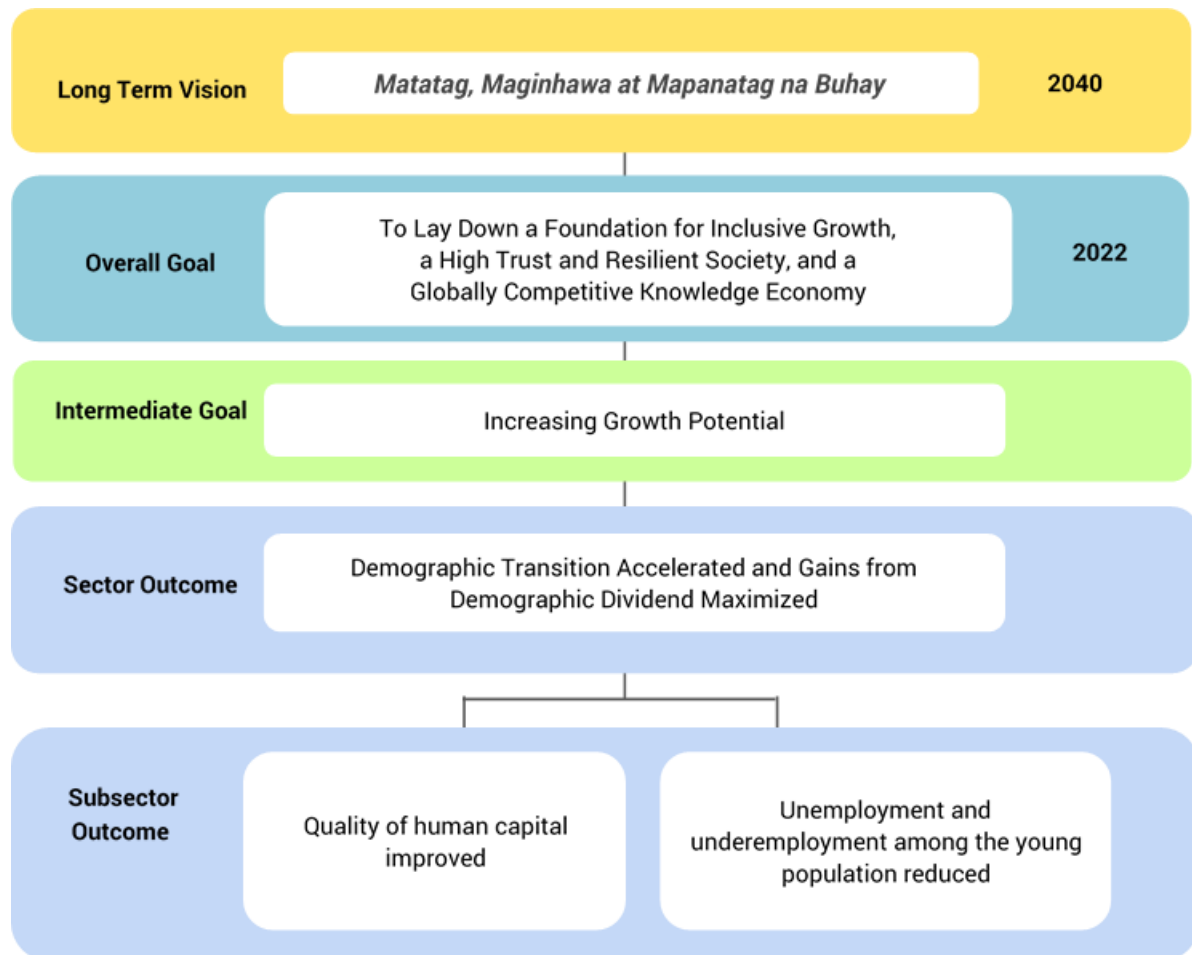
DRDF) were alarming and revealing. It was found that more than half of the youth population have had sexual experience before reaching age 18. The rising number of teenage pregnancies is a major social and health concern. Young mothers are more likely to suffer from severe complications during delivery that may result in higher morbidity (i.e. prevalence of disease), as well as mortality for both the mother and the child. Furthermore, early childbearing among the youth often reduces opportunities in education and employment, and is often associated with higher levels of fertility for women.

**High levels of unemployment and underemployment especially among the young population.** Although the unemployment rate declined over the period 2011 to 2016, the region's average is still above the national level. Based on PSA data, the region's Manufacturing sector posted a very significant growth from negative 1.3 in 2013 to 19.1 in 2014. Despite the double-digit growth in the

Manufacturing sector, the region posted a high unemployment rate. The unemployment challenge is primarily a youth phenomenon, as a number of jobseekers are young people who are unable

to secure employment. Age disaggregated data for unemployment in 2013 reveals that Central Luzon is among the regions with the highest youth unemployment rate at 21.1 percent.

## Strategic Framework



### *Subsector Outcome 1: Quality of human capital improved*

To fully realize the demographic dividend, increasing the budget for human capital development can help improve the quality of the workforce. As identified in Mapa (2014), “three relevant government policies

that had major influences in accelerating the demographic transition are: (a) health services, (b) family planning and (c) education.” Hence, ensuring access to quality education and youth-friendly health services for teenage girls are necessary to prepare them as they enter the working age to realize the demographic dividend.



### **Strategy 1: Push for the full implementation of the Responsible Parenthood and Reproductive Health (RPRH) Law**

The full implementation of RPRH Law will play a critical role in guaranteeing the creation of the demographic dividend. As identified in the PDP 2017-2022, there will be aggressive efforts to ensure that families will be of a size that can be adequately cared for. Moreover, initiatives need to be complemented with measures to delay childbearing and lengthen the space between births. Efforts in promoting family planning are essential to achieve this. With the full implementation of the RPRH law, several key development indicators will be improved such as the contraceptive prevalence rate, unmet need for family planning, total fertility rate, and maternal mortality rate, among others.

### **Strategy 2: Improve quality of education**

Strategies are laid out for achieving Outcome 2: Lifelong learning opportunities for all ensured under the intermediate goal of “Reducing Inequality in Economic Development Opportunities” (see Chapter 10: *Accelerating Human Capital Development*).

### **Subsector Outcome 2: Unemployment and underemployment among the young population reduced**

According to the World Bank, “the demographic dividend that will speed up the country’s growth rate will only be realized if there are enough jobs to match the growing working-age population (cited in Ordinario,

2015). The PDP 2011-2016 sought to foster inclusive growth based on massive quality employment creation.

### **Strategy 3: Ensure that job opportunities for the youth match the skills requirement of industries**

A growing number of adults (particularly those aged 15 to 24) will be productive only when there is flexibility in the labor market to allow expansion. The PDP aims to support Agro-industry, Manufacturing and Construction, in addition to Services sectors such as Information Technology and Business Process Management (IT-BPM) and Logistics. Furthermore, as identified by the ILO, “policy support to specific sectors will require a careful integration of gender and youth issues in order to ensure that efforts do not aggravate gender disparities in the labour market and that young women and men are able to benefit from the growth of priority and dynamic sectors.”

In order to attain Outcome 3: *Income earning abilities increased* under the intermediate goal of “Reducing Inequality in Economic Development Opportunities”, strategies in improving employment will be pursued. This includes among others, the promotion of skills development and retooling through continuing education and training (see also Chapter 10: *Accelerating Human Capital Development*).

# Research and Development Agenda

## Study on factors influencing high youth unemployment in the region

The unemployment of young adults particularly long-term unemployment may have life-long consequences including lower earnings and ill health. It thus widens inequality between rich and poor – because the poor are said to be the most affected. This study on the region's youth unemployment aims to gather data on the characteristics of unemployed youth and identify possible strategic interventions by both the government and the private sector that can reduce youth unemployment.

## Study on the high teen pregnancy rates in Central Luzon

This study aims to investigate the rise in the incidence of teen births in the region. It will examine teenage pregnancy alongside behavior such as sexual activity and the use of contraceptives. It seeks to provide insights on significant variations in the teen pregnancy rates across areas, income, educational attainment, and religious affiliation, among others. The research will be useful in addressing early pregnancy.

## RDP Targets

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
<b>Subsector Outcome 1: Quality of human capital improved</b>				
Total fertility rate	2013	2.8	2.1	DOH 3/ POPCOM 3
Total wanted fertility rate	2013	2.0	Equals total fertility rate	DOH 3/ POPCOM 3
Contraceptive prevalence rate	2013	61.2	65	DOH 3/ POPCOM 3
Unmet need for family planning -limiting -spacing	2013	13.1 6.8 6.3	Zero unmet need by 2018 (poor population) and by 2022 (all population)	DOH 3/ POPCOM 3
Maternal mortality rate	2015	43	Decreasing or no increase in prevalence	DOH 3
Teenage pregnancy cases	2015	23,674	Decreasing	DOH 3/ POPCOM 3
National achievement test results -elementary -secondary	SY 2014- 2015	73.39 48.89	Within the 75% minimum standard	DepED 3
<b>Subsector Outcome 2: Youth unemployment reduced</b>				
Young adult unemployment rate	2013	21.1	Decreasing	PSA
Higher education graduates (no.)	2015- 2016	67,503	Increasing	CHED 3
TVET employment rate				TESDA 3

# 14 Vigorously Advancing Science, Technology, and Innovation



# Vigorously Advancing Science, Technology and Innovation

Science, technology and innovation (STI) is a vital foundation for future economic development. The present administration has given importance to the promotion of science, technology, and the creative arts to enhance innovation and creative capacity towards self-sustaining and inclusive development and has made it an integral element of its 0-10 point Socio-Economic Agenda.

STI also plays an important role in achieving the region's sustainable and inclusive development objectives. Access to new and appropriate technologies can drive productivity, build skills, and create jobs that can ultimately improve living conditions and help reduce poverty.

Long-term investments in building local STI capacity can lead to innovations to benefit existing firms, create new firms or even build entirely new industries that can provide high-quality jobs for the people in the region. Technology adoption also allows the region's industries and people to access foreign technologies to benefit from innovations created in other countries.

STI can also lead to the creation of new public goods and services that will allow Central Luzon to better address development needs, especially of the disadvantaged in the areas of health, education, energy, disaster resiliency, and climate change adaptation, among others.

Due to the long gestation period involved in developing this capacity, it is important to sow these early. This chapter discusses the priority strategies and outcomes needed to increase the region's potential growth through innovation, which will build the foundation for a globally competitive knowledge economy.

## Assessment and Challenges

Currently, there is still a low level of expenditures and intensity, and weak innovation in the country due to linkages in local and global STI ecosystems. weaknesses in STI human capital, low In the Global Innovation Index<sup>1</sup> (GII) research and development (R&D) Report of 2016, the Philippines ranked 74th

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<sup>1</sup> The Global Innovation Index aims to capture the multi-dimensional facets of innovation by measuring the levels of innovation of 128 economies. The index is composed on seven pillars namely: institutions, human capital & research, infrastructure, market sophistication, business sophistication, knowledge & technology outputs and creative outputs. This is co-published by Cornell University, INSEAD and the World Intellectual Property Organization (WIPO).

among 128 economies in terms of overall innovation, the simple average of the input and output sub-index scores.

The country also ranked 5th among the 7 member-nations of Association of Southeast Asian Nations (ASEAN) that were included in the survey. The Philippines was ahead of Cambodia (95th) and Indonesia (88th), but lagged behind Singapore (6th), Malaysia (35th), Thailand (52nd), and Vietnam (59th).

A number of factors can be attributed to the weak performance of the STI sector and these include the following:

***Weak Science, Technology and Innovation (STI) culture.*** Public awareness and interest in STI is quite low. Many sectors still fail to recognize, appreciate, and understand the use of technology and science-based information in their daily activities. Weaknesses in social and professional circles in the research community and the general public still persist. There is likewise an apparent inability in the research community to match its research outputs with the needs of its end users.

There are reports of low adoption and application of technologies among micro, small, and medium enterprises (MSMEs), and sectors like agriculture and fisheries notwithstanding the vigorous implementation government-initiated technology transfer programs such as the Small Enterprise Technology Upgrading Program as well as the Venture Financing Program of the DOST. This can be attributed to a low level of awareness of available research products and outputs (in the form of technologies, processes, or

services) derived from public R&D activities, and of the various incentives provided by government to support innovation. Other reasons include the weak links between technology generators and users, capacity constraints of users, and inadequate LGU support.

***Low Government Spending on STI.*** The country's total R&D expenditures in 2013 totaled to P15.92 billion, which was a mere 0.14 percent of Gross Domestic Product (GDP). This was substantially below the 1 percent benchmark recommended by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the global average of 2.04 percent. It is also low compared to other ASEAN countries, such as Vietnam (0.19 %), Thailand (0.36%), Malaysia (1.09%), and Singapore (2.0%) (UNESCO Institute for Statistics).

The country's relatively low ranking (95th) in the GII Report was pulled down by weaknesses in human capital and R&D, with a score of 22.7 out of 100. This is due to the low public and private expenditure on education and R&D as well as low tertiary inbound mobility, which is the percentage of foreign students studying in a given country. The bulk of R&D spending (60%) came from the public sector, and they converge in the National Capital Region (NCR), Region IV-A (CALABARZON) and Region III (Central Luzon). Expenditures were directed towards R&D on agricultural and industrial production and technology, protection and improvement of human health, control and care of the environment among others.

Central Luzon ranked among the top three regions in terms of R&D expenditures.

The region spent P 766.34 million for R&D in 2013 with the bulk of the spending attributed to government institutions which stood at P 604.28 million. In terms of R&D intensity, the region performed rather poorly as its R&D expenditure was a mere 0.08 percent of its regional GDP.

***Inadequate S&T Human Resources Engaged in STI R&D.*** As of 2013, the country has a total of 36,517 R&D personnel, of which 26,495 are key researchers (scientific, technological, and engineering personnel engaged in R&D), while the rest are technicians and support personnel. This means that there are only 270 researchers for every one million Filipinos, falling short of the UNESCO norm of 380 per million population and the 1,020 researchers per million population average across developing economies in East Asia and the Pacific.

In terms of regional performance, the National Capital Region and the CALABARZON Region came in first and second in 2013, at 5,393 and 4,111 researchers, respectively. During the same period, Region III ranked third with 1,817 registered researchers. The figure for Region III translates to about 162 researchers per million of its population, which is significantly below the national average. It is worthy to note that as much as 59 percent of these researchers in the region come from the private industries.

Of the total researchers in the country from the government, higher educational institutions (HEIs) and private non-profit sectors, 14 percent had PhDs, 38 percent had Master's degrees, while 34 percent had

Bachelor of Science (BS) degrees up to post BS degrees.

The low number of researchers in the regions reflects the propensity of the educational system in the country to produce graduates outside of Science, Technology, Engineering, and Mathematics (STEM) programs. Data from the DepEd Region III reveal that a mere 17 percent of the 172,779 senior high school students were enrolled in STEM courses during the SY 2016-2017 seemingly indicating a failure of the educational system to attract more students to pursue this academic track. Students are still attracted to other academic tracks outside of STEM. The latest GII Report indicates that in terms of graduates in science and engineering, the country garnered a score of 25.5 out of 100 and ranked 26th.

***Difficulty in Increasing Employment Opportunities and Retaining S&T Human Capital.*** Even with the low number of STEM graduates, not all of the graduates are easily absorbed into the local workforce not to mention the low pay they receive if they eventually get employed. An assessment of the country's innovation system conducted by the United States Agency for International Development-Science, Technology, Research and Innovation for Development (USAID-STRIDE) Program revealed that the supply of STEM graduates exceeds local demand. As a result, there is an out-migration and underemployment of many skilled, locally-trained scientists and engineers.

Brain drain contributes to the problem as potential researchers, scientists, and



engineers, who are the key actors for the innovation ecosystem to flourish, prefer to seek employment overseas due to better economic opportunities and potential for advancement. Better pay and incentives are simply not available for researchers to stay in the Philippines and serve the country's interest.

***Absence of a Vibrant Intellectual Property Culture.*** The output of R&D is commonly measured in terms of patents applied and granted to Filipino residents. However, reports show that many universities do not have the expertise to market their patent portfolios for commercial use. There may be a need to review existing patent application and approval system to make it more palatable to inventors and researchers.

From 2005 to 2015, there was an annual average of 209 patents, 599 utility models and 598 industrial designs applications filed. In the same period, an annual average of 54 patents, 446 utility models and 502 industrial designs were granted. In 2016, the World Economic Forum (WEF) ranked the Philippines 86th out of 128 economies for the number of patents filed under Patent Cooperation Treaty per million population. Invention patents granted to local inventors represent the smallest share in the number of intellectual properties granted from 2001 to 2013. Industrial design and utility models consistently comprise the majority of the intellectual properties granted.

The country also needs to catch up in terms of research publications since the number of scientific publications in peer-reviewed journals per million population stands at 55, substantially below that of ASEAN

member states like Singapore (10,368), Malaysia (1,484), Thailand (478), and Vietnam (105). Poor performance in publication is in part due to the very low R&D outputs of researchers.

***Weak Linkages among Players in the STI Ecosystem.*** The 2009 Survey of Innovation Activities as well as the 2014 USAID-STRIDE Assessment of the Philippine Innovation Ecosystem discovered that innovation actors have weak cooperation, partnerships, and trust among themselves. Most HEIs perceive collaboration with companies as outside of their core mission and a risk for exploitation. Consequently, firms report that difficulties in convincing the HEIs of their shared interests stems from resentment, suspicion, and distrust. In effect, firms end up with little technical assistance from the government and research institutions.

There have been previous efforts and initiatives to link the R&D players in the region. A significant endeavor to address this weakness has been the creation of the various regional R&D consortia on agriculture, industry, and health. However, more work needs to be done as far as pushing for demand or market driven types of research from these consortia, which can only be achieved with the strong linkage and partnership of the regional consortia members, private industries, and government agencies.

***Restrictive Regulations which hamper Implementation of R&D Programs and Projects.*** The tedious government procurement process hampers the immediate procurement of equipment and other needed materials for research, which

in turn delays the implementation of R&D programs and projects. This was confirmed by the USAID-STRIDE study, which revealed that restrictive regulations make the procurement of equipment and consumables for research extremely slow and unnecessarily complex, decreasing research productivity, publication potential, and speed-to-market of innovations. In addition, the report said that government research grants do not usually compensate universities for the salary of faculty members' research activities. This practice is rarely seen outside the Philippines.

***Inadequate STI Infrastructure.*** Inadequacy in STI infrastructure such as laboratory facilities, testing facilities, and R&D centers persist in the country. Many existing infrastructures need upgrading to

improve their services, which contribute to the lack of absorptive capacity in research institutions. The USAID-STRIDE report also cited that the public institutions failed to provide young researchers with equipment packages, particularly those returning from PhD studies abroad with more advanced research agendas. The Philippines' leading research institutions also remain concentrated in Luzon.

The same issues and problems also manifest in many of the research facilities in Central Luzon. Most R&D facilities, especially those that are operated by private and government colleges and universities, are poorly equipped and in dire need of upgrading which add to the difficulty of undertaking research activities. These R&D centers usually rely on external funding to upgrade their facilities and equipment.

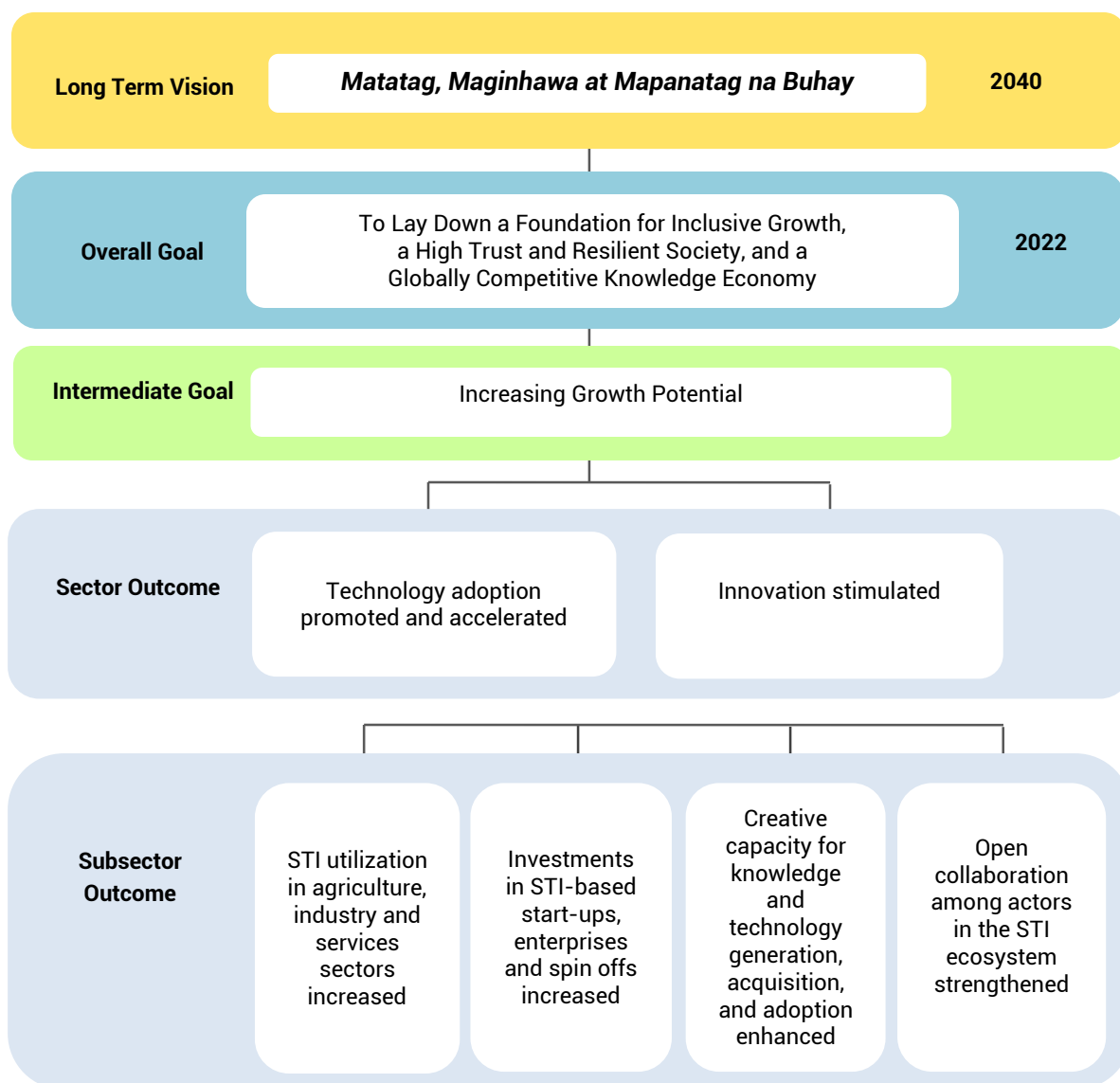
## Strategic Framework

STI will contribute to the achievement of the overall national goal of establishing the foundation for inclusive growth, a high-trust and resilient society and a globally competitive knowledge economy by increasing the country's potential growth. Increasing STI in agriculture, industry, and services sectors as well as investments in technology-based start-ups, enterprises and spin-offs will result in the promotion and acceleration of technology adoption. Enhancing the creative capacity for knowledge and technology generation, acquisition and adoption, and strengthening open collaboration among actors in the STI ecosystem will stimulate innovation.

### ***Subsector Outcome 1: Increased STI utilization in agriculture, industry, and services sectors***

#### **Strategy 1: Promote commercialization and utilization of technologies from publicly funded R&D**

The government will aggressively promote and accelerate the dissemination, transfer, commercialization, and utilization of technologies derived from publicly-funded S&T activities. Those technologies with high commercial potential shall be given priority assistance. The application of these knowledge, technology, information, and processes to agriculture, industry, and services sectors will be given priority to



improve productivity and increase incomes and jobs especially in the countryside. The government will also foster the development of networks and markets, and undertake effective marketing strategies through extensive use of quad-media and the organization of fora, fairs, and exhibits.

### Strategy 2: Develop a vibrant Intellectual Property Rights (IPR) culture

The initiative to improve patent applications performance through the Patent Incentive Package will be

strengthened. The application process should also be revisited and improved by streamlining certain procedures. Likewise, the provision of the Philippine Technology Transfer Act of 2009 particularly on ownership and revenue sharing will be institutionalized. Aggressive and sustained advocacy to increase the appreciation and understanding of IPR shall be undertaken in order to leverage intellectual property protection as an essential component of the innovation ecosystem. The government will also conduct information

campaigns on the importance of intellectual property rights to strengthen the public's awareness with the end view of creating an intellectual property culture among Filipinos.

### *Subsector Outcome 2: Increased investments in STI-based startups, enterprises and spin-offs*

#### **Strategy 3: Encourage more innovative financing mechanisms and private sector investments**

The government will create an investment environment that encourages more private sector participation, including angel investments, venture capital, and crowd fund-sourcing for STI-based startups, enterprises, and spin-offs. The investment provided may be a one-time investment to help the businesses launch or a continuing injection of support fund to help incubate startups during the early stages of their development. The government will strengthen existing programs and create new ones to provide financing for commercially viable innovation projects to bridge the gap between R&D and commercialization.

#### **Strategy 4: Provide support mechanisms for startups and MSMEs in the regions**

The government will strengthen the policy and regulatory environment, and introduce new mechanisms to support technopreneurs, startups, spin-off companies, and MSMEs. It will provide platforms for technology commercialization in partnership with the private sector and HEIs.

The Small Enterprise Technology Upgrading Program will be expanded to enable more MSMEs to access

government assistance such as provision of innovative and cost-effective facilities, provision of technical support for compliance with product and quality standards, packaging and labeling, as well as training and consultancy services.

DOST will also launch the DOST Appropriate Support to Start-Ups through Innovation, Science and Technology (DOST ASSIST) Program to similarly assist microenterprises and aspiring entrepreneurs, who otherwise cannot be supported through SETUP, to be able to join the ranks of successful businesses. The DOST ASSIST Program shall provide assistance for Technical Trainings, Business Related Trainings such as Marketing and Business Mentoring, Big Brother-Small Brother Guidance, Consultancy/Testing/Packaging and Labeling and Other S&T Services, and Technology/Equipment.

The Startup Ecosystem Development Program will be pursued to usher in a new breed of businesses that will thrive in an innovation economy. A startup economic zone will be established, and assistance in connecting startups with industry, including multinational corporations and potential markets will be provided.

### *Subsector Outcome 3: Enhanced creative capacity for knowledge and technology generation, acquisition and adoption*

#### **Strategy 5: Support research and development agenda**

The government will heavily invest in building an efficient system of knowledge creation and technology generation. As suggested in the Organization for

Economic Cooperation and Development Innovation Strategy 2015, long-term funding for curiosity-driven research must be preserved, as this has been the source of many significant innovations in the past and has high social returns.

Since the Philippines is now in the era of trade globalization, researches must lead to creation of new or improved products or services that meet the global standards to make them competitive in the ASEAN markets as well as in the whole world.

Funding support will be provided for the implementation of the Harmonized National R&D Agenda (HNRDA) which defines the country's priorities and guides public investment in R&D. The agenda will consolidate and promote basic and applied research in the areas of agriculture, aquatic, natural resources, health and nutrition, drug discovery and development, industry, energy, defense and security, and emerging technologies among others. STI initiatives for the creative industries, tourism, and other services industries will also be undertaken. At the regional level, the R&D Agenda for Central Luzon will be harmonized with the overall blueprint embodied in the HNRDA. The earlier efforts undertaken through the initiatives of the Regional Development Council, DOST and CLAARRDEC to come up with regional R&D plan must be continued in order to have a unified and relevant agenda in the region.

Public investments will be channeled to cyber security and other technology-related ventures. Investments will be allocated towards a Self-Reliant Defense Posture that aims to develop a local

defense industry to sustain the material and non-material requirements of the defense forces.

To catch up with the rapid global technological trends and developments, the Philippines will engage in more collaborative R&D activities and invest in infrastructure buildup to develop its capabilities and maximize the use of the following core and emerging technologies: a) Information and Communications Technology; b) Biotechnology for Industry, Agriculture, Health, and Environment; c) Nanotechnology; d) Genomics; e) Nuclear Science for Energy, Health, Agriculture, and Industry; f) Artificial Intelligence; g) Space Technology; and h) disaster risk reduction and climate change adaptation, and mitigation.

#### **Strategy 6: Increase funding for human resource development**

Increasing the number and quality of researchers, scientists, and engineers is an essential strategy for the establishment of a vibrant STI ecosystem. The target is to achieve and even surpass the UNESCO norm of 380 researchers, scientists and engineers per million population by 2025 from its current level of 270. This can be achieved by providing continuous support and funding for ongoing S&T scholarships such as the following:

- a) Expanded Specialized Science Secondary Education Scholarship;
- b) Expanded Undergraduate S&T Scholarships for Inclusive Development; and,
- c) Expanded S&T Graduate (Masters/PhD) Scholarships.

### **Strategy 7: Tap foreign and Overseas Filipinos (OFs) expertise**

Mechanisms will also be established to encourage overseas based experts to share their knowledge and specializations to the academe and industry by leveraging the use of Information and Communication Technology (ICT). The *Balik Scientist* Program and other related initiatives will be strengthened. The potential role of OFs in developing the country's STI capability will be recognized and pursued by providing opportunities for them. The hiring of foreign scientists and experts will be explored in areas where expertise is locally unavailable to leapfrog product/process development and build the capacity in the field. Institutional linkages through OFs, especially in ASEAN, will also be fostered to induce more R&D collaboration and capacity building activities.

### **Strategy 8: Strengthen STI Infrastructure**

STI infrastructure development will be undertaken across the country in order to address region- specific concerns. Niche centers for R&D will be established to capacitate regional academic institutions and improve industry competitiveness. Moreover, modernization of existing R&D facilities and other STI infrastructures, both in the public and private HEIs, will be pursued to enable them to carry out higher-level R&D activities. The government will also invest in the establishment of product development centers, materials and products testing facilities, and disaster risk reduction facilities. Improvement of internet connectivity by putting in place a robust ICT infrastructure, particularly the

national broadband infrastructure, will be given priority to boost productivity of research and other STI activities. The government is currently laying the groundwork for the rollout of its fiber optic cable network under its "Convergence Program" to link national government agencies in a fiber-optic network and through shared resources.

### **Strategy 9: Establish and promote innovation hubs and other similar mechanisms**

Innovation hubs will be established in strategic locations to include food innovation centers and shared service facilities. The country will position itself to become the global hub for Disaster Risk Reduction and Climate Change Adaptation and Mitigation to provide a platform for sharing technologies, lessons and best practices in responding and recovering from natural disasters such as typhoons, floods, and volcanic eruptions.

The Department of Trade and Industry will coordinate closely with the Department of Science and Technology (DOST) and other government agencies, the academe, the private sector, and Peoples Organizations on the necessary investments in scientific and technological research, as well as government support for science and technology parks and local R&D and training (Banatao, 2016).

Moreover, there are existing services that that should be continued and bolstered for innovation to take off, such as the following: a) One Lab (Harmonized Laboratory Testing Services), b) One Expert, and c) One Store.



**Strategy 10: Foster STI culture**

The culture of inventiveness and creativity will be promoted in all sectors and as early as possible. Programs to boost the interest of young students to pursue STEM courses and the creative arts as viable career options will be pursued. Communicating STI through various media and in partnership with different stakeholders will be carried out to increase public awareness and interest on the importance of STI in daily life.

STI culture will be inculcated upon policy makers and government officials and employees for more effective decision making. Moreover, being a major user and consumer of products and services, the government can serve as a showcase and promoter of innovative and STI-based solutions. The government will also support LGU-led innovation activities.

***Subsector Outcome 4:  
Strengthened open collaboration  
among actors in the STI ecosystem*****Strategy 11: Strengthen Tri-partite collaboration**

Collaboration in R&D based on the Triple Helix model, which involves the coordination and cooperation of university, industry, and government will be strengthened. It will be facilitated through the elimination of institutional bottlenecks for joint research activities, such as burdensome processes and administrative procedures, particularly in the case of public higher education and research institutions. The government will also leverage public R&D grants, tax, and other incentives to increase productivity. Efforts will be pursued to harmonize the R&D undertakings of the three regional

consortia, namely: the Central Luzon Agriculture and Aquatic Resources Research and Development Consortium (CLAARRDEC), Central Luzon Industry and Energy Research and Development Consortium (CLIERDEC) and Central Luzon Health Research and Development Consortium (CLHRDC). Private sector participation in the research prioritization of these consortia will also be aggressively encouraged to guarantee the relevance and usefulness of research generated products and outputs to their intended end-users.

**Strategy 12: Intensify international cooperation in STI**

International cooperation will be pursued more aggressively to enhance the flow of and benefit from a wide range of existing knowledge, and technologies that are being generated by other countries. Existing fora such as in ASEAN, Asia-Pacific Economic Cooperation and other similar platforms for dialogue and collaboration will be utilized.

Public and private STI institutions will be encouraged to participate and collaborate with international partners in research platforms that seek solutions to common regional concerns such as food security, climate change, disaster risk reduction, resiliency and preparedness, and the conservation of resources and biodiversity. These research platforms necessitate specific and strong support for policies that can: a) facilitate the mobility of S&T experts, researchers, academics and students and other highly skilled human capital, and b) advance cross-border education and inter-university collaboration, in order to foster innovations directed at solving common regional concerns.



## RDP Targets

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
Proportion of high tech agriculture, industry and services value added in sectoral value added	--	No data	To be determined	
Share of agriculture, forestry and fisheries and industry and services R&D to sectoral Gross Value Added	--	No data	To be determined	
Total number of Filipino patent registered	2016	31	42	
Total number of Filipino utility model registered	2016	555	833	
Total number of Filipino industrial design registered	2016	516	691	
Percent of Technology Business Incubations locators that graduated	--	No data	To be determined	
R&D expenditure as proportion of GDP	2013	0.14	0.50	
WEF-Global Competitiveness Report (GCR) Innovation Ranking among ASEAN member rankings	2016	5/7	Improved	
Researchers (in full time equivalent) per million population	2013	270	300	
WED-GCR Technological Readiness Ranking among ASEAN member countries	2016	4/7	Improved	
Number of Technology Transfer Agreements	--	No data	To be determined	
Number of scientific articles published by Filipino authors	2013		To be determined	



PART V

# **ENABLING AND SUPPORTIVE ECONOMIC ENVIRONMENT**





# 15

## Ensuring Sound Macroeconomy



# Ensuring Sound Macroeconomy

In order to achieve the region's intermediate goals of reducing inequality and increasing growth potential, Central Luzon needs to sustain a stable, sound, and supportive macroeconomic and financial climate. Providing this economic environment sends a clear signal to the private sector to confidently invest and create jobs in the region. Macroeconomic stability is a keystone in generating investments and fuelling economic growth.

This chapter lays down the strategies for the region to continue capitalizing on its robust economy so that all the sectors of society, especially the poor, will share in the fruits of its growth.

## Assessment and Challenges

### Population and GRDP Growth Targets

***Population growth decelerated from 2.61 percent in 1990-2000 to 2.11 percent in 2000-2015.*** Central Luzon's population is the third largest in the country, accounting for 11 percent of the national population. Based on data from the Philippine Statistics Authority, from 6.3 million in 1990, Central Luzon's population rose to 8.2 million in 2000, 9.7 million in 2007, 10.1 million in 2010, and then to 11.2 million in 2015. Population growth, however, decelerated from an annual average of 2.61 percent in the period 1990-2000 to 2.11 percent in the period 2000-2015. Population is expected to expand to 12.4 million by 2020 or an increase of about 2 percent from the 2010 level.

***Central Luzon held a stable performance in the past six years from 2011 to 2016 as its GRDP expanded by 7.1 percent, faster than the 6.1 percent national average.*** The

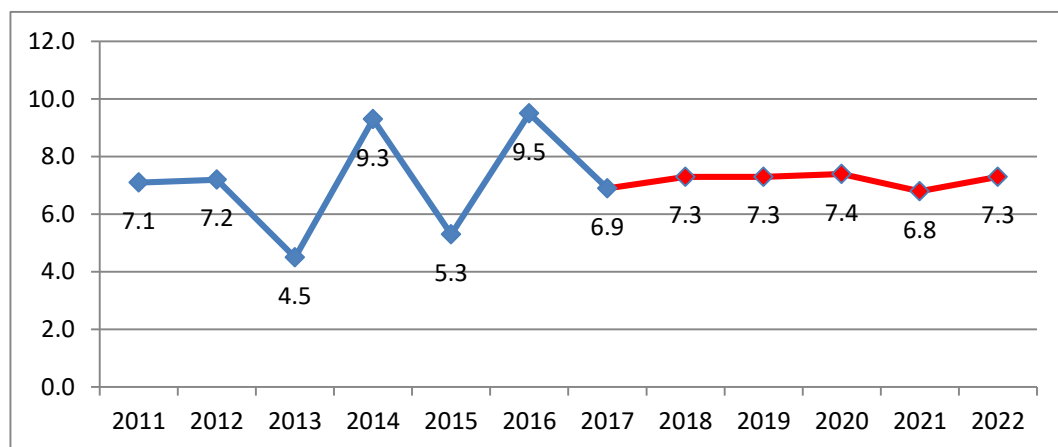
region's output of goods and services grew by 9.3 percent between 2013 and 2014 and by 9.5 in 2016 as presented in Figure 15-1. The blue colored line in the figure shows the growth performance of the region from 2011 to 2016 while the red colored line is the growth forecast for 2017 to 2022 in a high case scenario. The region's economy declined from 7.2 percent in 2012 to 4.5 percent in 2013 due to the slowdown of the region's Industry sector primarily in Manufacturing.

Central Luzon continues to be the third biggest contributor to the national economy with 9.5 percent share of the GDP in 2016.

Average contribution to GDP growth is 9.0 percent from 2010 to 2015. Growth rate is expected to be sustained at a range of 6.3 to 7.3 percent by the end of 2022. In terms of sectoral contribution in 2015, the region has the highest share to the national agricultural production at 16 percent and the third largest in both Industry and Services sectors



**Figure 15-1: Real GRDP Growth Performance 2011-2016 and Growth Forecast 2017-2022**



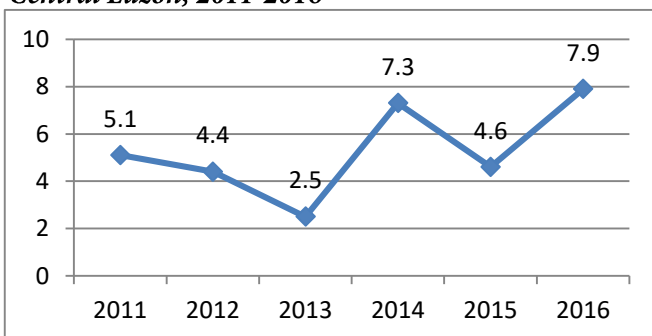
Source: Philippine Statistics Authority

at 12.2 and 6.5 percent respectively. Provided in Table 15-1 is the gross value added by industrial origin of all sectors in the region from 2010-2015. The in Agriculture, Hunting, Forestry, and Fishery (AHFF) had an average growth rate of 4.3 percent from 2011-2016, while Industry had 9.8 percent and Services 5.6 percent.

With the increase in population, growth in the production of goods and services must be further improved. Growth in per capita income reflects how the total production of an economy can be felt and shared by its

Industry and Services sectors dominated the regional scene in 2011 to 2016, with a lion's share of 80 – 85 percent during the period. The region's GRDP performance population. Real GRDP per capita in the region (Figure 15-2) has an average growth rate of 5.3 from 2011-2016. The region reached its highest per capita output in 2014 and 2016 with 7.3 and 7.9 percent growth, respectively. The per capita index of Central Luzon is 80 to 87 percent with reference to the national average. GRDP per capita growth rate is expected to move in a range of 4.5-6.5 percent from 2017 to 2022.

**Figure 15-2: Real GRDP per Capita Growth Rate in Central Luzon, 2011-2016**



Source: Philippine Statistics Authority

**Sustaining a favorable economic development climate is essential.** A sound and favorable economic environment is needed as a contributory factor in sustaining economic growth. Such is essential in reducing inequality and ultimately in alleviating poverty in the region. Despite the region's robust economy over the last six years, poverty incidence and income disparity are still evident. GRDP per capita has not shown significant improvement.

*Table 15-1: Gross Value Added by Industrial Origin (Real and Percent Distribution)*

Sector	2011			2012			2013			2014			2015			2016			Ave. GR 2010-2015
	in Php million	% Share	in Php million	in Php million	% Share	in Php million	in Php million	% Share	in Php million	in Php million	% Share	in Php million	in Php million	% Share	in Php million	in Php million	% Share		
I. AGRICULTURE, HUNTING, FORESTRY AND FISHING	89,646	16.4	97,832	16.8	17.0	103,125	114,649	17.1	115,327	16.4	116,053	15.0	4.3						
a. Agriculture and Forestry	70,861	13	79,064	13.6	13.8	83,943	95,400	14.3	96,200	13.7	97,056	12.6	5.3						
b. Fishing	18,785	3.4	18,768	3.2	19,182	3.2	19,249	2.9	19,126	2.7	18,996	2.5	(0.1)						
II. INDUSTRY	233,021	42.6	245,523	42.2	41.0	49,263	88,953	43.2	308,378	43.8	358,837	46.4	9.8						
a. Mining and Quarrying	2,155	0.4	3,053	0.5	3,730	0.6	3,404	0.5	2,071	0.3	2,493	0.3	11.5						
b. Manufacturing	187,736	34.3	194,000	33.4	191,425	31.5	227,997	34.1	243,915	34.6	286,414	37.0	10.3						
c. Construction	30,837	5.6	35,454	6.1	38,243	6.3	40,542	6.1	45,058	6.4	47,996	6.2	7.9						
d. Electricity, Gas and Water Supply	12,294	2.2	13,016	2.2	15,864	2.6	17,010	2.5	17,333	2.5	21,932	2.8	10.4						
III. SERVICES	224,163	41	238,027	40.9	42.0	254,860	265,386	39.7	280,579	39.8	298,385	38.6	5.6						
a. Transport, Storage & Communication	54,102	9.9	57,274	9.9	59,519	9.8	62,340	9.3	67,102	9.5	70,295	9.1	5.0						
b. Trade and Repair of Motor Vehicles, Motorcycles, Personal and Household Goods	46,402	8.5	49,488	8.5	52,876	8.7	53,577	8.0	55,942	7.9	58,978	7.6	4.6						
c. Financial Intermediation	31,728	5.8	34,211	5.9	38,688	6.4	43,265	6.5	45,734	6.5	48,714	6.3	9.0						
d. Real Estate, Renting and Business Activities	42,144	7.7	45,167	7.8	49,462	8.1	51,329	7.7	54,791	7.8	57,780	7.5	6.5						
e. Public Administration & Defense, Compulsory Social Security	13,070	2.4	13,886	2.4	14,430	2.4	15,032	2.2	15,232	2.2	16,088	2.1	3.6						
f. Other Services	36,716	6.7	38,002	6.5	39,886	6.6	39,840	6.0	41,777	5.9	46,527	6.0	4.2						

Source: Philippine Statistics Authority

Therefore, developing and more so sustaining an economic development climate conducive for all is an overwhelming task for the government. Given the region's strategic location and resource endowments, to create a fine investment climate requires putting in place good macroeconomic policies that need strong political will and broad public support.

**Table 15-2: Revenues by Province in Central Luzon, 2013-2015**

Province	2013	2014	2015
Aurora	539.11	591.90	674.34
Bataan	1,228.45	1,607.66	1,701.27
Bulacan	2,690.55	3,256.54	3,588.73
Nueva Ecija	1,798.42	2,031.23	2,298.45
Pampanga	1,897.42	2,194.94	2,393.06
Tarlac	1,413.27	1,588.56	1,828.31
Zambales	942.18	1,089.95	1,143.49
<b>Central Luzon</b>	<b>10,509.40</b>	<b>12,360.78</b>	<b>13,627.65</b>

Source: Bureau of Local Governance and Finance

## Revenues

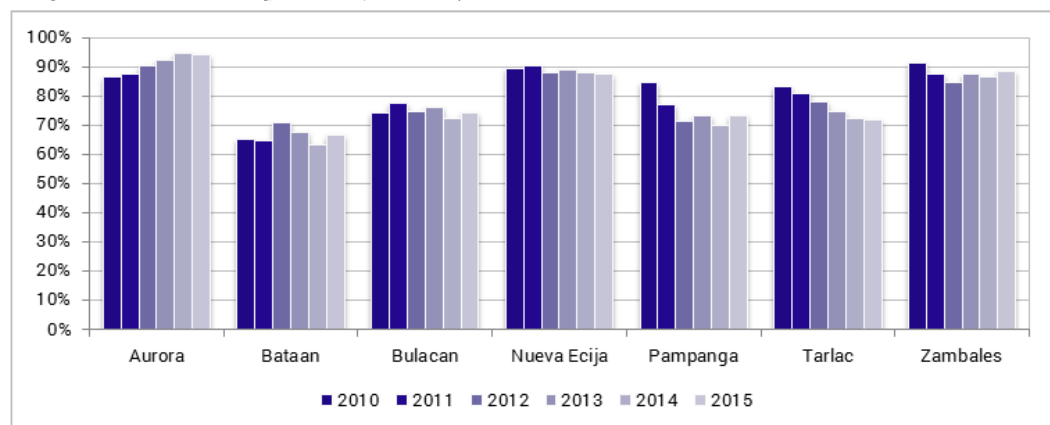
*Although provincial revenues have been increasing, strong dependence on IRA was still recorded.* LGUs' sources of revenues, as provided for in their charters and the Local Government Code (LGC), are local tax and non-tax charges and share from the national revenue or what is referred to as

Internal Revenue Allotment (IRA). The revenue of all the provinces in the region from 2013 to 2015 is presented in Table 15-2. Remarkably, revenues have been increasing for all provinces. Bulacan has the largest income among provinces at Php 3,588.73 million, followed by Pampanga and Nueva Ecija, while at the bottom tread are Aurora and Zambales. Locally sourced revenues or local receipts of all provinces except Aurora improved with an average growth of more than 50 percent from 2011 to 2015.

Part of the revenues generated by the provinces of Bulacan and Pampanga can be attributed to the amount of IRA share they receive, which corresponds to their land area and number of population comparative to other provinces in the region. Efficient collection of taxes and IRA endowment in particular, put the LGUs in a favorable position to provide goods and services, and augment national government support in their locale to achieve socio-economic development and environmental management outcomes.

All provinces exhibit strong dependence on their IRA, with six provinces having an IRA

**Figure 15-3: IRA Dependency Rate of Provinces in Central Luzon, 2012-2015**



Source: Philippine Statistics Authority

share of more than 70 percent (Aurora, Bulacan, Nueva Ecija, Pampanga, Tarlac and Zambales), and only the province of Bataan with IRA share of a little more than 60 percent (Figure 15-3). The Joint Memorandum Circular of the Department of Interior and Local Government (DILG) and Department of Budget and Management (DBM) dated April 2011 stipulates that LGUs appropriate and utilize no less than 20 percent of their IRA for developmental projects.

## Wages and Labor Productivity

***The current daily wage rate in Central Luzon is among the highest in the country, along with NCR and CALABARZON.*** As of January 2016, the minimum wage rates in the region range from Php313 to Php364 for non-agriculture workers, Php298 to Php334 for agriculture workers, Php248 to Php339 for retail/service establishments with less than 16 workers (Php353 minimum wage for all provinces except Aurora for retail/service establishments with more than 16 workers). Said wages are higher than the minimum wage as of December 2015, which ranged from Php228 to P349 and comparatively higher than the wage rates in other Asian countries, such as Cambodia, Vietnam, Indonesia, and China. The Regional Tripartite Wages and Productivity Board (RTWPB) encourages establishments to implement systems or programs that will enhance the productivity of their laborers or employees such as time and motion studies, labor management cooperation gain sharing programs, and the like.

In terms of labor productivity, the region increased its productivity by 4.2 percent from 2014 to 2015 with a regional average of Php 166,555. This is 87 percent of the national average of Php 190,766 for two years. An analysis of the dynamics of and link between wages and labor productivity should be included in policy and decision making in order to create or sustain macroeconomic stability. Inflation may result when average wages increase faster than labor productivity in the region. Hence, improving productivity may compensate the increase in real wages without firms considering retrenchment due to increased production costs. An increase in investments and job creation may result from the region's improving labor productivity primarily in sectors where it provides substantial contribution.

## Prices and Inflation

***The region's average year-on-year inflation rate by commodity group decreased from 3.6 percent in 2014 to 1.3 in 2015.*** The decline in the annual movement of the indices of food and non-alcoholic beverages, housing, water, electricity, gas and other fuel, health, recreation and culture, restaurants, miscellaneous goods and services, and transport pushed down the region's average inflation rate to 1.3 percent in 2015 from 3.6 percent in 2014 as provided in Table 15-3. The slowdown of the annual growth rates of other commodity groups except for alcoholic beverages and tobacco, and communication indices also contributed to the downward movement of inflation rate. Stabilized prices or a lower inflation level can help maintain the purchasing power of the peso,

taking into consideration the effect of increased wages in the region effective in the year 2016.

**Table 15-3: Average Year-on-Year Inflation Rate by Commodity Group in Central Luzon, 2014-2015**

Commodity Group	2014	2015
Average Inflation Rate	3.6	1.3
I. Food and Non-Alcoholic Beverages	6.3	2.9
II. Alcoholic Beverages and Tobacco	3.0	5.4
III. Clothing and Footwear	2.3	2.3
IV. Housing, Water, Electricity, Gas and Other Fuel	1.3	(2.1)
V. Furnishings, Household Equipment, and Routine Maintenance of the House	1.1	1.1
VI. Health	3.2	1.6
VII. Transport	1.6	(1.0)
VIII. Communication	(1.1)	(0.9)
IX. Recreation and Culture	2.1	1.3
X. Education	7.1	5.2
XI. Restaurants, Miscellaneous Goods & Services	1.1	0.7

Source: Philippine Statistics Authority

## Financial Inclusion

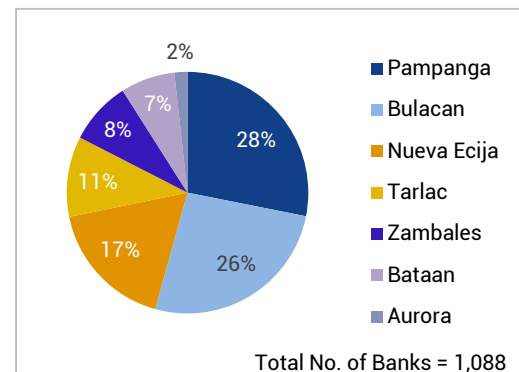
Financial inclusion or an inclusive financial system is defined by Bangko Sentral ng Pilipinas (BSP) as a state where in there is effective access to a wide range of financial products and services by all. Capital availability is a key to the ability of existing industries or firms to continue and to expand as well as to facilitate the start of new businesses. The Financial sector can play an important role in reducing inequality and in creating an appropriate and sustainable economic environment that would cater to both urban and rural areas especially the low-marginalized, MSMEs, agriculture sectors, and indigenous peoples, among others.

### Banking System

*The concentration of bank branches is expectedly high in the urban centers of the region, particularly Pampanga and Bulacan.* Bank density ratio in the region is

eight which means that there are eight banks servicing a city or municipality. The biggest number is in Pampanga with about a third or 28 percent located here, while 26 percent are in Bulacan. The region's agriculture hub – Nueva Ecija – has the third largest share with 17 percent, followed by Tarlac, Zambales, Bataan, and Aurora in that order (Figure 15-4). However, a big chunk of the banks are in the cities or capital towns of the seven provinces. This translates to a disparity in the provision and distribution of financial services as there are still unserved or unbanked areas in the region particularly in Aurora where poverty incidence is of the highest among the seven provinces.

**Figure 15-4: Percent Distribution of Banks by Province, 2015**



Source: Bangko Sentral ng Pilipinas

By type of banks, about 47 percent are universal/commercial banks, 21 percent are rural/coop banks, and 32 percent are thrift banks. The universal/commercial banks are largely in the industrial/urbanized areas of Pampanga and Bulacan, while most thrift banks are in Bulacan. Rural banks are mostly found in Pampanga, Nueva Ecija, and Bulacan (Table 15-4).

Loans to deposits ratio (LDR), which reflects efficiency in channeling deposits

**Table 15-4: Distribution of Banks by Province and by Type, 2015**

Area	2014				2015			
	Total	Universal and Commercial Banks	Thrift Banks	Rural and Cooperative Banks	Total	Universal and Commercial Banks	Thrift Banks	Rural and Cooperative Banks
<b>Central Luzon</b>	<b>1,033</b>	<b>490</b>	<b>211</b>	<b>332</b>	<b>1,088</b>	<b>510</b>	<b>232</b>	<b>346</b>
Aurora	18	3	4	11	19	3	6	10
Bataan	77	30	20	27	79	30	24	25
Bulacan	271	130	77	64	285	141	80	64
Nueva Ecija	177	73	32	72	190	76	35	79
Pampanga	291	149	45	97	306	153	49	104
Tarlac	112	54	18	40	117	55	20	42
Zambales	87	51	15	21	92	52	18	22

*Source: Bangko Sentral ng Pilipinas*

to lending activities in identified areas, exhibited one of the lowest among regions from a ratio of 25 in September 2014 to 24 in the same month of 2015. The decline in LDR signifies a faster rate of increase in deposit generation compared to credit provision in the region.

Accessibility to Automated Teller Machines (ATMs) for cash withdrawals, bills payment, and fund transfers improved during the last four years in Central Luzon. The number of on-site ATMs in the region or ATMs located within the bank increased by 41.7 percent (636) from 2012 to 2015 (901), while off-site ATMs or those found outside the premises of the bank also increased by 55.3 percent in the same period (from 430 to 668).

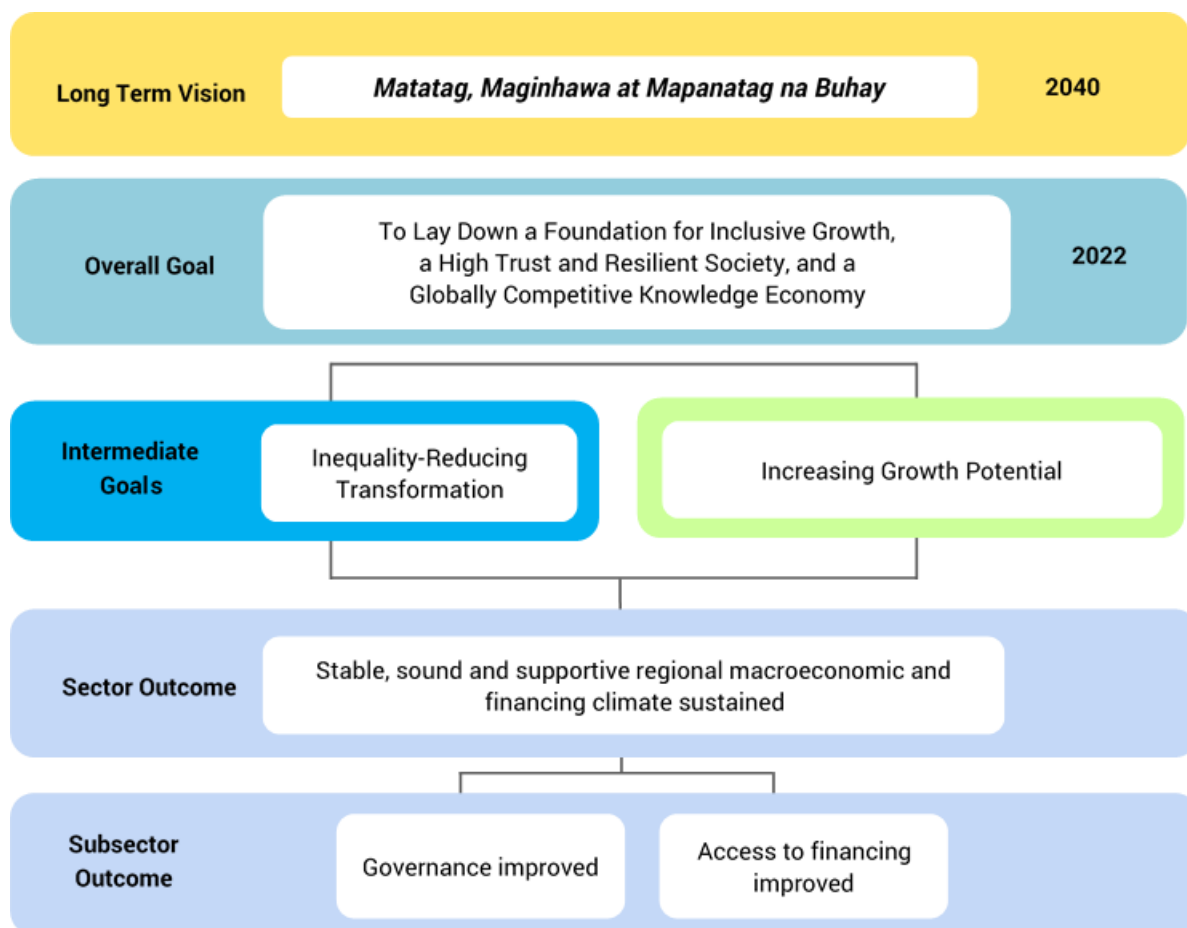
## Cooperatives

***Majority of the cooperatives in the region are agricultural and consumer type in nature.*** Cooperatives further increase or improve access of individuals, families, and microenterprises to financial services and thereby create potential contribution to local economic growth and poverty reduction by permitting individuals to be self-sufficient and resilient to economic shocks. A total of 88 cooperatives were registered in 2016. Most of these cooperatives are located in the provinces of Bulacan and Nueva Ecija. Majority of the cooperatives in the region are under the agriculture type and consumers type cooperatives. These finance institutions in the communities contribute in the growth of the microfinance sector in Central Luzon.

## Strategic Framework

The sector outcome of sustaining a stable, sound, and supportive regional macroeconomic and financing climate will

be achieved through: (i) improving governance, and (ii) improving access to financing.



### *Subsector Outcome 1: Governance Improved*

#### **Strategy 1: Improve public financial management**

The capacity of local government units to attract investments and stimulate economic growth all boils down to good governance. Effective public financial management at the local level allows better delivery of public goods and services. Further, the capacity of LGUs to generate revenues and utilize their financial resources effectively and efficiently provides more leeway for them to provide the necessary resources such as physical infrastructures and ICT that potential investors and entrepreneurs need to operate (see also Chapter 5: Ensuring People-centered, Clean and

Efficient Governance, and Chapter 6: Pursuing Swift and Fair Administration of Justice).

### *Subsector Outcome 2: Access to Financing Improved*

#### **Strategy 2: Expand coverage and simplify loan processes**

Improving access to financial services especially for the poor segment of society will contribute to the attainment of the Sustainable Development Goals (SDGs). The government shall continue its efforts to streamline and simplify loan processes. Incentives afforded by BSP to banks particularly to rural banks shall be heightened to bring financial services to unbanked or unserved areas in the country.



The regulation includes waived processing fees for the establishment of branches in unbanked areas, and an expansion of the allowable activities for micro-banking offices (MBOs). Core provisions of BSP Circular 855 particularly on the implementation of allowance for credit losses shall also be reviewed and relaxed and thus, will be anchored on the legislative grounds and clamor for inclusive financial services (Quililan, 2016).

Expanding the coverage of financial loans and rationalizing government programs for micro financing and SME financing initiatives shall be pursued to consider their management and financial capability. Financial literacy programs or financial education must be incorporated in the school curricula and must be enhanced on the part of MSMEs for business continuity and resiliency in the face of a volatile market.

## Research and Development Agenda

### *Transforming RDC into an Effective National Government Resource Mobilizer: Ensuring Fiscal Sustainability*

Sound resource management does not recognize breaks in relationships institutions either pronounced by law or shaped by practice. While public institutions are the only ones endowed with powers to plan how resources shall be utilized, too much respect for the mandates of these institutions and the inability of legislation to address gaps in the discharge of these mandates stifle opportunities for economic growth engendered by a dynamic process of resource policy steering. Overall, the objective of this study is to reveal relevant information to craft a strategic framework so that the process of NG-RDC resource mobilization may provide opportunities that support laggard LGUs and provide incentives to better-performing ones.

Specifically, it seeks to attain the following objectives: i) determine the pros and cons of the current Planning-Investment Programming-budgeting practice at the

regional level through the regional budget review process under the ambit of the Regional Development Council (RDC) 3; ii) identify causes of disparity in growth opportunities in the medium- and long-term and the immediate public service and goods inadequacy across LGUs in the region; iii) identify the different options being explored and/or used by LGUs in making their priority projects funded; and iv) identify mechanism on how to funnel national government resource of LGU-based budgeting process and outputs at the regional level through the RDC.

### *Best practices in Local Government Public Finance Management*

This research shall document and compile information on the best practices in public financial management among local government units in the region. An LGU's financial management system supports good government as it improves prioritization, aggregate control, public accountability and therefore efficiency in the management of public resources and delivery of services which are critical to the achievement of public policy objectives. A

comprehensive database of best practices can serve as a credible information source for LGUs in improving financial management.

### *Impact of Financing Programs for Start-ups in Central Luzon*

This will assess the impact of financing programs available for start-ups such as the Small Business Corporation Financing for Start-Up Enterprises and the Land Bank of the Philippines Easy Pongong Pang-Asenso.

## RDP Targets

Indicators	Baseline		End of Plan Targets	Agency Responsible
	Year	Value		
Sector Outcome 1: Stable, Sound, and Supportive Regional Macroeconomic and Financing Climate Sustained				
GRDP growth rate (high case scenario at constant prices)	2015	5.3	7.3	
GRDP growth rate (low case scenario at constant prices)	2015	5.3	6.3	
GRDP per capita growth rate	2015	4.6	6.5	
Agriculture, fishery and forestry output (growth rate)	2015	0.6	6.0	PSA
Industry output (growth rate)	2015	6.7	8.2	PSA
Services output (growth rate)	2015	5.7	6.8	PSA
Low and stable inflation rate	2015	1.3	Decreasing	PSA
Subsector Outcome A: Governance Improved				
Regional revenue generation of provinces (Php million)	2015	13,627.6	Increasing	BLGF
Average IRA dependency ratio (%)	2015	79	Decreasing	BLGF
Subsector Outcome B: Access to Financing Improved				
Number of registered cooperatives	2016	88	Increasing	CDA
Average number of banks per province	2015	73	Increasing	BSP
Number of ATMs	2015	1,569	Increasing	BSP
Loans-to-deposits ratio	2015	24	Increasing	BSP

# 16

## Leveling the Playing Field through a National Competition Policy



# Leveling the Playing Field through a National Competition Policy

Competitiveness is the ability of a nation to produce, under free and fair market conditions, goods and services which meet the test of international markets while simultaneously maintaining and expanding real incomes of its people over the long term (Dimian & Danciu, 2011). Competitiveness can be studied and monitored at the firm level and the local or national level. Enhancing the competitiveness of local government units encourages them to have a supportive economic environment, to generate and sustain high employment, and to improve the standard of living of their people. Competition at the firm level allows the market to perform better by providing an equal chance for all firms, regardless of size and type, to fairly operate and grow. It induces productivity by providing a wider array of goods and services that buyers or consumers can take advantage of; hence, it may potentially result in lower prices and improved quality for consumers.

The enactment of Republic Act (RA) No. 10667 or the Philippine Competition Act (PCA) on July 21, 2015 reinforces the efforts of the government to sustain inclusive economic growth. The PCA provides for the formulation of a National Competition Policy (NCP) which aims to steer the regulations and administrative procedures of government agencies toward promoting competition, strengthening the enforcement of anti-trust laws, and effectively ensuring competitive neutrality.

This chapter provides guidelines for improving consumer welfare and enhancing market productivity by detailing strategies that support the Philippine Competition Act.

## Assessment and Challenges

***Enhancing Central Luzon's competition environment.*** The domestic assets of the region such as but not limited to good governance, infrastructures, human capital, firms or enterprises constitute the competitiveness of the region. It is a challenge then for the region to take advantage of its assets and improve further

its contribution to national output. It continues to provide the highest share in terms of agricultural contributions and is the third major contributor to the Industry and Services sectors.

The National Competitiveness Council (NCC) uses three convergent pillars, which

are found among the most common key indicator areas: Economic Dynamism, Government Efficiency, and Infrastructure. The framework integrates these pillars of local economic development and competitiveness up to the regional, national, and global levels (National Competitiveness Council, 2016). In 2016, NCC conducted its 4<sup>th</sup> run of the Cities and Municipalities Competitiveness Index (CMCI) wherein a total of 13 cities and 112 municipalities were from Central Luzon.

Provincial rankings were based on population and income weighted average of the overall scores of cities and municipalities. Consistent with the previous years, there are a number of LGUs from the region recognized for being among the most competitive cities and municipalities. Most of the provinces in the region showed improvement in their rankings. The province of Bataan garnered the 7<sup>th</sup> position in 2016 among the 70 provinces in the country, from its 13<sup>th</sup> spot in 2015 as shown in Table 16-1.

**Table 16-1 Competitiveness Ranking of Provinces 2015-2016**

Province	2016 Ranking	2015 Ranking
Aurora	63	49
Bataan	7	13
Bulacan	24	44
Nueva Ecija	39	47
Pampanga	32	18
Tarlac	51	62
Zambales	71	28

Source: National Competitiveness Council

The City of San Fernando in Pampanga was hailed as the 2<sup>nd</sup> Overall Most Competitive Component City, the Municipality of Sta. Maria in Bulacan received the recognition of 3<sup>rd</sup> Most Competitive Municipality on Economic Dynamism (1<sup>st</sup>-2<sup>nd</sup> Class), while

Baler, Aurora received the 2<sup>nd</sup> Overall Most Competitive Municipality (3<sup>rd</sup>-6<sup>th</sup> Class).

Some provinces, cities and municipalities rankings in the competitive index improved from 2014 to 2016. A continuous effort to sustain economic dynamism, government efficiency, and infrastructure development is vital especially for those LGUs that are lagging behind. There is a need to ensure that cities and municipalities will remain competitive and will continue to push up the level of its development in the long term for present and future generations.

**Improving and harmonizing government regulatory functions.** The duplication or overlap of certain responsibilities, functions, and policies among various government agencies as well as the national and local government may pose threats to competition when it is unclear which office is the sector regulator and has jurisdiction over the implementation of competition rules. In the Agriculture sector, for example, there is an NG-LGU counter-parting between the Agriculture and Fisheries Modernization Act (AFMA) and the Fisheries Code on the role of local government units (LGUs) in the provision of devolved services and the financial and technical assistance of the national government.

In 2012, the Regional Development Council 3 organized the Special Committee on Competitiveness (SCC), a regional body composed of regional line agencies, academic institutions, private sector groups and representatives from NCC primarily in-charge of raising the competitiveness of Central Luzon.

***Ensuring a level playing field with the full enforcement of the PCA among firms.***

Challenges in achieving a level playing field include (a) achieving the right balance between efficiency of firms and market competition, and (b) fair provision of goods and services between government-owned and controlled corporations (GOCCs) and private firms. In spite of Central Luzon being the largest contributor to the Agriculture sector, particularly in rice production, the integration of Association of South East Asian Nations (ASEAN) economies as well as the lift of import limits on rice after a series of extensions on the imposition of quantitative restriction on rice may have a significant impact on rice production in the region. The entrance of unlimited rice imports in the market will lead to an abundant supply in the country.

This may then lead to the lowering of prices and a potential decrease in the income of farmers if not given proper intervention by the government.

***Reviewing laws and regulations that potentially render undue disadvantage to some firms within the same sector.***

Incentives rewarded to enterprises in special economic zones could attract more investments in the region but nonetheless target only large enterprises or companies. Other non-locators of the same sector may experience difficulties in doing business in the region in terms of requirements and fees for new entries and may experience undue disadvantage in terms of costs of production which may potentially be passed on to consumers.

## Strategic Framework

The sector outcome of enhancing regional competitiveness will be realized through: (i) diminishing anti-competitive practices, (ii) reducing barriers to entry, and (iii) reducing limits to entrepreneurship.

***Subsector outcome 1: Anti-competitive practices diminished***

**Strategy 1: Review potentially anti-competition legislation and policies that may substantially prevent, restrict, or lessen competition**

Support for the Project Repeal of NCC shall be strengthened. This aims to address red tape and corruption in the bureaucracy and to eliminate redundant, outdated, and

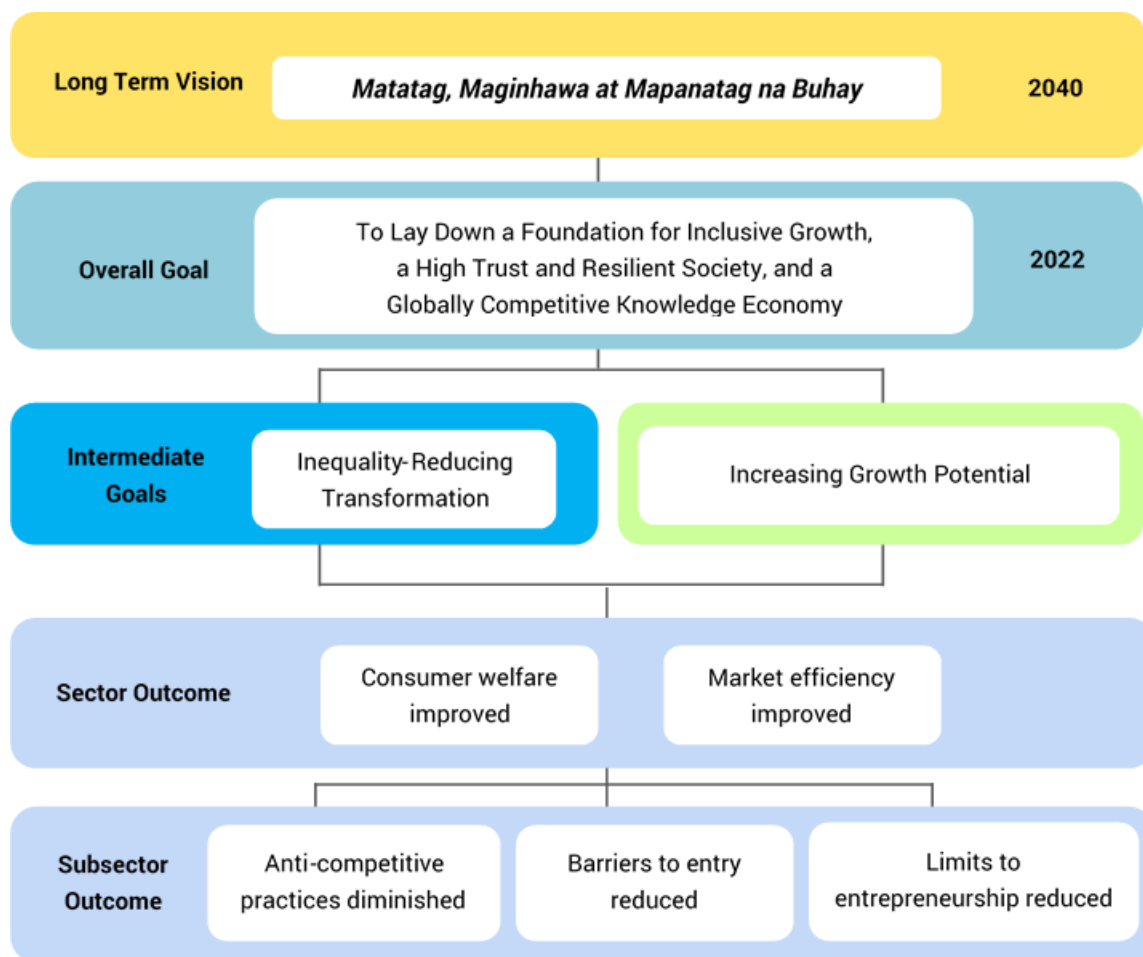
burdensome rules and regulations. Red tape is one of the concerns that restrain the country's overall competitiveness. More so, certain department issuances and regulations that are considered outdated and redundant shall be amended as part of the priority of the Department of Trade and Industry (DTI) and National Competitiveness Council (NCC) in terms of business and loan processing.

***Subsector outcome 2: Barriers to entry reduced***

**Strategy 2: Promote competition-related policies and best practices**

Promoting a culture of strong competition





in the region requires collaboration and cooperation among relevant government agencies and other sector regulators, with support from the Executive, Legislative and Judiciary departments. Activities will also be conducted to assist consumers to better understand the terms of services offered by firms.

The utilization of science, technology, and information products in the Agriculture, Industry, and Services sectors shall be increased to improve the innovativeness and competitiveness of the products and services offered by businesses and to encourage entry of new businesses in the region (see also Chapter 7 and Chapter 11).

### *Subsector outcome 3: Limits to entrepreneurship reduced*

#### **Strategy 3: Conduct capacity-building activities for government agencies and other institutions**

The RDC 3-SCC shall be strengthened in terms of ensuring the ease of doing business in the region and integrating data collection in the course curriculum of RDC 3 partner universities and colleges. The government will collaborate with academic and research institutions in strengthening programs on competition law and economics.

# Research and Development Agenda

## *Future Competitiveness Scenarios of Central Luzon Provinces*

Becoming more competitive is the only way to maintain an area's economic position vis-à-vis the economic standing of other regions and respond to challenges. Competitiveness indices and rankings are used to encourage local decision makers, planners, businesses, and communities to endeavour to raise their respective area competitiveness. The aim of the study is to develop a methodology to compute future competitiveness indices for

Central Luzon provinces which will be used to determine competitiveness scenarios of the seven provinces in 2025. The future competitiveness indices will benchmark the competitiveness of the seven provinces at two distinct points in time: 2015 (baseline data) and 2025 (projections). It is also expected to assess competitive issues in the identified priority sectors of Central Luzon provinces, which will serve as a basis in formulating strategies to enhance and sustain their competitiveness in the future.

## RDP Targets

Indicators	Baseline		End of Plan Target
	Year	Value	
Sector Outcome 1: Consumer Welfare Improved			
Sector Outcome 2: Market Efficiency Improved			
Provincial Competitiveness Rankings			
- Aurora	2016	63	Increasing
- Bataan	2016	7	Increasing
- Bulacan	2016	24	Increasing
- Nueva Ecija	2016	39	Increasing
- Pampanga	2016	32	Increasing
- Tarlac	2016	51	Increasing
- Zambales	2016	71	Increasing



PART VI

# **FOUNDATIONS FOR SUSTAINABLE DEVELOPMENT**





# 17 Attaining Just and Lasting Peace





# Attaining Just & Lasting Peace

In order for a region to flourish, development should be inclusive and sustainable. One of the Sustainable Development Goals included in the development agenda of the PDP 2017-2022 is the promotion of peaceful and inclusive societies. Peace and order is also part of the President's 0-10 point Socio-economic Agenda.

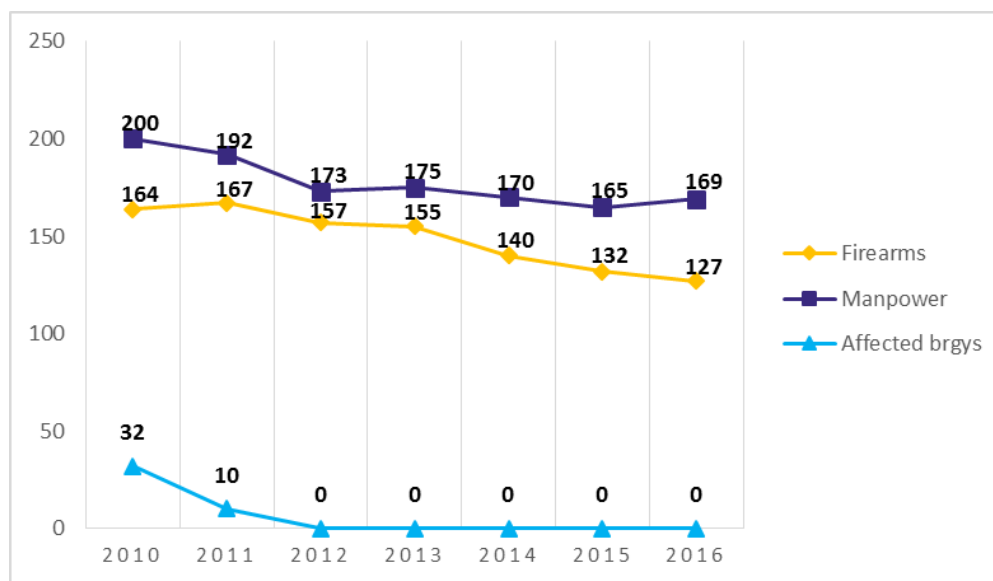
This chapter provides the framework for achieving the desired intermediate goal of building the foundations for inclusive and sustainable development by providing strategies to accomplish just and lasting peace.

## Assessment and Challenges

**Declining security threat.** While they may have professed the desire to overthrow the government through armed struggle, the Communist Party of the Philippines–New People's Army–National Democratic Front (CPP-NPA-NDF) has degenerated from being a major security concern to a negligible security threat. The trend of NPA

Manpower, Firearms, and Affected Barangays declined in the years from 2010 to 2016. Figure 17-1 shows that manpower declined from 164 in 2010 to 127 in 2016, while firepower declined from 200 to 169 in the same years. Moreover, the number of affected barangays in 2010 (32) drastically declined to almost zero from 2012 – 2016.

**Figure 17-1: Statistics of NPA Manpower, Firearms, and Affected Barangays, 2010 - 2016**



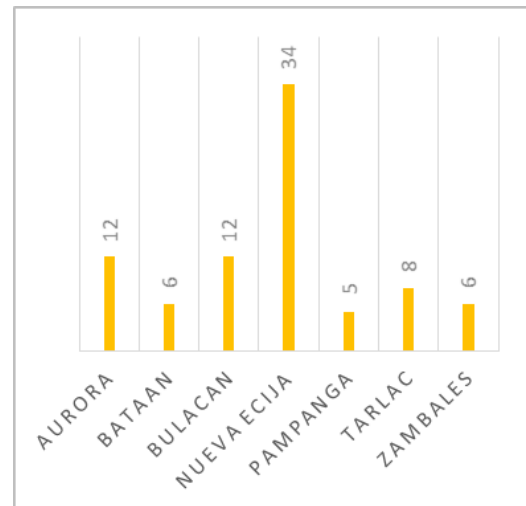
Source: NOLCOM 7<sup>th</sup> ID

The Regional Peace and Order Council (RPOC) reported that NPA remnant activities are mostly located in the tri-boundaries of the province of Zambales, Tarlac, and Pampanga. Based on the assessment, NPA remnants will endeavor to restore their significance, but the convergence of efforts by LGUs and NGOs to deliver basic services will hasten the end of the communist insurgency.

Figure 17-2 shows the NPA remnants per province. Based on the figure, NPA activities in the region are more concentrated in the province of Nueva Ecija. About 34 NPA activities were spotted in the said province.

Moreover, the 7th Infantry Division (ID) “Kagnay” will conduct development support operations from 2017 to 2022 to defeat peace spoilers and other threat groups in order to sustain peace and

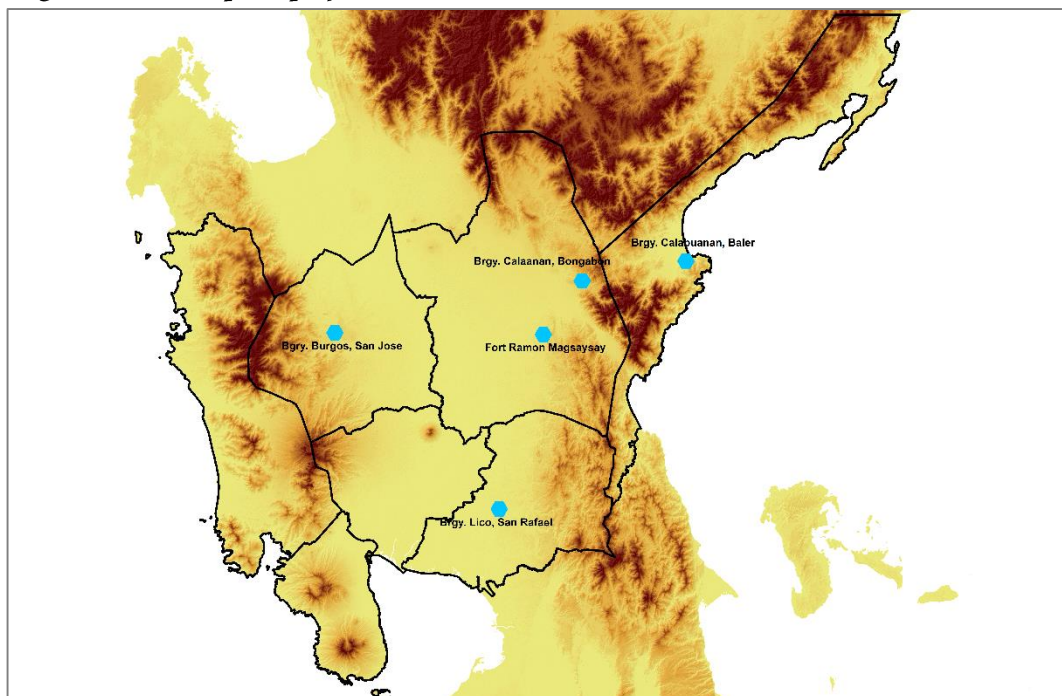
**Figure 17-2: NPA Remnants Events per Province, 2017**



Source: NOLCOM 7<sup>th</sup> ID

development in the region. Development Support Operations is a broad term that refers to AFP operations and activities conducted in support of civil authorities and other stakeholders. These operations promote and sustain internal stability in

**Figure 17-3: Troops Deployment**



Source: NOLCOM 7<sup>th</sup> ID

order to foster the foundation of inclusive economic and human development for the Filipino. It is focused on supporting nation-building by providing support for law enforcement authorities in the fight against criminality and illegal drugs, civil military cooperation, peace-building and advocacy, and the application of military force against terrorists and other armed threats.

***Need to strengthen Barangay Peacekeeping Action Teams.*** The Philippine National Police (PNP) recognizes the role of local peacekeepers including the *Barangay Tanods*, *Bantay Bayan*, Civilian Volunteers Organization, and Barangay Auxiliaries in the attainment of peace and development. Consequently, the institutionalization of Barangay Peacekeeping Operations was undertaken through the creation of Barangay Peacekeeping Action Teams (BPATs) in every barangay to maintain peace and order in the community. The BPATs are composed of representatives from the different sectors in the

community. As of 2015, only 14 percent (5,903) of the 42,036 barangays in the region have operational BPATs with a total of 56,562 members. The BPATs conducts community-based activities and information campaigns in support of the PNP's anti-criminality programs.

From 2013 – 2015, BPAT members participated in buy-bust operations and arrest operations, among others. The quick responses and assistance of BPATs and volunteers resulted in the arrest of suspects involved in illegal drugs, carnapping, and mauling. As such, several BPAT members were awarded and commended for their participation and assistance in the said operations/activities.

Based on the reports of the Police Regional Office (PRO) 3, inadequate equipment (reflectorized vests, flashlights, batons, and handcuffs, among others), patrol vehicles, and resources are the major factors that affect the operations of BPATs.

## Strategic Framework

This chapter focuses on the attainment of a cohesive, secure, and progressive nation. In order to accomplish this, the government shall aim to achieve the following subsector outcomes:

### ***Subsector Outcome: Just and lasting peace achieved***

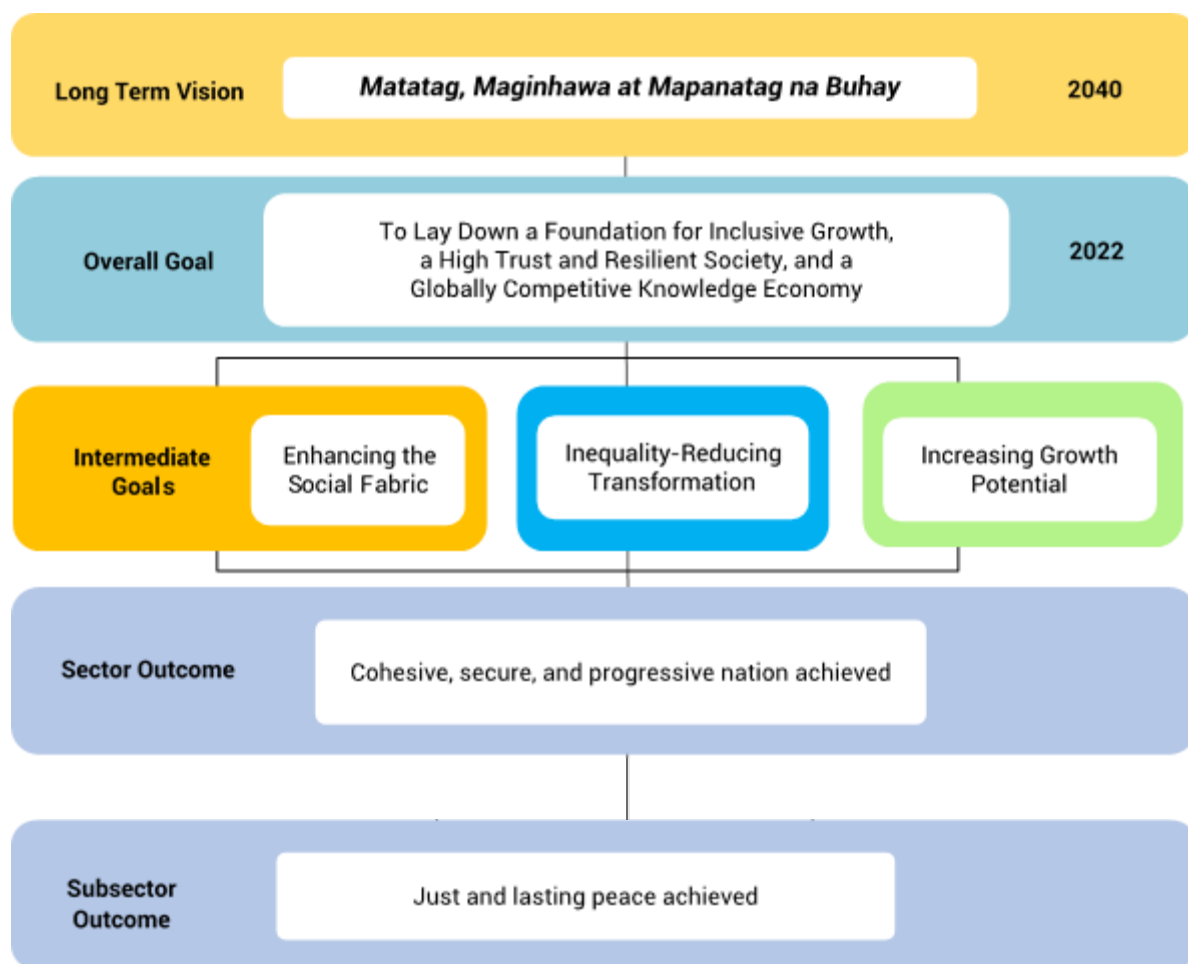
#### **Strategy 1: Strengthen peace initiatives and activities**

The government has been relentless in its pursuit of peace among communities.

To prevent further threats, the region shall facilitate peace negotiations and peace-building initiatives. The provision of alternative livelihood and viable social protection packages shall also be taken into consideration to encourage peace.

#### **Strategy 2: Empower communities and increase their capacity to address conflicts and reduce their vulnerability**

Based on the assessment, a total of 83 NPA remnant events were recorded as of the first few months of 2017. These events may



affect the region's communities in carrying out their daily activities. Consequently, the negative impacts of these events shall be mitigated, if not prevented, by supporting structures and mechanisms. The region shall strengthen local conflict resolution and management mechanisms.

The establishment of formal and informal avenues for peace initiatives and negotiations shall empower the stakeholders to participate in programs and activities of the local peace and order councils, local development councils, and *Katarungang Pambarangay*.

Mainstreaming peace education programs and promoting a culture of peace must also be embedded in these formal and informal avenues. The participation of peace stakeholders in these programs will also be vital to reduce the vulnerability of communities to conflicts.

### **Strategy 3: Intensify Barangay Peacekeeping Action teams**

The BPATs play a key role in the attainment of peace and security in the region. As such, the region shall intensify the Barangay Peacekeeping Action Teams in order to achieve just and lasting peace.

The recruitment and capacity building of BPATs must be strengthened. The provision of adequate equipment, vehicles, and compensation to BPAT members may be a factor in their quick response and assistance. The coordination and cooperation of the public is also vital in the maintenance of peace and security.

## Research and Development Agenda

### *Emerging Peace and Security Threats in Central Luzon*

This research will identify the key emerging threats to peace and security in the region. It will provide recommendations on how peace and security agencies, local governments and the public can collectively tackle these issues.

## RDP Targets

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
Number of barangays with BPATs	2015	3,058	Increasing	PNP
Number of NPA Remnant Events	2017	83	Decreasing	NOLCOM
Number of Manpower	2016	169	Decreasing	NOLCOM
Number of Firearms	2016	127	Decreasing	NOLCOM



# 18

## Ensuring Security, Public Order, and Safety





# Ensuring Security, Public Order and Safety

Security and public order play important roles in laying the foundations for sustainable development. These are likewise critical in establishing inclusive growth and building a high-trust and resilient society.

This chapter also supports the PDP 2017-2022 development agenda of promoting peaceful and inclusive societies for sustainable development at all levels. As such, this chapter shall contribute to the intermediate goals of enhancing the social fabric, reducing inequality, and increasing growth potential by providing strategies for safeguarding security, public order, and safety.

## Assessment and Challenges

### Criminality

**Police-to-Population ratio below the ideal standard.** There is a high disparity between the population of the region and its police force. As of 2015, Central Luzon has a total number of 9,366 police officers which translated to a 1:1,198 police-to-population ratio. Although the number of police officers in the region increased for all provinces for the period of 2013 – 2015, the police-to-population is still below the ideal ratio suggested by DILG of 1:500. The police force of the region cannot cope with the rapidly growing population.

As shown in Table 18-1, the provinces of Bulacan and Pampanga need approximately four times their current number of police officers to be able to meet the standard stated above. Likewise, the provinces of Bataan, Nueva Ecija, Tarlac, and Zambales must double their police population to reach the police-to-

population ratio of 1:500. Only the province of Aurora met the standard at 1:353 in 2015.

**Table 18-1: Police-to-Population Ratio of Central Luzon, 2013 - 2015**

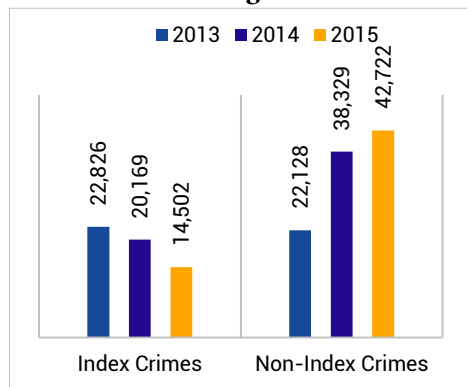
	2013	2014	2015
<b>Central Luzon</b>	<b>1:1,491</b>	<b>1:1,351</b>	<b>1:1,198</b>
Aurora	1:416	1:384	1:353
Bataan	1:1,401	1:1,223	1:1,179
Bulacan	1:2,338	1:2,097	1:1,911
Nueva Ecija	1:1,330	1:1,214	1:1,012
Pampanga	1:2,189	1:1,950	1:1,664
Angeles City	1:897	1:838	1:775
Tarlac	1:1,195	1:1,095	1:941
Zambales	1:1,125	1:1,026	1:975
Olongapo City	1:759	1:685	1:653

Source: Police Regional Office 3

Despite the disparity between the police force and the population, the index crime statistics of the region for the period 2013 – 2015 showed a downward trend. From a total number of 22,128 index crimes in 2013, a decrease of 11.64 percent and 28.10 were recorded in 2014 and 2015, respectively (Figure 18-1). This is primarily

due to the robust implementation of the PNP anti-crime campaign. Of these index crimes, physical injury had the highest number of cases. It was followed by theft and robbery.

**Figure 18-1: Reported Index and Non-Index Crimes in Region 3**



Source: Police Regional Office 3

Index crimes, according to the PNP definition, are crimes which are serious in nature and which occur with sufficient frequency and regularity such as murder, homicide, and physical injury, among others (PNP, 2009). There is also improved reporting of non-index crimes as shown in the significant increase of about 93.1 percent: from 22,128 in 2013 to 42,722 in 2015.

The crime rate or the ratio of crime incidents per 100,000 population is shown in Table 18-2. Compared to 33.39 percent in 2013, the average monthly crime rate went up by 9.11 percent in 2015. This contributed

**Table 18-2: Crime Statistics of Central Luzon, 2013-2015**

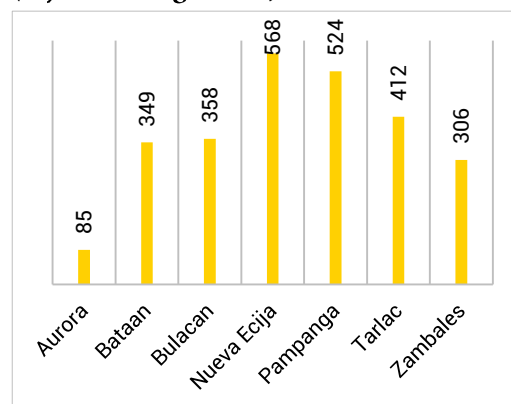
	2013	2014	2015
Total Crime Volume	44,954	58,498	57,224
Average Monthly Crime Rate (%)	33.39	43.45	42.51
Crime Clearance Efficiency (%)	28.29	54.15	67.15
Crime Solution Efficiency (%)	19.99	42.91	53.61

Source: Police Regional Office 3

to the increase in the non-index crimes which are mostly at the barangay level. Meanwhile, the Crime Clearance Efficiency (CCE) and Crime Solution Efficiency (CSE) in the region have improved. From a CCE of 28.29 percent and CSE of 19.99 percent in 2013, this went up to 67.15 percent and 53.61 percent in 2015, respectively.

## Detention centers and facilities

**Figure 18-2: Occupancy Rate of Prisons and Detention Centers in Central Luzon (3-year average, in %)**



Source: Bureau of Jail Management and Penology 3

### Congested detention centers and facilities.

Law enforcement The Bureau of Jail Management and Penology (BJMP) is mandated to enhance public safety by providing humane safekeeping and development of inmates in all districts, city, and municipal jails. Prisons all over the country serve as rehabilitation and reformatory institutions to eliminate the offenders' pattern of criminal behavior and reform them into law-abiding and productive citizens.

The congestion of prisons and detention centers in the region remains a challenge. As of 2015, there are 29 prisons and

**Table 18-3: Average Jail Population of Central Luzon, 2013 - 2015**

Province	2013			2014			2015		
	Average Jail Population	Ideal Capacity	Occupancy Rate (%)	Average Jail Population	Ideal Capacity	Occupancy Rate (%)	Average Jail Population	Ideal Capacity	Occupancy Rate (%)
Aurora	5	6	85	5	6	81	4	6	61
Bataan	1,362	390	349	1,669	390	428	2,034	390	521
Bulacan	507	142	358	561	142	396	957	142	675
Nueva Ecija	1,227	216	568	1,449	216	671	1,709	216	791
Pampanga	2,353	449	524	2,537	449	565	2,989	449	666
Tarlac	290	70	412	320	70	455	430	70	612
Zambales	806	263	306	803	263	305	932	263	354

Source: Bureau of Jail Management and Penology 3

detention centers in Central Luzon, 4 of which are female detainees' dormitories located in the provinces of Bataan, Nueva Ecija, Pampanga, and Zambales.

Presented in Figure 18-2 is the 3-year average occupancy rate of the jails and detention centers in the region for the period 2013 – 2015. With the exception of the jails in Aurora, 100 percent of the jails and detention centers in the region are operating under extreme congestion. The jails in Nueva Ecija are the most congested, with a 3-year average occupancy rate of 568 percent or about 7-8 inmates per prison unit intended for only one person.

The disaggregated occupancy rate relative to the ideal capacity and average jail population for the period 2013 – 2015 is

shown in Table 18-3. This undermines the goal of jail management, which is to provide venues to transform and reorient inmates to be better members of the society. Extreme congestion may affect the health of the detainees. Inmates are not only vulnerable to different diseases but are also forced to endure very poor living conditions.

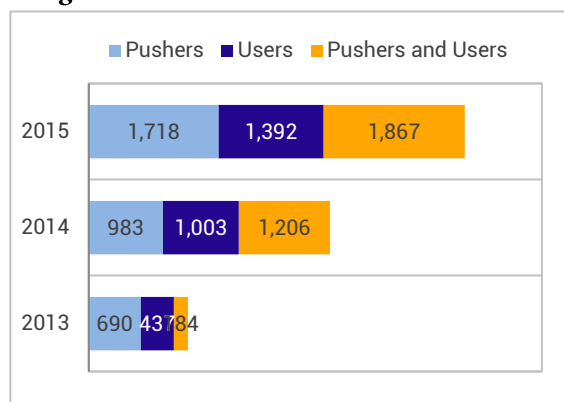
## The fight against illegal drugs

**Increase in arrested persons involved with illegal drugs.** With respect to the anti-illegal drug campaign of PRO III, 4,977 persons were arrested (1,718 pushers, 1,392 users, and 1,867 pusher and user) as of 2015. This is a 280 percent increase compared to the figure in 2014. Moreover, PRO III confiscated a total of 16,490 grams of marijuana and shabu in 2015 amounting to Dangerous Drug Board (DDB) value of Php55.17 million. Figure 18-3 shows the disaggregated number of arrested persons involved in the drug trade in Central Luzon from 2013 - 2015.

## Fire hazards

**Firemen-to-population ratio still way below the standard ratio.** According to the Citizen's Disaster Response Center

**Figure 18-3: Arrested Persons against illegal drugs**



Source: Police Regional Office 3

**Table 18-4: Fire Force in Central Luzon, 2013 - 2015**

	2013		2014		2015	
	No. of BFP Personnel	Firemen to Population Ratio	No. of BFP Personnel	Firemen to Population Ratio	No. of BFP Personnel	Firemen to Population Ratio
<b>Central Luzon</b>	<b>1,304</b>	<b>1:8,603</b>	<b>1,287</b>	<b>1:8,717</b>	<b>1,462</b>	<b>1:7,673</b>
Aurora	62	1:3,457	64	1:3,349	74	1:2,896
Bataan	128	1:5,943	123	1:6,184	134	1:5,676
Bulacan	264	1:12,470	256	1:12,860	276	1:11,928
Nueva Ecija	318	1:6,766	311	1:6,918	338	1:6,365
Pampanga	285	1:9,157	289	1:9,030	334	1:7,814
Tarlac	141	1:9,688	135	1:10,119	175	1:7,806
Zambales	106	7773	109	1:7,559	131	1:6,289

Source: Bureau of Fire Protection 3

(CDRC), fire is recognized to be the top hazard in the Philippines in terms of frequency in 2014. A total of 2,898 (36 deaths and 48 injuries) fire-related incidents were reported in 2013. In 2015, the region experienced 1,751 fire incidents, which is 39.58 percent lower compared to the cases in 2013. Majority of the incidents were due to faulty electrical wiring/connections. Overall, the province of Bulacan had the highest number of fire incidences for the period 2013 – 2015. On the other hand, the province of Aurora listed the lowest in the region.

In 2015, the region incurred a total of Php409.95 million worth of fire damage. Unlike natural hazards, fire incidences are man-made and therefore can be prevented. Based on the reports of the Bureau of Fire

Protection (BFP) 3, the region has a total of 1,462 firemen as of 2015 with a firemen-to-population ratio of 1:7,673. This is still way below the standard set by the Housing and Land Use Regulatory Board (HLURB) of 1:2,000. This disparity is attributed to the fast growing population of the region. This figure is already an improvement compared to the 2013 and 2014 ratios. All provinces did not meet the ideal ratio, with Bulacan having the biggest discrepancy (Table 18-4).

As of 2015, 13 municipalities in Central Luzon still lack a fire station. Five of these are located in the province of Nueva Ecija. However, construction of fire stations in five out of the 13 municipalities is underway. The inadequate capabilities and unavailability of equipment during response may contribute to the increasing number of fire incidents in the region.

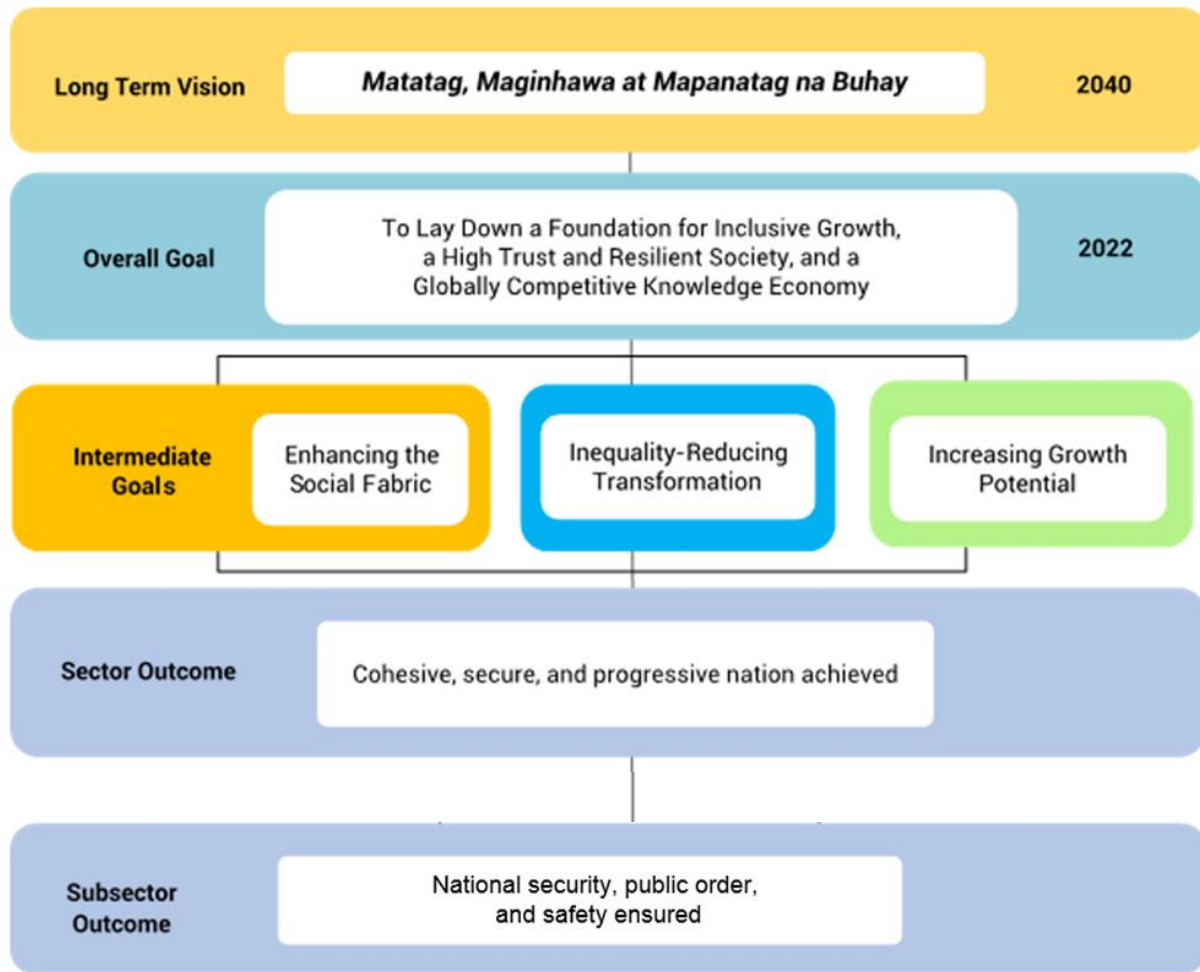
## Strategic Framework

Peace, security, and order are essential in the attainment of a cohesive, secure, and progressive nation. In order to accomplish this, just and lasting peace and regional security together with public order and safety must be achieved and secured.

**Subsector Outcome: National Security, Public Order and Safety ensured**

**Strategy 1: Intensify campaign against organized crime groups**

The government has been relentless in its



pursuit of peace among communities. To prevent further threats from these organized crime groups, the region shall facilitate peace negotiations and peace-building initiatives. The provision of alternative livelihood and viable social protection packages shall also be taken into consideration to encourage peace. However, if these crime groups persist in their criminal activities, the region will intensify its operations through the help of the police and Barangay Peacekeeping Action Teams in order to detain these criminal groups. For this end, the region shall intensify the recruitment and capacity building of BPATs.

The provision of adequate equipment, vehicles, and compensation to BPAT members may also enable them to deliver quick response and assistance in the region. The coordination and cooperation of the public is also vital in the said movement.

#### **Strategy 2: Strengthen police force**

To address the disparity in the police-to-population ratio and sustain the decrease in crime rates, the region shall strengthen its police force by taking the following measures:

- Intensify the recruitment program of PNP,
- Strengthen coordination with Barangay Peace and Order Council and capacitate peace officers,

- c. Increase force multipliers/volunteers and provide intensive training before deployment, and
- d. Provide complete sets of move (vehicles), shoot (firearms), and communicate (radio) equipment.

**Strategy 3: Modernize and decongest jails and detention centers**

To provide humane safekeeping and enhance the development of inmates while delivering the highest standard of social protection, the region shall decongest prisons and detention centers through the construction of safe and health-sensitive detention and correctional facilities. Moreover, the modernization of facilities, improvement of jail management, development of community-based alternatives, and implementation of swift and fair administration of justice (*see Chapter 6*) shall also be given importance and attention.

**Strategy 4: Strengthen campaign against illegal drugs**

In order to reduce and eventually eliminate illegal drugs, the region shall focus on the following anti-drug strategies:

- a. Reduce the supply of drugs in the public through market denial operations and prevention of diversion from the licit and illicit market; Reduce the demand for illegal

drugs through policy formulation, preventive education, treatment and rehabilitation, and research;

- b. Reduce the production of marijuana and eventually eliminate its cultivation through provision of alternative and sustainable livelihood programs;
- c. Promote community awareness and social responsibility in relation to the anti-drug advocacy; and
- d. Strengthen barangay, municipal, and provincial linkages.

**Strategy 5: Intensify fire hazard management capabilities**

To reduce the effects of fire hazards and improve the resiliency of the population, the region shall:

- a. Provide additional fire personnel;
- b. Upgrade and provide complete firefighting equipment and facilities such as fire stations, fire hydrants, and fire trucks;
- c. Intensively capacitate force multipliers/fire volunteers;
- d. Establish clustering to cover unserved barangays and municipalities;
- e. Include fire prevention and safety in the elementary and high school curriculum; and
- f. Strengthen Fire Brigades.



# Research and Development Agenda

## Assessment of program on drug surrenderers

It does seem that illegal-drug use is on the rise, and this has future worrying implications. There is an urgent need to educate everyone about the dangers of using illegal drugs and help those who are

already addicted to escape from its hold. Failure to do this may result in the further deterioration of many individuals. This research will involve an assessment of the effectiveness of the existing treatment and prevention program for drug surrenderers in the region.

## RDP Targets

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
Number of barangays with BPATs	2015	3,058	Increasing	PNP
Average Monthly Crime Rate	2015	42.51	Decreasing	PNP
Crime Clearance Efficiency	2015	67.15	Increasing	PNP
Crime Solution Efficiency	2015	53.61	Increasing	PNP
Police-to-Population Ratio	2015	1:1,198	Decreasing	PNP
Occupancy/congestion Rate of Prisons and Detention Centers	2015	426%	Decreasing	BJMP
Number of fire incidences	2015	1,751	Decreasing	BFP
Number of LGUs without fire stations	2015	13	Decreasing	BFP
Firemen-to-population ratio	2015	1:7,673	Decreasing	BFP



# 19 Accelerating Infrastructure Development



# Accelerating Infrastructure Development

Enhancing infrastructure is one of the key drivers toward a progressive and well-developed economy. Investments in infrastructure are essential to attaining sustainable development and empowering the community.

This chapter aims to provide the principles for achieving and sustaining the high growth trajectory that will reduce inequality and increase potential growth in the region.

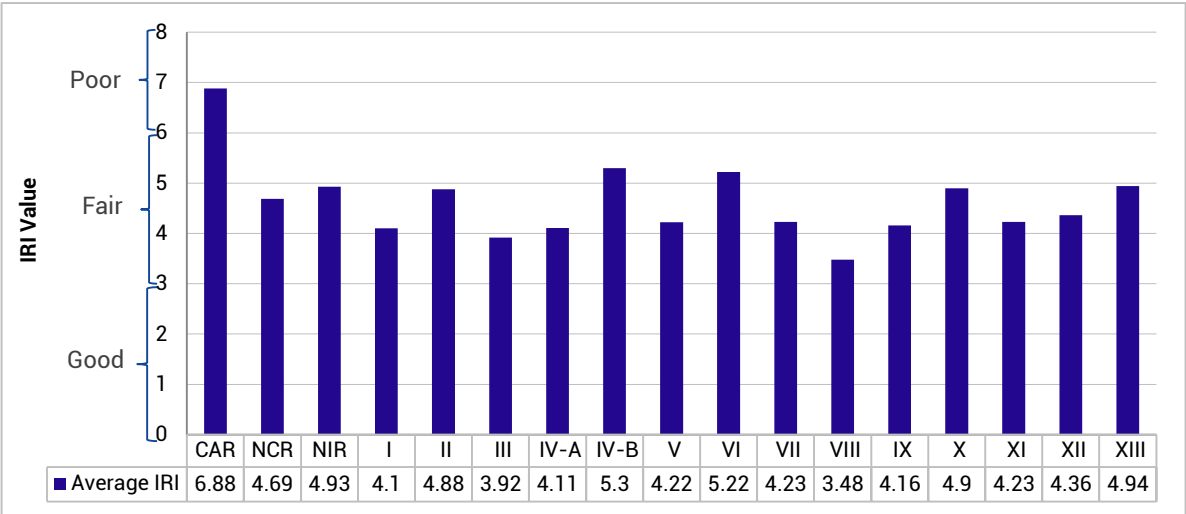
## Assessment and Challenges

### Internal access and connectivity

**Efforts to improve transport infrastructure still underway.** While improvements in the arterial road network system of the region was attained, the region has yet to realize its full potential in attracting investments (local and foreign) and catalyzing growth

due to some gaps and bottlenecks in transport infrastructure build-up. The arterial road network system of Central Luzon has gradually improved. Rehabilitation, widening, and improvement works in the transport network is continuously being undertaken. The provision of a fast, safe, and efficient transportation system in the region is expected to encourage and accelerate

Figure 19-1: Average International Roughness Index (IRI) per Region, 2016



Source: Department of Public Works and Highways (DPWH)

**Table 19-1: Status of National Roads in Central Luzon, 2015**

Region/ Province	Paved		Unpaved		Total	% Paved
	Concrete	Asphalt	Gravel	Earth		
<b>Central Luzon</b>	<b>1,109.21</b>	<b>1,153.65</b>	<b>81.84</b>	<b>-</b>	<b>2,344.70</b>	<b>96.51</b>
Aurora	198.12	5.90	51.16	-	255.18	79.95
Bataan	142.70	158.40	22.40	-	323.50	93.08
Bulacan	178.77	164.16	-	-	342.93	100.00
Nueva Ecija	251.73	266.27	7.39	-	525.39	98.59
Pampanga	170.50	158.67	0.89	-	330.06	99.73
Tarlac	157.88	217.97	-	-	375.85	100.00
Zambales	9.51	182.28	-	-	191.79	100.00

Source: Department of Public Works and Highways (DPWH)

development not only in the urban areas but in the countryside as well.

The Department of Public Works and Highways (DPWH) has adopted the International Roughness Index (IRI) as a basis for the provision of quality road infrastructure. Road roughness has been widely recognized as an indicator of road condition in terms of road pavement performance and as a major determinant in vehicle operating cost (DPWH, 2015). A low IRI means a road is of good quality. Conversely, a high IRI means a road is in poor condition. Despite having the 2nd lowest IRI average among the regions, Central Luzon's road networks are yet to achieve the acceptable International Roughness Index (IRI) value of not more than 3.0 (Figure 19-1). National roads in the region, on the average, have fair conditions with an IRI rating of 3.92.

Pavements with poor roughness ratings will result in poor riding quality, an increase in vehicle operating cost, an increase in accident potential, and a reduction in pavement life (DPWH, 2015). This condition calls for the pavement target of 100 percent for the region's national roads. However, approximately four (4) percent of the 2,344.70 km. of national arterial roads in the region still remains

unpaved (Table 19-1). Among the Central Luzon provinces, Bulacan, Tarlac, and Zambales already have 100 percent of national roads located in their area fully paved. On the other hand, bulk of the unpaved roads are found in Aurora, which has the lowest paved road ratio at 79.95 percent. Thus, completing road pavement in this province should be prioritized.

For bridges, the target of converting all temporary ones to permanent has already been attained. A total of 716 bridges with a total length of 35,234 linear meters were constructed and rehabilitated in the region as of 2015 (DPWH, 2015). Upgrading or replacing temporary and ageing bridges is deemed vital in facilitating intra and inter-regional connectivity within Central Luzon and the rest of the Luzon Regions. Bridges also serve an important role in reducing the vulnerability of communities to disasters as they function as key links in transporting people or providing relief during calamities.

In addition to improving national roads and bridges, the government is vigorously developing toll expressways to improve access and connectivity in Central Luzon. Table 19-2 shows the inventory of expressways passing through the region. Further development of expressways would help improve the level of service (LOS) in

**Table 19-2. Expressway Inventory in Central Luzon**

Expressway	Road Distance (Km)	Remarks
North Luzon Expressway (NLEX)	83.7	2-8 lanes divided expressway connecting Manila and Pampanga
Subic-Tipo Expressway	8.8	Two (2) lane expressway traversing the provinces of Zambales and Bataan
NLEX Spur Road (Bulacan)	0.1	The Tabang Spur road connects with NLEX-Tabang Exit and Maharlika Highway going to Cagayan Valley
Subic-Clark-Tarlac Expressway (SCTEx)	93.77	Four (4)-lane expressway north of Manila
Tarlac-Pangasinan-La Union (TPLEX)	41 (Tarlac Section)	Four (4)-lane expressway north of Manila
Central Luzon Link Expressways (CLLEX)	66.4	Detailed Engineering Design ongoing
<b>Total</b>	<b>269.77</b>	<b>--</b>

Source: National Economic and Development Authority (NEDA) 3

the region's road networks. LOS is defined as a scale for evaluating the quality of the operation status of traffic flow such as vehicle speed, travel time, traffic interference, amenity, and convenience (Takashi Sakai et al., 2011).

One of the on-going expressway projects in Central Luzon is the Tarlac-Pangasinan-La Union Expressway (TPLEX), which started in 2010. It connects at the terminus of the Subic-Clark-Tarlac Expressway (SCTEx). In November 2013, the Tarlac City-Gerona section was opened to public. In October 2011, the 31 – kilometer Central Luzon Link Expressway (CLLEX) was approved by the Investment Coordination Committee (ICC). CLLEX will commence from the terminus of SCTEx in Tarlac City, move eastward to Cabanatuan City, and intersect with Cagayan Valley Road and Vergara Highway. CLLEX Phase II will then climb northward to San Jose City covering a distance of 36 kilometers. The detailed engineering design for CLLEX is ongoing.

Phase I and Phase II of CLLEX are expected to be completed by 2017 and 2021, respectively. These infrastructure projects are expected to further improve access and mobility in and out of the region.

***Increasing volume of vehicles due to inefficient public transportation.***

Bottlenecks in major conurbation areas are also triggered by the seemingly high volume of vehicles in the region which is said to be brought about by inefficient public transportation. In spite of the improvement

**Table 19-3: Number of Motor Vehicles Registered by Region, 2015 and 2016 (semi-annual)**

Region	Motor Vehicles Registered		
	2015	2016	%INC (DEC)
CAR	60,965	73,179	20.0
I	275,014	298,206	8.4
II	240,489	234,737	-2.4
III	581,886	599,311	3.0
IV-A	620,511	652,342	5.1
NCR	1,288,730	1,342,021	4.1
PHILIPPINES	4,797,839	5,037,586	5.0

Source: Land Transportation Office (LTO)



in the transport system, traffic congestion remains to be a challenge in several parts of the region. One of the vital causes of congestion is the growing volume of vehicles. Among Luzon regions, Central Luzon has the third highest number of registered vehicles in 2015 and 2016 (Table 19-3), and the count is still increasing. Seemingly contributing to this situation is the lack of efficient public transportation. Commuters shift to private vehicle use as a convenient alternative to the poor transport system in the urban areas. As such, despite the government's efforts at road widening especially the major thoroughfares, traffic congestion continues to be a big concern for the riding public.

In attaining the efficient movement of people, goods, and services within and outside the region, the advancement of mass transportation is essential. Railway infrastructure is an effective system of mass transit. However, previous attempts to revive the North line of the Philippine National Railways (PNR) or to establish a light/rapid railway system from Clark to Metro Manila were not successful. As originally envisioned by North Rail Corporation, the Manila-Clark Rapid Railway System will be established to primarily serve Clark International Airport. Depending on the volume of passengers, the original San Jose City line will also be established along with a new branch to Subic. The long term plan is to extend the railway system to La Union.

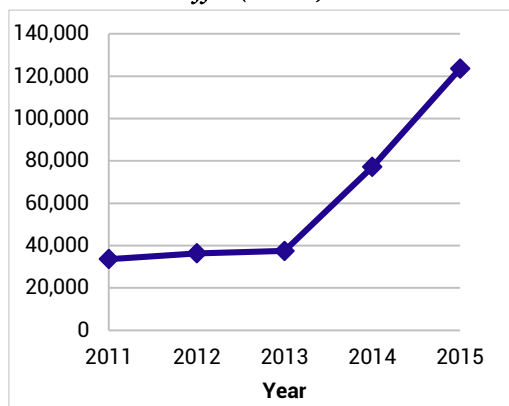
***Need to transform Clark International Airport (CRK) into the country's prime international gateway to achieve seamless connectivity.*** The provision of seamless connectivity between the region and the global market entails the transformation of Clark International Airport (CRK) into the country's prime international gateway. Thus, the continued development of the region's air transport system is vital. A driver of connectivity, the aviation sector enables the growth of international trade, tourism, and investments (Burns, 2015). Clark International Airport (CRK), which is located in Central Luzon, is one of the biggest aviation complexes in Asia and is envisioned to be one of the premier international gateways in the country. However, air traffic in CRK is still behind target. Annual passenger volume at Clark Airport has yet to reach the one million mark as indicated below (Table 19-4). Thus, to boost air traffic flow and provide strategic direction for the airport's development, Clark International Airport Corporation – the airport's administration – drew up a master plan and land use plan. Moreover, a P15-billion world-class Passenger Terminal Project for Clark International Airport (CRK), which is intended to provide a 100% increase in the passenger capacity of the airport, has already been approved by the NEDA Board (Clark International Airport Corporation Annual Report 2015).

**Table 19-4: Clark International Airport Air Traffic, Passenger and Cargo Movement**

Flight Classification	2014			2015		
	Flight	Passenger	Cargo Tonnage	Flight	Passenger	Cargo Tonnage
<b>Total</b>	<b>6,651</b>	<b>877,757</b>	<b>47,982</b>	<b>6,057</b>	<b>868,528</b>	<b>35,012</b>
Domestic	936	90,948	1,280	948	41,824	2,217
International	5,715	786,809	46,702	5,709	826,704	32,795

Source: Clark International Airport Corporation Annual Report 2015

**Figure 19-2: Subic Port Actual Container Traffic (TEUs) 2010 - 2015**



Source: Yasuhiro Kawabata, Ex-Post Evaluation of “Subic Bay Port Development Project”

**Full potential of the Subic port yet to be realized.** Another significant component in providing access to and connectivity within the region is water transportation. The efficient delivery of goods or cargos through the region’s seaport is a vital support for the productive sectors. The major seaport in Central Luzon is the Port of Subic. An upward trend in container traffic at this port has been observed for the past three (3) years (Figure 19-2). In 2015, Subic Port attained its 100,000th mark for its twenty-foot equivalent units (TEUs). At the end of 2015, a total of 123,558 TEUs were transported to Subic Port, translating to about 21 percent port utilization rate. At such rate, the container traffic in Subic Port is still way below the container traffic in other ports in the greater capital region (GCR) as seen in Table 19-5. The target of reaching the full utilization of the port is yet to be realized.

In 2014, Executive Order 172 “Declaring the Port of Batangas and Subic Bay Freeport as Extensions of the Port of Manila (MICT/South Harbor) during Port Congestion and other Emergency Cases”

was issued to increase utilization of the port and to ease port and traffic congestion in Metro Manila.

**Table 19-5: Greater Capital Region’s Port Container Traffic, 2015**

Port	Operator	Container Traffic	
		Actual	Capacity
Manila International Container terminal (MICT)	International Container Terminal Services Inc. (ICTSI)	1,960,699	2,500,000
Manila North Harbor (domestic)	Manila North Harbor Port Inc. (MNHPI)	1,137,455	2,000,000
Manila South Harbor	Asian Terminals Inc. (ATI)	877,593	1,200,000
Batangas Port	ATI	188,077	350,000
Subic Port	ICTSI	123,558	600,000

Source: Subic Bay Metropolitan Authority (SBMA)

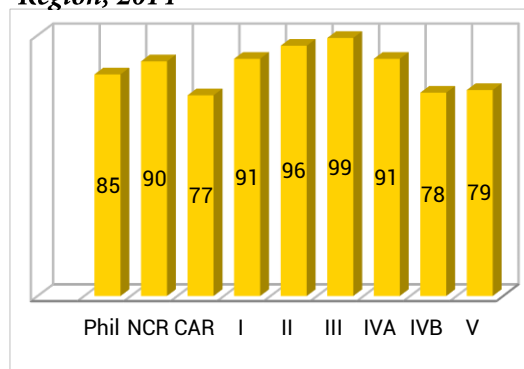
## Water Resources

**Impact of rapid urbanization and industrialization on the utilization of water resources.** Water demands from freeports, ecozones, industrial areas, and urban centers are steadily growing. The efficient management of water resources is essential to achieving economic growth. Sustaining water supply, sewerage and sanitation, irrigation, and flood management must be considered. For Central Luzon, rapid urbanization and industrialization put pressure on the utilization of water resources. As evaluated by JICA and NWRB in “The Study on Integrated Water Resources Management for Poverty Alleviation and Economic Development in Pampanga River Basin, 2011”, a number of urban centers in Central Luzon are already at risk of exceeding safe groundwater abstraction rates in 2008. Angeles City, Tarlac City, and Mabalacat City, among others, are already pumping groundwater equal to or more than the replenishment rate. This will further accelerate land subsidence and worsen

saline water intrusion in the coastal municipalities of Bulacan and Pampanga. Land subsidence is already gradually moving inland to City of San Fernando (CSFP). To address this concern, surface bulk water development should be vigorously pursued in the region.

***Ensuring access to safe water and sanitation to cope with growing population.*** Amidst the challenge of ground-water scarcity, access to safe water and sanitation, one of the Sustainable

**Figure 19-3: Percentage of Families with Access to Safe Water Supply by Region, 2014**



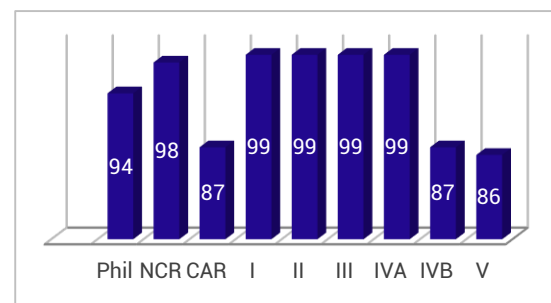
Source: Philippine Statistics Authority (PSA)

Development Goals (SDGs), is essential in the promotion of good health, clean environment, and further development. The 2014 Annual Poverty Indicators Survey (APIS) revealed that 98.9 percent of families in Central Luzon have access to a safe water supply, which is water accessed through a community water system piped into dwellings, yards or plots, through public tap, and protected wells. This percentage is the highest among the seven regions that have a proportion of families with access to a safe water supply at par or higher than the national average (Figure 19-3). However, attention should still be provided to the remaining areas in the region that have no

access to safe water. Intake of contaminated or unsafe water brings about waterborne diseases such as diarrhea, cholera, typhoid, and dysentery, among others (World Health Organization, 2015).

Moreover, APIS also showed that 99 percent of the families in the region have sanitary toilet facilities as shown in Figure 19-4. Inadequate sanitation and poor water quality may impose negative impacts on food security, livelihood choices, and educational opportunities for poor families (Philippine Statistics Authority, 2014).

**Figure 19-4: Percentage of Families who use Sanitary Toilet Facility by Region, 2014**



Source: Philippine Statistics Authority (PSA)

***Prioritizing infrastructure development for resiliency.*** The development of infrastructure facilities that will help increase the resiliency of the region against hydrometeorologic and geologic hazards have to be prioritized and accelerated. A proactive approach to disaster risk reduction and management (DRRM) is being pursued in Central Luzon. With the susceptibility of the region to occurrences of flooding, majority of the disaster risk reduction measures in Central Luzon are on flood control. The Department of Public Works and Highways (DPWH) Region III, under its 2015 regular program/budget, carried out 249 flood control and drainage

**Table 19-6: Inventory of completed, ongoing, and proposed major flood control projects in Central Luzon as of 2016**

Project Name	Cost (Php billion)	Implementation Period	Status
Pampanga Delta Development Project (PDDP) Flood Control Component	2.9	1993-2002	Completed
PHUMP 1	1.8	1996 – 2001	Completed
PHUMP 2	3.1	1999 – 2006	Completed
PHUMP 3	4.9	2014 – 2018	Completed
PHUMP 4	3.3	2017 – 2019	On-going
Rio Chico River Improvement Project	0.5	2014 – 2018	with initial implementation
Tarlac River Overall Improvement Works	10.7	2014 – 2018	F/S updating ongoing
Dinalupihan-Hermosa Flood Control and Regional Development Plan Project	3.3	2014 – 2018	WALPP
<b>TOTAL</b>	<b>30.5</b>	<b>--</b>	<b>--</b>

Source: NEDA 3; DPWH 3; JICA - IWRM Master Plan in PRB 2011

projects whose completed portions are worth a total of Php2.996 billion (DPWH). Moreover, shown in Table 19-6 are the major flood control projects in Central Luzon, either completed or in the pipeline, with an estimated cost of P30.5 million.

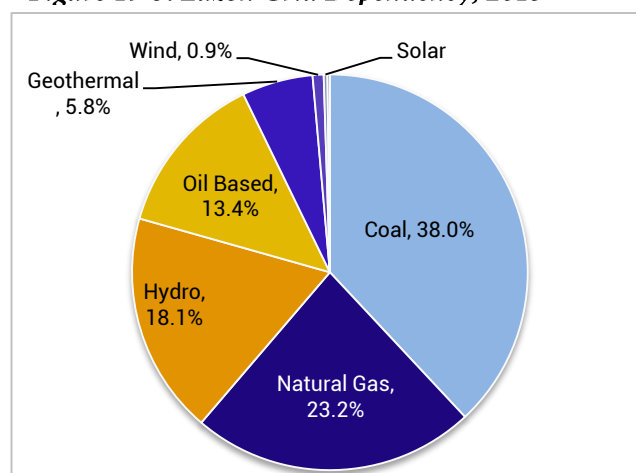
Despite these improvements, flood control measures in the region are yet to be completed. Moreover, the region is also susceptible to other hydrometeorologic (e.g. rain-induced landslides, El Niño, La Niña, typhoons) and geologic hazards (e.g. earthquakes, volcanic eruptions, tsunamis). The development of infrastructure facilities that will help increase the resiliency of the region to hydrometeorologic and geologic hazards have to be prioritized and accelerated. In addition to preparedness and mitigating measures, the response capability of the region should be ensured by improving the utility of lifeline and critical infrastructures (e.g. roads & bridges, temporary shelters, health facilities, warehouses for stockpiles, and logistical support).

## Energy

### *Tapping renewable sources of energy to attain stable supply.*

A stable supply of energy is vital to the economic development of any society. Central Luzon, as part of the Luzon grid, can still be adequately supplied with electricity within the medium term. However, efforts on ensuring a stable supply of energy in the long run are still to be sought.

**Figure 19-5: Luzon Grid Dependency, 2015**



Source: Department of Energy (DOE)

The Luzon power grid has an installed capacity of 13,213 megawatts (MW) or 73.6 percent of the country's total. Shown in Figure 19-5 is Luzon's total dependable capacity of about 11,898 MW in 2015. It is indicated that Luzon is highly dependent on coal (fossil fuel) and natural gas with 38 percent and 23.2 percent dependency ratio, respectively. The least tapped are renewable sources of energy such as wind and solar energy.

**Table 19-7: Comparative Gross Generation, Luzon, 2013 – 2014**

Plant Type	2014		2013		Difference	
	GWh	%Share	GWh	%Share	GWh	%
Coal	27,346	48.17	25,756	46.98	1,591	6.18
Oil-based	2,342	4.13	1,601	2.92	742	46.34
Natural Gas	18,686	32.92	18,783	34.26	(98)	-0.52
Geothermal	3,817	6.72	3,399	6.2	419	12.32
Hydro	4,357	7.68	5,156	9.4	(798)	-15.49
Wind	152	0.27	66	0.12	86	131.59
Biomass	65	0.11	60	0.11	6	9.35
Total Generation	56,766		54,820		1,947	3.55

Source: Department of Energy (DOE)

Table 19-7 shows that energy gross generation in 2014 slightly increased in comparison with the gross generation in the previous year. However, coal plants dominate the generation mix with a share of 48 percent. The challenge of reducing dependency on fossil fuels as well as developing and utilizing renewable energy is part of goal 7 of the Sustainable Development Goals (SDGs): “Ensure access to affordable, reliable, sustainable and modern energy for all.”

The Department of Energy (DOE) is currently promoting the production and utilization of renewable energy (RE) to constitute a significant portion of the energy mix throughout the country. In support of this endeavor, the government is pushing for a feed-in-tariff (FIT) system to accelerate renewable energy technology investments through long-term contracts with RE producers. The renewable energy – based capacity installation target in Luzon is shown in Table 19-8.

While access to electricity in the region is relatively high, gaps in the rural and off-grid areas remain. Of the 1,366,300 potential connections in the region, 1,315,880 were already served or provided with electricity which translates to about 96 percent regional electrification level. Table 19-9 shows that 93 – 98 percent of the potential connections in all the provinces in the region are served with electricity. This indicates that almost every household in these provinces has access to electricity. Still, efforts are to be continued to achieve the sustainable development goal of universal energy access by 2030.

**Electricity rates in the country among the highest in Asia.** Electricity rates in the Philippines are the third highest in Asia and fourth in the Asia-Pacific region (International Energy Consultants, 2016).

**Table 19-8: Renewable Energy-Based Capacity Installation Targets, Luzon**

Sector	Installed Capacity (MW) as of 2010	Target Capacity Addition by				Total Capacity Addition (MW) 2011-2030	Total Installed Capacity by 2030
		2015	2020	2025	2030		
Geothermal	899.0	100.0	720.0	-	-	820.0	1,719.0
Hydro	2,346.0	182.0	2,169.5	1,510.0	-	3,861.5	6,207.5
Biomass	9.0	97.3	-	-	-	97.3	106.3
Wind	33.0	841.0	840.0	432.0	-	2,103.0	2,136.0
Solar	-	228.1	-	-	-	228.1	228.1
Ocean	-	-	35.5	-	-	35.5	35.5
Total	3,287.0	1,438.4	3,765.0	1,942.0	-	7,145.4	10,432.4

Source: National Renewable Energy Program (NREP), DOE

The Department of Energy implements various programs to aid in the reduction of electricity rates and to improve electrification. One of these is the Household Electrification Program (HEP) in Off-Grid Areas using renewable energy, which aims to provide house lighting in off-grid sitios that cannot be viably connected to the conventional grid by the distribution utilities (DUs) or electric cooperatives. Another program is the National Energy Efficiency and Conservation Program (NEECP), which cushions the impact of increases in the prices of petroleum products and electricity through the implementation of energy efficiency and conservation measures. In addition, the program promotes cost avoidance/savings on fuel and electricity without sacrificing productivity, gets firm savings commitments from identified sector groups, and helps protect the environment. A third program is the Nationwide Intensification of Household Electrification, which aims to mobilize DUs in fast-tracking the connections of the remaining un-electrified households in both electrified (load centers and urban/slum areas) and un-electrified areas of their franchise areas.

## Infrastructure support for agriculture and fisheries

***Irrigation development remains low especially in the region's major rice-producing areas.*** The intensification of irrigation and the related expansion of irrigated areas bring about numerous direct and indirect benefits to the Agriculture sector. Irrigation raises land productivity by providing sufficient water to crops to

**Table 19-9: Status of Electrification by Province: Central Luzon, 2015**

Province	Connections		
	Potential	Served	
Aurora	49,700	47,658	96%
Bataan	181,300	178,244	98%
Nueva Ecija	393,200	364,718	93%
Pampanga	356,600	349,201	98%
Tarlac	243,900	239,068	98%
Zambales	141,600	136,991	97%
<b>Total</b>	<b>1,366,300</b>	<b>1,315,880</b>	<b>96%</b>

Source: National Electrification Administration (NEA)

increase yield and ensure the stability of production even under extreme weather conditions (PIDS, 2014).

Ironically, the bigger chunk of the remaining areas to be developed are in the provinces of Nueva Ecija and Tarlac, which are the region's major rice-producing areas (Table 19-10). Given these provinces' critical role, efforts at irrigation development in these areas or in the region in general, should therefore be prioritized.

In the meantime, small scale irrigation project systems (SSIPs) are distributed and installed to provide supplemental irrigation to rainfed rice-based areas in the region.

Additionally, these SSIPs are considered as one of the adaptation measures for mitigating the adverse impact of extreme climate events such as floods or droughts. A total of 1,588 SSIPs servicing 6,868 hectares were already installed or distributed in Central Luzon while 496 SSIPs are currently being constructed/distributed (DA, 2015). However, the provision of SSIPs still seems inadequate vis-à-vis the remaining areas needing irrigation development.

At rainfed conditions, a hectare of rice fields can produce 3 metric tons (MT) of palay per



**Table 19-10: Status of Irrigation Development as of December 31, 2015 (in hectares)**

Region/ Province	Estimated Total Irrigable Area	Firmed Up Service Area			Total	Irrigation Development (%)	Remaining Area To Be Developed
		National Irrigation System	Communal Irrigation System	Other Irrigation System			
<b>Central Luzon</b>	480,783	196,415	69,884	28,943	295,242	61.41	186,549
Aurora	16,407	1,577	5,839	1,912	9,328	56.85	7,079
Bataan	11,960	863	5,761	5,336	11,960	100.00	0
Bulacan	45,442	24,413	5,146	1,526	31,085	68.40	14,358
Nueva Ecija	205,790	111,420	14,954	7,266	133,640	64.94	72,150
Pampanga	52,087	26,557	14,406	6,358	47,322	90.85	4,766
Tarlac	112,921	25,862	17,235	2,729	45,826	40.58	67,095
Zambales	37,183	5,722	6,543	3,817	16,082	43.25	21,101

\*Estimated Total Irrigable Area is based on the 3 percent slope criteria

**Source: National Irrigation Administration**

year. If provided with irrigation, yield may rise to 5 MT per hectare and farmers may have two (2) cropping cycles a year. If the remaining unirrigated areas of 186,548 hectares are provided irrigation, an increment of 1.3 million MT of palay yield translating to 809.6 million kilogram (kg.) of rice could be realized in the region. With 110 kg. of annual per capita consumption of rice, 7.4 million people would potentially benefit from this yield increment, which is equivalent to about 66 percent of Central Luzon's total population or 57 percent of the National Capital Region's (NCR) population in 2015.

**Need to increase infrastructure support for fisheries.** The adequate provision of fishing ports, fish landing centers, and post-harvest facilities is critical to the full development of the Fisheries sector in the country in general and in the region in particular. The highly perishable nature of fish necessitates strategically-sited landing points where catch can be immediately sold, stored, processed or shipped to markets. It also requires the provision of enough facilities so that post-harvest losses can be significantly reduced (Roque, 2000).

One of the programs of BFAR Region 3 that aims to reduce transportation expenses, minimize post-harvest losses, and directly link producers to consumers is the establishment of fish ports or fish landing areas in strategic coastal communities all over the region. As of 2016, there are a total of 22 Community Fish Landing Centers (CFLCs) in Central Luzon (Table 19-11). CFLCs serve as hubs for fish landing and auction and venues for skills development, training in post-harvest, value-adding and fishery conservation, and resource management.

**Table 19-11: Community Fish Landing Center (CFLC) Inventory in Region 3, 2016**

Province	No. of CFLC	Location
Aurora	6	Baler, Dilasag, Dingalan, Dinalungan, Dipaculao, San Luis
Bataan	4	Bagac, Limay, Morong, Orion
Bulacan	1	Paombong
Nueva Ecija	--	--
Pampanga	6	Candaba, Macabebe, Minalin (2), Sto. Tomas, Guagua
Tarlac	--	--
Zambales	5	Botolan, Cabangan, San Antonio, San Felipe, San Narciso
<b>TOTAL</b>	<b>22</b>	<b>--</b>

**Source: Bureau of Fisheries and Aquatic Resources (BFAR) 3**



## Information and Communications Technology (ICT) Infrastructure

**Need to further strengthen the digital infrastructure.** Among the Luzon regions, Central Luzon has the 3<sup>rd</sup> largest number of installed and subscribed telecommunication lines. Of the 304,600 installed telecommunication lines in the region, there are 190,563 subscribed lines, which are equivalent to about 2 lines per 100 persons of the region's total population (Table 19-12).

The challenge of sustaining the growth momentum of the country calls for a more competitive environment that creates more valuable services through interoperability and maximization of resources. Thus, the advancement of ICT infrastructure in the country in general, and in the region in particular, is continuously looked into. The Information and Communications Technology (ICT) stock of the region, which is largely provided by the private sector, has to be further improved to benefit the Information Technology (IT) and Business Process Outsourcing (BPO) industries.

The need to fully migrate to Digital Terrestrial Television Broadcast (DTTB) and expand access to high speed internet also concerns the region. Preparatory works for the country's migration to digital broadcasting are currently on-going through the initiatives of the Department of Information and Communications Technology (DICT), the National Telecommunications Commission (NTC), and the Department of Science and Technology (DOST). In 2013 and 2014, memorandum circulars from NTC were issued to formalize the adoption of ISDB-T as the Philippine's Digital Terrestrial Television (DTT) standards and its implementing rules and regulations (IRR).

The current broadcast service profile from NTC shows that the highest broadcast service in Central Luzon is cable TV (CATV) as seen in Table 19-13. It would be noted that Central Luzon is one of the regions with the highest total current broadcast service among Luzon regions. However, efforts to migrate to digital broadcasting are yet to be pursued in the region.

On e-governance, the government launched the e-Government Master Plan (EGMP), 2013-2016 to serve as a blueprint for introducing innovations in government

**Table 19-12: Telecommunication Line in Luzon Regions, 2015**

Region	Population(estimated)	Installed Lines	Subscribed Lines	Teledensity	
				Installed	Subscribed
CAR	1,833,760	68,958	41,371	3.76	2.26
I	5,573,460	105,226	62,508	1.89	1.12
II	3,594,040	32,380	23,596	0.90	0.66
III	10,931,380	304,600	190,563	2.79	1.74
IV	16,233,460	617,656	329,301	3.80	2.03
V	6,164,700	108,061	57,566	1.75	0.93
NCR	12,086,820	3,707,882	1,827,859	30.68	15.12
<b>TOTAL</b>	<b>101,174,880</b>	<b>5,940,741</b>	<b>3,196,747</b>	<b>5.87</b>	<b>3.16</b>

Source: National Telecommunications Commission (NTC) Annual Report, 2014

**Table 19-13: Current Broadcast Service Profile, 2014**

Region	AM	FM	TV	CATV	TV Relay	TV Translator	DTU/DBS	MMDS	TOTAL
NCR	31	24	23	55	0	0	1	3	138
CAR	12	26	11	19	4	6	0	0	78
I	38	54	24	19	4	6	0	0	221
II	21	56	29	66	3	4	0	1	180
III	17	40	23	177	2	9	3	0	271
IV	38	104	47	269	7	3	1	0	469
V	38	102	48	114	6	7	0	0	315

Source: NTC Annual Report, 2014

work processes, and enhancing productivity in administrative services. As a component of EGMP, the Integrated Government Philippines (iGovPhil) Project was implemented to provide the necessary infrastructure, software, and related systems needed for e-governance. The project aims to create data centers, provide fiber optic networks that will interconnect government offices, and provide high-speed communication and sharing of data. Moreover, DICT expands the Philippine Community e-Center (CeC) Program through the Strategic Roadmap for the Philippine CeC Program 2011-2016. This program seeks to establish new CeCs in municipalities down to the barangay levels where there are no shared internet access facilities, transform existing school computer laboratories and Internet cages, where feasible, to become CeCs, and enhance and strengthen existing CeCs (Department of Information and Communications Technology, 2016).

## Social Infrastructure

### *Gaps in social infrastructure still evident.*

The provision of basic social services such as housing, education, health, and solid waste management are among the priorities of the government over the years. However, despite the improvements in the delivery of social infrastructures, these still fall short of

meeting the rising demand for such services because of the increase in population.

The perennial problem with classroom backlogs is continuously being addressed. Construction of additional classrooms was made possible through the Public-Private Partnership for School Infrastructure Project (PSIP). The second phase of PSIP (PSIP II) is currently being undertaken. The project's primary objective is to eliminate the classroom backlog in Central Luzon and complement DepEd's regular school building program. Specifically, it aims to fast track the delivery of classrooms, reduce cost for the government and introduce innovations in the design, construction methods and materials for classroom construction to address the growing classroom backlog in the country and achieve a 1:45 classroom-student ratio. As shown in Table 19-14, the target numbers of school buildings and classrooms to be constructed in the region at the end of PSIP II are 259 and 1,017, respectively. As of December 2014, there are ongoing constructions of 60 school buildings with 277 classrooms.

To close the gap in the provision of school facilities in the region, the implementation of PSIP, along with the other school building programs of the government such as the Basic Education Facilities Program

(BEFP), Regular School Building Program (RSBP), and School Building Program for Basic Education (SBP4BE), should be fast tracked.

High impact projects were undertaken with the goal of improving access to quality hospitals and health care facilities, one of which is the Health Facility Enhancement Program (HFEP). HFEP was envisioned to revitalize primary health care facilities and upgrade hospitals to decongest end-referral hospitals throughout the country. Hospitals were upgraded to make them more responsive towards providing Basic and Comprehensive Emergency Obstetrics and Neonatal Care (BEmONC and CEmONC), and to strengthen the health facility system or network. In Central Luzon, a total of 82 HFEP projects (65 DOH implemented and 17 DPWH implemented) were programmed for implementation in 2015 with a total project cost of Php 335.64 million. As of December 31, 2015, a total of 75 HFEP facilities (58 DOH implemented and 17 DPWH implemented) were completed.

Table 19-15 and Table 19-16 show that most of the programmed facilities in the region by DOH and DPWH are located in the provinces of Bulacan and Nueva Ecija. On the other hand, only 3 facilities were

**Table 19-14: PSIP II Physical Target (School Building and Classroom) by Province**

Region / Province	School Buildings	Classrooms
<b>Central Luzon</b>	<b>259</b>	<b>1,017</b>
Aurora	6	15
Bataan	34	75
Bulacan	106	574
Nueva Ecija	56	144
Pampanga	29	121
Tarlac	10	24
Zambales	18	64

**Source: Department of Education (DepEd)**

programmed and completed in the province of Aurora.

National housing need from 2011-2016 was estimated at 5.56 million units (HUDCC, December 2013). Central Luzon is among the three (3) regions with the highest projected housing need for the said period. Housing need, which is defined as the housing backlog plus new households, for Central Luzon, CALABARZON, and NCR account for almost one-third (1/3) of the projected housing need for the country in 2011-2016.

For Central Luzon alone, the estimated housing need for the said period is at 498,809 units. This is made up of the initial housing need of 101,441 units in 2011 and incremental housing need per year that ranged from 63,151 to 69,383 units as indicated in Chapter 9.

**Table 19-15: Summary of DOH-Implemented Projects as of 4th Quarter 2015**

Province	Cost	No. of Programmed Facilities	Status		
			Completed	Ongoing	Not started
Aurora	4,279,091.67	3	3	-	-
Bataan	995,000.00	2	2	-	-
Bulacan	18,415,655.04	17	13	4	-
Nueva Ecija	17,558,636.85	15	14	1	-
Pampanga	13,741,464.75	13	12	1	-
Tarlac	265,237,729.54	9	8	1	-
Zambales	7,145,295.51	6	6	-	-
<b>TOTAL</b>	<b>327,372,873.36*</b>	<b>65</b>	<b>58</b>	<b>7</b>	<b>-</b>

**Source: Department of Health (DOH)**

**Table 19-16: Summary of DPWH-Implemented Projects as of 4th Quarter 2015**

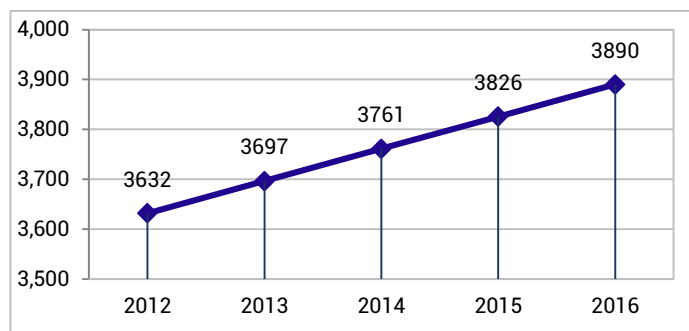
Province	Cost	No. of Programmed Facilities	Status		
			Completed	Ongoing	Not started
Aurora	-	-	-	-	-
Bulacan	7,500,000.00	5	5	-	-
Nueva Ecija	9,000,000.00	6	6	-	-
Pampanga	5,766,000.00	4	4	-	-
Tarlac	1,500,000.00	1	1	-	-
Zambales	1,500,000.00	1	1	-	-
<b>TOTAL</b>	<b>25,266,000.00*</b>	<b>17</b>	<b>17</b>	<b>-</b>	<b>-</b>

Source: Department of Public Works and Highways (DPWH)

**Managing solid waste should be prioritized.** The volume of waste generated in the region is increasing while waste management facilities remain low. As indicated in Figure 19-6, the volume of waste generated in the region is increasing, and this is due to the rapid increase in population, industrialization, and economic development according to the National Solid Waste Management Commission (NSWMC).

Currently, only 19 sanitary landfills are operating in Central Luzon. Most municipalities cannot afford to finance their own landfills, while those who have the means, however, find it difficult to build one due to strong resistance or “not in my backyard” (NIMBY) attitude of host communities. As such, the compliance of LGUs to RA 9003 is still a major issue with about 31 open dumpsites still in operation.

**Figure 19-6: Projected Waste Generation in Region 3 (Tons per day)**



Source: National Solid Waste Management Commission

However, LGU efforts in waste reduction can be observed with the presence of 514 materials recovery facilities (MRFs) in the region serving a total of 581 barangays (NSWMC, 2017).

## Protective and Governance Infrastructures

**Need to improve detention and fire-fighting facilities.** In 2015, the congestion rate in prison cells and correctional facilities throughout the region ranged from 61 percent to as high as 791 percent, with the ideal capacity at 4.7 square meters per inmate (see also Chapter 17 and 18). Poor conditions in the prison and correctional facilities not only threaten the health and security of inmates but also the correctional function of these facilities. Thus, rehabilitation and modernization of the jail and correctional facilities in the region must be prioritized.

While most urban centers have sufficient fire-fighting facilities, the smaller municipalities are yet to be provided with fire stations. There are about 129 fire stations and fire sub-stations in Central Luzon. A total of 13 municipalities in the region are still without a fire station as shown in Table 19-17. It can be noted that

most of the municipalities without a fire station are located in the provinces of Nueva Ecija and Aurora, while fire stations are already in place in all municipalities in the provinces of Bataan and Pampanga. To improve the region's preventive and response capacities to fire hazards, the remaining un-served areas in the region must be provided with firefighting facilities.

## Environmental management

### *Improving air quality deemed necessary.*

The need to increase the number of ambient air quality monitoring stations in the region poses a challenge. Data from the air quality monitoring stations of EMB III in City of San Fernando, Pampanga and Meycauyan, Bulacan registered steady growth in total suspended particulates (TSP) values ranging from 100-500 ug/NCM for years 2007 - 2012. These are significantly higher than the threshold of 90 ug/NCM. For the smaller but more lethal particulates (e.g 2.5 microns or less and 10 microns or less) that can easily penetrate the lungs, the government has yet to acquire the monitoring facilities and measuring

gadgets. Major sources of PM 2.5 and PM 10 are the two-stroke motorcycle engines, construction, and wear-and-tear of tires. There is a strong need to increase the number of air quality monitoring stations in the region to include those that can measure PM 2.5 and PM 10.

Effluents from industries, agriculture, and households are the major sources of pollutants that threaten the quality of land and water resources. In 2015, the Environmental Management Bureau (EMB) of DENR accredited 33 hazardous wastes transporters in the region. On the other hand, 28 treatment/storage/disposal (tsd) facilities for hazardous wastes were accredited in the region (DENR-EMB, as of August 31, 2015).

## Infrastructure Planning and Management

### *Duplication and fragmentation of roles and functions in the government.*

A case in point is the numerous agencies that partake in the utilization, management, and development of the region's water resources. More than a dozen agencies (both local and national) have a stake in the utilization, management, and development of infrastructures in the region's water resources. As such, turf war is not uncommon. The absence of legal bases or conflicting provisions between laws also hinders infrastructure development. The creation of an apex organization to handle water resources, amending existing infrastructure laws and passing new ones are needed to further improve infrastructure governance in the country in general and in the region in particular.

**Table 19-17: Municipalities without Fire Stations in Region 3 as of December 2015**

Province	Number	Municipality
Aurora	3	Casiguran, Dilasag, Dinalungan
Bataan	-	
Bulacan	1	Dona Remedios Trinidad
Nueva Ecija	5	Bongabon, Carranglan, Gabaldon, Nampicuan, Pantabangan
Pampanga	-	
Tarlac	2	Anao, Pura
Zambales	2	Cabangan, San Narciso
<b>Total</b>	<b>13</b>	<b>--</b>

Source: Bureau of Fire Protection (BFP) R3

Furthermore, lack of or limited maintenance activities are among the reasons for the accelerated deterioration of the infrastructure facilities in the region. The government is still in the process of institutionalizing “user-pays” principle for other viable infrastructure services to be able to raise funds for operation and maintenance activities. The use of Value Engineering/Value Analysis (VEVA) in project design and preparation to bring

down cost and ensure project functionality has yet to be adopted by infrastructure agencies or cascaded to local government units. VE/VA was introduced by NEDA initially for major infrastructure programs and projects. VE/VA is conducted to optimize project design, minimize cost overruns, and avoid project implementation delays.

## Strategic Framework

The golden age of infrastructure development in Central Luzon will focus on i) enhancing competitiveness and increasing productivity, ii) creating a safer environment conducive to regional development, iii) improving the quality of built and natural environments, and iv) reducing gaps in the provision of basic infrastructure services. These will help achieve and sustain a high growth trajectory that will create mass employment and reduce poverty. The key to accelerating infrastructure development in the region is to increase government spending on public infrastructure development. As the economy grows, the government and the private sector can generate the necessary resources to further build the infrastructure base of Central Luzon.

### Subsector Outcome 1: Enhanced Growth and Productivity

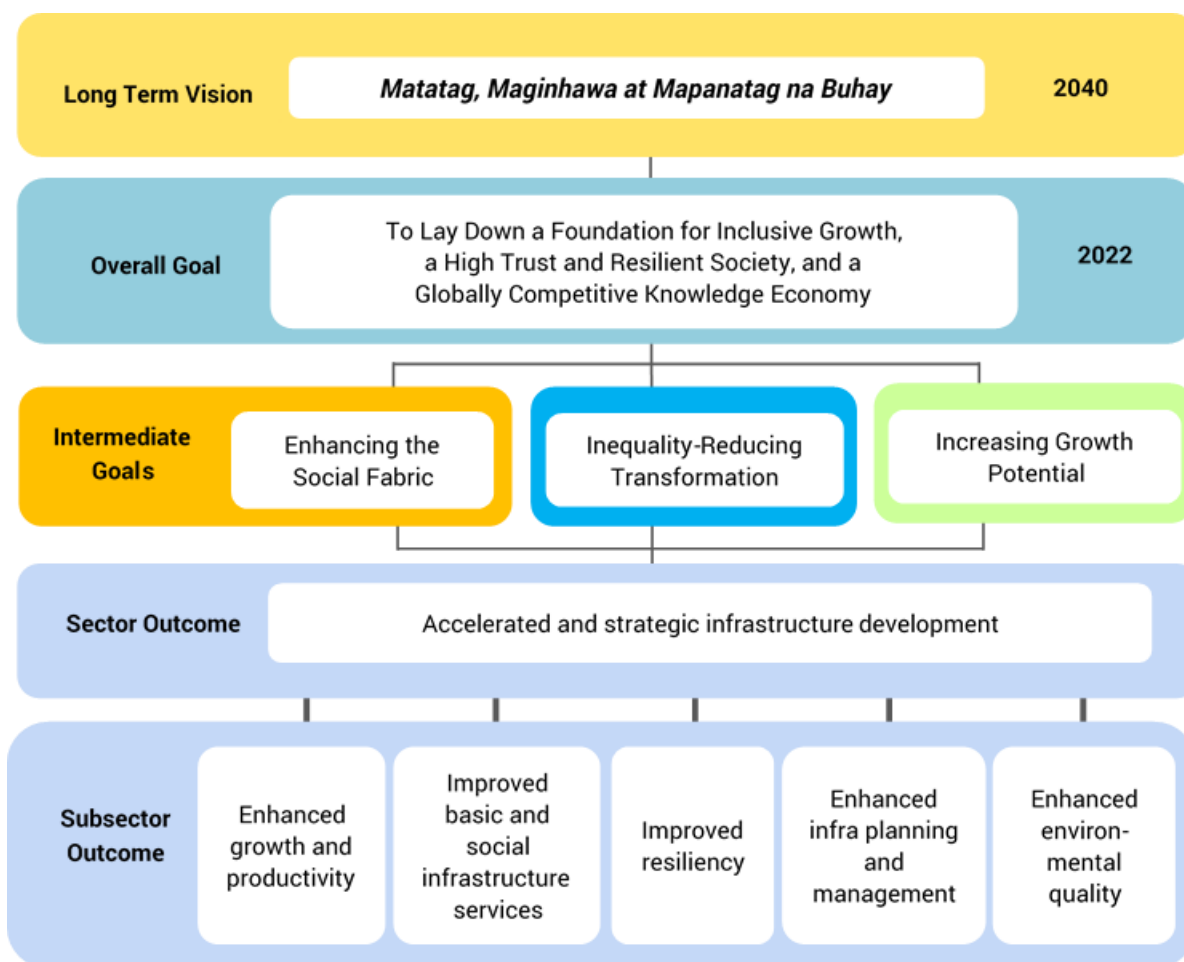
#### Strategy 1: Improve internal access and interregional connectivity

**Road-based Transport.** Internal access and circulation, along with interregional connectivity will be improved by

modernizing the region’s network of land, air, and water transportation systems. The linkages between national, regional, and local urban centers as described in the regional spatial development framework will be provided by a network of high standard highways (HSH) as schematically presented in Figure 19-7. The region’s development roadmap for land transportation (e.g. roads & bridges, railway systems, airports, and seaports) will be provided by an integrated land use and transportation master plan. This master plan will include the establishment of interregional bus transport terminals in major urban centers such as but not limited to San Fernando City, Angeles City, Mabalacat City, Layac Junction Dinalupihan, and San Jose City, among others.

The integrated land use, access and circulation framework for provinces, cities, and municipalities within the region will follow the concept developed by Serote (2010) as schematically presented in Figure 19-8. To hasten city-to-city (through) traffic, the level of service of major





thoroughfares will be improved by building new roads or adding lanes to existing alignments complemented by land use regulation, zoning, and traffic management. Growth nodes and alternative urban centers will be developed and provided with the required infrastructure support to decongest the central business districts (CBDs). Internal circulation in existing CBDs will be improved through land use planning and transportation management.

To improve the travel time to major urban centers within the radius of 60 kilometers from San Fernando City within two (2) hours anytime of the day, and the rest of the provincial capitals (e.g. Baler and Iba)

within 3-4 hours, the LOS of the following roads in the region should be further improved, as shown in Table 19-18.

Some of the recommended measures to maintain or further improve the levels of service (LOS) provided by these roads are presented in Table 19-19.

**Rail-based Transport.** The region's once vibrant railway system provided by the north lines of the Philippine National Railways (PNR) will be upgraded and modernized to provide airport-to-airport express services, inter-urban commuter services, and cargo express delivery services.



Figure 19-7: The Concept of High Standard Highways (HSH)

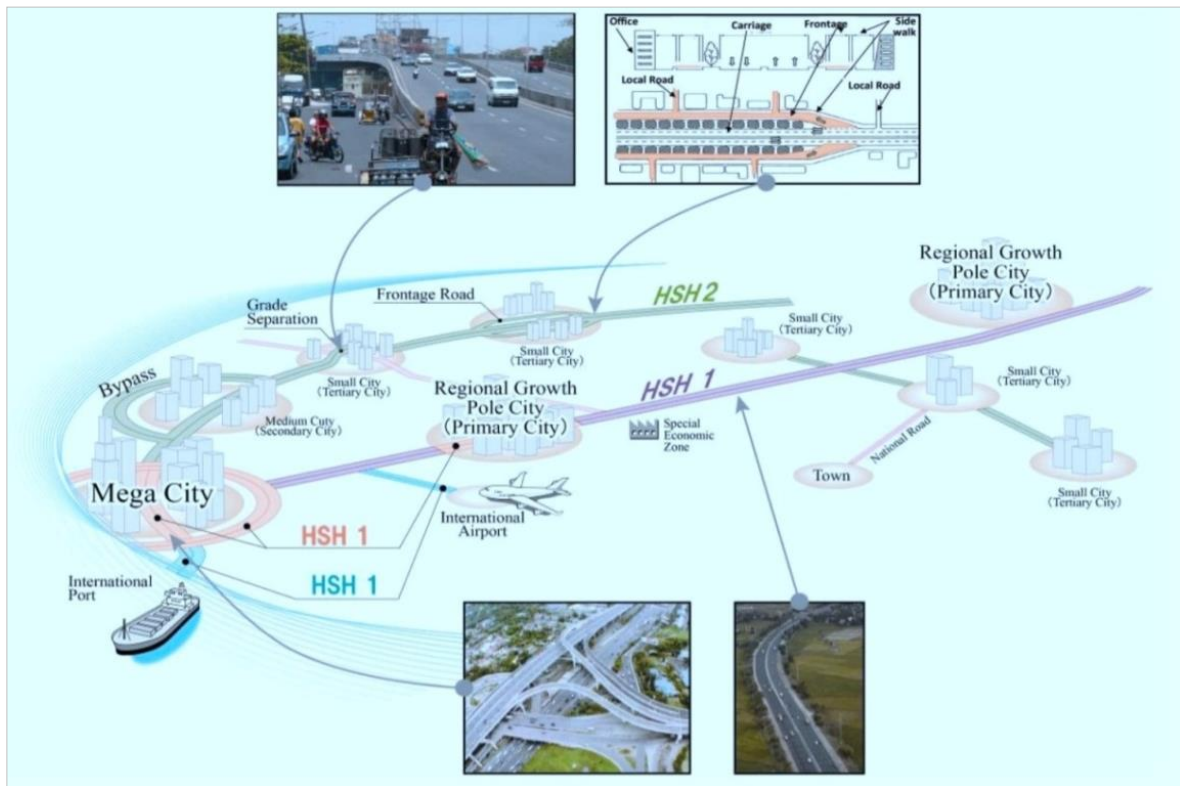
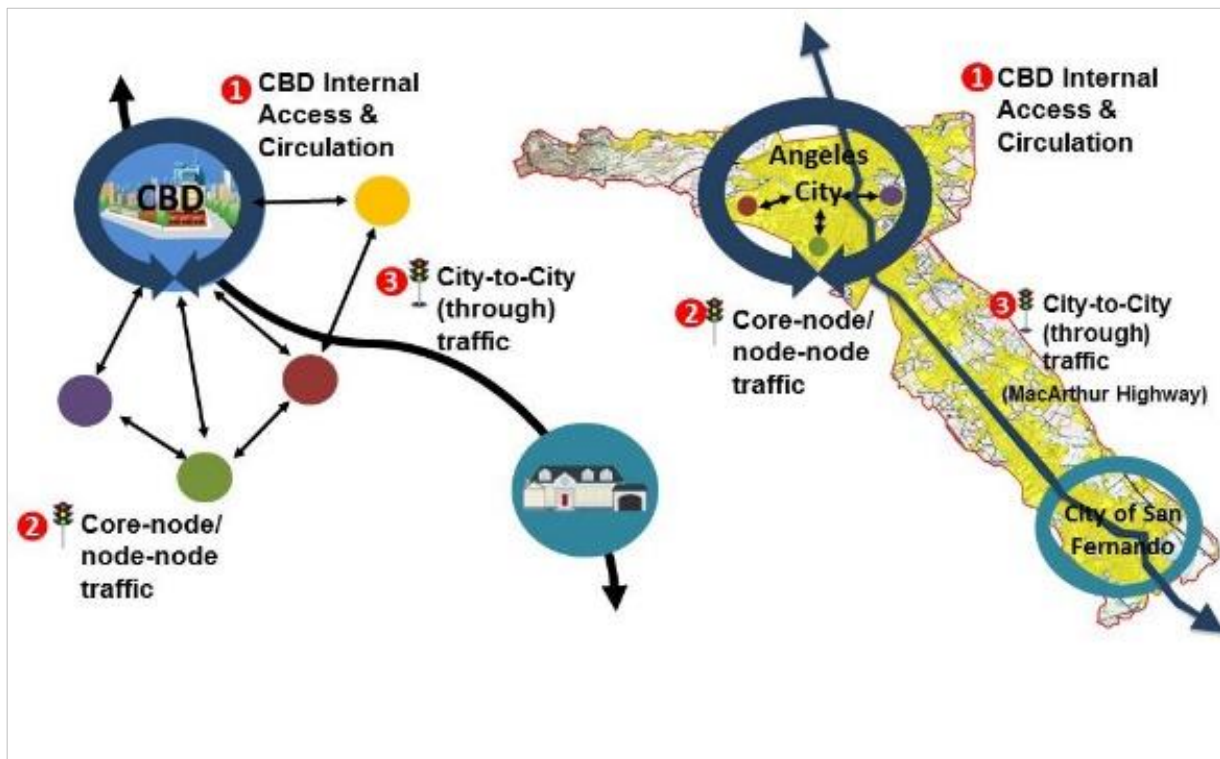


Figure 19-8: Integrated access, circulation, & land use planning framework for provinces, cities, and municipalities



To avoid future problems with railway connectivity and interoperability, the policy of using standard gauge (1,435mm) for all rail projects will be adopted. To help achieve these development objectives, the following activities will be pursued:

- i) Protecting the re-acquired ROW of PNR Mainline North from Caloocan to Angeles City from informal settlement and acquiring the remaining ROW of PNR Mainline North from Mabalacat City to Tarlac through the assistance of local and provincial government units;

- ii) Fast-tracking the implementation of Manila-Clark Rapid Railway System to provide seamless access between Mega Manila, Clark Green City, and Clark International Airport; and,
- iii. Initiating project preparatory activities for the Subic-Clark Cargo Railway Development program to help decongest the ports of Manila and improve the general, bulk, and containerized cargo traffic in Subic Port.

**Table 19-18: Major roads in Central Luzon that provides internal access and interregional connectivity**

Road Classification	Functional Role
<b>HSH1/ Toll Expressways</b>	
1. North Luzon Expressway (NLEX)	Interregional connectivity
2. NLEX Extension to Tabang (Tabang Spur Road)	Internal access & circulation
3. Tipo-Subic Expressway	-do-
4. Tarlac-Pangasinan-La Union Expressway (TPLEX)	Interregional connectivity
5. Subic-Clark-Tarlac Expressway (SCTEX)	-do-
6. Central Luzon Link Expressway (CLLEX)	-do-
<b>HSH 2/ North-South Backbone</b>	
7. Manila North Road (MNR)/ MacArthur Highway	Interregional connectivity
8. Cagayan Valley Road (CVR)/ Maharlika Highway	-do-
9. Plaridel Bypass Road	-do-
<b>East-West lateral</b>	
10. Gapan-San Fernando-Olongapo Road	Internal access & circulation
11. Iba-Tarlac-Sta. Rosa-Pantabangan-Baler Road	-do-
12. Capas-Botolan Road	-do-
13. Sta. Cruz – Mangatarem Road	Interregional connectivity
<b>Strategic Road</b>	
14. Baler-Casiguran Road	Internal access & circulation
15. Dinadiawan- Maddela Road	Interregional connectivity
16. Olongapo-Bugallon Road	-do-
17. Roman Highway	Internal access & circulation
18. Mariveles-Bagac Road	-do-
19. Angeles-Dinalupihan	-do-
20. Bagac-Morong-Subic Road	-do-
<b>National Secondary and Local Roads</b>	
21. Key provincial, city, municipal, and tourism road links	- do-
22. Key barangay and farm-to-market (FMR) roads	- do-

**Table 19-19: Recommended measures to improve LOS in Central Luzon roads**

Road Classification	Recommended measures to improve LOS
<b>HSH 1/ Toll Expressways</b>	<ul style="list-style-type: none"> <li>• Address traffic bottlenecks and widen NLEx to accommodate the traffic from SLEx-NLEx connector, CLLEx, TPLEx, SCTEx and other major roads</li> <li>• Rehabilitate and widen the connecting roads leading to and from tollway exits and entries</li> <li>• Continue implementing integrated ticketing systems (e.g. electronic and manual) for all tollways in Central Luzon to lessen queuing time in toll booths and plazas</li> <li>• Conduct preparatory studies and integrated master planning activities for new tollways in Central Luzon and the greater capital to include but not limited to i) Cavite-Manila-Bataan Expressway; ii) Manila Bay Bridge to connect Bataan, Corregidor, and Cavite</li> </ul>
<b>HSH 2/ North-South Arterial Backbone</b>	<ul style="list-style-type: none"> <li>• Continue the rehabilitation and widening activities in MNR and CVR</li> <li>• Construct additional bypasses, flyovers, or underpass structures in major urban centers (e.g. Tarlac City &amp; Gapan City) along CVR and MNR</li> <li>• Secure or fence the RROW of, and regulate the number of new intersections along the new Plaridel bypass road to sustain the LOS it currently provides</li> </ul>
<b>East-West Laterals</b>	<ul style="list-style-type: none"> <li>• Complete the rehabilitation and widening activities in GSO road all the way to Gapan City</li> <li>• Widen and flood-proof the Tarlac-Sta. Rosa section and fully pave the all-weather sections of Pantabangan-Baler road of the Iba-Baler lateral road link</li> <li>• Implement the Capas-Botolan road to fully integrate Zambales into the regional economy and open the western seaboard to development</li> <li>• Complete the Sta. Cruz-Mangatarem road to develop the Zambales northern tip through its integration with south-western Pangasinan and northern Tarlac</li> </ul>
<b>Strategic Roads</b>	<ul style="list-style-type: none"> <li>• Complete the remaining unpaved sections of Baler-Casiguran road</li> <li>• Widen congested sections of the Olongapo-Bugallon road</li> <li>• Complete the widening and rehabilitation of Roman highway to link Bataan freeport, the industrial areas and urban centers in Bataan to GSO road and SCTEx</li> <li>• Fully pave the Mariveles-Bagac Road and Bagac-Morong-Subic Road to fully open western areas of Bataan peninsula to development</li> <li>• Implement regular road maintenance activities in Angeles-Dinalupihan road</li> <li>• Pursue the Tourism Road Infrastructure Program (TRIP) of DPWH</li> </ul>
<b>Local Roads</b>	<ul style="list-style-type: none"> <li>• Key provincial, city, municipal, and local tourism road links, including critical barangay and farm-to-market (FMR) roads will be prioritized for inclusion in the local infrastructure support programs of national agencies</li> </ul>

**Air Transport.** The government will pursue its strategy to simultaneously develop Ninoy Aquino International Airport (NAIA) and Clark International Airport (CRK). To optimize the traffic handling capability of Clark, the following measures will be implemented:

- i) Pursuing terminal expansion, construction of an additional runway, modernization of navigational equipment, and upgrading of terminal equipment and facilities, among others;
- ii) Establishing a central intermodal terminal within the vicinity of Clark with 24/7 operation to provide secure and predictable

transport services (e.g. buses, taxis, public utility vehicles, private cars) to airport users and passengers;

- iii) Expanding the “park-then-ride” facilities inside Clark;
- iv) Formulating an integrated transportation and land use masterplan for Metropolitan Clark Area (MCA) to be incorporated in the comprehensive land use plans (CLUPs) and zoning ordinances (ZOs) of host cities and municipalities.

**Water Transport.** Port facilities in Central Luzon will be improved for bulk and containerized cargo handling, transshipment and passenger line operations, and inter-island passenger and cargo shipping. To achieve these objectives, the following measures will be implemented:

- i) Expanding the port facilities in Limay, Bataan to provide a direct RO-RO services between Bataan and Cavite that will facilitate quicker and cheaper transfer of goods, cargo, and passengers between neighboring regions;
- ii) Improving the traffic handling capacity of Subic port;
- iii) Providing RO-RO facilities in various ports located in Aurora, Bataan, & Zambales; and,
- iv) Providing road access to these port systems to expand their service hinterlands.

### **Strategy 2: Increase Supply of Clean and Renewable Energy**

To reduce the cost of electricity, the region's supply of clean and renewable energy will be expanded. This will improve the cost-effectiveness and competitiveness of business firms in local and global markets, stabilize prices, and improve the purchasing power of wage earners, among other economic benefits. The reduction of the region's carbon footprints from energy utilization will also help address emission reduction and global warming concerns to contribute to Sustainable Development Goals (SDGs).

**Power Generation.** The government, in partnership with the private sector, will develop other sources of energy to reduce

dependence on fossil fuels, and to decrease carbon emissions. The reliability and affordability of power supply in the region and the Luzon grid will be improved by building new power plants or expanding the capacity of existing generation plants through the following initiatives:

- i) Expanding the current production of coal-fired plants in Bataan and Zambales to take advantage of the cheaper bulk cargo transport of coal feedstock through the sea;
- ii) Exploring the geothermal energy potential of the region such as geothermal resources located in Bataan peninsula and the Mt. Pinatubo-Zambales mountain range areas;
- iii) Developing wind farms in Zambales, Aurora, and Nueva Ecija, where the interplay of varying elevations, mountains, vegetation, and bodies of water may provide wind flow patterns and velocities that can support commercial electricity production;
- iv) Expanding the generation of electricity from biomass feedstock in Nueva Ecija and Aurora, areas where small-scale plants are already operating;
- v) Constructing additional multi-purpose or trans-basin tunnels to Central Luzon from Sierra Madre, where abundant rainfall is evenly distributed all-year round, as well as building mini-hydroelectric power plants from NIA's existing irrigation facilities to augment the current total installed capacity of Pantabangan, Casecnan, and Angat Hydro-electric power plants of 486

MW of clean and renewable energy, and

- vi) Encouraging the development of solar farms and solar rooftops in specific areas of the region to balance solar energy gains and land conversion concerns, which may impact on the food security concerns of the region.

The growing popularity of rooftop photovoltaics and solar farms in Central Luzon is a welcome development. Rooftop installations should be given special attention by LGUs and building officials for structural and fire safety considerations. Large solar farms, however, should also be regulated since they could potentially negatively affect the region's food security objectives.

A hectare of solar farm can produce about 1 MW electricity. The additional demand of say 3,600 MW by 2020 may be supplied by an area equal to 3,600 hectares. Such land requirement is equal to 0.45% of the total agri-lands of Region III or about half of the total land area of San Fernando City (P.). At the production level of 10 metric tons (MT) per hectare per year, the same area can produce 26,000 MT of palay annually equivalent to 21,000 MT of rice at milling recovery rate of about 60 percent. These can supply the annual rice intake of about 196,364 people at 110 kg per capita consumption.

Based on the solar energy potential map produced by the National Renewable Energy Laboratory (Figure 19-9), areas in Central Luzon are under the middle range gain areas. Photovoltaic panels can potentially generate electricity between

5.0 – 5.5 kWh/ sq. m/ day in higher gain areas and 4.5 – 5.0 kWh/ sq. m/ day in lower gain areas.

**Power Transmission.** Power in the North Luzon Region (Central Luzon, the Cordilleras, Ilocos Region, and Cagayan Valley) of the Luzon Power Grid is provided by a network of 500-kV Extra High Voltage (EHV) transmission lines that run through the provinces of Pangasinan, Nueva Ecija and Bulacan and a network of 230-kV lines that covers majority of the entire area of North Luzon except areas up to Ilocos Norte which are still served by 115-kV radial lines (NGCP, 2013). The reliability of the existing power transmission network will be further improved in the region through the following measures:

- i) Expanding existing power transmission services to cover the entire province of Aurora to provide 24/7 supply of electricity to all its municipalities from Dingalan to Casiguran;
- ii) Possibly upgrading the existing 230 kV single circuit lines of Labrador-Hermosa and San Manuel-Pantabangan-Cabanatuan-Mexico transmission assets into double circuit lines consistent with N-1 redundancy provision of EPIRA law; and,
- iii) Upgrading and providing preventive maintenance works for transmission lines, sub-stations, and switchyards to minimize system loss and forced power outages.

**Distribution and Electrification.** Government interventions are necessary to



provide electricity services to remaining off-grid areas and unserved communities to achieve the household electrification targets of 90 percent coverage by 2017 and 100 percent by 2020, as stipulated in the household electrification and development plan of the government. These can be done through the following interventions:

- i) Ensuring the appropriateness, and sustainability of projects involving new or emerging technologies for missionary electrification;
- ii) Pursuing electrification targets as indicated in the Household Electrification, Development Plan and Missionary Electrification

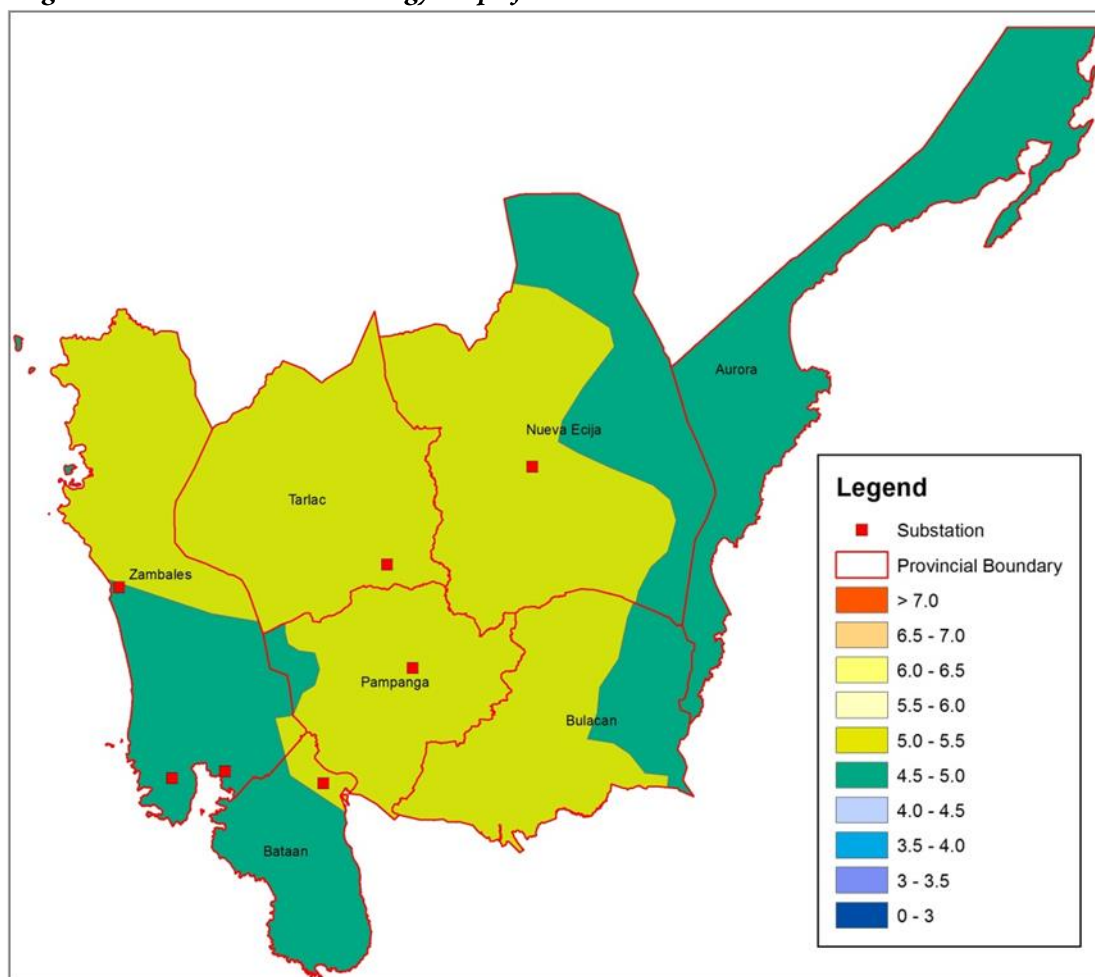
Development Plan;

- iii) Tapping EC Regional Technical Evaluators to complement manpower of NEA in facilitating evaluation of electrification projects; and
- iv) Providing technical and financial support to NEA and ECs in total electrification.

On the high cost of electricity, the government aims to reduce the rates through the following:

- i) Minimizing system loss and removing VAT on system loss

**Figure 19-9: Potential solar energy map of Central Luzon**



Source: US National Renewable Energy Laboratory

- charges through an Executive Order;
  - ii) Revisiting the Implementing Rules and Regulations (IRR) on the cross-ownership between RES and either generation companies or distribution utilities to foster transparency and promote fair competition in the implementation of the OARC;
  - iii) Revisiting and reviewing Section 43(f) of RA 9136 on the pricing methodology (from reasonable return on rate base (RORB) to adoption of alternative forms of internationally- accepted rate-setting methodology as may be deemed appropriate);
  - iv) Encouraging RE development in missionary areas to shift away from expensive diesel fuel and reduce universal charge for missionary electrification; and
  - v) Ensuring adequate supply of electricity in the grid to increase competition by fostering a more conducive business/regulatory environment to allow the entry of more power generation investors.
- ii) Tapping new multipurpose dams, and trans-basin tunnels from the Sierra Madre mountain range in the Eastern Luzon seaboard, where precipitation is abundant and evenly distributed all-year round, as additional sources of irrigation water;
  - iii) Rehabilitating existing national and communal irrigation systems from point source to the distribution canals to increase irrigation efficiency;
  - iv) Developing and providing small water impounding structures, small farm reservoirs, and shallow tube wells, among others, in areas not covered by large irrigation systems;
  - v) Providing farmers with tractors, seeders, transplanters, and other farm machinery to improve crop production;
  - vi) Providing farmers with mechanical driers, mechanical harvesters and threshers, covered multi-purpose pavements, cold storage, and other post- harvest facilities to reduce post-harvest wastage;
  - vii) Providing fisherfolk in the coastal communities and fishing villages of Pampanga, Bataan, Zamables, Bulacan, and Aurora with fish port complexes, cold storage facilities, and fishing boats to improve capture and market access; and,
  - viii) Paving key barangay and farm-to-market roads to enable efficient transport of fisheries and agricultural produce to distribution and market centers.

### **Strategy 3: Modernize agriculture and fishery infrastructures**

To achieve the objectives of making food available and affordable, and raising the incomes of farmers and fisherfolk, there is a need to improve productivity and increase production in the Agriculture and Fisheries sectors. As such, the following measures will be implemented:

- i) Accelerating the implementation of Balog-Balog reservoir multi-purpose project;



#### **Strategy 4: Strengthen the digital infrastructure**

Information and Communication Technology (ICT) is a vital tool for accelerating economic growth, reducing inequality, and catalyzing countryside development. Thus, the government will intensify efforts to address issues and challenges to enhance the quality, accessibility, affordability, and security of the country's ICT infrastructure.

The government will continue to promote the spread of ICT as a means to interconnect communities, businesses, and markets, including the poor, users in remote areas, and other disadvantaged groups. While the private sector will remain as the workhorse for supply of infrastructure systems in ICT, the government will provide the overall framework for improving digital connectivity through the following:

- i) Streamlining and harmonizing government requirements and processes on the issuance of permits and clearances by establishing one-stop shop offline and online facilities;
- ii) Ensuring the efficient utilization and management of the radio frequency spectrum to support the growth of various wireless ICT applications and services;
- iii) Providing fiscal incentives for emerging technologies capable of establishing connections to the countryside and far-flung areas through LGUs;
- iv) Creating a Universal Access Fund (UAF) to be used for the development of ICT infrastructure

in the unserved and underserved areas;

- v) Expanding access to high speed internet (i.e. 100 megabits per second) through the formulation of a National Broadband Deployment Plan;
- vi) Catapulting television broadcast from regular definition to high definition through the formulation of an analogue to Digital Terrestrial Television Broadcast (DTTB) migration plan; and,
- vii) Formulating other ICT master plans (e.g. National Cybersecurity Plan) to provide the overall policy direction and guide all infrastructure roll-out and development interventions.

#### **Subsector Outcome 2: Improved Basic and Social Infrastructure Services**

##### **Strategy 5: Ensure water security**

To increase the supply of water to households and industries, new water sources for bulk water production will be developed, prioritizing surface water over ground water for water-critical areas. In addition, distribution efficiency improvement and water safety measures will be pursued. In major urban and industrial centers where water demands are high, water abstraction can exceed or match the rate of replenishment. This may trigger saline water intrusion and can cause land to subside. Land subsidence will worsen the impact of sea level rise caused by global warming. While groundwater demands are high in urban centers located inland (e.g. Metro Clark, Tarlac City, and Cabanatuan City), saline water intrusion

and land subsidence are already felt in areas along the Pampanga bay, and gradually go inland as far as San Fernando City, Pampanga.

The following measures will be implemented to arrest these negative consequences:

- i) Regulating the development of the groundwater supply system by water utilities in the region to address issues on salt water intrusion due to over-abstraction;
- ii) Clustering water districts based on contiguity and water demand to improve their aggregate financial capacity to implement capital intensive projects on water resource development (e.g. bulk water supply, sewerage systems) to be initiated by the Local Water Utilities Administration (LWUA);
- iii) Establishing bulk water supply systems by building reservoirs or establishing water conveyance pipelines from existing high dams, in the provinces of Tarlac, Nueva Ecija, and Bulacan to ensure supply and address over-extraction and land subsidence issues, to be initiated by LWUA through local, ODA, or PPP financing schemes;
- iv) Rehabilitating water delivery and distribution systems of water districts to address system loss and reduce the cost of water delivery;
- v) Encouraging local water utilities to implement water safety measures to ensure public health and safety; and,
- vi) Enjoining local water utilities to provide a Level I water supply system for communities located

in rural and remote areas through their Corporate Social Responsibility (CSR) agenda to help achieve universal potable water supply coverage at the household level.

#### **Strategy 6: Provide health, education, and housing facilities**

The government will continue to address the growing backlog in the construction of classrooms, the modernization of hospitals and health facilities, and the provision of shelter (e.g. socialized, low cost, economic, and open market).

**Education.** The region's education facilities will be improved, expanded, and provided with complementary facilities such as power, ICT, water and sanitation facilities. To this end, the following measures will be taken:

- i) Tapping the Basic Education Facilities Fund (BEFF) of the government to upgrade and modernize the education facilities in the region;
- ii) Establishing an Integrated Financial Management Information System (IFMIS) to track the status of DepEd's budget releases and disbursements in real time to ensure timely delivery of educational facilities and learning resources; and,
- iii) Improving educational facilities through the joint implementation of the program by DepEd and DPWH.

**Health.** The strategic focus of health infrastructure development in the region will be governed by the Health Facilities Enhancement Program (HFEP) of the

Department of Health (DOH). The infrastructure development focus of the said plan are as follows:

- i) Upgrading DOH hospitals & medical centers, including provincial, district and municipal hospitals and other government health facilities;
- ii) Upgrading and constructing rural health units, barangay health units, blood service facilities, psychiatric facilities, reference laboratories, and quarantine stations;
- iii) Establishing treatment centers for emerging and re-emerging diseases;
- iv) Establishing vaccine production facilities and biosafety laboratories; and,
- v) Constructing drug abuse treatment and rehabilitation centers.

LGUs shall be given the primary responsibility to identify lands best suited for the construction and expansion of these health facilities. Further, policy reforms that will allow income retention of health facilities for the operation and maintenance of all government health facilities will be pursued.

**Housing.** Central Luzon is fast becoming a strong magnet for urban development, with increased housing demand from formal and informal settlers. The timely provision of decent shelter to the underserved, poor, and homeless will be ensured through the following initiatives:

- i) Provincial and local government units will acquire sites intended for housing, commercial, and mixed uses, and develop the same through

joint ventures (JVs) and other PPP financing schemes;

- ii) Provincial government units, through their respective provincial development and physical framework plans, will identify areas suitable for settlement expansion and densification;
- iii) LGUs, through zoning and local legislations, will identify and allocate relocation sites for informal settlements;
- iv) The Regional Development Council (RDC) III will support the creation of a strong and well-funded Department of Housing and Urban Development (DHUD) that will pursue the country's housing and urban development goals and objectives; and,
- v) RDC III to champion the passage of the National Land Use Act (NaLUA).

#### **Strategy 7: Address gaps in basic, governance, & protective infrastructures**

The government will ensure the delivery of basic infrastructure services especially in unserved and underserved areas through the following:

- i) Providing a potable water supply to rural and remote areas;
- ii) Upgrading transmission lines, substations, and power plants to ensure the reliability of the power supply in the off-grid areas of Aurora province;
- iii) Continuing rural electrification efforts through local power distribution utilities and electric cooperatives in the region to achieve 100 percent sitio and household electrification by 2020;
- iv) Addressing the backlog in school

facilities in the region within the medium term by fast-tracking the implementation of the major programs and projects of the government;

- v) Rehabilitating existing jail and prison facilities and constructing new structures to improve the level of service, which are currently operating at more than 500 percent capacity;
- vi) Increasing the number of police stations and substations to improve police presence and visibility in the community; and,
- vii) Modernizing fire stations, fire trucks, and other firefighting equipment and facilities especially in high density urban areas.

### **Subsector Outcome 3: Improved Resiliency**

Infrastructure interventions and vulnerability reduction measures to address climate (e.g. floods, rain-induced landslides, El Niño, La Niña, typhoons) geologic (e.g. earthquakes, volcanic eruptions, tsunamis) and man-made hazards (e.g. fires) will be implemented in the region. These measures are intended to improve preparedness, enhance disaster prevention and mitigation, improve response, and hasten recovery and rehabilitation in the region.

#### **Strategy 8: Increase resilience to climate and geologic hazards**

Climate change footprints are linked to stronger typhoons, increasing frequency of high intensity and short duration rainfall events, rising temperatures, occurrence of El Niño (drought) and La Niña (extremely

wet condition), and other extreme climatic events. Geologic hazards originate from volcanic activities, earthquakes, and other physical hazards.

The following measures will be implemented to improve the resilience of the region to natural hazards:

- i. Implementing integrated flood control measures in Tarlac river, Rio Chico river, Pampanga River, Candaba swamp, western river basins in Zambales, flood-prone areas of Aurora, and deltaic & coastal areas Bataan, Bulacan and Pampanga;
- ii. Establishing concrete, earth, and vegetative flood walls in areas prone to tsunamis and storm surges (e.g. Pampanga bay, eastern and western Central Luzon seaboard);
- iii. Expanding and strengthening the existing flood forecasting and warning systems through expansion of coverage and installation of new equipment and weather stations to improve community preparedness;
- iv. Implementing dam rehabilitation activities to mitigate possible impacts of earthquakes and extreme rainfall events;
- v. Implementing an integrated dam release management protocol and regulation procedure to optimize the flood control, power generation, irrigation, domestic water supply, and environmental flow services of dams in Central Luzon; and,
- vi. Establishing additional volcanic, earthquake, and tsunami monitoring equipment and stations to enhance preparedness and readiness.

### **Strategy 9: Improve response and hasten early recovery**

In addition to preparedness and mitigating measures, the response and early recovery capabilities of the region during and right after disasters will be improved by increasing the resiliency of lifeline and critical infrastructures:

- i) Bridges along, and sections of the north-south arterial backbones, east-west laterals, and expressways will be rehabilitated to ensure access and delivery of services during calamities;
- ii) Redundant or alternate roads will be developed to complement the main disaster road links;
- iii) Evacuation centers and temporary shelters will be established in all provinces and major cities and urban centers of the region;
- iv) Critical health facilities will be upgraded to ensure the delivery of health services during calamities; and,
- v) Regional and provincial warehouses will be established to pre-position food, water, medicines and other necessities.

### **Subsector Outcome 4: Enhanced Environmental Quality**

The livability of the built environment and sustainability of the natural environment will be improved by addressing air, water, and land-based pollution. In the case of Central Luzon, these will be achieved through appropriate infrastructure interventions.

### **Strategy 10: Improve sanitation and wastewater disposal**

Central Luzon will sustain its efforts to

improve Manila Bay water quality by controlling soil and water pollution (e.g. industrial effluents, waste water from piggeries and poultry, water runoff from agricultural lands laden with fertilizers and pesticides, and domestic or household wastes) as stipulated in the Supreme Court mandamus.

The following measures will be pursued in terms of sanitation infrastructure development:

- i) Enjoining industrial, agricultural, and commercial firms to establish their own wastewater treatment facilities, to be regularly monitored by DENR;
- ii) Enforcing the establishment of sanitary toilets with 3-chambered septic tanks at the LGU level in their capacity as the building official;
- iii) Establishing sewerage systems through the local water distribution utilities under the assistance of the Local Water Utilities Administration (LWUA) initially in high density urban centers such as Olongapo City, Angeles City, San Fernando City, Mabalacat City, Tarlac City, Cabanatuan City, Balanga City, and Malolos City, among others.

### **Strategy 11: Improve solid waste disposal and management**

Wastes can contaminate the soil as well as the groundwater and surface water. Contaminated groundwater or runoff creates health risks to the public. Wastes in open dumpsites expose the population to various vectors and water-borne diseases, and create nuisances to surrounding

communities because of the foul odor emitted by decomposing organic substances.

Toxic and hazardous wastes (THWs) from hospitals and industrial sources such as dead batteries, used petroleum products, cyanide, mercury, and asbestos, among others, directly expose the public to various health hazards. With the ban on incineration as a mechanism to treat and process THWs, the government has to rely more on the use of sanitary landfills to dispose of THWs.

Thus, the development of additional sanitary landfills in the region by LGUs or agencies will be accelerated along with the closure of open dumpsites. The “not in my backyard” or NIMBY attitude of host communities will be accordingly addressed through proper consultation and community education. Materials Recovery Facilities (MRFs) and transfer stations will also be established to facilitate recycling, reuse, and composting as well as the transfer of residual wastes to landfills.

#### **Strategy 12: Improve air quality**

Increasing air pollution load is one of the contributing factors to the high incidence of upper respiratory tract diseases in major urban centers. For the more dangerous particulates such as PM 10 (10 microns or less) and PM 2.5 (2.5 microns or less) which can easily penetrate the bronchioles of the lungs, DENR-EMB lacks the necessary monitoring and measuring devices. Major sources of PM2.5 and PM 10 are the two-stroke motorcycle engines, construction, and wear-and-tear of tires. On the average, 70 percent of TSP comes from mobile sources and 30 percent from stationary industrial sources.

While the government has been addressing the problem at point source, air quality monitoring in population centers and communities within the vicinity and influence area of power plants and industries must be vigorously pursued.

Thus, the government will pursue the procurement of additional air quality monitoring and measuring equipment to include those that can detect the more dangerous particulate matters – PM2.5 and PM 10.

### ***Subsector Outcome 5: Enhanced Infrastructure Planning and Management***

#### **Strategy 13: Improve infrastructure governance**

To improve infrastructure governance, enhance the operation of infrastructure agencies, and optimize the participation of the private sector in infrastructure development, the following shall be pursued:

- Advocating the Integrated Water Resources Management (IWRM) and river basin (e.g. ridge to reef) approach in the development of its water resources, and the establishment of a lead or apex agency to harmonize water resource governance currently scattered in several national government agencies;
- Adopting 24/7 work schedule on infrastructure construction;
- Amending Clean Air Act (RA 8749) to allow advanced incineration technologies to be used in the treatment and management of solid



and toxic and hazardous wastes; and,

- Facilitating the acquisition of right-of-way, site or location for national government infrastructure project to balance the interests of the state and private property owners, and to include the provision on ROW clean-up for obstructions such as trees, other forms of vegetation, and structures; and,
- Formulating development roadmaps for key infrastructure systems in Central Luzon.

#### **Strategy 14: Optimize Resources and Investments in Infrastructure**

The effectiveness of capital resources, as well as the utility and economic life of the

public infrastructures in the region will be optimized through the following initiatives:

- i) The use of Value Engineering/Value Analysis (VEVA) in project design and preparation will be cascaded and pilot-tested to select regional agencies and local government units to bring down cost and ensure project functionality;
- ii) Funds for the maintenance of existing infrastructure facilities will be regularly provided in the annual budget of agencies; and
- iii) The “user-pays” principle which is widely practiced in transportation sector will be expanded to cover other revenue-generating infrastructure systems to ensure sustainable project operation and facilitate cost recovery.

## Research and Development Agenda

The infrastructure development research agenda of the region will focus on improving internal access and inter-regional connectivity, ensuring the supply of clean and renewable energy, improving resiliency and adaptive capacity from climate and other natural hazards, ensuring water and shelter security, and improving the livability of the built environment. These studies are as follows:

### *Integrated land use and transportation master plan study for the major urban centers and interregional transportation hubs of Central Luzon*

An integrated land use and transportation master plan study for the metropolitan clusters of Angeles City, Tarlac City,

Cabanatuan City, and Malolos City will be prioritized. The study outputs will be incorporated in the comprehensive land use plans (CLUPs) of LGU beneficiaries.

### *A study evaluating the feasibility of establishing a Bus-Rapid Transit (BRT) system as an affordable alternative to a mass rail transit in Metro Clark Area (MCA)*

BRT systems can potentially generate higher economic returns due to lower capital requirements vis-à-vis mass rail transits. The research will examine the BRT system and the feasibility of introducing BRT facilities initially in Metro Clark. Viability gap analysis e.g. possible phase out of public utility jeepneys (PUJ) will be done. A BRT innovation – Jeepney Rapid Transit



(JRT) system will also be looked into as an alternative to address the viability gap.

### *Market hinterland expansion and logistics development study for Clark International Airport (CRK)*

Marketing strategies to improve the traffic handling and increase the service coverage of CRK from Central to Northern Luzon regions will be the main concerns of the study. The needed interventions to transform the Clark aviation complex into a major regional logistics hub will also be evaluated.

### *A comprehensive study on the renewable energy (RE) potentials of Central Luzon*

To ensure the affordable and dependable supply of clean energy to the Luzon grid, an updated study on the renewable energy potentials of Central Luzon will be revisited. The balance between resource use over food security and environmental protection objectives will be examined. The identified RE areas will be incorporated in the CLUPs and Zoning maps of host LGUs to optimize land use and avoid conflicting uses in the future.

### *Transbasin water resources study for power generation, irrigation, and water supply*

Surface water from Sierra Madre mountain range areas where rainfall is abundant and evenly distributed around the year may be tapped and conveyed to the region through transbasin tunnels. A comprehensive compensation package for the host LGUs and communities will be provided to strengthen transbasin cooperation. The study will focus on the institutional arrangements, environmental mitigation strategies, technical solutions, and economic & financial viability.

### *A study to identify climate adaptation pathways to address localized urban inundation and basin-wide flooding through non-structural interventions*

Infrastructure interventions are only one part of the holistic strategy to address flooding in the region. Non-structural strategies and concepts (e.g. relocation, insurance, land use, living with floods) will be investigated to mitigate flooding impacts now aggravated by climate change as evidenced by increasing frequency and intensity.

## RDP Targets

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
Subsector Outcome 1: Enhanced Growth and Productivity				
Percent paved national road to total national road in kilometers	2015	96.51	100	DPWH
Percent of permanent bridge to total bridge along national roads	2015	100	100	DPWH
Average International Roughness Index (IRI)	2016	3.92	3.0	DPWH

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
Number of Motor Vehicles Registered	2016	599,311	decreasing	LTO
Annual international and domestic passenger traffic in Clark International Airport (CRK)	2015	868,528	increasing	CIAC
Annual international and domestic flights in CRK	2015	6,057	Increasing	CIAC
Annual international and domestic cargo tonnage at CRK (number)	2015	35,012	Increasing	CIAC
Volume of containerized cargoes handled (TEU) in Subic Port	2015	123,558	160,625 (5% annual increase)	SBMA
Subic Port utilization rate (in percent)	2015	21	Increasing	SBMA
Percentage of HHs provided with electric power supply	2015	96	100	DOE
Percent of established post-harvest facilities (unit)	2015	1,023	Increasing	BFAR
Community Fish Landing Centers (CFLCs)	2016	22	Increasing	BFAR
Number of LGUs with free public wifi services	2016	14	Increasing	DICT
Average broadband speed (in Mbps)	2016	4.3 (national average)	Increasing	DICT
<b>Subsector Outcome 2: Improved Basic and Social Infrastructure Services</b>				
Proportion of families with access to safe water supply (in %)	2014	99	100	PSA
Percentage of irrigated area out of total irrigable area	2016	48.63	58.80	NIA/NIA-UPRIIS
Classroom backlogs in the region	2014	1,017	decreasing	DepEd
Number of Health Facility Enhancement Program (HFEP) facilities established	2015	75	increasing	DOH
Housing backlogs	2016	498,809	decreasing	NHA
Proportion of fire-truck to population (ideal 1:28,000)	2016	1:37,150	1:28,000	BFP
Average Occupancy rate of prison and correctional Facilities (in percent)	2015	526	decreasing	BJMP
Number of municipalities without fire stations	2015	13	0	BFP
<b>Subsector Outcome 3: Improved Resiliency</b>				
Number of flood control and drainage structures completed	2015	249	increasing	DPWH
<b>Subsector Outcome 4: Enhanced Environmental Quality</b>				
Number of materials recovery facilities (MRFs)	2016	514	increasing	DENR-EMB/DILG
Number Sanitary Landfills in the region	2015	19	increasing	DENR-EMB/DILG
Percentage of HHs with access to basic sanitation i.e. sanitary toilets	2014	99	100	PSA
Air quality monitoring stations	2014	5	increasing	DENR-EMB



# 20 Ensuring Ecological Integrity, Clean, and Healthy Environment



# Ensuring Ecological Integrity, Clean, and Healthy Environment

In recent years, the importance of environment and natural resources has been underscored as a critical and determining factor in achieving sustainable development. Natural resources are now viewed as economic assets and are referred to as natural capital. Ecosystem services such as *provisioning* (e.g. food, raw materials, freshwater), *regulating* (e.g. local climate and air quality, carbon sequestration and storage, erosion prevention), *supporting* (e.g. habitats for species, maintenance of genetic diversity), and *cultural* (e.g. recreation, tourism) are the functions the environment delivers to the entire population.

The succeeding sections will provide an overview and assessment of the Environment and Natural Resources sector of Central Luzon. The underlying reasons why ecosystem services are at risk or threatened, such as mismanagement, degradation and overexploitation of the region's environmental resources, will be examined and explained. Finally, strategies to restore and rehabilitate these will be presented as priority measures to ensure that a healthy and well-functioning environment will be handed down for future generations to enjoy.

## Assessment and Challenges

### Forest Governance and Management

***Protecting the region's forestlands and watersheds from degradation remains to be a challenge.*** Based on land classification, total forestland in the region comprises about 942,387.00 hectares or 43.9 percent of the region's total land area (Table 20-1). In 2010 however, the total forest cover of the region stands at 520,704.00 hectares which means that through the decades, the region has already lost almost half of its forests. This decline in forest cover and forest

density is brought about by increased human activities within forest areas.

***Almost half of the region's forests are covered with tenurial instruments.*** In terms of forest management, one of the key strategies of the government is the issuance of tenurial instruments. As of July 2016, 242,289.52 hectares of forest land are covered by various tenurial instruments (Table 20-2). Among these, the Industrial Forest Management Agreement (IFMA) has the largest share covering more than half (about 62 percent) of the total tenured area. IFMA is a production sharing

**Table 20-1: Land Classification and Total Forest Cover by Province**

Region/ Province	Land classification (2015)					Forest Cover (2010)			
	Total Area (ha)	Certified Alienable and Disposable (A & D)	Percent Share (%)	Forestland	Percent Share (%)	Total (ha)	Closed	Open	Mangrove
Central Luzon	<b>2,147,036</b>	<b>1,204,649</b>	<b>56.1</b>	<b>942,387</b>	<b>43.9</b>	<b>520,704</b>	<b>225,352</b>	<b>294,331</b>	<b>1,021</b>
Aurora	323,954	132,008	40.8	191,946	59.3	218,588	132,548	85,518	521
Bataan	137,291	69,975	51.0	67,316	49.0	31,617	10,618	20,791	208
Bulacan	262,505	185,333	70.6	77,172	29.4	58,720	35,266	23,387	67
Nueva Ecija	528,433	343,257	65.0	185,176	35.0	74,604	9,530	65,074	-
Pampanga	218,068	172,616	79.2	45,452	20.8	7,465	773	6,607	85
Tarlac	305,345	184,975	60.6	120,370	39.4	34,842	5,407	29,435	-
Zambales	371,440	116,485	31.4	254,995	68.6	94,869	31,209	63,519	140

Source: NAMRIA/ Philippine Forestry Statistics 2015

**Table 20-2: Tenurial Instruments in Central Luzon, as of July 2016**

Tenurial Instrument	Number of Sites	Tenured Area (ha)	Percent Share (%)
Integrated Forest Management Agreement (IFMA)	27	148,192.41	61.16
Socialized Industrial Forest Management Agreement (SIFMA)	251	6,199.01	2.56
Agroforestry Farm Lease Agreement (AFFLA)	7	1,860.50	0.77
Tree Farm Lease Agreement (TFLA)	34	2,516.37	1.04
Forest Land Grazing Management Agreement (FLGMA)/ Forest Land Grazing Lease Agreement (FLGLA)/ Pasture Lease Agreement	50	16,787.44	6.93
Special Land Use Permit (SLUP)	32	708.67	0.29
Forest Land Use Agreement (FLAG)	1	1.47	0.00
Forest Land Use Agreement for Tourism (FLAgT)	1	2.9	0.00
Community Based Forest Management Agreement (CBFMA)	116	65,316.42	26.96
Private Forest Development Agreement (PFDA)	2	600.00	0.25
Foreshore Lease Agreement (FLA)	21	39.73	0.02
Miscellaneous Lease Agreement (MLA)	4	62.60	0.03
PP	1	2.00	0.00
<b>TOTAL</b>	<b>547</b>	<b>242,289.52</b>	<b>100.00</b>

Source: Department of Environment and Natural Resources 3

agreement between a private individual or a corporation and the government which allows the harvesting, selling and utilization of planted trees in a specified area of forest.

*Significant accomplishments were achieved in the past years through the intensified National Greening Program.*

To address the lingering challenge in forest management, the DENR had intensified forest management through the wide scale implementation of the National Greening Program (NGP). For the period of 2011-2016, a total of 94,658.25 hectares were

replanted with assorted tree seedlings. Within this period, the Province of Tarlac had the largest share of area replanted equivalent to about 18,668.94 hectares.

## Coastal and Marine Resources Rehabilitation and Management

*Slow recovery of damaged coastal and marine resources due to climate change and human activities was observed.* With about 22 percent of the region's population



living along coastal areas, human activities have continued to put pressure on the productivity and quality of coastal and marine resources. Land-based pollution combined with the anticipated impacts of climate change, such as sea level rise and increase in surface water temperature, further aggravate the deteriorating condition of the region's marine resources.

Various efforts to reverse this are being implemented. Consequently, pursuant to the Supreme Court Continuing Mandamus for the rehabilitation of Manila Bay, the region through DENR conducted advocacies on ICRM Scaling-up, stream bank stabilization, and survey and mapping of coastal and marine resources.

***Mangrove reforestation throughout the region's coastline was intensified.*** During the previous years, DENR intensified mangrove reforestation projects to bring back mangrove forests in areas where there used to be such. From the period of 2014-2016, 277.50 hectares of coastal shoreline were replanted with various mangrove species. Replanting activities during this

period were concentrated in the provinces of Bulacan, Pampanga and Zambales.

## Biodiversity Conservation and Protected Area Management

***Protected areas cover a large portion of the region's land area; however budget allocation for protected area management has been minimal.*** The region has a total of 24 Proclaimed Protected Areas (PAs) covering 284,295.95 hectares. These protected areas are further classified into: (a) National Parks, (b) Game Refuge and Bird Sanctuary, (c) Watershed Forest Reserve, (d) Protected Landscape, and (e) Marine Reserve. The details on the location and respective legislation for each protected area are presented in Table 20-3. Further, in terms of area coverage, the Pantabangan-Carranglan Watershed Reservation in Nueva Ecija is the biggest, covering an area of about 84,500 hectares.

**Table 20-3: Protected Areas in Central Luzon, by classification**

Name of Protected Area	Location	Legislation	Date	Area (ha.)
<b>Regional Total</b>				<b>284,295.95</b>
<b>A. National Parks (6)</b>				
1. Minalungao NP	Gapan and Gen. Tinio, Nueva Ecija	Republic Act 5100	6/11/1967	2,018.00
2. Biak-na-Bato NP	San Miguel, Bulacan	Proc. 223	11/16/1937	2,117.00
3. Mt. Arayat NP	Arayat and Magalang, Pampanga	Proc. 203	9/16/1937	3,715.23
4. Bataan NP	Hermosa, Orani, Samal, Abucay, Pila, Balanga, Bagac and Morong, Bataan; (Subic, Zambales)	Proc. 192	11/27/1987	23,688.00
5. Olongapo Naval Base Perimeter NP	Olongapo City, Zambales	Proc. 478	10/22/1968	9.04
6. Aurora Memorial NP	Bongabon, Nueva Ecija; and Baler, Quezon	Proc. 130	5/19/1949	5,676.00
<b>B. Game Refuge and Bird Sanctuary (1)</b>				<b>12.35</b>
1. Lake Malimanga Bird and Fish Sanctuary	Candeleria, Zambales	Proc. 1949	3/14/1980	12.35
<b>C. Watershed Forest Reserve (11)</b>				<b>223,071.10</b>
1. Watershed Purposes of Mariveles (Palanas)	Mariveles, Bataan	E.O. 20	2/25/1919	325
2. Olongapo WFR	Olongapo, Zambales	Proc. 66	3/20/1987	6,335.00

Name of Protected Area	Location	Legislation	Date	Area (ha.)
3. Angat Watershed and Forest Range (Pilot)	Norzagaray, San Jose,Bulacan and Montalban,Nueva Vizcaya	Proc. 391	4/30/1968	6,600.00
4. Talavera Watershed Reservation	Sta. Fe, Nueva Vizcaya; Carranglan, Lupao, San Jose and Pantabangan, Nueva Ecija	Proc. 350	12/12/1938	37,295.00
5. Pantabangan-Caranglan Watershed Reservation	Pantabangan, Caranglan, Nueva Ecija	Proc. 561	5/21/1969	84,500.00
6. Doña Remedios/General Tinio Watershed	Doña Remedios, Bulacan; Gen. Tinio, Nueva Ecija	Proc. 230	3/23/1988	20,760.00
7. Calabgan WFR	Casiguran, Aurora	Proc. 915	6/1/1992	4803
8. Dipaculao WFR	Dipaculao, Aurora	Proc. 116	6/10/1987	1786
9. Dibalo-Pingit-Zabali-Malayay WFR	Baler, San Luis, Aurora	Proc. 908	5/25/1992	4528
10. Aurora Watershed Forest Reserve	Aurora	Proc. 34	2/4/1936	430
11. Angat Watershed Forest Reserve (Metro Water District)	Montalban, San Jose,Rizal, Norzagaray,Bulacan and Angat,San Rafael, Nueva Ecija	Proc. 71	3/10/1927	55,709.10
<b>D. Protected Landscape (5)</b>				<b>16,421.23</b>
1. Dinadiawan River Protected Landscape	Dipaculao, Aurora	Proc. 278	4/23/2000	3,371.33
2. Amro River Protected Landscape	Casiguran and Dilasaga, Aurora	Proc. 274	4/23/2000	6,471.08
3. Talaytay Protected Landscape	Dinalungan, Aurora	Proc. 283	4/23/2000	3,526.29
4. Simbahan-Talagas Protected Landscape	Dinalungan, Aurora	Proc. 267	4/23/2000	2,266.49
5. Roosevelt Protected Landscape	Hermosa and Dinalupihan,Bataan	Proc. 273	4/23/2000	786.04
<b>E. Marine Reserve (1)</b>				<b>7,568.00</b>
1. Masinloc and Oyon Bay Marine Reserve	Masinloc, Oyon, Zambales	Proc. 231	8/18/1993	7,568.00

Source: Biodiversity Management Bureau

In terms of the extent of protected areas per province, Nueva Ecija covers about 53 percent of the region's total proclaimed protected areas. However, in terms of budget allocation based on the DENR's 2015 and 2016 approved budget on Protected Area Development and Management, allotment has been varying especially for the provinces of Nueva Ecija and Bulacan (Table 20-4) which when combined comprise about 76 percent of the region's total protected areas. Budget cuts have serious implications on the maintenance and protection of biodiversity rich areas. In the recent years, biodiversity loss has been attributed to insufficient funding for protected area management.

*A decrease in the population of some threatened species has been recorded.* For biodiversity conservation, the population of three (3) threatened species is being monitored by the DENR: (i) Philippine Eagle; (ii) Fruit-eating Flying Fox; and (iii) Marine Turtles.

Historically, the Philippine Eagle could not be found in Central Luzon but in 2015, two (2) eagles were sighted in the province of Nueva Ecija. The Fruit-eating Flying Fox, on the other hand, can be usually found in Subic Bay, Olongapo City. In 2013, it had a population of around 13,649, which drastically dropped by about 62 percent to only 5,246 in 2015. The same trend was also observed for the population of marine

**Table 20-4: Protected Area Coverage per province and Budget Allocation, 2015 & 2016**

Province	Protected Area coverage (ha)	% Share	2015 DENR Budget Allocation on Protected Area Development and Management (Php)	2016 DENR Budget Allocation on Protected Area Development and Management (Php)
Aurora	27,182.19	9.56	6,833,000.00	17,904,000.00
Bataan	24,799.04	8.76	2,186,000.00	2,003,000.00
Bulacan	64,426.10	22.66	14,769,000.00	879,000.00
Nueva Ecija	150,249.00	52.85	15,379,000.00	1,463,000.00
Pampanga	3,715.23	1.31	490,000.00	5,355,000.00
Tarlac	-	-	206,000.00	1,485,000.00
Zambales	13,924.39	4.90	755,000.00	2,590,000.00

Source: Biodiversity Management Bureau, Department of Budget and Management

turtles. From a recorded population of 30 in 2013, it halved to only 15 in 2015 (DENR).

## Mining

*There is a need to ensure that responsible mining is practiced, especially in the province of Zambales where majority of the region's existing MPSAs are located.* The most abundant commodities mined within Central Luzon include nickel, iron ore, marble, limestone, shale and sand and gravel. Mining activities are concentrated in the provinces of Zambales, Bulacan and Bataan. Table 20-5 shows a summary of mining tenements as of September 2016 with the corresponding area and classification. For Mineral Production Sharing Agreements (MPSA), the province of Zambales has the largest area coverage equivalent to 30,858.33 hectares or 60.23 percent share to total. The main commodities mined in these areas are chromite and nickel. The province of Bulacan follows with a total area of 7,873.73 hectares with limestone and marbleized limestone as primary commodities. MPSA is a mineral agreement through which the government shares in the production of the Contractor, whether in kind or in value, as

owner of the minerals. In return, the contractor shall provide the necessary financing, technology, management and personnel for the mining project (MGB).

In terms of exploration permits (EP), majority (58.30 percent) are also located in the province of Zambales. This is followed by the province of Aurora where about 29.55 percent of total approved EPs, equivalent to 8,667.00 hectares are located.

**Table 20-5: Summary of Mining Tenements as of September 2016**

Classification	Province	Area (ha.)	Percent Share (%)
Existing Mineral Production and Sharing Agreement (MPSA)	Aurora	2,092.52	4.08
	Bataan	7,542.38	14.55
	Bulacan	7,873.73	15.37
	Nueva Ecija	156.48	0.31
	Pampanga	613.65	1.20
	Tarlac	2,187.00	4.27
	Zambales	30,858.33	60.23
	<b>Subtotal</b>	<b>51,234.10</b>	<b>100.00</b>
Exploration Permit (EP)	Aurora	8,667.00	29.55
	Bataan	-	-
	Bulacan	3,563.43	12.15
	Nueva Ecija	-	-
	Pampanga	-	-
	Tarlac	-	-
	Zambales	17,099.65	58.30
	<b>Subtotal</b>	<b>29,330.08</b>	<b>100.00</b>

Source: Mines and Geosciences Bureau 3

In line with the pronouncement on responsible mining by the President, DENR issued Memorandum Order No. 2016-01 regarding the audit of all operating mines and moratorium on new mining projects.

The said measure aims to ensure that loss of habitat, wildlife and resources are prevented or if unavoidable, managed accordingly through responsible mining practices. Especially in the province of Aurora where the Sierra Madre mountain range is located, strict and proper enforcement of mining regulations should be observed to prevent environmental degradation and further loss of biodiversity.

## Pollution

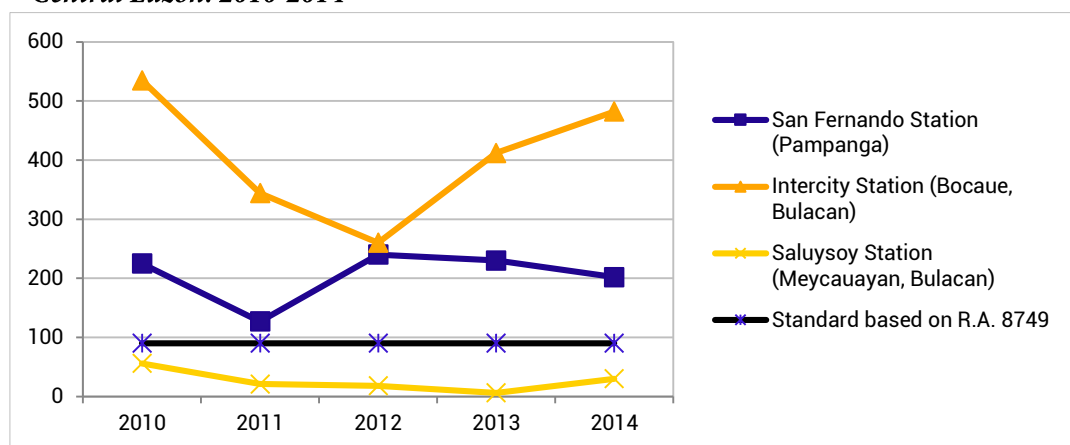
***Air quality, measured in annual TSP levels in San Fernando and Intercity Stations are still beyond the standard.*** As of 2015, five (5) air quality monitoring stations are operational throughout the region. Three of these are located in Pampanga (City of San Fernando, Clark Freeport Area and Pampanga Provincial Capitol Compound) and another two (2) in Bulacan. Figure 20-1 shows the average annual total suspended solids (TSP) values for the three monitoring stations, except for Clark Freeport Area and Pampanga Provincial Capitol Compound since these only became operational in 2014. Based on the results of monitoring

from 2010-2014, air quality in the San Fernando Station and Intercity Station are beyond the 90 ug/NCM standard espoused by Republic Act 8749 or the Clean Air Act and is considered as unhealthy for sensitive groups. The high values recorded for the Intercity Station are attributed to the combined emission from the rice milling operations and emissions from hauling trucks and motor vehicles.

***Water quality in general, within the MMO river system continued to deteriorate.*** In terms of water quality, regular monitoring of the EMB is limited to the Marilao-Meycauayan-Obando (MMO) River System which was designated as a Water Quality Management Area (WQMA) through DENR Administrative Order No. 7 issued on 14 May 2008. The Governing Board in partnership with other concerned government agencies is now operational and oversees the implementation of the Ten (10) Year Action Plan for the rehabilitation of the MMO River System.

Water quality monitoring by the EMB is limited to the following four (4) river

***Figure 20-1: Average Annual TSP Values for Three Air Quality Monitoring Stations, Central Luzon: 2010-2014***



Source: Environmental Management Bureau 3

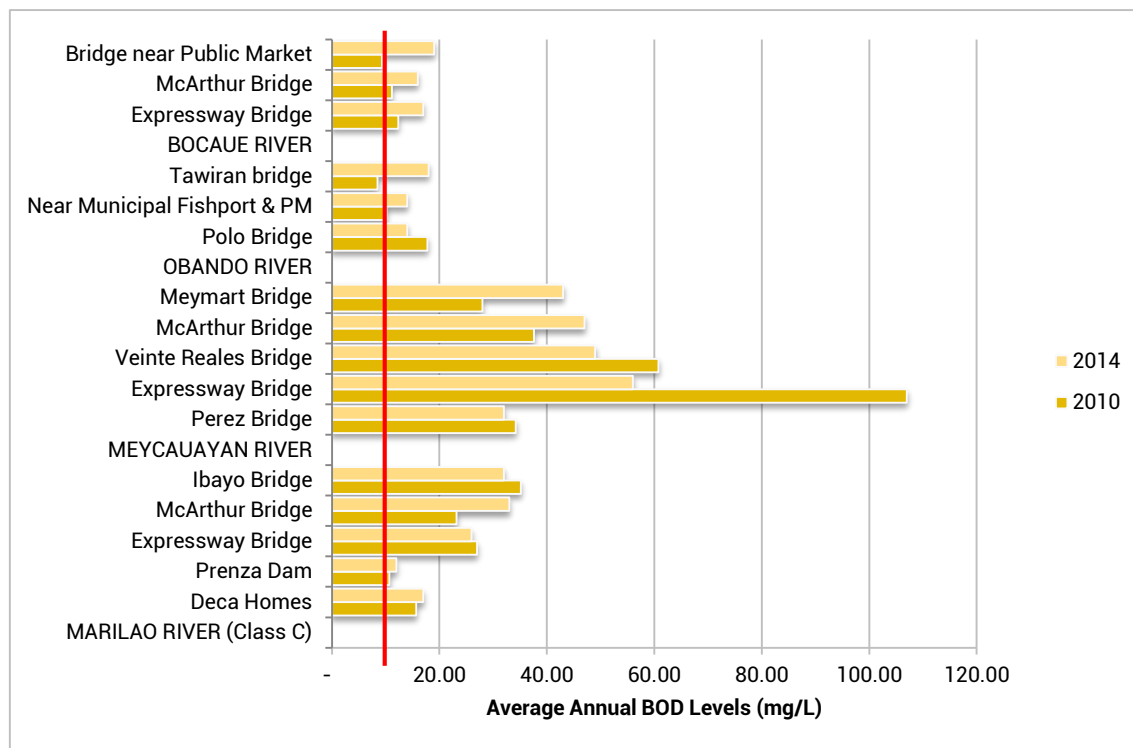
systems which are part of the MMO River System namely: (i) Marilao River, (ii) Meycauayan River, (iii) Obando River, and (iv) Bocaue River. All these river systems are classified as Class C water bodies – Fishery Water, Recreational Water Class II, or Industrial Water Supply Class I intended for propagation and growth of fish and other aquatic resources, boating, manufacturing processes after treatment (DENR AO 90-34). Two main parameters were used in the assessment of water quality in these river systems – (i) biochemical oxygen demand (BOD), used as a measure of the degree of pollution; and (b) dissolved oxygen (DO) or the amount of oxygen mixed in the water to support life of aquatic organisms.

Based on the water quality monitoring results for 2010 and 2014 within strategic

locations along the MMORS, BOD levels are generally still beyond the maximum requirement of 10mg/L for Class C waters. It may be noticed that while some recorded improvements, majority of the stations recorded an increase in the BOD levels within the period of four (4) years (Figure 20-2). Among the four river segments of the MMO River System, the Meycauayan River recorded the highest levels of BOD with about three times the value of the maximum requirement.

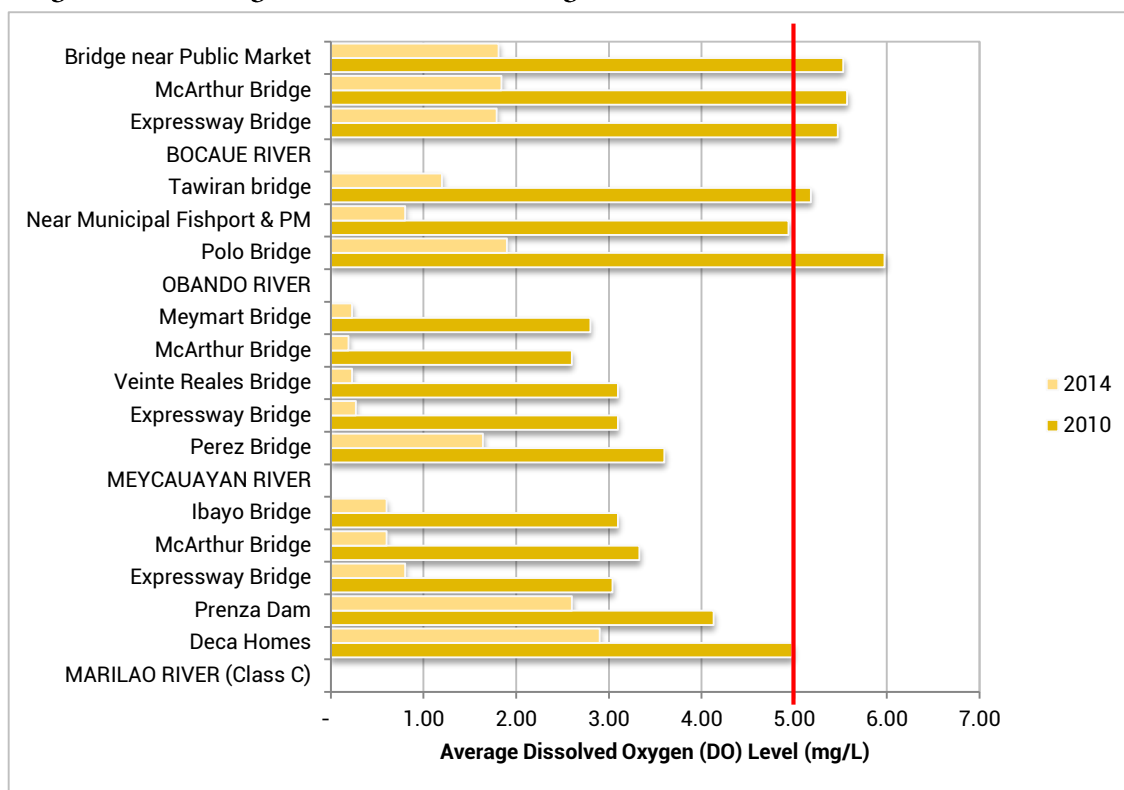
The same trend can be observed in the monitoring results of dissolved oxygen. For the same period, dissolved oxygen levels continued to be non-compliant with the minimum requirement of at least 5 mg/L for Class C waters (Figure 20-3). The results for BOD and DO monitoring confirm that

**Figure 20-2: Average Annual BOD Levels in mg/L in MMORS, 2010 and 2014**



Source: Environmental Management Bureau 3

**Figure 20-3: Average Annual DO Levels in mg/L in MMORS, 2010 and 2014**



Source: Environmental Management Bureau 3

**Table 20-6: List of LGUs with 10-Year Solid Waste Management Plan (SWMP) Approved by the National Solid Waste Management Commission, as of 4 January 2017**

Province	City/Municipality	Date Received
Aurora	1. Maria Aurora	1/26/2015
Bataan	2. Dinalupihan	4/23/2015
Bulacan	3. Pilar	2/11/2015
	4. Plaridel	7/23/2015
	5. San Jose del Monte City	2/10/2014
	6. San Rafael	5/28/2015
Nueva Ecija	7. Santa Maria	7/30/2015
	8. Laur	3/9/2007
	9. San Jose City	1/29/2015
Pampanga	10. Angeles City	7/21/2015
	11. Candaba	10/15/2015
	12. Guagua	5/6/2015
	13. Mabalacat City	3/30/2015
	14. City of San Fernando	5/20/2015
Tarlac	15. Sta. Rita	3/26/2015
	16. La Paz	3/4/2015
	17. Moncada	11/24/2015
	18. Victoria	11/12/2014

Source: Solid Waste Management Dashboard

the MMO River System is still gravely polluted and cannot support aquatic life.

**Compliance rate of LGUs with the provisions of Republic Act 9003 still remains low.** Waste management remains to be a challenge in Central Luzon. The projected waste generation of the entire region in 2015, according to the National Solid Waste Management Commission (NSWMC) is 3,825.58 tons per day. This translates to about 0.34 kg per capita waste generation per day. Highly urbanized areas including Cabanatuan City, Angeles City, City of San Fernando, and Tarlac City are among the LGUs with high waste generation.

As of January 2017, only 18 out of the 130 LGUs have 10-Year Solid Waste



Management Plans approved by the NSWMC (Table 20-6). Meanwhile, 53 SWMPs are conditionally approved and 31 SWMPs are for evaluation.

Waste disposal through open dumpsites is still practiced with 54 operational open dumpsites recorded as of January 2017. Of these, about half (24) have Safe Closure and Rehabilitation Plans. Furthermore, 11 sanitary landfills are in operation within the region.

## Climate Change and Disaster Risk Management

### ***Improving climate change adaptation and disaster risk management is crucial.***

Central Luzon's topographic characteristics determine its vulnerabilities to different climate-related and geologic hazards. The central plain is vulnerable to flooding, while the eastern and western mountain ranges are susceptible to rain-induced and earthquake-induced landslides. Predicted sea level rise due to global warming is anticipated to affect the coastal municipalities of Bulacan and Pampanga, as well as Zambales, Bataan and Aurora. The continuing threat of lahar flow from the 1991 Mount Pinatubo eruption, when triggered by rainfall, still puts the Provinces of Zambales, Pampanga and Tarlac at risk. The Philippine Fault Zone, which passes through Aurora and Nueva Ecija, and the West Valley Fault System extending to Bulacan are active earthquake generators that have potentials to create a multitude of earthquake-related hazards including ground shaking, liquefaction, and landslides. The urgency of effective disaster risk management cannot be overemphasized, considering that climate-

related hazards (e.g. strong typhoons, high intensity, short duration rainfall, La Niña, El Niño) are becoming more intense. Most recently, in 2015, damages incurred due to the onslaught of Typhoon Lando and Nona in the region reached an estimated Php 10.086 billion. For agriculture alone, an estimated Php 8.95 billion cost of damages was recorded.

Republic Act No. 10121 and Republic Act No. 9279 emphasize the need to understand the development-disaster nexus from local to national government and even within the private sector and the inclusion of disaster risk management and climate change adaptation issues in development financing decisions. While significant efforts in implementing the provisions of the law were already undertaken by both the national and local government, the challenge still remains to step up climate change adaptation and disaster risk reduction measures incorporated in the preparedness, prevention and mitigation and response action plans by concerned agencies to eventually reduce damages incurred during disasters.

***Results of the 2014 LGU Disaster Preparedness Assessment showed that the region fared well with respect to the number of LGUs which passed the assessment.*** In the recent years, the DILG prepared an LGU Disaster Preparedness Profile that contains, among others, information on: (1) organization of the LDRRMC and the LDRRMO; (2) presence of Plans related to DRRM; (3) systems in place on early warning and evacuation center management; (4) prepositioning of relief operations, medical and security



services; and (5) availability of Standard Operation Procedures.

The Province of Zambales had the highest passing rate of 94.29 percent while the Province of Aurora had the lowest of 66.67 percent (Table 20-7). Further, it was noted that the areas in which most LGUs did not meet the criteria included: (a) Updated Comprehensive Land Use Plans (CLUP), and availability of Standard Operating Procedures.

**Table 20-7: Summary of SGLG - Disaster Preparedness Passers for 2014 Assessment Period**

Province	No. of Province/ City/ Municipality	No. of Disaster Preparedness Passers	Percentage (%)
Aurora	9	6	66.67
Bataan	13	10	76.92
Bulacan	25	21	84.00
Nueva Ecija	33	31	93.94
Pampanga	23	21	91.30
Tarlac	19	14	73.68
Zambales	15	14	94.29

Source: DILG (Disaster Preparedness Profile – SGLG, 2014 Assessment Period)

## Institutionalizing natural capital accounting and valuation of ecosystem services

At the regional level, assessment of economic performance does not take into consideration the environmental effects and natural resources exploited to achieve a particular production and income level. The need for natural capital accounting as part of national and regional wealth accounting is essential to provide policy makers and decision makers a broader picture of the relationship of natural resources and the performance of the economy. Environment and natural resources-related statistics need to be regularly and appropriately updated such that it can be carefully considered during development planning activities.

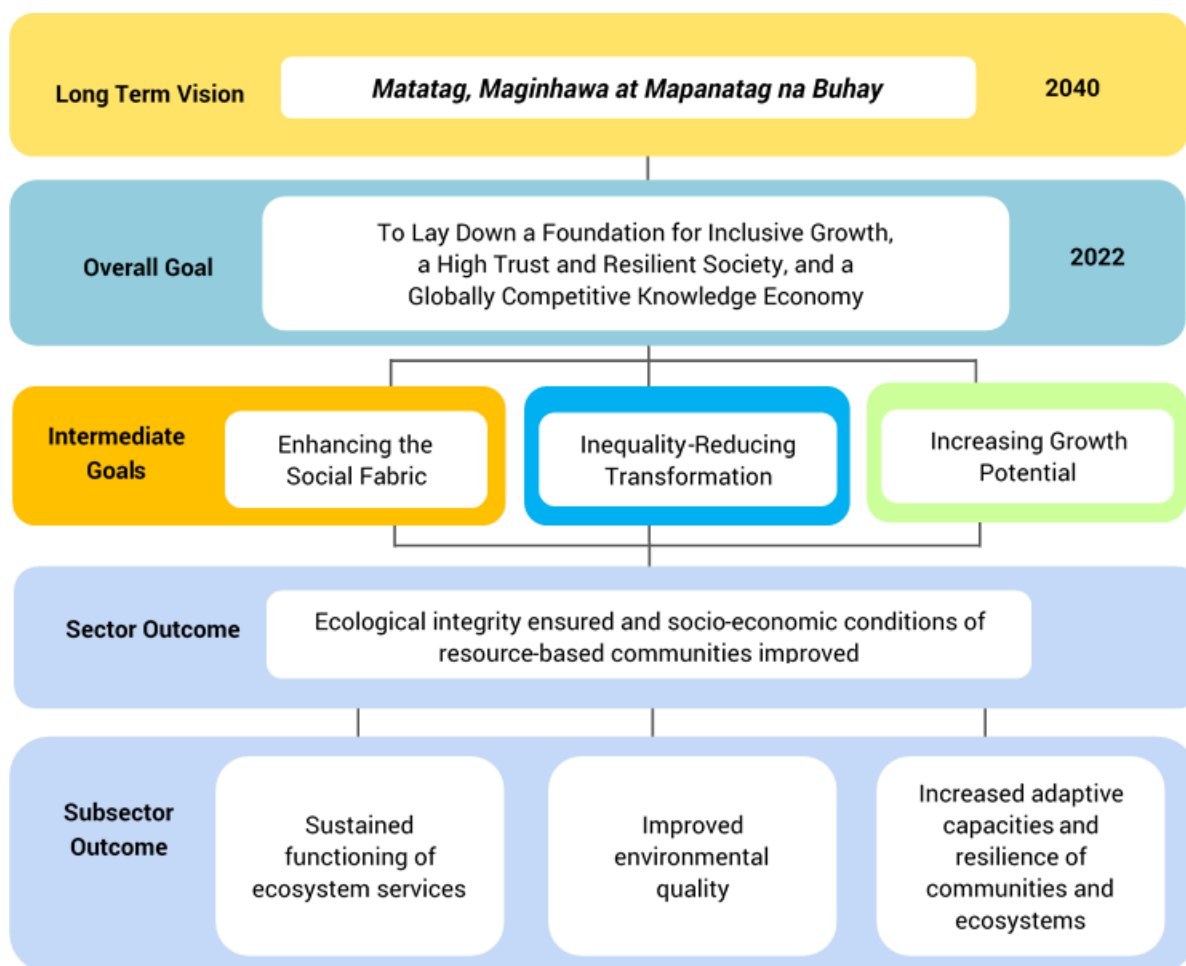
## Strategic Framework

The environment and natural resources serve as the foundation for sustainable development and a critical base for the economy. Its importance and role in achieving the country's long term vision cannot be undermined. Under the Philippine Development Plan Framework, the ENR sector will contribute in the operationalization of the three pillars that support the attainment of the medium-term goal.

### Subsector Outcome 1: Sustained functioning of ecosystem services

#### Strategy 1: Intensify sustainable management of natural resources through adoption of ridge-to-reef approach

The Pampanga River Basin Committee (PRBC) created by the Central Luzon Regional Development Council in 2011 is primarily tasked to advocate the resources management within the Pampanga River Basin (PRB). The PRB constitutes majority



of the region's population and industries, and is identified as one of the 18 priority river basins by the implementation of water integrated Cabinet Cluster on Climate Change Adaptation and Mitigation under Resolution No. 2012-02 dated May 2, 2012. Incorporation of the ridge-to-reef approach in river basin management and development planning shall be pursued in consonance with CCA measures to ensure that environment and natural resources management follows a holistic approach and is not restricted by political boundaries. Increased stakeholder participation and convergence will be encouraged to make sure that programs and projects have social acceptance and relevance. Further, some of the key strategies to be pursued are

contributing to the following Sustainable Development Goals: Goal 14 - conserve and sustainably use the oceans, seas, and marine resources; and Goal 15 - sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss.

**a. Forest and watershed**

- i. *Reverse the loss of forest cover through sustained rehabilitation of degraded forestlands including critical watersheds and major river basins.* Rehabilitation and reforestation of critical denuded forests will be accelerated and prioritized, most especially upland forests within watershed forest

reserves that feed the two major storage dams in Central Luzon - the Pantabangan and Angat Storage Dam shall be pursued.

ii. ***Strengthen protection of remaining natural and rehabilitated forests.***

Protection and maintenance of existing reforestation sites planted through the National Greening Program and other reforestation activities shall also be given focus to ensure continuous provisioning of forest ecosystem services such as supporting irrigation, and domestic and industrial water requirements of the population and economy. Intensified protection of the region's forests shall be pursued through strengthening of the Regional Anti-Illegal Logging Task Force (RAILTF) and enhancing coordination between law enforcement agencies such as the PNP, AFP and LGUs. Illegal logging hotspots shall be regularly monitored to ensure protection of watersheds.

iii. ***Strengthen sustainable management through issuance of appropriate tenure and management arrangements.***

Issuance of appropriate tenure/management instruments will continuously be pursued to create a culture of accountability in the development and conservation of forestlands and protected areas. The positive impacts of tenurial instruments are recognized as improving not only the livelihood and income of beneficiaries but also forest conditions. Security of tenure, oftentimes, is also a prerequisite to

personal and business investments and provides motivation in protecting forests for sustained use. Coordination with the NCIP shall be enhanced to ensure that the rights of the region's indigenous people are protected.

iv. ***Effectively manage Protected Areas.***

Protected Area management is carried out through the implementation of the respective Protected Area Management Plans prepared by the DENR. In order to effectively manage the region's Protected Areas, continuous mainstreaming of vulnerability and socio-economic assessment in the management plans shall be pursued. Zoning and demarcation of PAs shall also be done to prevent encroachment. Further, addressing policy and institutional gaps and lobbying for increased budget allocation and capacity-building on protected area management will be prioritized.

v. ***Improve Land Administration and Management.***

Land administration and management is done at the local level through the Comprehensive Land Use Plans (CLUPs) and its implementing document, the Zoning Ordinance. To ensure that land is properly managed, strengthened partnerships between land-related agencies and local governments shall be pursued. New technologies in mapping natural resources as well simulation of disasters will also be utilized in the crafting of these land use plans. Accelerating the

delineation of ancestral domains as the rights of indigenous people will be prioritized in collaboration with relevant agencies.

**b. Coastal and marine**

**i. *Strengthen enforcement of laws and management of coastal and marine areas.***

Stricter implementation and enforcement of national and local laws pertaining to the management of the region's coastal and marine environment and resources shall be pursued. These laws include, among others: Philippine Fisheries Code of 1998 as amended by R.A. 10654 (An Act to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing), NIPAS Act and other relevant policies and plans. Management mechanisms will also be strengthened and updating of Community-based Coastal Resource Management Plans prioritized. Actions towards maintaining fishing activities at sustainable levels and apprehending those who practice illegal and destructive methods of fishing shall be pursued. Establishment and networking of Marine Protected Areas (MPAs) to improve fisheries productivity and biodiversity shall also be actively pursued.

**ii. *Complete delineation/ delimitation and zoning of municipal waters.***

Essential to effective coastal and marine resources management is the clear delineation of municipal waters between adjacent coastal local government units. Especially in the provinces of Aurora, Bulacan,

Pampanga, Bataan and Zambales, delimitation will ensure that municipal fisherfolk are given equal economic opportunities to utilize this resource. Likewise, delineation and delimitation shall facilitate enforcement of related laws and policies by each coastal LGU. Finally, in the next six years, foreshore areas shall be mapped and zoned into production and protection areas to ensure fisheries sustainability.

**iii. *Intensify research on coastal and marine habitats and resources.***

In partnership with the academe and other research institutions, data generation to support coastal and marine resources assessment shall be pursued. This is due to the fact that there is limited data available to support sound decision and policy-making related to the improvement of the region's coastal and marine environment. The identification of spawning areas for priority fish species will also be pursued to further inform planning and prioritization of efforts in the fisheries sector.

**c. Wetlands**

***Improve the management of priority inland wetlands.***

The Candaba Swamp located within the boundaries of Pampanga and Bulacan is listed as a candidate site in the Ramsar Wetlands of importance and plays an important role for international migratory birds. In particular, it is part of the East-Australasian Flyway and is an extremely important staging and wintering area for ducks. The swamp

has an estimated area of about 32,000 hectares and also functions as a water retention basin of water from the outflow of the Pampanga River during the rainy season. The formulation of a wetland management plan shall be pursued to address threats such as urbanization and to implement a mechanism to optimize its ecotourism potential. Capacity building activities for stakeholders shall also be prioritized to ensure the effective implementation of policies and regulations.

**d. Mineral resources**

Strict implementation of the Philippine Mining Act in the region's mining concession areas shall be pursued. This is to ensure that mining operations are not only cognizant of the fragile nature of this activity but that the host communities are rendered better-off after mine pull-out.

**Strategy 2: Expand development of resource-based enterprises/ industries**

Development of ecotourism products and services shall be strengthened to improve the income of poor households in upland and coastal areas relying on natural resources for livelihood. Promotion of sustainable forest-based and marine-based industries, as well as biodiversity-friendly enterprises shall be pursued as these provide employment opportunities while contributing to the conservation of natural resources. Promotion and development of new ecotourism sites such as the Mt. Arayat National Park, Bataan National Park, and Aurora Memorial National Park to

domestic and international markets shall be pursued. Likewise, redevelopment of existing destinations and ecotourism services shall also be done to ensure that environmental conditions are not compromised due to tourism activities.

**Strategy 3: Mainstream ecosystem valuation into national and local development planning**

Natural capital accounting as defined by the World Bank, integrates natural resources and economic analysis, providing a broader picture of development progress than standard measures such as GDP. Most especially in the case of developing countries like the Philippines, wealth accounting is necessary to ensure that the services and products sourced from natural resources are valued and identified and that appropriate compensation and user fees are in place. Determining the value of the region's natural resources vis-à-vis projected requirements to support future economic development would help managing trade-offs and facilitating conservation and proper management of these finite resources.

**a. Develop a policy for Payments for Ecosystem Services (PES).** Following the lead of the national government, the region shall institutionalize and implement incentives for the management of environment and natural resources. The PES include the schemes in which beneficiaries or users of the ecosystem services provide incentive/payment mechanisms to people who will manage the ecosystems to ensure their continuous delivery of ecosystem services.

**b. Institutionalize natural resources monitoring system.** At the national level, this strategy includes strengthening of the Inter-Agency Committee on ENR Statistics (IAC-ENRS) and its five sub-committees on land/soil, water, energy and disaster, all led by the Philippine Statistics Authority (PSA). Moreover, advocacy on the disaggregation of ENR statistics down to the subnational and local level shall be pursued.

## Subsector Outcome 2: Improved environmental quality

### Strategy 4: Strengthen enforcement of environmental laws

The enforcement and monitoring of compliance to existing environmental laws and regulations shall be intensified. Reduction of pollution and waste generation shall be achieved through stricter implementation of environmental standards. To realize this, the following strategies will be prioritized:

#### a. Air Quality Management

- i. Install additional air quality monitoring stations and equipment in rapidly urbanizing areas and areas where identified pollutive industries are located;
- ii. Strengthen enforcement of anti-smoke belching campaign and vehicle emission testing through increasing the number of personnel and quality and quantity of necessary equipment/facilities;
- iii. Promote environmentally-sustainable transport including clean fuels and mass transport system;

- iv. Strengthen interagency coordination among mandated agencies in terms of implementing policies, programs, projects and activities to enhance efficiency in the delivery of services;
- v. Strengthen the promotion for the development and adoption of green technologies, systems and practices through improving access to incentives and ease of doing business and other related transactions;
- vi. Harness the potential of the private sector in investing in green technologies; and
- vii. Intensify advocacy and ensure support for research and development of clean technologies to further increase the potential of the sector by opening new opportunities not only in investment but also in technological development.

#### b. Water Quality Management

- i. Install additional water quality monitoring equipment in major water bodies, especially in rivers running through the region's major urban centers;
- ii. Expand the coverage of the *Sagip Ilog* Program and Adopt an *Estero* Program to increase private sector participation in the rehabilitation of water bodies; and
- iii. Improve wastewater management by increasing the number of domestic and industrial wastewater treatment facilities in water districts/LGUs

#### c. Land Quality Management

- i. **Promote sustainable land management (SLM) to contribute to land degradation neutrality.** Sustainable land management as



defined during the United Nations Earth Summit in 2012 is “the use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions”. SLM practices shall be integrated into sectoral, regional and local development plans. Promotion of soil and water conservation technologies shall likewise be pursued. Further, continued rehabilitation and remediation of contaminated soils, particularly the abandoned mines located in land degradation hotspots across the region shall be implemented.

- ii. ***Improve management of wastes including solid, toxic and hazardous wastes.*** Waste management still remains a challenge within the region. The compliance of LGUs with the provisions of the Ecological Solid Waste Management Act or Republic Act 9003 remains low. In order to prevent further pollution and degradation of land and water quality, the following shall be ensured:

- Encourage the operationalization of MRFs, treatment facilities, and submission of local solid waste management plans;
- Strengthen implementation of IEC activities focusing towards value re-orientation on waste management as a shared responsibility of the people and the government with

emphasis on the benefits of waste reduction, recycling, and proper waste management;

- Encourage economic incentives and disincentives to promote increased environmental awareness and stewardship;
- Capacitate LGUs in identifying, establishing, operating and maintaining solid waste technologies and facilities;
- Promote clustering of sanitary landfill facilities and solid waste management technologies to address its large capital requirement and allow low income LGUs to pool resources to establish such facilities;
- Close and rehabilitate remaining dumpsites and promote alternative waste disposal facilities/systems/technologies; and
- Improve disposal and management of electronic, hospital and toxic wastes.

#### **Strategy 5: Promote Sustainable Consumption and Production (SCP)**

Ensuring sustainable consumption and production patterns is stated as Goal 12 of the Sustainable Development Goals. As defined by the United Nations, SCP is about promoting resource and energy efficiency, building sustainable infrastructure, and providing access to basic services, green and decent jobs, and a better quality of life. Its implementation helps in the achievement of overall development plans, reduces future economic, environmental, and social costs, strengthens economic competitiveness, and reduces poverty. In particular, the following strategies shall be pursued to strengthen SCP promotion in Central Luzon:



- a. Establish a sustainable market for recyclable and recycled products;
- b. Develop, promote, and transfer cleaner production technologies, including water and energy-efficient practices (e.g. rainwater catchment facility, cleaner fuels and engine, energy-efficient facilities/green buildings);
- c. Strengthen certification and establish information systems for green products and services;
- d. Promote green procurement in both private and public sectors;
- e. Promote environmentally-sustainable modes of transport including a mass transport system; and
- f. Promote incentives for eco-friendly government offices.

### **Subsector Outcome 3: Increased adaptive capacities and resilience of communities and ecosystems**

#### **Strategy 6: Implement risk and climate-sensitive land use**

The massive costs of disasters on development and investments are recognized. Stalled growth because of disaster occurrences shall be avoided by mainstreaming DRR into the planning cycle so that development interventions, being disaster-risk reduction based, may serve as a more stable basis for long-term growth. The national directive and regional development strategy is already downloaded to the local level through the standardized mainstreaming guidelines.

The importance of sea-use zoning shall also be promoted to ensure that natural barriers to storm surges and tsunamis like mangrove

forests, sea grass beds and coral reefs are in good condition.

#### **Strategy 7: Strengthen implementation of prevention, mitigation, and preparedness, particularly at the local levels across sectors**

The medium-term priority shall be to ensure that all vulnerability assessments on climate and disaster risk across LGUs are completed. Further, the following shall be done:

##### **a. *Increase the awareness and disaster risk management capacities of local leaders and community stakeholders.***

Investing in disaster risk management awareness and preparedness programs for local leaders and communities alike may not only reduce response, recovery and rehabilitation costs but most importantly, loss of lives. Massive and relevant community awareness and preparedness campaigns on hazards and DRR shall be conducted.

Continuous capacity building activities shall also be provided in the areas of (i) interpretation/understanding of climate projections and scenarios and geospatial information; (ii) conduct of climate and disaster risk assessment; (iii) use of GIS and other related mapping and modeling software; and (iv) conduct of risk and vulnerability analysis/assessments.

##### **b. *Continue to mainstream CC and DRRM in national and local development plans, policies, and the education system.*** With the availability

of scientific information and various mapping technologies, inclusion of climate change and disaster risks considerations in the regional, provincial and local development planning process shall be pursued. In particular, priority shall be given in revisiting relevant plans such as the Regional Disaster Risk Reduction and Management Plan (RDRRMP). Integration of disaster risk reduction in the school curricula shall also be advocated.

- c. ***Promote climate-resilient structures and designs following established measures and standards by DPWH, HLURB, DILG, DSWD and other government agencies.*** This includes retrofitting and construction of infrastructure facilities that take into consideration climate risks. Priority shall be given to updating engineering standards in flood-prone areas within the region.

#### **Strategy 8: Strengthen implementation of response, recovery, and rehabilitation efforts**

Government and private sector actions during disaster events and recovery and rehabilitation stages shall be improved. The following key strategies are geared towards increasing the resiliency and adaptive capacities of the communities:

- a. ***Enhance capacities in emergency services and public assistance during disasters.*** Emergency response and

public assistance is vital in ensuring normalcy during and immediately after calamities. Strengthening capacities of frontline agencies involved in disaster relief will be pursued. Deployment of a sufficient number of well-equipped rescue and relief personnel during calamities shall be ensured. Equally important is the harmonization of and capacity-building in management strategies such as the Incident Command System (ICS) and other protocols to be followed in times of disaster. This is crucial in avoiding duplication and overlapping responsibilities during disaster response.

- b. ***Improve post disaster rehabilitation and reconstruction.*** Post disaster reconstruction and rehabilitation is anchored on the principle of “building back better”. The success of this, however, is dependent on how well damages are assessed and on the quality of reconstruction. To ensure that suitable rehabilitation activities in the region are undertaken, preparation of thorough post disaster needs assessment (PDNA) shall be strengthened and cascaded to the local levels. Harmonization of data management and reporting protocols among regional government agencies shall be addressed. Improving the disaster database is critical and is key to a well-planned rehabilitation. Appropriate engineering interventions shall be ensured during reconstruction

# Research and Development Agenda

## *Biodiversity assessment of critical habitats, key biodiversity areas, and watersheds*

This study aims to establish which should be key areas for conservation and determine conservation priorities. This will be accomplished by ranking areas according to specified values such as rarity, diversity, fragmentation, habitat condition, resilience, threats, and ecosystem processes.

## *Establishment of natural resources monitoring system*

The objective of the research is to come up with a system to monitor the natural resources of the region. The management of public lands has become increasingly complex. There need reliable data and information on the status and trends in the condition of key resources as a basis for protection planning, determining whether current management practices are having the desired effect, and informing stakeholders and the general public of changes in the condition of natural resources.

## *Alternative ways to convert waste to energy*

Millions of tons of waste are produced daily. They either become a part of the landfill or are thrown elsewhere. This causes a huge environmental impact in terms of wildlife, ecosystems, and human health. Relatedly, conventional forms of energy are fast pushing the world towards extinction and are contributing greatly to global concerns like global warming. The need to innovate

and use alternate or unconventional energy sources has become crucial. The objective of the study is to develop ways to compress and dispose of wastes while attempting to generate energy from it.

## *Research and development for cleaner production technologies*

Now that investment to manage waste products is becoming costly, many companies or businesses are looking for better ways to improve their productivity and decrease waste generation. The objective of this study is to come up with a list of cleaner production technologies that will protect the environment, the consumer, and the worker while improving the industrial efficiency, profitability, and competitiveness of companies/enterprises in the region.

## *Vulnerability assessment of coastal areas in the region to climate change*

Coastal areas or zones are considered to be highly vulnerable to the effects of climate change. The objective of the study is to develop guidelines and methodologies to assess this vulnerability, and identify options to respond to these effects.

## *Analysis of the disaster preparedness of critical infrastructure*

Critical infrastructure plays an important role in supporting communities by facilitating their quick response against natural disasters and reducing the impacts

of these disasters. Examples are roads and bridges for quick evacuation, and public buildings for temporary shelter. Due to global warming, there is an increase in the frequency of extreme weather events, which pose a high risk to the functional and structural integrity of this critical infrastructure. The objective of this

research is to analyze the disaster preparedness of key critical infrastructures in the region and develop a system for providing disaster-related information based on the inter-relationships between this infrastructure and the communities.

## RDP Targets

Indicators	Baseline Year	Value	End of Plan Target	Agency Responsible
<b>Subsector Outcome 1: Sustained functioning of ecosystem services</b>				
Forest cover (SDG 15), in hectares	2010	589,495		DENR- NAMRIA
Quality of coastal and marine habitats	2016	Excellent: Good: Fair: Poor:		DENR 3
Number of residential free patents issued	2016	3,687		DENR 3
Employment from ecotourism and sustainable community resource-based enterprises	2016			
<b>Subsector Outcome 2: Improved environmental quality</b>				
TSP levels (ug/NCM)	2014			DENR-EMB 3
a. San Fernando Station		202	Decreasing	
b. Pampanga Provincial Capitol Station		--	--	
c. Clark Freeport Zone Station		--	--	
d. Saluysoy Station		30	Decreasing	
e. Intercity Station		482	Decreasing	
Water pollution	2014			DENR-EMB 3
BOD (mg/L)				
a. Marilao River				
- Deca Homes		17.00	Decreasing	
- Prenza Dam		12.00	-do-	
- Expressway Bridge		26.00	-do-	
- McArthur Bridge		33.00	-do-	
- Ibayo Bridge		32.00	-do-	
b. Meycauayan River				
- Perez Bridge		32.00	Decreasing	
- Expressway Bridge		56.00	-do-	
- Veinte Reales Bridge		49.00	-do-	
- McArthur Bridge		47.00	-do-	
- Meymart Bridge		43.00	-do-	
c. Obando River				
- Polo Bridge		14.00	Decreasing	
- Near municipal fishport and public market		14.00	-do-	
- Tawiran Bridge		18.00	-do-	
d. Bocaue River				
- Expressway Bridge		17.00	Decreasing	
- McArthur Bridge		16.00	-do-	
- Bridge near public market		19.00	-do-	
DO (mg/L)	2014			
a. Marilao River				
- Deca Homes		2.90	Increasing	
- Prenza Dam		2.60	-do-	
- Expressway Bridge		0.80	-do-	
- McArthur Bridge		0.60	-do-	

Indicators	Baseline		End of Plan Target	Agency Responsible
	Year	Value		
- Ibayo Bridge		0.60	-do-	
b. Meycauayan River				
- Perez Bridge		1.64	Increasing	
- Expressway Bridge		0.27	-do-	
- Veinte Reales Bridge		0.23	-do-	
- McArthur Bridge		0.19	-do-	
- Meymart Bridge		0.23	-do-	
c. Obando River				
- Polo Bridge		1.90	Increasing	
- Near municipal fishport and public market		0.80	-do-	
- Tawiran Bridge		1.20	-do-	
d. Bocaue River				
- Expressway Bridge		1.79	Increasing	
- McArthur Bridge		1.84	-do-	
- Bridge near public market		1.81	-do-	
Area (in ha) assessed and mapped for soil fertility status and soil fertility management	2016			DA-BSWM
Solid waste diversion rate	2016			DENR-EMB 3
<b>Subsector Outcome 3: Increased adaptive capacities and resiliency of ecosystems and communities</b>				
Number of LGUs with completed vulnerability assessments and climate and disaster risk assessment	2016		Increasing	DILG 3
Number of approved CC/DRRM-enhanced plans	2016		Increasing	DILG 3
Number of LGUs with operating early warning systems (EWS) in place	2016		Increasing	DILG 3



PART VII

# FROM PLAN TO ACTION







21

Plan Implementation  
and Monitoring



# Plan Implementation and Monitoring

The Central Luzon Regional Development Plan (CL-RDP) 2017-2022 approved and adopted by the Regional Development Council (RDC) III on March 28, 2017, is the first medium-term plan to operationalize the country's long-term vision. CL-RDP is expected to contribute to the country's overall goal of laying a solid foundation for more inclusive growth, a high trust society, and a globally competitive knowledge economy. All plans of government departments, offices, and instrumentalities, including government-owned or controlled corporations and local government units, shall be consistent with the *AmBisyon Natin 2040*.

The implementation of the CL-RDP requires efficient coordination between the National Economic and Development Authority (NEDA) 3 and regional line agencies, local government units, state universities and colleges, private sector representatives, and civil society organizations. During the period of implementation (2017-2022), the effectiveness and efficiency of the strategies and programs identified in each chapter of the Plan will be monitored. The RDC III, as the highest policy-making body in the region, serves as the counterpart of the NEDA Board at the regional level. It is primarily responsible for coordinating the implementation of CL-RDP through its various Sectoral Committees (SecComs) on Economic Development, Social

Development, Infrastructure Development, and Development Administration, including the Regional Land Use Committee (RLUC) and the Regional Project Monitoring Committee (RPMC).

The NEDA Regional Office 3 as the RDC Secretariat will work with various implementing agencies of the RDC 3 Committees in monitoring the outcomes and implementation progress, which are as follows:

- (1) The **Sectoral Committee on Development Administration (SCDA)** will oversee the implementation of the strategies listed in Chapters 4 and 14, through the following agencies:
  - Department of the Interior and Local Government (DILG) 3, Civil Service Commission (CSC) 3, Department of Budget and Management (DBM) 3, Commission on Audit (COA) 3, Bureau of Local Governance and Finance (BLGF) 3, National Competitiveness Council (NCC), Philippine National Police (PNP) 3, Bureau of Jail Management Penology (BJMP) 3, Bureau of Fire Protection (BFP) 3, National Police Commission (NAPOLCOM), National Intelligence Coordination Agency (NICA) 3, Philippine Drug Enforcement

Agency (PDEA) 3, and Northern Luzon Command (NOLCOM)

The secretariat for the SCDA is the Development Research Division (DRD) of the NEDA RO3.

(2) The **Sectoral Committee on Economic Development (SCED)** will work on the strategies identified in six (6) chapters covering the sectors of Agriculture, Industry and Services, Environment, Science and Technology, and Macroeconomy through the following offices:

➤ Department of Agriculture (DA), Department of Agrarian Reform (DAR), Department of Trade and Industry (DTI) 3, Cooperatives Development Authority (CDA) 3, Department of Tourism (DOT) 3, Department of Environment and Natural Resources (DENR) 3, Environment Management Bureau (EMB) 3, Mines and Geosciences Bureau (MGB) 3, Office of Civil Defense (OCD) 3, DILG 3, Department of Science and Technology (DOST), the Bangko Sentral ng Pilipinas (BSP), and Bureau of Local Government Finance (BLGF).

The Policy Formulation and Planning Division (PFPD) of the NEDA RO3 will serve as the secretariat for the SCED.

(3) The **Sectoral Committee on Infrastructure Development (SCID)** will play close attention to the implementation of infrastructure strategies and

interventions through the following agencies:

➤ Department of Public Works and Highways (DPWH) 3, Land Transportation Office (LTO) 3, Land Transportation Franchising and Regulatory Board (LTFRB), Clark International Airport Corporation (CIAC), Philippine Ports Authority (PPA) 3, Subic Bay Metropolitan Authority (SBMA), Local Water Utilities Administration (LWUA), National Irrigation Administration (NIA) 3, NIA-Upper Pampanga River Integrated Irrigation System (UPRIIS), Department of Energy (DOE) 3, Department of Information and Communications Technology (DICT) Luzon Chapter, National Telecommunication Commission (NTC) 3, DOH 3, DepEd 3, and NHA 3.

The secretariat for the SCID is the Project Development, Investment Programming and Budgeting Division (PDIPBD) of the NEDA RO3.

(4) The **Sectoral Committee on Social Development (SCSD)** will be the main coordinating mechanism in implementing the strategies found in four (4) chapters and will work with the following implementing agencies:

➤ Department of Education (DepEd) 3, Department of Health (DOH) 3, National Nutrition Council (NNC) 3, Philippine Health Insurance Corporation (PHIC) 3, Department of Social

Welfare and Development (DSWD) 3, Commission on Higher Education (CHED) 3, Technical Education and Skills Development Authority (TESDA) 3, Department of Labor and Employment (DOLE) 3, Housing and Urban Development Coordinating Council (HUDCC), Commission on Population (POPCOM) 3, and National Commission on Indigenous Peoples (NCIP) 3.

The Project Monitoring and Evaluation Division (PMED) is the secretariat for the SCSD.

The various agencies mentioned above were all involved in the formulation of the CL-RDP 2017-2022. Specifically, these agencies participated actively in a series of public consultations conducted in the region, providing inputs in the identification of

development issues and challenges in the different sectors, and recommending strategies to address them. Hence, the regional line agencies that will serve as implementing agencies have vital roles in monitoring the progress of the implementation of the CL-RDP.

Other committees/ instrumentalities that will be utilized in monitoring the implementation of the CL-RDP are as follows:

- Regional Land Use Committee (RLUC) 3
- Regional Project Monitoring Committee (RPMC) 3
- Regional Economic Situationer (RES)
- Regional Development Report (RDR)
- Regional Project Monitoring and Evaluation System (RPMES)

**Table 21-1: Summary of Coordination Mechanisms**

CL-RDP Chapter	Sector Coordination Mechanism	NEDA Secretariat
<b>Chapter 3</b> – The Central Luzon Spatial Development Framework	RDC III-RLUC	NEDA3-PFPD
<b>Chapter 5</b> – Ensuring People-centered, Clean and Efficient Governance	RDC III-SCDA	NEDA3-DRD
<b>Chapter 6</b> – Pursuing Swift and Fair Administration of Justice	RDC III-SCDA	NEDA3-DRD
<b>Chapter 7</b> – Promoting Philippine Culture and Values	RDC III-SCSD	NEDA3-PMED
<b>Chapter 8</b> – Expanding Economic Opportunities in Agriculture and Fisheries	RDC III-SCED	NEDA3-PFPD
<b>Chapter 9</b> – Expanding Economic Opportunities in Industry and Services through <i>Trabaho at Negosyo</i>	RDC III-SCED	NEDA3-PFPD
<b>Chapter 10</b> – Accelerating Human Capital Development	RDC III-SCSD	NEDA3-PMED
<b>Chapter 11</b> – Reducing Vulnerability of Individuals and Families	RDC III-SCSD	NEDA3-PMED
<b>Chapter 12</b> – Building Safe and Secure Communities	RDC III-SCSD	NEDA3-PMED
<b>Chapter 13</b> – Reaching for the Demographic Dividend	RDC III-SCSD	NEDA3-PMED
<b>Chapter 14</b> – Vigorously Advancing Science, Technology, and Innovation	RDC III-SCED	NEDA3-PFPD
<b>Chapter 15</b> – Ensuring Sound Macroeconomy	RDC III-SCED	NEDA3-PFPD
<b>Chapter 16</b> – Leveling the Playing Field through a National Competition Policy	RDC III-SCED	NEDA3-PFPD
<b>Chapter 17</b> – Attaining Just and Lasting Peace	RDC III-SCDA	NEDA3-DRD
<b>Chapter 18</b> – Ensuring Security, Public Order and Safety	RDC III-SCDA	NEDA3-DRD
<b>Chapter 19</b> – Accelerating Infrastructure Development	RDC III-SCID	NEDA3-PDIPBD
<b>Chapter 20</b> – Ensuring Ecological Integrity, Clean, and Healthy Environment	RDC III-SCED	NEDA3-PFPD

## List of Acronyms

<b>A&amp;D</b>	Alienable and Disposable
<b>ADM</b>	Assistance to Disadvantaged Municipalities
<b>AFAB</b>	Authority of the Freeport Area of Bataan
<b>AFF</b>	Agriculture, Forestry and Fishery
<b>AFFLA</b>	Agroforestry Farm Lease Agreement
<b>AFP</b>	Armed Forces of the Philippines
<b>AHFF</b>	Agriculture, Hunting, Forestry, and Fishery
<b>ALS</b>	Alternative Learning System
<b>APIS</b>	Annual Poverty Indicators Survey
<b>ARTA</b>	Anti-Red Tape Act
<b>ASEAN</b>	Association of South East Asian Nations
<b>BEFP</b>	Basic Education Facilities Program
<b>BEmONC</b>	Basic Emergency Obstetric and Newborn Care
<b>CEmONC</b>	Comprehensive Emergency Obstetrics and Neonatal Care
<b>BFAR</b>	Bureau of Fisheries and Aquatic Resources
<b>BFP</b>	Bureau of Fire Protection
<b>BJMP</b>	Bureau of Jail Management and Penology
<b>BLGF</b>	Bureau of Local Government Finance
<b>BMBE</b>	Barangay Micro Business Enterprises
<b>BOD</b>	Biochemical Oxygen Demand
<b>BOI</b>	Board of Investments
<b>BPAT</b>	Barangay Peacekeeping Action Team
<b>BPLS</b>	Business Processing and Licensing System
<b>BPO</b>	Business Process Outsourcing
<b>BRT</b>	Bus-Rapid Transit
<b>BSP</b>	Bangko Sentral ng Pilipinas
<b>BSWM</b>	Bureau of Soils and Water Management
<b>BuB</b>	Bottom-up Budgeting
<b>CAAP</b>	Civil Aviation Authority of the Philippines
<b>CBDs</b>	Central Business Districts
<b>CBEP</b>	Community-based Employment Program
<b>CBFMA</b>	Community Based Forest Management Agreement
<b>CCA</b>	Climate Change Adaptation
<b>CCE</b>	Crime Clearance Efficiency
<b>CDC</b>	Clark Development Corporation
<b>CDP</b>	Comprehensive Development Plan
<b>CDRC</b>	Citizen's Disaster Response Center
<b>CeC</b>	Community e-Center
<b>CFLCs</b>	Community Fish Landing Centers
<b>CFSEZ</b>	Clark Freeport and Special Economic Zone
<b>CHED</b>	Commission on Higher Education
<b>CLLEx</b>	Central Luzon Link Expressway



<b>CL-RPRAT</b>	Central Luzon - Regional Poverty Reduction Action Team
<b>CLUP</b>	Comprehensive Land Use Plans
<b>CMCI</b>	Cities and Municipalities Competitiveness Index
<b>CNIS</b>	Comprehensive National Industrial Strategy
<b>COMELEC</b>	Commission on Elections
<b>CPR</b>	Contraceptive Prevalence Rate
<b>CRK</b>	Clark International Airport
<b>CSC</b>	Civil Service Commission
<b>CSE</b>	Crime Solution Efficiency
<b>CSFP</b>	City of San Fernando Pampanga
<b>CSIS</b>	Citizen's Satisfactory Index System
<b>CSO</b>	Civil Society Organization
<b>CSR</b>	Corporate Social Responsibility
<b>CVR</b>	Cagayan Valley Road
<b>DA</b>	Department of Agriculture
<b>DAR</b>	Department of Agrarian Reform
<b>DBM</b>	Department of Budget and Management
<b>DDB</b>	Dangerous Drug Board
<b>DepED</b>	Department of Education
<b>DHUD</b>	Department of Housing and Urban Development
<b>DICT</b>	Department of Information and Communications Technology
<b>DILEEP</b>	DOLE Integrated Livelihood and Emergency Employment
<b>DILG</b>	Department of the Interior and Local Government
<b>DO</b>	Dissolved Oxygen
<b>DOE</b>	Department of Energy
<b>DOH</b>	Department of Health
<b>DOJ</b>	Department of Justice
<b>DOLE</b>	Department of Labor and Employment
<b>DOST</b>	Department of Science and Technology
<b>DPWH</b>	Department of Public Works and Highways
<b>DRR</b>	Disaster Risk Reduction
<b>DRRM</b>	Disaster Risk Reduction and Management
<b>DSWD</b>	Department of Social Welfare and Development
<b>DTI</b>	Department of Trade and Industry
<b>DTT</b>	Digital Terrestrial Television
<b>DTTB</b>	Digital Terrestrial Television Broadcast
<b>DUs</b>	Distribution Utilities
<b>ECC</b>	Environmental Compliance Certificate
<b>ECCD</b>	Early Childhood Care and Development
<b>EGMP</b>	e-Government Master Plan
<b>EHV</b>	Extra High Voltage
<b>ELA</b>	Executive and Legislative Agenda
<b>EMB</b>	Environmental Management Bureau
<b>EO</b>	Executive Order

<b>EP</b>	Exploration Permits
<b>FDP</b>	Full Disclosure Policy
<b>FIT</b>	Feed-In-Tariff
<b>FLA</b>	Foreshore Lease Agreement
<b>FLAG</b>	Forest Land Use Agreement
<b>FLAgT</b>	Forest Land Use Agreement for Tourism
<b>FLGLA</b>	Forest Land Grazing Lease Agreement
<b>FLGMA</b>	Forest Land Grazing Management Agreement
<b>FMR</b>	Farm-To-Market Road
<b>GCR</b>	Greater Capital Region
<b>GDP</b>	Gross Domestic Product
<b>GFA</b> s	Government Funding Agencies
<b>GII</b>	Global Innovation Index <sup>2</sup>
<b>GIS</b>	Geographic Information System
<b>GRDP</b>	Gross Regional Domestic Product
<b>GVA</b>	Gross Value Added
<b>HEIs</b>	Higher Education Institutions
<b>HEP</b>	Household Electrification Program
<b>HFEP</b>	Health Facilities Enhancement Program
<b>HLURB</b>	Housing Land Use and Regulatory Board
<b>HSH</b>	High Standard Highways
<b>HUDCC</b>	Housing and Urban Development Coordinating Council
<b>HVCs</b>	High value crops
<b>I&amp;S</b>	Industry and Services
<b>IAC-ENRS</b>	Inter-Agency Committee on ENR Statistics
<b>ICC</b>	Investment Coordination Committee
<b>ICS</b>	Incident Command System
<b>ICT</b>	Information and Communication Technology
<b>IFMA</b>	Industrial Forest Management Agreement
<b>IFMIS</b>	Integrated Financial Management Information System
<b>iGovPhil</b>	Integrated Government Philippines
<b>ILO</b>	International Labor Organization
<b>IMR</b>	Infant Mortality Rate
<b>IP</b>	Intellectual Property
<b>IPOPHL</b>	Industrial Philippine Intellectual Property Office of the Philippines
<b>IPR</b>	Intellectual Property Rights
<b>IPs</b>	Indigenous Peoples
<b>IRA</b>	Internal Revenue Allotment
<b>IRI</b>	International Roughness Index
<b>IRR</b>	Implementing Rules And Regulations
<b>IT</b>	Information Technology
<b>ITSO</b>	Innovation and Technology Support Office
<b>IWRM</b>	Integrated Water Resources Management
<b>JICA</b>	Japan International Cooperation Agency

<b>JRT</b>	Jeepney Rapid Transit
<b>JVs</b>	Joint Ventures
<b>LDR</b>	Loans to Deposits Ratio
<b>LGC</b>	Local Government Code
<b>LGPMS</b>	Local Governance Performance Management System
<b>LGU</b>	Local Government Unit
<b>LOS</b>	Levels Of Service
<b>LSDF</b>	Luzon Spatial Development Framework
<b>LSP</b>	Local Special Bodies
<b>LU/LC</b>	Land Use And Land Cover
<b>LWUA</b>	Local Water Utilities Administration
<b>MASA MASID</b>	<i>Mamamayang Ayaw Sa Anomalya, Mamayang Ayaw sa Iligal na Droga</i>
<b>MCA</b>	Metropolitan Clark Area
<b>MDGs</b>	Millennium Development Goals
<b>MLA</b>	Miscellaneous Lease Agreement
<b>MMO</b>	Marilao-Meycauayan-Obando
<b>MMR</b>	Maternal Mortality Rate
<b>MNR</b>	Manila North Road
<b>MPAs</b>	Marine Protected Areas
<b>MPS</b>	Mean Percentage Score
<b>MPSA</b>	Mineral Production Sharing Agreements
<b>MRFs</b>	Materials Recovery Facilities
<b>MRO</b>	Maintenance and Repair Operations
<b>MRP</b>	Manufacturing Resurgence Program
<b>MSM</b>	Males Who Have Sex With Males
<b>MSME</b>	Micro, Small and Medium Enterprise
<b>NAIA</b>	Ninoy Aquino International Airport
<b>NaLUA</b>	National Land Use Act
<b>NAT</b>	national achievement test
<b>NBP</b>	National Broadband Plan
<b>NCC</b>	National Competitiveness Council
<b>NCCA</b>	National Commission for Culture and the Arts
<b>NCD</b>	Non-Communicable Diseases
<b>NCIP</b>	National Commission on Indigenous Peoples
<b>NDHS</b>	National Demography and Health Survey
<b>NEECP</b>	National Energy Efficiency and Conservation Program
<b>NHA</b>	National Housing Authority
<b>NIPAS</b>	National Integrated Protected Areas System
<b>NJIS</b>	National Justice Information System
<b>NLEx</b>	North Luzon Expressway
<b>NMIS</b>	National Measurement Infrastructure System
<b>NNC</b>	National Nutrition Council
<b>NNS</b>	National Nutrition Survey
<b>NREL</b>	National Renewable Energy Laboratory

<b>NSCR</b>	North-South Commuter Railway
<b>NSS</b>	National Spatial Strategy
<b>NSWMC</b>	National Solid Waste Management Commission
<b>NTC</b>	National Telecommunications Commission
<b>OCG</b>	Organized Crime Group
<b>OECD</b>	Organization for Economic Cooperation and Development
<b>OFs</b>	Overseas Filipinos
<b>OneLab</b>	One Stop Harmonized Laboratory Testing Services
<b>OPV</b>	Open pollinated Varieties
<b>OSH</b>	occupational safety and health
<b>PCF</b>	Performance Challenge Fund
<b>PDNA</b>	Post Disaster Needs Assessment
<b>PES</b>	Payments for Ecosystem Services
<b>PESFA</b>	Private Education Student Financial Assistance
<b>PEZA</b>	Philippine Economic Zone Authority
<b>PFDA</b>	Private Forest Development Agreement
<b>PGC</b>	Philippine Genome Center
<b>PM</b>	Particulate Matter
<b>PNP</b>	Philippine National Police
<b>PNR</b>	Philippine National Railways
<b>POPCOM</b>	Commission on Population
<b>PPP</b>	Public-Private-Partnership
<b>PQF</b>	Philippine Qualifications Framework
<b>PRBC</b>	Pampanga River Basin Committee
<b>PRO</b>	Police Regional Office
<b>PSA</b>	Philippine Statistics Authority
<b>PSIP</b>	Partnership for School Infrastructure Project
<b>PUD</b>	planned unit development
<b>PUJ</b>	Public Utility Jeeps
<b>PWDs</b>	Persons with Disabilities
<b>R&amp;D</b>	Research And Development
<b>RAILTF</b>	Regional Anti-Illegal Logging Task Force
<b>RDC</b>	Regional Development Council
<b>RDIs</b>	Research and Development Institutes
<b>RDPs</b>	Regional Development Plans
<b>RDRMP</b>	Regional Disaster Risk Reduction and Management Plan
<b>RE</b>	Renewable Energy
<b>RLA</b>	Regional Line Agencies
<b>RORB</b>	Return On Rate Base
<b>RPRH</b>	Responsible Parenthood and Reproductive Health
<b>RPT</b>	Real Property Tax
<b>RROW</b>	Road Right Of Way
<b>RSBP</b>	Regular School Building Program
<b>RSE</b>	Researchers, Scientist And Engineers

<b>RTWPB</b>	Regional Tripartite Wages and Productivity Board
<b>SAFDZs</b>	Strategic Agriculture and Fisheries Development Zones
<b>SBMA</b>	Subic Bay Metropolitan Authority
<b>SBP4BE</b>	School Building Program for Basic Education
<b>SCP</b>	Sustainable Consumption and Production
<b>SCTEx</b>	Subic-Clark-Tarlac Expressway
<b>SDG</b>	Sustainable Development Goals
<b>SEA-K/SLP</b>	Self-Employed Assistance – Kaunlaran or Sustainable Livelihood Program
<b>SETUP</b>	Small Enterprise Technological Upgrading Program
<b>SFP</b>	Supplemental Feeding Program
<b>SGLG</b>	Seal of Good Local Governance
<b>SIFMA</b>	Socialized Industrial Forest Management Agreement
<b>SLF</b>	Sanitary Landfill
<b>SLM</b>	Sustainable Land Management
<b>SLUP</b>	Special Land Use Permit
<b>SME</b>	Small and Medium Enterprises
<b>SO<sub>x</sub></b>	Sulphur Dioxide
<b>SP</b>	Social Protection
<b>SPES</b>	Special Program for the Employment of Students
<b>SRDP</b>	Self-Reliant Defense Posture
<b>SSIPs</b>	Small scale irrigation project systems
<b>STEM</b>	Science Technology, Engineering and Mathematics
<b>STI</b>	Science, Technology and Innovation
<b>SUCs</b>	State Universities And Colleges
<b>TBI</b>	Technology Business Incubation
<b>TESDA</b>	Technical Education and Skills Development Authority
<b>TEUs</b>	Twenty-Foot Equivalent Units
<b>TFLA</b>	Tree Farm Lease Agreement
<b>TFR</b>	Total Fertility Rate
<b>THWs</b>	Toxic And Hazardous Wastes
<b>TPLE<sub>x</sub></b>	Tarlac-Pangasinan-La Union Expressway
<b>TRIP</b>	Tourism Road Infrastructure Program
<b>TSP</b>	Total Suspended Solids
<b>TVET</b>	Technical and Vocational Education and Training
<b>UN</b>	United Nations
<b>UNFPA</b>	United Nations Population Fund
<b>VA</b>	Value Analysis
<b>VE</b>	Value Engineering
<b>WEF</b>	World Economic Forum
<b>WIPO</b>	World Intellectual Property Organization
<b>WIS</b>	Workers in the Informal Sector
<b>WQMA</b>	Water Quality Management Area
<b>YAFSS</b>	Young Adult Fertility and Sexuality Survey
<b>ZOs</b>	Zoning Ordinances

## GLOSSARY

<b>Achievement rate</b>	The degree of performance in different subject areas in various levels of education (DepEd, n.d.).
<b>Adaptive capacity</b>	Refers to the ability of ecological, social or economic systems to adjust to climate change including climate variability and extremes, to moderate or offset potential damage and to take advantage of associated opportunities with changes in climate or to cope with the consequences thereof (RA 9729, 2009).
<b>Aquaculture</b>	Fishery operations involving all forms of raising and culturing fish and other fishery species in fresh, brackish and marine water areas.
<b>Arts</b>	The quality, production, expression, or realm, according to aesthetic principles, of what is beautiful, appealing, or of more than ordinary significance.
<b>Basic education</b>	The education intended to meet learning needs in order to set the foundation for subsequent learning. It covers six years of primary education, four years of Junior High School, and two years of Senior High School. It also includes alternative learning system for out-of-school youth and adult learners and includes education for those with special needs. (RA 10533, 2013).
<b>Basic services</b>	The provision of basic necessities such as: potable water, power and electricity, and adequate power distribution system; sewerage facilities and an efficient and adequate solid waste disposal system, access to primary roads and transportation facilities; and the provision of health, education, communications, security, recreation, relief and welfare services in accordance with Republic Act No. 7279.
<b>Broadband</b>	Online, high-speed access service that provides connection to the internet and other information services.
<b>Business incubation</b>	A unique and highly flexible combination of business development processes, infrastructure and people designed to nurture new and small businesses by helping them to survive and grow through the difficult and vulnerable early stages of development.
<b>Certification rate</b>	The percentage of examinees who passed the national competency assessment for or within a given period.
<b>Climate change</b>	Refers to changes in climatic systems as measured by mean temperatures or variability of its properties, and persists for an extended period, typically decades or longer, whether due to natural variability or as a result of human activity (RA 9729, 2009).
<b>Climate change adaptation</b>	The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (RA 9729, 2009).
<b>Coastal area</b>	A band of dry land and adjacent ocean space, including submerged land, in which terrestrial processes affect oceanic processes and

	uses and vice versa. Its geographic extent may include areas within a landmark limit of one kilometer from the shoreline at high tide to include mangrove swamps, brackish water ponds, nipa swamps, estuarine rivers, sandy beaches and other area within a seaward limit of 200 meters isobath to include coral reefs, algal flats, sea grass, beds, and other soft bottom areas.
<b>Cohort survival rate</b>	The percentage of enrollees at the beginning grade or year in a given school year who reached the final grade or year of the elementary level.
<b>Commercialization</b>	The process of deriving income or profit from a technology, such as the creation of a spin-off company, or through licensing, or the sale of the technology and/or Intellectual Property Rights.
<b>Commercial fishing</b>	The catching of fish with the use of fishing boats with a capacity of more than three gross tons for trade, business or profit beyond subsistence or sports fishing.
<b>Communal irrigation system</b>	A type of irrigation system covering an area of 1,000 hectares or less, which is constructed by the National Irrigation Administration with the participation of the local irrigators' associations. Its operation and maintenance is turned over to the IAs upon project completion.
<b>Community-based Forest Management Agreement</b>	Partnership between the government and the local community, represented by people's organization, as forest managers, which has a term of 25 years, renewable for another 25 years.
<b>Completion rate</b>	The percentage of first grade/year entrants in a level of education who complete the required number of years of study.
<b>Comprehensive Land Use Plan</b>	A document accompanied by maps and similar illustrations, which represent the community-deserved pattern of population distribution and proposal for future allocation of land for the various land use activities, in accordance with the social and economic objectives of the people. It identifies location, character and extent of the area's land resources to be used for different purposes and includes the process and the criteria employed in the determination of the land's use.
<b>Conflict</b>	Affected areas communities where: there are actual armed encounters between the government forces and political armed groups; where political armed groups dominate the state of affairs of the community; or, where other forms of violent conflicts exist.
<b>Contraceptive prevalence rate</b>	The percentage of currently married women 15-49 years of age reporting current use of any method of contraception.
<b>Convergence program</b>	The complementation of agency initiatives within a defined area under a common intervention strategy to maximize impact.
<b>Cooperative</b>	An autonomous and duly registered association of persons, with a common bond of interest, who have voluntarily joined together to achieve their social, economic, and cultural needs and aspirations



	by making equitable contributions to the capital required, patronizing their products and services and accepting a fair share of the risks and benefits of the undertaking in accordance with universally accepted cooperative principles (RA 9520, 2008).
<b>Coral reef</b>	A natural aggregation of coral skeleton, with or without living coral polyps, occurring in intertidal and subtidal marine waters (RA 8550, 1998).
<b>Criminal justice</b>	As a factor of the Rule of Law Index, this measures whether the criminal investigation, adjudication, and correctional systems are effective, and whether the criminal justice system is impartial, free of corruption, free of improper influence, and protective of due process and the rights of the accused.
<b>Critical habitat</b>	Sites outside Protected Areas System under RA 7586 that are known habitats of threatened species and designated as such based on scientific data, taking into consideration species and endemism and richness, presence of manmade pressures and threats.
<b>Critical watershed</b>	A drainage area of a river system supporting existing and proposed hydroelectric power, irrigation works, or existing water facilities needing immediate protection and rehabilitation to minimize erosion and improve water yield.
<b>Culture</b>	Set of distinctive spiritual, material, intellectual and emotional features of society or a social group, that encompasses, not only art and literature, but lifestyles, ways of living together, value system, traditions and beliefs (UNESCO, 2001).
<b>Culture-sensitive</b>	Refers to the quality of being compatible and appropriate to the culture, beliefs, customs and traditions, indigenous systems and practices of indigenous cultural communities or indigenous peoples (R.A. 8371, 1997).
<b>Disaster</b>	A serious disruption of the functioning of a community or a society involving widespread human, material, economic, or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources (RA 10121, 2010).
<b>Disaster risk</b>	The potential disaster loss (i.e., lives, health status, livelihoods, assets, services) which could occur to a particular community or a society over some specified future time period (UNISDR, 2009).
<b>Disaster risk reduction</b>	The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including the reduction of exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (UNISDR, 2007; RA 10121, 2010).

<b>Disaster risk reduction and management</b>	Refers to the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improve coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster (RA 10174, 2012).
<b>Early warning system</b>	The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities, and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss (RA 10121, 2010).
<b>Economic services</b>	Enhancement of industrial/agricultural production capacities, covering, among others, the development of natural resources, promotion of trade and industry, and the setting up of infrastructure and utilities.
<b>Economic zone</b>	Selected areas with highly developed or which have the potential to be developed into agri-industrial, industrial, tourist, recreational, commercial, banking, investment and financial centers whose metes and bounds are fixed or delimited by Presidential Proclamations (PEZA, 1995).
<b>Ecotourism</b>	A form of tourism that can sustainably use natural and cultural resources while providing employment opportunities for local communities.
<b>eCourts</b>	This is a computer-based system designed to enable trial judges and court personnel to organize, plan and control the flow of cases from filing to resolution and enforcement. This system involves the electronic capture, storage, management and retrieval of essential case data to aid the judges and court case processors in more efficiently handling the volume of cases that flood the judiciary.
<b>El Niño</b>	A climate pattern that describes the unusual warming of surface waters in the eastern tropical Pacific Ocean that causes extreme dry weather or drought. It is the warm phase of a larger phenomenon called the El Niño-Southern Oscillation.
<b>Ethnolinguistic groups</b>	Group of people who share the same language and cultural practices.
<b>Expanded Specialized Science Secondary Education Scholarship</b>	A scholarship program implemented by the DOST-Philippine Science High School System to provide scholarship for the Specialized Science Secondary Education nationwide. The scholarship program increases the competitiveness of Filipinos in Science, Technology, Engineering and Mathematics courses by developing the skills, knowledge and attitudes of young scholars with high aptitude in science and mathematics to join the critical mass of S&T workers in the country.

<b>Farm-to-market roads</b>	Roads linking the agriculture and fisheries production sites, coastal landing points and post-harvest facilities to the market and arterial roads and highways.
<b>Feed-in tariff</b>	A policy mechanism that obligates electric power industry participants to source electricity from renewable energy generation at a guaranteed fixed rate per kilowatt-hour for a given period of time.
<b>Financial inclusion</b>	A state where there is effective access to a wide range of financial products. The term is synonymous to inclusive financial system.
<b>Fisherfolk</b>	People who are directly engaged in catching, culturing, and processing of fishery and/or aquatic resources.
<b>Food security</b>	A condition where all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2002).
<b>Foreign direct investments</b>	Investments made by a resident entity in one economy to another economy to acquire a lasting interest and have a significant influence in the management over the enterprise.
<b>Forest cover</b>	Natural and man-made forests, including forests within wetlands and built-up areas.
<b>Forest land</b>	Includes public forest, permanent forest or forest reserves, and forest reservations.
<b>Forward and backward linkages</b>	The channels through which products, materials, information, and money flow from suppliers to the firms (backward) or customers (forward). Backward and forward linkages are also descriptive measures of the economic interdependence of industries.
<b>Full Disclosure Policy</b>	A policy that mandates local government units to post plans, budgets, and full utilization reports to enable the public to view, download, and print these financial documents to allow their constituents to understand how their local governments budget and spend for public services.
<b>Functional literacy</b>	A significantly higher level of literacy, which includes not only reading and writing skills but also numerical skills. The skills must be sufficiently advanced to enable the individual to participate fully and efficiently in activities commonly occurring that require a reasonable capability of communicating by written language.
<b>Gender and development</b>	The development perspective and process that "seeks to achieve gender equality as a fundamental value that should be reflected in development choices; seeks to transform society's social, economic, and political structures and questions the validity of the gender roles they ascribed to women and men; contends that women are active agents of development and not just passive recipients of development assistance; and stresses the need of women to organize themselves and participate in political processes to strengthen their legal rights". (RA 9710, 2009).

<b>Greater Capital Region</b>	Consists of National Capital Region, Regions III, and IV-A.
<b>Grid</b>	The high voltage backbone system of interconnected transmission lines, substations, and related facilities.
<b>Gross domestic product</b>	The value of all goods and services produced domestically. It is the sum of gross value added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the values of their outputs). Gross regional domestic product The aggregate of gross value added of all resident producer units in the region. This includes regional estimates on the three major sectors including their sub-sectors namely: 1) Agriculture, Fishery, and Forestry Sector; 2) Industry Sector (Mining and Quarrying, Manufacturing, Construction, Electricity, Water); 3) Service Sector (Transport, Communication, Storage, Trade, Finance, Ownership of Dwellings and Real Estate, Private or Government Services). (PSA, n.d.).
<b>Gross value-added</b>	The total payment to factors of production, namely: wages, interest, profits, rents, including capital consumption allowance and indirect taxes. It is estimated by deducting from gross value of output the sum of non-factor cost such as raw materials and supplies, containers and packing materials, fuel, advertising and other non-industrial overhead cost.
<b>Hazard</b>	A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR, 2007).
<b>Hazardous waste</b>	Used or discarded substances or materials that are without any safe commercial, industrial, agricultural or economic uses, and which pose substantial or potential threats to public health and/ or the environment.
<b>Hospital waste</b>	Discarded materials from hospital operations and processes that may harbor or transmit pathogenic organisms. Heritage Includes artefacts, monuments, a group of buildings and sites, that have a diversity of values including symbolic, historic, artistic, aesthetic, ethnological or anthropological, scientific and social significance (UNESCO, 1972).
<b>Heritage</b>	Includes artefacts, monuments, a group of buildings and sites, that have a diversity of values including symbolic, historic, artistic, aesthetic, ethnological or anthropological, scientific and social significance (UNESCO, 1972).
<b>High-value crops</b>	Non-traditional agricultural and horticultural commodities that include coffee, cacao, fruits, root crops, vegetables, spices and condiments, cutflowers, and ornamental plants.
<b>Housing needs</b>	The number of conventional dwellings or other suitable living quarters that need to be constructed or repaired in order to bring

	housing conditions, in a particular point in time, up to nationally adopted standards, plus the number that need to be constructed, repaired or maintained to ensure that housing conditions remain at the standard level over a stated period of time. Composed of accumulated, future, and recurrent structure demands, with allowance for inventory losses and increase in households.
<b>Idle lands</b>	Land that was cultivated but is now in a state of disuse or is abandoned. This may also refer to non-agricultural lands in urban and urbanizable areas on which no improvements have been made by the owner, as certified by the city, municipal, or provincial assessor (RA 7279, 1992).
<b>Inclusive growth</b>	Growth that is rapid enough to matter, given the country's large population, geographical differences, and social complexity. It is sustained growth that creates jobs, draws the vast majority into the economic and social mainstream, and continuously reduces mass poverty.
<b>Indigenous cultural communities</b>	A group of people or homogenous societies identified by self-ascription and ascription by other, who have continuously lived as organized community on communally bounded and defined territory, and who have, under claims of ownership since time immemorial, occupied, possessed customs, tradition, and other distinctive cultural traits, or who have, through resistance to political, social and cultural inroads of colonization, non-indigenous religions and culture, become historically differentiated from the majority of Filipinos (RA 8371, 1997).
<b>Indigenous Peoples</b>	Peoples who are regarded as indigenous on account of their descent from the populations which inhabited the country, at the time of conquest or colonization or at the time of inroads of non-indigenous religions and cultures or the establishment of present state boundaries who retain some or all of their own social, economic, cultural and political institutions, but who may have been displaced from their traditional domains or who may have resettled outside their ancestral domains (RA 8371, 1997).
<b>Indigent senior citizen</b>	Any elderly who is frail, sickly or with disability, without pension or permanent source of income, compensation or financial assistance from relatives to finance basic needs, as determined by the Department of Social Welfare and Development in consultation with the National Coordinating and Monitoring Board (RA 9994, 2010).
<b>Inflation rate</b>	The annual rate of change or year-on-year change in Consumer Price Index.
<b>Informal settler families</b>	Households with no security of tenure vis-à-vis the land or dwellings they inhabit. Their neighbourhoods usually lack, or are cut off from, basic services and city infrastructure, and their housing may not comply with current planning and building

	regulations, and is often situated in geographically and environmentally hazardous areas.
<b>Information and communication technology</b>	An umbrella term that covers all technical means for processing and communicating information. It defines a broad range of technologies, including methods for communication (communication protocols, transmission techniques, communications equipment, media communication), as well as techniques for storing and processing information (computing, data storage, etc.).
<b>Installed capacity</b>	Fulllest operational capability of an equipment or facility, usually expressed in megawatts (MW). 368   Philippine Development Plan 2017-2022.
<b>Integrated Coastal Management</b>	A dynamic process of planning and management involving stakeholders, and requiring the analysis of the environmental and socioeconomic implications of development, the ecosystem processes, and the interrelationships among land-based and marine-related activities across jurisdictions (Executive Order No. 533).
<b>Integrated Forest Management Agreement</b>	A production-sharing contract entered into by and between the DENR and a qualified applicant where the DENR grants to the latter the exclusive right to develop, manage, protect, and utilize a specified area of forestland and forest resource therein for a period of 25 years and may be renewed for another 25 year period, consistent with the principle of sustainable development and in accordance with an approved Comprehensive Development and Management Plan, and under which both parties share in its produce.
<b>Integrated water resource management</b>	The process that promotes the coordinated development and management of water, land, and related resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.
<b>Intellectual property</b>	The intangible assets resulting from the creative work of an individual or organization. IP also refers to creations of the mind, such as inventions, literary and artistic works, and symbols, names, images and designs used in commerce. IP can also refer to future tangible and/or intangible assets that may be recognized as intellectual property.
<b>Irrigation development</b>	The ratio of the area that was developed altogether by the NIA, other government agencies and private sectors as against the potential irrigable area (NIA, n.d.).
<b>Key biodiversity areas</b>	They are places of international importance for the conservation of biodiversity through protected areas and other governance mechanisms. They are identified nationally using simple standardized criteria based on their importance in maintaining species population. As the building blocks for designing the

	ecosystem approach and maintaining ecological networks, these sites are the starting point for conservation planning at landscape level.
<b>Labor force</b>	This refers to population 15 years old and over who are either employed or unemployed.
<b>Labor market information</b>	Data that provides timely relevant and accurate signals on the current labor market such as in-demand jobs and skills shortages by developing client-specific information, education and communication materials.
<b>Labor productivity</b>	Labor productivity in agriculture, forestry and fishery pertains to the value of agricultural output per employed person in agriculture, forestry and fisheries.
<b>Land degradation</b>	The reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns (UNCCD, 1994).
<b>Large-scale irrigation system</b>	Type of irrigation systems constructed by National Irrigation Authority that are usually covering more than 1,000 hectares. These are jointly operated and maintained by National Irrigation Authority and the farmer beneficiaries through their irrigators' associations. (NIA, n.d.).
<b>Lifelong learning</b>	All learning activities undertaken throughout life for the development of competencies and qualifications. Adult learning and education, technical-vocational education or training, and literacy are all significant components of the lifelong learning process.
<b>Logistics hub</b>	Integrated centers for transshipment, storage, collection, and distribution of goods.
<b>Low-income households</b>	Those belonging to the bottom 30 percent income population (first to third income deciles).
<b>Mangroves</b>	A community of intertidal plants including all species of trees, shrubs, vines and herbs found on coasts, swamps, or border of swamps (RA8550, 1998).
<b>Marginalized</b>	Groups in society who, for reasons of poverty, geographical inaccessibility, culture, language, religion, age, gender, migrant status or other disadvantage, have not benefited from health, education, employment and other opportunities, and who are relegated to the sidelines of political persuasion, social negotiation, and economic bargaining (NEDA-SDC, 2007).
<b>Marine protected areas</b>	A defined area of the sea established and set aside by law, administrative regulation, or any other effective means in order to conserve and protect a part of or an entire enclosed environment through the establishment of management guidelines. It is



	considered a generic term that includes all declared areas governed by specific rules or guidelines in order to protect and manage activities within an enclosed area (Republic Act 10654).
<b>Market size</b>	Captures the following: real market potential, cost required to start a business, time required to start a business, cost of bankruptcy proceedings, strength of insolvency framework, attitudes toward entrepreneurial risk, growth of innovative companies, and willingness to delegate authority.
<b>Maternal mortality ratio</b>	The number of women who die from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, per 100,000 livebirths.
<b>Micro, small, and medium enterprises</b>	Any business activity or enterprise that has assets not exceeding ₱100 million and employment size less than 200, regardless of the type of ownership.
<b>Microfinance</b>	A broad range of financial services such as deposits, loans, payment services, money transfers and insurance products to the poor and low-income households and their microenterprises. By definition, it is important to note that microfinance is not a subsidized credit, not a dole-out, not salary or consumption loans, and not a cure-all for poverty.
<b>Mitigation</b>	The lessening or limitation of the adverse impacts of hazards and related disasters (UNISDR, 2007).
<b>Multinational corporations</b>	A parent corporation based in one country called the home country, with a multinational group of subsidiary corporations, organized under and subject to the laws of different countries, called the host countries.
<b>Municipal fisherfolk</b>	Persons who are directly or indirectly engaged in municipal fishing and other related fishing activities (Republic Act 8550).
<b>Municipal waters</b>	Include not only streams, lakes, inland bodies of water and tidal waters within the municipality which are not included within the protected areas as defined under Republic Act No. 7586, public forest, timber lands, forest reserves or fishery reserves, but also marine waters included between two lines drawn perpendicular to the general coastline from points where the boundary lines of the municipality touch the sea at low tide and a third line parallel with the general coastline including offshore inlands and 15 kilometers from such coastline. Where two municipalities are so situated on opposite shores that there is less than 30 kilometers of marine waters between them, the third line shall be equally distant from opposite shore of the respective municipalities (Republic Act 8550).

<b>National Integrated Protected Areas System</b>	The classification and administration of all designated protected areas to maintain essential ecological processes and life-support systems, to preserve genetic diversity, to ensure sustainable use of resources found therein, and to maintain their natural conditions to the greatest extent possible.
<b>National Justice Information System</b>	A program that is intended to address and remedy the current information gaps in the Philippine criminal justice system by enabling effective sharing of data between the police, judiciary, probation services, custodial authorities, and criminal information registries, at key decision points in the criminal justice system process.
<b>Natural gas</b>	Consists primarily of methane, typically with 0 to 20 percent higher hydrocarbon concentration, and is an important fuel source and major feedstock for fertilizers.
<b>Natural hazard</b>	Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR, 2007).
<b>Net enrolment rate or participation rate</b>	The ratio of the enrolment for the age group corresponding to the official school age in the elementary/secondary level to the population of the same age group in a given year.
<b>Non-communicable disease</b>	Also known as chronic diseases. These are not passed from person to person. They are of long duration and generally slow progression. The four main types of non-communicable diseases are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes.
<b>Off-city resettlement</b>	A relocation site developed outside and not adjacent to the local government unit where the affected informal settler families have their settlements (House Joint Resolution No. 0003, n.d.). Off-grid areas Localities not connected to the wires and related facilities of the On-Grid System of the Philippines.
<b>One Lab Harmonized Laboratory Testing Services</b>	An information technology based project that broadens public access to testing services initially of all DOST laboratories, at a single touch point through a platform that allows effective seamless handling of samples from receiving, referral, transport and analysis, to the prompt delivery of results. The platform is expected to link other government and private laboratories in the future.
<b>Patent</b>	A grant issued by the government through the Intellectual Property Office of the Philippines. It is an exclusive right granted for a product, process or an improvement of a product or process which is new, inventive and useful. This exclusive right gives the inventor the right to exclude others from making, using, or selling the product of his invention during the life of the patent.

<b>Performance Challenge Fund</b>	An incentive fund to eligible local government units in the form of counterpart funding for local development projects in the Annual Investment Program and funded out of the 20 percent Local Development Fund. It seeks to rationalize national government intergovernmental transfers to local government units, and encourage alignment of local development initiatives with national government development agenda and priorities.
<b>Poor</b>	Individuals and families whose income fall below the poverty threshold as defined by the government or those that cannot afford in a sustained manner to provide their basic needs of food, health, education, housing and other amenities of life (RA 8425, 1997).
<b>Protected areas</b>	Identified portions of land and water set aside by reason of their unique physical and biological significance, managed to enhance biological diversity and protected against destructive human exploitation.
<b>Public Financial Management</b>	The set of laws, rules, systems, and processes used by the government in resource mobilization and expenditure management. It is about the way government raises its income (in the form of taxes, customs duties and other revenues) and manages its expenditures to deliver essential services to its citizens in various areas (i.e., education, health care and other social programs, roads and infrastructure, the rule of law and security).
<b>Public-private partnership</b>	A contractual arrangement between the government and the private sector to deliver public infrastructure and/or public services.
<b>Rehabilitation</b>	Measures that ensure the ability of affected communities/ areas to restore their normal level of functioning by rebuilding livelihood and damaged infrastructure and increasing the communities' organizational capacity (Republic Act 10121).
<b>Renewable energy</b>	Energy resources that do not have an upper limit on the total quantity to be used, e.g., biomass, solar, wind, geothermal, hydropower, among others. Such resources are renewable on a regular basis, and whose renewal rate is relatively rapid to consider availability over an indefinite period of time.
<b>Replacement fertility</b>	The fertility rate that is consistent with stable population of about 2.1
<b>Report Card Survey</b>	An evaluation to obtain feedback on how provisions in the Citizen's Charter are being followed and how the agency is performing. This evaluation also includes estimates of hidden costs incurred by clients to access frontline services, which may include, but are not limited to, bribes and payment to fixers.
<b>Resiliency or resilience</b>	The capacity of social, economic, and environmental systems to cope with a hazardous event or trend disturbance, responding, or reorganizing in ways that maintain their essential function,

	identity and structure, while also maintaining the capacity for adaptation, learning and transformation (IPCC, 2014).
<b>Risk assessment</b>	A methodology used to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihood, and the environment on which they depend (RA 10121, 2010).
<b>River basin</b>	An area of land that drains water, sediment, and dissolved materials, to a common outlet at some point along the river and or stream channel.
<b>Roll-on-roll-off</b>	Cargo handling technique first introduced in the 1950s, in which vessels are used to carry wheeled cargo. Rolling stock is ready for delivery upon arrival at the discharge port, and loading, stowing, and discharge operations are simplified.
<b>Rule of law</b>	A principle of governance in which all persons, institutions and entities, public and private, including the state itself, are accountable to laws.
<b>Sanitary landfill</b>	A waste disposal site designed, constructed, operated, and maintained in a manner that exerts engineering control over significant potential environmental impacts arising from the development and operation of the facility.
<b>Seal of Good Local Governance</b>	A mechanism that monitors and recognizes adherence of local government units to performance criteria on any of the following areas: good financial housekeeping, disaster preparedness, social protection for the basic sector, business friendliness and competitiveness, environmental compliance, and law and order and public safety. This used to be referred to as the Seal of Good Housekeeping.
<b>Security of tenure</b>	The degree of protection afforded to qualified program beneficiaries against infringement or unjust, reasonable and arbitrary eviction or disposition, by virtue of the right of ownership, which may come in the form of lease agreement, usufruct, or other contractual arrangements (RA 7279, 1992).
<b>Sewerage</b>	Any system or network of pipelines, ditches, channels, or conduits, which collects, transports, pumps, and treats waterborne human and animal waste removed from residences, buildings, and industrial and commercial establishment to point of disposal.
<b>Small farmer</b>	Farmers cultivating not more than three hectares of land; landless farm workers with primary occupation in agriculture; or those engaged as backyard poultry/livestock raisers. In case of combination of these activities, the primary source of income will serve as the basis.
<b>Small scale irrigation system</b>	Irrigation with limited service areas, constructed in locations where permanent or continuous water sources are not available, and in which farmers have the control and management of the

	water abstraction from its source and using a level of technology which the farmers can effectively operate and maintain (DABSWM, 2014).
<b>Social cohesion</b>	A state of affairs between and among members of the community and between citizens and their government where they are bound together by norms, values, practices and relationships characterized by respect for diversity, culture of peace, cooperation and trust.
<b>Social protection</b>	Constitutes policies and programs that seek to reduce poverty and vulnerability to risks and enhance the social status and rights of the marginalized by promoting and protecting livelihood and employment, protecting against hazards and sudden loss of income, and improving people's capacity to manage risks (NEDA-SDC, 2007).
<b>Social safety nets</b>	Stop-gap mechanisms or urgent responses that address effects of economic shocks, disasters and calamities on specific vulnerable groups with the objective of providing relief and transition. Measures include emergency assistance, price subsidies, food programs, employment programs, retraining programs and emergency loans. (NEDA-SDC, 2007)
<b>Social services</b>	Education, manpower development, health, housing and social security and welfare services. Socialized housing Units that are affordable to low-income earners, with price ceiling not more than ₱450,000. It also refers to programs and projects undertaken by the government or private sector entities to assist underprivileged and homeless citizens in acquiring housing structures (RA 10884, 2016).
<b>Solid waste</b>	Discarded household, commercial, institutional and industrial materials, street sweepings, construction debris, agricultural refuse, and other non-hazardous/non-toxic solid excess.
<b>Solid waste management</b>	Discipline associated with the control of generation, storage, collection, transfer and transport, processing, and disposal of solid wastes in a manner that is in accord with the best principles of public health, economics, engineering, conservation, aesthetics, and other environmental considerations, and that is also responsive to public attitudes.
<b>Stunting</b>	A state in which a child, as a result of inadequate diet in the past, is small or short for his or her age and for his or her genetic stock.
<b>Subsistence incidence</b>	Proportion of the population with per capita income less than the per capita food threshold (PSA, n.d.).
<b>Sustainable development</b>	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
<b>Sustainable land management</b>	The use of the land to meet changing human needs, while ensuring long term socioeconomic and ecological functions of the land.

<b>Technical vocational education and training</b>	The education or training process where it involves, in addition to general education, the study of technologies and related sciences and acquisition of practical skills relating to occupations in various sectors of economic life and social life, comprises formal (organized programs as part of the school system) and non-formal (organized classes outside the school system) approaches.
<b>Technology business incubation</b>	A specific type of business incubator – a property-based venture that provides tangible and intangible services to new technology-based firms, entrepreneurs, and spin-offs of universities and large firms, all with the aim of helping them increase their chances of survival and generate wealth and jobs and diffuse technology.
<b>Technology transfer</b>	The process by which one party systematically transfers to another party the knowledge for the manufacture of a product, the application of a process, or rendering of a service, which may involve the transfer, assignment or licensing of Intellectual Property Rights.
<b>Technopreneur</b>	A new age entrepreneur who makes use of technology to come out with something new to make some innovation. Once the person succeeds in it, he exploits his achievement in the market to make money.
<b>Total fertility rate</b>	the total number of births a woman would have by the end of her childbearing period if she were to pass through those years bearing children at the currently observed “age-specific fertility rate” (average number of live births per 1,000 women in a certain age group).
<b>Traffic management</b>	The direction, control, and supervision of all functions incident to the procurement and use of freight and passenger transportation services.
<b>Twenty-foot equivalent unit</b>	The unit of the capacity of a container ship, a container terminal, and the statistics of the container transit in a port.
<b>Under-five mortality rate</b>	The probability of a child born in a specific year or period dying before reaching the age of five, if subject to age-specific mortality rates of that period.
<b>Unemployed</b>	Persons in the labor force who are reported as without work and currently available for work. These persons may be actively seeking work, not seeking work, awaiting results of previous job application, waiting for rehire or job recall. Persons who are jobless because of temporary illness, disability, or bad weather are also included.
<b>Universal charge</b>	A fixed amount approved by the Energy Regulatory Commission pursuant to Section 34 of RA 9136 imposed on all electricity end-users for the payment of stranded debts in excess of the amount assumed by the national government and stranded contract costs of the National Power Corporation and, environmental charge.

<b>Unregulated fishing</b>	Fishing activities conducted by: (a) vessels without nationality but operated by a Filipino and/or Filipino corporation; (b) Philippine flagged fishing vessels operating in areas or fish stocks where there are no applicable conservation and management measures; and (c) Philippine flagged fishing vessels operating in areas of fish stocks where there are no applicable conservation and management measures (RA 10654, 2015).
<b>Value chain</b>	The full range of activities that are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use.
<b>Vulnerability</b>	The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. Vulnerability may arise from various physical, social, economic, and environmental factors such as poor design and construction of buildings, inadequate protection of assets, lack of public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management. (RA 10121, 2010; UNISDR, 2007).
<b>Vulnerable</b>	Households confronted by ex-ante risk that, if they are currently non-poor, will fall below the poverty line, or if they are currently poor, will remain in poverty. It is also defined in terms of exposure to adverse shocks to welfare and not only in terms of exposure to poverty (NEDA-SDC, 2007).
<b>Wasting</b>	Current or recent or active malnutrition characterized by very low weight-for-height as a result of deficits in both muscle tissue and fat mass.
<b>Water district</b>	Government-owned and controlled corporations created primarily to acquire, install, operate, maintain, and improve water supply and distribution systems for domestic, industrial, and municipal uses of residents and to provide, maintain, and operate waste water collection, treatment, and disposal facilities within the boundaries of the district.
<b>Water quality management areas</b>	Designated sites, pursuant to Republic Act 9275, which uses appropriate physiographic units such as watershed, river basins or water resources regions. The objective of the designation is to protect, through stakeholder collaborations, the water body and its tributaries by keeping their water quality within the Water Quality Guidelines or Criteria conforming to the water body's classification or even improve the quality to higher classification (e.g., from C to B or SC to SB).
<b>Watershed</b>	A land area drained by a stream or fixed body of water and its tributaries having a common outlet for surface run-off. Also called basin or catchment areas.



<b>Wetlands</b>	Areas of marsh, peat land or water, whether natural or artificial, permanent or temporary, with water that is static, flowing, fresh, brackish, or salt, including area of marine water, the depth of which at low tide does not exceed six meters.
<b>Yield</b>	An indicator of productivity for agricultural commodities derived by dividing total production by the area planted or harvested.
<b>Yield curve</b>	A line that plots the interest rates, at a set point in time, of bonds and other financial instruments having equal credit quality but differing maturity dates. It is issued as a benchmark for other debt in the market such as mortgage rates or bank lending rates. The curve is also a graphical representation of the range of interest rates available to investors and fused to predict changes in economic output and growth.
<b>Youth</b>	Individuals belonging to the age group 15 to 30 years (RA 8044, 1995).

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# CLRDP 2017-2022 Planning Committees

## REGIONAL PLANNING COMMITTEE ON ECONOMIC DEVELOPMENT

Chairperson: **Governor Albert Raymond S. Garcia**  
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Vice-Chairperson: **Director Judith P. Angeles**  
Department of Trade and Industry (DTI) 3

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Governor Czarina D. Umali, Province of Nueva Ecija  
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Mayor Edwin C. Santiago, City of San Fernando, Pampanga  
Mayor Henry R. Villarica, Meycauayan City, Bulacan  
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Mayor Mario O. Salvador, San Jose City, Nueva Ecija

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Department of Agriculture (DENR) 3  
Department of Agrarian Reform (DENR) 3  
Department of Environment and Natural Resources (DENR) 3  
Department of Science and Technology (DOST) 3 <sup>1</sup>  
Department of Tourism (DOT) 3

#### RDC-Private Sector Representatives (PSRs)

Mr. Renato S. Tayag, RDC-PSR for Agribusiness  
Ms. Myrna C. Bituin, RDC-PSR for Trade and Industry  
Ms. Amanda T. Battad, RDC-PSR for MSME  
Ms. Loida P. Rivera, RDC-PSR for Crops and Livestock  
Mr. Zacarias P. Bodoy, RDC-PSR for Fisheries  
Ms. Evelyn A. Grace, RDC-PSR for Agriforestry and Mining

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<sup>1</sup> *Provided substantial inputs on Chapter 11: Vigorously Advancing Science, Technology, and Innovation*

## REGIONAL PLANNING COMMITTEE ON INFRASTRUCTURE DEVELOPMENT

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Department of Public Works and Highways (DPWH) 3  
Land Transportation Office (LTO) 3  
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Mr. Eugenio T. Orejas, RDC-PSR for Environment  
Ms. Riza Angara-Moises, RDC-PSR for Transport and Logistics  
Mr. Aristoteles Z. Elvina, RDC-PSR for Information and Communications Technology  
Mr. George U. Lorenzana, RDC-PSR for Tourism

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Department of Education (DepEd) 3  
Department of Health (DOH) 3  
Department of Social Welfare and Development (DSWD) 3  
Housing and Urban Development Coordinating Council (HUDCC)  
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Mr. Reynaldo King G. Ramirez, RDC-PSR for Health and Social Welfare  
Mr. Ernesto B. Juliano, Jr., RDC-PSR for Indigenous Peoples  
Mr. Ricardo M. Agapito, RDC-PSR for Vulnerable Groups  
Ms. Miriam Cea O. Palma, RDC-PSR for Culture and the Arts

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Governor Czarina D. Umali, Province of Nueva Ecija  
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Mayor Adrienne Mae J. Cuevas, Palayan City, Nueva Ecija  
Mayor Marino P. Morales, Mabalacat City, Pampanga

#### Regional Line Agencies (RLAs)

Bureau of Local Government and Finance (BLGF) 3  
Bangko Sentral ng Pilipinas (BSP)  
Department of Budget and Management (DBM)  
Department of the Interior and Local Government (DILG) 3  
Department of Foreign Affairs (DFA) 3  
Northern Luzon Command (NOLCOM)  
National Intelligence Coordinating Agency (NICA) 3  
Philippine Information Agency (PIA) 3

#### RDC-Private Sector Representatives (PSRs)

Ms. Catalina DJ. Santiago, RDC-PSR for Cooperatives  
Mr. Casiano M. Supan, RDC-PSR for Development Communication

# Schedule of CLRDP 2017-2022 Consultations

First Consultation Workshop : Regional Planning Committees on Economic Development (RPCED) and Infrastructure Development (RPCID)	12 October 2016
First Consultation Workshop: Regional Planning Committees on Social Development (RPCSD) and Development Administration (RPCDA)	13 October 2016
Presentation of the Central Luzon Regional Development Plan 2017-2022 (First Draft) to the Regional Development Council (RDC) III	14 December 2016
Second Public Consultation Workshop	16 February 2017
Presentation of the Central Luzon Regional Development Plan 2017-2022 (Final Draft) to the RDC III – Sectoral Committee on Development Administration (SCDA) and Economic Development (SCED)	23 March 2017
Presentation of the Central Luzon Regional Development Plan (Final Draft) 2017-2022 to the RDC III – Sectoral Committee on Social Development (SCSD) and Infrastructure Development (SCID)	24 March 2017
Presentation of the Central Luzon Regional Development Plan (Final Draft) 2017-2022 to the RDC III for adoption	28 March 2017

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