

Proposed Research Agenda 2020-2025: Catching FIRe as the Global Economy Reshapes

Final Report

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1. Introduction

The main objective of crafting a five-year research agenda is for the Philippine Institute for Development Studies (PIDS) to have an objective prioritization of prevailing issues surrounding the affairs of the country and the world. Having this agenda in place will allow PIDS to contribute to policy-making and planning in the Philippines relative to its competency and the future requirements of policymakers and the government.

The research themes have not substantially changed across the eight 5-year research agenda, although their presentation and emphasis have changed (see Annex A). It is to be noted though that upon cursory review, the specific research outputs under each research area have changed through the years. Annex B presents a summary of PIDS research outputs under the current research agenda categorized according to major research themes.

The proposed policy research agenda 2020-2025 departs from previous research agenda in three respects. First, it covers emerging policy issues that need to be thoroughly studied not only by PIDS but by other think-tanks and individual researchers in the country as well. While PIDS' human and financial resources are limited to adequately deal with so many policy issues, it can do more by inspiring other research institutions and individual researchers to conduct studies on key development issues confronting the country in the next five or ten years. In this regard, the Team proposes research priorities for PIDS culled from the formulated comprehensive research agenda. Second, it extends the period of coverage to six years instead of the previous five years. Third, it suggests a title for the policy research agenda, *"Catching Fire as the Global Economy Reshapes,"* to signal to readers its main focus.

Section 2 of the report discusses the performance of the Philippine economy during the period 2010-2018 and key legislative measures passed. Section 3 proposes a way of organizing the research agenda. Section 4 presents the Team's observations regarding the different types of research demanded by various government agencies. Section 5 presents the proposed research agenda following the framework discussed in Section 3. Section 6 suggests research priorities for PIDS culled from the proposed comprehensive research agenda. Section 7 presents recommended themes for the PIDS Annual Public Policy Conference.

2. Performance of the Economy and Key Legislative Measures

2.1 Performance of the Philippine Economy, 2010-2018

This sub-section discusses the performance of the economy from 2010 to 2018, which covers two PIDS research agenda periods. The intention is not to explain how PIDS policy advice has contributed to economic development in the country during this period but rather to provide a context for proposing the next research agenda.

Since 2010, the economy has experienced significant positive developments in many areas. Except for 2011, gross domestic product (GDP) has been growing at more than 6 percent per annum, a feat which was never achieved in previous periods (see Table 1). Poverty incidence has declined from 26.3 percent in 2009 to 21.6 percent in 2015. While the number of poor people has remained high, it went down to 22 million in 2015 from more than 23 million in previous survey years. The Philippine Statistics Authority has just announced that the poverty incidence in the first semester of 2018 was estimated at 21.0 percent, considerably lower than the 27.6 percent recorded in the same period in 2015. Given the high GDP growth rates in the last three years, it is therefore reasonable to expect a much lower poverty incidence for the full year of 2018 compared to 2015. With the sustained expansion of the economy, more employment opportunities have become available, causing unemployment rate to decline from

more than 7 percent in 2010 to close to 5 percent in 2018. Despite this positive development, underemployment rate has been persistently high, without any clear sign of abating and income inequality has remained high, albeit a slight improvement is seen in 2015.

Table 1. Selected Economic Indicators, 2010-2018										
Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Real GDP Growth (2000=100), Percent	7.6	3.7	6.7	7.1	6.1	6.1	6.9	6.7	6.2	
Poverty										
Poverty incidence, Percent of Total Population	26.3 (2009)		25.2			21.6				
Number of poor people, in million	23.3		23.8			21.9				
Income Inequality (Gini Coefficient)	0.4641 (2009)		0.4605			0.4439				
Unemployment Rate, New Concept (2000-based population projections)	7.4	7.0	7.0	7.1	6.6	6.3	5.4	5.7	5.3	
Underemployment Rate, New Concept (2000-based population projections)	18.8	19.3	20.0	19.3	18.4	18.5	18.3	16.1	18.0	
Inflation Rate, Percent (2012-based CPI series)	3.8	4.7	3.1	2.6	3.6	0.70	1.3	2.9	5.2	
Interest rates, Percent per Annum (bank average lending rate)	7.7	6.6	5.7	5.8	5.5	5.6	5.6	5.6	6.1	
Fiscal Accounts										
NG Total Outstanding Debt as Percent of GDP		21.4	18.6	16.9	15.2	15.5	14.9	14.0	14.4	
NG Deficit as a Percent of GDP	-3.5	-2.0	-2.3	-1.4	-0.6	-0.9	-2.4	-2.2	-3.2	
Revenue Effort, Percent to GDP	13.4	14.0	14.5	14.9	15.1	15.8	15.2	15.6	16.4	
External Accounts										
Current Account Balance, Percent of GDP	3.6	2.5	2.8	4.2	3.8	2.5	-0.4	-0.7	-2.4	
Export Growth, Percent	34	-6.2	7.9	8.8	9.5	-5.3	-2.4	19.7	-1.8	
US\$Million	51,498	48,305	52,100	56,698	62,102	58,827	57,406	68,713	67,488	
Import Growth, Percent	27.5	10.1	2.7	0.5	4.8	8.7	18.3	14.2	13.4	
US\$Million	54,933	60,496	62,129	62,411	65,398	71,067	84,108	96,093	108,928	
Exchange Rates, PhP/US\$	45.1	43.3	42.2	42.4	44.4	45.5	47.5	50.4	52.7	
Total Reserves in Months of Imports	10.4	11.6	11.5	11.6	9.9	9.9	8.8	7.8	7.0	
Official Reserve Assets, Million US\$	62,373	75,302	83,831	83,187	79,541	80,667	80,692	81,570	79,193	
Net FDI, US\$ Million		2,007	3,215	3,737	5,740	5,639	8,280	10,256	9,802	
Real Gross Domestic Product, in Million Pesos	5,701,539	5,910,201	6,305,229	6,750,631	7,165,478	7,600,175	8,123,375	8,665,818	9,206,889	
By Expenditure, in Percent										
Household Final Consumption Expenditure	69.2	70.5	70.5	69.5	69.1	69.3	69.5	68.9	68.5	
Government Final Consumption Expenditure	10.0	9.8	10.7	10.5	10.2	10.3	10.5	10.5	11.1	
Capital Formation	20.8	20.6	18.5	22.1	21.7	24.2	28.2	28.9	30.8	
Exports	50.6	47.6	48.4	44.8	47.5	48.6	50.8	57.0	60.8	
Imports	50.6	48.5	48.0	46.8	48.5	52.4	59.0	65.3	71.3	
By Industrial Origin, in Percent										
Agriculture, Hunting, Forestry and Fishing	11.6	11.5	11.1	10.5	10.0	9.5	8.8	8.5	8.1	
Industry Sector	32.6	32.0	32.2	32.9	33.4	33.5	33.9	34.0	34.1	
Manufacturing	22.2	22.4	22.1	22.8	23.3	23.2	23.2	23.6	23.3	
Manufacturing growth	11.2	4.7	5.4	10.3	8.3	5.7	7.1	8.4	4.9	
Service Sector	55.8	56.5	56.7	56.7	56.6	57.0	57.4	57.5	57.8	
Employment, Labor Productivity and Wages										
Employment by Industry, in thousand	36,035.00	37,192.00	37,600.00	38,118.00	38,651.00	38,741.00	40,998.00	40,334.00	41,159.80	
Agriculture, Forestry and Fishing	33.2	33.0	32.2	31.0	30.5	29.2	27.0	25.4	24.3	
Industry	15.0	14.9	15.3	15.6	16.0	16.2	17.5	18.3	19.1	
Services	51.8	52.1	52.0	53.4	53.5	54.7	55.6	56.3	56.6	
Labor Productivity (At 2000 Constant Prices), PhP/Person	158,222	158,911	167,692	177,098	185,389	196,179	198,125	214,849		
Agriculture, Forestry and Fishing	55,425	55,420	57,800	59,734	60,910	63,728	64,256	72,023		
Industry	344,418	342,486	353,725	373,769	387,752	405,643	384,137	399,878		
Services	170,183	172,033	180,875	187,988	196,075	204,753	204,689	219,336		
Real Wages (PhP)		349.18	363.64	362.36	356.54	363.84	361.56	360.31	460.94	

Sources: Philippine Statistical Authority; Bangko Sentral ng Pilipinas.

The high GDP growth rates and decline in both poverty incidence and unemployment rate since 2010 occurred against the background of a generally stable macroeconomic environment. Inflation rate has been low, except in 2018 when supply-side shocks, like increases in price of rice and oil, caused much larger increases in domestic prices of basic commodities. However, inflation rate has started to ease in the first three months of 2019, posting 3.3 percent in March. The national government deficit as percent of GDP has been generally contained, although it increased by one-percentage point in 2018 as the government intensified its “Build-Build-Build” program to make up for low investments in infrastructure in previous years. Its total outstanding debt as percent of GDP has been generally declining while its revenue effort as percent of GDP has been improving, posting 16.4 percent in 2018, the first year when the Tax Reform for Acceleration and Inclusion (TRAIN) Act took effect.

The country's current account balance turned negative since 2016, although as a percent of GDP, such deficits are still relatively small and do not signal alarming external imbalances. While its imports have consistently increased, its exports have had a spotty performance, exhibiting negative growth in some years including in 2018. Official reserve assets have remained high, although the number of months of average imports of goods and payment of services and primary income that can be financed by such reserves have been declining, reaching 7 months in 2018. Still, such import cover is comfortable to address temporary

shortages in foreign exchange inflows. One notable development is the generally rising net foreign direct investments, which rose from USD 2 billion in 2010 to around USD 10 billion in 2017 and 2018, suggesting foreign investors' increasing confidence in the Philippine economy.

Looking at the composition of GDP from the expenditure side, it can be said that the country's economy is mainly private sector consumption-led, with its share hovering around 70 percent, although a slight decline to less than 69 percent can be observed in the last two years. Government consumption has been hovering around 10 percent of GDP, but it reached 11 percent in 2018. The share of capital formation has been consistently improving since 2014, reaching 31 percent in 2018, mainly driven by investment in durable equipment and construction, boosting the country's productive capacity.

From the production side, the service sector contributed the largest share to GDP, rising from 56 percent in 2010 to 58 percent in 2018. Wholesale and retail trade and real estate sub-sectors have been the major contributors to the service sector. The industry sector's contribution to GDP has been around one-third, but it has been inching up from 32.6 percent in 2010 to 34.1 percent in 2018. The largest sub-sector in the industry sector is manufacturing whose share in GDP has seen a slight increase during the period 2010-2018. There have been high expectations that the manufacturing can contribute more to the economy due to relatively high growth rate it achieved in certain years, but such has not been consistent throughout the period 2010-2018. The agriculture sector has the smallest contribution to GDP, and it has been consistently declining since 2010.

In terms of employment, the service sector has been the largest contributor, with its share in total employment rising from 51.8 percent in 2010 to 56.6 percent in 2018. A large chunk of this share came from the wholesale and retail trade sector. Although the agriculture sector has been the smallest contributor to GDP, it is the second largest contributor to employment. However, its share in total employment has been consistently declining, from 33.3 percent in 2010 to 24.3 percent in 2018. The industry sector has the smallest share in employment, but its share has been rising from 15 percent in 2010 to 19 percent in 2018. Both the manufacturing and construction sub-sectors have been the largest contributors to the industry sector's share in employment. This trend supports the government's efforts to revive the industry sector, especially manufacturing, to expand the country's employment opportunities.

Labor productivity, computed as gross value-added of the sector per person, varies considerably among the three major sectors, with the industry sector having the highest labor productivity, followed by service sector and agriculture sector in that order. In 2018, the service and agricultural sectors' labor productivities constituted only 18 percent and 55 percent, respectively, of that of the industry sector, and they have been very slow in catching up with the latter's productivity during the period 2010-2018. Increases in real wages have been modest since 2010, but it rose by 28 percent in 2018 despite an uptick in inflation.

Despite the Philippine economy's generally favorable performance in the last nine years, it is found lagging behind its comparators in the Association of Southeast Asian Nations (ASEAN) region in many areas. For instance, poverty incidence in Indonesia, Malaysia, Thailand and Vietnam are already in single-digit levels. Exports of these countries are at least three times higher than the Philippines' during the period 2008-2018. Thus, the Philippines has a lot of catching up to do particularly in attracting foreign direct investments, and such task has become even more challenging with the onset of the 4th industrial revolution.

2.2 Key Legislative Reforms

The thrust of the past and current Philippine development agenda focuses on inclusive and employment-generating economic growth, access to universal basic education and health

care, protection for vulnerable groups who may be adversely affected by the economy's expansion, and national security. The Philippine Congress has been generally responsive to the need for policies which improve the service delivery, regulatory performance, and enabling environment of the country's social institutions. Among these, the 16th Congress has passed 30 development-oriented reforms from 2014 to 2016, while the 17th Congress has enacted 40 policy reforms—6 of which are awaiting the President's signature. Table 2 lists down the key legislative reforms achieved in the 16th and 17th Congress.

Table 2. Key legislative reforms passed, 2014 to 2019

16 th Congress (2014-2016)	17 th Congress (2016-2019)
<ul style="list-style-type: none"> • Foreign Banks Liberalization Act amendments (Republic Act [RA] 10641) • Philippine Lemon Law (RA 10644) • Go Negosyo [MSME Development] Act of 2014 (RA 10644) • Ladderized Education Act of 2014 (RA 10647) • Open Distance Learning Act (RA 10650) • Strengthening the Sandiganbayan Act (RA 10660) • Open High School System Act (RA 10665) • Philippine Competition Act (RA 10667) • Co-Loading Law (RA 10668) • Youth Entrepreneurship Act (RA 10679) • Unified Student Financial Assistance System for Tertiary Education [UNIFAST] Act (RA 10687) • Metallurgical Engineering Act (RA 10688) • Forestry Profession Act amendments (RA 10690) • Public Employment Service Office Act amendments (RA 10691) • PAGASA Modernization Act (RA 10692) • Microfinance NGOs Act (RA 10693) • Strategic Trade Management Act (RA 10697) • Tax Incentives Management and Transparency Act (RA 10708) • Credit Surety Fund Cooperative Act (RA 10744) • Right-of-Way Act amendments (RA 10752) • Magna Carta for Persons with Disability Amendments (RA 10754) • Philippine Green Jobs Act (RA 10771) • Overseas Workers Welfare Administration Act (RA 10801) • Farm Tourism Development Act (RA 10816) • Philippine Halal Export Development and Promotion Act (RA 10817) • Department of Information and Communications Technology Act (RA 10844) • Anti-Agricultural Smuggling Act (RA 10845) • Agricultural Competitiveness Enhancement Fund Extension Law (RA 10848) • Customs Modernization and Tariff Act (RA 10863) • National Bureau of Investigation Reorganization and Modernization (RA 10867) • Jobstart Philippines Act (RA 10869) • Philippine Credit Card Industry Regulation Law (RA 10870) • Agricultural Land Reform Code amendments (RA 10878) • Foreign Investment Liberalization Act (RA 10881) • Balanced Housing Development Program Amendments (RA 10884) • Continuing Professional Development Act (RA 10912) 	<ul style="list-style-type: none"> • Anti-money Laundering Act amendments (RA 10927) • Philippine Passport Act amendments (Extending Passport Validity) (RA 10928) • Free Internet in Public Places Act (RA 10929) • Extending Driver's License Validity (RA 10930) • Universal Access to Quality Tertiary Education (RA 10931) • Revised Penal Code amendments (RA 10951) • Tax Reform for Acceleration and Inclusion (RA 10963) • Philippine Qualifications Framework Act (RA 10968) • Ease of Doing Business and Efficient Government Service Delivery Act (RA 11032) • Balik Scientist Act (RA 11035) • Mental Health Act (RA 11036) • Expanded National Integrated Protected Areas System Act (RA 11038) • Philippine Food Technology Act (RA 11052) • Organic Law for the Bangsamoro Autonomous Region in Muslim Mindanao (RA 11054) • Philippine Identification System Act (RA 11055) • Personal Property Security Act (RA 11057) • Occupational Safety and Health Standards Act (RA 11058) • Regulating the Practice of Criminology (RA 11131) • National Payment Systems Act (RA 11157) • Telecommuting Act (RA 11165) • Social Security System Act amendments (RA 11199) • Mobile Number Portability Act (RA 11202) • Department of Human Settlements and Urban Development Act (RA 11201) • Rice Tarrification Act (RA 11203) • New Central Bank Act amendments (RA 11211) • Tax Amnesty Act (RA 11213) • Universal Healthcare Act amendments (RA 11223) • Mandatory PhilHealth Coverage for PWDs (RA 11228) • Revised Corporation Code of the Philippines (RA 11232) • Agricultural Free Patent Reform Act (RA 11231) • Tulong Trabaho Act (RA 11230) • Energy Virtual One-Stop Shop Act (RA 11234) • Road Board Abolition (RA 11239) • Energy Efficiency and Conservation Act (RA 11285) • Magna Carta for the Poor (RA 11291) • Pantawid Pamilyang Pilipino Program Act (RA 11310) <p><i>Recently-signed Laws</i></p> <ul style="list-style-type: none"> • Cheaper Electricity Act • Innovative Startup Act • Philippine Innovation Act • Philippine Space Development Act • Coconut Levy Fund Utilization Bill (vetoed)

<ul style="list-style-type: none"> • Philippine Agricultural and Biosystems Engineering Act (RA 10915) • Special Program for Employment of Students amendments (RA 10917) • Philippine Pharmacy Act (RA 10918) 	<ul style="list-style-type: none"> • Restructuring Excise Taxes on Tobacco Products (vetoed) • Security of Tenure (Anti-Endo) Bill (vetoed)
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Source: Presidential Legislative Liaison Office

In accordance with its mandate, PIDS has strived to constantly contribute in guiding the prioritization and formulation of policy initiatives which advance the country's development agenda. In examining the key legislative reforms from 2014 until the present, one can find that PIDS has conducted research projects, public fora and publications, and prepared comments and position papers on key legislative and policy measures which served to guide policymakers and advocates in crafting evidence- and context-based policy reforms. Annex C lists down these notable policy inputs.

3. Organizing the Research Agenda

3.1 Key Development Issues in the Next Ten Years

In preparing the proposed research agenda, the Team collected and reviewed published and unpublished materials deemed useful for the preparation of the research agenda. These are categorized into four groups (see Annex D):

- a. PIDS-related Information and References
- b. Philippine Development Plans, Country Strategies and Related Documents
- c. Research Agenda, Development Plans and Implementation Strategies in Asia
- d. Global Development Plans and Sectoral Reports

The Team conducted consultation meetings with top officials of 27 key government agencies, five academic institutions and six private sector associations. In addition, it has consulted individual local and foreign experts and seek their views regarding major global economic development issues that will likely dominate in the next 10 years and their implications for the Philippines, particularly the country's efforts to enhance its competitiveness. The same questions have been raised to officials of key government agencies and private associations but with additional questions that are related to emerging policy issues which are of utmost concern to their sectors that needed more in-depth studies. The Team held a session with the PIDS management and technical staff to present its preliminary set of policy issues and to solicit inputs from them (see Annex E).

The policy issues that emerge from the review of published and unpublished materials and consultations with key informants and experts revolve around the following major themes: fourth industrial revolution (FIRe); climate change; trading arrangements; competition framework; and inequality.

FIRe revolves around the digitalization of technology coupled with cyber-physical systems that provides emerging technology to be integrated with humans and society (Davis 2016). There are technology trends forming the building blocks of FIRe. These include internet of things (IoT), developments in genetics, artificial intelligence (AI), robotics, nanotechnology, 3D printing, biotechnology, and blockchain. Recent improvements of technology have led to significant increases in computing power and speed of digital data. These new and emerging technologies can connect billions of people in the web, improve the efficiency of business and organization, raise income levels and help build a better and sustainable environment. As intelligent computers play increasing roles, the structure of production will change and disrupt trade patterns, industries and the location of economic activity. Countries will need to figure

out how to work effectively in an information-led global economy, and what infrastructure, information systems, migration systems, education systems, and trade relationships they will need. This may require social investments that would not be handled by the market and may have large effects on income distributions and politics. For the Philippines, a major thrust of policy should be to make sure that the country is not left behind by the digital revolution and that a great majority benefits from it.

Climate change will intensify, exposing countries to larger risks, and prompting them to adopt more active policies. Countries need to reduce vulnerabilities and invest in mitigation and adaptation, especially as regards economic activity. In this regard, the Philippines needs to implement more effective disaster and risk reduction measures. It is now experiencing the adverse effects of extreme temperatures resulting in widespread displacement of large swathe of the population particularly those residing in vulnerable areas. In fact, natural disasters have now become the leading cause of displacement in Mindanao, albeit temporary, instead of armed conflict. Also, climate change has severe consequences on the agricultural sector due to frequent flooding, intersperse with drought and insect infestations due to weather conditions suitable for their rapid multiplication even during seasons when they are unexpected to multiply.

The last few years saw the beginning of a changing global trading arrangements. The US-China superpower competition and trade tensions will likely remain in the next few years, affecting all countries with significant relationships with both. Even if US leadership becomes more reasonable, unless China backs away from an ambitious, independent global role, relations between the two will get frosty and may create separate spheres of influence. East Asia's mid-sized and small economies will then be under pressure. The questions for the Philippines is what countries with which it has good trading arrangements and which sectors are vulnerable, and what steps it can take to maintain good relations with both. Even without such tension, populism that is rising in many developed economies can have severe implications on the global trading arrangements. If current trends continue, trade protectionism will likely become the new normal. Conceding that the global economic and political environment will likely remain quite difficult for the foreseeable future, in many dimensions, reinforcing the ongoing domestic policy reform in macroeconomic management, micro/business environment, social (equity) policy, and environmental sustainability are of utmost importance.

Competition is both a global and domestic concern. A healthy competitive environment always seeks out the best for both the consumers and producers. In recent years, developed countries have become more sensitive to and are actively trying to uncover abuses perpetuated by major global players. In some cases, they found that their existing legal framework and capacity to promote competition, especially in emerging economic areas like the digital economy, are even inadequate. Countries without a wholesome competition framework and and/or are lacking in capacity to enforce competition laws and regulations will likely not be able to maximize the benefits it will get from policy reforms.

The last two decades saw many developing economies experiencing extraordinarily rapid growth, with their per capita incomes converging with Organisation for Economic Co-operation and Development (OECD) countries. However, inequality in various forms within countries have remained persistently high or have been rising. The social tensions that such inequality has engendered has threatened the implementation of reform agenda. It is only a symptom that development strategies that worked well to drive the economy to a higher growth path have not paid sufficient attention to strengthening the social fabric.

These global themes, along with specific policy issues presented below, are weaved together using the framework presented below to form a coherent research agenda.

3.2 AmBisyon Natin 2040 as Framework

Key informants representing various sectors have stressed the importance of having a long-term vision for the country that can guide socio-economic policies, plans, and programs and steer public debates towards measures that can aid in realizing the vision. Almost all of them are conversant with the AmBisyon Natin 2040 and hope that the country will stay focused on achieving the aspirations embodied therein. AmBisyon Natin 2040 has articulated the vision that

“By 2040, the Philippines is a prosperous middle-class society where no one is poor. People live long and healthy lives and are smart and innovative. The country is a high-trust society where families thrive in vibrant, culturally diverse, and resilient communities.”

It embodies the following three elements:

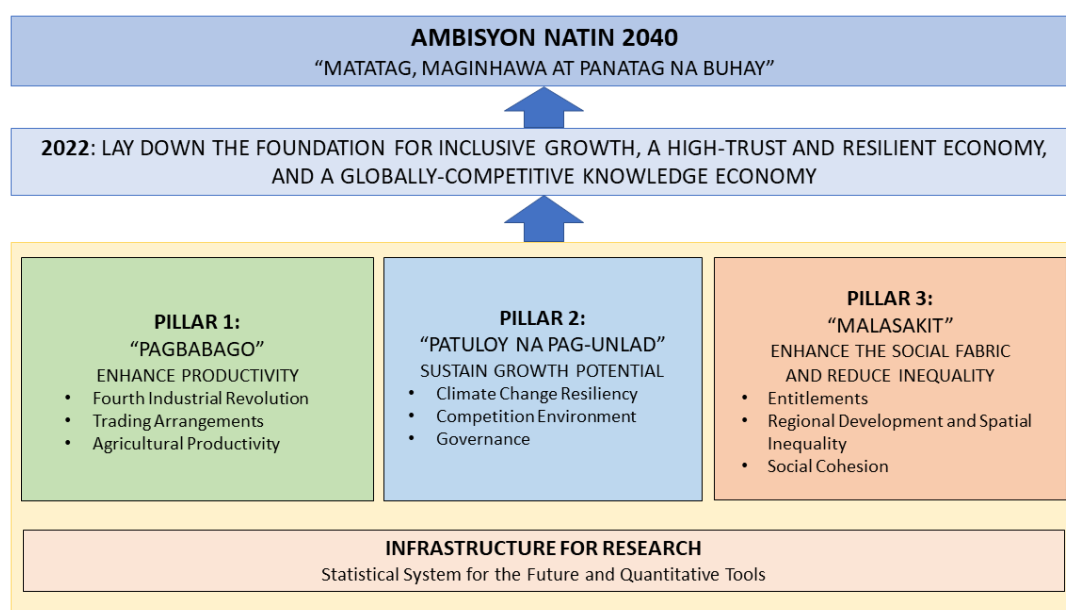
Filipinos are strongly rooted (matatag). Filipino families live together; there is work-life balance so that there is time to spend with family even for members who work. On weekends, families and friends enjoy time together in parks and recreational centers. It is a high-trust society with a strong sense of community. There are volunteer opportunities, and Filipinos spend time to serve the community, help others who are in need, and contribute to various causes.

Filipinos are comfortable (maginhawa). No one is poor, no one is ever hungry. Filipino families live in comfortable homes with the desired amenities and secure tenure. Families and friends are within reach because transport is convenient and affordable, and they can take a vacation together within the country and abroad. Children receive quality education so that they realize their full potentials and become productive members of society. Decent jobs that bring sustainable income are available, including opportunities for entrepreneurship.

Filipinos are secure (panatag). Filipinos feel secure over their entire lifetime. They expect to live long and enjoy a comfortable life upon retirement. There are resources to cover unexpected expenses, and there are savings. They feel safe in all places in the country. Filipinos trust their government because it is free of corruption and provides service to all its citizens equally.

The formulation of the research agenda is anchored on the assumption that AmBisyon Natin 2040 will remain as the guiding vision for future development policymakers and planners. This assumption is bolstered by the National Economic and Development Authority's (NEDA) plan that subsequent 5-year Philippine Development Plans (PDPs) up to 2040 will lay out “the pathways and modes” for realizing the vision. It is hoped that results of the research under the proposed research agenda can provide inputs to the formulation of subsequent development plans.

Central to the framework is aligning the research agenda with the broad research needs for public policy as articulated in the PDP 2017-2022, which embeds elements of AmBisyon Natin 2040. To guide the formulation of the research agenda, the overall strategic outcomes of the PDP have been reorganized and a fourth element has been added to support the research (see figure below).

Figure 1. AmBisyon Natin 2040 Framework for the Research Agenda

Pillar 1 deals with themes related to moving the Philippine economy on to a higher growth trajectory and the restructuring issues that go with such transformations. There is a definitive consensus among the experts consulted that given the structure of the production sector of the economy, the onset and consequences of the FIRE would be a critical research area. For instance, to what extent would AI affect not only the manufacturing sector but also the business process outsourcing sector of the Philippines would be an important policy area for the administration. Two themes – trading arrangements and agricultural productivity – are added to this pillar. Being an economy dependent on trade, the evolving trading order would have profound consequence on the pattern of industrialization in the future. To this end, how to respond to the current global trade tensions would be a critical area for policy study. As mentioned earlier, the agriculture sector has been the smallest contributor to GDP, but is the second largest contributor to employment. Increasing agricultural productivity would be an interesting area for policy research.

Pillar 2 deals with themes that would sustain the growth momentum. The themes identified are climate change resiliency, competition environment in the country, and governance. Climate change resiliency where mitigation and adaptation issues are important can no longer be ignored as they affect the country’s growth potential. Thus, a research on climate change related issues is in order. The benefit consumers, workers, entrepreneurs, small businesses and the economy, more generally, from having a wholesome competition environment is well known. However, creating such environment is a challenging task that needs to be guided by research. Governance ensures that the policy research agenda is implementable and reforms sustainable. FIRE has raised important governance issues that must be studied, the results of which can guide the formulation of policies to sustain the growth momentum as well as aid development planners in finding new sources of growth and employment opportunities.

Pillar 3 deals with themes that will enhance the social fabric and reduce inequality. This is an important element that would encourage the Philippine society to rally behind reform initiatives. The themes include entitlements, regional development and spatial inequality, and social cohesion.

Pursuing the research themes outlined above needs a good infrastructure. Policy advice must be anchored on solid evidence, and the ingredients are relevant and reliable statistical system and quantitative tools. Both provide the infrastructure for policy research.

4. Demand for Research: Some Observations

Results of the Team's consultations with various government agencies suggest that there is a high level of appreciation for evidence-based policy formulation. Some have even raised concerns regarding the formulation of some policies or inclusion of some provisions in recently passed laws without the benefit of rigorous research. This has made it difficult for them to design and implement programs in support of such policies or legislations. The Team has also noticed that there is a huge demand for research. In fact, some government agencies and private associations have well-defined research agenda with corresponding budgets. However, the types of research being demanded vary considerably: fire-fighting¹; process and impact evaluation; medium- to long-term policy-oriented research; and operations-oriented research. PIDS has maintained its focus on conducting policy-oriented research over the years, and it should do so in the future to fulfil its mandate. Government agencies usually do not have financial and human resources to conduct on their own this type of study. This is the type of research being addressed by this proposed research agenda. More recently, with increasing attention given to assess the effectiveness and value-for-money of government programs and the financial resources being allocated for such assessments, many government agencies are now doing process and impact evaluation of their programs or projects. Due to the lack of in-house capacity to do such studies, they have turned to third parties to conduct such studies. However, because of the difficulties they face with the government's procurement rules and regulations, they find it more convenient to look for a government research entity to handle the assignment, and PIDS is one of them. Process and impact evaluations of existing programs and projects are indeed useful in that they yield results that can prompt program implementers to fine tune their strategies before deploying more resources to enhance the effectiveness of a program and, in some instances, can even lead to recommendations to change policies, laws, rules, and regulations. PIDS should be more judicious in allocating its limited human resources (i.e., research staff) to such type of research, perhaps focusing only on those that matter a lot for the country's development such as the country's conditional cash transfer programs, so that it can do more medium- and long-term policy research.²

5. Proposed Research Agenda

The proposed research agenda is organized around the three pillars with major themes under each of the pillars and infrastructure for research mentioned above. Under each major theme are sub-themes with specific research questions. This is in line with the PIDS' management's instruction that the next research agenda should be more substantive and provide more details as to research questions that need to be studied by PIDS and other researchers. These questions are aimed at guiding the research, and are by no means exhaustive.

¹ Agencies need this type of research for a specific purpose (e.g., public hearings) that must be produced quickly. Operation-oriented research is a type of research aimed at improving the agency's operation. An example is the Department of Education's study to examine the responsiveness of its existing professional development framework.

² PIDS may develop methodologies for process and impact evaluations of existing programs which other researchers could use as guides.

5.1 Pillar 1: Enhance Productivity (Pagbabago)

5.1.1 Fourth Industrial Revolution (FIRe)

The Fourth Industrial Revolution (FIRe) is already on the shores of the Philippine economy. Its penetration to the rest of the economy depends on how the government shapes its policies and country's readiness to exploit the opportunities that it promises to bring to enhance its competitiveness. According to World Economic Forum (2018), the Philippines belongs to "legacy" countries, a category of those countries with a strong production base but at risk for the future due to weaker performance in improving institutional framework, investing in human capital and boosting the technology platforms. The country, the report continues, is still in the planning phase of adopting the FIRe. This adaptation will primarily be dependent on the capacity of the country to support the needs necessary to prepare and implement these technologies.

FIRe's impacts on the economy will be system- and industry-wide, leaving only a few that will be left unaffected. Hence, the research agenda must follow such architecture.

a. FIRe and labor and employment

Labor and employment will be significantly impacted by FIRe as new technology platforms can either replace or complement labor. There will come a time when FIRe's disruptive technologies replace routinary jobs and complement the non-routinary tasks. FIRe can create new jobs, which would require certain standards far different from existing ones. For example, the gig economy made possible by FIRe would increasingly allow work arrangements that would shift work away from the traditional office station towards home-based or mobile stations. In addition, these types of work arrangements facilitate working with multiple employers. Under such kinds of set ups, how could workers build up their assets such as retirement funds or pensions? More broadly, how will the Philippines adjust its labor and employment policies and regulations to address these challenges? How should the Labor Code be updated to reflect the likely changes in the workplace in the 21st century? The Philippines usually prides itself of having young and passionate workforce who could be easily trained in new areas. To what extent will it still hold, given changing skill demands of modern technologies? What short- and long-term programs should the country institute to prepare Filipino labor to such changes, and how should it design an incentive system to increase private sector participation in those programs? What jobs in manufacturing, services and agriculture/fisheries are at risk to FIRe technologies? What are the legal and ethical bounds surrounding the use of FIRe technologies, and how would they affect existing employment arrangements and practices?

b. FIRe and education

FIRe will have a significant impact on the education as there will be changes in the way new knowledge is created, disseminated, assimilated and utilized. This calls for a thorough review of the primary, secondary, and tertiary curricula and readiness of educational institutions to adapt to these changes. To reduce inefficiency in spending resources for public higher education institutions (HEIs), how should public-private partnership in education be structured and designed? How will scientific career system apply to HEIs and industry? The findings of such review can help shape future policies for the formal educational system.

Admittedly, the effects of such reforms will take some time to materialize. However, unlike previous revolutions that proceeded in a linear way, FIRe, which has been powered by technological changes in computing, communications and information processing, will grow at an exponential rate. Such growth will create demand for new skills. For instance, two trending technologies that will dominate the world in the coming years and decades are big data

analytics and AI that require new skills. The Technical Education and Skills Authority (TESDA) can certainly play a big role in this area. To what extent can TESDA's short-term training modules be overhauled to address emerging demand for new skills?

In addition, the advent of new technologies will pave the emergence of non-traditional sources of education. New work arrangements and shifting business models will create demand for new skills which will not be always supplied by the traditional modes of education. It is expected that FIRE will allow individuals to learn from multiple sources and institutions. To recognize the acquisition of such skills will require the establishment of standards and certifications. How could such standards and certification systems be designed in such a way that the multiple certifications can be recognized and 'stacked' to reflect competencies recognized by the industries?

Indeed, FIRE has rekindled the need for lifelong learning. Lifelong learners look for ways to adopt new technologies to remain competitive. How formal, informal and non-formal learning systems in the Philippines can support lifelong learning is an interesting area for policy research.

c. FIRE and Energy

Currently, the main source of energy in the Philippines is coal. The introduction of FIRE in the energy industry in the Philippines will be significant since FIRE can help optimize the allocation of energy distribution and utilization in the country. Advances in energy storage will have a major impact on the use of renewable sources of energy. What scheme can the government formulate to promote the development of energy storage technologies? To what extent AI can improve the viability of carbon sequestration technology?

d. FIRE and health

FIRE, such as the utilization of internet of things (IoT), will have a major impact on health care delivery. To illustrate, FIRE technology can enhance accessibility to health care services, particularly in remote areas of the country. To what extent can Information and Communications Technology (ICT) infrastructure support the use of FIRE technologies in health care provision? What policies should be adopted to facilitate investment in health-related FIRE technologies?

e. FIRE and science and technology

The Department of Trade and Industry's effort to establish regional inclusive innovation centers is indeed commendable. But beyond this, establishing global industrial research and development (R&D) is a must for the Philippines as this is the next step above and beyond manufacturing that will elevate the country toward a knowledge and innovation economy. While the Philippines needs to further grow and significantly expand its science and technology-based global manufacturing sector, it already is making progress in this area. However, the Philippines remains lagging in attracting and establishing global industrial R&D centers or laboratories in the country. Israel, for instance, has over 250 global companies today that have R&D laboratories in the country, with 80 of them being Fortune 500 companies — including Intel, Google and Microsoft. In addition to creating employment opportunities in the science and technology (S&T) sector and indirect employment opportunities in sectors supporting S&T, the presence of global industrial R&D centers/laboratories in a country has the added advantage of nourishing a natural symbiotic relationship between the global R&D centers/laboratories and the local startup companies, with the global R&D centers providing mentorship and linkages to global investors, among others. How should the Philippines position itself as a vibrant hub for global industrial R&D centers/laboratories? In a more general plane, in what way can FIRE bring significant improvements to local S&T that can provide

support to various economic sectors that need to position themselves in an increasingly competitive global economy?

f. FIRE and industry

FIRE will have a profound effect on industry processes, such as business process outsourcing. However, as the World Trade Organization (WTO) (2018) points out, “digital technologies not only create new markets, new forms of trade and new products, but they also lower trade costs and change trade patterns.” The Philippines is an archipelagic country and not all have access to these revolutionary technologies due to some infrastructure bottlenecks. The digital nature of these products and services can partly overcome physical infrastructure limitations. For example, firms and consumers in remote areas can easily access the global market. What policy and regulatory framework should the government put in place both at the national and local level to promote digital commerce?

IoT and blockchain are two important technologies that can power the growth of industries and promote trade. How should policies and regulatory regime be designed to promote the widespread use of such technologies? How should the government address concerns relating to consumer protection, cybersecurity, and data privacy that arise from using such technologies?

g. FIRE and taxation

The growth of digital commerce has posed a serious challenge to a country's taxation framework for it can erode or expand the tax base. There is now ongoing discussion at the international level, led by OECD, on how to tax the digital economy that will hinder its growth and, at the same time, shore up a country's tax base. Pending the lack of consensus, several countries, including among others, Australia, Italy, Israel, United Kingdom, United States, have already acted unilaterally to address taxation of digital economy. What would then be the Philippines' overall strategy with respect to taxing the digital economy? To what extent can existing legal framework and institutional capacity support the implementation of such strategy?

5.1.2 Trading arrangements

Like most of the Southeast Asian countries, the Philippines is very dependent on trade. As part of the economic strategy on the external front and in view of the stalled negotiations in the WTO's Doha Development Round, the Philippines has taken recourse to free trade agreements (FTAs) as a means of enhancing trade. As of 2017 it has entered into eight FTAs and a number of initiatives are currently being mulled. In addition, the Philippines has remained a stalwart member of the ASEAN for which the ASEAN Economic Community has shaped a number of key policy changes. In this regard, research should be directed towards addressing the issues outlined below.

a. FTAs' performance

Given the considerable period that has passed since the FTA strategy has been adopted, the time is ripe to have an assessment of trade policy to guide future actions on this area. What is the record of the FTAs in delivering the potential benefits expected? To what extent has the market access of Philippine products been enhanced? What were the common factors among the different FTAs that lead to successful realization of the offensive interests of the Philippines? Could there be a ranking among the different FTAs on the basis of the Philippine's interest? What has been the supply response of the Philippine productive sector in light of the market openings made possible by the FTAs?

What has been the impact of the FTAs on the economy's defensive interests, more specifically on the industries that are more vulnerable to competition from FTA partners? Is the cause of the vulnerability due to internal factors to the industry (presence of anti-competitive practices, technological constraints, etc.) or to external factors (high price of power, inadequate physical connectivity, etc.)? To what extent have the FTAs ushered in competitive forces? What have been the policy responses and if so, to what extent were these effective?

b. FTAs and supply chain

The FTAs are facilitating mechanisms for production networks or global supply chains to proliferate. To what extent have the FTAs been instrumental in linking the Philippines to such supply chains? How does the Philippine rank, relative to its Southeast Asian neighbors in the ability to link up to global supply chains? What proportion of the business of multinational companies catering to the ASEAN market does the Philippines possess? What impediments, such as logistical capacities, are present that prevent the Philippines from realizing the full potentials that the network of FTAs offer? What are the opportunities for global supply chain in the medium term in light of the global technological and trade policy changes and what measures the Philippines should institute to exploit such opportunities? How will the current trade conflict between China and the US affect world trade and opportunities to deepen and broaden the Philippines' participation in the global supply chain network?

c. FTAs and non-traditional provisions

The FTAs are increasingly becoming more complex and increasingly involves environment, intellectual property, investor state relations, competition, investment and other non-traditional issues. To what extent do such non-traditional provisions aid or hamper the development of industries given the current state of economic and institutional development? What is the current capacity to comply with such provisions? How does one identify and build institutions and what policies could be put in place to support compliance?

5.1.3 Agricultural productivity

The main constraints on the development of the agricultural sector - its low productivity- has long been recognized. Many studies have pointed to the factors that led to the weak performance: (a) lack of access to finance and insurance; (b) inadequate farm infrastructure in the form of irrigation and post-harvest facilities, farm-to-market roads; (c) low levels of mechanization; (d) weak capacity for research and development; (e) poor extension services support; and (f) bleak prospects of future supply of agricultural workers, among others. The aforementioned factors are long standing issues related with agricultural development of the country. Central to the underperforming record of the primary sector is the lack of investments despite policy efforts to channel resources to the agriculture sector. In addition to the inherent market risks in agricultural investments, the risk is magnified by the fact that the sector is most exposed to adverse effects of climate change. Given the role of agriculture in economic development and recognizing the fact that poverty in the Philippines is rampant in rural areas, forcing some to migrate to urban areas where employment opportunities are also scarce and social services are severely under stressed, the need to continue policy studies is ever more pressing. What are the impediments to investments in agriculture? What has been the record of the Comprehensive Agrarian Reform Program (CARP) which ended in 2014 on raising farm productivity? Will a new legislation on CARP be instrumental to reduce the uncertainty of land ownership? Aided by a comprehensive analysis of the outcome of the CARP, what lessons can be culled that can be incorporated in the new legislation? What is the role of land consolidation to address the constraint on farm productivity arising from small land holdings? What are the alternative institutional arrangements for farm mechanization to prosper? How could farmers improve their access to finance? More specifically, to what extent has the Agri-

Agra Law Reform Credit Act of 2009, to channel financial resources to the primary sector, achieved its objective? Is there evidence of a shortage of agricultural workers? What is the role of extension activities in spurring productivity? In the process of devolution of national agency tasks to the local government units (LGUs), what has been the record of LGUs in providing effective extension work to farmers? What are the opportunities and challenges in expanding agricultural value chains? More specifically, what models can be used to incentivize business arrangements between private corporations and small farmers?

5.2 Pillar 2: Sustain Growth Potential (Patuloy na Pag-Unlad)

5.2.1 Climate Change

Stronger typhoons, longer droughts and rising sea levels are just some of the climate change's primary effects that we are experiencing on a global scale. Unsustainable production and consumption practices, poor management of resources, and dependence on fossil fuels are some of the main causes of climate change that needs to be addressed immediately. Unfortunately, Buhr and Volz (2018) cites Philippines as one of the highly vulnerable countries to a warming planet. It ranks the Philippines third overall in the Climate Risk Index (CRI) and scored 20.2, where the lower CRI indicates a higher level of exposure and vulnerability to extreme events. Aside from deaths, the country incurred economic losses worth USD 2.8 billion every year which accounts to about 0.6 percent of the GDP during the period 1997-2016. Its report, "Climate Change and Cost of Capital in Developing Countries" confirms that countries with higher vulnerability to climate-change risk bear an incremental cost on government-issued debt. These costs are above and beyond the rates attributable to macro-economic and fiscal fundamentals.

Failure to address the pressing climate change issue puts the country at risk of not attaining the Sustainable Development Goals (SDGs) set by the United Nations. In fact, addressing the climate change issue through projects will also help attain the SDGs by encouraging meaningful partnerships and by providing opportunities accessible to everyone.

Indeed, climate change is a cross-cutting issue, and therefore should be examined from different sectors of the country as they contribute to and impacted by it. Both the mitigation of climate change and preparation for its effects should be part of the priority research agenda.

a. Climate change and agriculture and fisheries sectors

The agriculture and fisheries sectors are some of the most vulnerable sectors to the effects of climate change. Droughts and flooding can easily damage crops and livestock while warming water bodies can also negatively affect the marine resource availability and aquaculture production. How can the country protect fishing grounds and farms from the effects of climate change? Interestingly, the agricultural sector is also one of the biggest contributors of greenhouse gases. What policies and programs should be put in place to prepare these sectors against the effects of climate change as well as encourage them to adopt sustainable practices to help mitigate climate change? What critical factors should be examined to allocate resources for the rehabilitation of coastal areas that have been severely affected by climate change? What major impediments should be removed to institute an index insurance system? In what way can the design of micro-insurance program be improved to widen its utilization among farmers?

Climate change can have an impact on food security especially in urban communities which are dependent on food supply from rural areas and imports. This issue will intensify as more regional centers in the country emerge and flourish. Urban farming and aquaponics systems are seen as some of the possible solutions to this problem. To what extent are current plans

and programs, if any, effective in promoting urban farming and aquaponics facilities in major cities in the Philippines? Will these technologies actually make a significant impact in the food security issue? What sort of government interventions, both at the national and local levels, needed to make them become more cost-effective and economically feasible?

Globally, agriculture is a major contributor to greenhouse gas emissions. Productivity trends, technology adoption, and sustainable practices are important in reducing the carbon footprint of the agricultural sector. To what extent current programs being implemented by the government help food producers adopt these trends and practices?

b. Climate change and education

Public awareness about climate change is very important to mitigate it and to prepare for its effects. To do this, climate change education should be part of the current curriculum and active efforts should be done to educate more people about the matter. What is the scope and level of awareness of Filipinos on climate change? How integrated is climate change education in the current primary and secondary curriculum and what improvements, if any, should be made to enhance its effectiveness? To what extent are teachers prepared to implement such curriculum? What is its current impact on the level of awareness of students on climate change?

c. Climate change and energy

Energy is an important resource for national development but power generation is also the main contributor of greenhouse gas emissions. In the Philippines, majority of the electricity being generated comes from fossil fuels such as coal, oil, and gas. The 2015 power mix in the Philippines shows that majority of the electricity produced came from coal (44.5%).³ Burning these fuels produce greenhouse gases which directly contribute to climate change and also affect the surrounding environment and communities. One likely development in the near future would be the rise of carbon taxes, and the Philippines has to squarely face it to remain competitive. Thus, the country cannot remain neutral to energy mix that puts primary emphasis on efficiency. What would then be the optimal mix of energy for the country in the next 2-3 decades? To what extent current measures, if any, are effective in reducing gas emissions from these power plants and promote clean energy? Will carbon sequestering technologies be technically and economically feasible? Several renewable energy facilities such as solar and wind farms are being constructed in the country. However, producing solar panels, wind turbines and other equipment involved also entails big carbon footprints. Will these facilities be sustainable in the long run, considering their high initial cost? What is the impact of these facilities in terms of addressing the Philippine's demand for low-priced electricity? What policies should the Philippines put in place to develop industries in which it will have comparative advantage in the face of widespread carbon taxes?

d. Climate change and environment and natural resources

The Philippines has extensive access to marine and terrestrial resources. However, these resources are susceptible to the effects of climate change. Because these natural resources contribute greatly to the economy of the Philippines, it is very important to protect them. However, both marine and terrestrial organisms are at risk because of climate change. What are these at-risk species and what will be the impact to the ecosystem if they become extinct? How should current efforts be improved to protect them?

Blue and green carbon ecosystems refer to natural carbon sinks (i.e., blue carbon ecosystems – mangroves, sea grass, etc.; green carbon ecosystem – forests). What improvements should

³ Interview with Department of Energy Senior Undersecretary Jesus P. Posadas.

be made to the current efforts being done to conserve these blue and green ecosystems? In the summer of 2019, a water supply shortage hit Metro Manila. La Mesa dam reached critical levels. Many attributed it to both poor company policies and the mild El Niño that the country was experiencing. However, it is only one of the symptoms of the underlying water security issue in the country. What policies should be changed or improved to address the water supply issue, particularly watersheds, especially during periods of minimal precipitation? How should the government rationalize the more than 30 separate agencies involved in the water sector to harmonize water programs and plans and provide a clear order of operations?

Poor waste management is one of the main problems in the urban ecosystem. Poor segregation and disposal of waste generate greenhouse gases that contribute to climate change. Although there are policies to promote garbage segregation, problems abound in the implementation of these policies. How should the government design an incentive system to encourage households and industries to implement proper waste management? What measures should be made to expand the country's sanitary landfills, which at the moment are no longer sufficient to accommodate the rapidly growing volume of solid waste? What institutional framework and regulatory system needs to be improved to provide an environment for much stronger implementation of reusing, reducing, and recycling (3Rs) garbage? For types of waste that do not qualify under the 3Rs, what legal, regulatory and incentive system should be formulated to promote waste-to-energy technologies to help shore up power supply in the country and, at the same time, comply with environmental standards?

d. Climate change and health and safety

The public is at a higher risk of contracting health conditions because of climate change. In the Philippine setting, extremely hot temperatures increase the risk of getting heat-related conditions such as heat strokes. Certain carriers of diseases such as mosquitos are also more active during these seasons, thus increasing the risk of getting mosquito-borne illnesses. Air pollution especially in the urban setting is also a public health concern. In addition, the frequency and intensity of weather events also pose threats to the safety of the public. What is the projected increase of cases of climate change related diseases? What policies and programs should government institute to accommodate the increase in such cases?

e. Climate change and infrastructure

Super typhoons, flooding and other climate-related events are huge threats to the country's infrastructure. Majority of the infrastructures in the country were not particularly designed to withstand the risks of climate change. Older buildings in the country are also more vulnerable to the shocks of climate change. Is there a need to review and enhance existing building codes and standards to preserve existing infrastructure? What incentive system and mechanisms can be put in place to motivate cities to build resilient infrastructures and upgrade existing infrastructures to withstand effects of climate change? To what extent existing ICT technologies can be utilized in the midst of emergencies and disasters especially if most of the infrastructures are damaged due to extreme weather events?

f. Climate change and labor and employment

As some industries are becoming more susceptible to the effects of climate change, the jobs of people in these industries are also at risk. On the other hand, adaptation measures for climate change can also create jobs and opportunities that will protect workers. To what extent can climate change and extreme weather events affect employment? What measures should be adopted to effectively protect labor from climate-change-related stresses such as disasters, increasing heat stress and lower productivity from rising temperatures?

g. Climate change and science & technology

S&T can provide solutions to climate change mitigation and adaptation. What technology advancements have been or are currently being developed in order to combat climate change? What sectors of the Philippine economy, if any, are currently being served by these advancements, and to what extent are they effective? How should policies and programs be designed to encourage other sectors to take advantage of these solutions?

h. Climate change and tourism

Tourism is one of the main drivers of economic growth in the Philippines. The country's rich biodiversity, beaches, caves, mountains, rainforests, islands, and diving spots are among popular tourist destinations. However, this sector is vulnerable to the ill effects of climate change. For example, the rise in sea levels and increasingly acidic oceans can threaten coastal infrastructures. What measures, both short-and long-term, should the government institute to protect tourist destinations from the effects of climate change? As tourism industry continues to grow, what policies and strategies should the government adopt to promote sustainable tourism in the Philippines?

i. Climate change and industry

Different industries contribute to greenhouse gas emissions. According to the **Bourgouin (2014)**, total global greenhouse gas (GHG) emissions from industry almost doubled between 1970 and 2010. Further, global demand for industrial products will increase by 45 – 60 percent. Industries in the Philippines are very susceptible to the effects of climate change, including damages to infrastructure, as well as industrial and capital assets. Both mitigation of GHG emissions and preparation for calamities should be considered by industries.

The implementation of several mitigation strategies, either in the production or demand side, can reduce GHG emissions and carbon footprint by different industries. What strategies are appropriate for different industries? What incentive system can be introduced to motivate these industries to commit to these strategies?

j. Climate change and transportation

Transportation is the second main contributor of GHG emissions in the Philippines. In urban settings with poor transportation systems, GHG emissions tend to be higher as vehicles are caught up in traffic jams. Improving the transport system and reducing the number of vehicles is crucial to minimizing GHG emissions. To reduce the number of vehicular traffic requires improvement in the mass transport system. What are the constraints faced by major cities in promoting mass transport systems and how should they address them? What incentive system can be put in place to encourage private vehicle owners to shift to mass transport system? How can big data analytics be used to create more sustainable transportation networks?

Unlike conventional vehicles, electric vehicles do not produce emissions during operation. They are also more efficient due to significant weight difference. Emissions from power generating units are much easier to capture than those produced by fossil fuel-powered vehicles. What are the current hurdles (e.g., legal and regulatory framework, foreign investment restriction) of producing and maximizing the use of electric vehicles and how should these be addressed?

5.2.2 Competition environment

The inclusion of competition policy as an element in the template of the most progressive FTAs attests to its important role in the development of markets. Competition laws are desirable because they promote consumer welfare and ensure a level playing field for businesses to operate freely and for innovations to prosper. The security that competition policy accords to investors, particularly, international investments, as well as small businesses cannot be overemphasized. The passage of the Philippine Competition Act and the privatization of several state enterprises are major steps towards improving the competition environment in the country. However, legacy structures and the rapid changes in the industrial landscape pose challenges on how to design policies that best harness the benefits of competition.

a. Competition policy and technological changes

The emergence of technological advances has seen the rise of new industries as well as the transformation of 'old' industries. Rapid innovation of logistics has allowed the fragmentation and the 'servification' of product value chains. How should competition policy be adjusted in order to accommodate the 'blurring' of the boundaries among sectors? Put another way, given the vertical and horizontal changes of the global value chain, what are the units of analysis for authorities to evaluate anti-competitive behavior such as cartel formation, price fixing, and abuse of dominant position?

In addition, the advent of the fourth industrial revolution where network effects arising from adoption of platforms that could rapidly emerge as the standard pose challenges to competition authorities. How could policies be designed so that the benefits of network effects can be appropriated by innovating firms and, at the same time, minimize the threat of increasing the barriers to entry? Should there be disciplines that can be directed towards the firms whose first mover advantage can most likely be entrenched? To what extent can regulators allow dominant platforms to employ price discrimination strategies that do not block competition?

b. Competition and trade policy

One of the broad benefits of an open and free trade regime resides in the nature of allocation of resources. Protection, on the other hand, while bearing legitimacy under the infant industry argument, may give rise to rent seeking behavior among the protected sectors. In many cases the lack of import competition can create conditions for some firms to conduct that is anti-competitive to the detriment of consumer welfare and investment climate. What sectors have continued to enjoy high trade protection? What forms of protection (e.g., tariffs, non-tariff measures, foreign ownership restrictions) are applied to them? How do these highly protected sectors behave in terms of pricing, investments and other forms of conduct, and how do such behavior affect the economy?

c. Competition and public enterprise reforms

Many public enterprises were established at a time when both public and private institutions were weak to support the country's development objectives. Thus, many of them were given both policy/regulatory and commercial/development functions. As the Philippine economy and private sector participation in various production sectors expand through the years, the conflict between these two functions have become more glaring to the detriment of public welfare. There have been efforts to address this issue, including, among others, the privatization of some enterprises (e.g., Philippine National Bank, Philippine National Oil Company) and separation of policy/regulatory functions from commercial functions (e.g., Metropolitan Waterworks and Sewerage System). The creation of the Governance Commission for Government Owned and Controlled Corporations (GOCCs) has strengthened such efforts.

Among its mandates is recommending to the President actions to address conflict between the regulatory and commercial functions of a GOCCs. Despite previous attempts at reform, conflicts of interest continue to reside in regulatory structures. For example, there are a number of government agencies (e.g., Philippine Ports Authority and Civil Aviation Authority of the Philippines), that have regulatory oversight over services that they themselves provide in competition with the private sector. More recently, TESDA has been given authority to operate vocational training institutions that clearly compete with private vocational training institutions that it regulates. Given the political economy of the specific sectors, how could the regulatory mechanism be reviewed and redesigned in such a way that the inherent conflict of interest be eliminated or minimized? Given the changing business environment, and considering the social objectives of the government, to what extent are the mandates of the GOCCs relevant? What key policy lessons can be drawn from the experience of separating policy/regulatory function from commercial/development function useful for doing similar workout for conflicted GOCCs in the future? Policy research could be directed towards assessing the impact of GOCCs and other government agencies that have commercial functions on the level of competition in the markets where they operate.

5.2.3 Governance

What are we doing which we should not do? What are we not doing which we should do? Indeed, Philippine economic history is replete with examples of policies that fall short of attaining the desired welfare outcomes. The import substitution regime in the 1960s or the establishment of the oil price stabilization fund are just a few examples. While it could be argued that the design of such policies may qualify as ‘first best’ on the basis of economic efficiency, it may be less implementable compared to ‘second best’ ones due to governance issues that were largely ignored. Central to policy effectiveness in the context of governance, is the distribution of power among the different actors – state and non-state alike and its effect on capture or exclusion (World Bank 2017). Thus, when considering alternative policy recommendations, the criterion of implementability or feasibility on such policy action should be considered given the balance of power among the actors involved. More broadly, research that includes analysis of the influence of interest groups, such as industry associations, that interact with government agencies could be conducted. The use of social network analysis could prove useful. In addition, there is scope for studies that analyze how the undue influence of certain interest groups could be neutralized by the suitable construct of incentives among government agencies. Governance issues that involve trade policy, taxation, legal, political system reforms, and the design of entitlements are relevant areas for such studies. Research that takes into account the adjustment costs of policy changes will be important in sustaining policy reforms. For instance, the support for the rice tariffication law will increase or waver depending on how the safety nets will be applied to the sector that bears the brunt of adjustments, the rice farmers. Improvements in the efficiency in the administration of justice by the courts and alternative dispute resolution mechanisms and their impacts on the economy should be analyzed and monitored on a regular basis.

FIRe has brought major governance issues, and addressing these issues is important for the government to sustain the reforms. Exploiting opportunities created by emerging technologies and data analytics can help the government in formulating evidence-based policies and in implementing such policies with greater speed, precision, and efficiency than before. The interesting research questions here, include, among others, the following: To what extent existing policies and programs encourage innovation across government levels and institutions and how adequate are the financial and human resources to support such effort? This is important to effect more efficient government-to-government transactions, which, in turn, can facilitate a whole-of-government approach to policy formulation and implementation. To what extent online platforms of government agencies can facilitate citizens’ and private business sector’s participation in policy formulation? Since both the government and the private sector are collecting and accumulating data, what would be the appropriate policy

design for public-private sharing of data? In other jurisdictions, online dispute resolution mechanism is in place to hasten the resolution of cases. What hurdles should be overcome to institute such mechanism in the Philippines? Since innovations under FIRE are expected to take place much more rapidly than legislations and regulations, how should the government design its tool for regulatory sandboxes that will allow businesses to test new ideas or business models?

5.3 Pillar 3: Enhance the Social Fabric and Reduce Inequality (Malasakit)

5.3.1 Entitlements

In addition to the core functions such as maintaining peace and order and providing public goods, governments can take initiatives to stimulate economic growth directly and pursue social objectives through the provision of entitlement rights. To provide such entitlements, the state intervenes in the marketplace to supply services (such as health, education transport, housing, etc.), to regulate prices (through support prices such as National Food Authority rice, minimum wages, etc.) or to redistribute income (such as conditional cash transfers, taxes and other forms of subsidies). These actions of government lead to debates on the extent to which the state should interfere in the market. In addition, since the resources of the state are always limited, there abound challenges on how best to allocate funds for entitlement rights. Research on these areas can inform future attempts to refine or expand coverage of such entitlements, or introduce new ones.

a. Educational entitlement

In 2017, President Duterte approved the Universal Access to Quality Tertiary Education Act, essentially allowing free tuition in all 112 state colleges and universities (SUC) in the country. Though the policy move is consistent with the social development policy of improving access to tertiary education, there are lingering issues related to the manner by which the policy is implemented. Rather than implementing an across-the-board non-contributory entitlement, would a targeted approach be more cost effective? Should the funds channeled to expand enrolment in tertiary education better utilized to improving the quality of SUC education by steering their programs towards building 21st century competencies?

b. Irrigation entitlement

In early 2018, the government passed the Free Irrigation Service Act which exempts small farmers from paying irrigation fees. While this legislation will increase access to irrigation on the side of the farmers (the demand side), it still leaves the supply side issues, which may be the more critical area, unanswered. Hence, policy research can also be directed to the providing solutions to causes of inadequate irrigation systems from the supply side, namely conditions of watershed, diversion of water resources arising from increased urban needs, and pollution. Will the free irrigation, which does not reflect the true cost of water, lead to its overuse? What programs or systems can be put in place to promote adoption of more efficient irrigation water usage? Given that most of the irrigation systems of the country is directed towards rice, to what extent would the present entitlement to irrigation serve the diversification strategy of production in favor of higher value crops? What has been the record of LGUs in operating irrigation systems in light of the devolution of government?

c. Investment entitlements

While there is general agreement that a reduction in the corporate income tax rate envisioned under the TRABAHO Bill is desirable, there is opposition, particularly among the foreign investors community, over the proposed reduction of incentives already granted locators in

the Philippine Export Processing Zones (PEZA). While the proponent of the tax reform, the Department of Finance, contends that TRABAHO Bill is critical in financing the Build-Build-Build program of the administration, the PEZA and the different chambers of foreign investors claim that adjusting the existing incentives would discourage incoming foreign investments and halt expansion plans among the incumbent investors. The key questions that must be answered in this debate are: What has been the overall performance of PEZA incentives on foreign investments after some years of implementation has passed? Can the types of industries attracted to PEZA incentives contribute to the country's efforts to face the challenges of FIRE?⁴ Are there existing mechanisms to encourage PEZA investment projects to establish close cooperation with educational and research institutions? The results of such study can inform any attempts at reforming foreign investment incentive system in the future, especially in light of FIRE.

5.3.2 Regional development and spatial inequality

Recent years saw the flourishing of regional centers such as Calabarzon, Cebu, Iloilo, Davao, and the like. This is a favorable development as it heralds the decentralization aspirations in light of the problem of over-concentration of economic, political and social power in the National Capital Region (NCR). NCR's contribution to GDP in 2017 is 38 percent, which shows more concentration than the 36.3 percent registered in 2012. The regional disparity is even more stark in terms of per capita income. In 2017, NCR has a per capita income which is three times the national average and 37 times larger than the per capita income of the poorest region, namely, the Autonomous Region in Muslim Mindanao (ARMM). As echoed in past research agenda, there is still the need for focused policy research on how best to address this issue.

a. Regional development and export processing zones

As a mechanism to spur exports, create jobs, earn foreign exchange and promote technology transfer, there are increasing calls from local government units to set up Export Processing Zones (EPZs) in the countryside, particularly in the more depressed regions. Many countries have long used EPZ as developmental vehicles to catalyze industrialization and to attract foreign direct investments that can introduce new technology, link the country to global supply chains, train manpower as well as foster local supplier industries. However, EPZs can be fiscally burdensome given the costs associated with developing the property, granting tax incentives and subsidized rates for utilities, etc. Because of the mixed levels of success of EPZs, not only across countries but also across zones within a country, there is need for policy research on the viability of SEZs, particularly in the countryside. What is the outcome of cost benefit analyses of prospective SEZs? What are the political and economic risks associated with development of EPZs given the experience that EPZs can sometimes be used as entry point for smuggling goods to the domestic market? To what extent are the pre-conditions for success, culled from the experience of well-functioning SEZs, present among the sites being considered? Even more broadly, could the private sector perform better in the provision of EPZ than the government?

b. LGUs and PPP

Given the congestion in the NCR, the attractiveness of relocating larger portions of commercial activities in the regions becomes more appealing. Indeed, the decentralization strategy is one of the general thrusts of the current administration as evidenced by the federalization initiative.

⁴ To promote its fourth industrial revolution vision, Thailand provides a wide-range and attractive package of incentives including 13 years of corporate income tax exemption to targeted industries locating in the Eastern Economic Corridor.

Regional centers such as those mentioned above, among others, have seen investment and construction booms in recent times. However, despite the cost and market advantages that the regions offer, the lack of infrastructure hamper their capacity to absorb resources. The constraints of public funds are one of the factors that account for the general shortage of infrastructure. The introduction of the Public-Private Partnership (PPP) was meant to address the bottleneck, particularly the financing side of infrastructure development. PPP is a mechanism where a private sector and government enter into a long-term agreement to provide infrastructure for which the private sector, while bearing investment risk, also reaps remuneration based on performance. Given the experience at the national level, that is, PPP projects are complex, and usually take a long time to conclude, and the scale of projects and the constraints of technical resources of the LGU, how could LGUs harness the PPP for timely infrastructure development? What are the different variants of PPP models (e.g., Joint Ventures) that fit the specific infrastructure needs of LGUs in terms of project life cycle and financial requirements (Agra 2015)? How could the LGUs be capacitated to design a PPP Code that is relevant to their needs? What policies can be put in place to incentivize the LGUs to implement or update the Comprehensive Land Use Plan or the Provincial Development and Physical Framework Plan, which are critical preconditions to maximize the utilization of PPP for LGUs?

5.3.3 Social cohesion

The Ambisyon 2040, representing the collective long-term vision and aspirations of the Filipino people, includes the establishment of a high trust society which is more caring, and peaceful where human security is assured.

a. Social sector protection

In light of policies to restructure the economy to meet challenges of the future, such as FIRE, climate change, increasing competition, etc., policies to promote social cohesion such as social sector protection, retraining and retooling of displaced workers, universal pension and healthcare systems, etc., are needed. What enhancements can be done to existing pension systems that is affordable to contributors? How should the government design retraining and retooling of displaced workers in a cost-effective manner? For years, scant attention has been given to the unpaid work of housemakers in the context of the care economy, whose burden falls heavily on women. What policies can be put in place in order to unlock the value of the care economy in a way that is not disruptive of the social fabric? In what way can advances in technologies brought about by FIRE support such efforts?

The Universal Health Care Act of 2019 automatically enrolls all Filipino citizens in the National Health Insurance Program. When he signed the law, President Duterte claims that it will guarantee equitable access to quality and affordable health care services for all Filipinos. The objective – to increase equitable access for all Filipinos to affordable health care services – is laudable and supportive of the Ambisyon Natin 2040 as health is an important component of human capital formation. It contributes significantly to the improvement of social protection system in the country. Given its scale and complexity, the challenge of the universal health care law lies in its implementation, particularly during the transition phase. For example, to reduce the financial burden of healthcare, it is imperative to address the out-of-pocket expenditure, which is currently substantial. Given the current governance structures and institutions and pace of medical technology advances, how should interventions be sequenced in order to effect a robust ‘health financing transition’ in which out-of-pocket health service expenditures are expected to decline? To track the effectiveness of health-related policy interventions, it is important to gather data for monitoring purposes. To this end, research directed to bridging the data gap in the baseline indicators in the National Objectives for Health 2017-2022 would be very useful. Moreover, what would be the appropriate basis for

determining the standard health facility to population ratio and its fiscal implication (Department of Health 2018)? On the supply side, how could the quality and quantity of primary health care centers, which is the weakest link in the health system, be augmented? In addition, how could LGUs, as first line providers of health care services, be capacitated to make them more responsive to the health care needs of their constituents. The need to address this is made more compelling in light of the fragmentation of health service delivery due to the devolution of functions to LGUs. Given the constraints of some LGUs and the challenges posed by servicing health delivery in the geographically isolated and disadvantaged areas, what mechanisms can be explored to promote PPP in the provision of health care services in a cost-effective manner? What would be the appropriate incentive system for health workers to encourage them to work in disadvantaged areas? To what extent could advances in e-health or innovations affect the delivery, regulation, financing and ultimately the health outcomes?

A related issue to the provision of health care services, albeit more long term in nature, is aging. This phenomenon is no longer an exclusively developed country concern. In the ASEAN, Singapore, whose median age is beyond 40, is rapidly aging. Thailand and Vietnam are also beginning to transition into aging societies, which can be especially challenging at this stage of their economic development. Unlike Japan or Sweden, these countries are at risk of becoming old before they get rich. Are their workers equipped to financially provide for their needs in retirement? To what extent would the increasing dependency ratios limit their potential for growth potentials? While the Philippines is still reaping the fruits of the demographic dividend, there is already a need to design and put in place policies that can address the challenges that aging societies pose. Research on evaluating if the Philippine health system, particularly in the area of long-term care, is adequate to cope with the influx of aging Filipinos is important (Badana and Andel 2018). Is the current social security system based on the pay-as-you-go scheme adequate to support the cohort of retirees in the future? What adjustments or reforms in the social security system are needed now to meet the financial demands in the face of an aging society? In light of FIRE, what types of jobs should be promoted and skills retraining programs to be launched to ensure continued participation of the aged in the labor market? Considering that the pace of aging is more rapid in Asia and occurs at an earlier phase in the economic development path compared to the developed economies, it would be an opportune time to make policy studies to meet the challenge of aging.

b. Sub-national conflict

Sub-national conflict, that is, conflict confined within certain regions of the country, including violent extremism, continues to bedevil a significant portion of the world's populations, consigning them to extreme poverty. In the Philippines, the growing disparity between the capital of the country and its remote regions (usually inhabited by cultural minorities) will intensify sub-national conflict, which, in turn, will further impede the development of these economically lagging regions. Violent conflict (whether identity, religious, gang, drug-related) will remain to be an incubus to a civilized society wanting to live peacefully and enjoy the benefits of modern technologies. Analysis of sub-national conflict cannot be left to the security sector alone. There is a need for researchers and academics from various disciplines to understand the phenomenon and come out with ways to better address this challenge.

Indeed, addressing sub-national conflict is challenging on the grounds that it is not very easy to pinpoint the drivers of the conflict owing to the complexity of the situation brought about by the confluence of culture, power structure of local politics as well as state performance or lack thereof. For example, does national growth and improved state capacity to deliver services automatically reduce or end conflicts in the Philippine case? Given that sub-national conflicts are specific to a situation, case studies aimed at identifying the specific factors in the local context (which marginalized groups, what are the shortcomings of the state practices and the

magnitude of the inequity of resource allocation) can be helpful in formulating the appropriate strategies to reduce or end conflicts. What are the transformational strategies that can be adopted that will build confidence in the peace process (Parks et al. 2013)? What institutions should be developed that will improve security, justice and economic conditions in the sub-regions? How does the local political structure and dynamics influence the type of transformative strategies to be adopted? Because strategies that address sub-national conflicts take time and evolve depending on the progression or stage of transformation, it is important to monitor and gather evidence on the conditions or outcomes at the level of the sub-region of interest. Due to the political-economic nature of the issue, the design of gathering evidence or data should have quantitative and qualitative aspects. The kind and level of disaggregation of evidence that should be gathered could be included among the research issues.

5.4 Infrastructure for Research

5.4.1 Statistical system for the future

The Philippine statistical system, in general, compares well with those of similarly situated economies around the world in terms of the amount of statistics available to the general public, coverage and level of disaggregation of socio-economic-demographic statistics, accessibility to the general public especially through the web, and timeliness of publication. However, there are many areas where some improvements are needed. Reliability and consistency of the estimates of some statistics, as in the case of export and import data, need to be ensured. Revised data, as in the case of GDP, are sometimes far from the preliminary estimates. Reporting lags of some statistics need to be shortened as they are needed by policymakers to make prompt policy decisions and by private enterprises to make robust business plans. There are also statistical systems that need to be frequently updated as they are needed to analyze economy-wide impacts of certain policies already in place or proposed legislative measures. Examples of such statistics are input-output table and social accounting matrix. Estimated demand systems that yield estimates of own- and cross-price elasticities as well as income elasticities are crucial in informing policy and regulatory measures (e.g., enforcing competition law, designing incentive system). Yet, none of the existing statistical systems provide highly disaggregated consumption, price and income data. Some agencies are given new mandates, such as monitoring child labor and human trafficking, that need statistics that are updated regularly, but such statistics are not yet included in the regular statistical system. Finally, FIRE has blurred the lines between industries, technologies and the physical and digital worlds that challenge the existing classification system of players and sectors in the economy. All this calls for a comprehensive review of the country's statistical system to make it more relevant and responsive to the demand for evidence-based policy decisions under a new environment.

One issue for the Philippines is the role of data science in many policy arena. For example, data science has a role to play in financial inclusion. This is not about fintech and mobile payments, but it is more about the role of big data in savings mobilization and credit extension, which in China has been dominated by BigTech (e.g., Ant Financial's MyBank and Tencent's WeBank). To what extent can such technologies be applied to the Philippines by, for example, microfinance institutions to enable them to expand further their services for the underprivileged? Access to big data systems can allow Philippine Competition Commission to conduct sector-specific analyses, the results of which can aid it in enforcing competition policy.

Having a responsive statistical system must be coupled with improved access to it, especially big data systems for big data analytics. The research issue here is how to design a policy that provides a good balance between data access and data privacy.

5.4.2 Quantitative tools

Maintaining quantitative models, such as annual and quarterly macroeconometric models, dynamic stochastic general equilibrium models (DSGE), and computable general equilibrium models (CGE), is an important task of a policy-oriented research institution. These models are not necessarily meant for forecasting purposes but for evaluating the net effects of macroeconomic policies taking into consideration the relative strength of forces operating on different parts of the economy. For instance, a CGE model could be used to assess the impacts of TRAIN1 tax reforms on the entire economy and on households belonging to various income classes or to quantify forgone benefits by not participating in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership. Results of these models can sharpen the policy advice given to policymakers.

Having a geographic information system can strengthen the analytical power of a research institution, especially if layers of spatially located data need to be analyzed to inform policy. For instance, poverty incidence by region, city or town can be mapped against resources deployed to these areas to reduce poverty to measure the effectiveness of poverty-reduction programs.

In light of increasing availability of big data systems from both the government and private sectors, data science should be one of the toolkits of a research institution.

In some instances, policy questions cannot be addressed by any of the models mentioned above for some reasons, such as absence of consistent data series or inappropriateness of such models. Thus, it is important to have a capacity to apply other approaches more appropriate for analyzing the effects of certain policy changes or for designing policy implementation strategies. One such approach is randomized experimental design (RED) that does not rely on the availability of existing data system. Indeed, there are already several cases in which such an approach could be used to answer some policy questions. For example, the success of the Universal Health Care Act of 2019 partly hinges on the availability of health services in rural areas. The Department of Health is confronted with the issue of how to incentivize health workers to work in disadvantaged areas of the country. Results of RED research can aid in designing an incentive system for health workers.

Among the quantitative tools mentioned above, PIDS should develop its capacity to do DSGE and RED studies. Regarding the latter, innovative ways of funding the studies that satisfy government rules on spending agency funds must be explored. To undertake data science, knowledge of python programming is fundamental to utilize higher tools in big data systems.

6. Research Priorities for PIDS

Based on the comprehensive research agenda presented above, the Team recommends a subset of topics as research priorities for PIDS according to the following criteria:

- a. Consistency with PIDS mandates;
- b. Timeliness of issues; and
- c. Capabilities of PIDS research resources.

Table 3 presents the suggested research priorities for PIDS over the research agenda period, 2020-2025.

Table 3. Research Priorities for PIDS

	Theme	2020	2021	2022	2023	2024	2025
1.	Productivity						
1.1	Fourth Industrial Revolution	<ul style="list-style-type: none"> • Labor & employment (Labor code update; jobs at risk) • Industry (policy and regulatory framework to promote digital commerce) 	<ul style="list-style-type: none"> • Education (review of curricula at all levels; reform TESDA training programs; lifelong learning; public-private partnerships in HEIs) 	<ul style="list-style-type: none"> • Tax policy for the digital economy 			<ul style="list-style-type: none"> • Health (policies to promote investments in ICT-enabled health care systems and services)
1.2	Trading Arrangements	<ul style="list-style-type: none"> • FTAs and supply chain (in light of US-China trade tension) 	<ul style="list-style-type: none"> • FTAs' performance (assessment in terms of achieving offensive and defensive interests) 			<ul style="list-style-type: none"> • FTAs and non-traditional provisions (compliance capacity) 	
1.3	Agricultural Productivity	<ul style="list-style-type: none"> • Review of agricultural credit schemes 	<ul style="list-style-type: none"> • Land consolidation issues • CARP assessment and new legislation 		<ul style="list-style-type: none"> • Performance assessment of devolution policy of LGUs (municipal extension services) 		
2.	Sustainability						
2.1	Climate Change	<ul style="list-style-type: none"> • Environment and Natural Resources (governance and rationalization of water regulation system) • Transport (legal and environmental framework for investment in e-vehicles) 	<ul style="list-style-type: none"> • Waste management (water, solid waste) 	<ul style="list-style-type: none"> • Labor and employment (effects of climate change) 	<ul style="list-style-type: none"> • S&T (policies and programs for climate change mitigation and adaptation) 		<ul style="list-style-type: none"> • Health (policies and programs to address climate change-related diseases)
2.2	Competition	<ul style="list-style-type: none"> • Trade policy (review of highly-protected sectors) 	<ul style="list-style-type: none"> • Public enterprise reforms (separation of policy and regulatory functions) 	<ul style="list-style-type: none"> • Public enterprise reforms (cont.) 		<ul style="list-style-type: none"> • Technological changes (network effects and barriers to entry, intellectual property) 	

2.3	Governance	<ul style="list-style-type: none"> Influence of interest groups on policies using social network analysis (legal-judicial reform, electoral reform, taxation reform, etc.) 	<ul style="list-style-type: none"> Analysis of adjustment costs of policy changes 		<ul style="list-style-type: none"> FIRe opportunities for improving governance (transparency, efficiency, speed in decision-making) 	<ul style="list-style-type: none"> FIRe opportunities for improving governance (cont., innovation across government agencies) 	<ul style="list-style-type: none"> FIRe opportunities for improving governance (cont., design for “regulatory sand-boxes”)
3. Social Cohesion and Inequality							
3.1	Entitlements	<ul style="list-style-type: none"> Investment entitlements (TRABAHO Bill issues, investment screening for FIRe in PEZA, industry-academe linkages) 			<ul style="list-style-type: none"> Assessment of entitlement programs (universal health care, universal tertiary education) 	<ul style="list-style-type: none"> Assessment of entitlement programs (cont.) 	
3.2	Regional Development and Spatial Inequality	<ul style="list-style-type: none"> Cost-benefit analysis of special economic zones 		<ul style="list-style-type: none"> Decentralization (LGUs and PPP, regional infrastructure development) 			
3.3	Social Cohesion	<ul style="list-style-type: none"> Social protection (pension and health care reforms, displaced workers, care economy) 		<ul style="list-style-type: none"> Aging issues (challenges of aging, social security and health, FIRe and job opportunities for the aged) 			
4. Infrastructure for Research (in coordination with the Philippine Statistical Authority)							
4.1	Statistical System for the Future	<ul style="list-style-type: none"> Improving reliability, timeliness and accessibility of existing data 	<ul style="list-style-type: none"> Review classification of industries in light of FIRe Provision of disaggregated data 				

4.2	Research Tools	<ul style="list-style-type: none"> • Knowledge of DSGE and RED for policy analysis, and Python programming for data science 					
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7. Proposed Themes for the PIDS Annual Public Policy Conference

The Team proposes the following themes for the PIDS Annual Public Policy Conference with suggested topics based on the comprehensive research agenda for the period, 2020-2025:

2020: Readiness of Philippine Human Resources for the FIRE Challenges

- Education (review of curricula at all levels)
- Reform TESDA training programs
- Lifelong learning (formal, informal, non-formal): Certification and standards
- Labor code for the 21st century
- Health

2021: Revisiting Climate Change: Green and Blue Economy

- Governance and rationalization of water regulation system
- Conservation of blue and green ecosystems
- Protection of at-risk species
- Waste management (water, solid waste, waste-to-energy technologies)
- Labor and employment (effects of climate change)
- Health (policies and programs to address climate change-related diseases)

2022: Governance and Innovation

- Legal-judicial, electoral, and taxation reforms
- FIRE opportunities for improving governance
- Innovation policies and programs (hub for global industrial R&D centers/laboratories)
- Trade policy (review of highly-protected sectors)
- Public enterprise reforms

2023: Decentralization Strategies: Alternative Growth Corridors

- LGUs and PPP, regional infrastructure development
- Cost-benefit analysis of special economic zones
- Urbanization challenges

2024: Back to the Basics: Pre-conditions for Productivity and Growth

- Investments in agriculture
- Land use and consolidation
- Water resources
- Incentive systems for business arrangements between private corporations and small farmers

2025: Sustainability of Entitlements

- Investment entitlements (fiscal incentives system)
- Assessment of social entitlement programs (universal health care, universal tertiary education)
- Social protection (pension and health care reforms, displaced workers, care economy)
- Aging issues (challenges of aging, social security and health, FIRE and job opportunities for the aged)

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Annex A

Evolution of Research Themes

1981-1985	1986-1990	1991-1995	1996-1999	2000-2004	2005-2009	2010-2014	2015-2019*
1. Employment, human resource development and technology	1. Employment, human resource development and technology	1. Macroeconomic policies	1. Industry, agriculture, and services	1. Macroeconomic management in a globalized setting	1. Economic Policy Choices - Budget analysis - Defining the size and scope of the government - Measuring waste in the government - Tax policy - Analysis of public spending - Debt management - Monetary policy and financial market reforms - Sources of economic growth and income distribution - Unemployment policy - Getting the economic accounts right - Competition policy - Private provision of infrastructure and other social overhead cost - Environmental protection and natural resource management	1. Economic Policy Choices - Macroeconomic policies - Fiscal issues - Agricultural policies - Land Policy and Agrarian Reform - Poor Performance of manufacturing, and Trade and Industrial Policies - Competition Policy - Small and Medium Enterprises - Geopolitics of the Region - Regulatory Structures - Infrastructure - Environment and Natural Resources - Labor Market Issues: Emphasis on OFWs and the Economy - Metropolitan Issues - Local Governance	1. Human Capital Development

					- The Philippines and the international community		
2. Resource mobilization	2. Resource mobilization	2. Agriculture, rural, and regional development	2. Resource mobilization	2. Competitiveness and competition policies	2. Policies for Sustainable Human Development <ul style="list-style-type: none"> - CCT and Social Protection - Education Issues - Health Sector Policies 		2. Restructuring the Economy
3. Trade expansion, agricultural and industrial development and energy		3. Trade, industry and international economic relations	3. Human resource development, income distribution and poverty	3. Governance	3. Institutional Development and Good Governance <ul style="list-style-type: none"> - Legal and judicial framework - The Constitution: Should it be amended? - Legislative framework - The executive and form of government 	3. Better Institutions	3. Social Protection
4. Poverty, income and wealth distribution	4. Agricultural and industrial development and trade policy	4. Natural Resources and Environmental Management	4. Competition policy and corporate governance	4. Social sector reform			4. Industrial Policy
5. Regional, rural and urban development	5. Regional, rural and urban development	5. Human Resources and Social Development	5. Policy analysis and planning tools and monitoring systems	5. Infrastructure development			5. Trade Policy
	6. Natural resource and environment	6. Energy and infrastructure		6. Modernizing Philippine Agriculture			6. Improving the Quality of Laws

	ent manage ment	developme nt					
	7. Energy and electricity	7. Science and technology policies		7. Environmen t and natural resource manageme nt			7. Measuring Impact of Public Spending
				8. Policy analysis, planning tools and monitorin g systems			

* These are areas where research gaps have been identified. The emerging themes from the research gaps are: (a) helping build resilient systems; (b) making PIDS research become even more effective in influencing policies.

Annex B

PIDS Research Outputs							
Focus Area	2014	2015	2016	2017	2018	2019	Total
Human Capital Development	27	17	26	11	11	1	93
Restructuring the Economy	12	12	11	20	22	0	77
Social Protection	7	12	12	21	7	0	59
Industrial Policy	13	11	8	14	9	0	55
Trade Policy	9	23	2	5	3	0	42
Improving Quality of Laws	8	12	18	18	23	2	81
Measuring the Impact of Public Spending	7	10	16	7	4	0	44
Publication Type	2014	2015	2016	2017	2018	2019	Total
Discussion Paper	51	55	56	60	54	0	276
Policy Note	23	30	28	30	20	3	134
Books	3	1	1	3	2	0	10
Total	77	86	85	93	76	3	420
Source: PIDS							

Annex C: PIDS' Contribution to Key Legislative Reforms of the 16th and 17th Congress

Type of Reform	Congress	Reform Enacted	PIDS' Submission to Congress (PIDS webpage)	Related PIDS Research Projects (2014-2018)	Other PIDS Activities (2014-2018)
Legislative	16th	Foreign Banks Liberalization Act amendments (RA10641)	AEC 2015: How Prepared are We?--Position Paper and Presentation of Dr. Gilbert Llanto on the Philippine Financial Services Industry, Submitted to the House Committee on Economic Affairs (Nov. 25, 2014)	-	
Legislative	16th	Philippine Lemon Law (RA 10644)	-	-	
Legislative	16th	Go Negosyo [MSME Development] Act of 2014 (RA 10644)	-	Toward Competitive and Innovative ASEAN SMEs: Philippine SME Policy Index 2012 (2014)	
Legislative	16th	Ladderized Education Act of 2014 (RA 10647)	-	-	
Legislative	16th	Open Distance Learning Act (RA 10650)			
Legislative	16th	Strengthening the Sandiganbayan Act (RA 10660)			
Legislative	16th	Open High School System Act (RA 10665)		Design of Impact Evaluation of DepEd Programs (2014)	
Legislative	16th	Philippine Competition Act (RA 10667)	Comments on the proposed bills on Competition Law and Policy (Medalla, 2014; Navarro, 2014)		
Legislative	16th	Co-Loading Law (RA 10668)	Relaxing the Cabotage Restrictions in Maritime Transport (Llanto and Navarro, 2014), Comments on the Proposed House Bills related to Coastwise Trade (Llanto, 2015)	Policy Note: Toward relaxing the cabotage restrictions in maritime transport (2014)	
Legislative	16th	Youth Entrepreneurship Act (RA 10679)			
Legislative	16th	Unified Student Financial Assistance System for Tertiary Education (UNIFAST) Act (RA 10687)	Comments on Education Bills SBN 705 and SBN 819 (Orbeta, n.d.)	Research Project: Grants-in-Aid for Research, Development, and Extension (RDE) for State Universities and Colleges (SUCs) Project	

Legislative	16th	Metallurgical Engineering Act (RA 10688)			
Legislative	16th	Forestry Profession Act amendments (RA 10690)			
Legislative	16th	Public Employment Service Office Act amendments (RA 10691)			
Legislative	16th	PAGASA Modernization Act (RA 10692)			(1) Dr. Danilo Israel as Discussant, "Beyond GDP: The Natural Environment, Shocks, Energy and Economic Policy" at the NEDA Technical Assembly on AMBISYON NATIN 2040 (2016)
Legislative	16th	Microfinance NGOs Act (RA 10693)			
Legislative	16th	Strategic Trade Management Act (RA 10697)			
Legislative	16th	Naval Architecture Law (RA 10698)	Comments on HB 5535, and Senate Bill Nos. 2378 and 2373 (Medalla, 2015)		
Legislative	16th	Tax Incentives Management and Transparency Act (RA 10708)	Comments on Senate Bill 469 (Tax Incentives Management and Transparency Act) and 1187 (Tax Incentives Transparency Act) (Manasan, n.d.)		
Legislative	16th	Credit Surety Fund Cooperative Act (RA 10744)			
Legislative	16th	Right-of-Way Act amendments (RA 10752)			

Legislative	16th	Magna Carta for Persons with Disability Amendments (RA 10754)	(1) Comments on House Bill Nos. 1916 and 2396, An Act Amending RA 7277, Otherwise known as the Magna Carta for the Disabled Persons (Reyes, 2017), (2) Comments on the Substitute Bill titled, "An Act Granting Additional Privileges to Persons with Disability, amending for the Purpose RA No. 7277, as Amended, otherwise known as the Magna Carta for Persons with Disability, and Appropriating Funds Therefor." (Reyes, 2017), (3)		
Legislative	16th	Philippine Green Jobs Act (RA 10771)			
Legislative	16th	Overseas Workers Welfare Administration Act (RA 10801)			
Legislative	16th	Farm Tourism Development Act (RA 10816)			
Legislative	16th	Philippine Halal Export Development and Promotion Act (RA 10817)			
Legislative	16th	Department of Information and Communications Technology Act (RA 10844)			
Legislative	16th	Anti-Agricultural Smuggling Act (RA 10845)			
Legislative	16th	Agricultural Competitiveness Enhancement Fund Extension Law (RA 10848)			
Legislative	16th	Customs Modernization and Tariff Act (RA 10863)	Comments on HB No. 5535 and Senate Bill Nos. 2378 and 2373 (Medalla, 2015)	Policy Note: How should we move forward in customs brokerage and trade facilitation? (2014)	
Legislative	16th	National Bureau of Investigation Reorganization and Modernization (RA 10867)			

Legislative	16th	Jobstart Philippines Act (RA 10869)		Study on Strategic Government Interventions of Employment Generation: DTI and Various Departments (DOLE, DA, DAR, DSWD, DOTC and DPWH), An Assessment of Labor Market Interventions	
Legislative	16th	Philippine Credit Card Industry Regulation Law (RA 10870)			
Legislative	16th	Agricultural Land Reform Code amendments (RA 10878)			
Legislative	16th	Foreign Investment Liberalization Act (RA 10881)	Status of Philippine Commitments to AEC and Recommendations: Response to House Resolutions 666 and 746 (Llanto, 2014)		
Legislative	16th	Balanced Housing Development Program Amendments (RA 10884)	(1) Dr. Marife Ballesteros as Resource Person on Housing Summit Recommended Legislative and Executive Actions, Joint HOR/Senate, The National Housing and Urban Development Summit (2016), (2) Comments on House Joint Resolution No. 3, Joint Resolution Ordaining a Glossary of Significant Housing Terminologies for Adherence by the Key Shelter Agencies, Other Appropriate Agencies of Government, and other Housing and Urban Development Stakeholders" (Ballesteros, 2016)		
Legislative	16th	Continuing Professional Development Act (RA 10912)			
Legislative	16th	Philippine Agricultural and Biosystems Engineering Act (RA 10915)			
Legislative	16th	Special Program for Employment of Students amendments (RA 10917)			

Legislative	16th	Philippine Pharmacy Act (RA 10918)		(1) Research Project: Health Systems Research Management in the Department of Health Project (15 studies)	DOH-PIDS Health Systems Research Program: Knowledge-Sharing Seminars (Makati City, 2014)
Legislative	17th	Anti-money Laundering Act amendments (RA 10927)			
Legislative	17th	Philippine Passport Act amendments (Extending Passport Validity) (RA 10928)			
Legislative	17th	Free Internet in Public Places Act (RA 10929)			
Legislative	17th	Extending Driver's License Validity (RA 10930)			
Legislative	17th	Universal Access to Quality Tertiary Education (RA 10931)	(1) Position Paper on Free Higher Education Act (Orbeta and Paqueo, 2016), (2) Dr. Rosario Manasan as Resource Person, Meeting with Senator Bam Aquino re: Public Hearing on Higher Education Tuition Fees (2017)	(1) Policy Note: How should income-based grantees in tertiary education be chosen? (2014)	(1) Comments on Filipino 2040 paper, "Human Capital: The Role of Education and Training" (Albert, 2016)
Legislative	17th	Revised Penal Code amendments (RA 10951)			

Legislative	17th	Tax Reform for Acceleration and Inclusion (RA 10963)	(1) On proposals to exempt marginal income earners from taxes (Manasan, 2014), (2) On proposals to exempt marginal income earners from taxes (Manasan, 2014), (3) Comparative Assessment of Various Proposals to Amend the Personal Income Tax (Manasan, 2015), (4) Dr. Rosario Manasan as Resource Speaker on Personal Income Tax sponsored by Ways and Means and CPBRD (2016), (5) Submission of Materials on Personal Income Tax to the Economic Affairs, House of Representatives (2016), (6) Dr. Rosario Manasan as Resource speaker, Comparative Assessment of Proposals to Amend Personal Income Tax Law for the Senate Centennial Lecture Series, Senate of the Philippines (2016)	(1) Policy Note: The need (or not) for fiscal incentives (2014), (2) Evaluation of Fiscal Incentives in the Philippines, (3) Assessment of the 2017 Tax Reform for Acceleration and Inclusion	(1) Tax Reform for Acceleration and Inclusion: HB 4774, HB 5636 and SB 1408 Compared (Senate of the Philippines Building, Pasay City), (2) Dr. Rosario Manasan as Resource Person: Small Roundtable Discussion and Consultation on DOF's Proposed Tax Reform Program with Secretary Carlos Dominguez III, (3) Dr. Rosario Manasan as Resource Speaker, 2016 International Tax Forum, Fiscal Policy and Inclusive Growth, (4) Dr. Rosario Manasan as Resource Speaker, Bangko Sentral ng Pilipinas' (BSP) 28th Environmental Scanning Exercise (ESE) on "The Road to Tax Reform: Issues and Challenges" (2017), (5) Inputs to DOH-HPDP Bureau on discussions on Sugar-Sweetened Beverages tax (Abrigo, 2017)
Legislative	17th	Philippine Qualifications Framework Act (RA 10968)		(1) PJD 2012: AEC 2015: Issues and challenges in standards and conformance	
Legislative	17th	Ease of Doing Business and Efficient Government Service Delivery Act (RA 11032)	(1) Comments on the Draft Bill on the Ease of Doing Business. Senate Committee on Trade, Commerce and Entrepreneurship (Serafica, 2016), (2) Comments on House Bill Nos. 40, 436, 2445, 3534, 3560, 4197 and 4578, and participated in the 2nd TWG meeting on PCIC bills. Committee on Government Enterprises and Privatization (Reyes, 2017)		(1) Dr. Francis Quimba as Resource Person in the meeting the Technical Working Group (TWG) of Ease of Doing Business Bills (2017)

Legislative	17th	Balik Scientist Act (RA 11035)			Inputs to DOST on budgetary allocations and possible actual expenditures of the Philippine government in Science and Technology, R&D and STEM education system to determine the financial capability of S&T and R&D for promoting inclusive development (Manasan, 2016)
Legislative	17th	Mental Health Act (RA 11036)			
Legislative	17th	Expanded National Integrated Protected Areas System Act (RA 11038)			
Legislative	17th	Philippine Food Technology Act (RA 11052)			
Legislative	17th	Organic Law for the Bangsamoro Autonomous Region in Muslim Mindanao (RA 11054)			
Legislative	17th	Philippine Identification System Act (RA 11055)			
Legislative	17th	Personal Property Security Act (RA 11057)			
Legislative	17th	Occupational Safety and Health Standards Act (RA 11058)			
Legislative	17th	Regulating the Practice of Criminology (RA 11131)			
Legislative	17th	National Payment Systems Act (RA 11157)			
Legislative	17th	Telecommuting Act (RA 11165)			
Legislative	17th	Social Security System Act amendments (RA 11199)	(1) Inputs to the Staff of Senator Cayetano about Social Security System (SSS) pension (Manasan, 2016)		
Legislative	17th	Mobile Number Portability Act (RA 11202)			

Legislative	17th	Department of Human Settlements and Urban Development Act (RA 11201)	(1) Commentary on House Resolution 611 (Ballesteros, n.d.), (2) Comments on House Joint Resolution 3 (Ballesteros, 2017), (3) Comments on House Joint Resolution No. 38, "Joint Resolution Ordaining a Glossary of Significant Housing Terminologies for Adherence by the Key Shelter Agencies." (Ballesteros, 2017)		(1) Dr. Marife Ballesteros as Participant, National workshop on "Advancing Inclusive and Resilient Urban Development Targeted at the Urban Poor" (2018)
Legislative	17th	Rice Tarrification Act (RA 11203)	(1) Policy Note (Briones and Galang, 2014): The continuing saga of rice self-sufficiency in the Philippines, (2) Position paper on clarification of The Quantitative Restriction on Rice: Impacts on Filipino Farmers and Consumers (Briones and Tolin, 2016), (3) Presentation on Expiration of the Waiver for Quantitative Restrictions on Rice Importation by June 2017: Options for Food Policy, PIDS-CPBRD Legislative Forum Series (Briones, 2017), (4) Dr. Roehlano Briones as Resource Person, Public Hearing on Rice Related Legislative Measures, Senate Committee on Agriculture (2018)		(1) Comments on Options on Rice Tariffication. Meeting of Philippine Council for Agriculture and Fisheries (PCAF) Committee on Food Staples (Briones, 2016), (2) PIDS-CPBRD Forum on Expiration of the Waiver for Quantitative Restrictions on Rice Importation by June 2017: Options for Food Policy (House of Representatives, Quezon City), (3) Media Engagement: Rice self-sufficiency policy (ANC Early Edition)
Legislative	17th	New Central Bank Act amendments (RA 11211)			
Legislative	17th	Tax Amnesty Act (RA 11213)			
Legislative	17th	Universal Healthcare Act amendments (RA 11223)		(1) Research Project: Health Systems Research Management in the Department of Health Project (15 studies)	(1) Dr. Danilo Israel as Discussant, "Universal Health Coverage, Health Security and Resilient Health Systems" at the NEDA Technical Assembly on AMBISYON NATIN 2040 (2016)
Legislative	17th	Mandatory PhilHealth Coverage for PWDs (RA 11228)			

Legislative	17th	Revised Corporation Code of the Philippines (RA 11232)	Comments on House Bill 4407 or the proposed "Act Amending Batas Pambansa Blg. 68 or the Corporation Code of the Philippines" (Navarro, 2015)		
Legislative	17th	Agricultural Free Patent Reform Act (RA 11231)			
Legislative	17th	Tulong Trabaho Act (RA 11230)			
Legislative	17th	Energy Virtual One-Stop Shop Act (RA 11234)			(1) Dr. Marife Ballesteros and Dr. Sonny Domingo as PIDS Representatives in the National Energy Policy Review Forum and Focused Group Discussions (2017)
Legislative	17th	Road Board Abolition (RA 11239)			
Legislative	17th	Energy Efficiency and Conservation Act (RA 11285)			
Legislative	17th	Magna Carta for the Poor (RA 11291)	(1) Dr. Celia Reyes as Participant, Meeting with HOR Committee on Poverty Alleviation (2017)		(1) Assistance of Dr. Jose Ramon Albert to DSWD in the advisory committee on the Launch of 2015 Listahan Database of Poor Families (2016)

Legislative	17th	Pantawid Pamilyang Pilipino Program Act (RA 11310)	(1) Dr. Aniceto Orbeta as Resource Person, Forum on Pantawid Bill and Talk about the Positive Impact of Pantawid Pamilya particularly to the Marginalized Sector of our Society. House of Representatives (2017), (2) Comments and recommendations on the consolidated enrolled bill, entitled, "An Act Institutionalizing the Pantawid Pamilyang Pilipino Program (4Ps)" (Orbeta and Paqueo, 2019)	Toward Adaptive Social Protection in the Philippines	(1) Dr. Aniceto Orbeta as Resource Person, Conference on Sustaining the Gains of the Conditional Cash Transfer Program in the Philippines (2016), (2) Presentation of update on the Pantawid Pamilya Program at the National Independent Advisory Monitoring Committee (Orbeta, 2016), (3) Dr. Celia Reyes, Dr. Aniceto Orbeta and Dr. Vicente Paqueo as Participants in consultation meeting on the sampling design for the Third Wave Evaluation of the Pantawid Pamilyang Pilipino Program (2017), (4) Analysis of FIES 2015 data to examine current poverty status of 4Ps beneficiaries (Reyes, 2017), (5) Dr. Aniceto Orbeta as Presenter, Technical Discussion on the Midterm Review of Pantawid Pamilya Program (2018)
Legislative	17th	Cheaper Electricity Act			(1) Comments on Filipino 2040 paper, "Energy: power Security and Competitiveness" (Navarro, 2016), (2) Dr. Adoracion Navarro as Discussant, NEDA Technical Assembly on the Long-Term Vision on papers "Infrastructure, Urbanization, and the Filipino 2040 Vision" and "Energy: Power Security and Competitiveness"

Legislative	17th	Innovative Startup Act		(1) Book: Innovative behavior of local firms: Results of the 2009 Pilot Survey of Innovation Activities – Towards an innovation-led development path in the Philippines (2014),	(1) Dr. Jose Ramon Albert as Resource Speaker, MSME – Industry 4.0 and the Challenges and Opportunities for SMEs in celebration of the DOST Regional Science and Technology Week (2018)
Legislative	17th	Coconut Levy Fund Utilization Bill (vetoed)			

Legislative	17th	Philippine Innovation Act	Position Paper on the Proposed "Philippine Innovation Act" (Albert, Medalla and Quimba, 2018)	(1) Innovation Activity of Firms in the Philippines, (2) Impact of Foreign Linkages on Innovation Activity of Manufacturing Firms in CALABARZON, (3) Measuring and Examining Innovation in Philippine Business and Industry, (4) Preparing the Philippines for the Fourth Industrial Revolution, (5) Policy Note: Big Data for measuring progress and development: Big insights or big issues?	(1) Comments on Filipino 2040 Background Paper on the Technology and Innovation (Serafica, 2016), (2) Presentation: Measuring and Examining Innovation in Philippine Business and Industry (PIDS Conference Hall), (3) Dr. Ramonette Serafica as Resource Speaker, "Measuring and Examining Innovation in Philippine Business and Industry" (Results of the 2015 PIDS Survey of Innovation Activities) Creating an Inclusive Innovation and Entrepreneurship Ecosystem: Gearing Up the Regions 4.0 – Visayas and Mindanao Workshops (2017), (4) Dr. Jose Ramon Albert as Resource Speaker, "Results of 2015 PIDS Innovation Survey". DTI's Regional Innovation Seminar Workshop "Gearing up the Regions Industry 4.0, Angeles and Davao City (2017), (5) Comments to DTI on "The Concept Note on the Assessment of ASEAN Readiness for the Fourth Industrial Revolution (Assessment Report) (Serafica, 2018), (6) Dr. Jose Ramon Albert as Resource Person, TWG Meeting on the bills on the Philippine Innovation Act (HB Nos. 5618 and 5701) (2018)
Legislative	17th	Philippine Space Development Act			

Legislative	17th	Restructuring Excise Taxes on Tobacco Products (vetoed)			
Legislative	17th	Security of Tenure Bill (vetoed)	Bills Prohibiting/Restricting All Forms of Temporary Employment: Why are They Problematic (Orbeta and Paqueo, 2017)	(1) A Review of Labor Laws and Its Effects on the Philippine Economy (2014), (2) Policy Note: Effects of minimum wage on the Philippine Economy (2014)	(1) Senate-PIDS Economic Forum on the Jobs Challenge (Senate of the Philippines, Pasay City), (2) CPBRD-PIDS Knowledge-Sharing Seminars and Fora on the Jobs Challenge and Government Interventions for Jobs Generation in the Private Sector, (3) Dr. Aniceto Orbeta as Resource Speaker, NEDA Brown Bag Session on “The Discourse of Endo” (2017)

References Being Reviewed (Not in Alphabetical Order)

1. PIDS-related Information and References

1	Title: PIDS Research Agenda Year: Various Years (1981–1985 up to 2015–2019)
2	Title: PIDS Annual Reports Year: Various Years (2007–2017 or 2018, if available)
3	Profile of PIDS Research Fellows and Research Associates
4	PIDS' Indicative List of 2019 Studies
5	List of PIDS Research Partners

2. Philippine Development Plans, Country Strategies and Related Documents

1	Author: Office of the President, National Economic and Development Authority Title: Ambisyon Natin 2040 (Executive Order 5, s. 2016) Year: 2016
2	Author: National Economic and Development Authority Title: Philippine Development Plan 2017–2022 Year: 2017
3	Author: Department of Science and Technology Title: Harmonized National Research and Development Agenda 2017–2022 Year: 2017
4	Author: Commission on Higher Education Title: National Higher Education Research Agenda II 2009–2018 Year: 2009
5	Author: Department of Trade and Industry Title: Comprehensive National Industrial Strategy Year: 2016
6	Author: Asian Development Bank Title: Country Partnership Strategy, Philippines, 2018–2023 — High and Inclusive Growth Year: 2018
7	Author: Asian Development Bank Title: Country Operations Business Plan, Philippines 2019–2021 Year: 2018
8	Author: Global Green Growth Institute Title: Philippines Country Planning Framework 2016–2020 Year: 2016
9	Author: United Nations International Fund for Agricultural Development Title: Republic of the Philippines Country strategic opportunities programme Year: 2017
10	Author: United Nations World Food Programme Title: Philippines Country Strategic Plan (2018–2023) Year: 2018
11	Author: World Bank Title: Growth and Productivity in the Philippines: Winning the Future Year: 2018
12	Author: United Nations Development Programme

	Title: Country Programme Document, 2019–2023 Year: 2018
13	Author: United Nations Food and Agriculture Organization Title: Country Programming Framework, 2018–2024 (Philippines) Year: 2018
14	Author: United States Agency for International Development Title: Country Development Cooperation Strategy 2013–2018 (updated) Year: 2017
15	Author: World Bank Title: Philippines – Country partnership strategy FY 2015–2018 Year: 2014
16	Author: United Nations Industrial Development Organization Title: UNIDO Country Programme for the Philippines Year: 2018
17	Author: Various authors, repository under the Department of Trade and Industry Title: Industry roadmaps Year: Various years
18	Author: National Academy of Science and Technology Title: Policy resolutions Year: Various years—2008 to 2018
19	Policy studies of academic/university research centers in the Philippines
20	Legislative agenda of the Philippine Congress
21	Author: Department of Health Title: Medium-Term Health Policy and Systems Research Agenda, 2016-2022 Year: 2017 (Memorandum Circular No. 2017-0034)
22	Author: Technical Education and Skills Development Authority Title: Guidelines on the Implementation of National Technical Education and Skills Development Research Agenda, 2017-2022 Year: 2017 (TESDA Circular No. 48 Series of 2017)
23	Author: Department of Education Title: Adoption of the Basic Education Research Agenda, 2018-2022 Year: 2016 (Department Order No. 39 s. 2016)
24	Author: Philippine National Health Research System Title: National Unified Health Research Agenda, 2017-2022 Year: 2017

3. Research Agenda, Development Plans and Implementation Strategies in Asia

1	Author: Asian Development Bank Title: Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific Year: 2018
2	Author: Tri Dewi Virgiyanti Title: SDGs and National Development Plan in Indonesia Year: 2016
3	Author: Economic Planning Unit, Prime Minister's Department Title: Eleventh Malaysia Plan 2016–2020: Anchoring Growth on People Year: 2015
4	Author: Datuk Zolkopli Dahlan Title: National Development Planning Practices in Malaysia Year: no date
5	Author: Socialist Republic of Vietnam Title: The Five-Year Socio-economic Development Plan 2016–2020 Year: 2016

6	Author: Asian Development Bank Institute Title: Three-Year Rolling Work Program, 2018–2020 and Budget for 2018 Year: 2017
7	Author: Central Committee of the Communist Party of China Title: The 13 th Five-Year Plan for Economic and Social Development of the People's Republic of China, 2016–2020 Year: 2016

4. Global Development Plans and Sectoral Reports

1	Author: United Nations Conference on Trade and Development Title: World Investment Report Year: 2013 to 2018
2	Author: United Nations Economic and Social Commission for Asia and the Pacific Title: Achieving the 2030 Agenda for Sustainable Development in the Pacific Year: 2017
3	Author: United Nations Title: The Road to Dignity by 2030: Ending Poverty, Transforming All Lives and Protecting the Planet (Synthesis report of the Secretary-General on the post-2015 sustainable development agenda) Year: 2014
4	Author: International Monetary Fund Title: World Economic Outlook: Challenges to Steady Growth Year: 2018
5	Author: United Nations Title: Addis Ababa Action Agenda Year: 2015
6	Author: World Bank Title: World Development Report Year: 2014 to 2019
7	Author: United Nations Industrial Development Organization Title: Industrial Development Report 2018 Year: 2017
8	Author: World Trade Organization Title: World Trade Report 2018 – The Future of World Trade: How Digital Technologies are Transforming Global Commerce Year: 2018

Annex E

Research Agenda Committee (RAC) Consultation Meetings (January – March 2019)

Name of Agency/Office	Persons Consulted	Date of Consultation
GOVERNMENT AGENCIES:		
BANGKO SENTRAL NG PILIPINAS	DR. FELIPE MEDALLA Monetary Board Member	8 February 2019
	MR. FRANCISCO G. DAKILA, JR. , Assistant Governor Monetary Policy Sub-Sector MR. DENNIS D. LAPID DER Director MS. LARA GANAPIN DER Acting Deputy Director Bank Officers: MS. ROSELLE MANALO MS. CHERRIE RAMOS MR. CHRISTOPHER OCAMPO	18 February 2019
COMMISSION ON HIGHER EDUCATION	MR. NELSON CAINGHOG Director V, Planning, Research and Knowledge Management Program (OPRKMP) MR. NELSON T. APAREJO OPRKMP	28 February 2019
CONGRESSIONAL POLICY AND BUDGET RESEARCH DEPARTMENT (CPBRD)	DR. ROMULO M. MIRAL Director General	11 February 2019
DEPARTMENT OF AGRICULTURE	DR. SEGFREDO R. SERRANO Undersecretary for Policy and Planning	13 March 2019
DEPARTMENT OF BUDGET AND MANAGEMENT	MS. LAURA B. PASCUA Undersecretary for Budget Policy and Strategy Group MS. KRISTIANA MAE ALMOJUEVA BMB-C MS. ELIZABETH E. CUNANAN BMB-C Director	6 February 2019

	MS. TESSIE C. GREGORIO BMB-F Director	
DEPARTMENT OF EDUCATION (DepEd)	MR. JESUS LORENZO R. MATEO Undersecretary Office of the Undersecretary for Planning and Field Operations MR. EMILJOHN SENTILLAS Education Program Specialist Policy Research and Development Division	12 February 2019
DEPARTMENT OF ENERGY (DOE)	MR. JESUS CRISTINO P. POSADAS Senior Undersecretary for Policy and Planning MR. DANILO V. VIVAR Supervising Science Research Specialist Formulation and Research Division Energy Policy and Planning Bureau MS. MARIETTA M. QUEJADA Supervising Science Research Specialist Energy Policy and Planning Bureau	15 March 2019
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCE (DENR)	ATTY. JONAS R. LEONES Undersecretary for Policy, Planning, and International Affairs REPRESENTED BY: MS. MARIA LOURDES G. FERRER Director for Policy and Planning	13 March 2019
DEPARTMENT OF FINANCE (DOF) 5th floor, DOF Building, BSP Complex Roxas Boulevard, Manila	DR. KARL KENDRICK T. CHUA Undersecretary for Strategy, Economics and Results Group	20 February 2019
DEPARTMENT OF HEALTH (DOH)	DR. MARIO C. VILLAVARDE, MPH, MPM, CESO I Undersecretary of Health Health Policy and Systems Development Team	11 March 2019
DEPARTMENT OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (DICT)	BRIG. GEN. ELISEO M. RIO, JR. Secretary ATTY. AUBIN ARN R. NIEVA	27 February 2019

	Director IV for Procurement Service and Deputy Chief of Staff, Office of the Secretary	
DEPARTMENT OF LABOR AND EMPLOYMENT (DOLE)	<p><u>Institute for Labor Studies (ILS):</u></p> <p>MS. AHMMA CHARISMA LOBRIN-SATUMBA Executive Director</p> <p>RONNEL DELERIO FRANCIS CAMILLE DUMALAO MIRALUNA TACADAO CARL ROOKIE DAGUIO</p> <p><u>Bureau of Local Employment:</u> AIKO LEGACIO MYKA TRONO JINKY ARQUERO</p> <p><u>Bureau of Labor Relations:</u> JEROME YANZON, DIVISION CHIEF KIM MARGARETTE MARTINEZ</p> <p><u>Bureau of Working Conditions:</u> DR. FELIX LABAND ENGR. KRISTINE CAROL SORRIENTO</p> <p><u>Bureau of Workers with Special Concerns:</u> MAYBELLE FRIANESA, PLANNING OFFICER RIZA MAE DAGUPLO RAYMOND BANAGO RODERICK ROLDAN, INTERNAL AUDITOR V ATTY. NATHANIEL BARRAIRO</p> <p><u>National Conciliation and Mediation Board:</u> MARIFE FAUSTO, OIC CHIEF</p> <p><u>National Maritime Polytechnic:</u> VIRGINIA RIVAS</p> <p><u>National Wages and Productivity Commission</u> ALVIN CURADA, DIRECTOR</p>	27 February 2019

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS (DPWH)	DR. MA. CATALINA E. CABRAL Undersecretary for Planning and PPP	Not yet interviewed. Tentative schedule is 28 March 2019 at 2:00PM
DEPARTMENT OF SCIENCE AND TECHNOLOGY	DR. FORTUNATO T. DELA PEÑA Secretary	13 February 2019
DEPARTMENT OF SOCIAL WELFARE AND DEVELOPMENT (DSWD)	MS. FLORITA R. Villar Undersecretary for Planning and Plans Group To be represented by MS. RHODORA ALDAY Director IV, Policy Development and Planning Bureau	Not yet interviewed. Schedule is 28 March 2019 at 10:00AM.
DEPARTMENT OF TOURISM	MR. ROBERTO P. ALABADO, III, Assistant Secretary MR. WARNER M. ANDRADA Division Chief, Tourism Development Planning, Research and Information Management MR. ALAIN C. QUESEA, Supervising Tourism Operations Officer, Policy Formulation and Evaluation Division MS. MA. ELENITA I. PAJARILLO, Senior Tourism Operations Officer, Tourism Development Planning Division MR. RAMIL S. BASUEL, Senior Tourism Operations Officer, Statistics, Economic Analysis and Information Management Division MARIA JOY MEDINA	26 February 2019
DEPARTMENT OF TRADE AND INDUSTRY	DR. CEFERINO S. RODOLFO Undersecretary for Industry Development and Trade Policy Group	26 February 2019

	DR. RAFAELITA M. ALDABA Undersecretary for Competitiveness and Innovations Group	
DEPARTMENT OF TRANSPORTATION	MR. RUBEN S. REINOSO, JR. Undersecretary for Planning and Project Development	14 March 2019
NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY (NEDA)	DR. CARLOS BERNARDO O. ABAD Assistant Secretary for Planning and Policy <u>National Policy and Planning Staff:</u> MS. ELAINE BAUTISTA MS. MELANIE QUINTOS MS. DESIREE JOY NARVAEZ MR. RENZ TORILLOS MS. RAVINA VIERA MADRID <u>Development Information Staff:</u> MS NANCY SAMONTE <u>Governance Staff:</u> MS. JUDITH GONDRA <u>Agriculture, Natural Resources and Environment Staff:</u> MR. JULIUS CASABAL MS. JILIAN KAZUMI IPAC <u>Social Development Staff:</u> MR. JOHN ANTHONY GERONIMO <u>Trade, Industry and Services Staff:</u> MR. RICHARD EMERSON BALLESTER <u>Infrastructure Staff:</u> MR. ERNEST ALBERT DIAZ <u>Regional Development Staff:</u> MS. ANA FRANCESCA VILLAREAL <u>Monitoring and Evaluation Staff:</u> MS. MARIA LOURDES EUDELA MR. WILLIAM CU	15 February 2019
PHILIPPINE COMPETITION COMMISSION (PCC)	DR. ARSENIO M. BALISACAN Chairman	20 February

PHILIPPINE COUNCIL FOR HEALTH RESEARCH AND DEVELOPMENT (PCHRD)	DR. JAIME MONTOYA Executive Director	19 February 2019
PHILIPPINE INSTITUTE FOR DEVELOPMENT STUDIES	DR. CELIA M. REYES , President DR. MARIFE M. BALLESTEROS , Vice-President DR. SHEILA V. SIAR , Director for Research Information and Dissemination MS. RENEE ANN C. AJAYI , Director for Project Services Department MR. LAYLORD XYRCHEZ TAGANAS , Division Chief, Administration and Finance PIDS RESEARCH FELLOWS AND ASSOCIATES: DR. MICHAEL RALPH ABRIGO DR. CONNIE DACUYCUY DR. SONNY DOMINGO DR. FRANCIS QUIMBA DR. ANICETO C. ORBETA DR. VICENTE PAQUEO DR. RAMONETTE S. SERAFICA DR. CHARLOTTE JUSTINE DIOKNO-SICAT DR. AUBREY TABUGA MS. JANETTE CUENCA MS. MELALYN MANTARING MS. CATHARINE ADARO MR. NICOLI ARTHUR BORROMEO MS. IVORY MYKA GALANG MR. MARK ANTHOY BARRAL MR. JOHN PAUL CORPUS MS. ANNA JENNIFER UMLAS MS. MAUREEN ANE ROSELLON	12 February 2019
SENATE ECONOMIC PLANNING OFFICE (SEPO)	MR. RONALD R. GOLDING Director-General MR. MERWIN H. SALAZAR Executive Director MR. XERXES S. NITAFAN , Director MR. MARIA CRISTINA R. PARDALIS , Director	13 February 2019

	MS. KATHREENA D. TAN , Macro sector MR. PETER S. TURINGAN , Micro sector MR. PAOLO S. NAVATA , Governance sector. MR. DAVID T. ALEGRE, III , Social Sector	
TARIFF COMMISSION	MS. MARILOU P. MENDOZA Chairperson	28 February 2019
TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY (TESDA)	MS. MARISSA G. LEGASPI Executive Director, TESDA Planning Office <u>Other TESDA Staff:</u> Ms. Katherine Amor A. Zarsadias Ms. Christina Maureen S. Dulce	19 February 2019
ACADEMIC INSTITUTIONS:		
ATENEO DE MANILA UNIVERSITY	DR. FERNANDO T. ALDABA Dean, School of Social Sciences and Department of Economics	17 January 2019
DELA SALLE UNIVERSITY	DR. MARITES TIONGCO Dean, School of Economics DR. MYRNA AUSTRIA University Fellow and Professor DR. LAWRENCE B. DACUYCUI Professor	19 February 2019
UNIVERSITY OF ASIA AND THE PACIFIC (UA&P)	DR. WINSTON STAN PADOJINOG President DR. BERNARDO M. VILLEGAS Vice-President DR. PETER LEE U Professor, School of Economics MS. DITAS MACABASCO Professor, School of Economics	1 February
UNIVERSITY OF THE PHILIPPINES SCHOOL OF ECONOMICS (UPSE)	DR. ORVILLE J. SOLON Dean, School of Economics	17 January 2019

	Represented by: DR. SARAH LYNNE DUCANES, Director for Research DR. KARL ROBERT JANDOC, Professor DR. MARIA MARGARITA GONZALES, Professor	
UNIVERSITY OF THE PHILIPPINES-LOS BAÑOS (UPLB)	DR. JOSE V. CAMACHO, JR. Dean, UPLB Graduate School DR. AGHAM C. CUEVAS Department Chair Department of Economics College of Economics and Management DR. RODMYR F. DATOON Assistant Professor, College of Agriculture and Food Science DR. AILEEN V. LAPITAN, Assistant Professor, College of Public Affairs and Development	22 February 2019
PRIVATE BUSINESS ASSOCIATIONS:		
AMERICAN CHAMBER OF COMMERCE OF THE PHILIPPINES, INC. (AMCHAM)	MR. EBB HINCHLIFFE Executive Director	19 March 2019
MAKATI BUSINESS CLUB	MR. COCO ALCUAZ Executive Director MS. ROXANNE V. LU Programs and Project Unit Director	12 March 2019
JAPANESE CHAMBER OF COMMERCE AND INDUSTRY OF THE PHILIPPINES (JCCIFI)	MR. NAOTO TAGO President [A new JCCIFI President was elected on March 19 and will assume office on April 1, 2019]	May no longer be interviewed
EUROPEAN CHAMBER OF COMMERCE OF THE PHILIPPINES	MR. NABIL FRANCIS President	Not yet interviewed. Tentative schedule on March 22 or 25.
PHILIPPINE BUSINESS FOR THE ENVIRONMENT	MR. BONAR LAURETO Executive Director	26 February 2019

PHILIPPINE CHAMBER OF COMMERCE AND INDUSTRY (PCCI)	MR. CRISANTO F. FRIANESA Secretary General	14 March 2019
PHILIPPINE EXPORT CONFEDERATION OF THE PHILIPPINES	MR. SERGIO R. ORTIZ-LUIS, JR. President	14 March 2019
UN INTERNATIONAL RESOURCE PANEL	DR. (ANTHONY) SHUN FUNG CHIU Member	27 February 2019
Affiliation	INDIVIDUAL EXPERTS:	Responses Received via email
AUSTRALIAN NATIONAL UNIVERSITY	DR. HAL HILL H. W. Arndt Professor Emeritus of Southeast Asian Economies	January 26, 2019
BRANDEIS UNIVERSITY	DR. PETER PETRI Professor	February 1, 2019
CORNELL UNIVERSITY AND UNIVERSITY OF INDONESIA	DR. IWAN J. AZIZ Professor	January 24, 2019
INSTITUTE OF SOUTHEAST ASIAN STUDIES Yusof Ishak Institute	DR. THAM SIEW YEAN Director of Institute of Malaysian and International Studies of University Kebangsaan Malaysia	February 26, 2019
JOHNS HOPKINS UNIVERSITY	DR. MICHAEL G. PLUMMER Director, School of Advanced International Studies – Europe	February 19, 2019
NATIONAL CHENG KUNG UNIVERSITY	DR. WEN-JEN HSIEH Professor of Economics and Director General of the Art Center	No response yet
NATIONAL UNIVERSITY OF SINGAPORE	DR. RAMKISHEN RAJAN Vice Dean (Research) and Professor at Lee Kuan Yew School of Public Policy	No response yet
PHILIPPINE COUNCIL FOR INDUSTRY, ENERGY, AND EMERGING TECHNOLOGY	DR. ENRIQUE PARINGIT Executive Director	February 20, 2019
UNIVERSITY OF TOKYO	DR. MASAHIRO KAWAI Professor	January 31, 2019
WILLIAMS COLLEGE	DR. ELI REMOLONA Visiting Professor of Economics Center for Economic Development	January 24, 2019
WORLD BANK	DR. FERMIN ADRIANO Senior Adviser of the Conflict, Security and Development Team	February 8, 2019

WORLD TRADE ORGANIZATION	DR. ROBERT TEH Chief of the Economic Modelling and Quantitative Analysis Unit of the World Trade Organization.	February 6, 2019
UN INTERNATIONAL RESOURCE PANEL	DR. (ANTHONY) SHUN FUNG CHIU Member	February 23, 2019
UNIVERSITY OF ARIZONA, U.S.A.	DR. JOEL CUELLO Professor of Biosystems Engineering	February 20, 2019
UNIVERSITI KEBANGSAAN MALAYSIA	THAM SIEW YEAN Director of Institute of Malaysian and International Studies	February 26, 2019
UNIVERSITY OF THE PHILIPPINES	DR. AILEEN BAVIERA Professor, Asian Center	February 13, 2019
WORLD INTELLECTUAL PROPERTY ORGANIZATION	DR. CARSTEN FINK Chief Economist	March 2, 2019