

PERSPECTIVE

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Philippine Regional Inclusive Innovation Centers: Solving Community Problems and Bridging Development Gaps

*Rafaelita M. Aldaba**

EXECUTIVE SUMMARY

- Amidst new technologies and other global and domestic development challenges, the Philippines is implementing a new industrial policy called inclusive innovation industrial strategy, or i³S.
- Innovation is at the front and centre of this industrial policy being pursued through strong government-academe-industry collaboration.
- Regional Inclusive Innovation Centers or RIICs will serve as platforms to link stakeholders from government, academe and industry to address gaps in the innovation and entrepreneurship ecosystem.
- Through the RIICs, the country's industrialization should be driven more by science, technology, and innovation, with a focus on human resource development and more market-oriented research leading to the creation of new products, new processes, and new business models.

** Guest writer Rafaelita M. Aldaba is Undersecretary for Competitiveness and Innovation in the Philippine Department of Trade and Industry (DTI). Please address queries to RafaelitaAldaba@dti.gov.ph.*

INTRODUCTION

The Philippine economy has been growing at a remarkable average rate of 6.4 percent from 2010 to 2017 and at 6.2 percent in 2018. Although it slowed down in 2018, the economic outlook has remained positive given the country's strong macroeconomic fundamentals. Manufacturing has continued to be one of the important growth drivers, posting an average growth of 7.6 percent during the 2010-2017 period while services grew by 6.7 percent on average. The manufacturing resurgence that the country is experiencing has been attributed to its growing domestic market, growing middle class low and stable wages; abundant, young, highly trainable, English-speaking workforce; and rising costs in China. A manufacturing slowdown was evident in 2018 when the sector registered a growth rate of 4.9 percent. This was due to high inflation, global rise in oil prices, weakened consumer spending, drop in business confidence, and sluggish export growth arising from the US-China trade war and global economic slowdown.

The performance of the agriculture, hunting, fishery, and forestry has remained lackluster, lagging behind services and industry with an average growth of only 1.4 percent from 2010 to 2017 and 0.8 percent in 2018. Since most of the regions are dependent on agriculture, fishing, and forestry, regional economic imbalances have continued to persist, along with poverty, unemployment, and underemployment. The Autonomous Region of Muslim Mindanao (ARMM) has the highest poverty incidence at 54 percent, followed by CARAGA and Eastern Visayas at 39 percent, SOCCSKSARGEN and Northern Mindanao at 37 percent, Bicol at 36 percent, and Zamboanga 34 percent.

One important question is whether or not Industry 4.0 technologies such as artificial intelligence or AI, data analytics, robotics, 3D printing, or Internet of Things will help address regional inequality and poverty and drive the country's industrial development. These new technologies can reduce costs and lead to more efficient and scalable industry, and to the development of new business models, new production techniques, and changes in global value chains that would require new skills and capabilities.

While Industry 4.0 technologies will lead to productivity increases, it may displace workers. McKinsey Global Institute estimates that 48 percent or 18.2 million jobs in the Philippines could be automated with 6.2 million jobs in the agriculture and fishing sector, 3.4 million in retail, and 2.4 million in the manufacturing industry.¹ Francisco et al (2019) indicates the same trend with agriculture, fishing, and forestry sector registering the highest average probability of being automated. Overall, low-skilled, low educated, routinized and hazardous jobs are the most vulnerable to the adverse effects of technological change.²

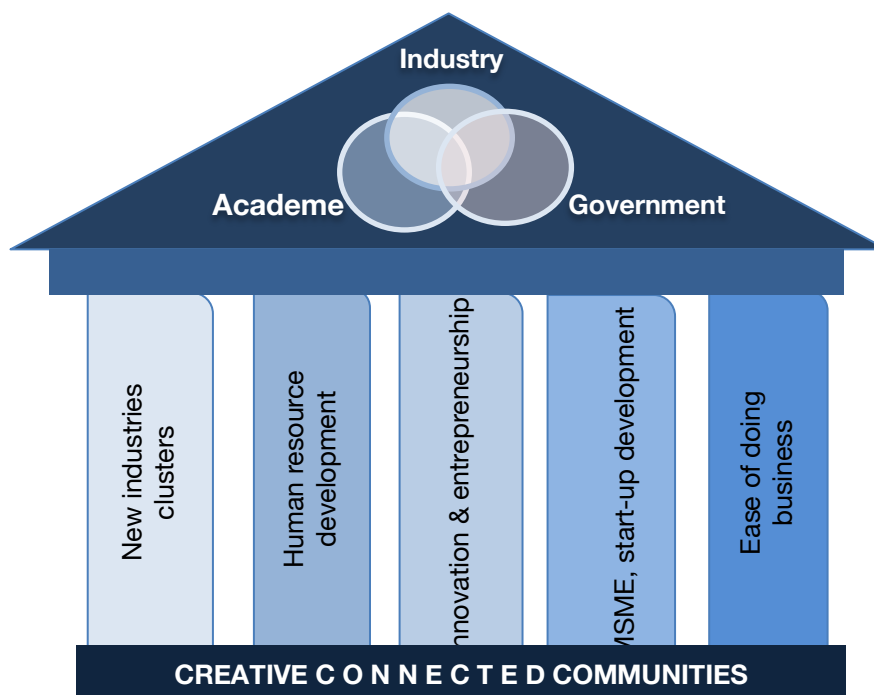
But although some jobs will be lost, new activities will be created. For instance, robots will need operators and manufacturers of robots and robot parts. AI activities will require not only data scientists but also relatively low-skilled jobs such as data cleaning and data annotation.

INCLUSIVE INNOVATION INDUSTRIAL STRATEGY (I3S)

Faced with these challenges, the government is implementing a growth model where a modern industrial sector will play a key role in generating investment and employment. In terms of market orientation, the strategy focuses on both the domestic and export markets using the large consumer base to attract investments and to become a future hub in the global and regional production network of multinational companies.

Innovation is at the heart of the new industrial policy known as inclusive innovation industrial strategy or i³S,³ which aims to develop globally competitive and innovative industries applying new technologies to help the country leapfrog industrially. To achieve sustainable and inclusive growth, the strategy focuses on three areas: creating an innovation and entrepreneurship ecosystem, removing obstacles to growth to build industry clusters, and strengthening domestic supply and value chains to deepen Philippine participation in global and regional value chains and networks. The strategy relies on strong government-academe-education-industry collaboration, with the government acting as main coordinator and facilitator in addressing the most binding constraints that prevent industries from growing. Central to the new industrial policy framework is the process of competition, innovation, entrepreneurship, and productivity relationship.

Figure 1: inclusive innovation industrial strategy or i³S Major Pillars



The industry priorities of i³S cover the following:

- electrical and electronics
- automotive and automotive parts
- aerospace parts and maintenance, repair, and overhaul of aircraft

- IT-business process management and E-commerce
- tool and die, iron and steel
- chemicals
- agribusiness focusing on high value crops like coffee, cacao, coconut, fruits and nuts
- shipbuilding and ship-repair
- garments, furniture, creative industry
- construction, transport and logistics, tourism
- innovation and research and development (R&D) activities and startups
- climate change
- parts and components supply development and inclusive business

These industries were selected based on a discovery process that assessed the industries' strengths, weaknesses, and growth opportunities and their contribution to the following objectives that are crucial for economic transformation: technology upgrading, promotion of innovation, closing of the infrastructure gap, addressing of regional imbalances, generation of more and better jobs, sustainability, creation of spillover and multiplier effects, and strengthening of supply and value chain linkages.

INCLUSIVE FILIPINNOVATION AND ENTREPRENEURSHIP ROADMAP

Currently, the Philippines is ranked 54th in the 2019 Global Innovation Index (GII) from 73rd of 126 countries. It is behind Malaysia, Thailand, and Vietnam. Based on the GII, graduates in science and engineering; trade, competition, and market scale; knowledge absorption and diffusion are among the country's strengths; while the major weaknesses include ease of starting a business, expenditure on education, global R&D companies, ease of getting credit, venture capital deals, and scientific and technical articles. In the last four years, government expenditure for R&D in the national budget has not reached 0.1 percent of GDP. The Philippines also lacks the manpower needed to support innovation and commercialization activities. Its ratio of scientific and technical publications relative to GDP is around 1.6, while Thailand and Vietnam produce more than three times this value (6.5 and 5.6, respectively). Patent applications are also low, even when compared with other Asian countries like Malaysia or Thailand. It is important to note, however, that the country's score and ranking on the university-industry collaboration of the Global Competitiveness Index has improved substantially, moving from 56 in 2018 to 25 in 2019.

To strengthen the innovation performance of the country and address the gaps in the innovation and entrepreneurship ecosystem, the Inclusive Filipinnovention and Entrepreneurship Roadmap focuses on integrating and connecting innovation with entrepreneurship, building an inclusive innovation and entrepreneurship ecosystem, and creating an environment that is conducive to innovation and enabling and supporting the active engagement and interaction of the different players and stakeholders. This emphasizes a market-oriented research policy that pursues the promotion of research and development (R&D) but also the commercialization and diffusion of these R&D investments.

The ultimate goal of the country's innovation and entrepreneurship roadmap is to reduce, if not completely eliminate, poverty in the country. With the right policy framework and innovation-centred strategies and programmes, domestic firms and industries can address the challenges, take advantage of market opportunities arising from new technologies and serve as an engine for sustainable growth, job creation, and poverty reduction especially in regions and rural areas where poverty incidence remains persistently high.

The key elements of the innovation and entrepreneurship ecosystem include universities and research institutions, companies, government innovation agencies, funding and finance sources, services providers, regulatory framework and infrastructure, culture, markets, education and training, support mechanisms, and human capital and workforce. In the Philippines, the ecosystem players include large multinational companies, small and medium enterprises (SMEs) and start-ups, industry associations, universities as research partners and developers of future workforce, and key government agencies like Trade and Industry, Science and Technology, Higher Education, Basic Education, Agriculture, Economic and Development Authority, and Information Communication and Technology. Through a Memorandum of Understanding, the agencies have agreed to collaborate to create and transfer knowledge that would enable new products and new business models to catalyze economic transformation and development.

In order to achieve the overall vision of creating an Inclusive Innovation and Entrepreneurship Ecosystem, the following government-led strategies and recommendations are being pursued vis-à-vis the key elements of the ecosystem:⁴ 1) Development of Human Capital Towards Innovation and Entrepreneurship; 2) Strong Government-Academe-Industry-Linkages; 3) An Enabling Program and Policy (hard and soft) Environment to Accelerate Innovation; 4) An Entrepreneurship Culture and Support Programs for Micro, Small, and Medium Enterprises (MSMEs); 5) Creation of Funding & Finance Programs to Incentivize Innovation; and 6) Growth and Development of Industry Clusters.

Startups are expected to play a vital role in developing the innovation and entrepreneurship ecosystem, particularly in electronics, automotive, aerospace, agriculture, IT, transport, logistics, finance, education, and other services sectors. There are over 500 startup companies valued at US\$378 million. The Philippines has a young population, full of potential and embedded capabilities. There is a growing focus among startups on fintech, enterprise solutions, AI, and machine learning. The country's startup ecosystem is still in the activation phase and will need more sizable exits, more immigrant founders and foreign engineers, and funding to move to the globalization phase.

In 2019, two important innovation legislations were approved by the President: the Philippine Innovation Act and the Innovative Startup Act. The new legislations will create an innovation fund of US\$20 million, implement ease of doing innovation measures to remove barriers to innovation, establish innovation centres and business incubators, provide financial subsidies for startups (tax breaks, grants, exemption from registration and application fees), startup visas, create startup grant fund, innovative startup venture fund, and build startup ecozones. So far, the Philippines only has one unicorn—Revolution

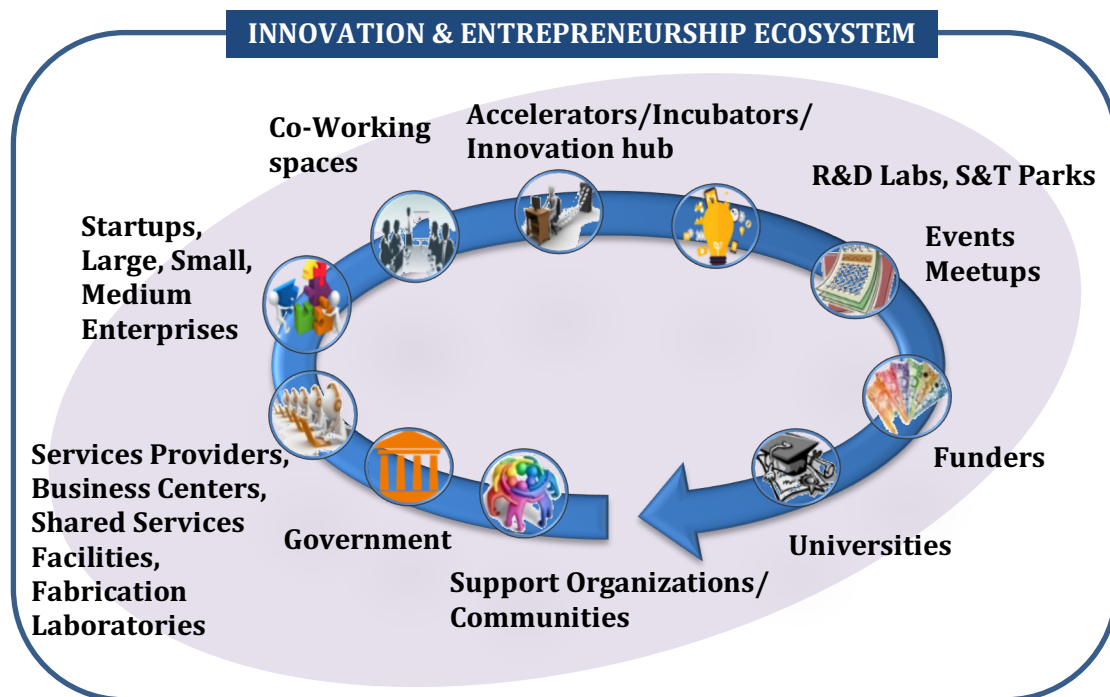
Precrafted, a disruptive business that provides prefab homes and pavilions designed by the world's top architects and artists who are unobtainable to most people due to their mid-size budget. With government support through the above measures, the Philippines aims to foster a business environment conducive to a culture of entrepreneurship and continuous innovation of products and services, and billion-dollar startups.

RIICS TO BRIDGE GAPS IN THE ECOSYSTEM AND BUILD CREATIVE CONNECTED COMMUNITIES

The establishment of Regional Inclusive Innovations Centers or RIICs to build the local innovation ecosystems is one of the major recommendations of the Filipinnovation and Entrepreneurship Roadmap based on the focus group discussions and stakeholder consultations that were conducted all over the country. RIICs will constitute an innovation network or platform of creative communities in various regions of the country linking together the different stakeholders in the innovation and entrepreneurship ecosystems towards market-oriented research that addresses societal issues and industry problems and produces new products and services. They will be nurtured by the collaboration of government, industry, and education/academia through policies, programmes and projects that continuously develop human capital; ensure access to funding and other sources of financing; and provide the needed support mechanisms and services for the commercialization of research.

The RIICs are envisioned as being at the core of Philippine economic transformation and serving as the linchpin of productive collaborations between and among industries, universities, government agencies, local government units, start-ups, micro, small, and medium enterprises, R&D laboratories, science and technology parks, incubators, fabrication laboratories, shared services facilities, business centres, and investors, among many other local players. Moreover, the centres serve as platforms for DTI's inclusive innovation industrial strategy (i³S) which aims at growing innovative and globally competitive manufacturing, agriculture, and services, while strengthening linkages into domestic and global value chains.

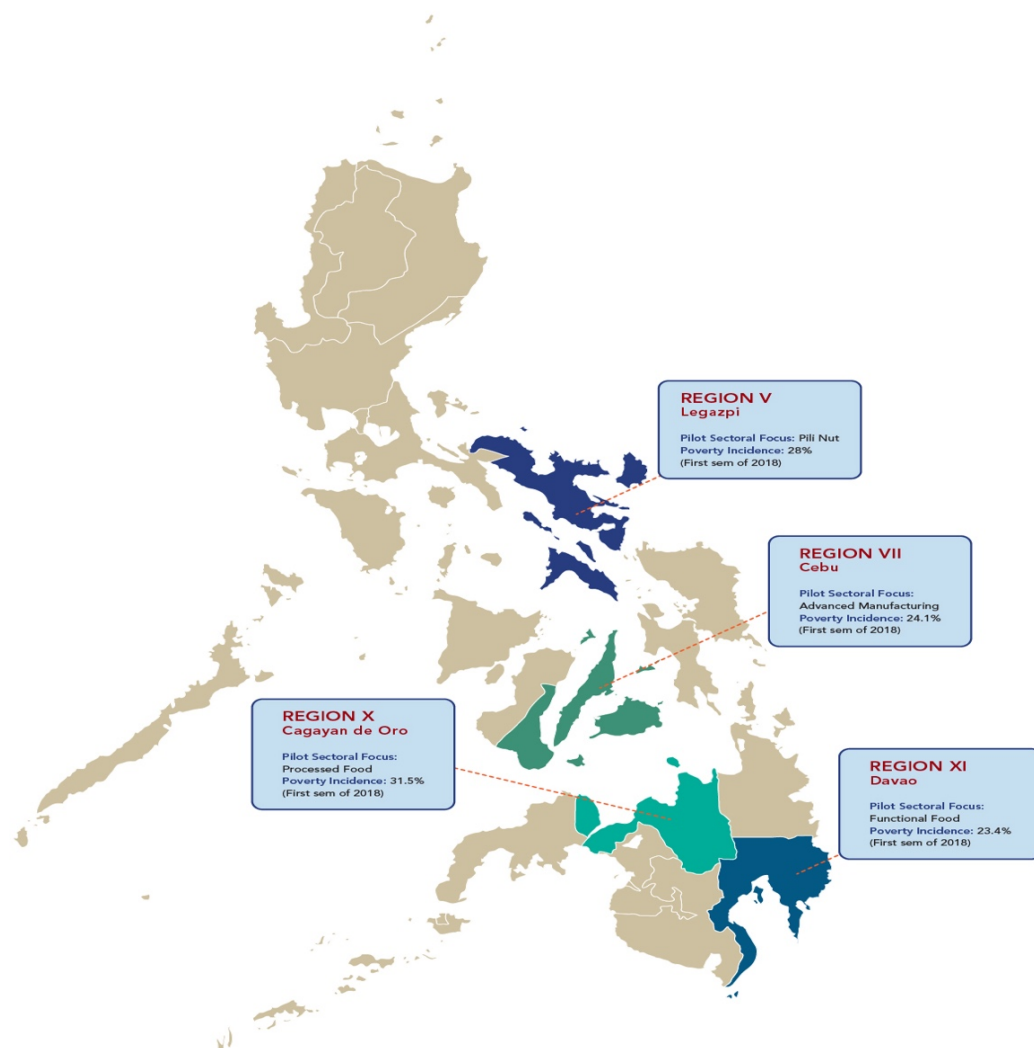
Figure 2: Regional Inclusive Innovation Center



In the end, the RIICs will constitute an innovation network or platform of creative communities in various regions of the country, propelled by innovative and entrepreneurial Filipinos, who are driven by their desire to do things better, provide solutions, make better products, and address market demands. The RIICs will focus on market-oriented research providing solutions to societal issues and industry needs through the development of new products and services, particularly in auto, electronics, aerospace, IT-BPM, and agribusiness.

The RIICs will be nurtured by policies, programmes, and projects that continuously develop human capital; ensure access to funding and other sources of financing; and provide the needed support mechanisms and services for commercialization. All of these activities, interactions, and partnerships will be fostered in an environment in which institutions, infrastructure, intellectual property rights system, culture, and customers enable more and better innovation, and entrepreneurship throughout the country.

Figure 3: Location of Pilot RIICs



Currently, the RIICs initiative is piloted as a virtual platform connecting stakeholders from government, academe, and industry in Cebu, Legaspi, Cagayan de Oro, and Davao (see Figure 3). The Department of Trade and Industry is partnering with community stakeholders such as startups, industry, farmer cooperatives, and researchers to build the capacity of stakeholders in R&D ideation and design-thinking process and carry out studies and adapt new technologies to address socio-economic problems in the pilot areas. Cebu is looking at advanced manufacturing, particularly in electronics and semiconductor. Legaspi is targeting pili nuts to find ways to add value to the product, while Davao and Cagayan de Oro are prioritizing coffee, cacao, and fruits and nuts. In Davao, an interactive application that will help micro, small and medium enterprises access government services and innovation programs is being developed. To support these agricultural areas, researchers and other stakeholders are focusing on R&D to provide technology solutions to problems such as low productivity, insufficient postharvest facilities, lack of quality of planting materials, pests and diseases. In Cebu, R&D in advanced manufacturing will be crucial to leapfrog to

Industry 4.0. To pursue this, Cebu-based companies are partnering with academe to conduct joint R&D and formulate training programmes to improve worker capabilities.

Through i3S, the government is consciously aware that the shift to new technologies/Industry 4.0 should leave no person, no industry, no enterprise, no region behind. More attention should be given to Internet capability, broadband access, computerization, and electricity supply. At the same time, the education and training systems need to be adjusted to deliver the skills required for Industry 4.0.

The RIICs to be built around the country are envisioned to become connected creative communities driven by science, technology and innovation and the commercialization of market-oriented research. In the near future, the RIICS will be transformed into physical infrastructure providing R&D, incubator and accelerator facilities where startups and companies can go for innovation and linkages creation services provided by both national and local government units and the private sector. Innovative products, services, processes, or new business models resulting from R&D activities and addressing community problems will emerge from the RIICs. As the linchpin of the country's new industrial policy, the RIICs will drive regional development and economic transformation leading to new investments, job generation, higher incomes, improved quality of life, and shared prosperity for the Filipino people.

¹ See Moraje, Suraj. (2017). "Seizing the automation opportunity in the Philippines", McKinsey Institute, at: <https://www.mckinsey.com/featured-insights/asia-pacific/seizing-the-automation-opportunity-in-the-philippines>

² See Francisco, Jamil Paolo and Flores, Stephanie Rose and Canare, Tristan and Caboverde, Christopher Ed and Borja, Benjur Emmanuel and Monterola, Christopher. (2019). Mapping Philippine Workers at Risk of Automation in the Fourth Industrial Revolution. Available: <https://ssrn.com/abstract=3366809>

³ See DTI Policy Brief 2017-05 "Philippine Inclusive Innovation Industrial Strategy: Propelling Jobs, Investments, and Shared Prosperity for All".

⁴ For a more detailed discussion, refer to DTI Policy Brief Special Issue "The Philippine Inclusive Filippinnovation and Entrepreneurship Roadmap" <http://industry.gov.ph/wp-content/uploads/2018/12/Inclusive-Filippinnovation-and-Entrepreneurship-Roadmap.pdf>

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