Inclusive Innovation Industrial Strategy (i3S) Propelling jobs, investments, & shared prosperity for all

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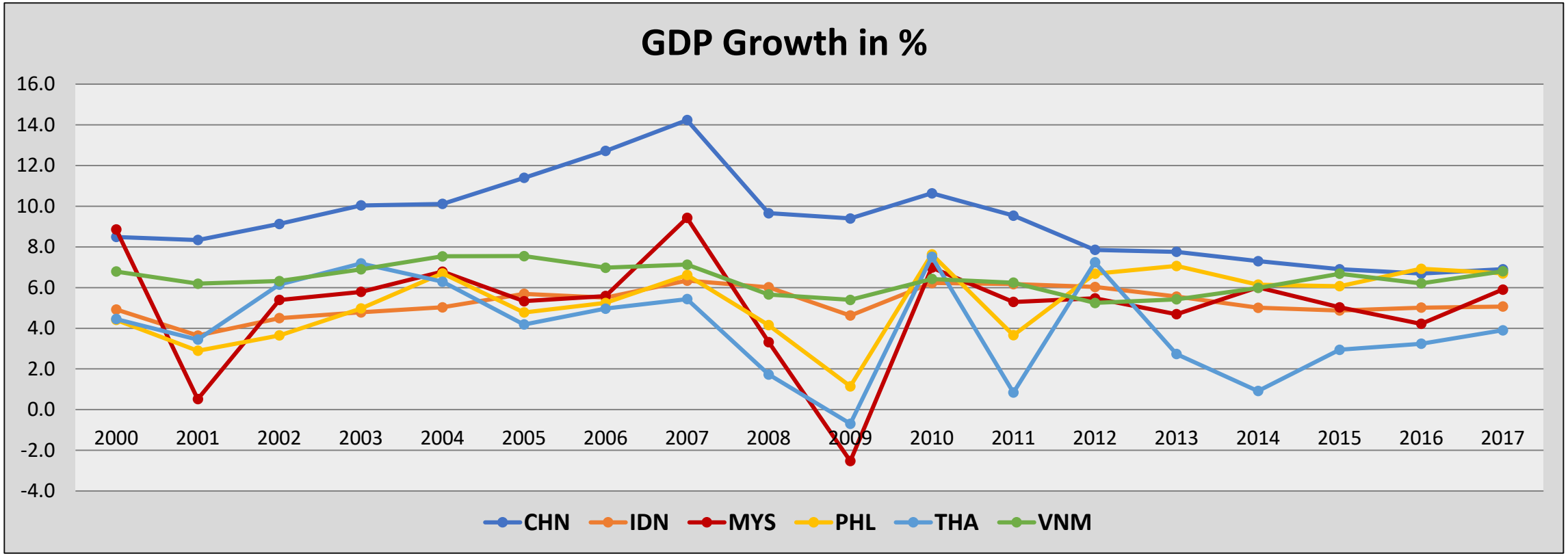
DTI-BOI
ERDT Conference, Manila
27 September 2018

Presentation Outline

Inclusive & sustainable innovation-led industrial policy for poverty reduction and economic transformation

- Macro Performance & Economic Structure
  - Remarkable performance but poverty has remained
- New Industrial Strategy: inclusive, innovation industrial strategy (i^3s)
  - Five Pillars and Strategic Actions
  - Top 12 Industry Priorities
- Inclusive Filipinnovation & Entrepreneurship Roadmap
  - State of innovation: strengths, weaknesses
  - vision, where do we want to go, how to get there
- Implications for Research Institutions, Academe, and Education

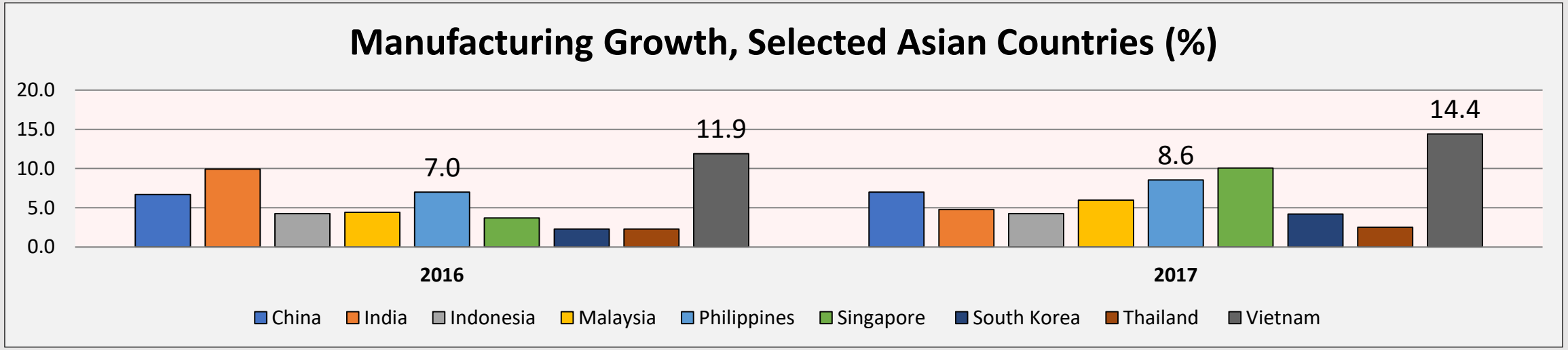
Macro Performance

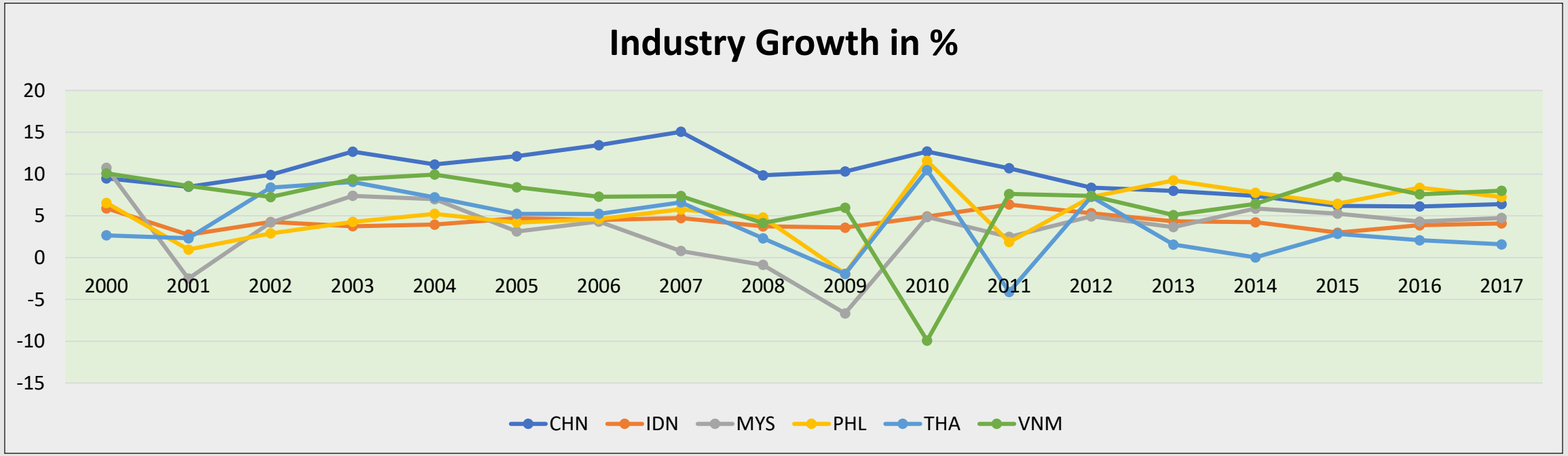


Source: World Development Indicators, The World Bank

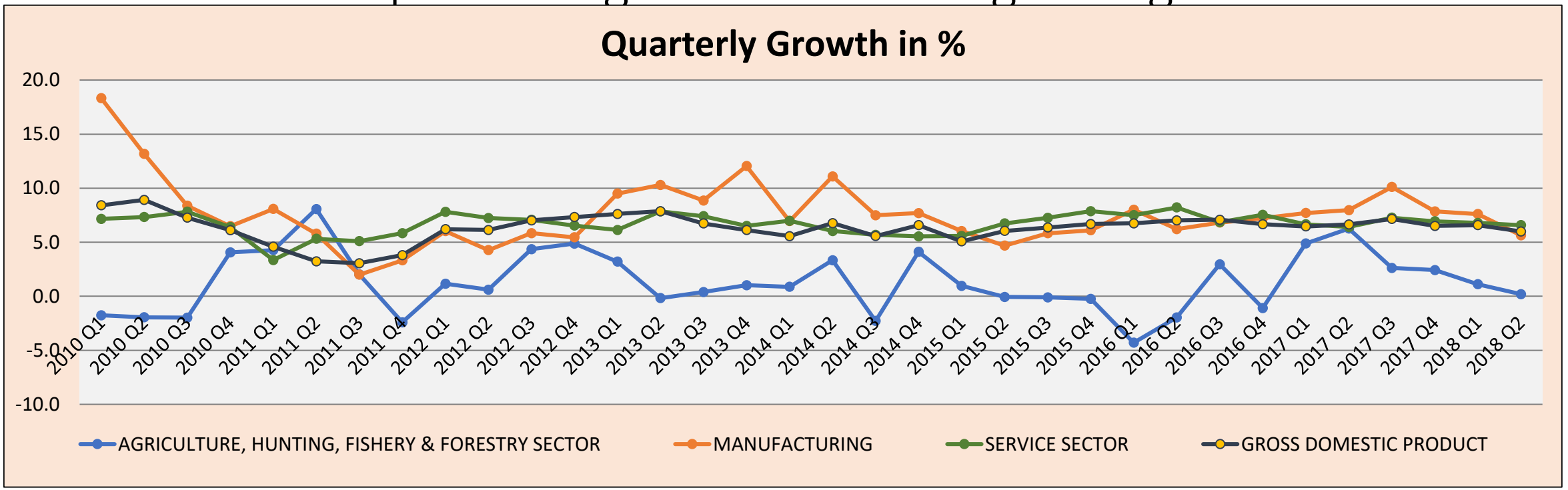
- Amid economic & global uncertainty, PH grew 6.4% from 2010 to 2017
- 2017: China 6.9%, Vietnam 6.8%, **Philippine 6.7%,** Malaysia 5.9%, Indonesia 5.1%, Thailand 3.9%
- PH: 2018 Q2 growth: 6%, 2018 H1 growth: 6.3%

High industry growth driven by manufacturing





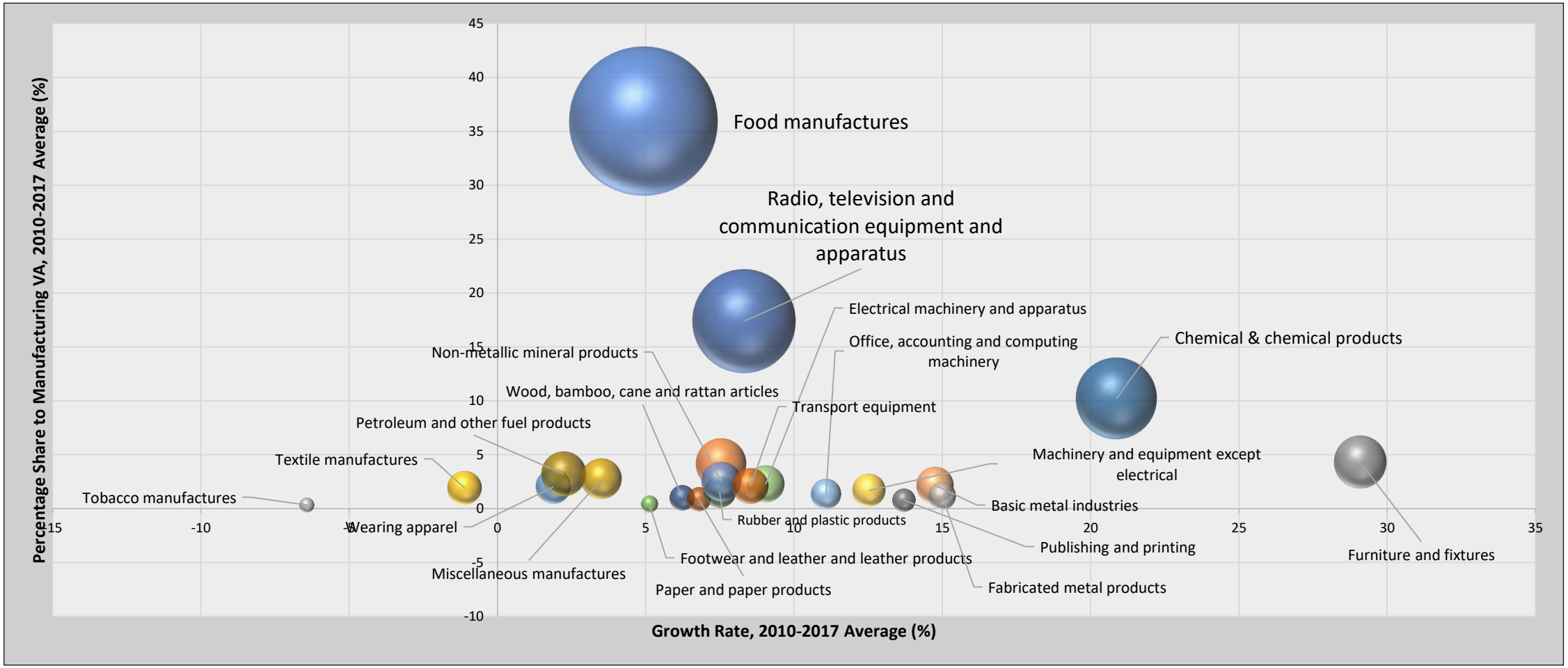
PH experiencing a manufacturing resurgence



- rising costs in China; growing domestic market, growing middle class, good macro performance; young English speaking workforce
- 2018 Q2 growth: 5.6%, 2018 H1 growth: 6.6%

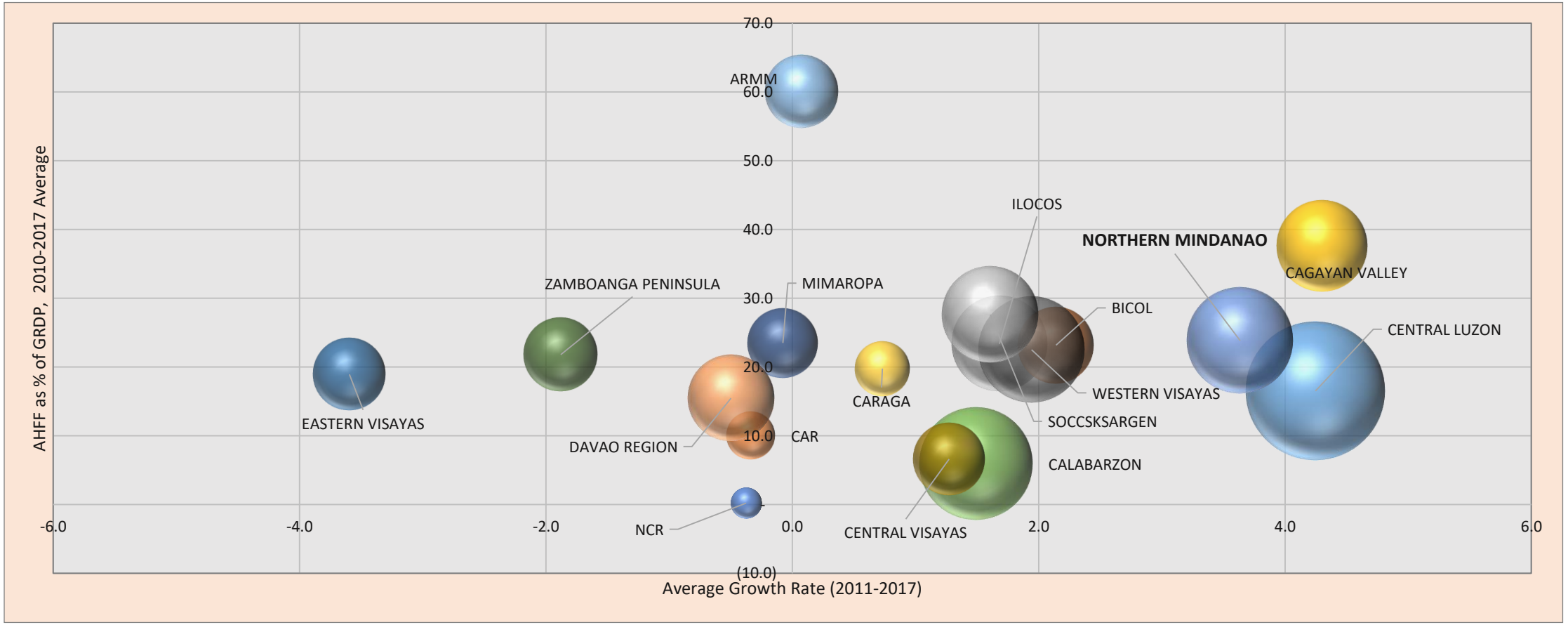
Period	Manufacturing	Services	Agriculture, fishing, forestry
2000-2009	3.2	5.2	3.2
2010-2017	7.6	6.7	1.4

Leading sectors: food manufacturing, electronics, chemicals



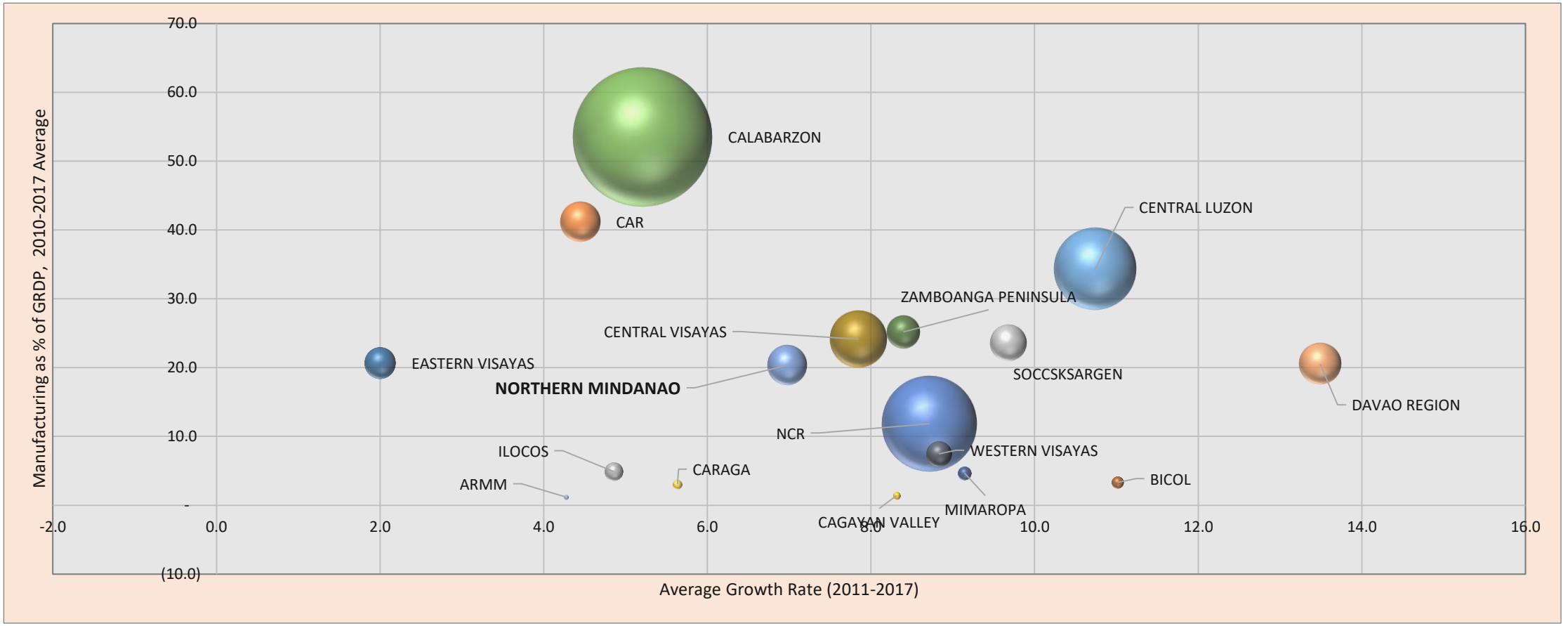
- Food manufacturing dominated with a share of 33.5% in 2017
- Growth in 2017: 5%, 8.2% in 2016

Regional economies still dependent on agriculture



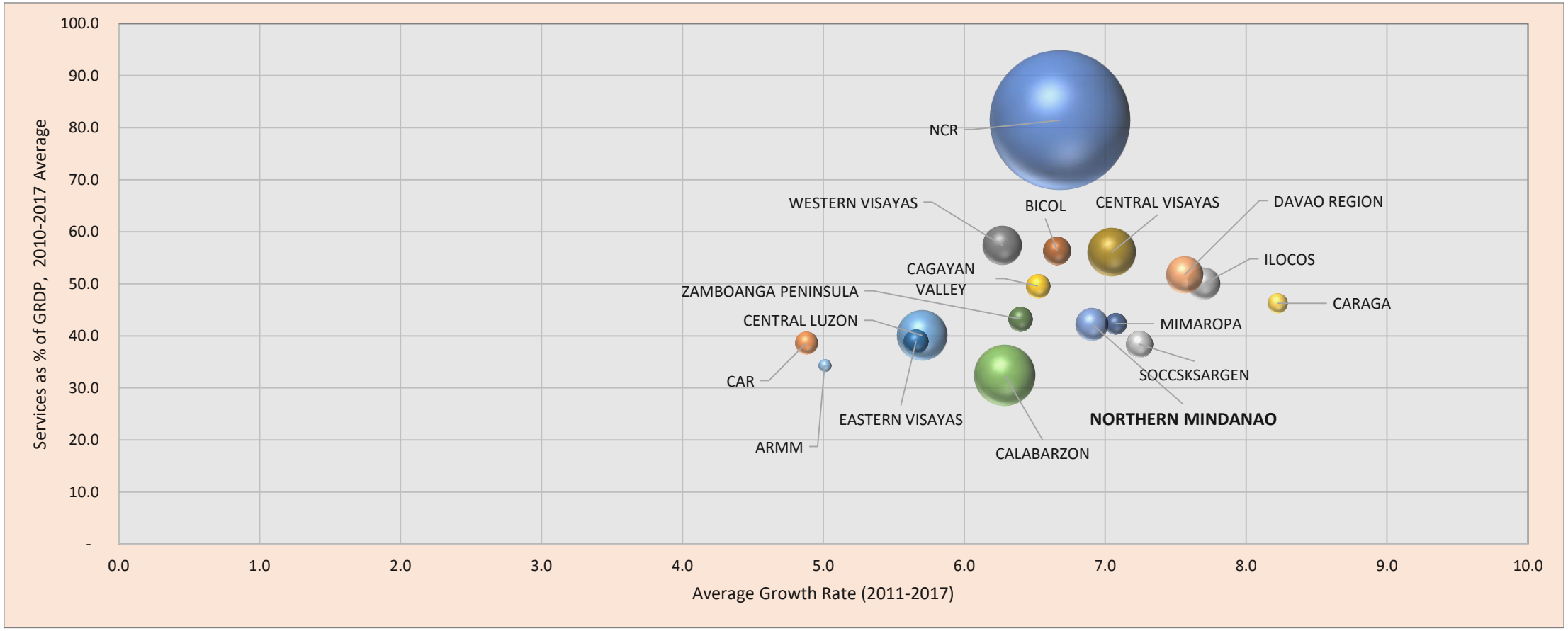
- Except for NCR, our regional economies are still dependent on agriculture, forestry, and fishery
- In terms of size, the largest contributors are led by Central Luzon (14.8%) followed by CALABARZON (10.0%), Western Visayas (8.9%), Northern Mindanao (8.6%), & SOCCSKARGEN (7.4%)

Manufacturing is confined in Regions 4A, NCR, & 3



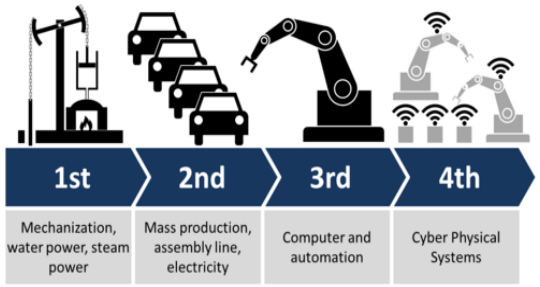
- Manufacturing activities have been largely confined in CALABARZON (41.0%), followed by NCR (18.5%) and Central Luzon (13.5%)
- Central Visayas (6.6%) and Davao (3.3%) trying to catch-up

Services is concentrated in NCR

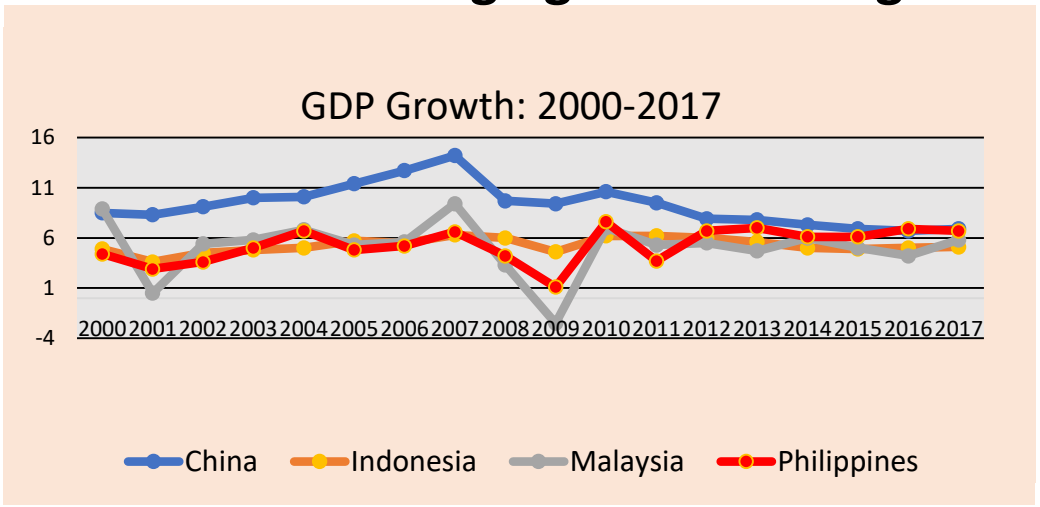


- Huge imbalance among the regions in terms of services; services is highly concentrated in highly urbanized NCR accounting for 51.8% of total
- Outside NCR, services is quite high only in relatively large economic areas led by CALABARZON (9.9%) followed by Central Luzon (6.6%), & Central Visayas (6.2%)

New Industrial Strategy
global & domestic context



PH: Asia's Emerging Economic Tiger



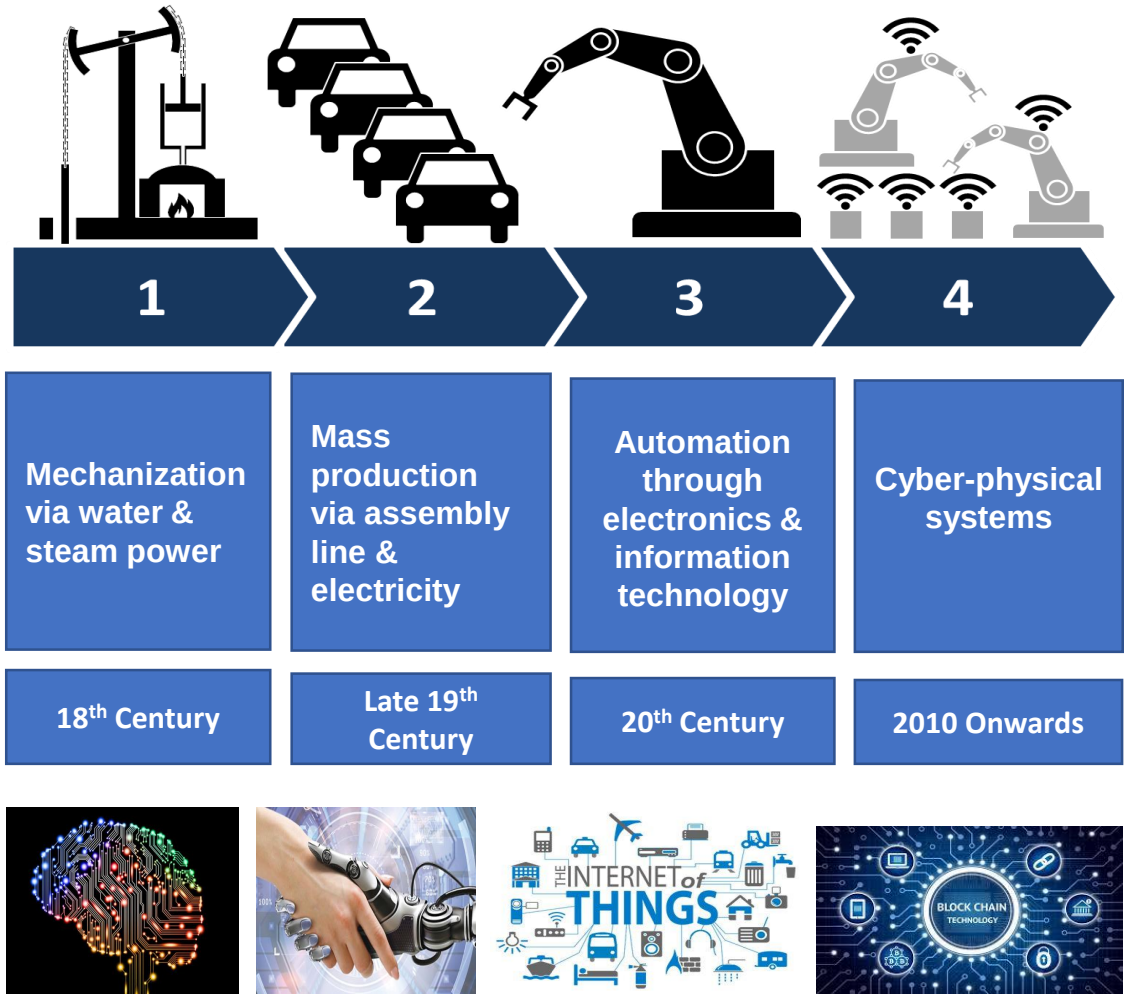
Poverty incidence remains high

ARMM	53.7%	N. Mindanao	36.6%
CARAGA	39.1%	Bicol	36%
E. Visayas	37.3%	Zamboanga	33.9%

#TaxReformNow
Department of Finance's proposal on tax reforms

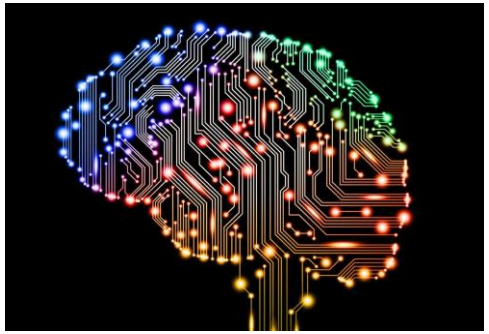
i3s Inclusive Innovation Industrial Strategy

4th Industrial Revolution: impact on industries



- spur development of new production techniques & business models that would transform global production systems
- drive new, more distributed & connected value chains
  - trigger selective reshoring, nearshoring & other structural changes in GVC
  - certain skills & capabilities will be required at each stage of the GVC
- add another layer of complexity to the challenging tasks of developing globally competitive industries
  - put at risk the viability of low cost manufacturing & services exports as source of growth & development

Industry 4.0 disrupting business models at an accelerated pace, is PH ready?



PH: low level of readiness for future production, at risk

Weak institutional framework, human capital, technology & innovation (WEF 2018)

Upgrade technology platform, reskill/up- skill workers

Innovation: animating force behind the future of production

Some Philippine industries in 3.0, many are still transitioning from Industry 2.0 to 3.0

IT-BPM: strong in voice, to move up the value chain, non-voice high value knowledge process outsourcing

Automotive: completely-knocked-down (CKD) assembly & parts manufacturing like large plastic and metal body parts, strategic parts

Electronics: mainly semi conductor manufacturing services particularly in labor-intensive, back-end assembly process & test

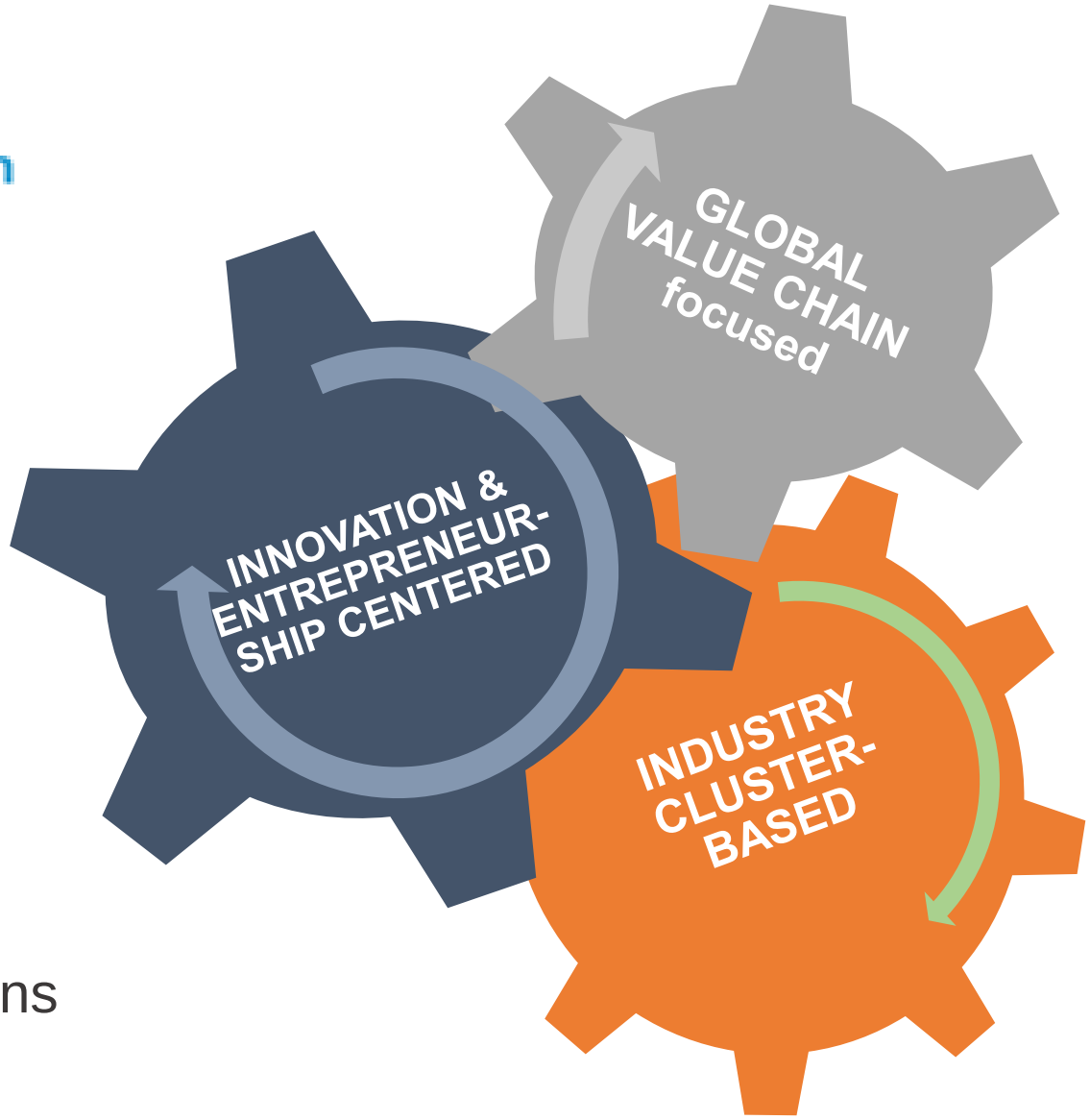
Agriculture still in mechanization phase

New Industrial Strategy
GLOBAL & DOMESTIC CONTEXT

i3s Inclusive Innovation Industrial Strategy

Overall Goal

- Build innovation & entrepreneurship ecosystem
  -> upgrade & develop new industries
- Remove obstacles to growth
  -> attract investments, create jobs
- Strengthen domestic supply chains & participation in global/regional value chains
  -> link manufacturing with agriculture & services

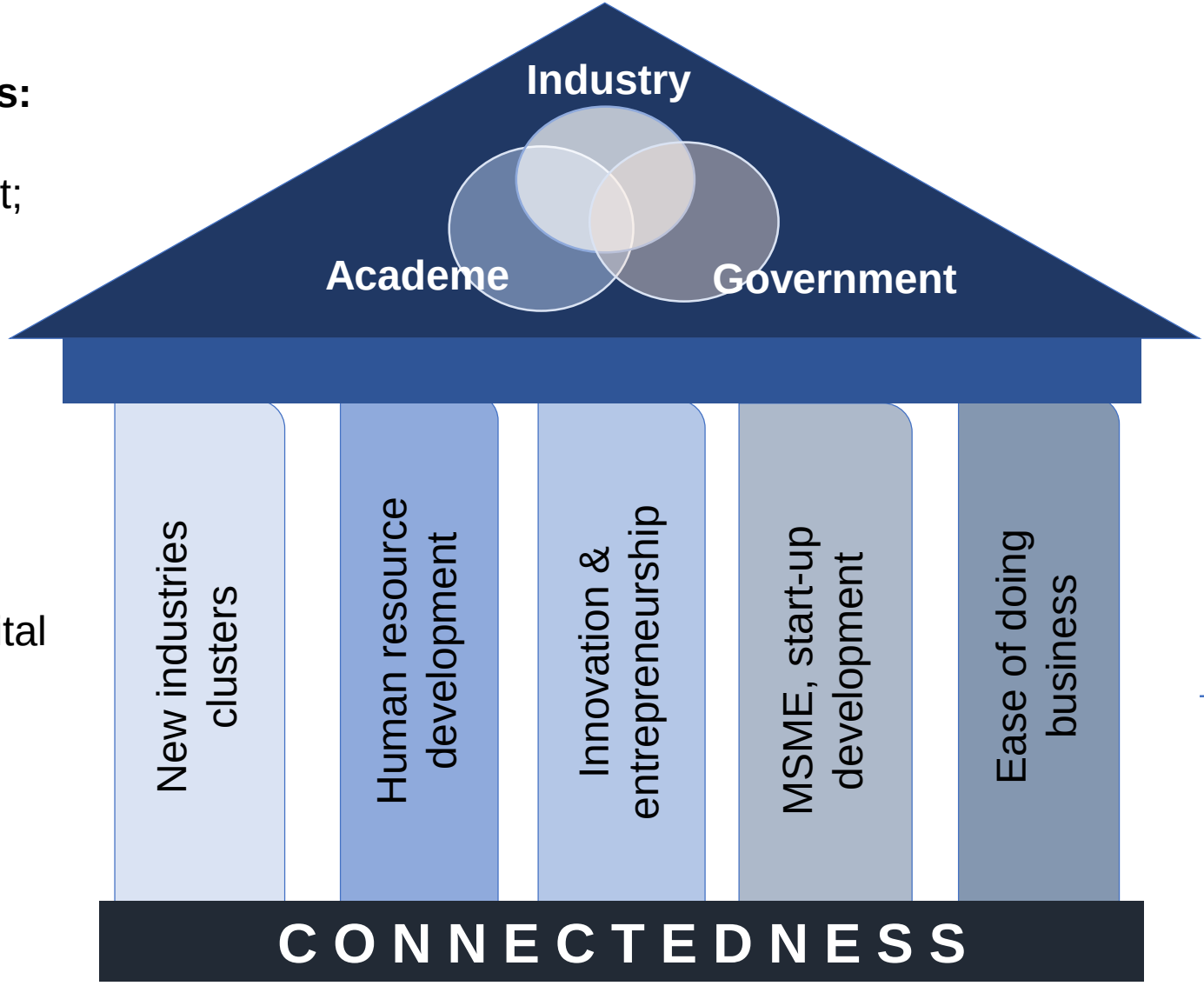


Role of Government: address coordination & market failures; create proper environment for private sector growth

New Industries, clusters: supply/value chain gaps; domestic & export market; trade & investment promotion; incentives

Human Resource Development upgrading education curricula, skills training programs, improving digital skills

MSMEs: access to finance, markets, skilled labor, technology
7Ms: mindset, mastery, mentoring, money, machine, market, models



Strong government-academe-industry collaboration

Innovation & Entrepreneurship: government-academe-industry linkage, market-oriented research; R&D centers, innovation incentives; shared facilities & support for startups, regional inclusive innovation hubs

Ease of Doing Business: simplification of processes, automation; power, logistics, infrastructure

i^{3}S Five Major Pillars

Top 12 Priorities for Both Domestic & Export Markets

Electrical & Electronics

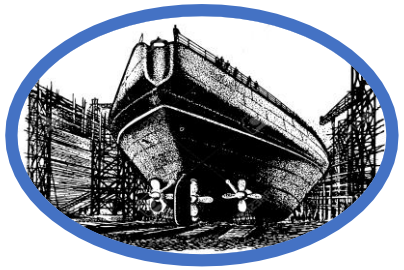
IT BPM, E-Commerce

Agri-business

Transport, Logistics, Construction, Tourism

Auto & Auto Parts

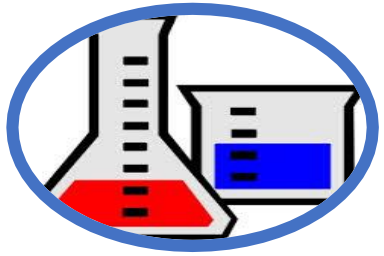
Tool & Die, Iron & Steel



Shipbuilding, RORO

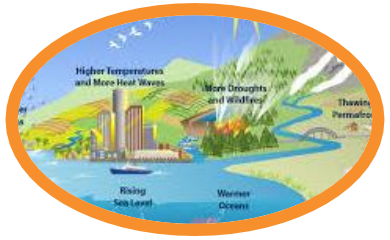
Innovation, R&D

Aerospace Parts



Chemicals

Furniture, Garments, Creative



Climate Change, Parts & Components

Hi-technology, innovation/R&D, infrastructure, regional imbalance, labor-intensity, sustainability, spill-over/multiplier effects, value/supply chain linkage

Regional Industry Priorities

CAR: coffee, processed vegetables, aerospace, electronics, tourism

4B. seaweed, tablea, rubber, coco coir, tourism

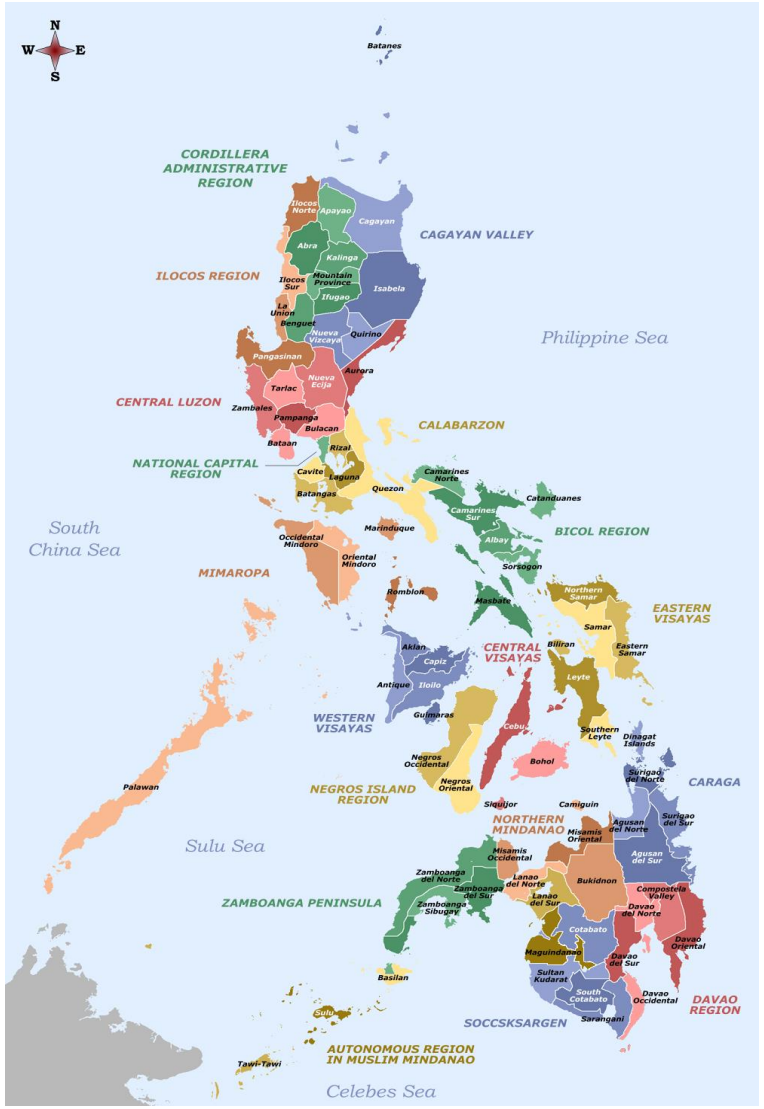
5. metal casting, coco coir, health care, agribusiness

6. processed meat, processed shrimp, tourism

7. seaweed/carrageenan, dried mangoes, furniture, IT-BPM, shipbuilding, tourism

10. rubber, bamboo, cacao, coco coir, coffee, agribusiness, tourism

11. processed meat, seaweed/carrageenan, cacao/ tablea, agribusiness, tourism



ARMM: coffee, rubber, cacao, palm oil, agribusiness

1. coffee, cacao, processed fruits, processed meat, tourism

2. processed fruits, processed meat, coffee, furniture, cacao, agribusiness

3. bamboo, furniture, aerospace, processed meat, shipbuilding, aerospace

4A. auto, electronics, petrochemical, IT-BPM, chemicals, aerospace

8. processed meat, copper, processed marine, processed fruits, natural health, agribusiness

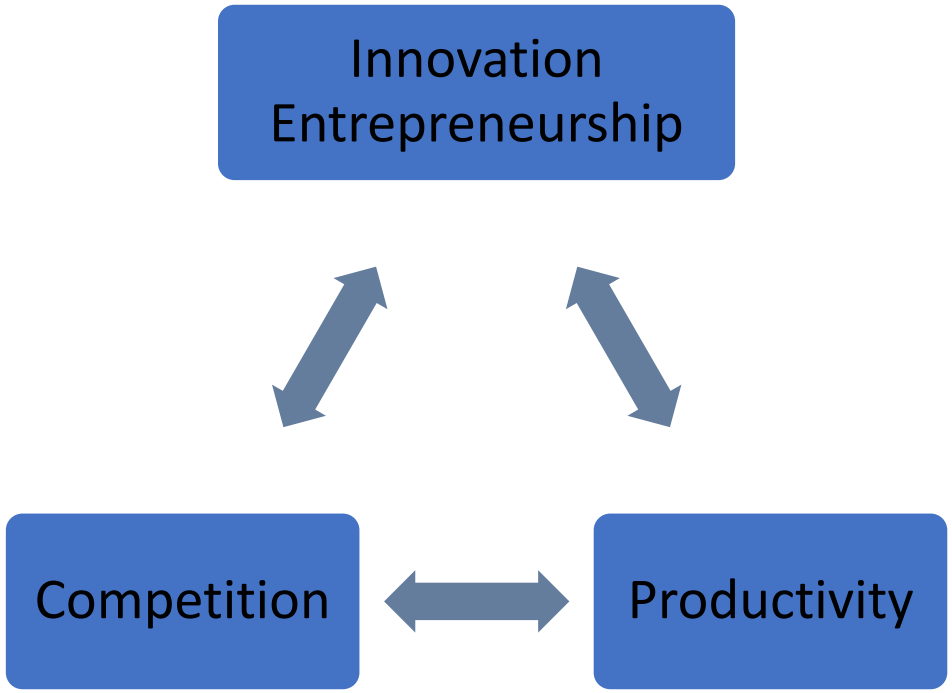
9. Rubber & rubber prods, coconut & coconut prods, fish & fish prods, mango & mango prods, seaweed & seaweed prods

12. rubber, palm oil, processed fish/aquamarine, tourism, agribusiness

13. processed marine, palm oil, rubber, agribusiness

Global Innovation Index 2018

Innovation is at the front & center of our new industrial policy

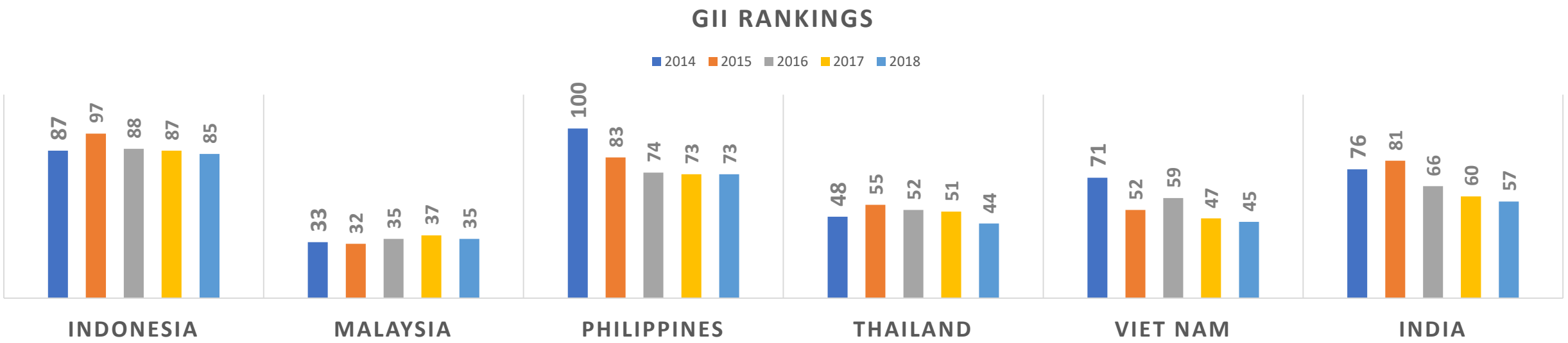


ASEAN

5. Singapore
35. Malaysia
45. Viet Nam
44. Thailand
57. India
73. Philippines
85. Indonesia

Underlying Framework of PH industrial strategy
COMPETITION- INNOVATION-PRODUCTIVITY NEXUS

Global Innovation Index



STRENGTHS:

graduates in science & engineering (#17)

gross capital formation, % of GDP (#32)

market capitalization, % of GDP (#17)

trade, competition & market scale (#30);

firms offering formal training (#9);

research talent (#7);

high & medium high-tech manufactures (#27)

ICT services exports (#8)

WEAKNESSES:

political stability and safety (#117)

ease of starting a business (#121)

expenditure on education, % of GDP (#109)

pupil-teacher ratio, secondary (#95)

ease of getting credit (#111)

ease of protecting minority investors (#112)

science & technical articles (#120)

Institutions (#93)

Market sophistication (#100)

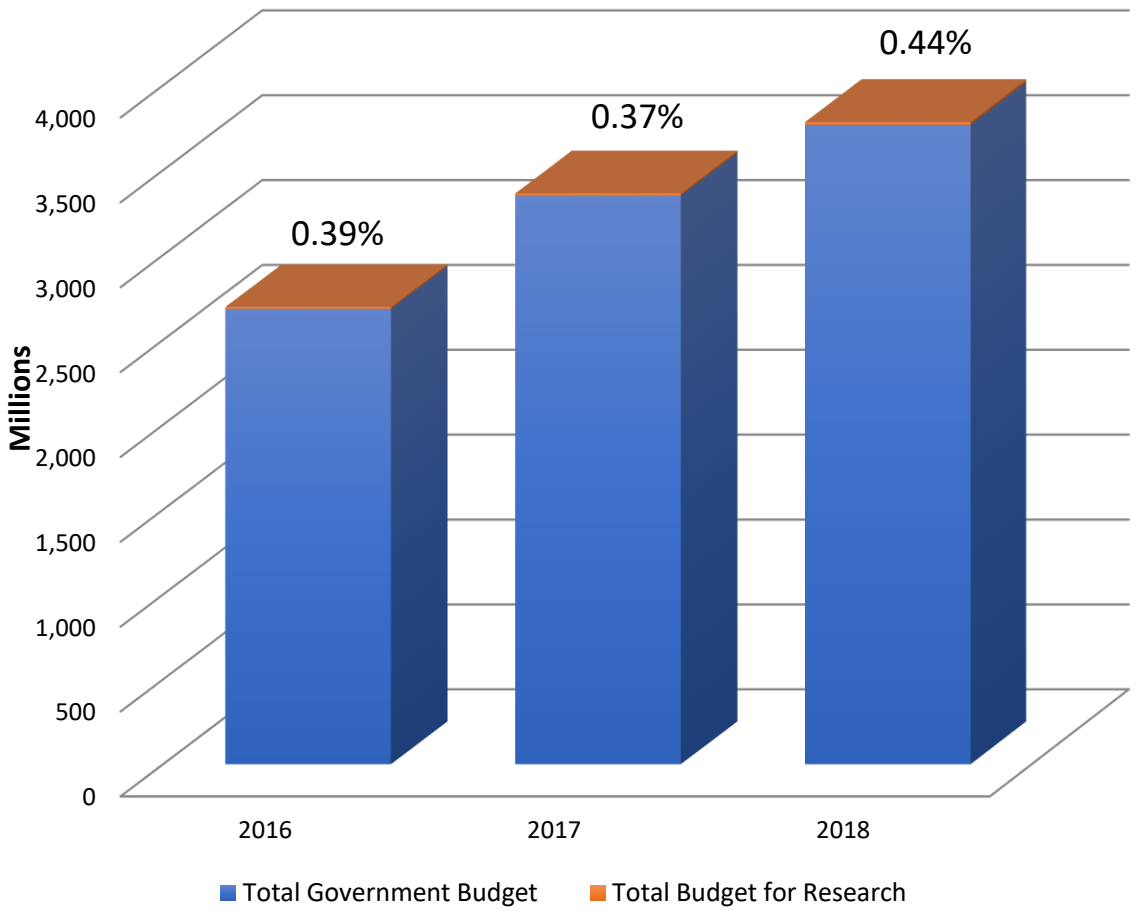
Creative outputs (#92)

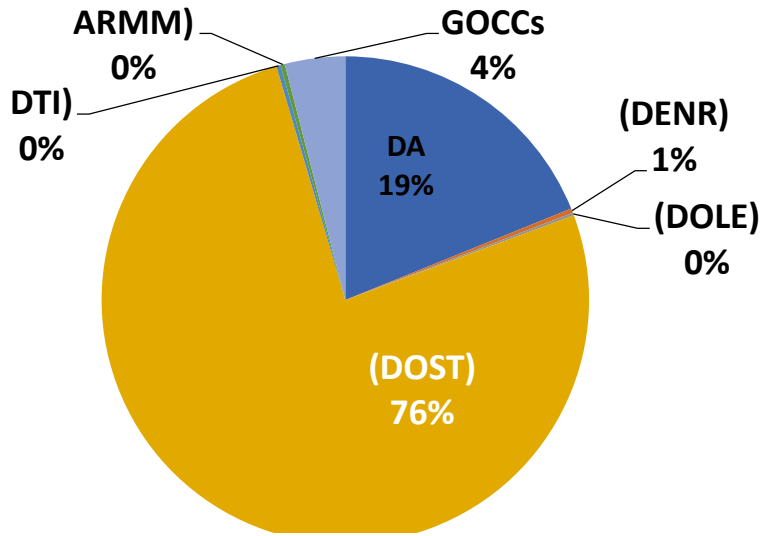
ICT access (#86)

ICT use (#83)

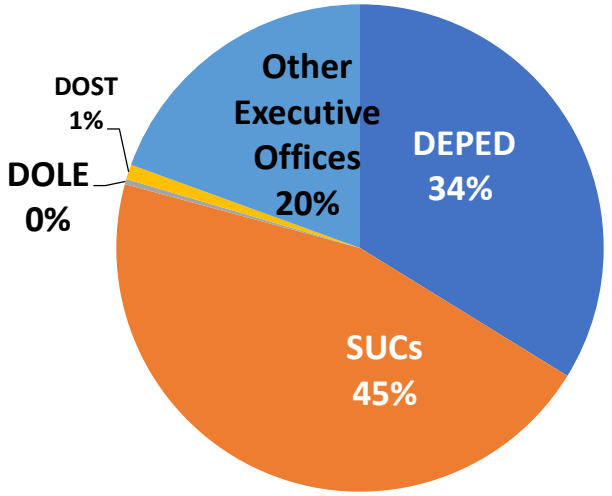
Innovation linkages (#93)

Government Research Budget





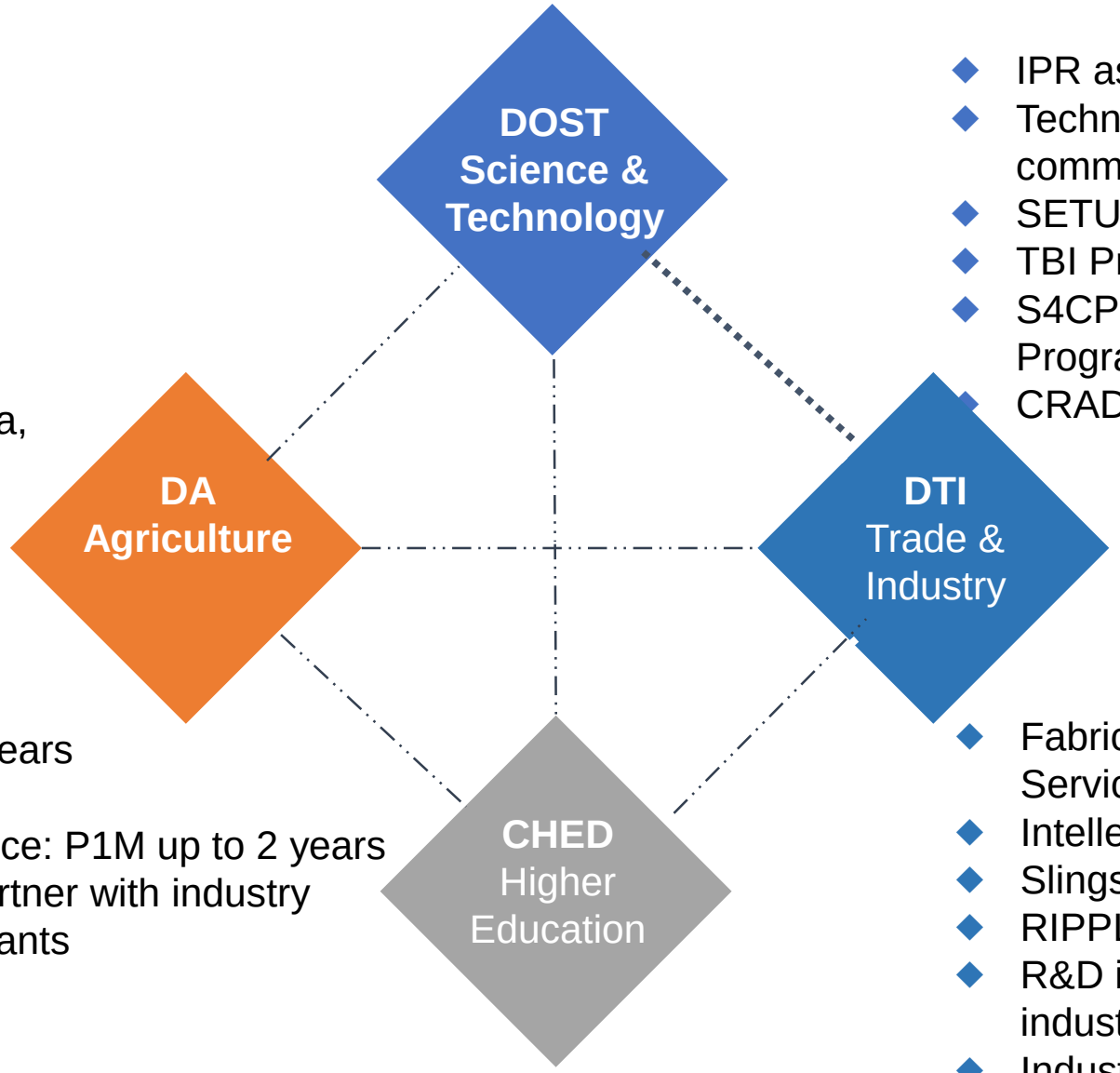
R&D Economic Affairs 2018



R&D Education 2018

Limited coordination among research-granting agencies

- Community-based participatory action research (CPAR)
- National Technology Commercialization Program (NTCP)
- National Commodity Programs: rice, corn, cassava, HVCs
- National thematic programs: organic agriculture, climate change, biotechnology

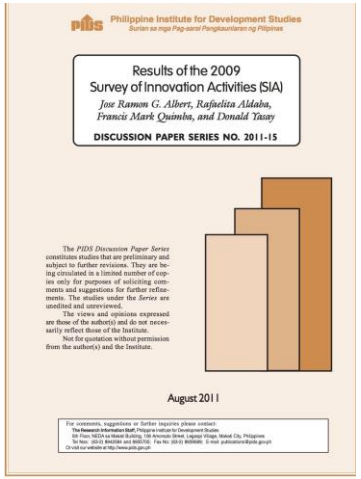


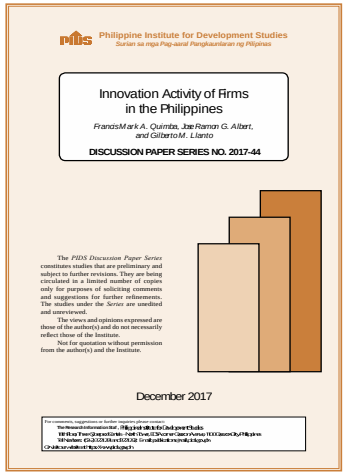
- IPR assistance thru TAPI
- Technicom: technology innovation for commercialization
- SETUP
- TBI Program: diffusion of technology
- S4CP: NICER, R&D Leadership Program
- CRADLE, BIST

- Block Grants: P10M up to 2 years
- Regular GIA: P500-P10M
- Frontiers in research excellence: P1M up to 2 years
- Industry 4.0 grants: HEI to partner with industry
- International Collaborative Grants
- Masters or Doctoral Theses
- REALM: capacity building

- Fabrication Laboratories, Shared Services Facilities, Negosyo Centers
- Intellectual Property Protection
- Slingshot, Funding: SBCorp
- RIPPLES
- R&D incentives & incentives for new industries, technologies
- Industry development & roadmaps

Weak linkage between industry & academe

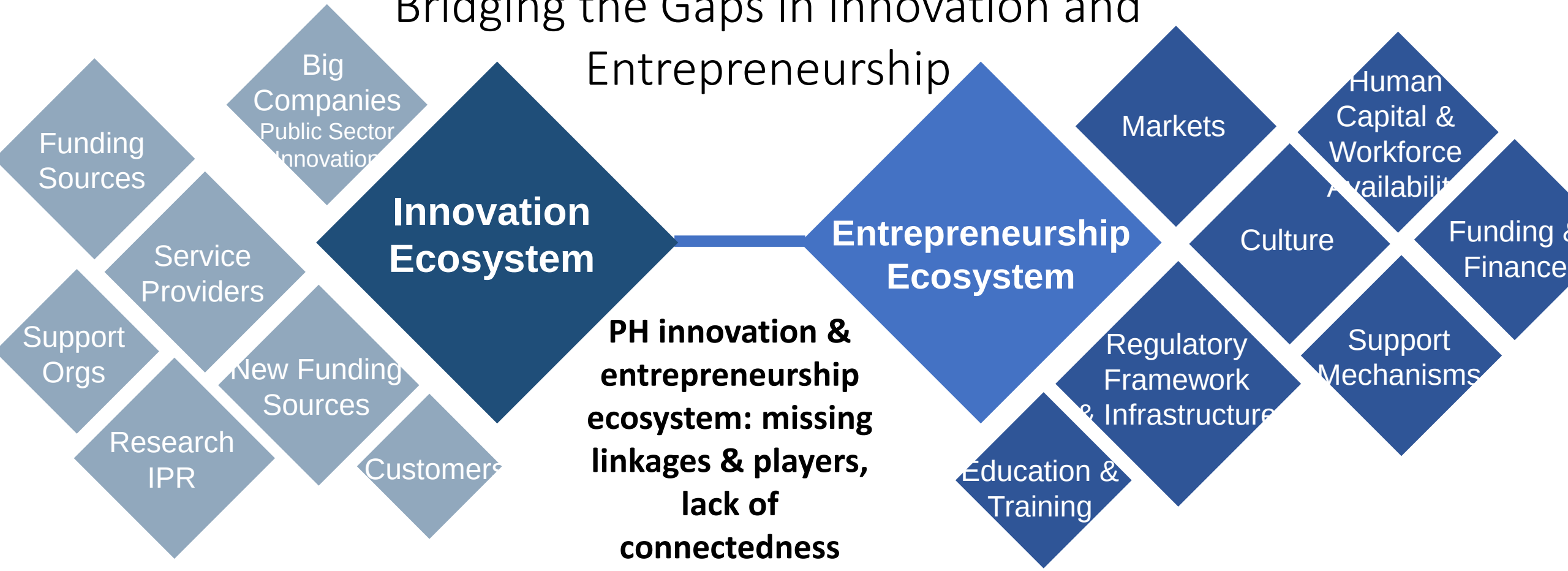




- Low GERD due to limited resources
- 42.9% of surveyed firms are innovation active
- Lack of appropriate incentives to produce competitive & relevant research at universities
- Widespread mistrust between university & industry communities, more competition than collaboration
- Lack of strong culture of research in universities

- Open innovation exist in the supply chain but not with academe
- Lack of STEM-oriented PhD programs, limited post-doctoral research training
- No critical mass in terms of volume of research
- Difficulties in procurement laws

Bridging the Gaps in Innovation and Entrepreneurship



PH innovation & entrepreneurship ecosystem: missing linkages & players, lack of connectedness

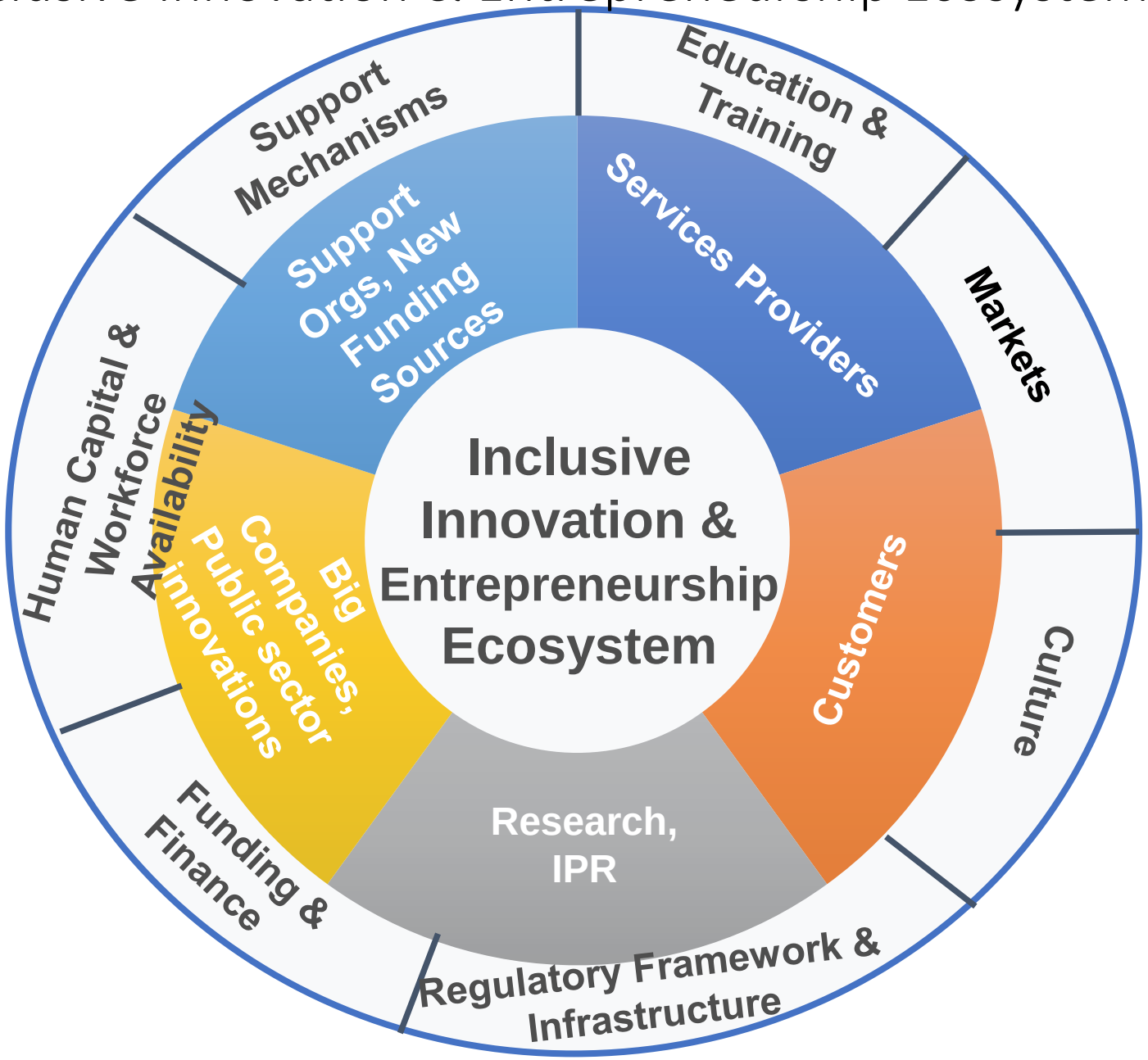
- **Strong collaboration among government, academe, industry → connected country**
- **Strong business & policy environment → sustainable growth**
- **Creative talent pool: critical mass**

poverty reduction

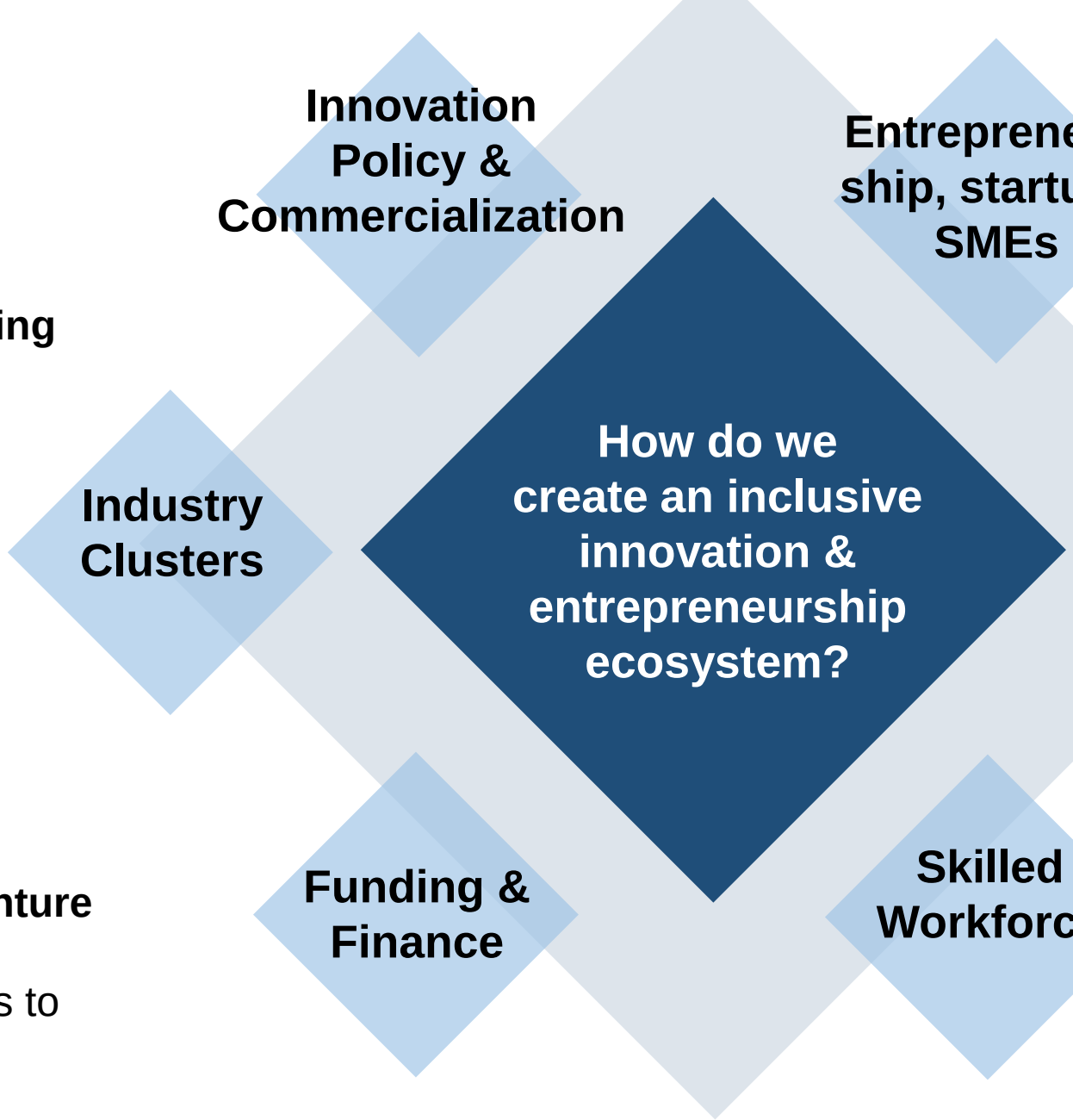
Source: Startup Commons, From Innovation Ecosystems to Startup Ecosystems, 2017; World Economic Forum 2012

Vision: Inclusive Innovation & Entrepreneurship Ecosystem

- **Strong collaboration: connected country**
- **Strong business & policy environment: innovation, jobs, investment**
- **Creative talent pool**



- **Incubation of innovation**
- **Academe industry partnerships to conduct baslc, applied, market oriented research**
- **Support by government & funders**
- **Involve researchers & experts & industries across the country**



1 **hard & soft infrastructure**, acceleration of commercialization: **incentives, enabling environment**

2 Position **innovative industries** for rapid growth

3 Family & friends, private equity, **venture capital, angel investors**, access to capital

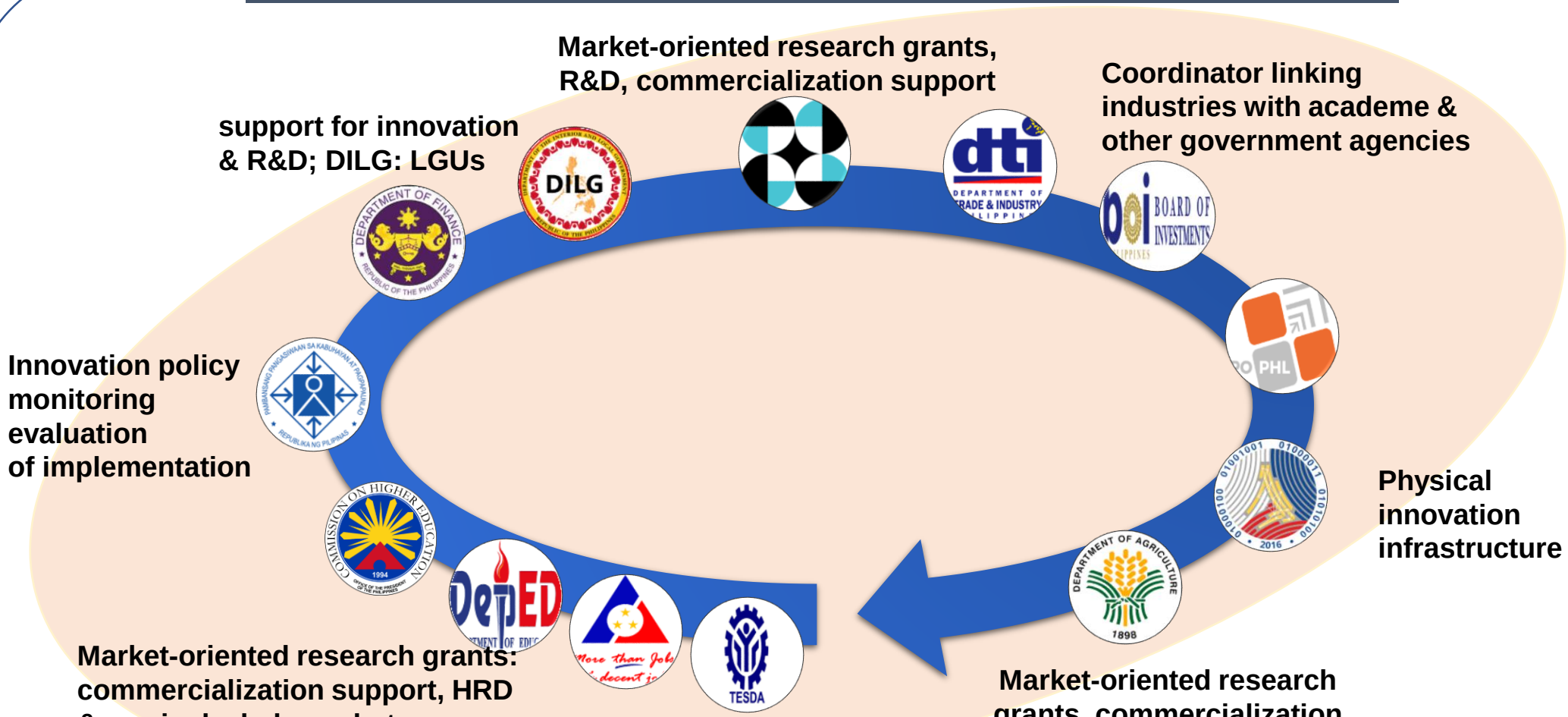
4 **entrepreneurial culture**, support for start-ups: mentors, advisors, incubators, accelerators, **professional services How to make SMEs innovative**

5 relationships, **market driven research, job-ready graduates**, entrepreneur-specific trainings

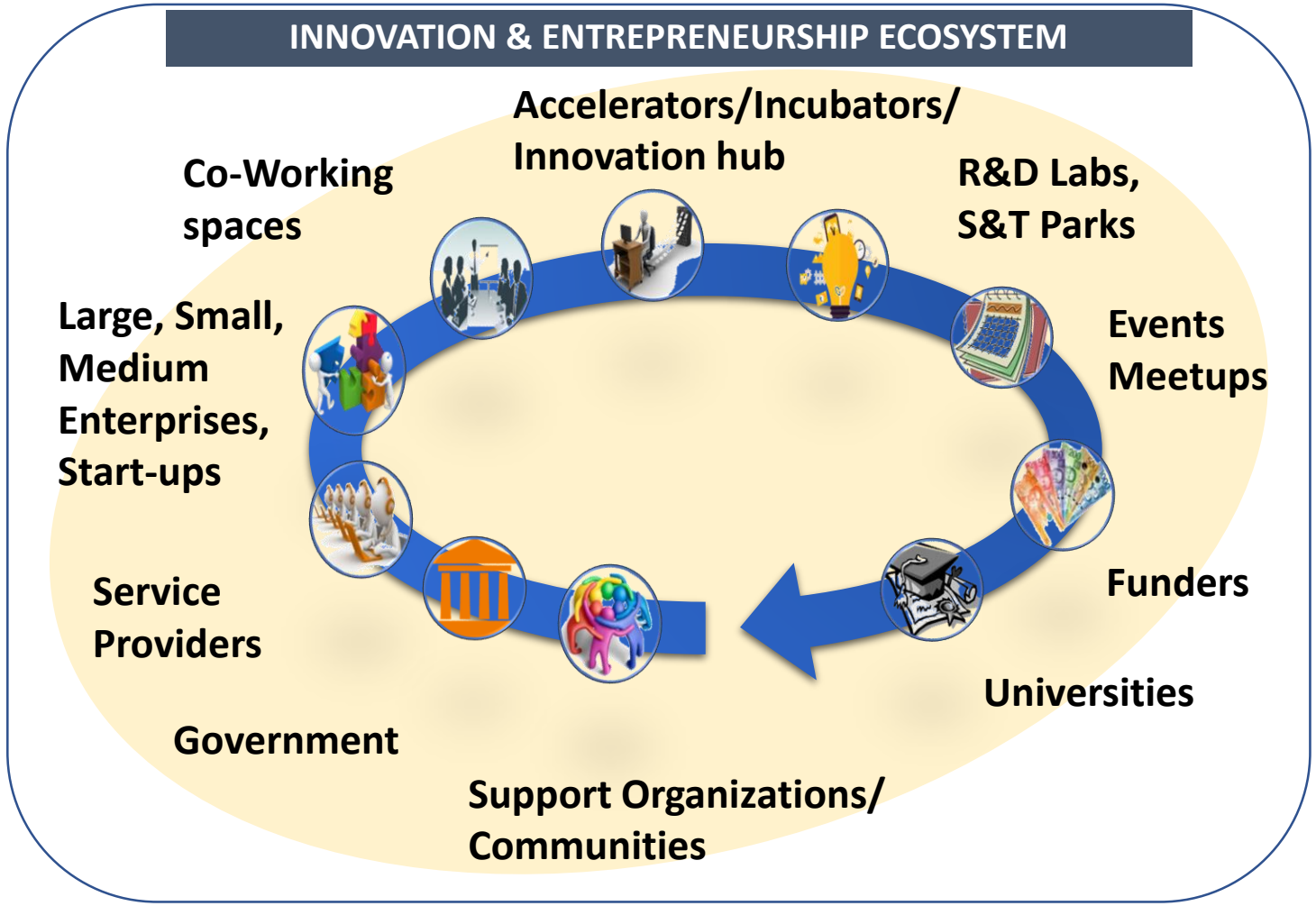
6 **HRD for innovation, innovation-ready workforce**: technical & management talent

To promote collaboration & closer coordination within government

Expand DOST-DTI Innovation MOU



Regional Inclusive Innovation Hubs/Centers



- Regional & local inclusive innovation hubs: cornerstone of i3S, lie at the heart of our economic transformation
  - Bridge gap between industries & academe
  - Create regional ecosystem: **virtual & physical** made up of universities, R&D labs, S&T parks, incubators, fab labs, co-working spaces, investors, & LGUs, start-ups, SMEs, LEs
  - DOST & other agencies, industry, & academe
- Innovation focus on electronics, auto, aerospace, chemicals, IT-BPM, agribusiness

Upgrading Trajectories for PRIORITY Industries

R&D, IC design, facilities for advanced products & technologies, auto electronics, aerospace electronics, batteries, consumer electronics

Electronics & electrical

Auto electronics, ADAS components, engineering services outsourcing, electric motor powertrains like battery, EV, metal casting, forging, machining

Automotive

ESO, data analytics, legal process outsourcing, health information management (preventive health, remote), animation & game development, IT services, global-in-house, services embedded in manufacturing

Aerospace parts

Flight control actuation systems, servo actuators, servo valves, galley inserts, structures & equipment, seat parts, lavatories, interior fit-out, panel assembly, electronics, airframes & sub-assemblies; MRO: base & line maintenance

IT-BPM

Agribusiness

mangoes, bananas, nuts, coffee, cacao, coconut, & other high value crops

Upgrading Trajectories for PRIORITY Industries

Industry Upgrading Short to Medium-run

- Close supply/value chain gaps
  - Auto: metal casting, forging, machining
  - High value added parts: Auto electronics, ESO, R&D, sensors, ADAS
- Accumulation of labor-intensive industries
- Products with good balance of semi-automation & labor-intensive work
  - Assembly & mid-inspection require labor-intensive work

Construction Transport, Logistics

Mass housing, land, air, & water transport, airports & seaports

Furniture, garments

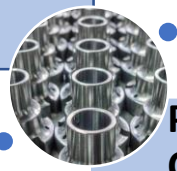
Manufacturing & design

Shipbuilding

RORO as well as small- & medium-sized vessels

Iron & steel

Integrated steel manufacturing



Parts & Components

intermediate parts & components supply especially those produced by MSMEs

Chemicals

Petrochemicals, oleo chemicals, basic chemicals, plastics

Find the right balance between skills & technologies

Labor & Employment Profile

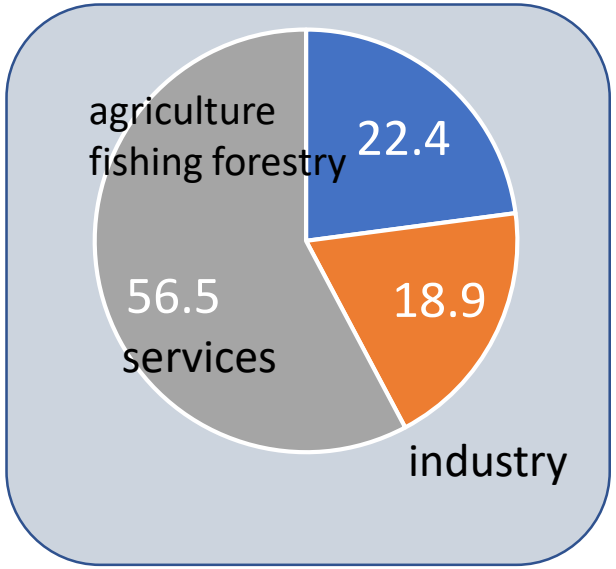
41.3M Employed 94.6%

7.2M underemployed 17.5%

2.34 unemployed 5.4%

43.7 Labor force 61.5%

Structure of Employment



Characteristics of the Unemployed

323K Elementary 13.8%

998K High School 42.6%

161K Post secondary 6.9%

835K College 35.7%

Skilled workers: 30M, 73% of total
Unskilled: 11M, 27%

Skilled: Managers 16%, service & sales 15%, skilled agricultural 13%, craft & related traders 8%, plant & machine operators, assemblers 6%

STEM graduates declined from 235K (37%) in 2015 to 214K (30%) in 2017
Business Administration & Education & teacher training graduates increased from 296K (47%) to 341K (49%)

i3S is vital for sustainable & inclusive development

innovation is at the heart of our economic transformation

- **PH industrial policy is innovation-focused**
- Link Manufacturing with Agriculture & Services
- Productivity leads to inclusive & sustainable growth
- Innovation crucial to productivity

- **Innovation & Entrepreneurship strategy**
- Creative, connected communities
- Government-academe-industry: basic & applied research providing solutions to societal issues & industry needs

- **Regional inclusive innovation centers**
- Bridge gap between innovation & entrepreneurship
- No one size fits all approach: regional/local conditions
- Industry clusters, strong business environment: jobs, investments, poverty reduction

i3S for sustainable & inclusive development

Propel Jobs, Investments, Shared Prosperity for all

- Human capital is crucial for innovation & entrepreneurship
  - knowledge production, technology adoption, productivity growth

Educational system to produce the quality of human capital that can advance innovation & entrepreneurship

- basic, secondary, tertiary: values, skills & competencies

Government-Industry-Education collaboration: policies & training programs that are more responsive to the fast changing dynamics of industry & avoid mismatch between technology & skills

Low-skilled, low-educated & routinized jobs are the most vulnerable to the adverse effect of technological change

Provide safety nets through innovation & R&D with education and training