Inclusive Filipinnovation & Entrepreneurship Roadmap

PH Economic Transformation in the New Digital Age

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DEPARTMENT OF TRADE & INDUSTRY PHILIPPINES

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Presentation Outline

Inclusive innovation-led industrial policy to transform the economy in the digital age

1. Philippine Economic Growth Performance

2. New Industrial Strategy: inclusive, innovation industrial strategy (i^3S)
   - Framework: competition-innovation-productivity nexus
   - Top 12 Industry Priorities
   - Five Pillars and Strategic Actions

3. Inclusive Filipinnovation & Entrepreneurship Roadmap
   - Current state of innovation: strengths, weaknesses
   - Regional Innovation Journey: innovation aspirations, building inclusive innovation ecosystem
   - Roadmap: what is our vision, where do we want to go, and how to get there

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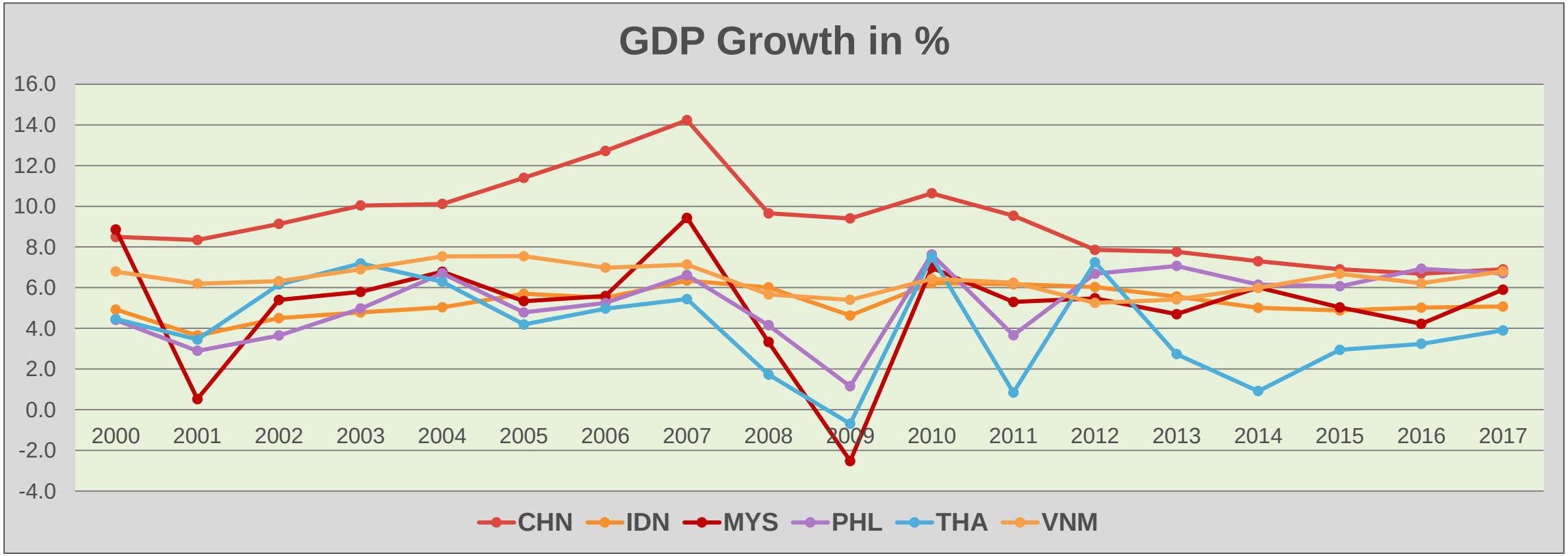
Philippine Economic Growth national, sectoral, and regional performance

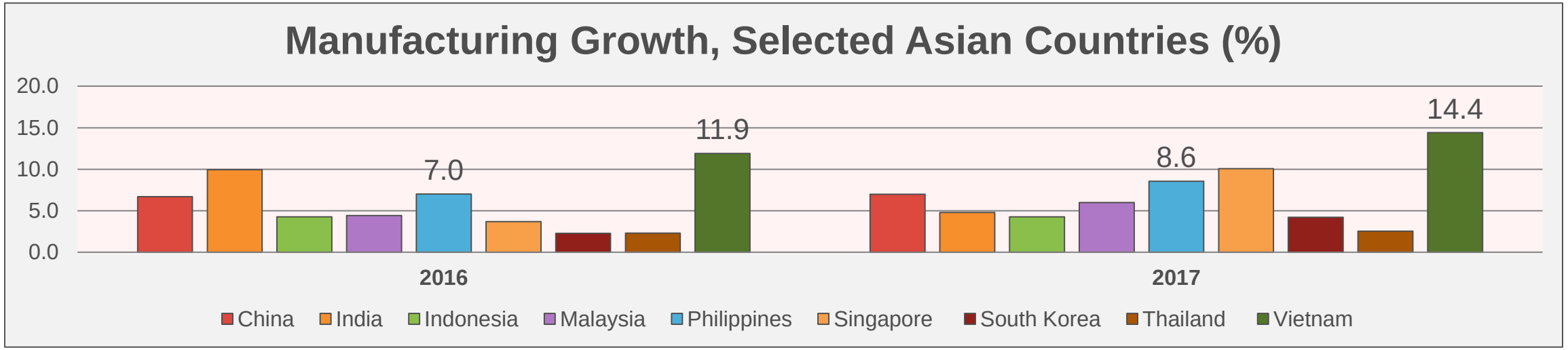
Macro Performance: PH Remarkable Growth

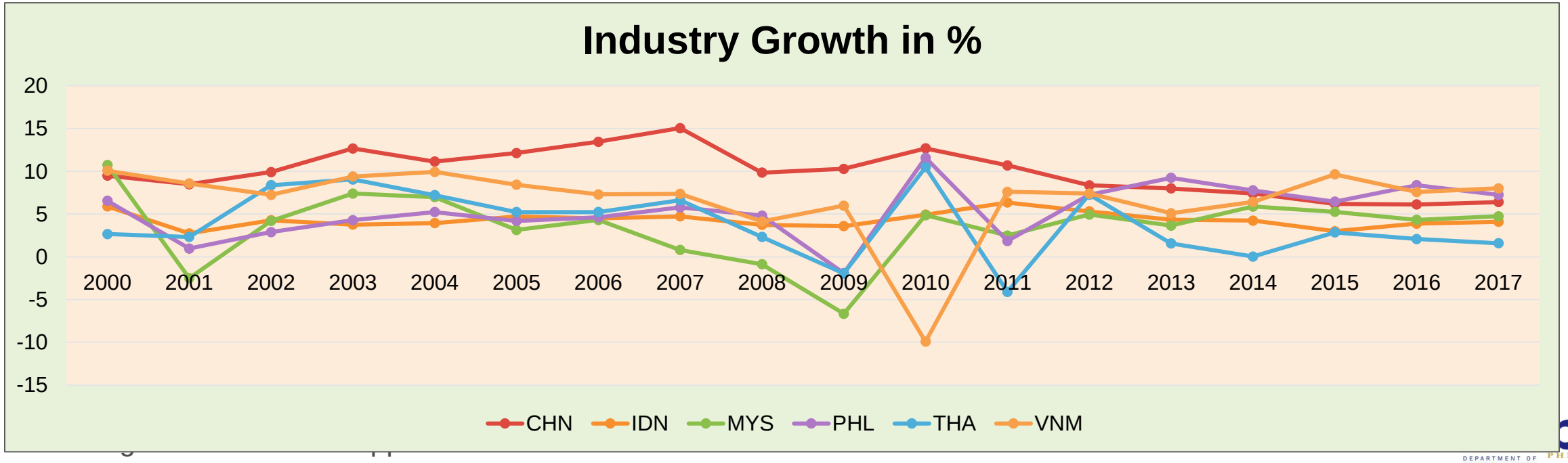


Source: World Development Indicators, The World Bank

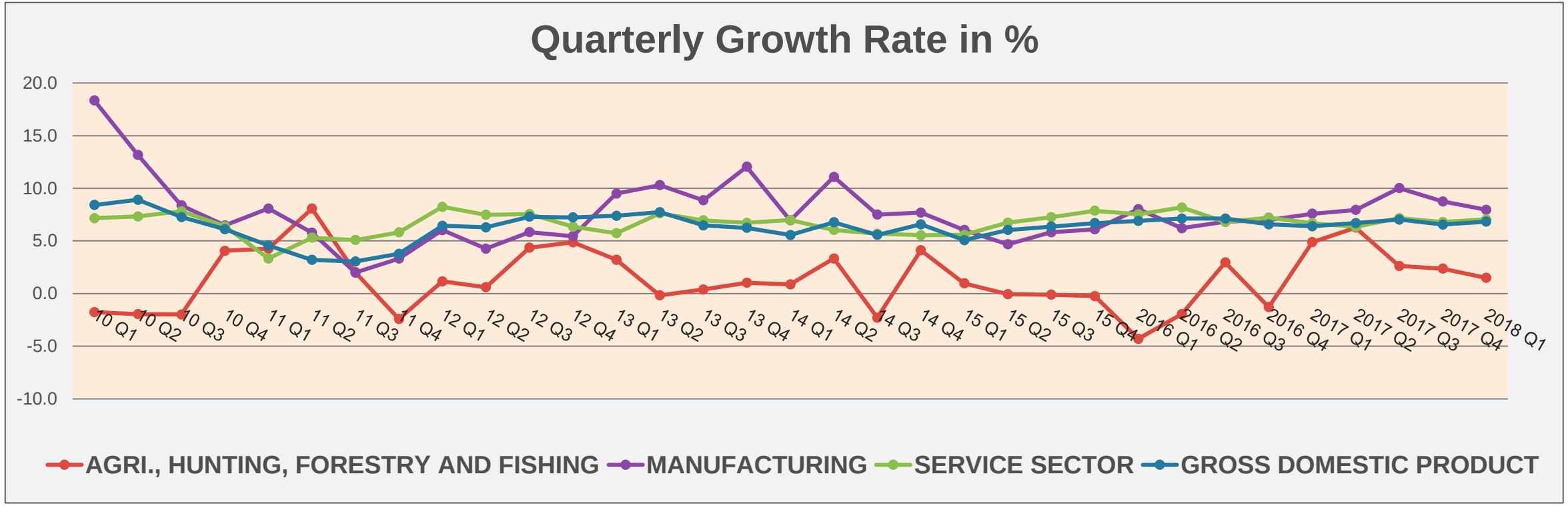
- Amid economic & global uncertainty, PH grew 6.4% from 2010 to 2017
- 2017: China 6.9%, Vietnam 6.8%, **Philippine 6.7%,** Malaysia 5.9%, Indonesia 5.1%, Thailand 3.9%
- PH impressive growth: a new growth area, Asia's new economic tiger

High industry growth driven by manufacturing





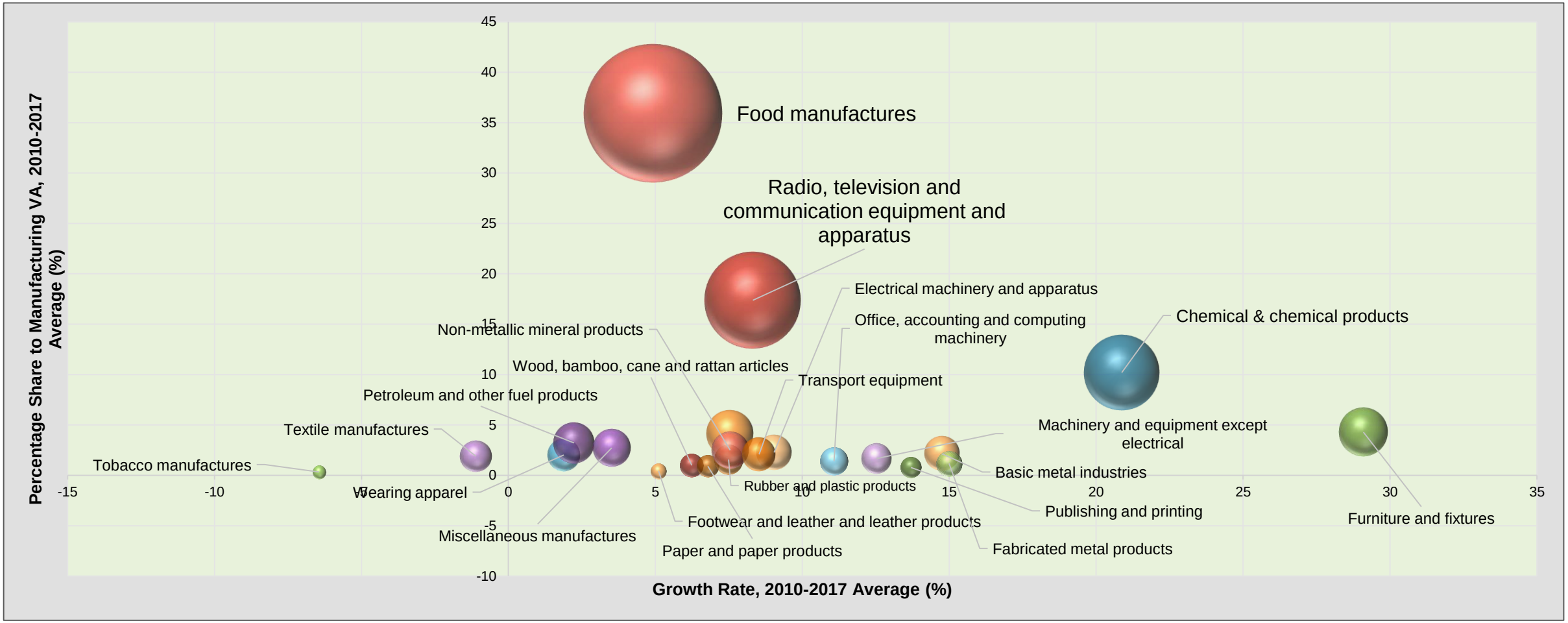
PH experiencing a manufacturing resurgence



- rising costs in China; growing domestic market, growing middle class, good macro performance; stable business & consumer confidence; young English speaking workforce

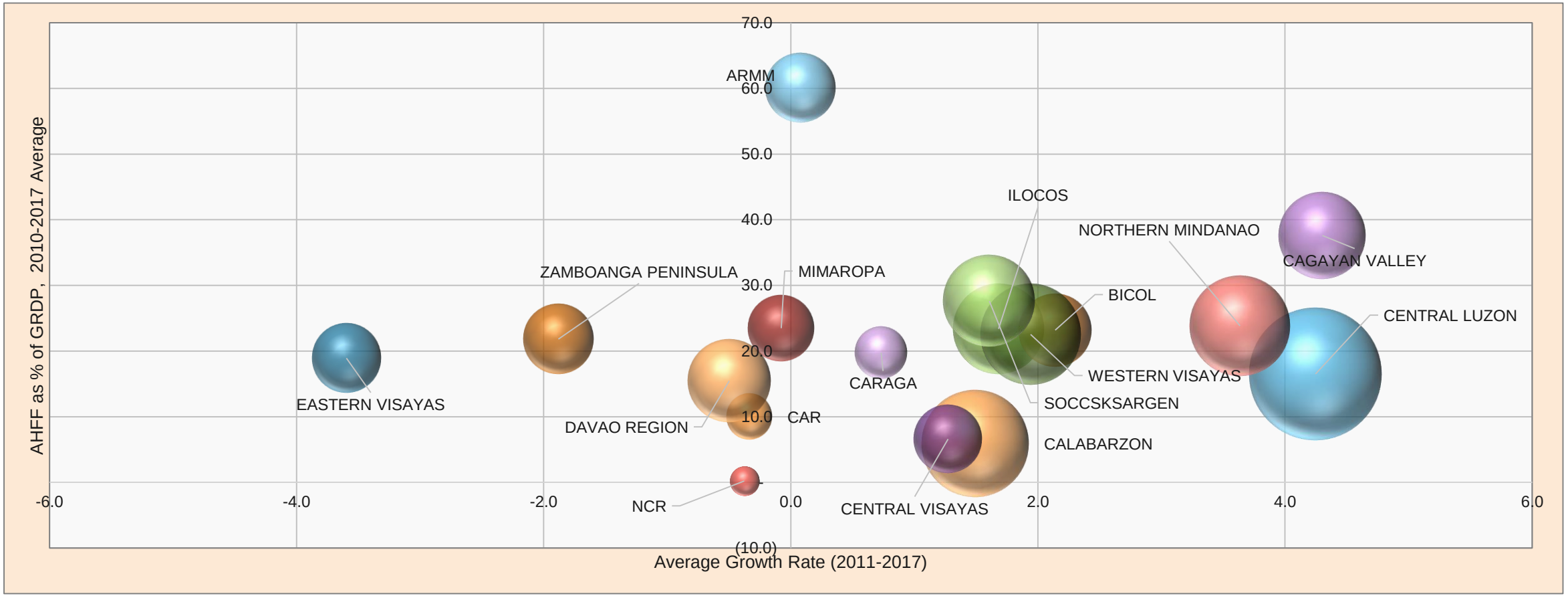
Period	Manufacturing	Services	Agriculture, fishing, forestry
2000-2009	3.2	5.2	3.2
2010-2017	7.6	6.7	1.4

Leading sectors: food manufacturing, electronics, chemicals



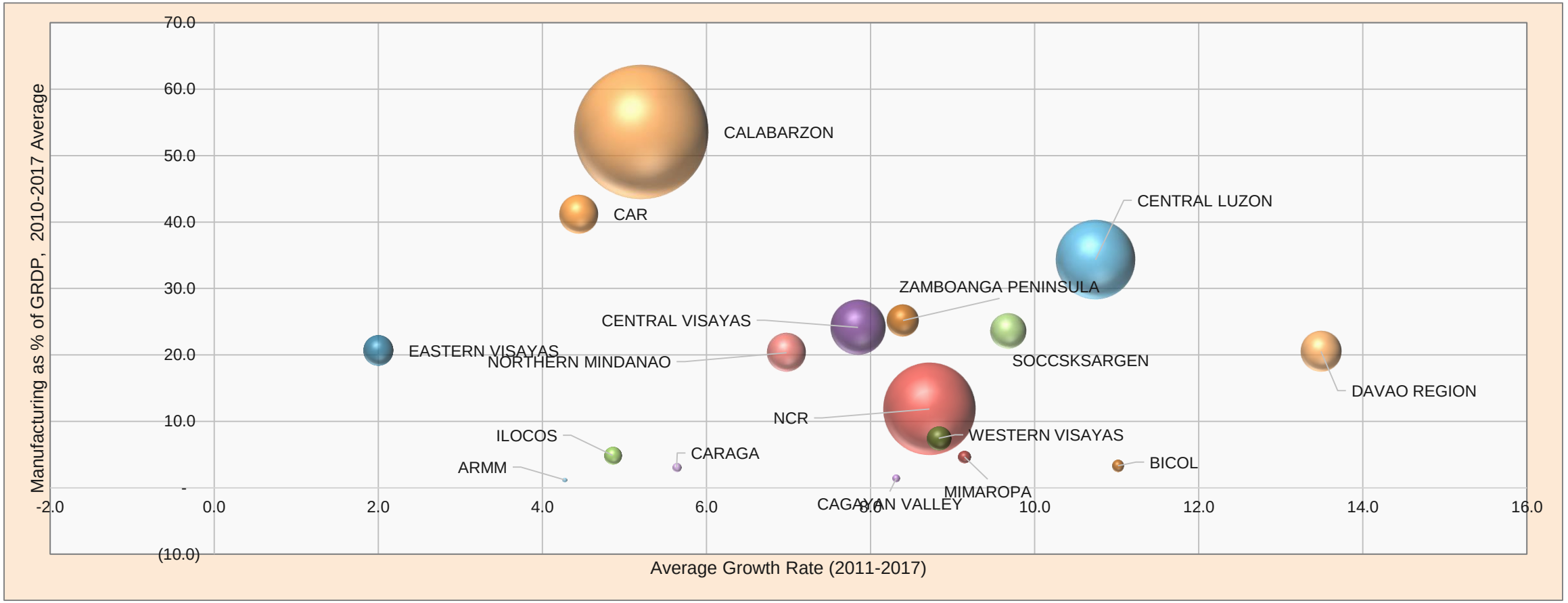
- Food manufacturing dominated with a share of 33.5% in 2017
- Growth in 2017: 5%, 8.2% in 2016

Regional economies still dependent on agriculture



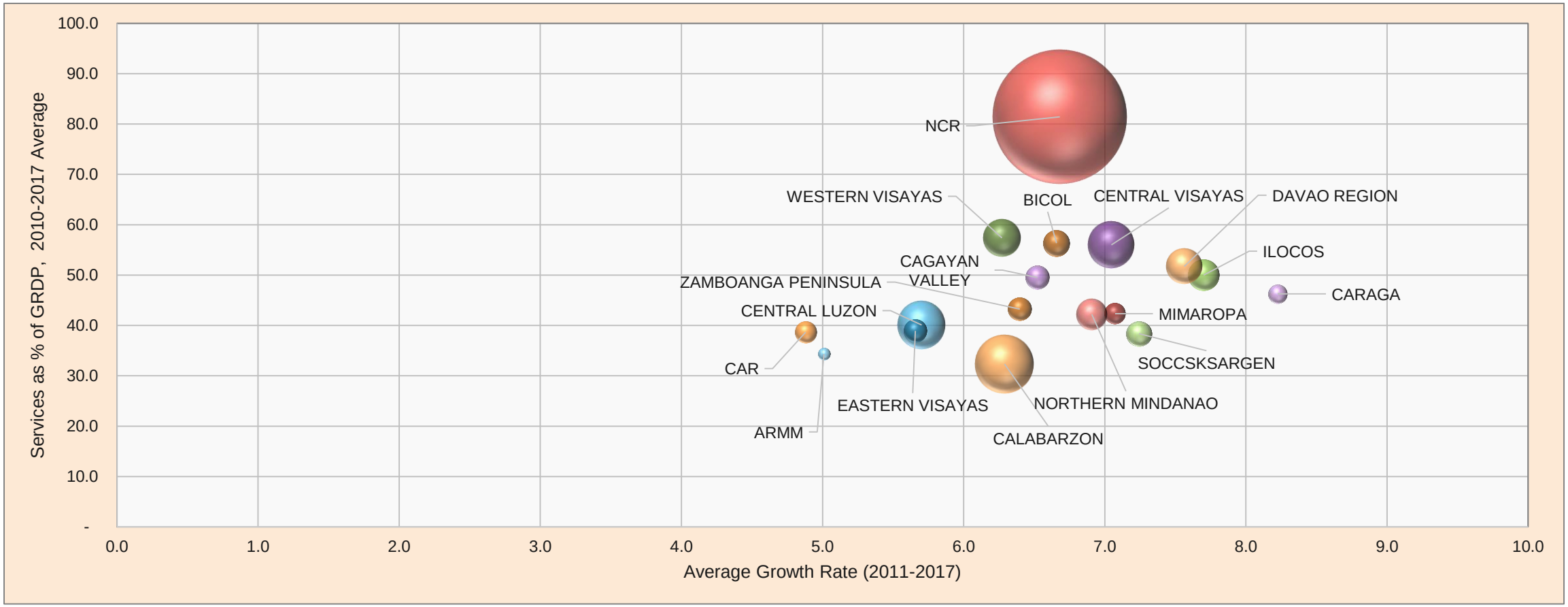
- Except for NCR, our regional economies are still dependent on agriculture, forestry, and fishery
- In terms of size, the largest contributors are led by Central Luzon (14.8%), followed by CALABARZON (10.0%), Western Visayas (8.9%), Northern Mindanao (8.6%), & SOCCSKARGEN (7.4%)

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



- Manufacturing activities have been largely confined in CALABARZON (41%) followed by NCR (19%) and Central Luzon (14%)
- Central Visayas (6.6%) and Davao (3.3%) trying to catch-up

Services is concentrated in NCR



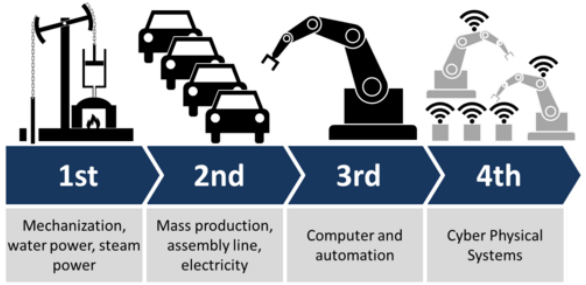
- Huge imbalance among the regions in terms of services; services is highly concentrated in highly urbanized NCR accounting for 52% of total
- Outside NCR, services is quite high only in relatively large economic areas led by CALABARZON (9.9%) followed by Central Luzon (6.6%), & Central Visayas (6.2%)

2

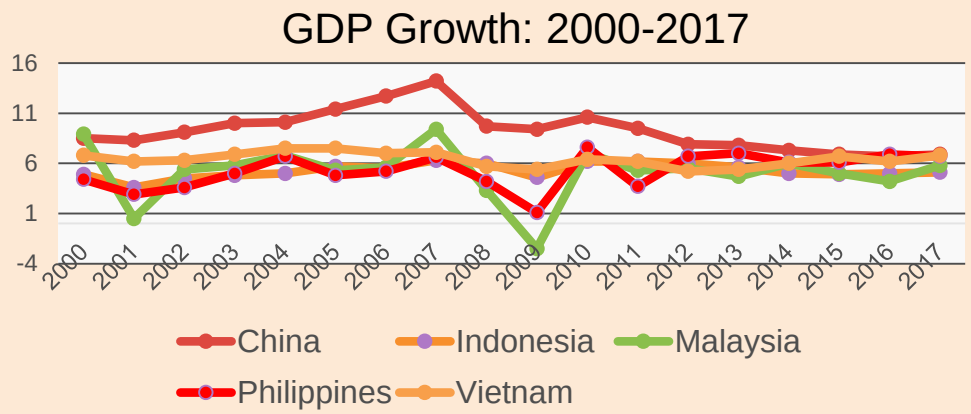
PH New Industrial Policy

inclusive innovation industrial strategy i³S

New Industrial Strategy
GLOBAL & DOMESTIC CONTEXT



PH: Asia's Emerging Economic Tiger

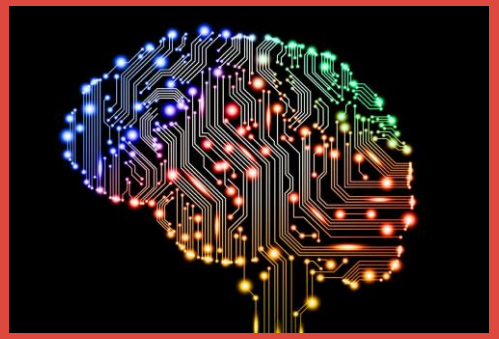


Poverty incidence remains high

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

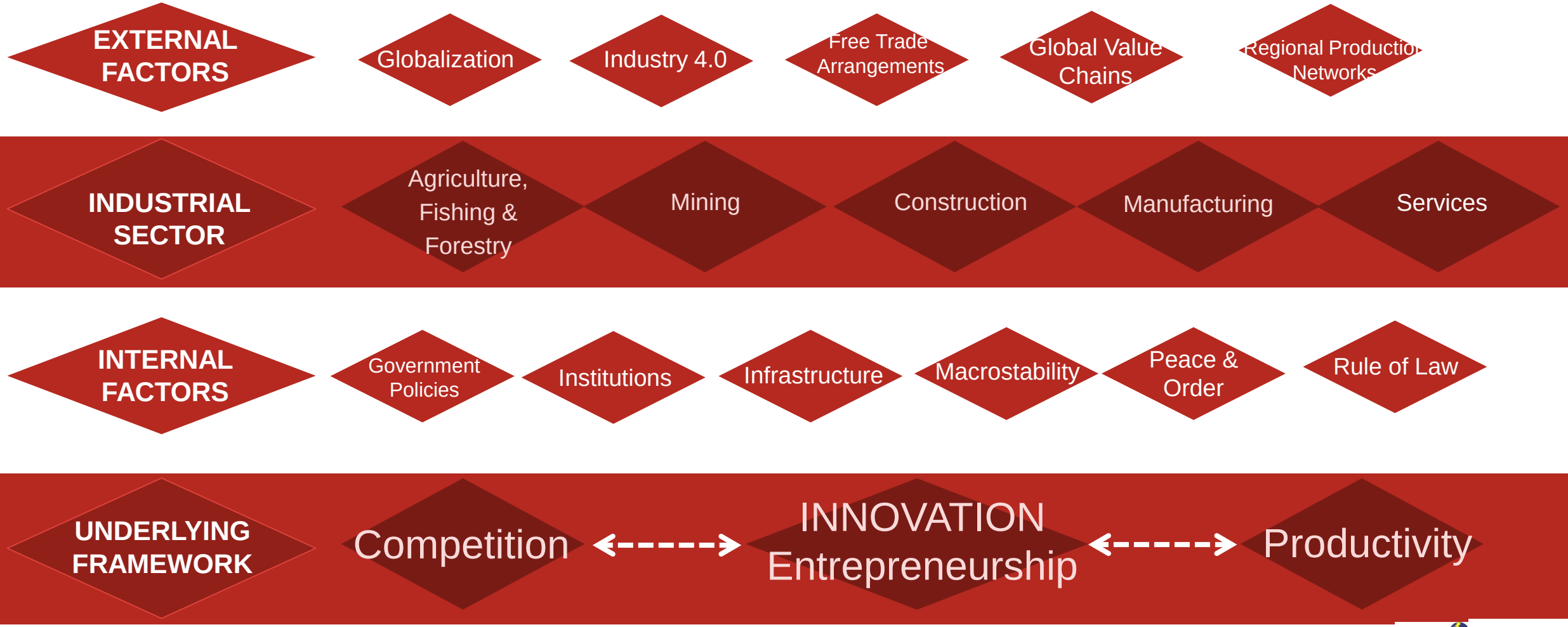
i3s Inclusive Innovation Industrial Strategy

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**

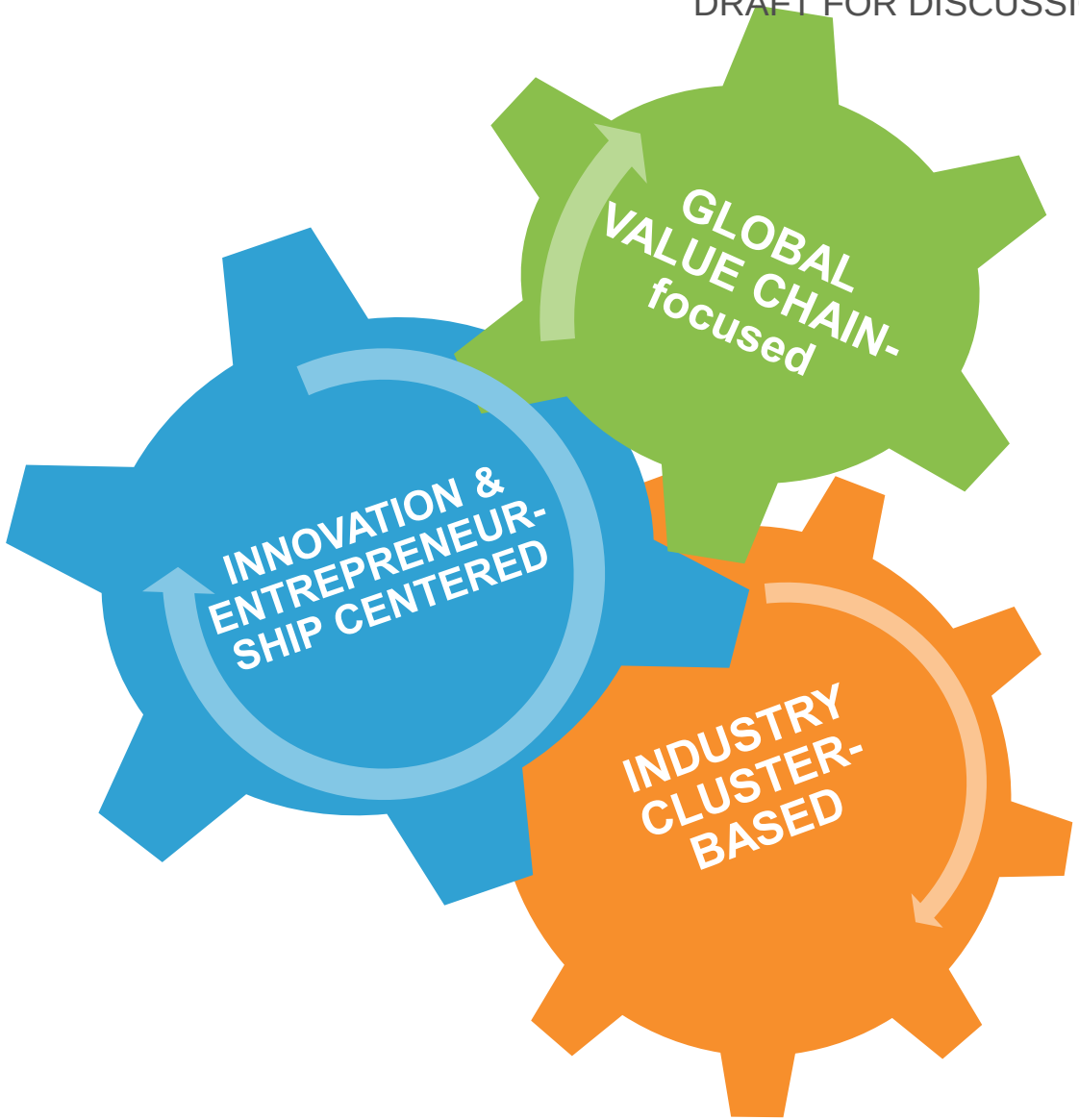
Underlying Framework of PH industrial strategy
COMPETITION- INNOVATION-PRODUCTIVITY NEXUS



i³S

Inclusive Innovation Industrial Strategy

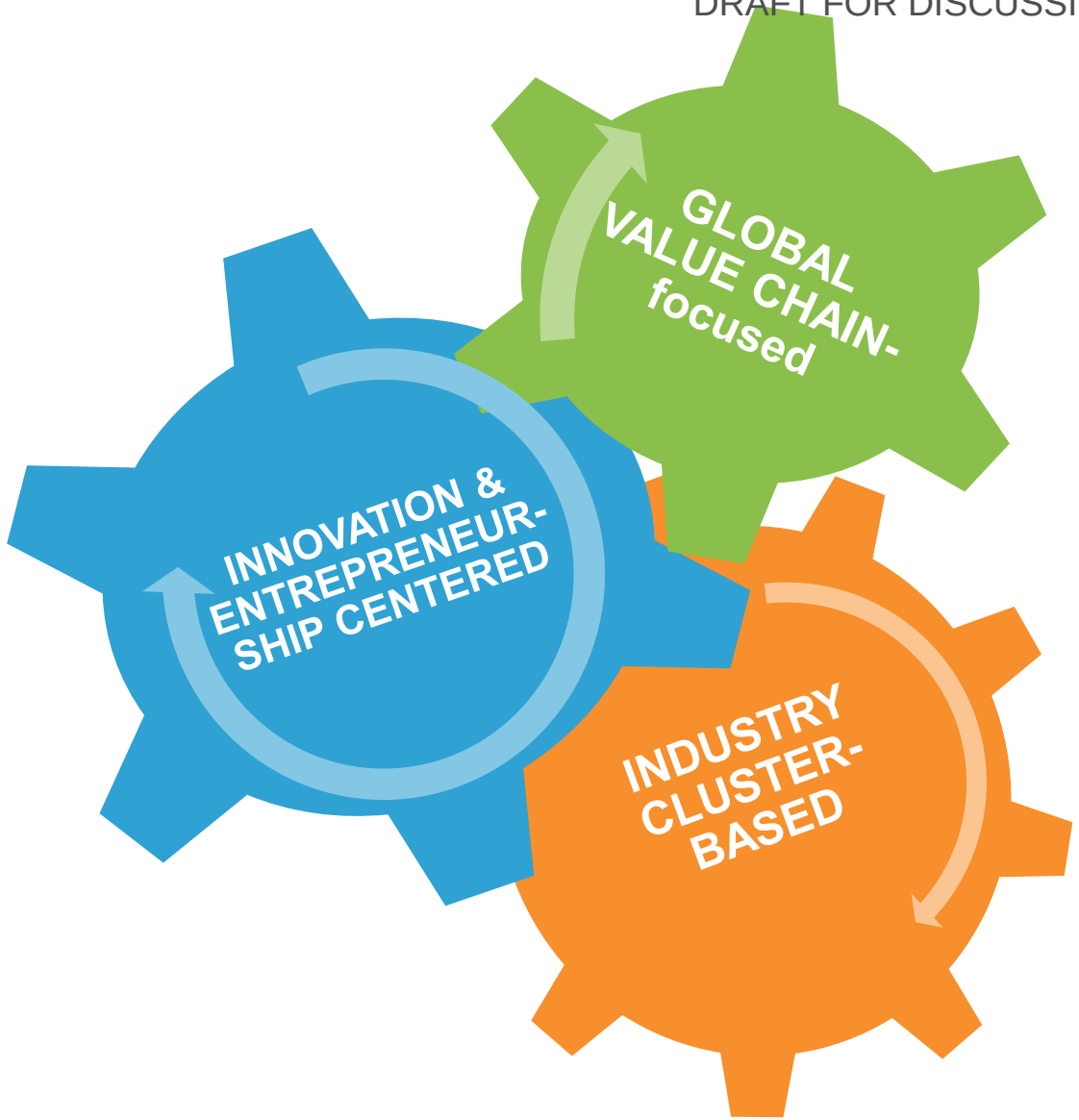
Transforming the PH economy in the new digital age



i3S

Overall Goal

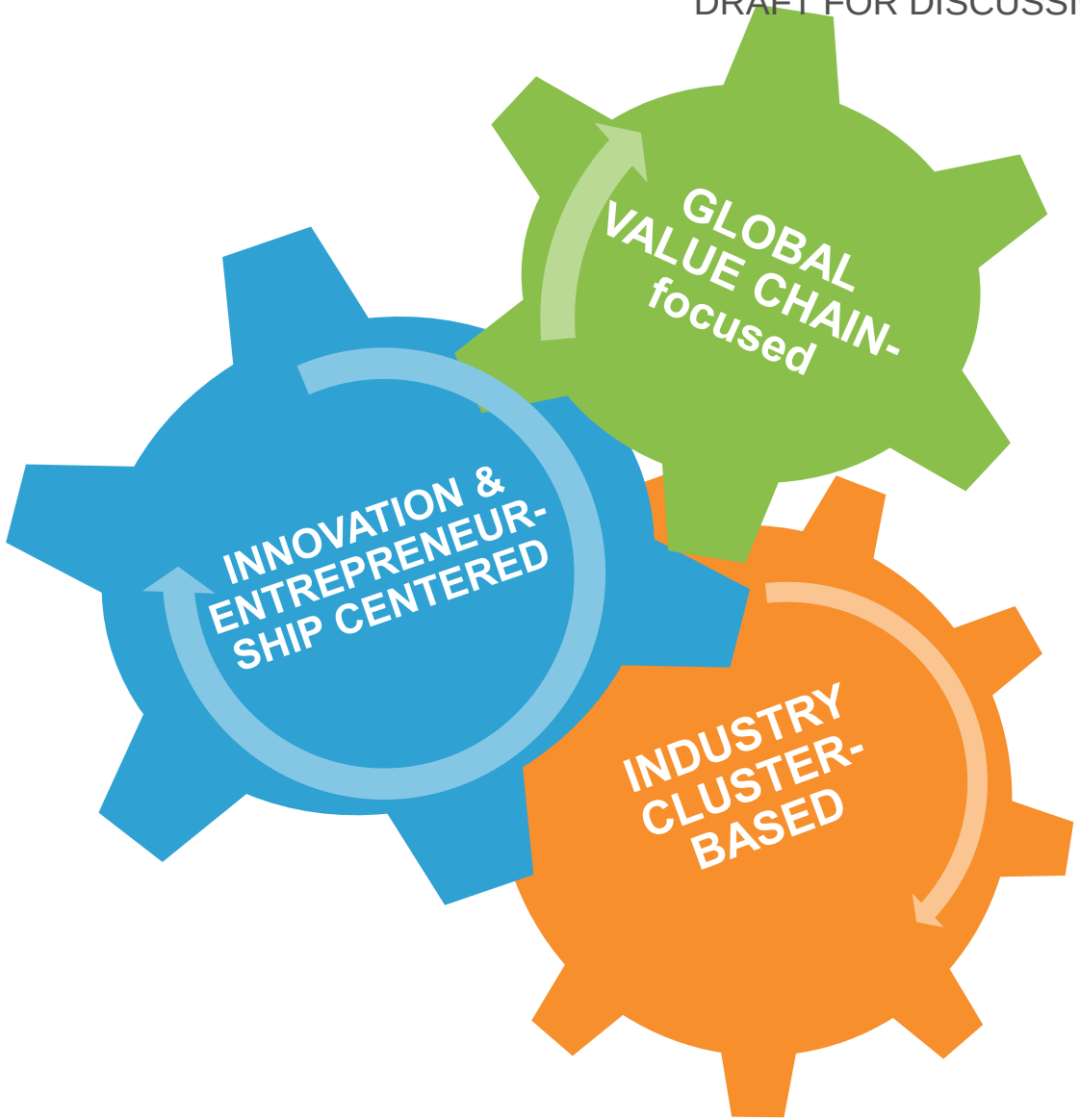
- Build innovation & entrepreneurship ecosystem
  -> upgrade & develop new industries
- Remove obstacles to growth
  -> attract investments
- Strengthen domestic supply chains & deepen participation in global/regional value chains



i³S

Role of Government

- Address coordination & market failures -> the most binding constraints preventing industries from growing
- Create proper environment for private sector development -> inclusive innovation & entrepreneurship ecosystem

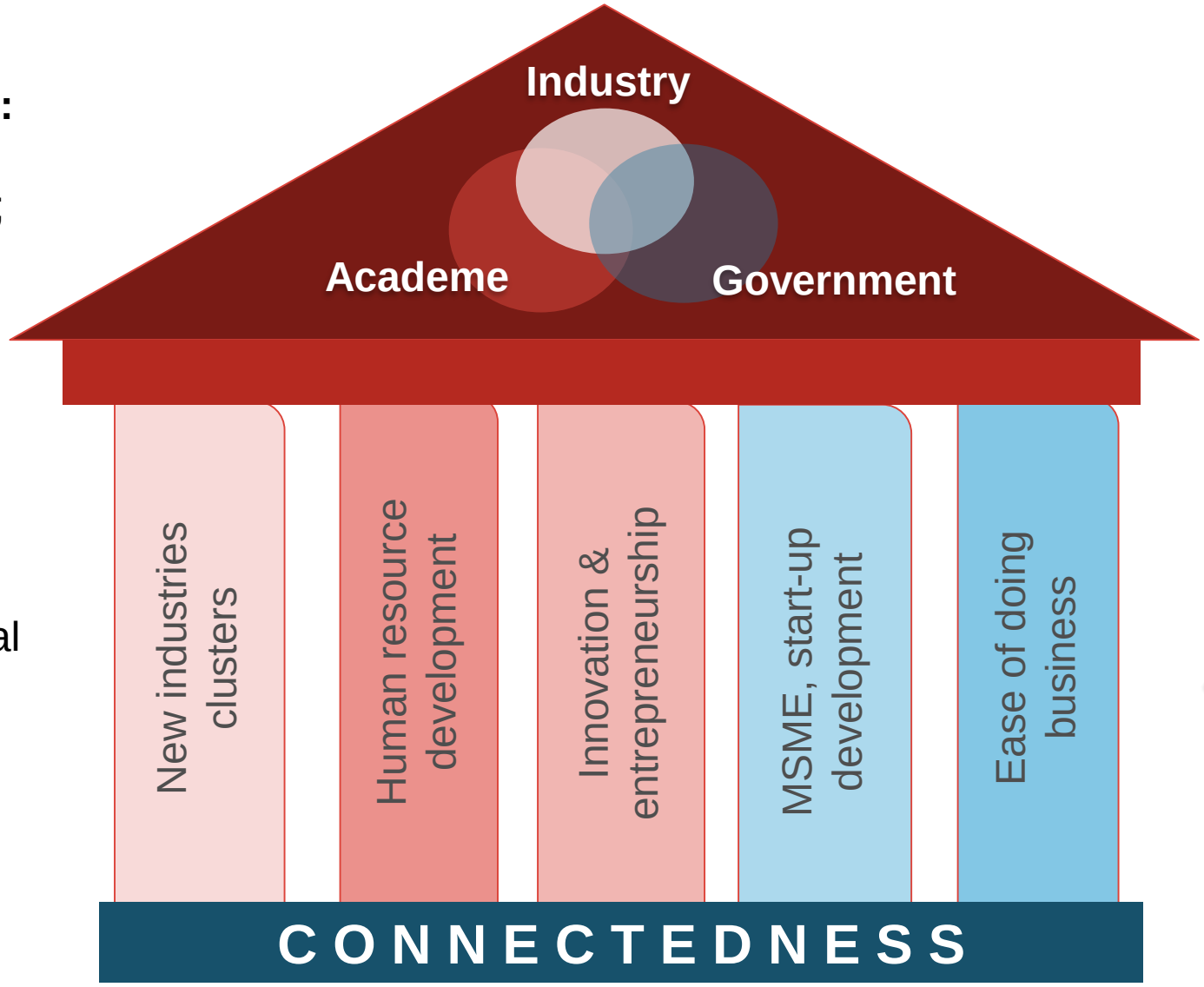


i³S Five Major Pillars

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: 7Ms mindset, mastery, mentoring, money, machine, market, models; access to finance & technology; etc.



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

Market orientation: Both Domestic & Export

Opportunities

- New high level growth trajectory
- Growing market, middle class
- Political stability
- Young, English speaking workforce
- Stable business confidence
- AEC & FTAs
- Industry 4.0

100 Million Consumer Market as springboard

PH as regional hub, linked with GVCs

Challenges

- Complex regulations
- High cost of power
- Lack of ports, airports, roads
- SME access to finance
- Supply chain gaps
- Industry 4.0

- BOLDER TRADE POLICY
- INCREASED INFRASTRUCTURE SPENDING,
- INTENSIFIED INVESTMENT PROMOTION

- SKILLS TRAINING, HRD
- INNOVATION & R&D, GREEN GROWTH
- MSME DEVELOPMENT

Top 12 Priorities for Both Domestic & Export Markets

Electrical & Electronics

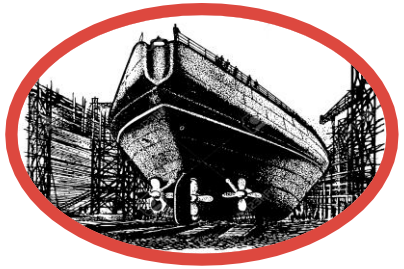
IT BPM, E-Commerce

Agri-business

Tourism

Auto & Auto Parts

Tool & Die
Iron & Steel



Shipbuilding, RORO

Transport & Logistics

Aerospace Parts

Chemicals

Furniture, Garments, Creative

Construction

Upgrading Trajectories for Selected Industries

Electronics & electrical	R&D, IC design, expansion facilities for advanced products & technologies (IoT, robotics, drones, AR, cognitive cloud, 3D printing), auto electronics (GPS, infotainment, wireless communication modules, telematics, autonomous vehicle sensors, VR systems, onboard computers, microprocessors), aerospace electronics, batteries
Automotive	Auto electronics, ADAS components, engineering services outsourcing, electric motor powertrains like battery
Aerospace parts & MRO	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 for commercial aviation
IT-BPM & E-commerce	Engineering services outsourcing, data analytics, legal process outsourcing, health information management (preventive health, remote), animation & game development (3D, AR/VR), IT services, global-in-house, services embedded in manufacturing (R&D, design)
Chemicals	Petrochemicals, oleo chemicals, basic chemicals, plastics
Agribusiness	Production of high value crops like mangoes, bananas, nuts, coffee, cacao, coconut

3

Strategies to build the Inclusive Filipinnovation & Entrepreneurship Ecosystem

Global Innovation Index 2017

How does the Philippines fare in terms of innovation efforts?

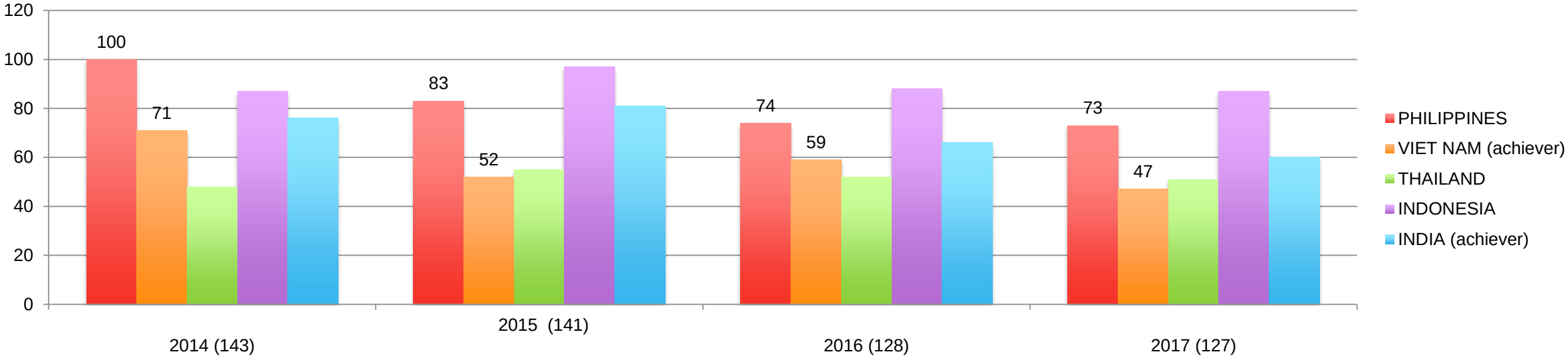
Top 5: Leaders

1. Switzerland
2. Sweden
3. Netherlands
4. US
5. UK

ASEAN

7. Singapore
37. Malaysia
47. Viet Nam
51. Thailand
60. India
73. Philippines
87. Indonesia

Global Innovation Index 2017



STRENGTHS:

graduates in science & engineering (#27);

trade, competition & market scale (27);

firms offering formal training (9);

research talent (8);

high & medium high-tech manufactures (18);

ICT services exports (16)

WEAKNESSES:

ease of starting a business;

education (#113);

expenditure on education (#106);

government expenditure/pupil (#99);

pupil-teacher ratio (#99);

tertiary inbound mobility (#105)

global R&D companies; science & technical articles (#120);

global R&D companies; science & technical articles (#120);

new businesses/'000 population; creative goods & services (#115),

online creativity (92)

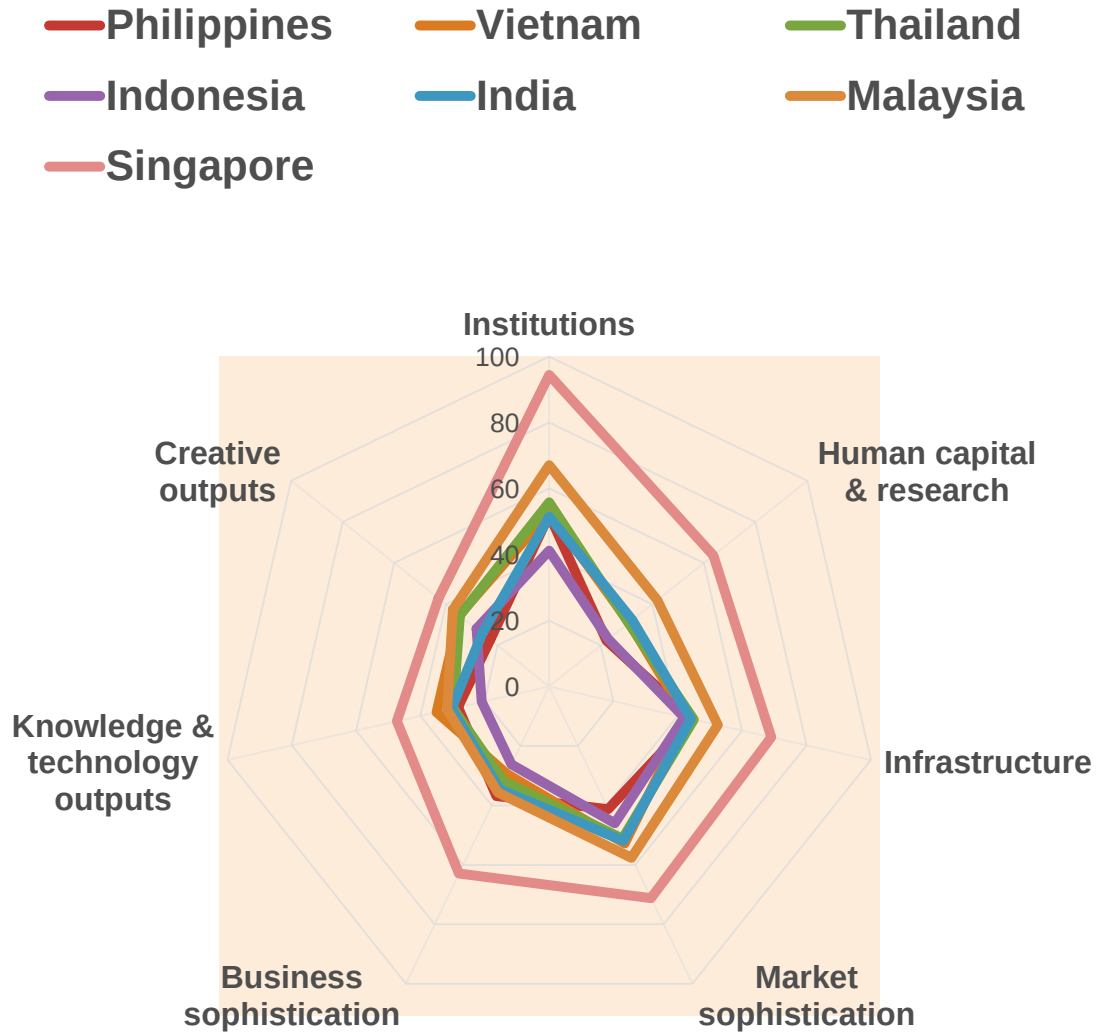
Global Innovation Index 2017

PH Scored Lowest in:

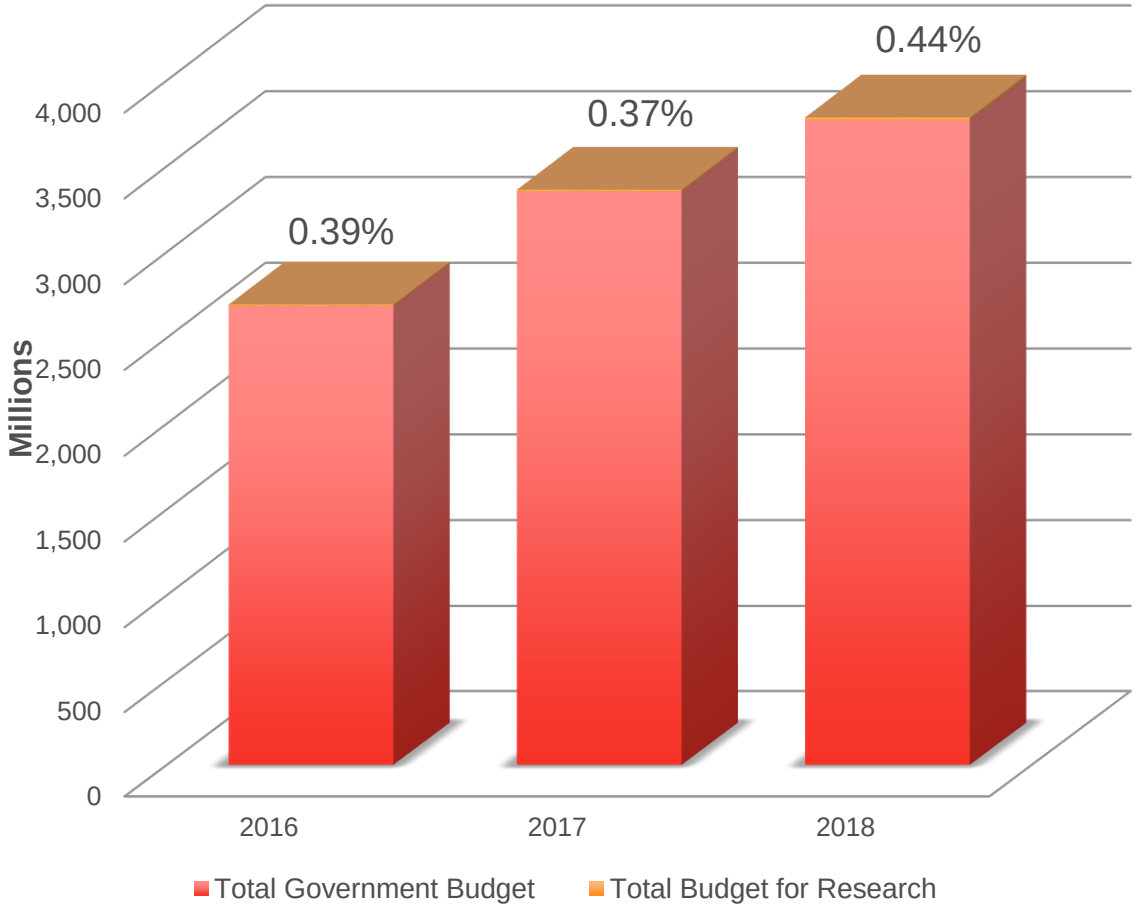
- **Creative outputs:** intangible assets (trademarks, industri designs, ICT & business model), creative goods & service (cultural & creative services exports), online creativity (video uploads on YouTube)
- **Human capital:** education, tertiary education (enrolment) R&D expenditure, global R&D
- **Market sophistication:** credit (ease of getting credit, microfinance loans), investment (ease of protecting minor investors, venture capital deals)

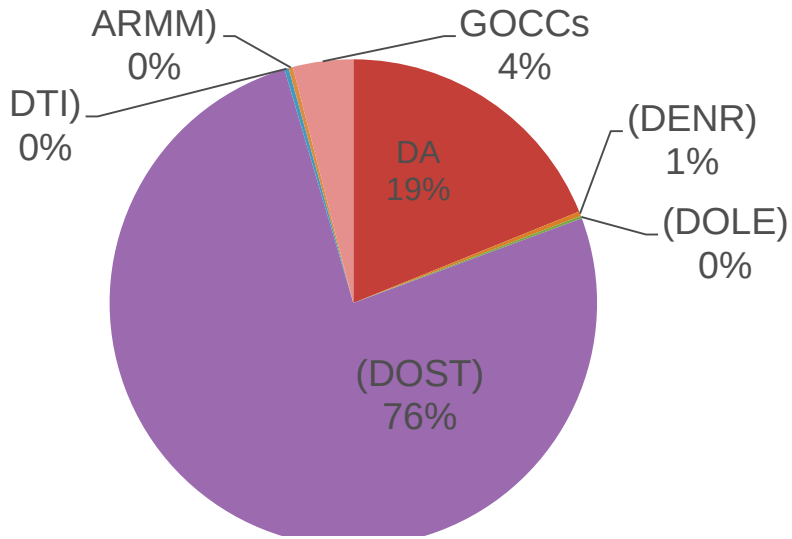
More needs to be done

- ICT infrastructure: access #89, ICT use #88
- Innovation linkages (#95)

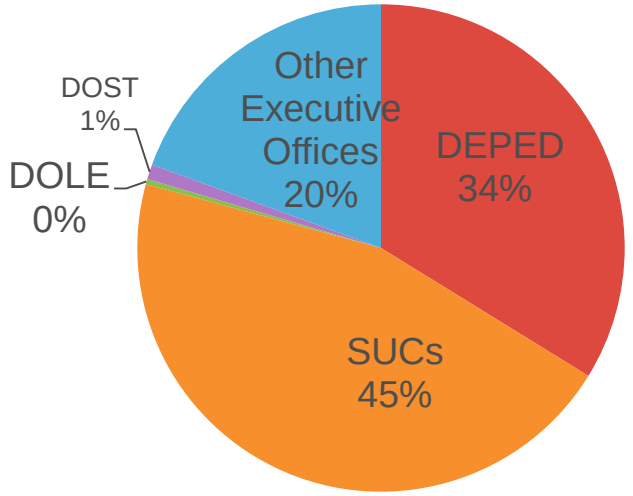


Government Budget on Research





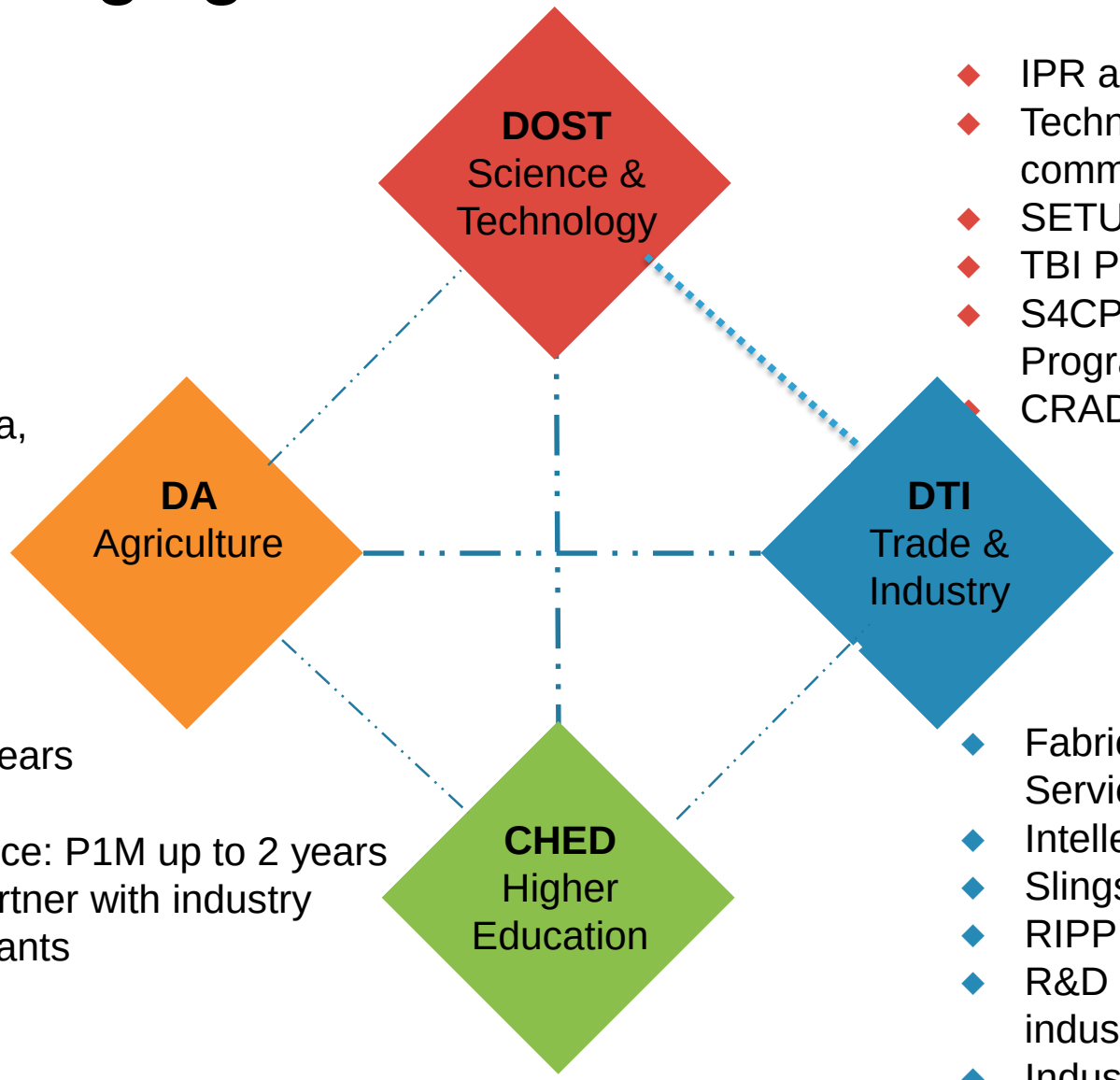
R&D Economic Affairs 2018



R&D Education 2018

research-granting agencies & conduct of market studies

- 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

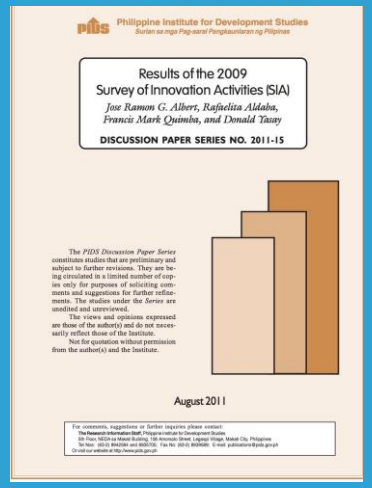


- IPR assistance thru TAPI
- Technicom: technology innovation for commercialization
- SETUP
- TBI Program: diffusion of technology
- S4CP: NICER, R&D Leadership Program
- CRADLE, BIST

- 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

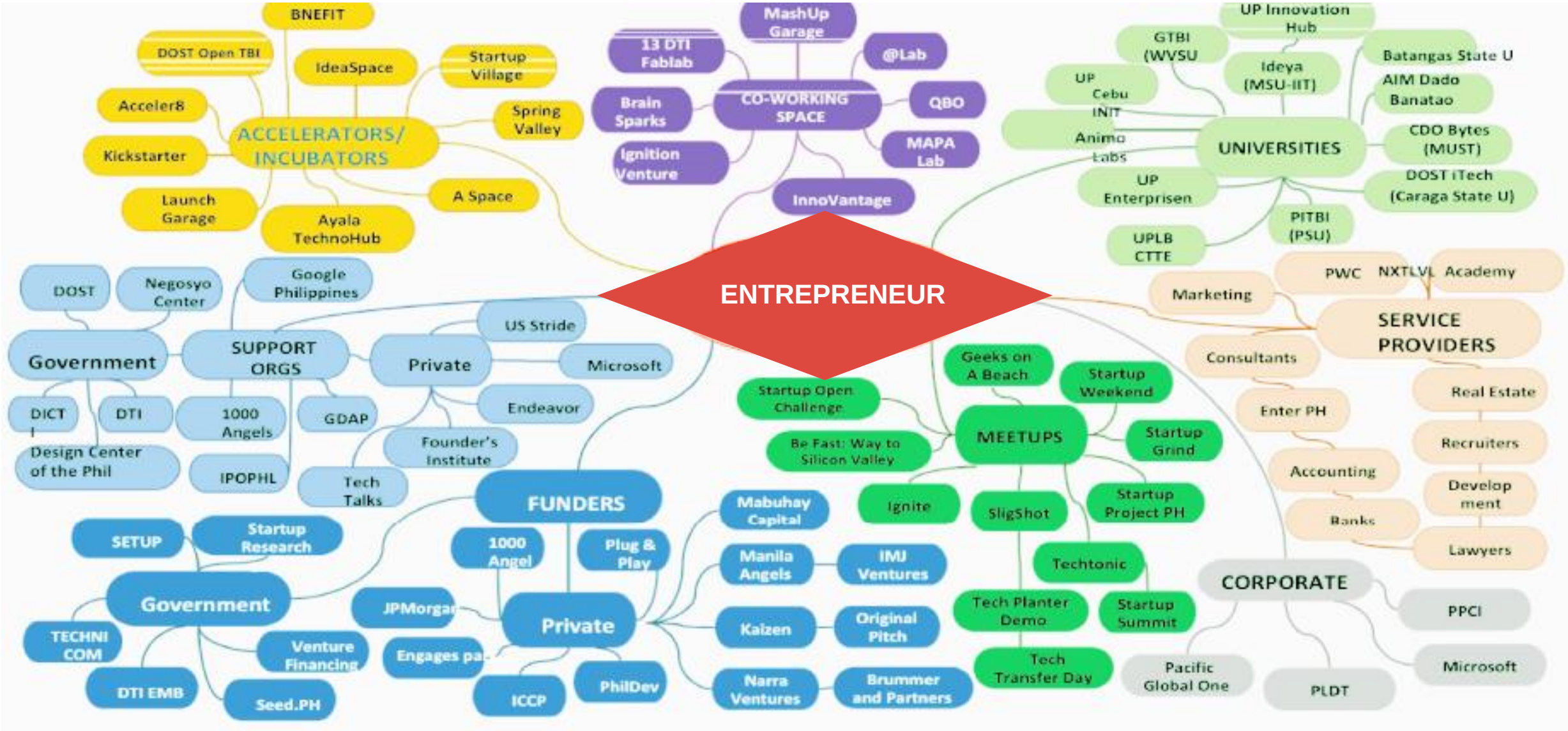
Weak linkage between industry & academe



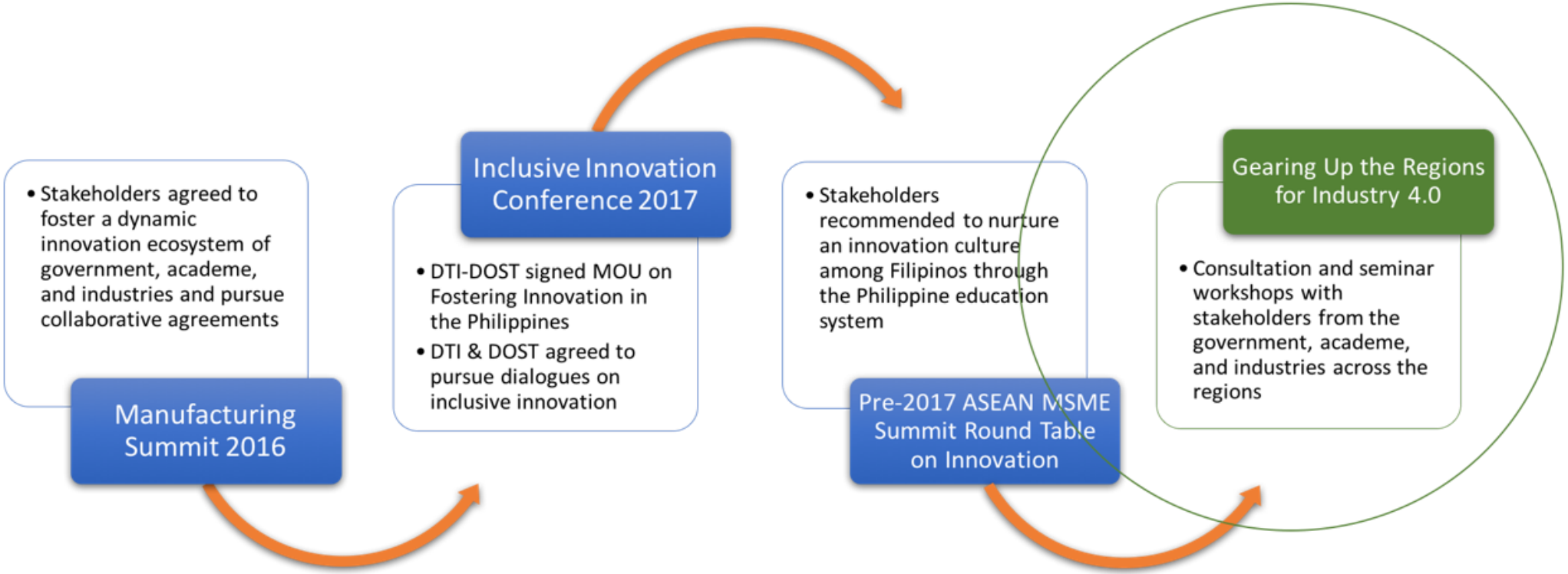
- Low GERD due to limited resources
- 42.9% of surveyed firms are innovation active
- Lack of appropriate incentives to produce competitive & relevant research at universities
- Widespread mistrust between university & industry communities, more competition than collaboration
- Lack of strong culture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

PH start-up ecosystem: missing linkages & players, lack of connectedness



The Road to Building an Inclusive Innovation and Entrepreneurship Ecosystem



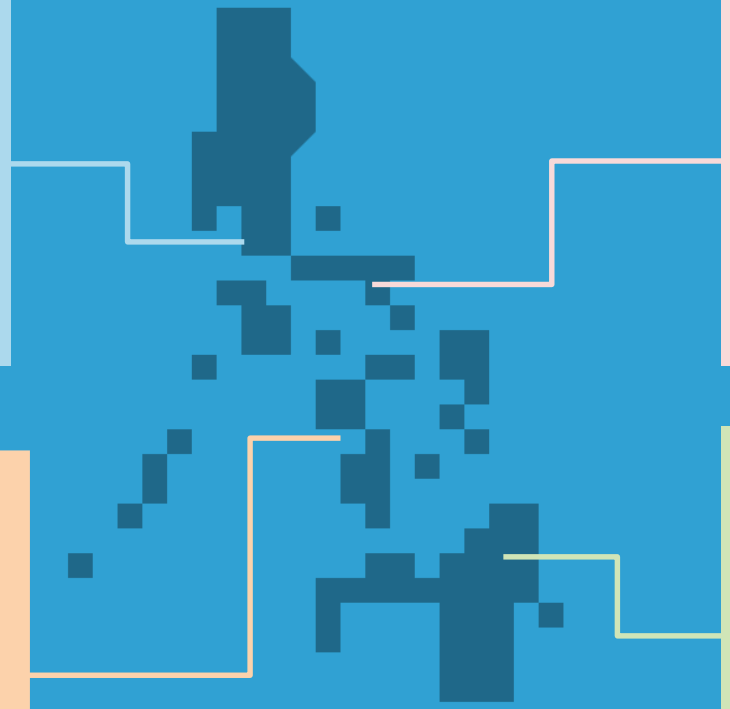
Regional Consultations in Manila, CDO, Cebu, Davao, Clark

- 12 Regions: 3, CAR, 6, 7, 8, 9, 10, 11, 12, Caraga, CALABARZON, NCR
- About 500 Participants from Industry, Academe, Government
- Industry 4.0
- Innovation landscape & needs

FGDs: Voices from the Regions
Building Connected Creative Innovative Communities

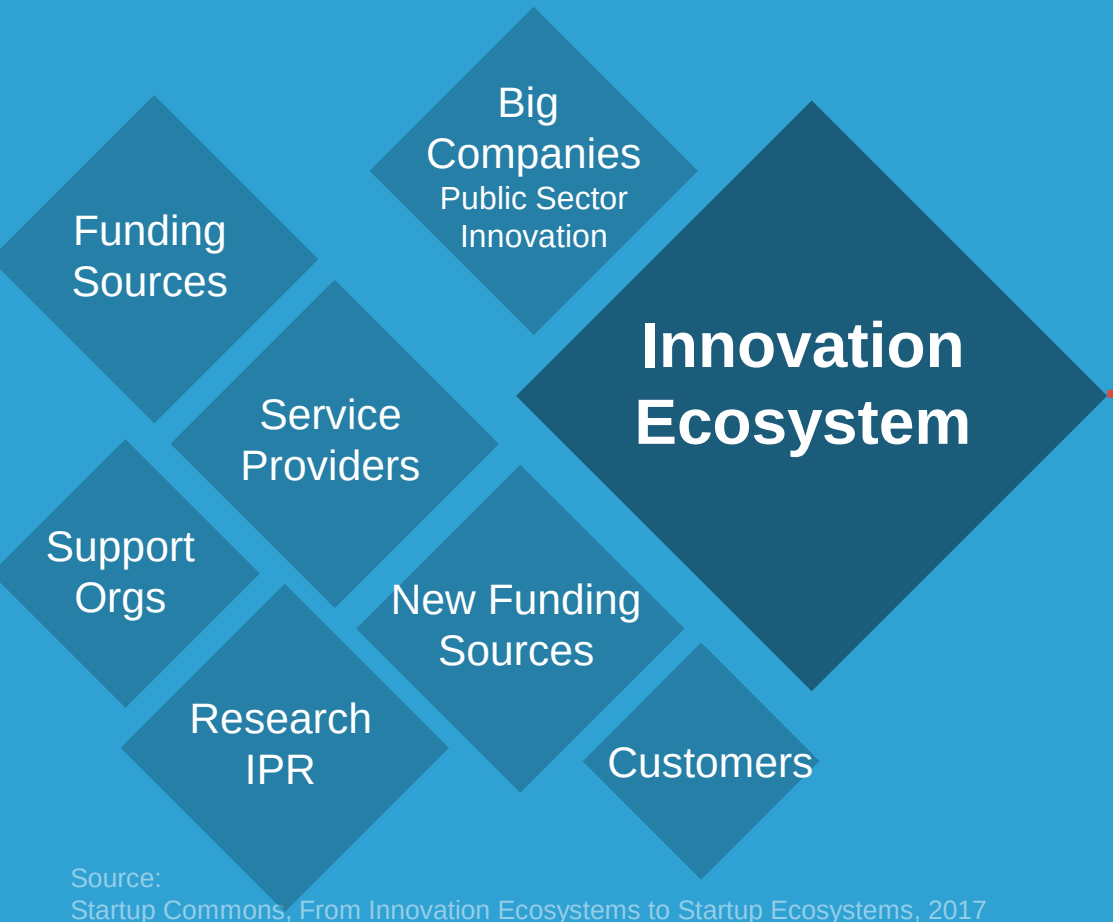
R&D collaboration between industry & academe
- Research hubs / R&D collaboration centers at select HEIs
- Test technologies & innovations developed by partner sector

Integration of innovation and entrepreneurship in education curriculum
- education modules to strengthen STEAM programs & align it with Industry 4.0
- faculty training on innovation & entrepreneurship
- Provide government subsidy

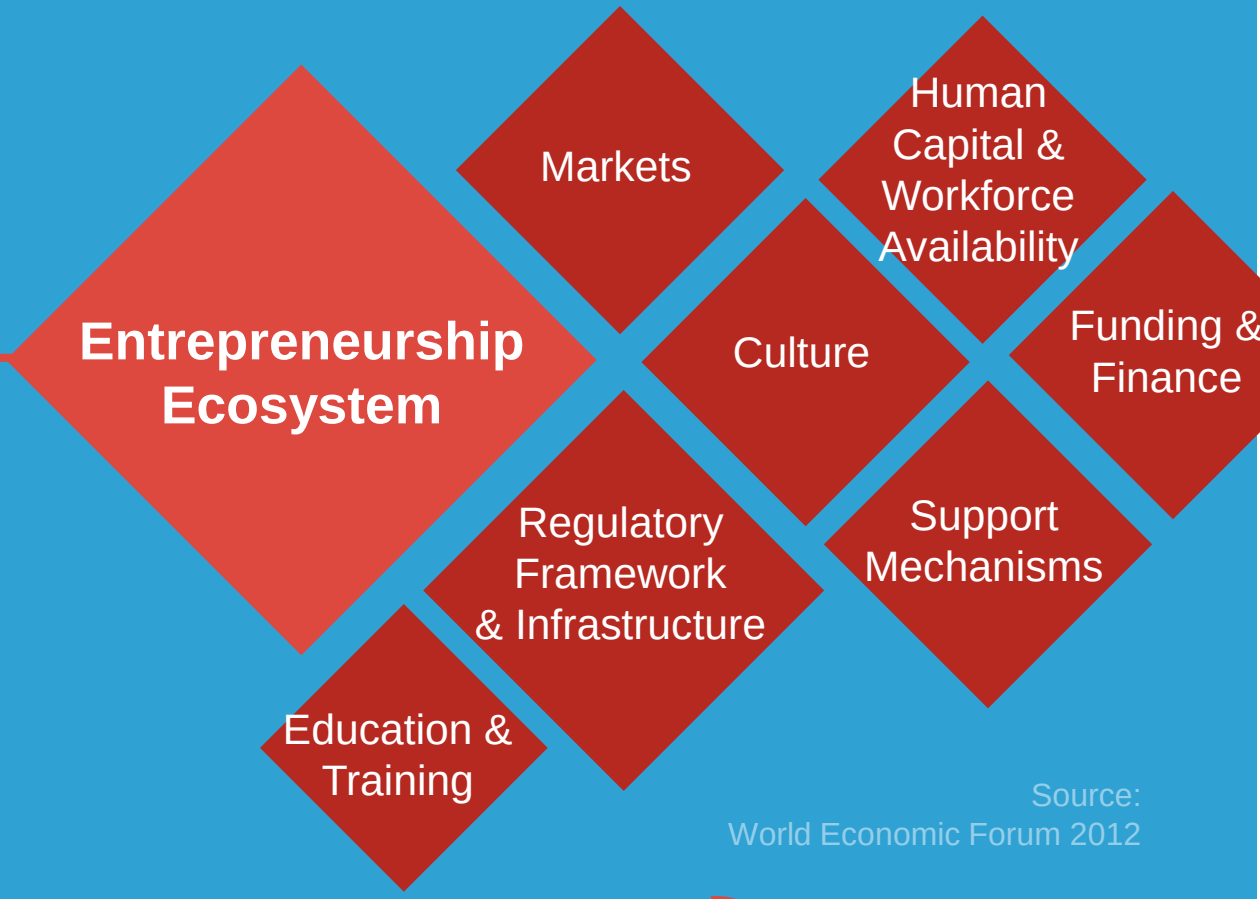


Legislation and policies to strengthen R&D based on local industry needs
- Support Philippine Innovation Act and National Innovation Roadmap
- Policies for regional & cluster innovation, including increased R&D funds for LGUs

Improved quality and utilization of government's shared infra i.e., SSFs, FabLabs, FICs, etc.
- S&T & innovation skills of personnel running SSFs, FICs
- MSME training on the use of SSFs; access to SSFs



Source:
Startup Commons, From Innovation Ecosystems to Startup Ecosystems, 2017



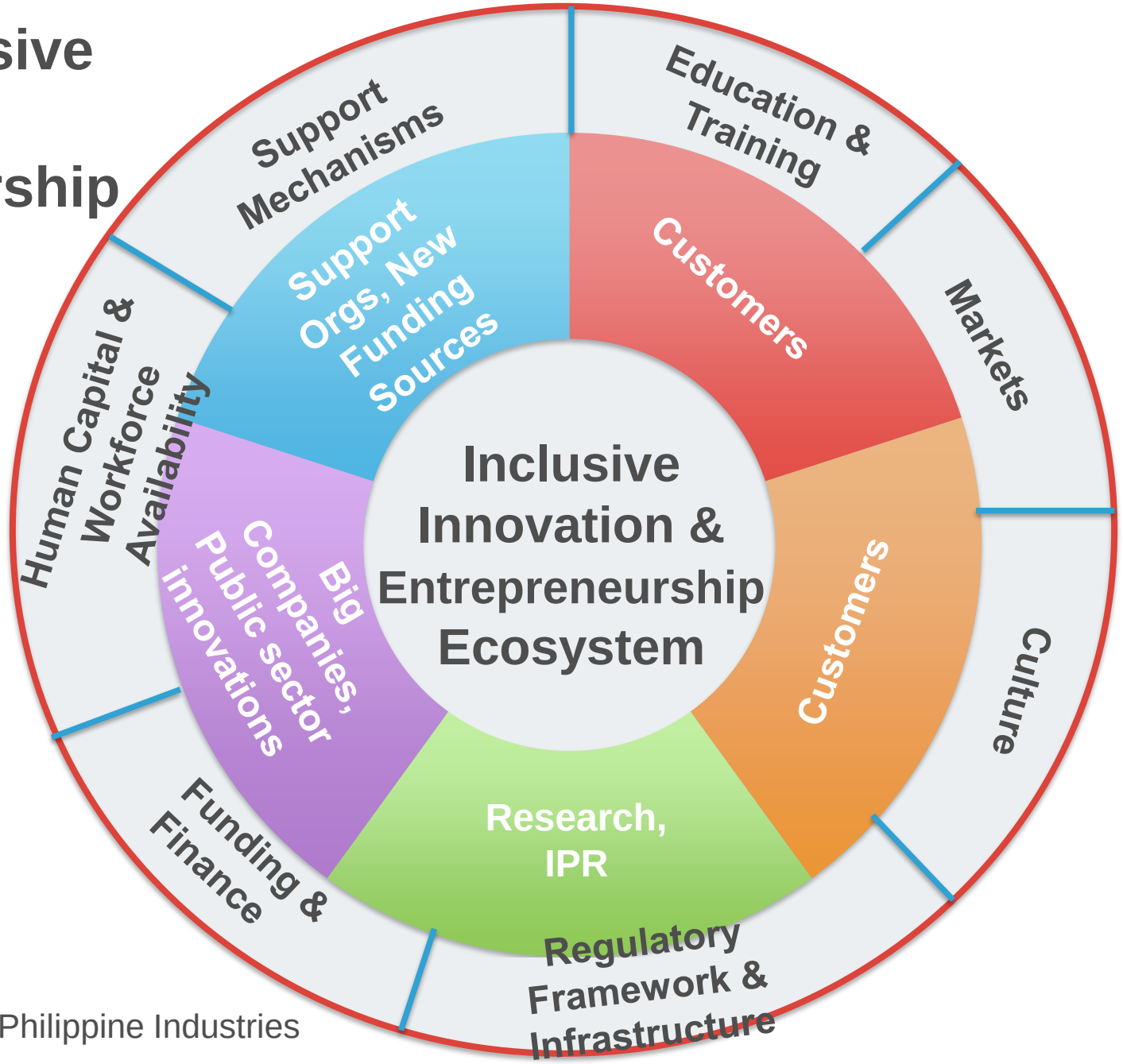
Source:
World Economic Forum 2012

- Strong collaboration among government, academe, industry → connected country
- Strong business & policy environment → job generation; new tech industries, new products & processes; improved productivity & competiveness; sustainable growth
- Creative talent pool: critical mass

poverty reduction

Vision: Inclusive Innovation & Entrepreneurship Ecosystem

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



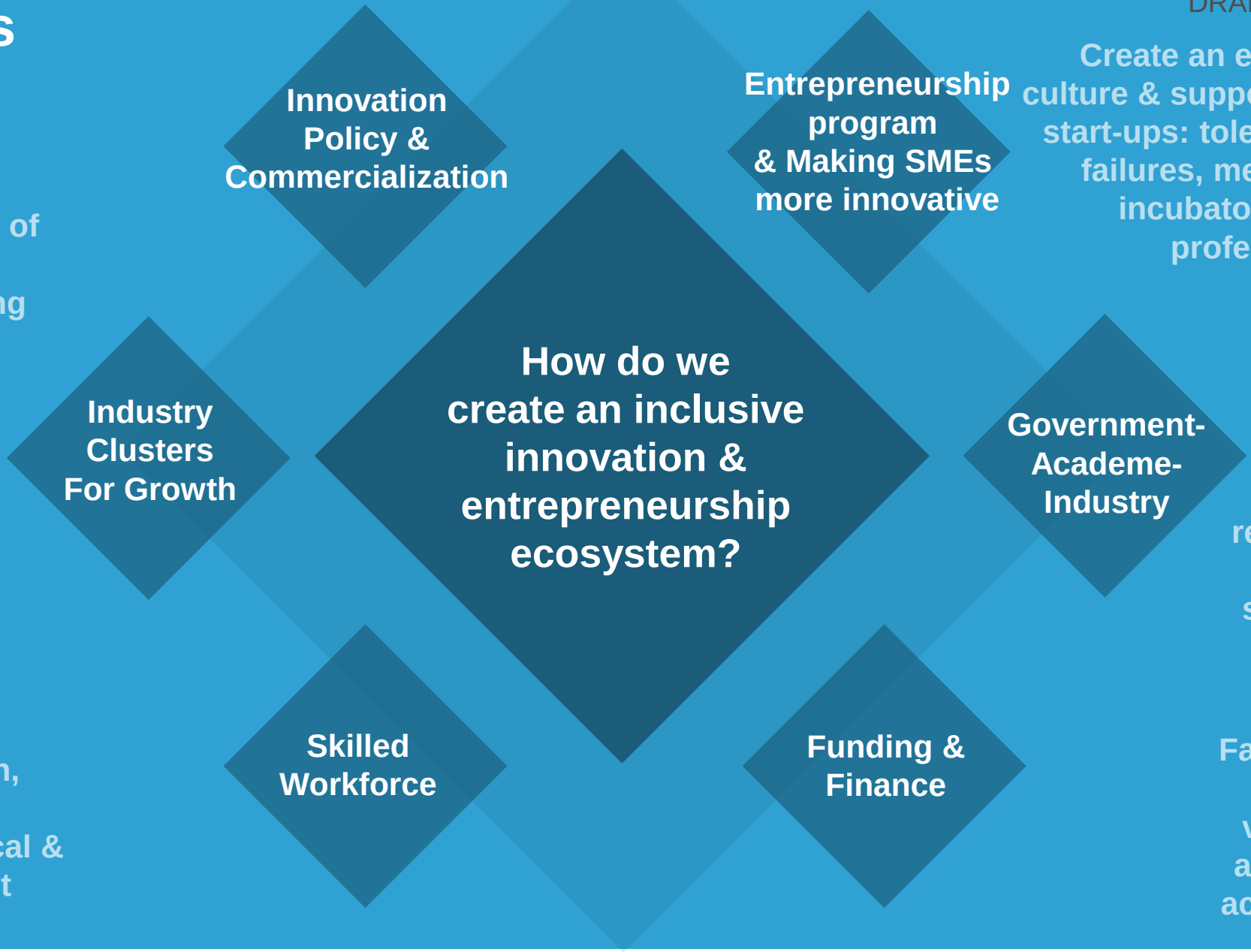
- Incubation of innovation
- Bridge gaps in innovation & entrepreneurship
- Academe industry partnerships to conduct basic, applied, market oriented research
- Support by government & funders
- Involve researchers & experts & industries across the country

6 Elements

Strengthen policy infrastructure & acceleration of commercialization of R&D investments: incentives, enabling environment

Position innovative industries for rapid growth: domestic & foreign markets

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



Create an entrepreneurship culture & support programs for start-ups: tolerance of risks & failures, mentors, advisors, incubators, accelerators, professional services

Strengthen relationships, market driven research, job-ready graduates, entrepreneur-specific training

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

FGDs/Studies: Recommended actions

Technical collaboration between academe & industries foreign & local, market-driven research, open innovation platforms, manufacturing engineering fellowships

HRD and industry responsive curricula and university research & extension

Academe-industry shared facilities for rapid prototyping & demonstration, testing equipment, fast & reliable ICT networks, communication platforms

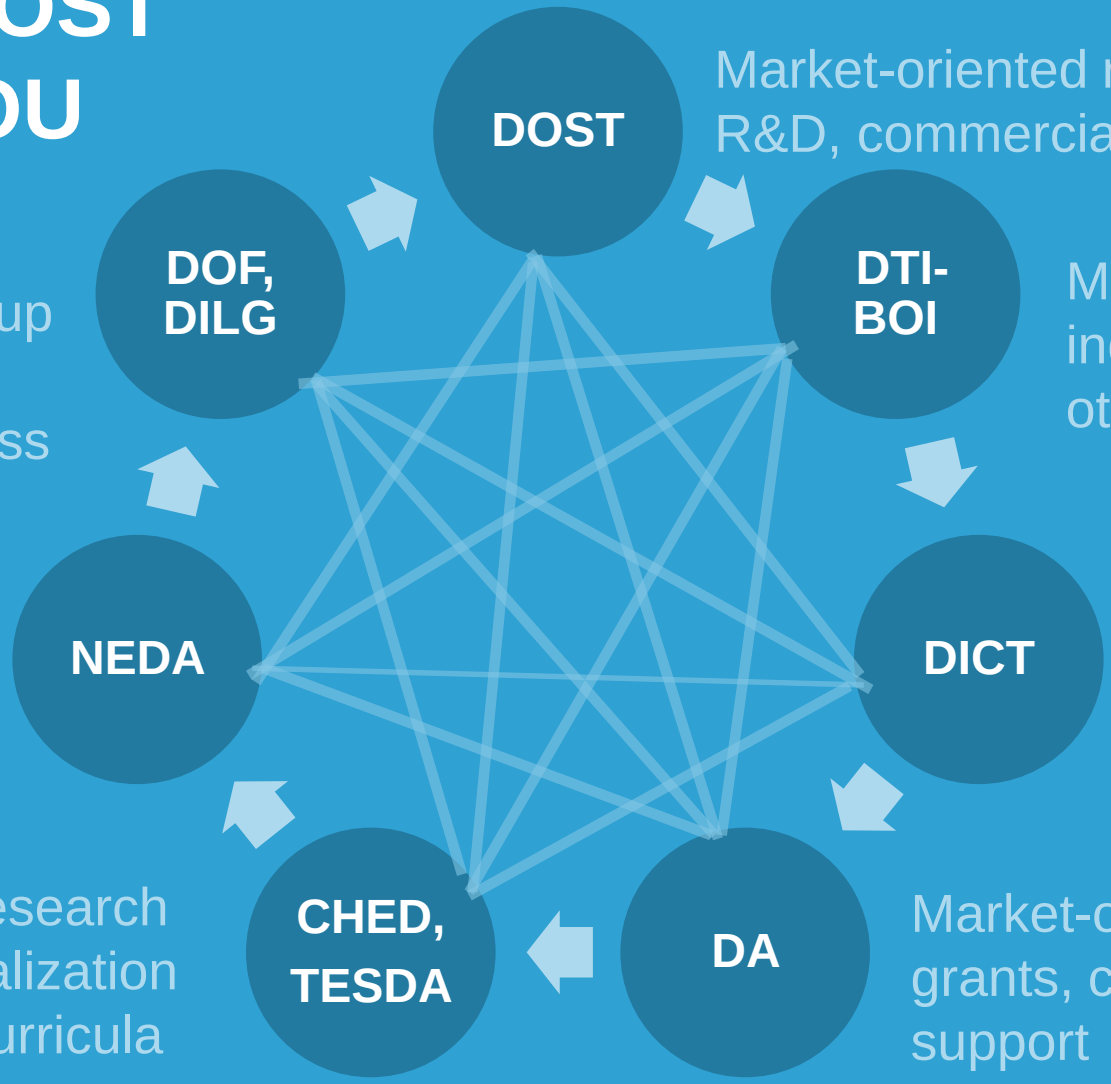
R&D incentives, tax credit, accelerated depreciation, R&D grants, innovation vouchers

Technology transfer offices, science parks, business incubators, accelerator programs, (professionals), funding networks

Leverage BPO model for high value tech based design, digitization, big data, manufacturing, materials

To promote collaboration & closer coordination within government

Expand DTI-DOST Innovation MOU



Market-oriented research grants, R&D, commercialization support

Market studies, linking industries with academe & other government agencies

Physical innovation infrastructure

Market-oriented research grants, commercialization support

Market-oriented research grants, commercialization support, HRD & curricula

Innovation policy monitoring/evaluation of implementation

DOF: Fiscal support for innovation & R&D, start-up activities, MSMEs, LEs, commercialization process
DILG: LGUs

Government-academe-industry network: Innovation ecosystem 2018-2022

Elements	Who will be responsible	Proposed action agenda from 2018-2022
Innovation policy, commercialization	NEDA, DOST, DTI, DA, & other agencies	R&D hubs, innovation database, COA rules, technology transfer offices, science parks, business incubators, accelerator programs, (professionals), funding networks
Entrepreneur-ship program, SMEs, start-ups	DTI, DOST, DA, DILG	Entrepreneurship culture, start-up & SME support to improve competitiveness & innovation performance: mentors, funding, support services, technology adoption skills
GAIN	NEDA, DOST, DTI, DA, CHED, DICT, DILG, LGUs, universities & colleges, LEs/start-ups/MSMEs	Filipinnovation Council, academe-industry technical collaboration, shared facilities for rapid prototyping & demonstration, testing equipment, fast & reliable ICT networks, communication platforms, manufacturing eng'g Augmented-Intelligence Enabled Workforce
Funding	DOF, DBM, DTI	R&D incentives, tax credit, accelerated depreciation, R&D grants, innovation vouchers
Skilled workforce	CHED, DePED, TESDA	Curriculum changes, prepare PH workforce with skills by industry, digital tech skills, HRD & industry responsive curricula, university research & extension
Industry clusters	DTI, DA, NEDA, DILG/LGUs	Connect industries & align innovation activities towards needs of industry clusters

Recommended Actions: Regional Inclusive Innovation Hubs/Centers

2018

- MOU signing
- Revival of Filipinnovation Council
- Regional inclusive innovation hubs
- Pilot areas: NCR, CALABARZON, Cebu, Bicol
- DTI Market research group
- Coordination with CHED & TESDA on future skills & curricular reforms

2019-20

- Regional inclusive innovation hubs
- R&D Centers
- Evaluation of innovation policy & impact
- Central portal/database of innovation related research grants, projects, & programs

2020-22

- More Regional inclusive innovation hubs & R&D Centers across the country

- Regional & local inclusive innovation hubs: cornerstone of i3S, lie at the heart of our economic transformation
  - Bridge gap between industries & academe
  - Create regional ecosystem 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

Guided by the inclusive Filipinnovation vision to transform the economy & with the strong collaboration between government, academe, & industry, the Philippines will be in a better position to leapfrog to industrialization in the new digital age & uplift the lives of Filipinos.