Inclusive Filipinnovation & Entrepreneurship Roadmap

PH Economic Transformation in the New Digital Age

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Assistant Secretary

2018
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 (i³S)
   • 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

Securing the Future of Philippine Industries
1

Philippine Economic Growth
national, sectoral, and regional performance
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

Source: World Development Indicators, The World Bank
High industry growth driven by manufacturing

Manufacturing Growth, Selected Asian Countries (%)

- China
- India
- Indonesia
- Malaysia
- Philippines
- Singapore
- South Korea
- Thailand
- Vietnam

Industry Growth in %

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

<table>
<thead>
<tr>
<th>Period</th>
<th>Manufacturing</th>
<th>Services</th>
<th>Agriculture, fishing, forestry</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2009</td>
<td>3.2</td>
<td>5.2</td>
<td>3.2</td>
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<tr>
<td>2010-2017</td>
<td>7.6</td>
<td>6.7</td>
<td>1.4</td>
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</table>
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

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• 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%).

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• 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
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- 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%).
PH New Industrial Policy
inclusive innovation industrial strategy i^3S
PH: Asia’s Emerging Economic Tiger

GDP Growth: 2000-2017

- China
- Indonesia
- Malaysia
- Philippines
- Vietnam

Poverty incidence remains high

<table>
<thead>
<tr>
<th>Region</th>
<th>Poverty Incidence</th>
</tr>
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<tbody>
<tr>
<td>ARMM</td>
<td>53.7%</td>
</tr>
<tr>
<td>N. Mindanao</td>
<td>36.6%</td>
</tr>
<tr>
<td>CARAGA</td>
<td>39.1%</td>
</tr>
<tr>
<td>Bicol</td>
<td>36%</td>
</tr>
<tr>
<td>E. Visayas</td>
<td>37.3%</td>
</tr>
<tr>
<td>Zamboanga</td>
<td>33.9%</td>
</tr>
</tbody>
</table>

New Industrial Strategy
GLOBAL & DOMESTIC CONTEXT

DRAFT FOR DISCUSSION
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

EXTERNAL FACTORS
- Globalization
- Industry 4.0
- Free Trade Arrangements
- Global Value Chains
- Regional Production Networks

INDUSTRIAL SECTOR
- Agriculture, Fishing & Forestry
- Mining
- Construction
- Manufacturing
- Services

INTERNAL FACTORS
- Government Policies
- Institutions
- Infrastructure
- Macrostability
- Peace & Order
- Rule of Law

UNDERLYING FRAMEWORK
- Competition
- INNOVATION
- Entrepreneurship
- Productivity

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i³S
Inclusive Innovation Industrial Strategy
Transforming the PH economy in the new digital age
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New Industrial Strategy
GLOBAL & DOMESTIC CONTEXT

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

Global Value Chain-focused
Industry Cluster-based
Innovation & Entrepreneurship centered

DRAFT FOR DISCUSSION
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
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.

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

Strong government-academe-industry collaboration

i3S Five Major Pillars

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Opportunities

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

Challenges

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

100 Million Consumer Market as springboard

PH as regional hub, linked with GVCs

- 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
- Auto & Auto Parts
- Aerospace Parts
- Tool & Die
- Iron & Steel
- Chemicals
- IT BPM, E-Commerce
- Agri-business
- Shipbuilding, RORO
- Furniture, Garments, Creative
- Tourism
- Transport & Logistics
- Construction
## Upgrading Trajectories for Selected Industries

<table>
<thead>
<tr>
<th>Industry</th>
<th>Trajectories</th>
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<tbody>
<tr>
<td>Electronics &amp; electrical</td>
<td>R&amp;D, IC design, expansion facilities for advanced products &amp; 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</td>
</tr>
<tr>
<td>Automotive</td>
<td>Auto electronics, ADAS components, engineering services outsourcing, electric motor powertrains like battery</td>
</tr>
<tr>
<td>Aerospace parts &amp; MRO</td>
<td>Flight control actuation systems, servo actuators, servo valves, galley inserts, structures &amp; equipment, seat parts, lavatories, interior fit-out, panel assembly, electronics, airframes &amp; sub-assemblies; MRO: base &amp; line maintenance for commercial aviation</td>
</tr>
<tr>
<td>IT-BPM &amp; E-commerce</td>
<td>Engineering services outsourcing, data analytics, legal process outsourcing, health information management (preventive health, remote), animation &amp; game development (3D, AR/VR), IT services, global-in-house, services embedded in manufacturing (R&amp;D, design)</td>
</tr>
<tr>
<td>Chemicals</td>
<td>Petrochemicals, oleo chemicals, basic chemicals, plastics</td>
</tr>
<tr>
<td>Agribusiness</td>
<td>Production of high value crops like mangoes, bananas, nuts, coffee, cacao, coconut</td>
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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
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);
- new businesses/'000 population; creative goods & services (#115),
- online creativity (92)

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Global Innovation Index 2017

PH Scored Lowest in:

- **Creative outputs**: intangible assets (trademarks, industrial designs, ICT & business model), creative goods & services (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 minority investors, venture capital deals)

**More needs to be done**

- **ICT infrastructure**: access #89, ICT use #88

- **Innovation linkages**: #95
Government Budget on Research

- Total Government Budget: 0.39%, 0.37%, 0.44%
- Total Budget for Research: 4,000, 2,000, 1,000

R&D Economic Affairs 2018
- DA: 19%
- (DENR): 1%
- (DOLE): 0%
- (DOST): 76%
- ARMM: 0%
- GOCCs: 4%
- DTI: 0%

R&D Education 2018
- DEPED: 34%
- SUCs: 45%
- Other Executive Offices: 20%
- DOLE: 0%
- DOST: 1%
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- 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
- 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

DOST Science & Technology

DA Agriculture

CHED Higher Education

DTI Trade & Industry

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

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

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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

- **Stakeholders agreed to foster a dynamic innovation ecosystem of government, academe, and industries and pursue collaborative agreements**

- **Inclusive Innovation Conference 2017**
  - DTI-DOST signed MOU on Fostering Innovation in the Philippines
  - DTI & DOST agreed to pursue dialogues on inclusive innovation

- **Pre-2017 ASEAN MSME Summit Round Table on Innovation**

- **Stakeholders recommended to nurture an innovation culture among Filipinos through the Philippine education system**

- **Gearing Up the Regions for Industry 4.0**
  - Consultation and seminar workshops with stakeholders from the government, academe, and industries across the regions

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**Manufacturing Summit 2016**

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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
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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

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

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

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

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

DRAFT FOR DISCUSSION
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

How do we create an inclusive innovation & entrepreneurship ecosystem?

Innovation Policy & Commercialization

Entrepreneurship program & Making SMEs more innovative

Government-Academe-Industry

Skilled Workforce

Funding & Finance

Industry Clusters For Growth

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

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

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

Securing the Future of Philippine Industries
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**

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

**DILG:** LGUs

**NEDA:** Innovation policy monitoring/evaluation of implementation

**CHED, TESDA:** Market-oriented research grants, commercialization support, HRD & curricula

**DOST:** Market-oriented research grants, R&D, commercialization support

**DTI-BOI:** Market studies, linking industries with academe & other government agencies

**DICT:** Physical innovation infrastructure

**DA:** Market-oriented research grants, commercialization support

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

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**Securing the Future of Philippine Industries**
Guided by the inclusive Filipinovation 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.