National Innovation Systems, Policy Framework and Programs for the Philippines

Issues Identification

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A Paradigm Shift

“market failure” rationale

“systemic failure” rationale
Constitutional Provisions

- priority to R&D, invention, innovation and their utilization; and to S&T education, training and services.
- provide for incentives, including tax deductions, to encourage private participation in programs of basic and applied scientific research.
- regulate the transfer and promote the adaption of technology from all sources for the national benefit.
- protect and secure the exclusive rights of scientists, inventors, artists, and other gifted citizens to their intellectual property and creation.
Institutional Evolution

NSDB, 1958
(R.A. 2067)

DOST, 1987
(E.O. 128)

NSTA, 1982
(E.O. 784)
DOST Mandates

- Provide central direction, leadership and coordination of all scientific and technological efforts in the country
- Formulate S&T policies, programs, and projects in support of national development priorities
President Corazon C. Aquino

- RA 6959 - Establishment of Provincial Centers for S&T
President Fidel V. Ramos

- Stand Philippines
- RA 7459 – Inventors Incentives Act
- RA 7687 – S&T Scholarship Act
- RA 8439 – Magna Carta for S&T Personnel
- RA 8496 – Integrating PSHS campuses into one system of governance
President Joseph Ejercito Estrada

- DOST Medium-Term Plan (1999-2004)
- Crafted the vision of a competent and competitive science community with a social conscience
President Gloria Macapagal-Arroyo

- SETUP
- TECHNICOM
- SUPRE-GOV
- Republic Act 9036
- Republic Act 9107
- Policy Statement and Framework on Modern Biotechnology
- Republic Act 9236
- Republic Act 9242
Adopting policies focused on making the Philippine National Innovation System work

- Product/financial market reforms
- Reduction of barriers to technology entrepreneurship/obstacles to start ups
- Venture capital promotion
- Removing disincentives to technology entrepreneurs
- Educational improvements
- Support to R&D
- IPR protection
Enhancing the competitiveness of S&T workers

- Improving educational system to meet industry needs
- Greater access to skills upgrading opportunities
- Quality standards, accreditation and certification systems
- ICT use promotion
- Tapping Filipino experts from abroad
Medium-Term Philippine Development Plan (2004-2010)

- Accelerating knowledge creation and transfer
  - More resources for field extension
  - More funds for knowledge management
  - Networking
  - Upgrading S&T facilities
  - Technology parks
  - Strengthening extension centers
Promoting technology entrepreneurship
- Support services to new entrepreneurs and SMEs
- SETUP and Technicom implementation
- Technology diffusion
- Commercialization by biotech products
- R&D cost-sharing through contract research
- Venture capital financing
- LBP/DBP financing for SUC projects
- Network and alliances
Assessment of Philippine S&T

NATIONAL R&D EXPENDITURES

0.14% of GDP R&D Expenditure (2002)

1.0% of GDP UNESCO Recommendation
### Assessment of Philippine S&T

#### R&D Expenditures as a Percentage of GDP

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Japan</td>
<td>2001</td>
<td>3.09</td>
</tr>
<tr>
<td>South Korea</td>
<td>1996</td>
<td>2.82</td>
</tr>
<tr>
<td>USA</td>
<td>2002</td>
<td>2.82</td>
</tr>
<tr>
<td>Australia</td>
<td>2000</td>
<td>1.53</td>
</tr>
<tr>
<td>Singapore</td>
<td>1995</td>
<td>1.13</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1999</td>
<td>1.03</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>1996</td>
<td>0.61</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1996</td>
<td>0.24</td>
</tr>
<tr>
<td><strong>Philippines</strong></td>
<td>2002</td>
<td><strong>0.14</strong></td>
</tr>
<tr>
<td>Thailand</td>
<td>1996</td>
<td>0.13</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1994</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Source: UNESCO Statistical Yearbook, 1999

Survey on National R&D Expenditures and Manpower
### R&D Personnel of Selected Countries (1987-1997)

<table>
<thead>
<tr>
<th>Country</th>
<th>Scientists and Engineers in R&amp;D (per million population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan (2001)</td>
<td>10,200</td>
</tr>
<tr>
<td>USA (1999)</td>
<td>8,600</td>
</tr>
<tr>
<td>New Zealand (1999)</td>
<td>7,600</td>
</tr>
<tr>
<td>Australia (2000)</td>
<td>7,200</td>
</tr>
<tr>
<td>South Korea (2001)</td>
<td>6,400</td>
</tr>
<tr>
<td>Singapore (1995)</td>
<td>2,318</td>
</tr>
<tr>
<td>Hong Kong (1996)</td>
<td>454</td>
</tr>
<tr>
<td>Indonesia (1988)</td>
<td>182</td>
</tr>
<tr>
<td>Thailand (1996)</td>
<td>103</td>
</tr>
<tr>
<td>Malaysia (1996)</td>
<td>93</td>
</tr>
<tr>
<td><strong>Philippines (2002)</strong></td>
<td><strong>89</strong></td>
</tr>
</tbody>
</table>

Source: UNESCO Statistical Yearbook, 1999

Survey on National R&D Expenditures and Manpower
Assessment of Philippine S&T

Low number of scientific publications

- USA – 1st place 163,526
- Taiwan 4,655
- Thailand 470
- Malaysia 416
- Philippines - 29th place 164
- Indonesia – Last place 142
Assessment of Philippine S&T

**Patents Granted to Residents**

- Korea – 3rd place 34,052
- Thailand – 22nd place 65
- Malaysia – 27th place 28
- Philippines - 28th place 6
DOST 8-Point Agenda

1. Putting in place five comprehensive priority R&D programs
   - Biotechnology
   - ICT
   - Environment
   - Pharmaceuticals
   - Basic Research
DOST 8-Point Agenda

2. Expanded implementation of existing SETUP, Technicom and Techno Gabay Programs
3. Implementation of high-impact programs in each region
4. Better ways of helping inventors
DOST 8-Point Agenda

5. Launching of Innovation Promotion Program
   - Business plan competition
   - Success stories of Filipino technology entrepreneur
   - Networking with Filipino S&T experts abroad
   - Conducive financial and legal framework for business start-up
DOST 8-Point Agenda

6. Innovative human resources development programs

7. Upgrading of facilities

8. Policy development and advocacy program
   - Groundwork for comprehensive technology transfer legislation
   - Revisit S&T parks program
   - Evaluation of DOST programs
   - DOST Rationalization Program
   - International cooperation
DOST 8-Point Agenda

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   - DOST Rationalization Program
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Conclusion

- Innovation depends on how we all work together.
- We should work together to make National Innovation System produce benefits for Filipinos.