



DEPARTMENT OF SCIENCE AND TECHNOLOGY

# Science for Change Program (S4CP)

## Orientation & Call for Proposals

22 February 2018; SMX Pasay City

ROWENA CRISTINA L. GUEVARA, Ph.D.  
Undersecretary for R&D

# Outline

- S&T Human Resource Development
- Research and Development at DOST
- Science for Change Program
- CRADLE and BIST



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# S&T **HUMAN RESOURCE** Development

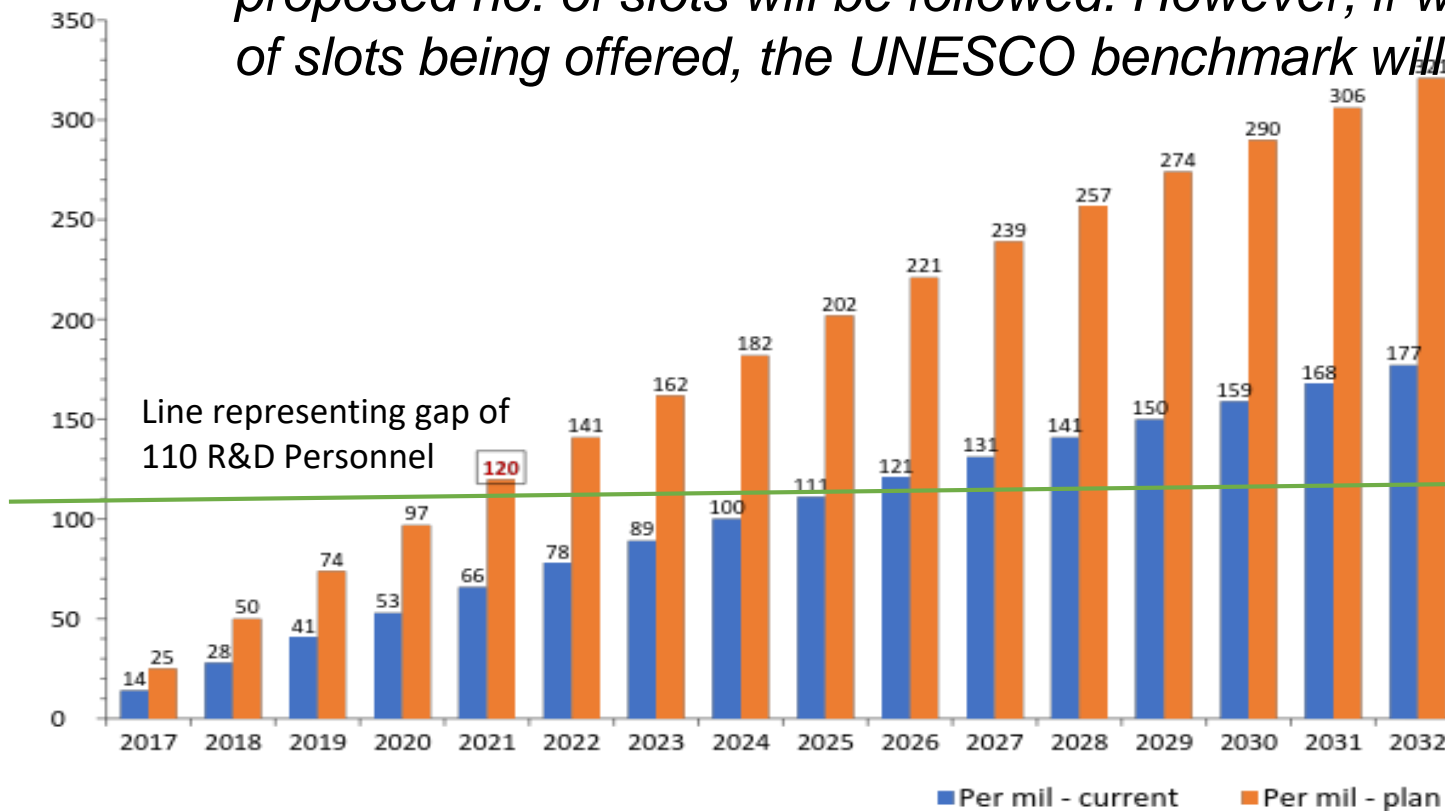
UNESCO Benchmark	380 R&D personnel per million population
Philippine Data (Based on 2013 DOST R&D Survey)	270 R&D personnel per million population (26,495 total headcount)
GAP	110 R&D personnel per million population
Total number of R&D personnel required to meet benchmark in 5 years (2022)	46,462* STEM personnel working in R&D (headcount)
Additional number of R&D personnel required to meet benchmark in 5 years (2022)	16,652 STEM personnel working in R&D (headcount)

*Assuming 10% attrition, 3,663 STEM graduates should be added to the R&D pool every year*

# S&T HUMAN RESOURCE Development

## Number of years needed to meet UNESCO benchmark gap current vs. proposed

Assuming that all available slots are subscribed and that **only 30%** of the scholar-graduates go into R&D, the UNESCO benchmark **will be met in 2021** if the proposed no. of slots will be followed. However, if we remain at the current number of slots being offered, the UNESCO benchmark will be met in 2025.



2018	P 5.0 B
2019	P 7.3 B
2020	P10.9 B
2021	P16.2 B
2022	P24.3 B

# Research and development (R&D)

Comprising of **creative** work undertaken on a **systematic** basis in order to **increase the stock of knowledge**, including knowledge of man, culture and society, and the use of this stock of knowledge to **devise new applications**



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# Research and development (R&D)

- Fundamental/Basic Research
- Applied Research
- Experimental Development
- Pilot Testing



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# DOST COUNCILS



Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD)



Philippine Council for Health Research and Development (PCHRD)



Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD)



National Research Council of the Philippines (NRCP)

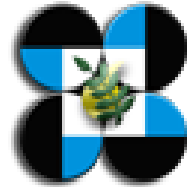
## ***Functions:***

- *Formulation of policies, plans, programs, projects and strategies for S&T development*
- *Programming and allocation of Grants-in-Aid (GIA) funds for R&D*
- *Monitoring of research and development projects*
- *Generation of external funds*

# DOST RESEARCH AND DEVELOPMENT INSTITUTES (RDIs)



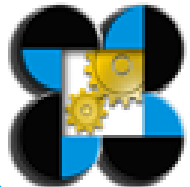
Advanced Science and  
Technology Institute (ASTI)



Food and Nutrition Research  
Institute (FNRI)



Forest Products Research and  
Development Institute (FPRDI)



Industrial Technology  
Development Institute (ITDI)



Metals Industry Research and  
Development Center (MIRDC)



Philippine Nuclear Research  
Institute (PNRI)



Philippine Textile Research  
Institute (PTRI)

## ***Functions:***

- *Research & Development*
- *Technology Transfer*
- *S&T Services (Testing & Calibration)*
- *Technical and Consultancy Services*

# HARMONIZED NATIONAL R&D AGENDA (2017-2022)

## NATIONAL INTEGRATED BASIC RESEARCH AGENDA (NIBRA)

### WATER SECURITY

Watershed studies, water quality, accessibility and availability

### FOOD AND NUTRITION SECURITY

Food safety, biodiversity studies

### HEALTH SUFFICIENCY

Fundamental studies on potential sources of natural products, basic veterinary studies, social dimensions on health

### CLEAN ENERGY

Alternative energy

### SUSTAINABLE COMMUNITIES

Vulnerable ecosystem, data analytics on natural phenomena, environmental and anthropogenic activities

### INCLUSIVE NATION-BUILDING

Documentation of indigenous knowledge, data collection on social phenomena, education, national security and sovereignty, arts, history and culture

## HEALTH

Drug Discovery and Development

Diagnostics  
Functional Foods

Hospital Equipment and Biomedical Devices

Information and Communication Technology for Health

Dengue

Nutrition and Food Safety

Disaster Risk Reduction – Health

Climate Change Adaptation – Health

Omic Technologies for Health

## AGRICULTURE, AQUATIC AND NATURAL RESOURCES SECTOR (AANR)

### AGRICULTURE

#### Crops

Germplasm research; Varietal improvement and selection; Good quality planting materials (QPMs); Postharvest processing and product development

#### Livestock

Animal improvement, improved reproduction, feeding and nutrition; Conservation and improvement of native animals; Vaccine, biologics and diagnostics; Detection of chemical residues and antimicrobial resistance; Decision support system; Product development and processing

### FISHERIES AND AQUACULTURE

Applied genomics; Culture systems; Culture of new cultivatable species; Fish health, disease diagnostics and management; Nutrition, feeds and feeding systems; Postharvest handling, processing and product development; Automation of feeding, water and culture management and post production; Fishkill warning and mitigation systems and environmental management; Management of fisheries

### FORESTRY

Development and sustainable management of tree plantations; HYV development of priority timber species; Production protocols for the production of QPM; Sustainable cultural management practices, harvesting and postharvest techniques and marketing strategies

### NATURAL RESOURCES AND ENVIRONMENT

Biodiversity; Watershed management and utilization; Soil management and rehabilitation; Agricultural and forest waste-based product development; Climate change strategies and decision support tools; Resource assessment and monitoring; Habitat management; Marine environmental management; Innovative systems for unique landscapes and ecosystems

### TECHNOLOGY TRANSFER

Upscaling of technology transfer and commercialization; New and innovative extension modalities; Technology business incubators

### SOCIO-ECONOMICS AND POLICY RESEARCH

## INDUSTRIAL, ENERGY AND EMERGING TECHNOLOGY

Food and Nutrition Security

Countryside Development

Competitive Industries

Delivery of Social Services

Intelligent Transportation Solutions

Renewable Energy and Energy Storage Solutions

Human Security

## DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTION (DRR CCA)

Observation and Monitoring Networks

Technology Development and Application for Monitoring

Modelling and Simulation for Improvement of Monitoring and Forecasting

Hazards, Vulnerability and Risk Assessment

Warning and Risk Communication

Technology Development and Application for Climate Change Mitigation and Adaptation

Technology Development and Application for Disaster Risk Management

Policy Research

# 6Ps Metrics: Evaluation of R&D Proposals

**P**ublications

**P**atents

**P**roducts

**P**eople Services

**P**laces and

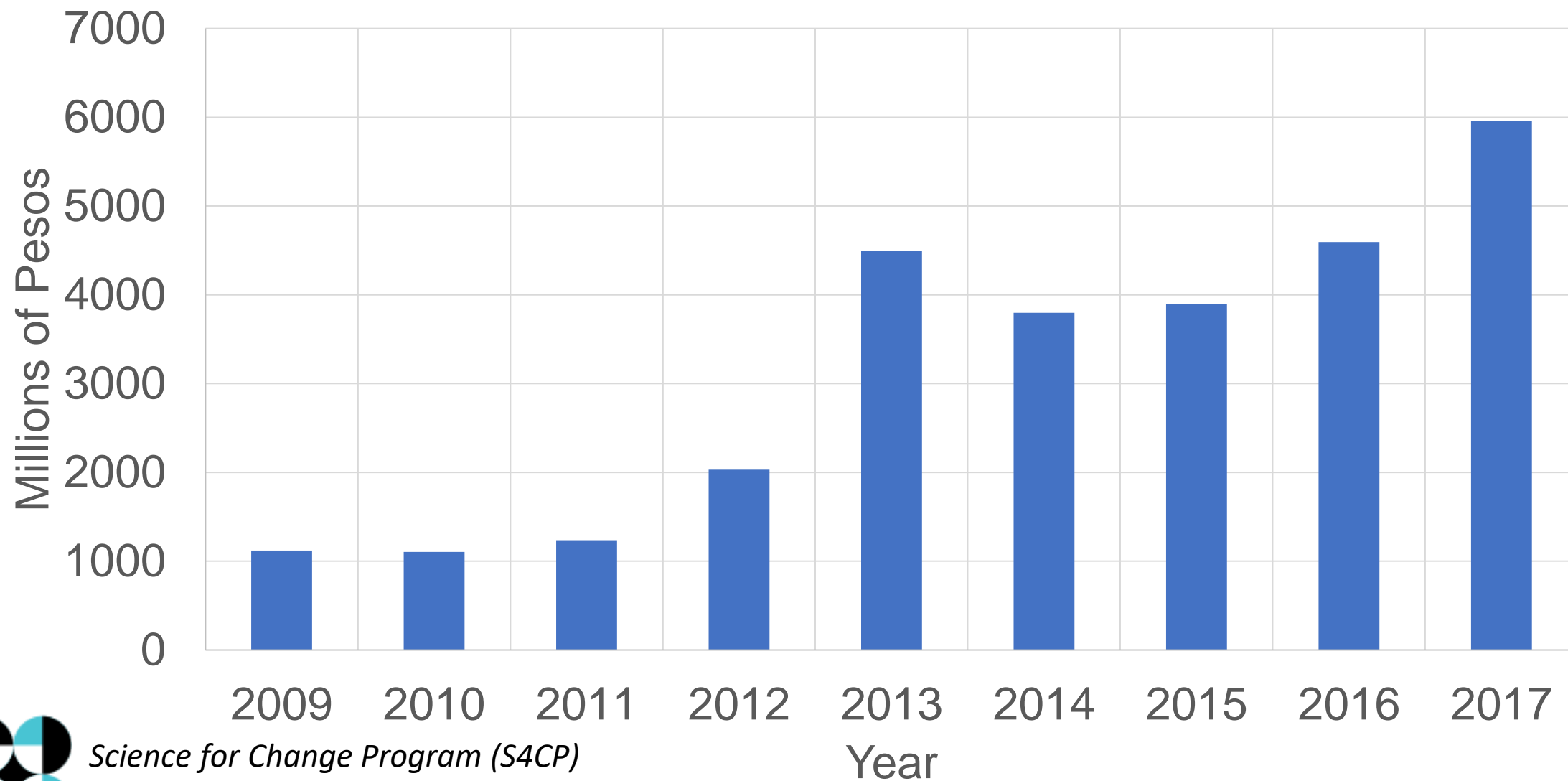
**P**artnerships

**P**olicies



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## DOST R&D Grant-in-Aid Funding



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# *Technology Transfer Act of 2009 (RA 10055)*



- Ownership
- Management
- Use and Commercialization



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<https://thumb7.shutterstock.com>, <https://us.123rf.com>

# DOST IP Policies (6)

1. Intellectual Property Policy
2. Data Sharing Policy
3. Guidelines for the Fairness Opinion Board (FOB) and the Issuance of Fairness Opinion Report (FOR)
4. Technology Transfer Protocol for R&D Institutes
5. IP Management Protocol
6. Establishment and Maintenance of Revolving Funds of DOST RDIs



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# TECHNiCOM

Technology Innovation for Commercialization

- ✓ Developed by DOST with the aim to create a mechanism to fast track the market-readiness of innovations and technologies developed by the local and supported S&T communities.



UPM's BIOTEK-M Aqua Kit (Liquid Format)  
(Prototype Development, Field Testing)



FNRI Iron Fortified Rice  
(Scaling-Up Rice Fortification Program:  
Techno-Transfer to Private Mills)



PTRI's Neo-ethnic Philippine Tropical Fabrics  
(Nationwide Field-Testing and Technology Validation of Natural Fiber  
Blended Yarns and Eco-friendly Treatment and Dyeing Technologies)



Botanical Dewormer for Free Range Native Chickens, CSU-Dumarao



VSU's processing of dried grates and flour made from fresh cassava roots is scaled up to produce food products such as espasol, cassava sticks, cassava cupcakes and cookies



Shelf-life expansion of fortified ready-to-drink tropical fruit and vegetable juice blends of UP Diliman  
prepared by Aseptic Processing and Packaging



Neo-ethnic Philippine textile products of the DOST-PTRI (the convergence of science, art and tradition)

# Technology Business Incubation (TBI)

*one of the strategies to achieve the objective of diffusion of technologies*

## TBI Facilities and Services

### Common Facilities

- Office space
- Internet access
- Business meeting/Conference room
- Training room
- Storage room

### Basic Services Offered

- Technical assistance
- Intellectual property management and Legal counseling services
- Analytical laboratory services
- Administrative services
- Janitorial services

\* Incubatees may be Resident/In-wall or Virtual/Out-wall Locators



## Support for Starting Entrepreneurs

Technology Business Incubator  
(PCIEERD, MSMEs)



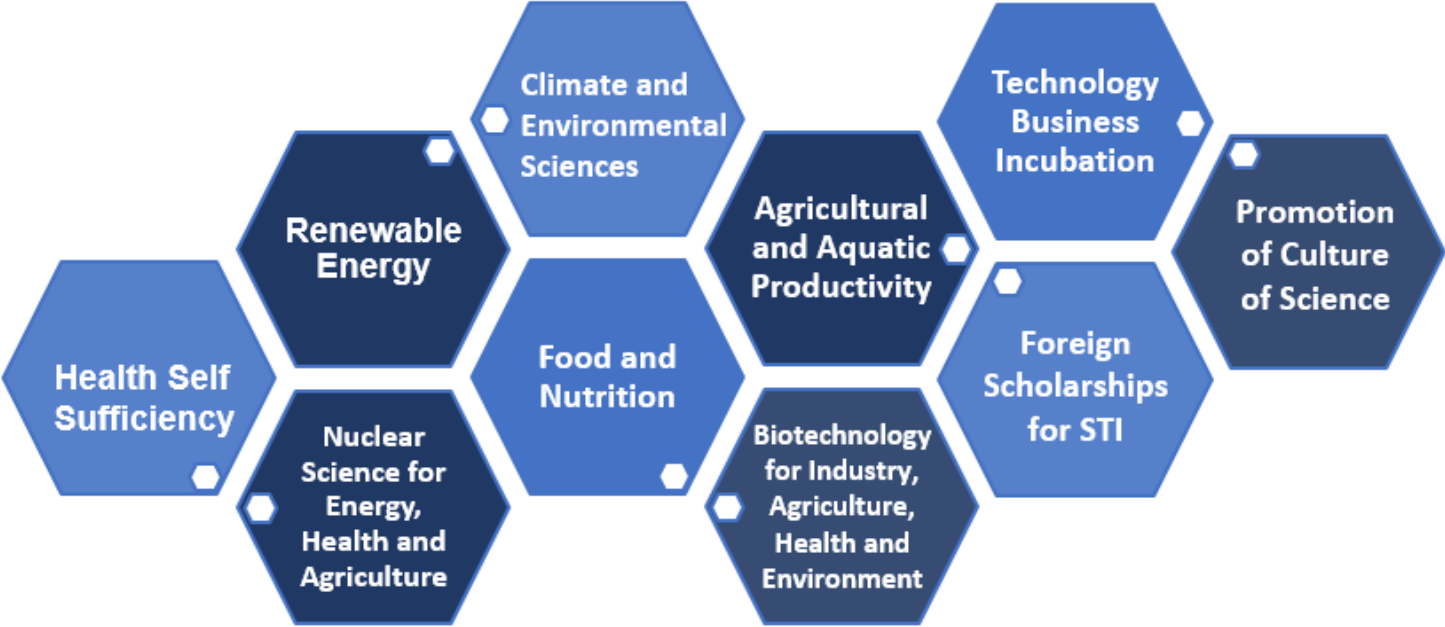
The DOST has invested on TBIs since 2009 and has assisted 116 tech startups where 38 surviving tech-based companies have sprung since 2013.



TECHNOLOGY

# SCIENCE FOR CHANGE PROGRAM

## A. PROGRAM EXPANSION



## B. NEW PROGRAMS

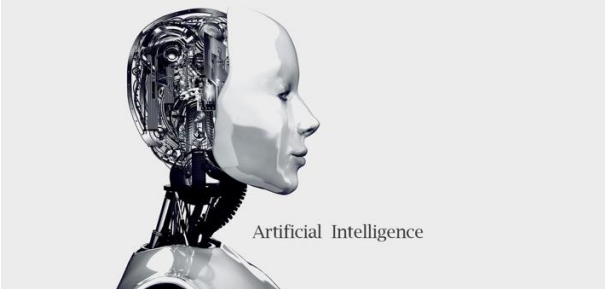


Photo credit: <http://www.dqindia.com/4g-health-the-care-goes-techy/>;  
<https://www.vecteezy.com/vector-art/128754-medical-circle-icons-vector>

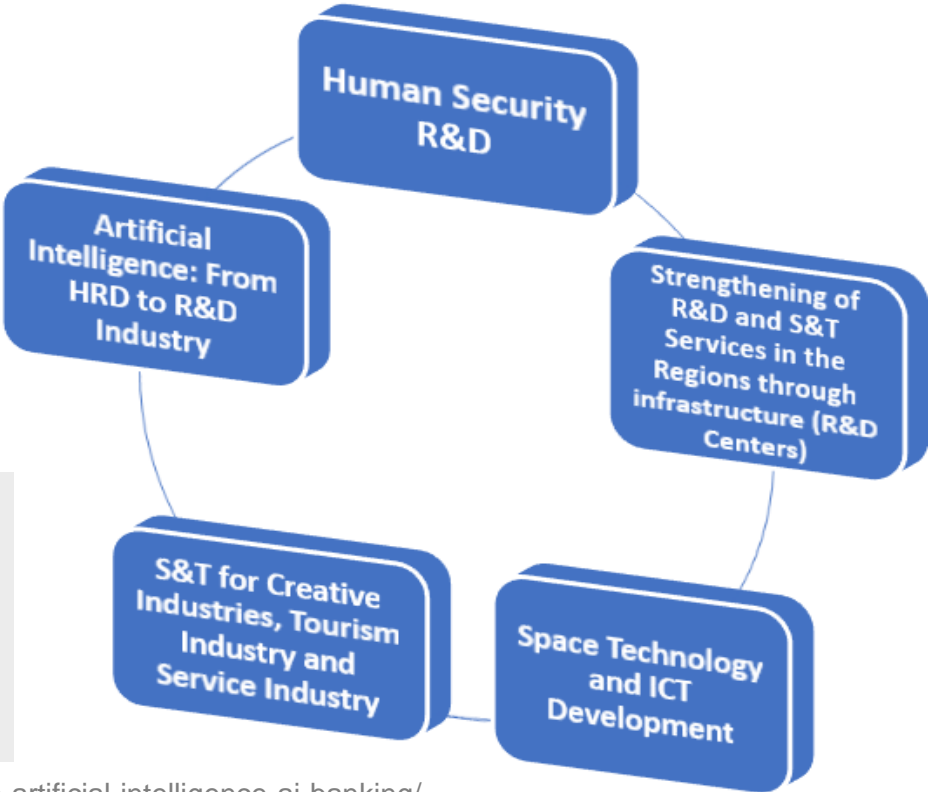


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# ACCELERATED R&D PROGRAM for Capacity Building of Research and Development Institutions and Industrial Competitiveness

**NICER**



Accelerate industrial competitiveness by **capacitating HEIs in the Regions** to undertake quality research that will promote regional development

**RDLead**



**Engage experts** with strong leadership, management and innovative policy-making proficiencies to be in charge of strengthening the research capabilities of the HEIs

**CRADLE**



Create a synergistic **relationship between the academe and the industry** with the goal of invigorating R&D

**BIST**



**Level-up the Philippine Industrial Sector** through the industry R&D, and acquisition of strategic and relevant technologies to enhance their technology level and production processes

# AO 002: Guidelines for the Accelerated R&D Program for Capacity Building of Research & Development Institutions and Industrial Competitiveness of the Science for Change (S4C)

- ✓ Signed by the Secretary on **7 February 2018**
- ✓ Publication in Official Gazette for general circulation on **21 March 2018**



Effectivity of AO 22: **5 April 2018**



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Photo credit: <https://www.update.ph/wp-content/uploads/2017/07/official-gazette.jpg>

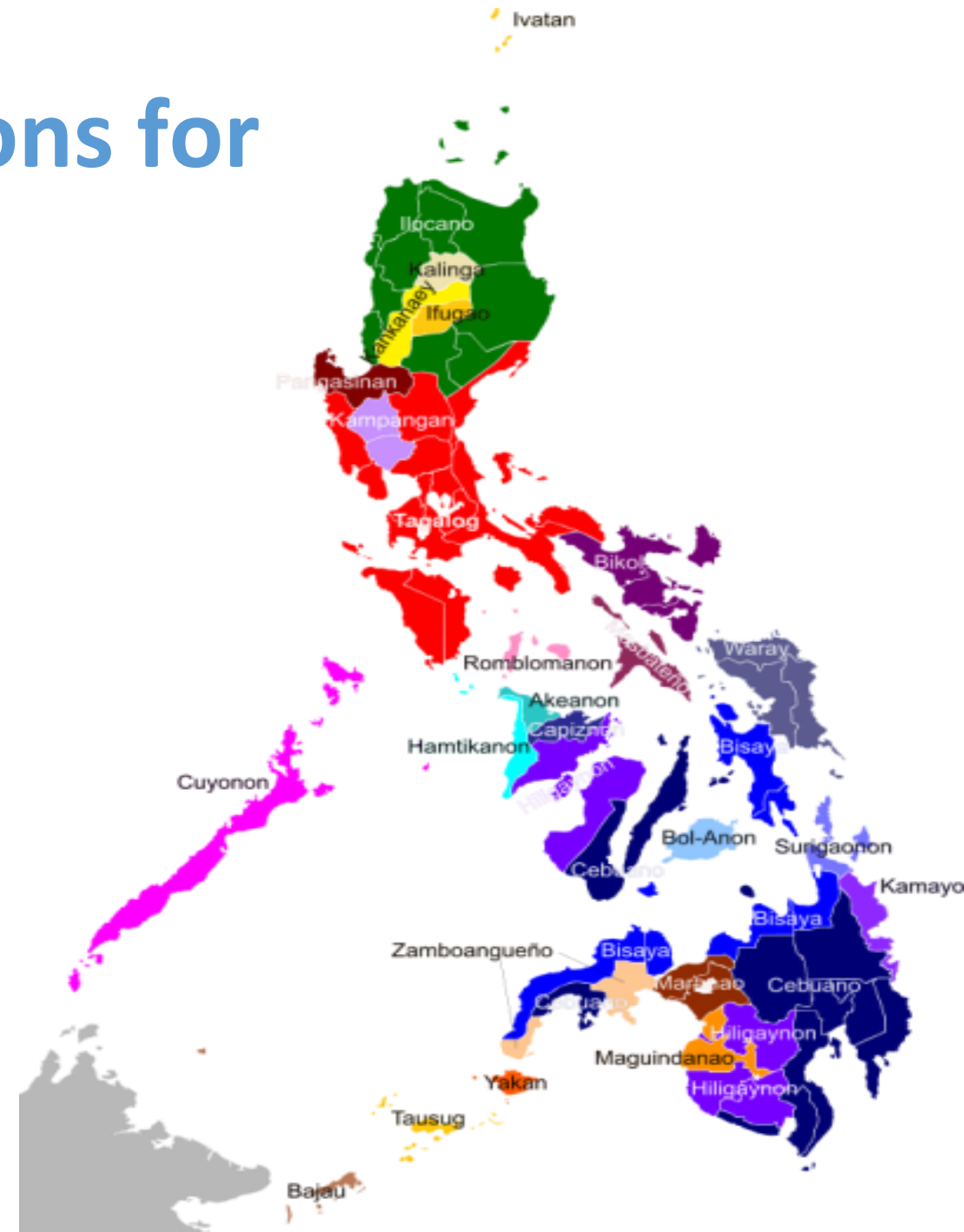
Photo credit: [http://law.upd.edu.ph/wp-content/uploads/2015/10/UP-Law-Center-Logo\\_small.png](http://law.upd.edu.ph/wp-content/uploads/2015/10/UP-Law-Center-Logo_small.png)

# I. Niche Centers in the Regions for R&D (NICER) Program

- Accelerates industrial competitiveness of HEI towards regional development
- Provides grant for R&D capacity building to improve S&T infrastructure



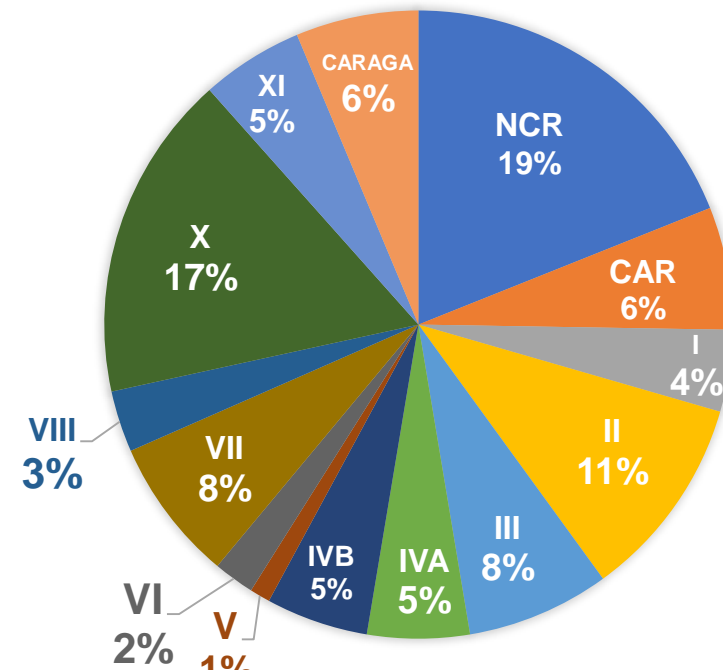
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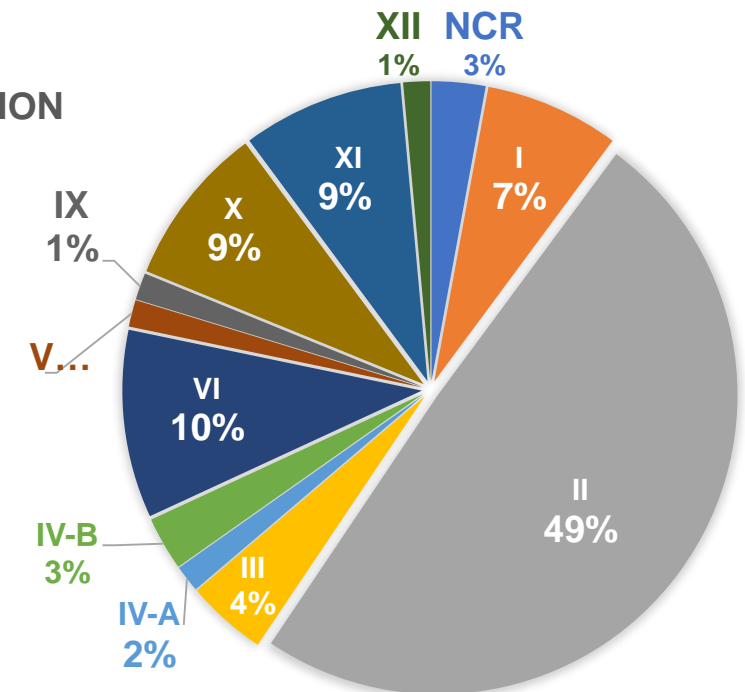
# NICER: Status of Proposals

NICER Proposals	2017	2018
Total Capsule Proposals Submitted	<b><u>95</u></b>	<b><u>69</u></b>
Disapproved	70	20
Under Evaluation	0	43
Endorsed For Full-Blown	25	6
Approved	6	
Disapproved	4	
Still Under Evaluation	11	
Withdrawn	1	
Reconsidered	3	

*\*as of 15 February 2018*



NICER 2017 PER REGION



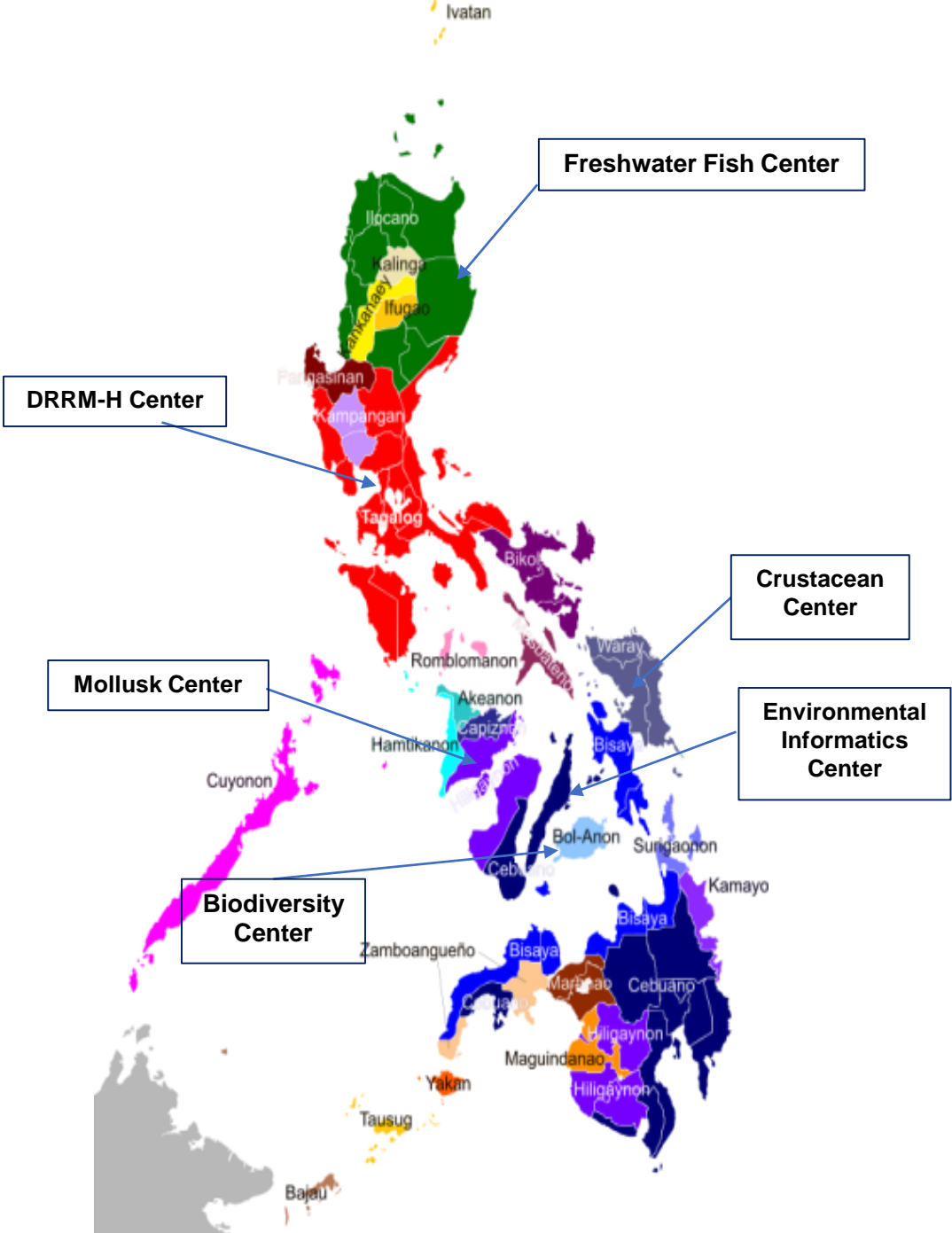
NICER 2018 PER REGION



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# Approved NICER Proposals

TITLE	UNIVERSITY
Center for Innovations for Disaster Risk Reduction and Management in Health	UP MANILA/ DILIMAN
Multi-Species Freshwater Fish Center for Cagayan Valley	ISU
Assessment of Mollusk Resources of the Philippines	UP Visayas
Flora and Fauna Assessment in Cebu Island Key Biodiversity Areas	CTU-Argao
Environmental Informatics Center in Central Visayas	UP Cebu
Eastern Visayas Center for Crustacean R&D	Samar State University



## 2. R&D Leadership Program (RDLead)

- Upgrades existing R&D facilities in HEIs and RDIs
- Engages experts to strengthen research capabilities of HEIs/RDIs
- Hastens use of research for national socio-economic development



# Who can become an RDLeader?

- ✓ A **doctorate degree** in the relevant field
- ✓ With **at least ten (10) years** professional experience in the relevant field
- ✓ Has **made an outstanding contribution** in his/her field of specialization
- ✓ Has demonstrated **competent training and leader skills**
- ✓ Has **refereed publications**
- ✓ In **good health** with **no accountabilities** with DOST and previous employer/s



### 3. Collaborative Research and Development to Leverage Philippine Economy (CRADLE)

- Catalyze collaboration between academe and industry to strengthen Philippine R&D
- Industry identifies the problem, and HEI/RDI undertakes R&D



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#### CRADLE: Status of Proposals

CRADLE Proposals	Number of Proposals
<b>Total Proposals Submitted</b>	<b><u>56</u></b>
Still Under Evaluation	4
Disapproved	29
Endorsed For Full-Blown	23
Approved	3
Disapproved	6
Under Evaluation	13
Appealed for Reconsideration	1

*\*as of 15 February 2018*

# I. Predictive Chromatography of Organic Plant Extracts with Intelligent Agents



**Objective:** Develop a system to efficiently monitor environmental conditions at a plantation for medicinal plants

PROGRAM DURATION

3 years

TOTAL APPROVED BUDGET

P 5,179,400

Photo credit:

[https://upload.wikimedia.org/wikipedia/en/c/cf/Samar\\_State\\_University\\_Logo.png](https://upload.wikimedia.org/wikipedia/en/c/cf/Samar_State_University_Logo.png)

## II. Metabolomics as a Tool for Discovery of Target and Untargeted Hyposcholesterolemic Natural Products from Pineapple



### **Objective:**

Profile the metabolomes of stem and fruit using advance metabolomics technology

**PROGRAM DURATION**

1 year

**TOTAL APPROVED BUDGET**

P 4,999,138.00

## III. Synergize Academe-Industry Research Undertaking to Improve Productivity through Development of Banana Diseases Surveillance System



HIJO  
RESOURCES CORPORATION

### **Objective:**

Develop forecasting models for a disease management system; validation and design of models to enhance workers' and agricultural productivity at HIJO Resources Corporation.

**PROGRAM DURATION**

**2 years**

**TOTAL APPROVED BUDGET**

**P 4,999,438**

# WHAT TO SUBMIT UNDER **CRADLE PROGRAM**?

HEI/RDI	PARTNER INDUSTRY
1. <b>Capsule Proposal</b> following the DOST Form No. 1A and 1B	
2. <b>Letter of intent</b> signed by the industry and partner HEI/RDI	
	2. <b>Certification that the industry will adopt the R&amp;D output</b>
	3. <b>Copy of business permits and licenses</b> from LGU and other relevant government offices
	4. <b>Certificate of registration</b> with DTI, SEC or CDA



## 4. Business Innovation through S&T (BIST) for Industry

- Strengthens private sectors' S&T innovation activities
- Provides assistance for acquisition of high-tech equipment, technology licensing, and patent rights

### BIST: Status of Proposals

BIST Proposals	Number of Proposals
Total Capsule Proposals Submitted	<b><u>14</u></b>
Under Evaluation	2
Disapproved	9
Endorsed For Full-Blown	3
Disapproved	3

*\*as of 15 February 2018*



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# STEERING COMMITTEE



Philippine Chamber of  
Commerce and Industry



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# WHAT TO SUBMIT UNDER **BIST PROGRAM**?

1. Capsule Proposal following the DOST Form No. 1A and 1B	4. Certificate of registration with DTI or SEC
2. <b>Letter of intent</b> to avail of the BIST program, stating commitment to refund the cost of technology acquisition and cover the insurance cost of the acquired technology	5. <b>Financial statements</b> for the last 2 years
3. <b>Copy of business permits and licenses</b> from LGU and other relevant government offices	6. <b>Curriculum Vitae</b> of Management and Technical Team

## HOW TO APPLY?

PROPONENT

- Proponent submits Capsule Proposal with pertinent documents to OUSECRD

OUSECRD

- OUSECRD sends Capsule Proposal with documents to Councils for evaluation

COUNCIL

- Councils evaluate and send results (Endorsed for submission of full blown proposal, Disapproved or Deferred) to OUSECRD

OUSECRD

- OUSECRD informs proponent of the final result of the evaluation

## For Full-blown Proposals

PROPONENT

- Proponent submits Full-blown Proposal with pertinent documents to OUSECRD

OUSECRD

- OUSECRD sends Full-blown with documents to Councils for evaluation

COUNCIL

- Councils evaluate and send results (Approved or Disapproved) to OUSECRD

OUSECRD

- Proposal is presented to the DOST-Exec Com for FINAL APPROVAL
- OUSECRD informs proponent of the final result and proceeds with processing documents for funds release

# Call for Proposals for **CRADLE** and **BIST**

ACTIVITIES	TIMETABLE
Evaluation Period for Capsule Proposals	24 April 2018 to 21 May 2018
Deadline for Submission of Full-blown Proposals (only for those requested to submit Full-Blown proposal)	21 June 2018
Evaluation Period for Full-blown Proposals	22 June 2018 to 8 August 2018
Information to Proponents on the Status of Full-blown Proposals	9 August 2018 to 7 September 2018



**SUBMISSIONS DUE on 23 APRIL 2018**





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## Orientation & Call for Proposals

22 February 2018; SMX Pasay City

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