

SEVENTEENTH CONGRESS OF THE REPUBLIC }
OF THE PHILIPPINES }
Second Regular Session }



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SENATE
Senate Bill No. 1548

RECEIVED BY

Introduced by **SENATOR LACSON**

AN ACT ESTABLISHING THE SCIENCE FOR CHANGE PROGRAM

EXPLANATORY NOTE

One of the key State policies, as stated in Article II Section 17 of the Constitution, provides that “the State shall give priority to science, technology and innovation to foster patriotism and nationalism, accelerate social progress, and promote total human liberation and development.” Thus, “the State shall give priority to research and development, invention, innovation, and their utilization”.

We live in a fast-paced technological era where failing to adapt can result in massive social and economic losses. Truly, French philosopher Jacques Ellul is on point when he stated that “modern technology has become a total phenomenon for civilization, the defining force of a new social order in which efficiency is no longer an option but a necessity imposed on all human activity.” In order to remain competitive in this modern world, there is definitely a need to think new and do new.


While a number of studies have established a strong link between research and development (R&D) and economic prosperity, a study conducted by the Philippine Institute for Development Studies indicates that R&D gaps are still among the causes of poor productivity performance in the Philippines.

Recognizing therefore the critical role of R&D in our country’s development, the Department of Science and Technology (DOST) has launched the Harmonized National Research and Development R&D Agenda 2017-2022, with emphasis on the importance of collaborative research among stakeholders in the government, industry, and the academe to leverage growth in the Philippine economy through the Science for Change Program.

This proposed piece of legislation thus aims to institutionalize DOST’s Science for Change Program in order achieve a higher standard in the field of science and technology, to contribute to the development of the economy and society and to the improvement of the welfare of the nation through prescribing the basic policy requirements for the promotion of science and technology (S&T) and comprehensively and systematically promoting policies for the progress of S&T.

Among the R&D agenda by which the formulation of the Science for Change Program shall be anchored on include, but not limited to addressing pressing problems, boosting productivity, applying new technologies across sectors. The passage of this bill will address the national and sectoral gaps in R&D, including budget, manpower, and inefficiency in institutional arrangement.

It is for this reason that the early passage of this bill is earnestly sought.


PANFILO M. LACSON
Senator

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Introduced by **SENATOR LACSON**

AN ACT ESTABLISHING THE SCIENCE FOR CHANGE PROGRAM

Be it enacted by the Senate and House of Representatives of the Philippines in Congress assembled:

1 **SECTION 1. Short Title.** This Act shall be known as the “Science for Change
2 **Program (SCP) Act of 2017.”**

3
4 **SECTION 2. Declaration of Policy-** The State shall give priority to science,
5 technology and innovation to foster patriotism and nationalism, accelerate social
6 progress, and promote total human liberation and development.” It recognizes that
7 “Science and technology are essential for national development and progress.” Thus, “the
8 State shall give priority to research and development, invention, innovation, and their
9 utilization”. It shall likewise give priority to “science and technology education, training,
10 and services. It shall support indigenous, appropriate, and self-reliant scientific and
11 technological capabilities, and their application to the country's productive systems and
12 national life.”

13
14 **SECTION 3. Objectives.** – The objective of this law is to achieve a higher
15 standard of science and technology, to contribute to the development of the economy and
16 society and to the improvement of the welfare of the nation through prescribing the basic
17 policy requirements for the promotion of science and technology (S&T) and
18 comprehensively and systematically promoting policies for the progress of S&T.

19
20 In order to achieve this objective, the following S&T programs of DOST shall be
21 expanded:

- 22 a. Health Self Sufficiency

- 1 * Drug discovery and development;
- 2 * Diagnostics development;
- 3 * Biomedical engineering
- 4 b. Renewable Energy
- 5 * Solar;
- 6 * Ocean;
- 7 * Wind;
- 8 * Hydro; Biomass;
- 9 * Energy Storage
- 10 c. Nuclear Science for Energy, Health, Agriculture and Industry
- 11 d. Climate and Environment Sciences
- 12 * Disaster risk reduction; Resilience in different sectors;
- 13 * Models downscaled to specific locations
- 14 e. Food and Nutrition
- 15 * Innovative Food Products;
- 16 * Affordable nutrition intervention;
- 17 * Focus on first 1000 days of the young
- 18 f. Agricultural Productivity
- 19 * Farm mechanization;
- 20 * High-yielding varieties;
- 21 * Novel farming methods;
- 22 * Disease prevention and control
- 23 g. Biotechnology for Industry, Agriculture, Health and Environment
- 24 h. Technology Business Incubation
- 25 i. Foreign scholarships for STI
- 26 j. Promotion of Culture of Science

27

28 The following new programs shall also be included in the Science for Change

29 Program.

- 30
- 31 a. Human Security R&D
- 32 b. Strengthening of R&D and S&T Services in the Regions through
- 33 Infrastructure (R&D Centers), facilities, HRD and R&D funding
- 34 c. Space Technology and ICT Development
- 35 * New satellites (Apo, Mayon and Makiling after Diwata);

1 * Rural communications (digital inclusion)

2 d. S&T for Creative Industries, Tourism Industry and Services Industry

3 e. Artificial Intelligence: From HRD to R&D to Industry.

4
5 **SECTION 4. *The Science for Change Program (SCP) and Utilization Policy***
6 *Framework.* The formulation of the SCP is anchored on the following Research and
7 Development (R&D) Agenda:

8
9 **4.1 R&D to Address Pressing Problems**

10
11 a. Health Self Sufficiency

12 - Drug Discovery and Development

13 - Diagnostics Development

14 - Biomedical Engineering

15 - Early Detection of Disease Outbreak

16 - Malnutrition Reduction Program

17 b. Food and Nutrition

18 - Innovative Food Products

19 - Complementary Foods

20 - Affordable Nutrition Intervention

21 - Focus on First 1000 Days of the Young

22 c. Priority Agricultural Commodities (Crops, Livestock, Poultry, Marine
23 Resources, Inland Aquatic Resources, etc.)

24 - Reinvigorating the Philippine Coconut Industry through Coconut
25 Somatic Embryogenesis Technology (CSET)

26 - Varietal Improvement of Philippine Native Chicken, Ducks and Pigs

27 - Varietal Improvement for Important Export Commodities

28 - Disease Prevention and Intervention for Abaca, Banana, Coconut and
29 Papaya

30 - Increasing Crop Resilience to Environmental Stresses

31 d. Biodiversity and Sustainable Development

32 - Conservation of Select Indigenous Forest Tree Species in Forest
33 Reserve

34 - Mangrove Rehabilitation and Management

- 1 - Coastal Sustainable Development / Ocean-Atmosphere Interaction
2 Research Program
3 e. Transport and Mobility
4 - Environmentally-sustainable Technology Alternatives for Public Utility
5 Vehicles
6 - Intelligent Transport System (ITS)
7 - Small Interisland Transport
8 f. National Security and Human Security
9

10 **4.2 R&D for Productivity**

- 11
12 a. Technology Support for Agricultural Productivity
13 - Farm Mechanization
14 - Varietal Improvement
15 - Novel Farming Methods
16 - Disease Prevention and Control
17 b. Technology Support for Industrial/Manufacturing/Mining Productivity
18 - Production of Gums, Resins and Oils from Local Plants Using New
19 Technologies
20 - Green Chemistry Products and Technologies
21 - R&D in Support of the Philippine Metals Industry
22 - Responsible Mining Technologies and Processes for extraction and
23 product development for copper, nickel, iron, gold and chromite
24 including Service Facilities for Artisanal Small-Scale Gold Mining
25 - Electronics Products Design and Development
26 c. S&T for the Creative Industries, Tourism Industry and Services Industry
27

28 **4.3 R&D to Tap, Manage and Store Renewable Energy Resources**

- 29 a. Renewable Energy Production
30 - Solar
31 - Wind
32 - Hydro
33 - Biomass
34 - Ocean

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- b. Energy Storage
 - Engineering Design, Modeling, Assessment Tools and Development of Renewable Energy Systems
 - Fabrication of Solid State Rechargeable Batteries and Super capacitors

4.4 R&D to Apply New Technologies Across Sectors

- a. Biotechnology, Nanotechnology, Genomics, ICT and Nuclear Science (for agriculture, industry, energy, health and environment)
- b. Artificial Intelligence
- c. Space Technology

4.5 Disaster Risk Reduction and Climate Change

- a. Full implementation of the PAGASA Modernization Law
- b. Improvement of Weather, Climate and Flood Forecasting/Warning and Other Related Activities
 - Development of Flood/Hazard/Resource Vulnerability Maps
 - Development of Flood Forecasting Model for Major River Basin
 - Development of Radar Software and Hardware
 - Development of Tropical Cyclone Forecasting Tools for Deterministic or Consensus TC Forecast
 - Climate Monitoring and Prediction System (CLIMPS)
 - Severe Weather Forecasting and Warning
 - Automation of Flood Early Warning System
 - Advanced Data Collection, Enhancement of Web and Dissemination including Mirror Forecasting
- c. Technical Advisory Services for Geologic and Geophysical Phenomena
 - Development of Real-time Physico-chemical Monitoring Network
 - Ground Deformation Monitoring and R&D of Active Volcanoes
 - Fault Finder App
- d. Disaster Preparedness
 - Improvement of Weather Prediction and Information for Disaster Prevention

- 1 - Volcano, Earthquake and Tsunami Disaster Preparedness and Risk
- 2 Reduction
- 3 - ReliefOps. Ph – a multi-stage and multi-user decision support system for
- 4 disaster preparedness and response
- 5 - Municipal Level Risk Assessment and Incident Reporting and
- 6 Visualization
- 7 - Development of Spatial Models for Comprehensive Land Use Planning
- 8 - Best practices for environmental planning, structural and architectural
- 9 designs and guidelines for residential structures and evacuation centers.
- 10 - Enhancing Cytogenetic Biological Dosimetry Capabilities of the
- 11 Philippines for Nuclear Incident Preparedness
- 12 - Establishment of Real-time Environmental Radiation Monitoring System
- 13 - Emergency Food Development
- 14 - Emergency Shelter Development

15

16 **4.6 Maximize Utilization of R&D Results Through Technology Transfer**

17 **and/or Commercialization**

18

- 19 a. Inter-department Collaborations to roll out new beneficial technologies.
- 20 b. Promotion of Commercializable Technologies to the Private Industry Sector
- 21 c. Community Empowerment through Science and Technology (CEST)
- 22 d. Disaster Risk Management

- 23
- 24 - Turnover of Flood/Hazard/Resource Vulnerability Maps to LGUs
- 25 - Deployment of Early Warning Systems in Disaster-Prone Areas
- 26 - Deployment of Weather Monitoring Device
- 27

28 **4.7 Accelerated R&D Program for Capacity Building of Research and**

29 **Development Institutions and Industrial Competitiveness**

30

- 31 a. Niche Centers in the Regions for R&D (NICER)
- 32 b. R&D Leadership Program (RDLead).
- 33 c. Collaborative R&D to Leverage PH Economy (CRADLE) for RDIs and
- 34 Industry.
- 35 d. **Business Innovation through S&T (BIST)** for Industry

1 **4.8 Assistance to the Production Sector**

- 2 a. One Lab / Metrology, Calibration and Testing – Networking of Laboratories
- 3 b. One Expert – for S&T Services
- 4 c. One Store – to assist in on-line marketing of technology-based products
- 5 d. Packaging and Labeling Program
- 6 e. Food Innovation Centers Program
- 7 f. Food Safety and Quality Program
- 8 g. Machine and Equipment Development
- 9 h. Technology Assistance to Traditional/Indigenous Industries

10 **4.9 Upgrading of Facilities and Improvement of S&T Services**
11 **(Strengthening of R&D and S&T Services in the Regions through**
12 **Infrastructure, facilities, HRD and R&D funding)**

- 13
- 14 a. Technology Business Incubation Program
- 15 b. Product Development Centers
- 16 c. Materials and Products Testing Facilities
- 17 d. Research Centers in the Regions
- 18 e. Disaster Risk Reduction Facilities

19

20 **4.10 Human Resource Development for Science and Technology**

- 21
- 22 a. Foreign scholarships for PhD Scholars in S&T
- 23 b. PhD by research
- 24 c. MD/PhD scholarships
- 25 d. Expanded MS/PhD S&T Scholarships
- 26 e. Expanded Undergraduate S&T Scholarships for Inclusive Development
- 27 f. Expanded Secondary Level Scholarships at Philippine Science High School
- 28 g. Innovative modalities for the delivery of HR interventions
- 29 h. Promotion of Culture of Science
- 30 i. Science and Technology Education for Ordinary Citizens

31

32 **4.11 Capacitate and Utilize Institutions in the Regions – SUCs who do**
33 **R&D and Develop Human Resources in S&T**

1 a. S&T Regional Alliance of Universities for Inclusive National Development
2 (STRAND)

3 b. Science Teacher Academy for the Regions (STAR)

4 c. Strengthening of Research Centers in Universities in the Regions
5

6 **4.12 Collaboration with industry, academe and international**
7 **institutions**

8
9 a. Industry-Academe-Government Collaboration in R&D (Co-laboratories)

10 b. International S&T Collaborations
11

12 **SECTION 5. *Formulation and Submission of the Science for Change***
13 ***Program (SCP).*** - The DOST shall formulate the five-year Science for Change
14 Program in coordination with other relevant government agencies including State
15 Universities and Colleges and representatives from the private sector undertaking
16 R&D. The Secretary of DOST shall submit to the President the Science for
17 Change Program for approval within ninety (90) days from the effectivity of this
18 Act.
19

20 **SECTION 6. *Mandatory Adaptation of Publicly Funded Technologies by***
21 ***National government Agencies (NGAs) and State Universities and Colleges***
22 ***(SUCs)***– Mandatory adaptation of publicly funded and generated technologies
23 whenever feasible and practicable, shall strictly be implemented by all government
24 entities or instrumentalities utilizing public funds for any purpose. All national
25 government agencies (NGAs), government-owned-and controlled corporations
26 (GOCCs), state universities and colleges (SUCs), and local government agencies
27 (LGUs) performing science and technology initiatives are mandated to help
28 develop and implement critical and strategic technology development projects and
29 adopt government funded locally developed technologies.
30

31 For this purpose, all Research and Development (R&D) activities performed
32 by NGAs, GOCCs, SUCs and LGUs under their respective mandates shall be
33 under the control and supervision of the Department of Science and Technology.
34

1 The DOST, in consultation with government research institutions and other
2 agencies concerned, shall prepare a harmonized national research and
3 development agenda for the government covering all major research and
4 development programs and projects or those costing Twenty Million Pesos
5 (P20,000,000.00) and above. The proposed agenda shall be submitted for approval
6 by the Director General of NEDA.

7
8 The Harmonized National Research and Development Agenda shall be directly
9 related to the priorities under the Philippine Development Plan.

10
11 The DOST shall submit to the DBM, the Speaker of the House of the
12 Representatives and the President of the Senate of the Philippines, either in printed
13 form or by way of electronic document, a copy of the approved Harmonized
14 National Research and Development Agenda. The Secretary of Science and
15 Technology and the Agency's web administrator or his/her equivalent shall be
16 responsible for ensuring that the approved Harmonized National Research and
17 Development Agenda is posted on the Agency's website.”

18
19 **SECTION 7.** *Science for Change Program Fund (SCPF).* - There is hereby
20 created the Science for Change Program Fund to be used exclusively for the
21 implementation of the projects and activities under the SCP. The SCPF shall be
22 administered by DOST in accordance with existing government budgeting,
23 accounting and auditing rules and regulations. Science for Change Program Fund
24 shall be sourced from the following:

- 25
26 a) The initial amount of twenty-one Billion pesos (P 21,000,000,000.00) to be
27 taken from the General Appropriation Act (GAA) and other utilized funds /
28 savings from GAA of the preceding year, in case the GAA was approval before
29 this law is enacted. The yearly budget for Science for Change Program shall
30 double yearly for the next four (4) years. Such amount shall be released to the
31 DOST after the effectivity of this Act.
- 32 b) Income produced by the SCP.
- 33 c) Loans, contributions, grants, bequests, gifts, and donations whether from local
34 or foreign sources. Provided, That acceptance of grants, bequests, contributions
35 and donations from foreign governments shall be subject to the approval of the

1 President upon the recommendation of the Secretary of the DOST and
2 Secretary of the Department of Foreign Affairs (DFA). The Secretary of DOST
3 with the approval of the NEDA and subsequently the Department of Finance
4 (DOF) is hereby granted the authority to enter into loan agreements with
5 foreign financial institutions. Said fund obtained from various source shall be
6 utilized from the different components of the program.
7

8 **SECTION 8. Appropriations.** - The sum of Twenty-one Billion Pesos (PHP
9 21,000,000,000.00) is hereby appropriated as initial operating fund for the projects
10 and activities under the SCP, taken from the current fiscal year's appropriation of
11 the Office of the President. Thereafter, the amount needed for the operation of the
12 SCP shall be included in the General Appropriations Act.
13

14 **SECTION 9. Annual Report.** - The DOST shall annually submit a report on
15 the implementation of the SCP to the Office of the President and to the
16 Committees on Science and Technology in both Chambers of Congress.
17

18 **SECTION 10. Implementing Rules and Regulations.** - The DOST shall
19 formulate the Implementing Rules and Regulations (IRR) for the effective
20 implementation of this Act within one hundred eighty (180) days from the
21 effectivity of this Act.
22

23 **SECTION 11. Separability clause.** - Any portion or provision of this Law that
24 may be declared unconstitutional or invalid shall not have the effect of nullifying
25 other portions or provisions hereof as long as such remaining portion or provision
26 can still subsist and be given effect in their entirety.
27

28 **SECTION 12. Effectivity Clause.** - This Act shall take effect fifteen (15) days
29 after its complete publication in a newspaper of general circulation.
30

31 *Approved.*
32