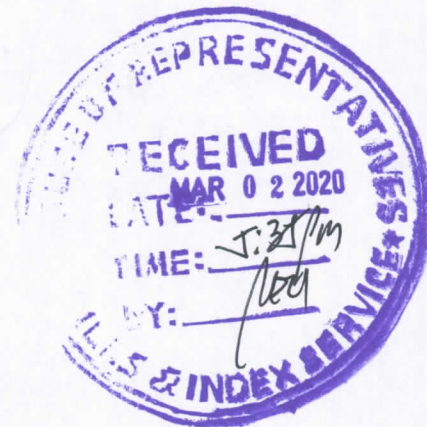


Republic of the Philippines
House of Representatives
Quezon City, Metro Manila

EIGHTEENTH CONGRESS
First Regular Session

House Bill No. 6435



INTRODUCED BY
REP. ALFRED VARGAS

AN ACT
ESTABLISHING THE SCIENCE FOR PEOPLE AND COMPETITIVENESS
PROGRAM

EXPLANATORY NOTE

The country has shown great effort toward preparing for the Fourth Industrial Revolution. However, the Philippine Institute for Development Studies (PIDS) estimates that our 2018 spending for research and development (R&D) comprises a paltry 0.2 percent of Gross Domestic Product (GDP). This is way below the international standard of one percent (1%) of GDP and below what our ASEAN neighbors have been spending.¹ Yet, R&D is but a small component of a much more significant factor in a country's development – science and technology.

To quote US Navy Vice Admiral Herbert A. Browne (Ret.) in Armed Forces Communications and Electronics Association (AFCEA)'s² SIGNAL Newsletter, "(T)here is a significant difference between science and technology versus research and development, and government funding should be delineated along these lines. Science and technology involves pushing the outside of the technology envelope to generate breakthroughs in engineering disciplines or even in basic science itself. Research and development is focused more on generating an end product that may owe its

¹ <https://www.pids.gov.ph/press-releases/419>

² AFCEA is a member-based, non-profit association for professionals that provides highly sought after thought leadership, engagement and networking opportunities. It focuses on cyber, command, control, communications, computers and intelligence to address national and international security challenges.

origins to proven science and technology. With these definitions in mind, in these times of scarce resources it is better to concentrate funds for government work on science and technology.”³

The Department of Science and Technology (DOST) endeavors to significantly accelerate Science, Technology, and Innovation (STI) in the country through a massive increase in investments on S&T, HRD, and R&D over a 5-year period. We must support DOST’s efforts.

While the passage of this important legislation will further boost science and technology research necessary for the competitiveness of Philippine products and services, it is critical that our people –particularly farmers, fisherfolk, domestic entrepreneurs, and the local science community – will be the primary beneficiaries of all the knowledge and information generated by these initiatives. This bill therefore ensures not just the availability of funds but likewise promotes a “Science for People and Competitiveness Program.”

The Science for People and Competitiveness Program (SPCP) consists of four (4) components: Program Expansion in 7 areas, New Programs in 6 areas, the Grand Plan for S&T Human Resource Development, and the Accelerated R&D Program for the Capacity Building of Research and Development Institutions and Industrial Competitiveness.

The program needs a substantial budget capturing all the R&D efforts - spread over a five-year period - as follows:

1. Niche Centers in the Regions for R&D (NICER) – 3.2 Billion Pesos
2. R&D Leadership Program (RDLead) – 6 Billion Pesos
3. Collaborative R&D to Leverage PH Economy (CRADLE) for RDIs and Industry – 3.2 Billion Pesos
4. Business Innovation through S&T (BIST) for Industry – 14.25 Billion Pesos (25 industry sectors, at PhP50-100M per sector x75)
5. The S&T HRD (STRAND, STAR, SRCUR)

In view of the foregoing, the passage of this measure earnestly sought.



ALFRED VARGAS

³ <https://www.afcea.org/content/divide-science-technology-and-research-development>

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

SECTION 1. *Short Title.* – This Act shall be known as the “Science for People and Competitiveness Program (SPCP) Act.”

SECTION 2. *Declaration of Policy.* –

Article XIV of the Philippine Constitution declares that “the State shall give priority to research and development, invention, innovation, and their utilization”. It shall likewise give priority to “science and technology education, training, and services. It shall support indigenous, appropriate, and self-reliant scientific and technological capabilities, and their application to the country’s productive systems and national life.”

SECTION 3. *Objectives.* – This law aims to achieve a higher standard of science and technology that shall primarily benefit farmers, fisherfolk, local entrepreneurs, and the Filipino scientific community; contribute to the development of the economy and society; to boost the improvement of the welfare of the nation by prescribing the basic policy requirements for the promotion of Science and Technology (S&T); to comprehensively and systematically promote policies for the progress of S&T; and to enhance our

competitiveness and be at par or above with other countries in the field of S&T.

In order to achieve these objectives, the following S&T programs of the Department of Science and Technology (DOST) shall be expanded:

- a. Health Self Sufficiency
 - 1) Drug discovery and development
 - 2) Diagnostics development
 - 3) Biomedical engineering
- b. Renewable Energy
 - 1) Solar;
 - 2) Ocean;
 - 3) Wind;
 - 4) Hydro;
 - 5) Biomass;
 - 6) Energy Storage
- c. Nuclear Science for Energy, Health, Agriculture and Industry
- d. Climate and Environment Sciences
 - 1) Disaster risk reduction; Resilience in different sectors;
 - 2) Models downscaled to specific locations
- e. Food and Nutrition
 - 1) Innovative Food Products;
 - 2) Affordable nutrition intervention;
 - 3) Focus on first 1000 days of the young
- f. Agricultural Productivity
 - 1) Farm mechanization;
 - 2) High-yielding varieties;
 - 3) Novel farming methods;
 - 4) Disease prevention and control
- g. Biotechnology for Industry, Agriculture, Health and Environment
- h. Technology Business Incubation
- i. Foreign scholarships for Science and Technology Information Institute (STII)
- j. Promotion of Culture of Science

The following new programs shall also be included in the Science for People and Competitiveness Program:

- a. Human Security Research & Development (R&D).
- b. Strengthening of R&D and S&T Services in the Regions through Infrastructure (R&D Centers), facilities, HRD and R&D funding

- c. Space Technology and ICT Development
 - 1) New satellites (Apo, Mayon, and Makiling after Diwata);
 - 2) Rural communications (digital inclusion)
- d. S&T for Creative Industries, Tourism Industry and Services Industry
- e. Artificial Intelligence: From HRD to &D to Industry.

The whole-of-country approach in policy and decision-making shall be used to recognize the valuable input from the government, private sector, and other stakeholders in the implementation of the program.

SECTION 4. *The Science for People and Competitiveness Program (SPCP) and Utilization Policy Framework.* - The foundation of the SPCP is anchored on the following Research and Development (R&D) Agenda:

4.1 R&D to Address Pressing Problems

- a. Health Self Sufficiency
 - 1) Drug discovery and development
 - 2) Diagnostics development
 - 3) Biomedical engineering
 - 4) Early Detection of Disease Outbreak
 - 5) Malnutrition Reduction Program
- b. Food and Nutrition
 - 1) Innovative Food Products
 - 2) Affordable Nutrition Intervention
 - 3) Focus on First 1000 Days of the Young
- c. Priority Agricultural Commodities (Crops, Livestock, Poultry, Marine Resources, Inland Aquatic Resources, etc.)
 - 1) Reinvigorating the Philippines Coconut Industry through Coconut Somatic Embryogenesis Technology (CSET)
 - 2) Varietal Improvement of Philippine Native Chicken, Ducks and Pigs
 - 3) Varietal Improvement for Important Export Commodities
 - 4) Disease Prevention and Intervention for Abaca, Banana, Coconut and Papaya
 - 5) Increasing Crop Resilience to Environmental Stresses
- d. Biodiversity and Sustainable Development
 - 1) Conservation of Select Indigenous Forest Tree Species in Forest Reserve
 - 2) Mangrove Rehabilitation and Management
 - 3) Coastal Sustainable Development / Ocean-Atmosphere Interaction Research Program
- e. Transport and Mobility

- 1) Environmentally-sustainable Technology Alternatives for Public Utility Vehicles
- 2) Intelligent Transport System (ITS)
- 3) Small Inter-island Transport
- f. National Security
 - 1) National satellite technology towards:
 - (i) Research and development on military communication satellites
 - (ii) Military navigations
 - (iii) Reconnaissance and intelligence gathering
 - (iv) Satellite mapping and imaging
 - 2) ICT infrastructure to strengthen against cybercrimes
 - 3) Biosecurity

4.2 R&D for Productivity

- a. Technology Support for Agricultural Productivity
 - 1) Farm mechanization
 - 2) Varietal Improvement
 - 3) Novel farming methods
 - 4) Disease prevention and control
- b. Technology Support for Industrial/Manufacturing/Mining Productivity
 - 1) Production of Gums, Resins, and Oils from Local Plants Using New Technologies
 - 2) Green Chemistry Products and Technologies
 - 3) R&D in Support of the Philippines' Metals Industry
 - 4) Responsible Mining Technologies and Processes for extraction and product development for copper, nickel, iron, gold and chromite including Service Facilities for Artisanal Small-Scale Gold Mining
 - 5) Electronics Products Design and Development
- c. S&T for the Creative industries, Tourism Industry and Services Industry

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

- a. Renewable Energy Production
 - 1) Solar
 - 2) Wind
 - 3) Hydro
 - 4) Biomass
 - 5) Ocean
- b. Energy Storage

- 1) Engineering Design, Modeling, Assessment Tools and Development of Renewable Energy Systems
- 2) 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
 - 1) Development of Flood/Hazard/Resource Vulnerability Maps
 - 2) Development of Flood Forecasting Model for Major River Basin
 - 3) Development of Radar Software and Hardware
 - 4) Development of Tropical Cyclone Forecasting Tools for Deterministic or Consensus TC Forecast
 - 5) Climate Monitoring and Prediction System (CLIMPS)
 - 6) Severe Weather Forecasting and Warning
 - 7) Automation of Flood Early Warning System
 - 8) Advanced Data Collection, Enhancement of Web and Dissemination
- c. Technical Advisory Services for Geologic and Geophysical Phenomena
 - 1) Development of Real-Time Physico-chemical Monitoring Network
 - 2) Ground Deformation Monitoring and R&D of Active Volcanoes
 - 3) Fault Finder App
- d. Disaster Preparedness
 - 1) Improvement of Weather Prediction and Information for Disaster Prevention
 - 2) Volcano, Earthquake and Tsunami Disaster Preparedness and Risk Reduction
 - 3) ReliefOps.Ph – a multi-stage and multi-user decision support system for disaster preparedness and response

- 4) Municipal Level Risk Assessment and Incident Reporting and Visualization
- 5) Development of Spatial Models for Comprehensive Land Use Planning
- 6) Best practices for environmental planning, structural and architectural designs and guidelines for residential structures and evacuation centers.
- 7) Enhancing Cytogenetic Biological Dosimetry Capabilities of the Philippines for Nuclear Incident Preparedness
- 8) Establishment of real-time Environmental Radiation Monitoring System
- 9) Emergency Food Development
- 10) Emergency Shelter Development

4.6 Maximized Utilization of R&D through Technology Transfer to benefit the country's Industrial Program

- a. Inter-department Collaborations to roll out new beneficial technologies.
- b. Promotion of Commercial Technologies to the Private Industry Sector
- c. Community Empowerment through Science and Technology (CEST)
- d. Disaster Risk Management
 - 1) Turnover of Flood/Hazard/Resource Vulnerability Maps to LGUs
 - 2) Deployment of Early Warning Systems in Disasters-Prone Areas
 - 3) Deployment of Weather Monitoring Devices

4.7 Assistance to the Production Sector

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

4.8 Upgrading of Facilities and Improvement of S&T Services
(Strengthening of R&D and S&T Services in the Region through
Infrastructure, facilities, HRD and R&D funding)

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

4.9 Human Resource Development for Science and Technology

- a. Foreign scholarships for PhD Scholars in S&T
- b. PhDs in research
- c. MD/PhD scholarships
- d. Expanded Undergraduate S&T Scholarships for Inclusive Development
- e. Expanded Secondary Level Scholarships at Philippines Science High School
- f. Innovative modalities for the delivery of HR interventions
- g. Promotion of Culture of Science
- h. Science and Technology Education for Ordinary Citizens

4.10 Capacitate and Utilize Institutions in the Regions – SUCs who do
R&D and Develop Human Resources in S&T

- a. S&T Regional Alliance of Universities for Inclusive National Development (STRAND)
- b. Science Teacher Academy for the Regions (STAR)
- c. Strengthening of Research Centers in Universities in the Regions

4.11 Collaborate with industry, academic, and international institutions

- a. Industry- Academe-Government Collaboration in R&D (Co-laboratories)
- b. International S&T Collaborations

SECTION 5. *Formulation and Submission of the Science for People and Competitiveness Program (SPCP).* – The DOST shall formulate the five (5)-year Science for People and Competitiveness Program (SPCP) in coordination with other relevant government agencies, including State Universities and Colleges and representatives from the private sector undertaking R&D. It shall establish clearly measurable outcomes and deliverables on a yearly basis to gauge if the program is on-track. The Secretary of DOST shall submit to the President the SPCP for approval within ninety (90) days from the effectivity of this Act.

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

For this purpose, all Research and Development (R&D) activities performed by NGAs, GOCCs, SUCs and LGUs under their respective mandates shall be under control and supervision of the DOST.

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

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

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

SECTION 7. *Science for People and Competitiveness Program Fund (SPCPF).* – There is hereby created the Science for People and Competitiveness Program Fund (SPCP) to be used exclusively for the implementation of the projects and activities under the SPCP. The SPCPF shall be administered by DOST in accordance with existing government budgeting, accounting, and auditing rules and regulations. The SPCP Fund shall be sourced from the following:

- a. The initial amount of Twenty-One Billion Pesos (P21,000,000,000.00) to be taken from the General Appropriations Act (GAA) and other utilized funds/ savings from GAA of the preceding year, in case the GAA was approved before this law is enacted. The budget for Science for People and Competitiveness Program shall be doubled yearly for the next four (4) years. Such amount shall be released to the DOST after the effectivity of this Act.
- b. Income produced by the SPCP.
- c. Loans, contributions, grants, bequests, gifts, and donations whether from local or foreign sources. *Provided, that* the acceptance of grants, bequests, contributions, and donations from foreign governments shall be subject to the approval of the President, upon the recommendation of the Secretary of the DOST and Secretary of the Department of Foreign Affairs (DFA). The Secretary of DOST, with the approval of the NEDA and subsequently the Department of Finance (DOF), is hereby granted the authority to enter into loan agreements with foreign financial institutions. Said funds obtained from various sources shall be utilized for the different components of the program.

SECTION 8. Appropriations. – The sum of Twenty-One Billion Pesos (P 21,000,000,000.00) is hereby appropriated as initial operating fund for the projects and activities under the SPCP, taken from the current fiscal year's appropriation of the Office of the President. Thereafter, the amount needed for the operation of the SPCP shall be included in the General Appropriations Act.

SECTION 9. Annual Report. – The DOST shall submit an annual report on the implementation of the SPCP to the Office of the President and to the Committees on Science and Technology of both Chambers of Congress.

SECTION 10. Implementing Rules and Regulations. – The DOST shall formulate the Implementing Rules and Regulations (IRR) for the effective implementation of this Act within one hundred eighty (180) days from the effectivity of this Act.

SECTION 11. Separability Clause. – Any portion or provision of this Law that may be declared unconstitutional or invalid shall not have the effect of nullifying other portions or provisions hereof as long as such remaining portions or provisions can still subsist and be given effect in their entirety.

SECTION 12. *Repealing Clause.* – All laws, executive orders, proclamations, rules, regulations, and other issuances or part thereof which are inconsistent with the provisions of this Act are hereby repealed, amended, or modified accordingly.

SECTION 13. *Effectivity.* – This Act shall take effect fifteen (15) days after its publication in the Official Gazette or in a newspaper of general circulation.

Approved,