EIGHTEENTH CONGRESS OF THE REPUBLIC }
OF THE PHILIPPINES }
First Regular Session }

Senate
Office of the Secretary

20 JAN 30 P4 :07

RECEIVED BY:

SENATE
Senate Bill No. 1303

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. 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." Indeed, 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 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 Agenda (2017-2022), with emphasis on the importance of collaborative research among stakeholders in the government, industry, and academe to leverage growth in the Philippine economy through the Science for Change Program.

This proposed piece of legislation aims to institutionalize DOST's Science for Change Program to achieve a higher standard in the field of science and technology (S&T), to prescribe policy requirements on S&T, and ultimately to contribute to the development of the economy and society.

The formulation of the Science for Change Program shall be anchored on our R&D agenda which includes addressing pressing critical problems, boosting productivity, and applying new technologies across sectors, among others.

The passage of this bill will address the national and sectoral gaps in R&D, including the lack of budget, scarce manpower, and weak 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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AN ACT ESTABLISHING THE SCIENCE FOR CHANGE PROGRAM

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

SECTION 1. Short Title. This Act shall be known as the "Science for Change Program (SCP) Act of 2020."

SECTION 2. *Declaration of Policy*- 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." It recognizes that "Science and technology are essential for national development and progress." Thus, "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.* – The objective of this law is to achieve a higher standard 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.

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

a. Health Self Sufficiency

* Drug discovery and development;

* Diagnostics development;

* Biomedical engineering

b. Renewable Energy

* Solar;

* Ocean;

* Wind;

* Hydro; Biomass;

* Energy Storage

c. Nuclear Science for Energy, Health, Agriculture and Industry

d. Climate and Environment Sciences

* Disaster risk reduction; Resilience in different sectors;

* Models downscaled to specific locations

e. Food and Nutrition

* Innovative Food Products;

* Affordable nutrition intervention;

* Focus on first 1000 days of the young

f. Agricultural Productivity

* Farm mechanization;

* High-yielding varieties;

* Novel farming methods;

* Disease prevention and control

g. Biotechnology for Industry, Agriculture, Health and Environment

h. Technology Business Incubation

i. Foreign scholarships for STI

j. Promotion of Culture of Science

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

a. Human Security 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

* New satellites (Apo, Mayon and Makiling after Diwata);

* Rural communications (digital inclusion)

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

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

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

4.1 R&D to Address Pressing Problems

a. Health Self Sufficiency
   - Drug Discovery and Development
   - Diagnostics Development
   - Biomedical Engineering
   - Early Detection of Disease Outbreak
   - Malnutrition Reduction Program

b. Food and Nutrition
   - Innovative Food Products
   - Complementary Foods
   - Affordable Nutrition Intervention
   - Focus on First 1000 Days of the Young

c. Priority Agricultural Commodities (Crops, Livestock, Poultry, Marine Resources, Inland Aquatic Resources, etc.)
   - Reinvigorating the Philippine Coconut Industry through Coconut Somatic Embryogenesis Technology (CSET)
   - Varietal Improvement of Philippine Native Chicken, Ducks and Pigs
   - Varietal Improvement for Important Export Commodities
   - Disease Prevention and Intervention for Abaca, Banana, Coconut and Papaya
   - Increasing Crop Resilience to Environmental Stresses

d. Biodiversity and Sustainable Development
   - Conservation of Select Indigenous Forest Tree Species in Forest Reserve
   - Mangrove Rehabilitation and Management
   - Coastal Sustainable Development / Ocean-Atmosphere Interaction Research Program

e. Transport and Mobility
   - Environmentally-sustainable Technology Alternatives for Public Utility Vehicles

- Intelligent Transport System (ITS)
- Small Interisland Transport

f. National Security and Human Security

4.2 R&D for Productivity

a. Technology Support for Agricultural Productivity
   - Farm Mechanization
   - Varietal Improvement
   - Novel Farming Methods
   - Disease Prevention and Control

b. Technology Support for Industrial/Manufacturing/Mining Productivity
   - Production of Gums, Resins and Oils from Local Plants Using New Technologies
   - Green Chemistry Products and Technologies
   - R&D in Support of the Philippine Metals Industry
   - 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
   - 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
   - Solar
   - Wind
   - Hydro
   - Biomass
   - Ocean

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
   - Volcano, Earthquake and Tsunami Disaster Preparedness and Risk Reduction
   - ReliefOps. Ph – a multi-stage and multi-user decision support system for disaster preparedness and response

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

4.6 Maximize Utilization of R&D Results Through Technology Transfer and/or Commercialization

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

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

4.7 Accelerated R&D Program for Capacity Building of Research and Development Institutions and Industrial Competitiveness

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

4.8 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

4.9 Upgrading of Facilities and Improvement of S&T Services (Strengthening of R&D and S&T Services in the Regions 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

4.10 Human Resource Development for Science and Technology

a. Foreign scholarships for PhD Scholars in S&T

b. PhD by research

c. MD/PhD scholarships

d. Expanded MS/PhD S&T Scholarships

e. Expanded Undergraduate S&T Scholarships for Inclusive Development

f. Expanded Secondary Level Scholarships at Philippine Science High School

g. Innovative modalities for the delivery of HR interventions

h. Promotion of Culture of Science

i. Science and Technology Education for Ordinary Citizens

4.11 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

4.12 Collaboration with industry, academe 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 Change Program (SCP).*** - The DOST shall formulate the five-year Science for Change Program in coordination with other relevant government agencies including State Universities and Colleges and representatives from the private sector undertaking R&D. The Secretary of DOST shall submit to the President the Science for Change Program for approval within ninety (90) days from the effectivity of this Act.

SECTION 6. ***Mandatory Adaptation of Publicly Funded Technologies by National government Agencies (NGAs) and State Universities and Colleges (SUCs)***– Mandatory adaptation 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 the control and supervision of the Department of Science and Technology.

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 Director General of NEDA.

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

a) The initial amount of twenty-one Billion pesos (P 21,000,000,000.00) to be taken from the General Appropriation Act (GAA) and other utilized funds / savings from GAA of the preceding year, in case the GAA was approval before this law is enacted. The yearly budget for Science for Change Program shall double 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 SCP.
c) Loans, contributions, grants, bequests, gifts, and donations whether from local or foreign sources. Provided, That 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 fund obtained from various source shall be utilized from the different components of the program.

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

SECTION 9. *Annual Report*. – The DOST shall annually submit a report on the implementation of the SCP to the Office of the President and to the Committees on Science and Technology in 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 12. *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 portion or provision can still subsist and be given effect in their entirety.

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

Approved