

NINETEENTH CONGRESS OF THE)
REPUBLIC OF THE PHILIPPINES)
First Regular Session)



23 MAR 22 P4:56

SENATE

Senate Bill No. 2038

RECEIVED BY:

Introduced by Senator Juan Miguel F. Zubiri

**AN ACT
PROVIDING FOR THE MODERNIZATION OF THE PHILIPPINE INSTITUTE OF
VOLCANOLOGY AND SEISMOLOGY (PHIVOLCS), PROVIDING FUNDS
THEREFOR AND FOR OTHER PURPOSES**

EXPLANATORY NOTE

The Philippine archipelago is one of the riskiest places to live in given the natural geological and hydro-meteorological occurrences. In 2022, the World Risk Index ranked the Philippines on top of 193 countries evaluated for highest overall disaster risk.

The Philippines sits on the Pacific Ring of Fire and hosts 24 active volcanoes, 27 potentially active volcanoes and numerous active faults and trenches capable of producing large magnitude earthquakes that can result in disasters and disrupt life in communities. Of the 24 active volcanoes, only 10 are currently being monitored. And out of the 10 monitored volcanoes, only two are instrumented with all required station types.

On the other hand, at least 60% of the country's total land area is exposed to multiple hazards, and 74% of the population is susceptible to their impact. Sixty-six (66) out of 81 provinces in the Philippines are coastal, and are therefore, exposed to tsunami threats. The total coastal population in the Philippines based on the 2015 PSA data is 64.7 million, or almost 61.6 % of the total population.

Recently, the catastrophic 7.8 magnitude earthquake in Turkey and Syria caused more than 50,000 deaths, estimate report from the World Health Organization suggests up to more than 23 million people were affected by the natural disaster. Experts say it may take years to rebuild damaged infrastructure in the affected region.

Considering our country's vulnerability to geological and hydrometeorological hazards, there is a need to come up with viable solutions to combat the impact of these hazards.

The Philippine Institute of Volcanology and Seismology (PHIVOLCS) is the service institute of the Department of Science and Technology (DOST) mandated to mitigate disasters that may arise from volcanic eruptions, earthquakes, tsunami and other related geotectonic phenomena.

This bill seeks to modernize the PHIVOLCS to enable the institute to strengthen its capability and capacity to better provide services critical to disaster planning, preparation, and mitigation, among others, thereby providing the necessary monitoring and warning technologies, increase in seismic stations, and human resource requirements to minimize the vulnerability of people, nature, and the economy to natural disasters.

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JUAN MIGUEL F. ZUBIRI

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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 the “**PHIVOLCS Modernization**
2 **Act.**”
3

4 **SEC. 2. Declaration of Policy.** – It has been the policy of the State to utilize
5 scientific and technical knowledge and information as an effective instrument to ensure
6 the safety, well-being and economic security of the people; to safeguard the environment;
7 and to promote national progress and sustainable socioeconomic development through
8 various applications of geology, geophysics, geodetic engineering and allied sciences. The
9 State also recognizes the need to strengthen the capability of government personnel
10 tasked to monitor volcanic and seismological activities and other related services and
11 information to the public. Towards this end, the State shall undertake the modernization
12 of the Philippine Institute of Volcanology and Seismology (PHIVOLCS) to improve its
13 technological operational capacity, strengthen its role as the premier national volcano and
14 earthquake monitoring agency and to attain its vision as a center of excellence for related
15 information services.
16

17
18 **SEC. 3. Objectives.** – Pursuant to the foregoing policy, the PHIVOLCS
19 Modernization Program shall be implemented in accordance with the following objectives:
20

- 21 (a) To upgrade physical resources and operational techniques through acquisition
22 and development of state-of-the-art instruments, equipment, facilities and
23 systems to enhance current capabilities in providing useful, timely, accurate and
24 reliable volcanic and seismological data and localized warning and information
25 services for use in decision-making in disaster preparedness, climate change
26 adaptation, water resources management, agriculture, transportation, health,
27 tourism and other sectors;
28

- 1 (b) To enhance research and development capabilities by adopting a rationalized
2 and integrated approach with focus on the improvement of basic operations and
3 specialized services;
4
- 5 (c) To integrate disaster risk reduction and management in the sustainable
6 socioeconomic development planning at the national and local levels in
7 coordination with appropriate government agencies and other entities;
8
- 9 (d) To strengthen linkages and cooperation at the national level among the various
10 providers and users of geological, seismological and other services as well as to
11 provide for the appropriate mechanisms for this purpose;
12
- 13 (e) To establish and enhance volcanic and seismological activity monitoring service
14 centers in strategic areas in the country to broaden the agency base for the
15 delivery of service in the countryside;
16
- 17 (f) To strengthen a technology-based data center consistent with international
18 standards to make information available to those involved, whether from the
19 government or private sector in Disaster Risk Reduction and Management Plans,
20 among others;
21
- 22 (g) To enhance public information, education and advocacy on geological activities,
23 as well as their impacts, risks and vulnerability;
24
- 25 (h) To facilitate the appropriate appreciation and delivery of information, products
26 and services to decision makers, media, other users and the general public; and
27
- 28 (i) To provide a more competitive base pay and other benefits for its personnel in
29 order to promote professionalism and commitment to the service.
30

31 **SEC. 4. Definition of Terms.** – the following terms are defined as follows:
32

- 33 (1) Seismology – the scientific study of the sudden, violent movements of the earth
34 connected with earthquakes
35
- 36 (2) Tsunami - a series of large waves of extremely long wavelength and period
37 usually generated by a violent, impulsive undersea disturbance or activity near the
38 coast or in the ocean.
39
- 40 (3) Volcanology – is the study of volcanoes, lava, magma, ash or tephra fall and
41 related geological, geophysical and geochemical phenomena.
42

43 **SEC. 5. Mandate.** – The PHIVOLCS is mandated to:
44

- 45 (a) Predict the occurrence of volcanic eruptions and earthquakes, and their related
46 geotectonic phenomena,
47 (b) Determine how volcanic eruptions and earthquakes shall occur and areas likely
48 to be affected,
49 (c) Mitigate hazards of volcanic activities through appropriate detection, forecast
50 and warning system,

1 (d) Provide appropriate volcano, earthquake and tsunami products and services
2 for disaster preparedness,
3

4 PHIVOLCS shall provide timely, quality and socially-inclusive information and services
5 for warning, disaster preparedness and mitigation.
6

7 **SEC. 6. Organizational Structure.** - The PHIVOLCS shall be an attached agency
8 of the Department of Science and Technology (DOST) for purposes of policy and program
9 coordination, to ensure alignment in national science and technology policies and
10 priorities.
11

12 It shall be headed by an Executive Director V with the rank and compensation of a
13 Department Undersecretary who shall be appointed by the President upon
14 recommendation by the Secretary of the DOST.
15

16 The Executive Director V shall be assisted by three (3) Deputy Executive Director
17 V for Operations Services; Research and Development and S&T Services; and
18 Administration, Finance and General Services, all with the rank and compensation of a
19 Department Assistant Secretary to be appointed by the President.
20

21 **SEC. 7. Qualifications.** – No person shall be appointed as Executive Director V
22 unless that person is a natural-born citizen and a resident of the Philippines, of good moral
23 character, has an advanced degree in geology, geodetic engineering, volcanology,
24 physics, and other related fields and with at least five (5) years of competence and
25 expertise in volcanology, geophysics, and or allied sciences. Provided, That the Executive
26 Director V and the three (3) Deputy Executive Director V shall be career executive officers.
27

28 **SEC. 8. Components of Modernization.** – The PHIVOLCS modernization shall
29 have the following components:
30

31 (a) Upgrading and Maintenance of Physical Resources and Operational Techniques.
32 – This shall entail the acquisition and/or upgrade of state-of-the-art instruments,
33 equipment, facilities, systems, and operational techniques, with emphasis on
34 volcano, earthquake and tsunami monitoring and warning system: Provided, that
35 prior to such acquisition and/or upgrade, an inventory of existing government
36 and private, volcanic and seismological instruments nationwide shall be
37 undertaken: Provided, further, that the acquisition of new instruments, equipment
38 and systems shall be harmonized with the phase-out of uneconomical and obsolete
39 instruments, equipment and systems in the PHIVOLCS inventory;
40

41 (b) Sustained development of Volcano Monitoring network infrastructure for all
42 active volcanoes of the Philippines that will ensure early-warning of volcanic activity
43 even at volcanoes of long dormancy.
44

45 (c) Sustainable development of continually evolving technologies for eruption early-
46 warning will help the national government keep abreast with the latest in S&T while
47 maximizing its investment in public safety amidst technology shifts and changes.
48 From state-of-the-art systems to customized off-the-shelf instruments interfaced
49 by the Internet-of-Things, such technologies provide quality scientific data while
50 instilling a culture of dynamic technical learning, vital to long-term organizational
51 growth and performance.
52

- 1 (d) Earthquake Monitoring and Information System Development. Establish,
2 operate and maintain an advanced infrastructure for earthquake and tsunami
3 monitoring throughout the Philippines that operates with high performance
4 standards, gathers critical technical data, and effectively provides information
5 products and services to meet the needs of the Philippine government and the
6 public
7
- 8 (e) Reliable Monitoring. Continuously monitor earthquakes and other seismic
9 disturbances throughout the Philippines, including earthquakes that may cause a
10 tsunami or precede a volcanic eruption, with special focus on regions of moderate
11 to high hazard and risk.
12
- 13 (f) Long-term Protection/ Conservation of Built Environment. Thoroughly measure
14 strong earthquake shaking at ground sites and in buildings and critical structures.
15 Focus should be in urban areas and near major active fault zones to gather greatly
16 needed data and information for reducing earthquake impacts on buildings and
17 structures.
18
- 19 (g) Development of Forecasting Capability for Impending Large Earthquakes/
20 Tsunami Events. Develop machine learned capability to determine earthquake
21 parameters and the resulting information will automatically be broadcast to mobile
22 phones and social media accounts whenever a significant earthquake occurs, for
23 immediate assessment of impacts. In areas feasible, for sites at a distance from
24 the epicenter, an early warning will be broadcasted seconds before strong shaking
25 arrives. Provide similar capabilities for automated warning and alert for tsunamis.
26
- 27 (h) Establishment of permanent PHIVOLCS building including land acquisition to
28 house the Data Receiving/ Operation Centers for real-time volcano, earthquake
29 and tsunami monitoring. This shall ensure stability and protection of government
30 investments on scientific, technical equipment and research laboratories.
31
- 32 (i) Enhancement of Research and Development Capability. – This shall involve the
33 enhancement of research and development capability through a more rationalized
34 and totally integrated approach with established earthquake and volcano research
35 laboratories, focusing on improvement of operations, as well as the strengthening
36 of specialized services with cost recovery measures;
37
- 38 (j) Enhancement of Public Information and Linkages with Local Government Units
39 (LGUs) and other stakeholders. -This shall include continuous sharing of
40 information to LGUs and other stakeholders that help in the disaster planning,
41 preparation, disaster mitigation, among others;
42
- 43 (k) Enhancement of Volcanic and Earthquake Data and Information Dissemination
44 Services. – This shall involve the development and use of communication strategy
45 for ensuring the use of plain and local language, nontechnical terms and familiar
46 graphical presentations, in combination with science-based information that will
47 ensure the delivery of accurate, up-to-date and timely earthquake, tsunami, and
48 volcano-related information to create greater public awareness and draw
49 appropriate response for disaster risk reduction: Provided, that PHIVOLCS shall
50 partner with the Komisyon sa Wikang Filipino (KWF), various Sentro ng Wika at
51 Kultura, Philippine Commission on Women, and other rights-based organizations

1 for the development or enhancement of socially-inclusive products.
2 PHIVOLCS shall collaborate with both public and private organizations to effectively
3 disseminate data and products.
4

- 5 (I) Strengthening of the Human Resource Development Program (HRDP). - The
6 HRDP of PHIVOLCS will continue to be aligned with the strategic goals of the
7 Institute. This shall ensure that personnel are provided equal opportunities for self-
8 improvement to be competent, motivated to work and rewarded.
9

10 Complementation and capacity-building of a wide-range of experts in volcanology
11 and seismology and to efficiently develop, operate and maintain advanced
12 monitoring systems and distill accurate volcano, earthquake and tsunami
13 information for public guidance. Support to continued professional learning will
14 further ensure skills development and motivation that will translate to better S&T
15 services.
16

17 ***SEC. 9. Collaboration or linkages with Local Government Units (LGUs).*** -
18

19 With this institutional modernization of PHIVOLCS, the roles of the local government will
20 also be enhanced to cover the following areas:
21

- 22 (a) Public Intermediary. The local government, together with national & local news
23 media and the emergency management community, shall frequently act as
24 intermediaries between PHIVOLCS and its complex target audience including the
25 general public, institutional decision makers, and emergency responders, especially
26 in crafting plans attuned to the local needs of its constituents to increase public
27 resilience to earthquakes, tsunami and volcanic eruptions, to reduce or eliminate
28 long-term risk to human life and property and shorten recovery periods based on
29 risk assessments.
30

- 31 (b) Information Dissemination. It is critically important for PHIVOLCS to work closely
32 with the national and local disaster agencies to craft appropriate information
33 messages, to regularly test and evaluate their dissemination communication
34 channels, and to identify gaps and dissemination problems, so that the tsunami
35 messages reach the intended users when an event occurs.
36

- 37 (c) Awareness and Promotion. Outreach and communication with the public is
38 crucial to their understanding and awareness of the nature of the geotectonic
39 hazards, the risks to personal safety and property, and the steps to reduce those
40 risks including the deployment of sustainable, reliable and effective monitoring and
41 warning systems. With this, the local government is expected to promote in local
42 and international recognition programs, its own interfaces with the enhanced
43 PHIVOLCS system with its increased coverage and explore avenues to enjoy its full
44 benefits
45

- 46 (d) Technical Review. The local government shall contribute in the review of local
47 research, exchange information and coordinate local projects during regular local
48 meetings to ensure readiness to disasters, that appropriate guidelines are
49 consistently crafted and that local support infrastructure to the enhanced systems
50 are funded;
51

1 **SEC. 10. Components of the HRDP.** – This component shall include the
2 following:

3
4 (a) New Salary Scale for PHIVOLCS Personnel. – The Department of Budget and
5 Management (DBM) shall develop a new salary scale for PHIVOLCS personnel in
6 consonance with Republic Act No. 8439, as amended otherwise known as the
7 “Magna Carta for Scientists, Engineers, Researchers and other Science and
8 Technology Personnel in Government” with a corresponding increase in the base
9 pay, allowances and other benefits;

10
11 (b) PHIVOLCS Personnel Retention Incentive. – An additional incentive to be known
12 as the “Personnel Retention Incentive” shall be provided to qualified PHIVOLCS
13 personnel, to be determined by PHIVOLCS in consultation with DBM in an amount
14 not exceeding twenty percent (20%) of the monthly basic salary subject to the
15 implementing rules and regulations (IRR) which shall be hereinafter formulated;
16 and

17
18 (c) Scholarship Program. – Not later than three (3) years from the enactment of this
19 Act, scholarships shall be provided for undergraduate and graduate studies in
20 volcano- and seismology-related fields as well as for specialized training programs,
21 in coordination with the DOST, Commission on Higher Education (CHED) and
22 Higher Education Institutions (HEIs). Cooperation on human resources upgrading
23 and capability enhancement with regional and international organizations shall also
24 be undertaken.

25
26 (d) Development of Regional and International Cooperation Program. – This shall
27 entail the development of appropriate collaborative arrangements with relevant
28 regional and international bodies and government institutions to complement the
29 national effort for modernization.

30
31 **SEC. 11. Disaster Preparedness, Public Information and Dissemination**
32 **Services** – The institutional modernization of PHIVOLCS shall enhance public
33 information, education and advocacy on earthquake, tsunami and volcano hazards and
34 risks. To facilitate the appropriate appreciation and delivery of science-based information
35 to target stakeholders for proper response actions before and during the occurrence of
36 these hazards, there shall be provision for:

37
38 (a) Fully-equipped and well-staffed learning / training center that will serve as a
39 platform for planning, implementing, monitoring, and evaluating capacity
40 development programs for various stakeholders regarding mitigation and
41 preparedness for volcanic eruptions, earthquakes, and tsunami-related hazards.

42
43 (b) A knowledge management system (composed of people, process, infrastructure,
44 and strategy) that will ensure that researches are attuned to the public’s needs
45 and that research and development outputs are translated into culturally-relevant,
46 gender-responsive, and disability-inclusive capacity development programs, and
47 warning and risk information products and services for key stakeholders and the
48 public.

49
50 (c) A multi-channel and multi-directional communication strategy and standardized

1 procedures that shall ensure access to and effective dissemination of useful
2 information on volcano, earthquake and tsunami disaster preparedness, risk
3 reduction, and emergency response to intended stakeholders and the public.
4

5 **SEC. 12. Formulation and Submission of the PHIVOLCS Modernization**
6 **Program.** – The Executive Director of the PHIVOLCS in coordination with the Secretary
7 of the DBM and the Director-General of the National Economic and Development Authority
8 (NEDA), shall formulate the PHIVOLCS Modernization Program and oversee its
9 implementation based on the policy objectives provided in this Act.
10

11 The PHIVOLCS Modernization Program shall indicate among others:
12

- 13 (a) PHIVOLCS requirements in terms of personnel, equipment and facilities during
14 the various stages of modernization;
15
16 (b) The modernization projects, which shall indicate the equipment and technology
17 acquisitions, including major construction or upgrade of facility and the
18 particular objective and component to which such intended acquisition,
19 construction and upgrading belongs to; and
20
21 (c) The priorities, schedules and estimated cost of each modernization project.
22
23

24 The PHIVOLCS Modernization Fund shall be administered by the Executive Director
25 of the PHIVOLCS in accordance with existing government budgeting, accounting and
26 auditing rules and regulations.
27

28 **SEC. 13. Period of Implementation.** - The modernization program under this
29 Act shall be implemented for an initial period of three (3) years: Provided, that payments
30 for multi-year contract obligations incurred under this Act may extend beyond this period.
31 Provided, further, that PHIVOLCS shall continue to modernize and constantly update its
32 operational capabilities to keep pace with best international practices.
33

34 **SEC. 14. PHIVOLCS Modernization Fund.** – There is hereby created the
35 PHIVOLCS Modernization Fund to be used exclusively for the PHIVOLCS Modernization
36 Program, which shall be sourced from the following:
37

38 (a) The amount of five billion pesos (P5,000,000,000.00) to be taken from the share
39 of the National Government in the gross income of the Bases Conversion and
40 Development Authority (BCDA). For two (2) years after the effectivity of this Act, an
41 amount of two billion five hundred million pesos (P2,500,000,000.00) per year shall
42 be released to the PHIVOLCS. The entire amount of five billion pesos
43 (P5,000,000,000.00), including any interest income thereon, shall be used exclusively
44 for capital outlay.
45

46 (b) Loans, grants, bequests, and donations whether from local or foreign sources.
47 The Secretary of the DOST with the approval of the NEDA and subsequently the
48 Department of Finance (DOF) is hereby granted the authority to enter into loan
49 agreements with foreign financial institutions.
50

1 The PHIVOLCS Modernization Fund shall be administered by the Executive Director of
2 the PHIVOLCS in accordance with existing government budgeting, accounting and
3 auditing rules and regulations.
4

5 **SEC. 15. Annual Report.** – The Executive Director of the PHIVOLCS shall prepare
6 an annual report on the status of the implementation of the PHIVOLCS Modernization
7 Program which shall be submitted through the DOST Secretary, to the President and to
8 the Chairpersons of the Committee on Science and Technology of the Senate and the
9 House of Representatives not later than June 30 of the succeeding year.
10

11 **SEC. 16. Tax Exemptions.** - Donations, grants, gifts, endowments, legacies, and
12 contributions used actually, directly and exclusively for the purpose for PHIVOLCS shall
13 be exempt from donor's tax and the same shall be considered as allowable deduction
14 from gross income for purposes of computing the taxable income of the donor, in
15 accordance with Sec. 34 (H)(2)(a) of the National Internal Revenue Code of 1997, as
16 amended. Likewise, such other transfers of ownership and/or possession of real or
17 personal properties of all kinds shall be exempt from all taxes.
18

19 **SEC. 17. Procurement of Scientific and Technical Materials, Equipment,
20 and Services.** - The PHIVOLCS shall undertake the procurement of scientific and
21 technical materials, equipment, and services in its operation and administration, in the
22 most expeditious manner, and adopt the most suitable or appropriate method of
23 procurement that it deems fit based on its identified needs and requirements depending
24 on the existing conditions and requirements that justify the use of a particular alternative
25 modality provided for by Republic Act No. 9184, otherwise known as the "Government
26 Procurement Reform Act" and its Implementing Rules and Regulations (IRR).
27

28 **Sec. 18. Exemption from Import Duties, Taxes and Restrictions -**
29 Importation and consignments of equipment shall benefit from:
30

31 (a) Exemption from all duties and taxes;

32 (b) Waiver of economic prohibitions and restrictions except for categories of special
33 goods and equipment that may be indicated by the PHIVOLCS;
34

35 (c) Clearance without regards to the country of origin or the country from which
36 the goods have arrived, subject to monitoring for reasons of public health and
37 security and
38

39 (d) Immediate release of urgent, necessary monitoring equipment when there is
40 an ongoing volcanic eruption.
41

42 **Sec. 19. Simplification of Documentation Requirements -**
43

44 (a) Consignments of equipment sent by international collaborative research
45 partners shall be cleared or released on the basis of a simplified equipment
46 declaration providing the minimum information necessary for the Bureau of
47 Customs to identify the equipment and object, when deemed necessary, to
48 completion of a more complete declaration within a specified period.
49

50 (b) The requirements for the declaration for all imports of equipment by or on
51 behalf of international collaborative research partners and any supporting
52 documents relating to it, release and clearance shall be simplified and lodged
53 without fee.
54

1
2 **SEC. 20. Appropriations.** – The amount necessary to carry out the
3 implementation of this Act shall be initially charged against the current fiscal year
4 appropriations of the DOST – PHIVOLCS. Thereafter, the amount needed for the
5 continued implementation of the modernization program, shall be included in the annual
6 General Appropriations Act.
7

8 **SEC. 21. Implementing Rules and Regulations (IRR)** – Within ninety (90)
9 days from the effectivity of this Act, the PHIVOLCS shall issue the IRR for the effective
10 implementation of this Act in consultation with relevant stakeholders.
11

12 **SEC. 22. Separability Clause.** – If any provision or part of this Act is declared
13 invalid or unconstitutional, the other provisions hereof which are not affected thereby
14 shall continue to be in full force and effect.
15

16 **SEC. 23. Repealing Clause.** – All laws, orders, proclamations, rules and
17 regulations or parts thereof which are inconsistent with the provisions of this Act are
18 hereby repealed or modified accordingly.
19

20 **SEC. 24. Effectivity Clause.** – This Act shall take effect fifteen (15) days after
21 its publication in one (1) national newspaper of general circulation.

Approved,