

Republic of the Philippines
HOUSE OF REPRESENTATIVES
Quezon City, Metro Manila

NINETEENTH CONGRESS
First Regular Session

HOUSE BILL NO. 7102



Introduced by Representative **CARLITO S. MARQUEZ**

EXPLANATORY NOTE

This bill seeks to modernize the Philippine Institute of Volcanology and Seismology (PHIVOLCS) to enhance its capability in providing services to protect the people from hazards turning into disasters.

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 (twenty-four) 24 active volcanoes, only ten are currently being monitored: Bulusan, Hibok-Hibok, Kanlaon, Mayon, Pinatubo, Taal, Matutum, Parker, Iriga and Isarog. However, out of these volcanoes, only Taal and Mayon are instrumented with all required station types.

Susceptible is the 74% of the Philippine population to multiple hazards, accounting to sixty-six (66) provinces exposed to tsunami threats. This makes the Philippines top the 2022 World Risk Index among the evaluated 193 countries.

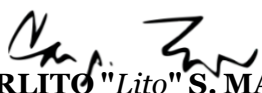
Although there have been significant advances in the technologies used in mitigating disasters caused by volcanic eruptions, earthquakes, tsunamis and other related geotectonic phenomena, PHIVOLCS needs to be further strengthened in its capacity in conducting research, mapping and monitoring of hazards, among others.

PHIVOLCS, as mandated by law, is to predict the occurrence of volcanic eruptions and earthquakes, to determine how eruptions and earthquakes shall occur and areas likely to be affected, to mitigate hazards of volcanic activities through appropriate detection, forecast and warning systems, to generate sufficient data for forecasting volcanic eruptions and earthquakes, and to formulate appropriate disaster preparedness plans.

Increasing its capacity and capability to better understand future geological occurrences shall provide significant support in risk assessments, of which other government agencies or even the private sector usually avail for various projects.

Therefore, we believe that in order to not only meet the demands of the present but also for the urgency to prepare for the worst, this bill hopes to address the gaps by upgrading the capacity of the Institute to perform its evolving mandate by providing the necessary monitoring and warning technologies and increasing in seismic stations, and human resource requirements to minimize the vulnerability of people, nature, and economy.

In view of the foregoing, the immediate passage of this bill is earnestly sought.


ENGR. CARLITO "Lito" S. MARQUEZ
Chairperson, Committee on Science & Technology

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

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 Act.**”

2
3 **SEC. 2. Declaration of Policy.** – It has been the policy of the State to utilize scientific and
4 technical knowledge and information as an effective instrument to ensure the safety, well-
5 being and economic security of the people; to safeguard the environment; and to promote
6 national progress and sustainable socioeconomic development through various
7 applications of geology, geophysics, geodetic engineering and allied sciences. The State
8 also recognizes the need to strengthen the capability of government personnel tasked to
9 monitor volcanic and seismological activities and other related services and information
10 to the public. The State also recognizes the need to strengthen the capability of the
11 mandated government agency – the Philippine Institute of Volcanology and Seismology
12 of PHIVOLCS – to monitor the threat of volcanic eruptions, earthquakes, tsunamis and
13 related processes in order to provide critical life-saving information to the public and
14 generate scientific knowledge to be leveraged for the safety of future generations. This
15 capability would be predicated upon improvements in its scientific, technological,
16 operational and human resource capacities, a strengthening of its role as the premier
17 national volcano and earthquake monitoring agency and a realization of its vision as a
18 center of excellence for geotectonic hazard mitigation.

19
20 Towards this end, the State shall undertake the modernization of the Philippine Institute
21 of Volcanology and Seismology (PHIVOLCS) in response to the United Nations
22 Sustainable Goals (UNSDGs) particularly No. 11 or Sustainable Cities and Communities.
23 A modernized PHIVOLCS can also indirectly address other SDGs such as SDG 1 (No
24 Poverty) and SDG 2 (Zero Hunger). When people in communities are safe, resilient and
25 empowered, they are able to participate in the economic development of the country and
26 at the same time reap the benefits of such development, leading to inclusive growth. If
27 communities are out of earthquake, volcanic or tsunami hazard zones or if communities
28 and other human-built resources within the hazard zones are built according to specific
29 designs to mitigate the effects of these geological hazards, damages to physical and social
30 ecologies are reduced and economic losses are kept to minimum. This would then

1 translate to high growth sustainability. Eventually, if inclusive growth and high growth
2 sustainability are achieved, this will lead to two intended consequences: mass-
3 employment generation and poverty-reduction. Once these two externalities are
4 experienced, this would reinforce the inclusive growth and high growth sustainability
5

6 **SEC. 3. Objectives.** – Pursuant to the foregoing policy, the PHIVOLCS Modernization
7 Program shall be implemented in accordance with the following objectives:
8

9 (a) To upgrade physical resources and operational techniques through acquisition and
10 development of state-of-the-art instruments, equipment, facilities and systems to
11 enhance current capabilities in providing useful, timely, accurate and reliable volcanic
12 and seismological data and localized warning and information services for use in
13 decision-making in disaster preparedness, climate change adaptation, water resources
14 management, agriculture, transportation, health, tourism and other sectors;
15

16 (b) To enhance research and development capabilities by adopting a rationalized and
17 integrated approach with focus on the improvement of basic operations and
18 specialized services;
19

20 (c) To integrate disaster risk reduction and management in the sustainable
21 socioeconomic development planning at the national and local levels in coordination
22 with appropriate government agencies and other entities;
23

24 (d) To strengthen linkages and cooperation at the national level among the various
25 providers and users of geological, seismological and other services as well as to provide
26 for the appropriate mechanisms for this purpose;
27

28 (e) To establish and enhance volcanic and seismological activity monitoring stations in
29 strategic areas in the country to broaden the agency base for the delivery of service in
30 the countryside;
31

32 (f) To strengthen a technology-based data center consistent with international standards
33 to make information available to those involved, whether from the government or
34 private sector in Disaster Risk Reduction and Management Plans, among others;
35

36 (g) To enhance public information, education and advocacy on geological activities, as
37 well as their impacts, risks and vulnerability;
38

39 (h) To facilitate the appropriate appreciation and delivery of information, products and
40 services to decision makers, media, other users and the general public; and
41

42 (i) To provide a more competitive base pay and other benefits for its personnel in order
43 to promote professionalism and commitment to the service.
44

45 **SEC. 4. Definition of Terms.** – the following terms are defined as follows:
46

47 (1) *Seismology* – the scientific study of the sudden, violent movements of the earth
48 connected with earthquakes
49

(2) *Tsunami* - a series of large waves of extremely long wavelength and period usually generated by a violent, impulsive undersea disturbance or activity near the coast or in the ocean.

(3) *Volcanology* – is the study of volcanoes, lava, magma, ash or tephra fall and related geological, geophysical and geochemical phenomena.

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

- a. Predict the occurrence of volcanic eruptions and earthquakes, and their related geotectonic phenomena,
- b. Determine how volcanic eruptions and earthquakes shall occur and areas likely to be affected,
- c. Mitigate hazards of volcanic activities through appropriate detection, forecast and warning system,
- d. Provide appropriate volcano, earthquake and tsunami products and services for disaster preparedness,

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

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

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

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

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

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

- (a) *Upgrading and Maintenance of Physical Resources and Operational Techniques.*
– This shall entail the acquisition and/or upgrade of state-of-the-art instruments, equipment, facilities, systems, and operational techniques, with emphasis on volcano, earthquake and tsunami monitoring and warning system: Provided, that prior to such acquisition and/or upgrade, an inventory of existing government and private, volcanic and seismological instruments nationwide shall

1 be undertaken: Provided, further, that the acquisition of new instruments,
2 equipment and systems shall be harmonized with the phase-out of uneconomical
3 and obsolete instruments, equipment and systems in the PHIVOLCS inventory;
4

5 (b) Sustained development of Volcano Monitoring network infrastructure for all active
6 volcanoes of the Philippines that will ensure early-warning of volcanic activity even
7 at volcanoes of long dormancy.
8

9 (c) Sustainable development of continually evolving technologies for eruption early-
10 warning will help the national government keep abreast with the latest in S&T
11 while maximizing its investment in public safety amidst technology shifts and
12 changes. From state-of-the-art systems to customized off-the-shelf instruments
13 interfaced by the Internet-of-Things, such technologies provide quality scientific
14 data while instilling a culture of dynamic technical learning, vital to long-term
15 organizational growth and performance.
16

17 (d) *Earthquake Monitoring and Information System Development.* Establish,
18 operate and maintain an advanced infrastructure for earthquake and tsunami
19 monitoring throughout the Philippines that operates with high performance
20 standards, gathers critical technical data, and effectively provides information
21 products and services to meet the needs of the Philippine government and the
22 public
23

24 (e) *Reliable Monitoring.* Continuously monitor earthquakes and other seismic
25 disturbances throughout the Philippines, including earthquakes that may cause a
26 tsunami or precede a volcanic eruption, with special focus on regions of moderate
27 to high hazard and risk.
28

29 (f) *Long-term Protection/ Conservation of Built Environment.* Thoroughly measure
30 strong earthquake shaking at ground sites and in buildings and critical structures.
31 Focus should be in urban areas and near major active fault zones to gather greatly
32 needed data and information for reducing earthquake impacts on buildings and
33 structures.
34

35 (g) *Development of Forecasting Capability for Impending Large Earthquakes/*
36 *Tsunami Events.* Develop machine learned capability to determine earthquake
37 parameters and the resulting information will automatically be broadcast to
38 mobile phones and social media accounts whenever a significant earthquake
39 occurs, for immediate assessment of impacts. In areas feasible, for sites at a
40 distance from the epicenter, an early warning will be broadcasted seconds before
41 strong shaking arrives. Provide similar capabilities for automated warning and
42 alert for tsunamis.
43

44 (h) Establishment of permanent PHIVOLCS building including land acquisition to
45 house the Data Receiving/ Operation Centers for real-time volcano, earthquake
46 and tsunami monitoring. This shall ensure stability and protection of government
47 investments on scientific, technical equipment and research laboratories.
48

49 (i) *Enhancement of Research and Development Capability.* – This shall involve the
50 enhancement of research and development capability through a more rationalized

1 and totally integrated approach with established earthquake and volcano research
2 laboratories, focusing on improvement of operations, as well as the strengthening
3 of specialized services with cost recovery measures;

4
5 (j) *Enhancement of Public Information and Linkages with Local Government Units*
6 *(LGUs) and other stakeholders.* -This shall include continuous sharing of
7 information to LGUs and other stakeholders that help in the disaster planning,
8 preparation, disaster mitigation, among others;

9
10 (k) *Enhancement of Volcanic and Earthquake Data and Information Dissemination*
11 *Services.* – This shall involve the development and use of communication strategy
12 for ensuring the use of plain and local language, nontechnical terms and familiar
13 graphical presentations, in combination with science-based information that will
14 ensure the delivery of accurate, up-to-date and timely earthquake, tsunami, and
15 volcano-related information to create greater public awareness and draw
16 appropriate response for disaster risk reduction: Provided, that PHIVOLCS shall
17 partner with the Komisyon sa Wikang Filipino (KWF), various Sentro ng Wika at
18 Kultura, Philippine Commission on Women, and other rights-based organizations
19 for the development or enhancement of socially-inclusive products.
20 PHIVOLCS shall collaborate with both public and private organizations to
21 effectively disseminate data and products.

22
23 (l) *Strengthening of the Human Resource Development Program (HRDP).* - The
24 HRDP of PHIVOLCS will continue to be aligned with the strategic goals of the
25 Institute. This shall ensure that personnel are provided equal opportunities for
26 self-improvement to be competent, motivated to work and rewarded.

27
28 Complementation and capacity-building of a wide-range of experts in volcanology
29 and seismology and to efficiently develop, operate and maintain advanced
30 monitoring systems and distill accurate volcano, earthquake and tsunami
31 information for public guidance. Support to continued professional learning will
32 further ensure skills development and motivation that will translate to better S&T
33 services.

34
35 **SEC. 9.** *Collaboration or linkages with Local Government Units (LGUs).* With this
36 institutional modernization of PHIVOLCS, the roles of the local government will also be
37 enhanced to cover the following areas:

38
39 (a) *Public Intermediary.* The local government, together with national & local news
40 media and the emergency management community, shall frequently act as
41 intermediaries between PHIVOLCS and its complex target audience including the
42 general public, institutional decision makers, and emergency responders,
43 especially in crafting plans attuned to the local needs of its constituents to increase
44 public resilience to earthquakes, tsunami and volcanic eruptions, to reduce or
45 eliminate long-term risk to human life and property and shorten recovery periods
46 based on risk assessments.

47
48 (b) *Information Dissemination.* It is critically important for PHIVOLCS to work
49 closely with the national and local disaster agencies to craft appropriate
50 information messages, to regularly test and evaluate their dissemination

1 communication channels, and to identify gaps and dissemination problems, so
2 that the tsunami messages reach the intended users when an event occurs.

3
4 (c) *Awareness and Promotion.* Outreach and communication with the public is
5 crucial to their understanding and awareness of the nature of the geotectonic
6 hazards, the risks to personal safety and property, and the steps to reduce those
7 risks including the deployment of sustainable, reliable and effective monitoring
8 and warning systems. With this, the local government is expected to promote in
9 local and international recognition programs, its own interfaces with the enhanced
10 PHIVOLCS system with its increased coverage and explore avenues to enjoy its full
11 benefits

12
13 (d) *Technical Review.* The local government shall contribute in the review of local
14 research, exchange information and coordinate local projects during regular local
15 meetings to ensure readiness to disasters, that appropriate guidelines are
16 consistently crafted and that local support infrastructure to the enhanced systems
17 are funded;

18
19 **SEC. 10.** *Components of the HRDP.* – This component shall include the following:
20

21 (a) *New Salary Scale for PHIVOLCS Personnel.* – The Department of Budget and
22 Management (DBM) shall develop a new salary scale for PHIVOLCS personnel in
23 consonance with Republic Act No. 8439, as amended otherwise known as the
24 “Magna Carta for Scientists, Engineers, Researchers and other Science and
25 Technology Personnel in Government” with a corresponding increase in the base
26 pay, allowances and other benefits;

27
28 (b) *PHIVOLCS Personnel Retention Incentive.* – An additional incentive to be known
29 as the “Personnel Retention Incentive” shall be provided to qualified PHIVOLCS
30 personnel, to be determined by PHIVOLCS in consultation with DBM in an
31 amount not exceeding twenty percent (20%) of the monthly basic salary subject to
32 the implementing rules and regulations (IRR) which shall be hereinafter
33 formulated; and

34
35 (c) *Scholarship Program.* – Not later than three (3) years from the enactment of this
36 Act, scholarships shall be provided for undergraduate and graduate studies in
37 volcano- and seismology-related fields as well as for specialized training programs,
38 in coordination with the DOST, Commission on Higher Education (CHED) and
39 Higher Education Institutions (HEIs). Cooperation on human resources
40 upgrading and capability enhancement with regional and international
41 organizations shall also be undertaken.

42
43 (d) *Development of Regional and International Cooperation Program.* – This shall
44 entail the development of appropriate collaborative arrangements with relevant
45 regional and international bodies and government institutions to complement the
46 national effort for modernization.

47
48 **SEC. 11.** *Disaster Preparedness, Public Information and Dissemination Services* – The
49 institutional modernization of PHIVOLCS shall enhance public information, education
50 and advocacy on earthquake, tsunami and volcano hazards and risks. To facilitate the

appropriate appreciation and delivery of science-based information to target stakeholders for proper response actions before and during the occurrence of these hazards, there shall be provision for:

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

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

(c) A multi-channel and multi-directional communication strategy and standardized procedures that shall ensure access to and effective dissemination of useful information on volcano, earthquake and tsunami disaster preparedness, risk reduction, and emergency response to intended stakeholders and the public.

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

The PHIVOLCS Modernization Program shall indicate among others:

(a) PHIVOLCS requirements in terms of personnel, equipment and facilities during the various stages of modernization;

(b) The modernization projects, which shall indicate the equipment and technology acquisitions, including major construction or upgrade of facility and the particular objective and component to which such intended acquisition, construction and upgrading belongs to; and

(c) The priorities, schedules and estimated cost of each modernization project.

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

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

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

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

(b) Loans, grants, bequests, and donations whether from local or foreign sources. The Secretary of the 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.

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

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

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

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

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

(a) Exemption from all duties and taxes;

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

3
4 (c) Clearance without regards to the country of origin or the country from which the
5 goods have arrived, subject to monitoring for reasons of public health and security
6 and
7

8 (d) Immediate release of urgent, necessary monitoring equipment when there is an
9 ongoing volcanic eruption.
10

11 **Sec. 19. Simplification of Documentation Requirements -**
12

13 (a) Consignments of equipment sent by international collaborative research
14 partners shall be cleared or released on the basis of a simplified equipment declaration
15 providing the minimum information necessary for the Bureau of Customs to identify the
16 equipment and object, when deemed necessary, to completion of a more complete
17 declaration within a specified period.
18

19 (b) The requirements for the declaration for all imports of equipment by or on
20 behalf of international collaborative research partners and any supporting documents
21 relating to it, release and clearance shall be simplified and lodged without fee.
22

23 **SEC. 20. Appropriations.** – The amount necessary to carry out the implementation of
24 this Act shall be initially charged against the current fiscal year appropriations of the
25 DOST – PHIVOLCS. Thereafter, the amount needed for the continued implementation of
26 the modernization program, shall be included in the annual General Appropriations Act.
27

28 **SEC. 21. Implementing Rules and Regulations (IRR).** – Within ninety (90) days from
29 the effectivity of this Act, the PHIVOLCS shall issue the IRR for the effective
30 implementation of this Act in consultation with relevant stakeholders.
31

32 **SEC. 22. Separability Clause.** – If any provision or part of this Act is declared invalid or
33 unconstitutional, the other provisions hereof which are not affected thereby shall
34 continue to be in full force and effect.
35

36 **SEC. 23. Repealing Clause.** – All laws, orders, proclamations, rules and regulations or
37 parts thereof which are inconsistent with the provisions of this Act are hereby repealed or
38 modified accordingly.
39

40 **SEC. 24. Effectivity Clause.** – This Act shall take effect fifteen (15) days after its
41 publication in the Official Gazette or in one (1) national newspaper of general circulation.

Approved,