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Science and Technology for Society: Solutions to Long-Standing Concerns

42nd Annual Scientific Meeting, 10 July 2020

RESOLUTIONS

WHEREAS, our society has been confronting a host of long-standing concerns;

WHEREAS, the National Academy of Science and Technology, Philippines (NAST PHL), believes in Science & Technology as a source of innovations and solutions to society's long-standing concerns;

WHEREAS, the NAST 42nd Annual Scientific Meeting deliberated on the concerns in: (a) food system and health; (b) energy, water, and transportation; (c) environment, climate change, and blue economy; (d) ICT, shelter, and other infrastructure; (e) science education; and (f) the way forward, among other matters;

WHEREAS, the existing food system is dysfunctional and is linked to non-communicable diseases, poverty, and natural resource depletion and pollution; and transforming it requires understanding of its processes and impacts, including shift in eating habits;

WHEREAS, the science-based Planetary Health Diet (PHD) can be used as a guide in changing the eating habits of the Filipinos;

WHEREAS, the coronavirus pandemic has shown that water, sanitation, and hand hygiene are central to the prevention of the spread of the virus and are the first line of defense against this serious threat to people's lives and health systems;

WHEREAS, the coronavirus pandemic has resulted in an increase in the relative share of renewables in the overall global supply of electricity because they are less affected by supply chain disruptions than fossil-fuel based power sources. This situation has thus provided excellent opportunity for countries to transition to clean energy systems;

WHEREAS, the country has two key legislations to promote renewable energy, namely, the Renewable Energy Act of 2008 and the Biofuels Act of 2006;

WHEREAS, the country has prepared the Philippine Water Supply Roadmap (2010) and the National Sewerage and Septage Management Plan (2011);

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WHEREAS, the Philippines has one of the most unique and diverse natural environments in the world, but this has been destroyed by human activities compounded by climate change;

WHEREAS, understanding the dynamics of human activities and natural systems is a key to stave off and reverse the degradation of environment;

WHEREAS, the Philippine blue economy can contribute to inclusive growth by harnessing the bountiful marine resources of the country while protecting its natural base;

WHEREAS, small and medium enterprises, including public and private organizations, lack the required resources to use information and communications technologies more and in better ways unless the costs are shared, such as in town-wide or city-wide digital ecosystems;

WHEREAS, the National Building Code of 1977 has been studied comprehensively, in consultation with stakeholders, culminating in the proposed adoption of a new Philippine Building Act of 2020, which contains major regulatory and building standards reforms;

WHEREAS, other infrastructure in local, regional and national scale need to be retrofitted, upgraded, or replaced for climate change adaptation and disaster risk reduction;

WHEREAS, the Philippines has continued to perform poorly in Mathematics and Science, such as in the 2018 Programme for International Student Assessment (PISA), where the Philippines ranked second to last in Math and Science, and last in Reading out of 79 participating countries;

WHEREAS, alternative strategies in basic education, such as the Central Visayan Institute Foundation (CVIF) Dynamic Learning Program (DLP), have produced graduates, who performed well in various independent assessments, with minimal financial investments;

WHEREAS, numerous basic and higher STEM educational institutions need significant upgrading of faculty and facilities;

WHEREAS, there are regulatory laws that restrict innovation in STEM teaching and learning;

WHEREAS, public and private sector initiatives have failed to retain and attract highly-trained Filipino and foreign talents for research, development and innovation;

WHEREAS, the Philippines continues to lag behind other countries in terms of budget allocation for research and development;

NOW, THEREFORE, the National Academy of Science and Technology, Philippines (NAST PHL), in fulfillment of its mandate to give advice to the highest levels of government, hereby resolves to recommend that the concerned public agencies take the following actions and in doing so work with private institutions, as necessary:

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FOOD SYSTEM AND NUTRITION

1. Department of Education
    a. Revise the curriculum and integrate food system education at all levels;
    b. Train teachers to implement the new curricula;
    c. Utilize the Planetary Health Diet (PHD) as a guide in the school feeding program; and
    d. Monitor the learning and health outcomes of the feeding program.

2. Department of Health
    a. Adopt the PHD as a component of the Universal Health Care program;
    b. Actively promote the PHD as an important component of a healthy lifestyle; and
    c. Integrate food system education and the PHD in training of medical personnel.

3. Department of Agriculture
    a. Revive the Food Terminal in Taguig City and establish more farmers' markets to provide marketing services for small farmers;
        i. Improve local and regional food systems by training farmers to produce sustainable, nutritious, culturally-preferred, and widely accessible food; and
        ii. Reduce food waste and progressively shift to lower-impact, less-resource-intensive food sources;
    b. Restructure support for food production programs to align the structure of Philippine agriculture with the needs of the PHD;
    c. Improve productivity of diversified farms needed in the PHD; and
    d. Establish model farms based on rice, corn, coconut and aquaculture to produce the requirements of the PHD.

4. Department of Science and Technology
    a. Fund R&D on low cost renewable energy and cold storage/transport of food, food technology to convert food commodities into nutritious products, initially for relief operations and feeding programs, and the study of the nutritional value of underutilized foodstuff;
    b. Sustain food innovation centers;
    c. FNRI to help monitor the health outcome of the Department of Education-led school feeding program; and
    d. Develop software applications to help consumers in making data- and values-driven food choices based on the PHD and establish links with farmers and food service providers.

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5. Department of Agriculture, Department of Science and Technology, and Department of Trade and Industry
    a. Mainstream "nutrition-sensitive" policies, programs and investments across sectors by incentivizing the production of nutrient-rich foods like fruit and vegetables, investing in transport and cold-chain infrastructure, procuring from local smallholder farms, reformulating food, and regulating retail and food service chains, and food labels.

6. Department of Science and Technology and Department of Social Welfare and Development
    a. Provide for the immediate food needs of vulnerable populations by expanding social protection programs, scaling-up nutritional support, supporting management and prevention of undernourishment, and adjusting school meal programs.

ENERGY, WATER, AND TRANSPORTATION SYSTEMS

1. Department of Energy, Department of Science and Technology, and National Economic and Development Authority
    a. Implement key legislations on renewable energy, namely, Renewable Energy Act of 2008 and Biofuels Act of 2006, and focus on the following specific actions:
        i. Mandate power distribution utilities to purchase and inject a minimum portion of renewable energy (RE) to the grid to guarantee a market for RE producers; and
        ii. Review the Biofuels Act, formulate realistic targets, and support research, development, and commercialization of local biofuels to reduce dependence on imported fuels.

2. Department of Interior and Local Government, National Water Resources Board, Local Water Utilities Administration, and Metropolitan Waterworks and Sewerage System
    a. Revise and update the Philippine Water Supply Roadmap (2010) and the National Sewerage and Septage Management Plan (2011) to adapt to the "new normal", focusing on the following actions:
        i. Provide a favorable environment for waterworks systems, water districts, LGUs and the private sector to attain complete coverage of an integrated water supply, sanitation, and sewerage service for the whole country;
        ii. Provide water services with full recovery of costs (operation, maintenance, depreciation, investment in enhanced services) while ensuring that water services are priced equitably reflecting their scarcity value and fostering economy in water use; and
        iii. Ensure full stakeholder consultation and participation at all levels in the decision-making process of development and management of water resources.

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3. Department of Science and Technology
    a. Conduct R&D on alternative location-based technologies in acquiring water, such as solar desalination, water harvesting, and solar stills for remote areas; and
    b. Assess and study the safe yield of the country's groundwater resources.

4. Department of Interior and Local Government
    a. Construct medium- to large-scale water storage system and expand transmission lines to deliver water reliably to rural areas.

5. Metropolitan Waterworks and Sewerage System
    a. Develop new major source/s of bulk water supply to meet Metro Manila's increasing water demand for water security and redundancy.

6. Department of Transportation
    a. Plan, design and implement programs and projects on the use of active transport modes in Philippine cities; and
    b. Optimize the use of transport facilities by using ICT, including computerized performance monitoring systems, smart technology applications among users and enforcers for traffic management like electronic toll collection, automatic illegal parking detectors, security camera systems, transit smart cards, and real-time public transport information.

ENVIRONMENT, CLIMATE CHANGE, AND BLUE ECONOMY

Climate Change and Environment

1. Department of Environment and Natural Resources, and Climate Change Commission:
    a. Strengthen research and adoption of ecosystems-based adaptation in the country;
    b. Implement systems approach in environmental and natural resources management to address multiple threats (hazards) and attain sustainable development goals;
    c. Provide adequate support to building capability of concerned NGAs and LGUs in adopting ridge to reef approach to comprehensive land use and development planning; and
    d. Maximize the contribution of the forestry sector to climate change mitigation and adaptation, biodiversity conservation, DRR, and local and national development through Sustainable Forest Management (SFM).

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2. Department of Science and Technology
    a. Invest in long-term research and monitoring of ecosystems and its responses to climate change, human activities, and natural hazards; and
    b. Harmonize R&D agenda of DENR, DA and CCC on environment, natural resources, and climate change.

3. Senate and House of Representatives
    a. Enact a law to improve the enabling policy environment for sustainable forestry and succeed the Revised Forestry Code of 1975; and
    b. Pursue the National Land Use Act and establish a framework for national and local land use and development planning.

Blue Economy

4. Congress and Executive Agencies
    a. Reiterate the recommendation of NAST in 2018 and 2019 to create the Department of Fisheries and Marine Resources that could focus on the planning, implementation, monitoring and regular updating of a consolidated "National Fisheries and Marine Resources Research, Development and Utilization".

5. Department of Foreign Affairs, and Department of Science and Technology
    a. Support cooperation/collaboration at the regional and global levels on the monitoring and management of natural and man-made risks and threats, including those from climate change effects in adjacent seas, while giving priority to national interests and security.

6. Department of Science and Technology, and Department of Energy
    a. Fund R&D on the economical and greener transport systems for people and goods with renewable energy from sun, wind and wave; and
    b. Promote the use of ICT, AI, and other appropriate technologies in the enhanced mapping, increased innovative investment, monitoring and science-guided governance and management of the Philippine Blue Economy.

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ICT, SHELTER, AND OTHER INFRASTRUCTURE

1. Department of Information and Communications Technology and Department of Science and Technology
    a. Undertake a comprehensive R&D program to establish digital ecosystems and accelerate the digital transformation of public and private organizations in the country; and
    b. Implement the National Broadband Plan for the Philippines to make internet connectivity ubiquitous and within reach for every Filipino.

2. Office of the President
    a. Certify as urgent the proposed Philippine Building Act of 2020, reform regulatory system and standards for various types of public and private buildings in the country, mainstream disaster risk reduction and management, promote inclusivity, sustainability and foresight, and repeal Presidential Decree No. 1096.

3. Senate and House of Representatives
    a. Approve and oversee the implementation of the Philippine Building Act of 2020 including major reforms such as, but not limited to: streamlining the building permit process; designing resilient buildings against multiple hazards; assessing old buildings; incentivizing the retrofit of old buildings; and creating the inter-agency and multi-sectoral Building Regulations and Standards Council (BRSC) with foresight to review and update the regulations and standards every five (5) years or sooner.

4. Department of Public Works and Highways, Department of Human Settlements and Urban Development, Professional Regulation Commission, Department of Interior and Local Government, Department of Trade and Industry, Department of Environment and Natural Resources, and Department of Science and Technology
    a. Engage partner government agencies and private sectors in crafting and updating periodically the regulations and standards for buildings, mainstreaming disaster risk reduction and management, and infusing with a culture of science, technology and innovation.

5. Department of Science and Technology, and National Economic and Development Authority
    a. Collaborate across agencies and sectors in the compliance with building regulations and standards and the enforcement of the same, infusing with research and development in particular and a culture of science, technology, and innovation in general.

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SCIENCE EDUCATION AND TALENT RETENTION

1. Department of Education
    a. Undertake systematic and comprehensive effort to address the decline in Mathematics, Science and Reading at the basic education level, in collaboration with multi-sectoral stakeholders; and
    b. Pilot alternative modes of instruction in basic education, such as Central Visayan Institute Foundation (CVIF) Dynamic Learning Program (DLP).

2. Department of Education, and Commission on Higher Education
    a. Strictly monitor the quality of STEM institutions, in terms of faculty competency and adequacy of laboratory.

3. Professional Regulation Commission, and Commission on Higher Education
    a. Review laws that restrict innovation in science and engineering, and identify amendments without compromising public safety, in collaboration with relevant scientific and professional societies, and concerned private sector organizations.

4. Department of Science and Technology
    a. Attract and retain highly trained Filipino and foreign talent in the country as stated in Chapter 14 of the Philippine Development Plan;
    b. Encourage and deploy more researchers, scientists, and engineers (RSEs) in the regions; and
    c. Increase R&D budget to address relevant basic research and innovation.

DONE on this 10th day of July 2020 in Bicutan, Taguig City.

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