

LESSON 3.0 – SCIENCE and TECHNOLOGY in NATION BUILDING

3.2a The Philippine Government S&T Agenda

The **Philippine government science and technology agenda** is a list of things it wants to do. Thus, it introduced and implemented several programs, projects, and policies to boost the area of science and technology. The main government agency tasked to do these is the **Department of Science and Technology**, better known for its acronym, **DOST**.

The goal of the said agenda is to prepare the whole country and its people to meet the demands of a technologically driven world and capacitate the people to live in a world driven by science.

What is a public policy?

According to Point Park University (2017), a public policy describes the actions of the government. Usually created in response to issues brought before decision makers, these policies come in the form of laws and regulations. They may be created by any governing body, from the country's president down to city council members. On the other hand, Houghton (2020) simply defined public policy as actions taken by government — its decisions that are intended to solve problems and improve the quality of life for its citizens.

What is a policy making process?

Houghton (2020) elucidated on it by pointing out that a policy established and carried out by the government goes through several stages from inception to conclusion. These are agenda building, formulation, adoption, implementation, evaluation, and termination that fully comprise the policy making process.

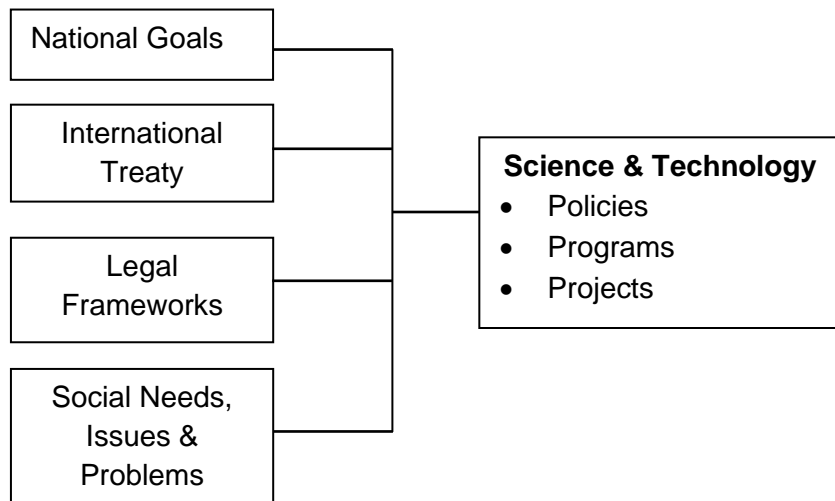
Policy making process:

1. **Agenda building.** Before a policy can be created, a problem must exist that is called to the attention of the government such as illegal immigration, a high level of crimes, and terrorism. As such, new legislation is needed to address these problems.

2. **Formulation and adoption.** Policy formulation means coming up with an approach to solving a problem. Congress, the executive branch, the courts, and interest groups may be involved. A bill to solve a problem goes before the Congress or a regulatory agency drafts proposed rules. The process continues with adoption. A policy is said to be adopted when Congress passes legislation, the regulations become final, or the Supreme Court renders a decision in a case.
3. **Implementation.** The implementation or carrying out of a policy is most often accomplished by institutions other than those that formulated and adopted it. A statute decreed by Congress usually provides just a broad outline of a policy. For example, Congress may mandate improved water quality standards, but the **Environmental Protection Agency (EPA)** provides the details on those standards and the procedures for measuring compliance through regulations. Successful implementation depends on the complexity of the policy, coordination between those putting the policy into effect, and compliance.
4. **Evaluation and termination.** Evaluation means determining how well a policy is working, and it is not an easy task. People inside and outside of government typically use cost-benefit analysis to try to find the answer. History has shown that once implemented, policies are difficult to terminate. When they are terminated, it is usually because the policy became obsolete, clearly did not work or lost its support among the interest groups and elected officials that placed it on the agenda in the first place.

Specifically, what is S&T policy?

Science and technology policy is one of the public policies that promotes appropriate funding to advance scientific and technological research and education, studies the impact of science and technology upon its citizenry, and prescribes regulation, if necessary (Science Tracer Bullets Online, 2020). Those involved in a nation's science and technology policy analyze and often provide in depth studies to determine the plans, programs and policies of the government and their effects on domestic and international affairs. Since many political issues have a scientific component, most developed countries have specific agencies, ministries, or offices that deal with science and technology policy.



Development of Science & Technology Policies in the Philippines

As shown in the diagram, the development of policies in science and technology is shaped or influenced by several variables. These include policies that need to be aligned to national goals; policies in consideration of the country's international commitments and those based on legal frameworks; and the government response to various social needs, issues, and problems. Science and technology policies ensure that the whole country and all its people will experience the progress that science can bring. Policies are guides to direct all efforts to a goal of developing a scientifically advanced country.

The Department of Science and Technology, founded by **Pres. Corazon Aquino on January 30, 1987**, is the **executive department** of the Philippine government **responsible for the coordination of science and technology-related projects in the Philippines and to formulate policies and projects in the fields of science and technology in support of national development.**

Thus, the DOST is considered the premiere science and technology body in the Philippines charged with the twin mandate of providing central direction, leadership, and coordination of all scientific and technological activities, and of formulating policies, programs, and projects to support national development.

On **December 6, 2010**, the NRCPP, as tasked by DOST, spearhead a series of consultations with scientists, researchers, engineers, policymakers, and executives of offices and institutions across the entire Philippines that would consolidate policy recommendations and initiatives in pursuit of the ASEAN 2015 goals (NCRP & DOST, 2011).

The **National Research Council of the Philippines (NRCPP)** is a collegial body of researchers formed in 1933 and mandated to promote basic research for the continuing improvement of the research capability of local scientists, foster linkages with other scientific organizations for enhanced cooperation in the development and sharing of scientific information, provide advice on issues of national interest, and promote scientific culture to all sectors of Philippine society.

As mandated by the Department of Science and Technology, a government agency in which NRCP is under it, the NRCP recommended clustering these policies into four, namely:

1. Social Sciences, Humanities, Education, International Policies and Governance in pursuit of:

- 1.1 integrating ASEAN awareness in basic education without adding to curriculum,
- 1.2 emphasizing teaching in the mother tongue,
- 1.3 developing school infrastructure and providing for ICT broadband,
- 1.4 local food security,
- 1.5 harnessing indigenous knowledge systems and practices.

2. Physics, Engineering and Industrial Research, Earth and Space Sciences, and Mathematics with goals of:

- 2.1 emphasizing degrees, licenses, and employment opportunities,
- 2.2 outright grants for peer monitoring,
- 2.3 review of RA 9184, and
- 2.4 harnessing science and technology as independent mover of development.

3. Medical, Chemical, and Pharmaceutical Science that intends to attain the following objectives:

- 3.1 ensuring compliance of drug manufacturing firms with ASEAN harmonized standards by full implementation of the Food and Drugs Administration,
- 3.2 creating an educational council dedicated to standardization of pharmaceutical services and cares,
- 3.3 empowering food and drugs agencies to conduct evidence-based research as pool of information,
- 3.4 allocating two percent of GDP to research, and
- 3.5 legislating a law supporting human genome project.

4. Biological Sciences, Agriculture and Forestry, and Veterinary Medicine focusing on:

- 4.1 protecting and conserving biodiversity by full implementation of existing laws,
- 4.2 use of biosafety and standard model by all ASEAN countries,
- 4.3 promoting indigenous knowledge systems and indigenous people's conservation, and
- 4.4 formulation of common food safety standards

Government Science & Technology Programs and Projects

But let us first answer the question ... How does project differ from a program?

A **project**, according to Ward (2009), is defined as a **temporary undertaking to create a unique product or service**. A project has a **defined start and endpoint and specific objectives** that, when attained, signify completion. A **program**, on the other hand, is defined as a **group of related projects managed in a coordinated way to obtain broader benefits not available from managing the projects individually**. There are many differences between a project and a program including scope, benefits realization, time, and other variables. One notable difference is time; for example, a **project has a beginning and an end**; however, certain **programs**, while **having a beginning may not have an end**. A classic example of one of these types of programs is an annual construction program of the government.

There are existing programs supported by the Philippine government through DOST. Some of these are the following:

- 1. Providing funds for basic research and patents related to science and technology. The government funds basic and applied research. Funding of these research and projects are also from the **Overseas Development Aid (ODA)** from different countries.
- 2. Providing scholarships for undergraduate and graduate studies of students in the field of science and technology. The country needs to produce more doctoral graduates in the field of science and

technology and produce more research in these fields.

3. Establishing more branches of the Philippine Science High School System for training young Filipinos in the field of science and technology.
4. Creating science and technology parks to encourage academe and industry partnerships.
5. Balik Scientist Program to encourage Filipino scientists abroad to come home and work in the Philippines or conduct research and projects in collaboration with Philippine-based scientists.
6. Developing science and technology parks in academic campuses to encourage and industry partnerships.
7. The establishment of the National Science Complex and National Engineering Complex within the University of the Philippines campus in Diliman. These aimed to develop more science and technology and engineering manpower resources needed by the country. They also aimed to produce more research in these fields.

In a broader sense, it is not only the DOST who is the sole agency that promotes and supports Science and Technology in the country, but rather, there are numerous public and private organizations that also provides their expertise and assistance. One of which is PAASE.

The **Philippine-American Academy of Science and Engineering** (PAASE) identified several capacity-building programs that may help further develop Science and Technology. And these are as follows:

1. Establishment of national centers of excellence
2. Manpower and institutional development programs, such as the **Engineering and Science Education Program** (ESEP) to produce more PhD graduates in science and technology.
3. Establishment of regional centers to support specific industries that will lead the country in different research and development areas.
4. Establishment of science and technology business centers to assist, advise, and incubate technopreneurship ventures.
5. Strengthen science education at an early stage through the

Philippine Science high School system.

In the field of education, several science-related programs and projects were created to develop the scientific literacy of the country. Special science classes were organized, and special science elementary schools were established indifferent regions. Aside from these, science and mathematics in basic education were continuously improved. The current K12 education program included **Science, Technology, Engineering, and Mathematics** (STEM) as one of its major tracks in the senior high school program to encourage more students to enroll in science-related fields in college. Lately, the **Commission on Higher Education** (CHED) launched its **Philippine-California Advanced Research Institutes** (PCARI) Project to allow several higher education institutions in the Philippines and some US-based laboratories, research institutes, and universities to work on research and projects related to science, agriculture, engineering, health, and technology. This project is hoped to strengthen the STEM competitiveness of the country. There are many other areas and fields that are worth taking consideration to by our government in embarking on various research and projects. The following are some of them:

1. Use of alternative and safe energy
2. Harnessing mineral resources
3. Finding cure for various diseases and illness
4. Climate change and global warming
5. Increasing food production
6. Preservation of natural resources
7. Coping with natural disasters and calamities
8. Infrastructure development

The Philippine Congress has also created various laws related to science and technology. These laws serve as a legal framework for science and technology in the country to grow and benefits its citizens. These laws vary according to different themes such as: conservation, health-related, technology-building, and supporting basic research, among others. Some laws and policies are in line with international treaties such as the United Nations (UN), United Nations Educational, Scientific and Cultural Organization (UNESCO), Association of

Southeast Asian Nations (ASEAN) and other international agencies.