

BANGLADESH¹⁶

The Ministry of Science and Information & Communication Technology (MOSICT) is the focal point for science and information and communication technologies (ICT) in Bangladesh. This Ministry explores and executes socio-economic development of the country through research and development (R&D), extension and successful utilization of science and technology (S&T). The Ministry also formulates policies for promotion of S&T. It participates in different international, regional and sub-regional forums and signs collaborative agreements. There are several agencies that function under MOSICT.

A. R&D agencies under MOSICT

1. Bangladesh Council for Scientific and Industrial Research (BCSIR)

BCSIR is an autonomous body under the national government. Its research activities are run by the following nine independent institutes/units:

1. BCSIR Laboratories, Dhaka;
2. BCSIR Laboratories, Rajshahi;
3. BCSIR Laboratories, Chittagong;
4. Institute of Food Science & Technology;
5. Pilot Plant and Process Development Centre;
6. Leather Research Institute;
7. Institute of Fuel Research & Development;
8. Institute of Glass and Ceramic Research & Testing; and
9. Institute of Mining and Mineralogy.

Major functions of BCSIR are:

1. BCSIR is mandated to facilitate science, technology and innovation activities of the country, and to undertake R&D and analytical services for exporters, importers and local entrepreneurs;
2. It initiates and guides S&T research connected to industries and such other allied matters as the government may refer to it;
3. BCSIR facilitates research with the object of using the country's natural resources in the best possible manner;
4. It provides grants-in-aid for scientific, industrial and technological research schemes and projects of the universities established by law and other research institutions;
5. BCSIR adopts measures for the commercial utilization of discoveries and inventions from the research carried out by its own units or by any other university or research organization;
6. It collects and disseminates information of scientific, industrial and technological matters, and publishes scientific papers, reports and periodicals; and
7. BCSIR encourages establishment of industrial research organizations.

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Fields of BCSIR activities include: energy and fuel, biogas and biofuel, arsenic remediation, plant science, tissue culture, glass and ceramics, fibres and polymers, medicinal and aromatic plants, oilseeds and legumes, industrial physics, pulp and paper, biological sciences, food microbiology, pharmacology, leather, durable and low-cost housing materials, chemicals from organic sources, etc.

Since BCSIR's establishment in 1973, 547 processes have been developed by its scientists to aid the industrial development of the country. Around 210 patents have been filed, and 215 processes have been transferred to the industry, of which 35 have been commercialized so far.

2. Bangladesh Atomic Energy Commission (BAEC)

BAEC, an autonomous body under the government, deals with medicine, agriculture, food, industry, electricity and energy, geology, nuclear materials, human resources development and peaceful use of nuclear energy.

BAEC activities are conducted under the following disciplines: physical science; nuclear analytical techniques; application of the Van De Graff accelerator; non-destructive testing; tracer technology; radioactive monitoring; computing facilities; radiation processing; isotope hydrology; radioactive waste management; isotope production; biological sciences; nuclear medicine (diagnostic and therapeutic activities in 14 centres, including one institute); tissue banking; biotechnology; food and radiation biology; engineering; and nuclear power project.

3. National Institute of Biotechnology (NIB)

NIB is a newly established research institute for the development of biotechnology in the country. Its functions include:

1. R&D programmes in agriculture, environment, health and industry using biotechnology and genetic engineering;
2. Collaborative research programmes at home and abroad;
3. Technology transfer to the stakeholders;
4. Human resource development on biotechnology;
5. Human DNA fingerprinting for forensic and medical purposes;
6. Quality determination and certification of genetically modified imported foods; and
7. National focal point to coordinate biotechnological activities in the country.

B. Other R&D organizations

Research activities are also conducted by some other government agencies that are not under MOSICT, as well as by different public universities. These are:

1. Bangladesh Agricultural Research Council (under the Ministry of Agriculture);
2. Bangladesh Rice Research Institute (under the Ministry of Agriculture);
3. Bangladesh Agricultural Research Institute (under the Ministry of Agriculture);

4. Bangladesh Institute of Nuclear Agriculture (under the Ministry of Agriculture);
5. Bangladesh Livestock Research Institute (under the Ministry of Fisheries and Livestock);
6. Bangladesh Fisheries Research Institute (under the Ministry of Fisheries and Livestock);
7. Bangladesh Forest Research Institute (under the Ministry of Forests and Environment); and
8. Bangladesh Medical Research Council (under the Ministry of Health and Population Control).

C. National Science and Technology Policy (NSTP)

Bangladesh has an NSTP since 1986. The Policy enunciated the principles on which S&T growth ought to be based. It emphasized scientific and technological competence and self-reliance. NSTP stressed the need for its effective synchronization with socio-economic, cultural, educational, agricultural and industrial policies of the country.

Recently, the government has taken steps to revisit NSTP and update it. A revised draft of NSTP has already been prepared. The revised draft includes a 'Vision' statement and several 'Missions' to achieve that vision.

1. Vision

To establish S&T as the main vehicle of socio-economic development through effective and innovative leadership in the development, promotion and application of S&T and to ensure that traditional as well as modern advances in all branches of S&T are effectively applied in all sectors of economy including agriculture, industry, environment and services for sustainable national development to build a happy, prosperous S&T-led Bangladesh.

2. Missions

The core theme of NSTP is to ensure that it becomes an important and integral component of all development plans and activities in the country. To that end the policy will have the following missions:

1. To place S&T as the basis for formulation of national development plan for economic and cultural development;
2. To build a strong foundation for development, promotion and application of S&T for sustainable prosperity;
3. To develop quality human resources, infrastructures and institutions for S&T so as to create a strong, creative, innovative and competitive nation in the worldwide knowledge-based society;
4. To promote basic sciences and innovative practices and ensure effective use of science, engineering and technology to fulfil basic needs of its people;
5. To encourage generation, adaptation, transfer and assimilation of technology appropriate for basic, applied and developmental research;

6. To ensure the development and use of traditional S&T and upgrade indigenous community knowledge to provide quality goods and services to all sectors;
7. To encourage research on green technology to harness natural capital ecosystem, which acts as a carbon sink and a buffer against climate change, together with ICT, biotechnology, nanotechnology, etc.;
8. To create adequate infrastructure for R&D in S&T areas of national need and encourage private sectors to set up R&D centres for quality products;
9. To provide support, adequate training and skill development opportunities to the vast workforce, and promote scientific literacy to empower and enrich the society;
10. To strengthen and protect intellectual property rights of various technologies generated in the country;
11. To provide special technology support and services to export-oriented industries such as agriculture, agro-industry, pharmaceuticals, medicinal and aromatic plants, jute, leather, textiles, ready-made garments and handicrafts; and
12. To develop technologies that are friendly to small and medium enterprises (SMEs) for the sustainable growth of SMEs.

D. Strengths of S&T system

1. Bangladesh has institutional and infrastructural facilities for research and innovation;
2. The country has a good number of talented scientists; and
3. Bangladesh has drafted and updated a national S&T policy.

E. Weaknesses of S&T system

1. Fund constraint is one of the major drawbacks for research work; and
2. Low efficiency in the commercial utilization of discoveries and inventions resulting from S&T research.

F. Views and suggestions

Innovation is invention and commercialization of new (or significant improvement of existing) products, processes and/or services. Innovations usually do not take place in a static environment; rather, they are the result of a dynamic process involving interplay of several internal and external factors. In this light, some suggestions for the development of a National Innovation System (NIS) in Bangladesh are:

1. National need assessment in the field of S&T should be conducted and research should be based on that assessment;
2. Efforts should be taken to involve private sector financing in research works;
3. Intensive efforts should be taken for marketing of innovative products or processes; and
4. Indigenous knowledge should be accumulated and promoted.