

Science and Technology Status of Bangladesh



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Country Profile

- **Official Name:** People's Republic of Bangladesh
- **Geographical location:**
Latitude $20^{\circ}34'$ - $26^{\circ}38'$ north
Longitude $88^{\circ}01'$ - $92^{\circ}41'$ east
- **Total Area:** 147,570 Sq. Km
- **Capital City:** Dhaka
- **Population:** 15.5 million (approx.)
- **Religions:** Islam, Hindu, Buddhist, Christianity
- **Languages:** Bengla



Organizational Structure for the Development of Science and Technology

- The Ministry of Science and Technology (MOST) is the umbrella government agency for science and technology development. The ministry has six agencies
 - Bangladesh Atomic Energy Commission (BAEC)
 - Bangladesh Council for Scientific and Industrial Research (BCSIR)
 - National Museum of Science and Technology (NMST)
 - Bangladesh National Scientific and Technical Documentation Centre (BANSDOC)
 - Bangabandhu Sheikh Mujibur Rahman Novotheatre
 - National Institute of Biotechnology (NIB).
- The BARC under the Ministry of Agriculture is at the apex body of the national agricultural research system (NARS).

Organizational Structure for the Development of Science and Technology (Cont.)

- The National Agricultural Research System (NARS):
 - ❖ Bangladesh Agricultural Research Institute (BARI)
 - ❖ Bangladesh Rice Research Institute (BRRI)
 - ❖ Bangladesh Jute Research Institute (BJRI)
 - ❖ Bangladesh Institute of Nuclear Agriculture (BINA)
 - ❖ Soil Resources Development Institute (SRDI),
 - ❖ Bangladesh Sugarcane Research Institute (BSRI),
 - ❖ Bangladesh Live stock Research Institute (BLRI),
 - ❖ Bangladesh Fisheries Research Institute (BFRI)
 - ❖ Bangladesh Tea Research Institute (BTRI)
 - ❖ Bangladesh Forest Research Institute (BFRI)
- Universities and NGOs - playing an important role in identifying appropriate and sustainable technology for the country

Science and Technology in Development Plan

Technological innovation and research has been given high importance in the Sixth Five Year Plan (2011-2015) and National Science and Technology Policy-2011 to achieve the development goal and making Bangladesh middle income country by 2021.

Innovations by adopting improved technology as well as through development of indigenous technology .

Advancement of science and technology for attainment of socio-economic growth, eradicating the poverty and to enhance the quality of life.

Strategies for Technology Transfer

Strategic actions in Sixth Five Year Plan:

- Effectively linking the entrepreneurs within the country with the supply of technology originating both at home and abroad through a national network.
- Establishment of Hi-tech Park, IT and Bio-technology incubator, IT Village and Software Park, Community e-Centre in suitable locations of the country.
- Remodeling the legal framework for protection of intellectual property, providing incentives for local entrepreneurs and development and transfer and absorption of technology.
- Strengthening regional and sub-regional cooperation with SAARC countries and with other science and technology organizations for better cooperation and bilateral relations.

Science and Technology Policy and Action Plan

- The National Science and Technology Policy of Bangladesh was first introduced in 1986.
- The new 'National Science and Technology Policy-2011' has been declared by the government where the vision is to meet the basic needs of human beings by harnessing the potential of science and technology
- National Science and Technology Action Plan-2011 has been approved on 4 July, 2011 by the Cabinet.
- Total 246 actions have been identified for achieving the 15 objectives of the policy within the short term, Medium term and long term period.

S & T for SMEs Development

- SME Policy 2005 - The Technology-exchange programs between countries in similar stages of development, and with a similar maturity of the infrastructural development for SME development has been placed high importance in the interest of rapid technology transfer.
- Limited access to modern technology is a major challenge facing the Bangladesh SME sector.
- Income derived from any Small and Medium Enterprise (SME) engaged in production of any goods and having an annual turnover of not more than BDT 2400000 is exempt from tax and Income from Information Technology Enabled Services (ITES) business is tax exempted up to 30th June, 2013.

Government Policy for Diversification of Energy Sources

- The use of solar panel in all large buildings in the city area has been made mandatory and Solar panel imports are made duty-free for which SMEs sector for solar energy business has been developed significantly.
- Local bodies may involve in promoting and disseminating technical knowledge for setting up of projects relating to solar energy, bio-fertilizer and IT enabled services.

Institutional Infrastructure for Nanotechnology

- R&D in nanotechnology in Bangladesh is very limited due to the limited R&D in nanotechnology and the lack of international collaboration, tools and equipment.
- Bangladesh Atomic Energy Commission is carrying out some research work in the field of nanotechnology covering areas such as synthesis of nanoparticle by chemical methods (e.g. silver, iron oxide and various ceramic oxide nanoparticle) for studying their magnetic and dielectric properties.

National initiatives for Technology Transfer and Innovation

- The Ministry of Science and Technology disseminate indigenous technology to improve living stand of the people through 'Appropriate Technology Transfer seminar' throughout the country.
- Fellowship Program on Science and Technology-Home and abroad.
- BCSIR has developed total 36 new technological processes and 24 processes have got patent in last two years.
- Total 89 SMEs have been given lease permission to commercialize developed products in the market in the last two years.
- BCSIR has developed 'Arsenic Kit' and 'Duel-Fuel Irrigation Pump' .

National initiatives for Technology Transfer and Innovation (Cont.)

- *‘Mitigation of Carbon Emission and Extension of Alternative Energy usage Through Dissemination of BIO Gas Plant and Improved Cook Strove Technology’* project is being implemented through BCSIR in order to set up total 2800 BIO Gas Plant and 28000 improved cook stove technology to the rural areas within 2013.
- Since May 2011, IDCOL, a Government owned Investment Company, has installed 18,713 biogas plants in different parts of Bangladesh.
- Amniotic membrane has been used by Bangladesh Atomic Energy Commission (BAEC) as an effective dressing material for treating burn patients.

National initiatives for Technology Transfer and Innovation (Cont.)

- Bangladeshi scientists have successfully disclosed genome sequencing of jute (mystery of origin of jute) after long research opening up a new vista in the development of variety of the world's most biodegradable natural fiber.
- BARI has so far developed a total of 777 technologies of which 355 are improved crop varieties (commodity) and 422 technologies on different non-commodity areas.
- Hybrid Seed Production and Hybrid Variety development (Rice-BRRI Hybrid1-4, BADC Hybrid 1-2).
- Stress tolerant rice variety has been developed in the recent year. Saline tolerant rice variety is BRRI Dhan-47, BINA Dhan-7.

National initiatives for Technology Transfer and Innovation

- Alternative Wetting and Dying (AWD) technology is developed for ensuring the effective use of irrigation water. This technology is helpful for adaptation to drought.
- Irrigation technology has been developed in order to ensure effective and efficient use of irrigation water and fertilizer simultaneously.
- Integrated Pest Management (IPM) technology is developed and used for environment friendly and judicious use of pesticide.
- Floating agriculture technology (Baira Hydroponics) is used in the wetland area of Bangladesh for adapting to flood.
- Power Tiller Operated Seeder (POTS) technology has been developed as rural technology and is used for shadow tilling, fertilizing , seeding in line and seed covering in a single pass. This technology is used for wheat, maize, lentil, chickpea production in Bangladesh.

Constrains for Transfer of Technology

- Lack of a clear perception of the very special nature of R & D institutions and their management.
- Limitation of resources, dependence on foreign technology.
- Shortage of skilled manpower in many areas, brain drain and emigration of trained manpower.
- Inadequate research facilities and skill development programs.
- Lack of coordination among scientific organizations.
- Poor social consciousness of the role of science and technology in national development.

Suggested Programs of Action)

- Establishment of Technology transfer Centre
- Development of Technology business incubator
- Development of Rural technology
- Establishment of Information Network Village
- Energy security through establishing network for Bio gas Plant and Improved Cook Strove for the rural poor people.
- Development of Nanotechnology
- Exchange of innovative knowledge and skill through training program.

The way forward

- Transfer of technology from the developed to the developing world as well as within the developing world should be augmented.
- Sincere endeavors should be made to harness the benefits of science and technology for the improvement in the living condition of the multitude of impoverished down trodden population in the developing countries.
- Technology transfer should not promote transfer of old-aged and inefficient technologies.
- Science and Technology must be duly harnessed to unleash the creative potential of the people making collaboration and regional relation for technology transfer.

Thank You