

3. Bangladesh

The People's Republic of Bangladesh bordered by India, Myanmar, and Bay of Bengal is one of the most densely populated countries in the world with a high incidence of poverty.

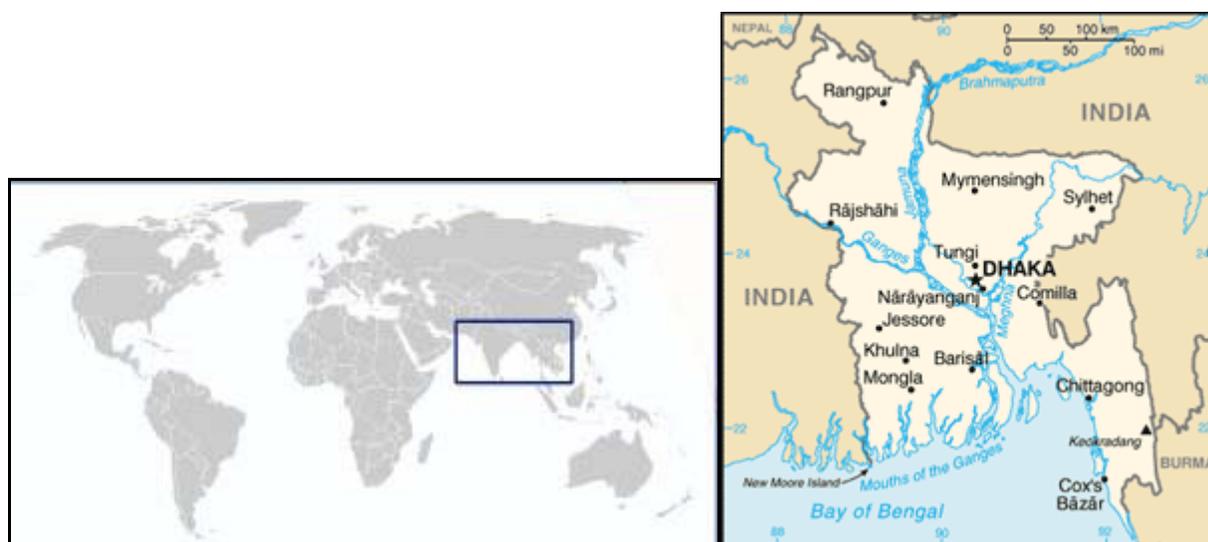


Figure 4: Map of Bangladesh

Source: www.wikipedia.org; www.cia.gov

Bangladesh is a developing nation with continuous domestic and international efforts to improve its economic condition. According to the gradation by the International Monetary Fund, Bangladesh ranked as the 48th largest economy in the world in 2008. More than half the GDP is contributed by the service sector, while around two third of the population is employed in the agriculture sector. Some of the key economic and demographic indicators are given as follows:

Table 8: Key Demographics and Economic Indicators - Bangladesh

Parameter	Value	Year
Population	158,665,000	2007
Gross domestic growth (million US \$)	67876	2007
GDP per capita (US \$)	427.8	2007
Human development index ranking	146/182	2009
Population below poverty line	45%	2004

Source: <http://unstats.un.org>; www.cia.gov; <http://hdr.undp.org>

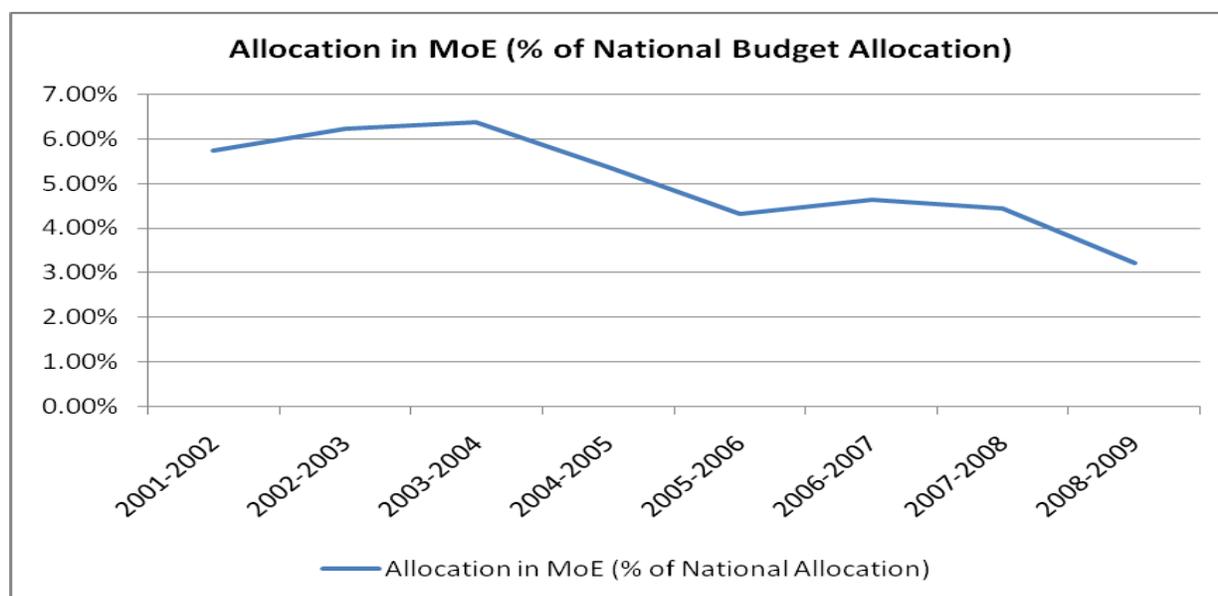
3.1. Background

The primary education system in Bangladesh is managed by the Ministry of Primary and Mass Education, whereas the MoE is responsible for secondary and postsecondary higher education. Both Ministries operate through their various directorates and supporting departments. The government is looking at implementing ICT initiatives to revolutionize the education system. With

the successful implementation of ICT in the education system, the government can look at a greater participation of the country in the global information society. It is hoped that ICT will impact the access, cost-effectiveness, and quality of the education system too. The increasing digital divide needs to be addressed by the uniform and well-administered implementation of ICT. The demographical picture that shows a relatively lower participation of the female population in the ICT education process also needs to be revised through initiatives and programs.

Bangladesh Bureau of Educational Information and Statistics (BANBEIS) is the organization responsible for collection, compilation, and dissemination of educational information and statistics at various levels and types of education. This organization is the main organ of the MoE responsible for collection and publication of educational data and statistics. It functions as the Education Management Information System (EMIS) of the Ministry. It is also the National Coordinator of RINSACA (Regional Informatics for South & Central Asia).

The allocation of budget to the MoE as a percentage of total national development budget was 5.73% in the year 2001-02. In the year 2003-04, it was 6.37% and has been gradually decreasing since then. In the year 2008-09, it has come down to 3.22% excluding Taka 163.17 crore (approximately 0.2 million dollars) as block allocation under MoE. The following graph shows the percentage of budget allocated to MoE in last 9 years:



Bangladesh has made significant progress, especially with regard to increasing access and gender equity, both at the primary and secondary levels. Gross enrollment rates at the primary level rose from 90% in the late 1990s to 98% in 2003, while the enrollment rates at the secondary level rose to 44%. Gender parity in access to primary and secondary education has also been achieved to an extent. These achievements are particularly spectacular when compared to countries in the South Asia region and other countries at similar levels of per capita income.

Some of the key education indicators for the country are given as follows:

Table 9: Key Education Indicators of - Bangladesh

Education parameter		Value	Year
Adult literacy rate	Male	53.9	2000–2007
	Female	31.8	2000–2007
Youth literacy rate	Male	71	2000–2007
	Female	73	2000–2007
Gross enrollment ratio (%): Primary education	Male	101	2000–2007
	Female	105	2000–2007
Gross enrollment ratio (%): Secondary education	Male	43	2000–2007
	Female	45	2000–2007
Expenditure on education (% of GDP)		2.7	2003–2006

Source: www.unicef.org; www.cia.gov

The ICT industry in Bangladesh has been making steady progress with rapid growth in mobile telephony and Internet usage. The Ministry of Science Information and Communication Technology is tasked with the responsibility of providing the policy framework and institutional mechanism for the development of a robust ICT sector in the country. Further, the Bangladesh Computer Council (BCC), set up by the Ministry in 1990, is an autonomous body responsible for encouraging and providing support for ICT-related activities in Bangladesh. Some of the key ICT-related indicators for the country are given as follows:

Table 10: ICT Indicators - Bangladesh

ICT parameters	Value	Year
Internet users (per 100)	0.3	2008
Internet subscribers (per 100)	0.1	2008
Broadband subscribers (per 100)	0.03	2008
Mobile coverage (%)	90	2007
Mobile subscribers (per 100)	21.7	2007
Personal computers (per 100)	2.42	2006–2007
Internet affordability (US \$/month)	22.1	2007
Mobile affordability (US\$/month)	2.6	2007
Radio subscribers (per 1000)	42.6	
Households with TV (%)	22.9	

Source: www.itu.int; www.mdgs.un.org; World Development Indicators Database; www.cia.gov

3.2. Policy Framework and Delivery Mechanism

The Government of Bangladesh in an effort to harness the power of ICT formulated its National ICT Policy in year 2002. A revised National ICT Policy was passed in 2009. The National ICT Policy 2009 has incorporated all the components of the National ICT Policy 2002 in a more structured manner. And has includee of planned action items in conformity with policies and strategies. To ensure the successful implementation of the revised National ICT Policy, the review committee took into cognizance the government's declared intentions in the Poverty Reduction Strategy Paper and other national policy documents to align the revised ICT policy with the national goals as

envisioned in the documents. The goal of following a pyramidal structure with the vision placed at the apex and the other linked parameters in the subsequent stratas were decided in the revised policy of 2009. Some of the specific policy statements relevant to education are stated below:

- Assess skills of ICT professionals and meet gaps with targeted training programmes to overcome the short-term skills shortage in the ICT industry and adopt continuing education and professional skills assessment and enhancement programmes
- Encourage closer collaboration between academia and industry to align curriculum with market needs
- Establish an ICT Center of Excellence with necessary long-term funding to teach and conduct research in advanced ICTs
- Enhance the quality and reach of education at all levels with a special focus on Mathematics, Science, and English
- Boost use of ICT tools in all levels of education, including ECDP, mass literacy, and lifelong learning
- Ensure access to education and research for people with disabilities and special needs using ICT tools
- Establish multimedia institutes
- Initiate diploma and trade courses to enable ICT capacity building for teachers. Teacher training institutes to be empowered with ICT capacity to meet the challenges
- Create reliable and accessible national databases
- Promote the use of ICT for the purpose of training in the public sector
- Initiate development of a sizable resource of globally competitive ICT professionals in order to meet local and global market requirements
- Administer the successful enactment of laws and regulations that conform to World Trade Organization stipulations to allow for consistent ICT growth
- Promote distance education, set up institutes and infrastructure for e-learning training programs
- Develop seamless telecommunication network for the unhindered implementation of ICT policy
- Ensure public access to information through setting up of kiosks. Encourage the participation of private sector for ICT implementation
- Work toward setting up a Ministry of ICT, by merging MOSICT and MOPT. The “Science” part from MOSICT can be transferred to MoE and be renamed as the Ministry of Education and Science. BTRC should be brought under the Ministry of ICT
- Create an e-Education Cell for coordinating and mainstreaming ICTs in education system

Some of the specific ICT in education objectives of the Government along with strategies proposed to achieve these objectives are given below:

ICT-Trained and Qualified Teachers

The government of Bangladesh has identified the shortage of trained and qualified teachers as a key constraint and therefore proposes to leverage ICT tools for imparting effective teachers’ training

programmes and mitigating the shortage of good quality teachers. The following strategy is proposed:

- Provide incentives/special loans/performance-based grants to teachers to acquire ICT tools
- Install computers, LAN, reliable Internet connectivity with reasonable speed, and multimedia teacher training content for all primary and secondary Teachers' Training Colleges
- Ensure that the teachers of higher secondary level and secondary level ICT courses are at least IT graduates and IT diplomas, respectively
- Provide special incentive for IT teachers in cities to go to regional colleges on short-term deputation and also provide special privilege for local ICT teachers to stay in their home districts

ICT access to all schools

Besides providing qualified ICT teachers, the government also realizes the importance of providing ICT access to all schools to familiarize students with modern ICT technology. To implement this policy, the government proposes to:

- Install computers, Internet connectivity, and appropriate multimedia educational content for every primary, secondary, and higher secondary school, accessible to each student; include solar energy panels if necessary
- Create a Model School as an Information Access Center with ICT facilities in each union, so that all other adjacent school students can use that facility

Bridging the Digital Divide

An immediate priority for the government is to bridge the digital divide and minimize economic disparity for lower income groups, ethnic minorities, women, and individuals with special needs. In this regard, the government has formulated certain policies to ensure equitable ICT access to students belonging to these groups and the following strategies have been proposed

- Develop special ICT literacy and training programmes for ethnic minorities
- Arrange Internet connectivity up to all villages of the country
- Ensuring subsidized pricing for Internet connectivity to primary and secondary educational institutions and TVET programmes
- Promote the use of standard Bangla keyboard for people with special needs

Larger Pipeline of ICT Professionals

The government proposes to encourage closer collaboration between academia and the ICT industry to align curriculum with market needs. Policies will be implemented to extend the reach of ICT literacy throughout the country by incorporating ICT courses in secondary and tertiary education. A redesigning of the secondary and higher secondary syllabus will take place at regular intervals based on the needs of an inclusive and cost-effective knowledge society.

As for the current ICT professionals, an "ICT Professional and Skill Enhancement Programme" will be initiated, which would assess the skills of ICT professionals and meet gaps with targeted training programmes to overcome the short-term skills shortage in the ICT industry. To provide an incentive for companies to invest in training of their HR, the Ministry of Science and Information

and Communication Technology (MoSICT) would reimburse 50% of training costs for ICT professionals.

Bangladesh's commitment to education has been clearly stated in its constitution and development plans with education being given the highest priority in the public sector investments. Education sector allocations are currently about 2.3% of GDP and 14% of total government expenditure. At the primary level, MoPME is supported by a multidonor group through the Primary Education Development Program II (PEDP II), which aims to strengthen educational access, quality, and efficiency.

MoE is aiming to move toward a devolved system of governance within the current administrative structure. In this system, the central government will be responsible for formulating policies, financing, setting quality standards, and monitoring and evaluation, while lower levels of government will be responsible for administering the system. MoE is empowering officials at the district and upazila levels to take greater responsibility in monitoring school performance and ensure public disclosure of information (e.g., SSC passing rates, teacher absenteeism, class sizes) related to school quality.

The necessity to improve quality of education by leveraging technology is also articulated by the different Education Commissions set up by the Government of Bangladesh. The Mohammad Moniruzzaman Mia Commission-2003, which submitted its report in March 2004, reiterated that there was no alternative to using modern technology for improving quality of primary and secondary education. In this regard, a dedicated TV channel has been proposed. It is recommended that distance education through TV could be introduced for pre-primary and continuous education.

Another significant step as regards policy framework for ICTs for education has been the adoption of the Community Radio Installation, Broadcasting & Operation Policy 2008, by the Ministry of Information. This policy provides a framework for extensive use of radio technology to provide education and support to communities that may not have access to regular schooling or other Internet or telephone resources.

3.3. Initiatives

In the government sector, some initiatives have been taken for ICT-enabled education and computer-aided education at all levels including primary schools. In 2009, the Prime Minister made a promise of a *Digital Bangladesh* to the citizens by providing access to ICT for all. Bangladesh has also seen many initiatives by donor agencies and non-government organizations such as BRAC (Bangladesh Rural Advancement Committee) and Grameen Bank, particularly in the field of ICT human capacity building. Some of the key initiatives using ICT for education are outlined as follows:

In-Service Secondary Teacher Training Programme

In an effort to harness the use of ICT to improve the quality of the ADB funded Teaching Quality Improvement in Secondary Education Project (TQI-SEP), two subject trainers, a training coordinator, and a cluster of 10 schools were equipped with "smartphones"(phones equipped with

features such as video playback, speakerphone, three-way calling capabilities, email access and so on). These smartphones were to be used by 20 Bangla and mathematics teachers in the 10 schools. The phones were intended to enhance communication, motivation, and multimedia delivery. Trainees used SMS to reply to assessment questions and teleconferencing facilities were used to communicate with the trainers.

Gonokendros (Union Libraries)

The Continuing Education Program was introduced by BRAC in 1995 and was responsible for establishing Gonokendros (Union Libraries), which provide computer training for students at a low price. They also provide an access to reading materials for the rural population in an effort to increase the literacy levels among them. By December 2007, Gonokendros had organized computer training for more than 20,000 people and are now being developed as information centers to ensure the participation of everyone, particularly women.

Computer-Aided Learning

In 2004, BRAC initiated the CALP with an aim to provide interesting and interactive learning materials for teachers to use in the classroom. The software developed is based on the national curriculum and is intended to improve teachers' classroom skills by improving their capacity to maintain student's attention and to help students grasp difficult concepts by providing useful visualizations. CAL also trains teachers on using computers and on using the technology to expand their own knowledge

Under the TQI-SEP supported by BRAC, the MoE established Mobile ICT Labs in 2010. Each Mobile ICT Lab contains five laptops, five wireless Internet modems, two digital cameras, multimedia projector, webcam and various other e-learning enabling facilities. These Mobile ICT Labs will move around in 17 cars through remote areas in Bangladesh introducing an e-learning system to teachers and students in one thousand schools by the end of the year.

Grameen Communications

Grameen Communications is a not-for-profit Information Technology company which launched a pilot Village Computer and Internet Project (VCIP) in a district near the capital of Bangladesh. The primary objective of the program is to provide access to modern ICT services to rural areas. A major emphasis for VCIP is providing education at a low cost to the people in isolated regions. In this regard, the program has provided computer lab facilities to schools and colleges, basic training courses in computers, and educational programs for the children like learning of alphabets and words.

Grameen Communications has also initiated various other programmes in Bangladesh. The Global Communication Center, which is the R&D wing of the company, works toward producing and promoting ICT technologies to improve health care, education, and business in the country.

Bangladesh Open University

Bangladesh Open University (BOU) was established in 1992 and till date it is the only public university in Bangladesh, which imparts education through a distance learning mode. The University uses ICT to achieve its goal of reaching the masses and creating efficient and skilled manpower in the country. It functions through 12 Regional Resource Centres, 6 schools, and 1,106 Study Centres. It recently became a member of the mega-universities with student enrollment exceeding 300,000 (Hossain and Saddik).

Delivery of education at BOU depends largely on the print medium and the use of technology such as television broadcast, radio and audio cassettes is provided as a supplementary component of print based delivery (Hossain and Saddik). On an average 13 Television lectures and 16 Radio lecture are aired per month, delivery of these lectures are carried out by BOU academics and subject specialists from other institutions (Alam and Islam). The use of contemporary technology such as e-mail, computer-aided learning, and teleconference, which started only in 2000, still remains limited.

Bangladesh Virtual Classroom is a SPIDER (Swedish Program for ICT in Developing Region) funded project run by Orebro University (Sweden), Soft-Ed Limited (Bangladesh) and Bangladesh Open University (BOU). It focuses on using electronic means to provide education to rural areas of Bangladesh. The objective of the Bangladesh Virtual Classroom is to test a method that would make the pre-recorded lessons delivered at BOU more interactive. The proposed project will use Short Messaging Services (SMS) along with perceived live telecast to create a virtual classroom.

Relief International—Schools Online

Relief International—Schools online (RI-SOL) is a US-based International NGO, which has been working in Bangladesh's education sector to integrate ICT in classroom learning and teaching. Under the Global Connections and Exchange Project, RI-SOL has launched 47 Internet Learning Centers offering a variety of ICT. These learning centers are operating in rural and semiurban areas in 10 districts of Bangladesh and are also open to neighboring schools, colleges, local institutions, and surrounding communities.

In May 2009, RI-SOL collaborated with Intel Corporation and the U.S. State Department Educational and Cultural Affairs Bureau (ECA) in an effort to provide ICT skills and development training to teachers in Bangladesh. Intel's teaching and learning programs and RI-SOL school-based online learning modules will be available for schools to improve the capacity of the teachers. This collaboration also aims at encouraging interactive linkages between U.S. and Bangladeshi schools.

3.4. Constraints

Despite the number of initiatives taken up by the government and international donor agencies to improve education through ICT, literacy levels in Bangladesh still remain low and stagnant. Some of the key constraints in the application of ICT for education are outlined as follows:

High Cost of Internet: Internet is becoming more popular but is affordable to only a small urban section of the population. It is extremely expensive in rural areas where the need for distance education is the most. As a result the country will have to rely on more traditional communication means such as radio and television, which have higher penetration, and also focus on developing relevant quality content for these formats.

ICT Infrastructure: ICT infrastructure in schools still remains poor with limited Internet access. It is estimated that only 2.2 per 100 people have access to personal computers (World Bank). This could be a major constraint in ensuring quality implementation of ICT in education.

Lack of Qualified Teachers: There is a lack of qualified teachers particularly in lower and higher secondary schools (45% and 33%, respectively). There is also a shortage of ICT trained teachers; this can be attributed to the fact that the policy framework for ICT encourages IT graduates to join the ICT industry to ensure a larger pipeline of ICT professionals and as a result there is no incentive scheme for them to teach at school levels.

3.5. Insights

Bangladesh can reap great benefits by integrating ICT in the education system since the country has one language and is densely populated. The challenge faced by Bangladesh, like many developing countries is overcoming the extensive digital divide. Implementation of ICT would need to be carefully rolled out since, if ICT services are not affordable or accessible to rural areas, ICT expansion could increase the existing urban-rural IT gap.

The ICT policy framework for Bangladesh focuses on capacity building in terms of infrastructure and developing human resources; for example, the government creates a venture capital fund for young ICT graduates to establish startup ICT companies; ICT training companies are given incentives to increase the number of ICT professionals. As a result a large number of software companies have sprung up over the last decade and the number of science and mathematics graduates has also increased. While this is a positive step for the ICT industry in general, the potential of ICT in education has had little attention. It would be beneficial if Bangladesh could take advantage of the exponential growth in ICT training institutes to cater to the shortage of teachers. ICT graduates will have to receive proper incentives to join academics rather than software companies.

The Bangladesh Telecom Regulatory Commission was set up as an independent body in 2001. Even though competition has increased in the telecom space in recent years, further efforts will have to be made to reduce telecommunication costs and improve its efficiency.

The opportunity provided by extensive coverage of mobile network and relative affordability of mobile services (very expensive internet) should be leveraged for designing innovative solutions through these media. This may be more usefully utilized for non formal education as well as support services in education. Further TV and Radio networks may be utilized to a greater extent to deliver educational content, given the high population density and greater penetration of these media.

3.6. Select Bibliography

- Mohammad Ali, 2003. "ASPBAE, Research on Information and Communication Technology" Dhaka Ahsania Mission. http://portal.unesco.org/education/en/file_download.php/. The paper outlines the current state, major initiatives and future opportunity of implementing ICT in higher education.
- T.M Barkatullah, 2008. "ICT Human Capacity Building." Bangladesh Computer Council. www.unapcict.org/ecohub/.../ict-human...bangladesh/at.../attachment1.
- "BRAC Education Programme, BEP 2004-2009" by Anne Ryan, James Jennings Jill White, Mar 2007; www.connect-bangladesh.org/cb

Links to Initiatives

Government Links

- Bangladesh Computer Council (BCC): www.bcc.net.bd/
- Bangladesh Bureau of Educational Information and Statistics (BANBEIS): www.banbeis.gov.bd/

Schools and Education Institutions

- National Academy for Primary Education: <http://www.nape.gov.bd/>
- Bangladesh Open University: www.bou.edu.bd/

Private Companies

- Soft – Ed Limited: www.softedltd.com/

Non Government Organizations

- Bangladesh Rural Advancement Committee (BRAC): www.brac.net/
- Grameen Communications: www.grameencommunications.com/

Other Important Links

- Relief International – Schools Online (RI-SOL): www.connect-bangladesh.org/component/option,com_frontpage/Itemid,1/
- Swedish Program for ICT in Developing Region (SPIDER) – Bangladesh Virtual Classroom: www.spidercenter.org/news/virtual-classroom-bangladesh