

Grant No. 23

126 - Ministry of Science and Technology

Medium Term Expenditure

(Taka in Thousands)

Description	Budget 2019-20	Projection	
		2020-21	2021-22
Operating Expenditure	530,38,00	583,42,00	641,76,00
Development Expenditure	15908,47,00	17499,32,00	19249,25,00
Total	16438,85,00	18082,74,00	19891,01,00
Recurrent	839,65,83	864,08,55	870,36,32
Capital	15599,01,57	17218,44,35	19020,40,18
Financial Asset	17,60	21,10	24,50
Liability	0	0	0
Total	16438,85,00	18082,74,00	19891,01,00

1.0 Mission Statement and Major Functions**1.1 Mission Statement**

Help in achieving the overall socio-economic prosperity of the country and the nation through peaceful use, propagation, expansion and successful application of nuclear energy including Science and technology research, technology innovation, development and nuclear power production.

1.2 Major Functions

- 1.2.1 Review the existing policies on science and technology and formulation of new policy keeping consistence with national goals and plans;
- 1.2.2 Coordination between the activities of various ministries to implement the National Policy on Science and Technology;
- 1.2.3 Implementation of the recommendations of the National Council for Science and Technology (NCST);
- 1.2.4 Provide financial support to research and development activities (for R&D) by individuals / organizations / educational institutions / science clubs related to science and technology and offer fellowship for MS, PhD and Post-Doctoral Studies in the Country under the Bangabandhu Science and Technology Fellowship Trust;
- 1.2.5 Establish relationships with international organizations related to science and technology and engage in activities related to contract and cooperation in the respective fields; and take appropriate steps to involve Bangladesh in ongoing development activities;
- 1.2.6 Ensure Nuclear Safety and Radiation Control as well as peaceful use of atomic energy and provide atomic medical services along with the installation of nuclear power plants;
- 1.2.7 Development, promotion, expansion of Science and technology and to celebrate National Science and Technology Week for developing awareness amongst the students and popularizing science;
- 1.2.8 Enhance economic development of the country through the management and control of all the related activities concerning sea research and application of research results.

2.0 Medium Term Strategic Objectives and Activities

Medium-Term Strategic Objectives	Activities	Implementing Departments/Agencies
1	2	3
1. Providing assistance for research work related to science & Technology	<ul style="list-style-type: none"> • Provide fellowships and opportunity for higher study and research to researchers 	<ul style="list-style-type: none"> • Secretariat • BCSIR • Bangabandhu Science and Technology Fellowship Trust
	<ul style="list-style-type: none"> • Provide grants to the researchers, concerned organizations and non-government scientific organizations and societies for scientific research 	<ul style="list-style-type: none"> • Secretariat
	<ul style="list-style-type: none"> • Conduct training on science and technology 	<ul style="list-style-type: none"> • Bangladesh Atomic Energy Commission • BCSIR • National Institute of Biotechnology • National Science and Technology Museum • Bangabandhu Sheikh MujiburRahman Novo Theatre • Bangladesh Atomic Energy Regulatory Authority
	<ul style="list-style-type: none"> • Participation on the training program organized by IAEA/RCA/FNCA/ANSN to implement agreement on regional cooperation 	<ul style="list-style-type: none"> • Bangladesh Atomic Energy Regulatory Authority
2. Popularizing of Science & Technology	<ul style="list-style-type: none"> • To arrange Seminar and workshop for Science affairs 	<ul style="list-style-type: none"> • Bangladesh Atomic Energy Commission • National Institute of Biotechnology • BANSDOC • Bangladesh Atomic Energy Regulatory Authority • BCSIR
	<ul style="list-style-type: none"> • Arrange science fairs/exhibitions/Olympiad at district and national level with permanent science exhibitions 	<ul style="list-style-type: none"> • National Science and Technology Museum
	<ul style="list-style-type: none"> • Collect, process preserve, edit and distribute information in all fields of natural science, 	<ul style="list-style-type: none"> • BANSDOC

Medium-Term Strategic Objectives	Activities	Implementing Departments/Agencies
1	2	3
	<p>agricultural science, medical, engineering, industrial technology, scientific research and research.</p> <ul style="list-style-type: none"> • Developing Navotheatre as a center of excellence through recreational science education and aerospace research. • To set up network with people including educational institutions for providing accurate information and information about aerospace science 	<ul style="list-style-type: none"> • Bangabandhu Sheikh Mujibur Rahman Novotheatre
3. Ensure safe and peaceful use of nuclear energy	<ul style="list-style-type: none"> • Radio isotope related Health services • Production and supply of ammonia tissue and bone graft • Production and supply of ammonia tissue bone grafts Determine amount of radiation exposure to imported and exported food. • Applying radiation to food items • Applying radiation to Medical items • Approval of the management of nuclear and radiation installations • Approval of import and export of nuclear and radioactive materials / equipment • Certification of Radiation Control Officers • Regulatory inspection of nuclear and radiation facilities • Regulatory document preparation and technical document evaluation 	<ul style="list-style-type: none"> • Bangladesh Atomic Energy Commission • Nuclear Power Company Bangladesh Limited (NPCBL) • Bangladesh Atomic Energy Regulatory Authority
4. Environment friendly and sustainable technology innovation for socio-economic development	<ul style="list-style-type: none"> • Conduct research on non-conventional and renewable energy and transfer of innovated technology. Conduct research and transfer technology invented to ensure public health and quality of food. • Innovation and expansion of technology for industrialization through the use of domestic raw materials. • Provide technological service in trade, industrialization and economic development by examining and creating research facilities to calibrate and ensure the quality of local 	<ul style="list-style-type: none"> • BCSIR

Medium-Term Strategic Objectives	Activities	Implementing Departments/Agencies
1	2	3
	<p>product and export-import goods.</p> <ul style="list-style-type: none"> • Publish basic and applied research work and papers to provide main technological service in trade, industrialization and economic development by creating research facilities. • Inform the research result to stakeholders • DNA sequencing service • Production of Taq DNA polymerase enzyme • Production of aloe vera sapling following tissue culture method and development of farming system applying biotechnology. • Innovation of environment-friendly germs for rice • Diagnosis of pregnancy diabetes in Bangladeshi women with type-2 diabetes mellitus associated genetic variation • Production of eco-friendly microbial enzymes for textile and leather processing • Initiation of sea related research and development projects • Providing sea related sample analysis services and enriching information on it. 	<ul style="list-style-type: none"> • Bangladesh Atomic Energy Commission • National Institute of Biotechnology • National Institute of Biotechnology • Bangladesh Oceanographic Research Institute
5. Development of infrastructure for expansion of science and technology	<ul style="list-style-type: none"> • The main construction work of Rooppur Nuclear Power Plant • Human resource development of radioactive testing and monitoring laboratory established at Mongla Port including setting up residential facilities. • Establishment of Institute of Nuclear Medicine and Allied Sciences (INMAS) at 8 Medical College Hospital's campus of the country • Establishment of the institute of bioequivalence studies and pharmaceutical sciences 	<ul style="list-style-type: none"> • Bangladesh Atomic Energy Commission • Nuclear Power Company Bangladesh Limited (NPCBL) • BCSIR

3.0 Poverty, Gender and Climate Change Reporting

3.1 Impact of Medium Term Strategic Objectives on Poverty Reduction, Women's Advancement and Climate Change

3.1.1 Providing assistance for research work related to science and technology

Impact on Poverty Reduction: No direct impact. However, the standard of living is improved by utilizing the biogas and fuel efficient cook stove technologies. Moreover, self-employment generation is being created by making use of the innovative techniques of BCSIR, making mushroom cultivation, fish food, candles, lacquers and agar products etc. and poverty is being reduced.

Impact on Women's Advancement: No direct impact. However, more energy is saved by using improved stove. **Again**, since smoke is not spread out, this technology is useful for the protection of rural women. Generally, women have to spend plenty of time and labor to collect fuel. However, by using improved stoves and biogas technology, both time and labor of women are being saved.

Impact on Climate Adaptation and Mitigation: Introduction of new climate-resilient technologies is contributing to reducing the loss of disaster which, in turn helps to increase people's adaptability.

3.1.2 Popularizing of science and technology

Impact on Poverty Reduction: Poor people will be trained and motivated to get involved in science education and modern technology by organising Science Olympiads, Documentaries on science, exhibitions, etc.

Impact on Women's Advancement: Women are encouraged to become science savvy by organizing science fairs and exhibiting digital films and exhibitions.

Impact on climate adaptation and mitigation: There is no direct impact.

3.1.3 Ensure safe and peaceful use of nuclear energy

Impact on Poverty Reduction: By generating electricity from nuclear sources, continuing the activities of fertilizer production, irrigation etc., it is possible to play a role in poverty reduction by increasing agricultural production and other electricity dependent non-agricultural production. It will be possible to protect the people from the harmful effects of imported food by radioactivity tests and various initiatives to control nuclear radiation. Support is being provided to poor people in providing better quality of Nuclear Medicine and health care and determining the quality of food. Receiving services at the nearest and relatively close locations will reduce the relative costs of medical care. Also, medical treatment for poor people will be available through the discovery of the drug processing system.

Impact on Women's Advancement: There is an indirect impact on women. Use of radio-active isotope is making it possible to provide medical services specially diagnosis of some critical diseases of women. This will increase the women's access to public services.

Impact on climate adaptation and mitigation: There will be no carbon emissions due to the production of electricity from the atomic source; this will help to achieve the goal of nationally-determined carbon emissions level.

3.1.4 Environment friendly and sustainable technology innovation for socio-economic development

Impact on Poverty Reduction: Efforts will be made to ensure the best use of unused, less-used resources by inventing advanced technologies in solar power, biogas etc. As a result, it will be possible to increase their income and improve the living standards by ensuring the possible maximum utilization of available resources for the poor.

Impact on Women's Advancement: It will be possible to play a role in the development of women by conducting research on safe, drinkable and pollution-free (arsenic-free) water supply in the household level, which is usually working area for women. Due to the use of sustainable technology in home work, the work hours will be reduced. By spreading knowledge of science to grassroots level, women's participation and social status will be increased and women will be empowered.

Impact on Climate Adaptation and Mitigation: Introduction of advanced technologies in solar power, biogas etc., is contributing to achieve climate resilient livelihood.

3.1.5 Development of infrastructure for expansion of science and technology

Impact on Poverty Reduction: Jobs and enhanced income opportunities will be created for poor people in the infrastructure development work.

Impact on Women's Advancement: The involvement of women in infrastructure development activities will generate direct employment for them.

Impact on climate adaptation and mitigation: There is no direct impact.

3.2 Poverty Reduction, Women's Advancement and Climate Change Related Spending

(Taka in Thousands)

Description	Budget 2019-20	Projection	
		2020-21	2021-22
Poverty Reduction	3562,14,15	4058,72,01	4143,76,45
Gender	101,86,17	108,51,69	89,47,23
Climate Change	2184,73,51	2343,87,91	2667,63,75

4.1 Priority Spending Areas/Scheme

Priority Spending Areas/Scheme	Related Medium Term Strategic Objectives
<p>1. Construction of Rooppur nuclear power plant infrastructure: To add approximately 2400 MW of electricity to the national grid by 2023-24, Rooppur nuclear power plant has been given priority in the development of appropriate infrastructure.</p>	<ul style="list-style-type: none"> Development of infrastructure for expansion of science and technology
<p>2. Expand peaceful use of nuclear energy The provision of nuclear technology-based medical treatment facilities at different parts of the country contributes significantly towards the protection of health of the people in Bangladesh. Further, nuclear power is considered a cost effective option than any hydrocarbon-based power and this sector is given top priority.</p>	<ul style="list-style-type: none"> Ensure safe and peaceful use of nuclear energy
<p>3. Research and development on sustainable environment friendly technology suitable for the poor It is necessary to create mass awareness for the environment-friendly new high yielding varieties through application of genetic engineering for increased production in agriculture and non-agriculture sector, as well as for use of non-conventional energy for energy savings and of biotechnology. In addition, this sector has been given priority considering the need for research and development for a food processing system that produces food items free of poisonous/harmful materials, pure drinking water, water purification filters and development of balanced and nutritious food varieties.</p>	<ul style="list-style-type: none"> Invention of environment-friendly and sustainable technology for socio-economic development
<p>4. Expansion of research in the area of scientific technology Grants have been provided to the different universities and science, technology related institutions from the research allocation for ministry, and its attached departments as well as their different projects/Scheme for work on science and for encourage and inspire people.</p>	<ul style="list-style-type: none"> Providing assistance for research work related to science & technology

4.2 Medium Term Expenditure Estimates and Projection (2019-20 to 2021-22)

4.2.1 Expenditure by Department/Agencies/Institutional Units

(Taka in Thousands)

Description	Budget	Revised	Budget 2019-20	Projection	
	2018-19			2020-21	2021-22
Secretariat	12200,75,00	12389,88,00	16434,37,00	18053,09,00	19864,03,00
Nuclear Power Wings	0	1,37,00	4,48,00	29,65,00	26,98,00
Grand Total :	12200,75,00	12391,25,00	16438,85,00	18082,74,00	19891,01,00

4.2.2 Expenditure by Economic Group

(Taka in Thousands)

Economic Group	Description	Budget	Revised	Budget 2019-20	Projection	
		2018-19			2020-21	2021-22
	Recurrent Expenditure					
3111	Wages and salaries in cash	41,77,32	14,28,98	13,23,46	21,63,70	23,51,01
3211	Administrative expenses	18,48,92	20,53,07	2,92,20	7,86,85	8,61,10
3221	Fees, charges and commissions	30,78,86	37,71,48	11,00	62,00	66,00
3231	Training	20,19,10	15,95,75	45,40	1,45,00	1,55,00
3241	Domestic travel and transfer	0	1,13,54	0	0	0
3242	Foreign travel and transfer	0	5,35,00	0	0	0
3243	Petrol, oil and lubricants	2,87,55	2,04,20	53,00	50,00	52,00
3244	Travel and Transfer	2,89,25	93,47	64,40	70,00	90,00
3252	Medical and surgical supplies	80	0	0	0	0
3253	Public order and safety supplies	3,20,00	2,08,00	0	0	0
3255	Printing and stationery	7,62,89	3,97,32	47,90	61,64	95,24
3256	General supplies and materials	4,08,71	5,71,00	5,00	6,00	7,00
3257	Professional services, honorariums and special expenses	13,75,61	17,73,96	22,00	22,50	23,80
3258	Repairs and maintenance	8,69,04	7,57,72	1,60,40	1,64,90	1,92,60
3631	Current grants	452,82,17	460,03,95	462,51,62	487,23,44	536,81,30
3632	Capital grants	0	0	24,51,45	23,60,99	31,64,15
3821	Current transfers not elsewhere classified	34,88,75	39,95,95	22,41,00	24,78,50	26,21,50
3823	Current transfers for projects	0	1,15,00	209,65,54	191,14,85	136,75,62
3911	Reserve	33,96,03	60,55,82	100,31,46	101,98,18	100,00,00
	Total : - Recurrent Expenditure	676,05,00	696,74,21	839,65,83	864,08,55	870,36,32
	Capital Expenditure					
4111	Buildings and structures	209,24,68	978,73,64	169,21,03	0	0
4112	Machinery and equipment	11136,64,09	207,79,12	10,12,11	11,47,06	6,96,54
4113	Other fixed assets	10,08,34	18,26,95	10,43	78,32	94,26
4141	Land	0	28,53,00	0	0	0
4144	Intangible nonproduced assets	7,77,39	7,77,39	0	0	0
4211	Capital expenditure for project	0	2,00,00	920,38,80	1579,58,64	588,44,43
4911	Reserve	160,81,00	10451,25,00	14499,19,20	15626,60,33	18424,04,95
	Total : - Capital Expenditure	11524,55,50	11694,35,10	15599,01,57	17218,44,35	19020,40,18
	Assets					
7215	Loans	14,50	15,70	17,60	21,10	24,50
	Total : - Assets	14,50	15,70	17,60	21,10	24,50
	Grand Total :	12200,75,00	12391,25,01	16438,85,00	18082,74,00	19891,01,00

5.0 Key Performance Indicator (KPIs)

Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
			2017-18		2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10
1. Provided Fellowship	1	No.	1800		2650	2650	2850	3050	3200
2. Beneficiaries of Received Research Grant	1	No.	510		575	525	550	550	560
3. Trained Manpower	1	No.	1260		1335	1300	1360	1370	1380
4. Arranged Seminar and Workshop	2	No.	96		296	95	316	330	340
5. Radioactivity measurement of Radiation worker and importeard & exported food items	3	No.	17000		18000	15900	18450	18550	18600
6. Radio isotop related Health services	3	No.	365000	328290	380000	380000	381000	382000	383000

6.0 Recent Achievements, Activities, Output Indicators and Targets and Expenditure Estimates of the Departments/Agencies

6.1 Secretariat

6.1.1 Recent Achievements: The Bangabandhu Science and Technology Fellowship Trust Act, 2016 has been formulated. In the last 03 (three) years, Under the science and technology program, the research grant for 1,239 projects amounts to 39.49 crore taka; 33.24 crore taka against 5,499 people under National Science and Technology Fellowship Program; Tk 2.74 billion against 387 people under research grant; 2.40 crore taka against 371 people under other associations / institutions; and Tk 1.94 crore to the private secondary and higher secondary education institutions were allocated. In the last year under the Bangabandhu Fellowship, Fellowship has been awarded to 241 people at the cost of 12.00 crores.

6.1.2 Activities, Output Indicators and Targets

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18		2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10	11
1. Provide fellowships and opportunity for higher study and research to researchers	Fellowship	1	Person	1750	2358	2600	2600	2800	3000	3150
			TK. (core)	15.00	14.76	18.00	18.00	20.00	21.00	22.00
2. Provide grants to researchers, concerned organizations and non-government scientific organizations and societies for science related research	Grant for research project	1	No.	510	643	575	575	600	640	650
	Grant for other societies and institutions		No.	241	241	190	190	200	210	220
	Grant for Educational Institute and Science Club		Tk. (Lac)	270.00	148.00+	280.00	280	315.00	325.00	330

6.1.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects

(Taka in Thousands)

Name of the Institutional Unit/Scheme/ Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8
Operating Activities							
General Activity							
1260101 - Secretariat	১-২	9,17,25	11,93,00	12,49,10	13,56,40	14,70,90	16,38,50

Name of the Institutional Unit/Scheme/ Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8
1260102 - Nuclear Power Wings	-	0	0	1,37,00	4,48,00	29,65,00	26,98,00
Total : General Activity		9,17,25	11,93,00	13,86,10	18,04,40	44,35,90	43,36,50
Special Activity							
12000801 - Loans to Government Employees	-	0	0	0	17,60	21,10	24,50
120003600 - National Science & Technology Council	-	0	0	0	4,00,00	5,50,00	6,00,00
120005100 - National Fellowship Programme	1	9,99,78	18,00,00	18,00,00	20,00,00	21,00,00	22,00,00
120005300 - Grants for Science Serving and Science Based Professional Organizations	2	48,47	4,60,00	4,13,30	1,00,00	1,30,00	1,50,00
120005400 - Science & Technology Programme	2	11,54,80	15,00,00	15,00,00	16,00,00	17,00,00	18,00,00
120005500 - Research Activities	2	77,40	1,60,00	1,60,00	2,00,00	2,50,00	2,60,00
120007600 - Examination Expense Management	1-2	0	5,00	5,00	0	0	0
120008428 - Research & Innovation Activity	1-2	0	0	5,00	0	0	0
127001001 - Asia and Pacific Centre for Transfer of Technology	-	0	0	0	7,00	8,00	8,00
127001401 - Asia Pacific Network of Science and Technology Centres (ASPAC)	-	0	0	0	1,00	5,00	5,00
127004501 - Commonwealth Science Fund	-	0	0	0	10,00	10,00	10,00
127007201 - International Council of Museums (ICOM)	-	0	0	0	1,00	5,00	5,00
127007901 - International Center for Genetic Engineering and Bio-technology	-	0	0	0	6,00	6,00	6,00
127010001 - Association of Science-Technology Centers (ASTC)	-	0	0	0	1,00	5,00	5,00
127013101 - Organization of Islamic Conference Standing Committee on Scientific and Technological Cooperation (COMSTECH)	-	0	0	0	10,00	10,00	10,00
Total : Special Activity		22,80,45	39,25,00	38,83,30	43,53,60	48,00,10	50,83,50
Support Activity							
131006100 - National Science & Technology Council	2	3,87,52	8,00,00	8,00,00	0	0	0
132011800 - Bangabandhu Science and Technology Fellowship Trust	1	0	17,00,00	23,00,00	35,00,00	35,00,00	50,00,00
136001000 - Asia and Pacific Centre for Transfer of Technology	1-2	0	6,00	18,60	0	0	0
136001400 - Asia Pacific Network of Science and Technology Centres (ASPAC)	-	0	0	50	0	0	0
136004500 - Commonwealth Science Fund	1-2	0	10,00	10,00	0	0	0
136007200 - International Council of Museums (ICOM)	-	0	0	80	0	0	0
136007900 - International Center for Genetic Engineering and Bio-technology	-	3,96	6,00	4,20	0	0	0
136010000 - Association of Science-Technology Centers (ASTC)	-	0	0	50	0	0	0
136013100 - Organization of Islamic Conference Standing Committee on Scientific and Technological Cooperation (COMSTECH)	1-2	0	10,00	10,00	0	0	0
Total : Support Activity		3,91,48	25,32,00	31,44,60	35,00,00	35,00,00	50,00,00
Total : Operating Activities		35,89,18	76,50,00	84,14,00	96,58,00	127,36,00	144,20,00
Development Activities							
Annual Development Program							
221000126 - Reserve for unapproved project Ministry of Science and Technology	1-2	0	160,81,00	0	100,00,00	100,00,00	150,00,00
224248700 - Contraction and Renovation of Rail line with signal for Rooppur Nuclear Power Plan	-	0	0	150,00,00	185,94,00	0	0
Total : Annual Development Program		0	160,81,00	150,00,00	285,94,00	100,00,00	150,00,00
Total : Development Activities		0	160,81,00	150,00,00	285,94,00	100,00,00	150,00,00
Total :		35,89,18	237,31,00	234,14,00	382,52,00	227,36,00	294,20,00

6.2 Bangladesh Atomic Energy Commission

6.2.1 Recent Achievements: For Modernization of Nuclear Medical Services and for cancer detection advanced equipment, 3(three) PET-CTs have been installed at National Institute of Nuclear Medicine and Allied Sciences (NINMAS) and Institute of Nuclear Medicine and Allied Sciences (INMAS), Dhaka. In addition to the infrastructural Development, laboratories have been modernized of the Institute of Food and Radiation Biology at Atomic Energy Research Establishment (AERE), Savar. The Nuclear Medical Physics Institute has been established at Atomic Energy Research Establishment (AERE), Savar to provide cancer treatment as well as 1 LINAC machine has been set up in the FY 2017-2018 to develop skilled medical Physicists and technologists in cancer treatment. In order to increase the field for research on Nano-technology, modern equipment has been collected along with the Modernization of the Laboratory at Atomic Energy Center, Dhaka.

6.2.2 Activities, Output Indicators and Targets

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18		2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10	11
1. Conduct training on Science and technology	Trained Manpower	1	No	360	370	361	360	305	310	320
2. Organizing seminars and workshops on science	Organized seminars and workshops	2	No	50	51	52	52	53	54	60
3. Provide general and radio-based medical services	Service takers	3	No	379287	435262	379300	380000	381000	382000	383000
4. Produced amnion tissues and bone graph supplies	Ammonium Graphite supplied	3	No	5800	5989	5900	5900	5950	6000	6250
	Provided bone graphite			15500	15681	15700	15200	15250	15300	15500
5. Determine radiation levels and radiation levels of imported and exported food	Service delivery	3	No	15700	16874	18100	12700	11200	11250	11300
6. Application of food radiation	Radiation applied food products	3	Quantity (ton)	70	163	72	70	75	80	85
7. Applying radiation to medical materials	Irridation medical Items	3	Quantity (ct)	2000	3934	2500	2500	2600	2700	2800
8. Notification of stakeholders for research results	Articles and books published in scientific journals	4	No	166	167	167	150	152	155	160
	Organized seminars and workshops	4	No	4	4	6	6	7	8	10
9. The main construction work of Rooppur Nuclear Power Plant	Physical progress	5	%	3		9		15	21	
10. Establishment of residential facilities including development of laboratory testing and monitoring laboratories established at Mongla port	Expenditure against the budget allocated for implementation of the project	5	%	8	-	16	60.00	26.68*	13.72	-
11. Establishment of Institute of Nuclear Medicine and Allied Sciences (Imran) at 8 Medical College Hospitals Campus of the country	Expenditure against the budget allocated for implementation of the project	5	%	-	-	39.29	10.00	20.00	25.00	45.00
12. Enhanced capacity of the Institute of Nuclear Medicine and Allied Sciences (Immanan) Dhaka, Chittagong, Rajshahi, Khulna, Sylhet, Dinajpur and Rangpur	Expenditure against the budget allocated for implementation of the project	5	%	-	-	41.40	35.00	65.00	0	0

6.2.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects

(Taka in Thousands)

Name of the Institutional Unit/Scheme/ Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
			4	5	6	7	8
1	2	3	4	5	6	7	8
Operating Activities							
Support Activity							
131005700 - Bangladesh Atomic Energy Commission	1-7	207,10,47	218,40,00	219,12,00	230,00,00	242,00,00	260,00,00
Total : Support Activity		207,10,47	218,40,00	219,12,00	230,00,00	242,00,00	260,00,00
Total : Operating Activities		207,10,47	218,40,00	219,12,00	230,00,00	242,00,00	260,00,00
Development Activities							
Annual Development Program							
222004900 - Technical Feasibility Study Project on Establishment of High Powered Nuclear Research Reactor in Bangladesh	-	0	0	1,42,00	5,74,00	0	0
223012100 - Development of Human Resources and Establishment of Residential Accommodation Facilities for the Radiation Testion and Monitoring Laboratory, Mo(01/04/2017-30/06/2019) Approved	11	0	14,33,00	14,33,00	1,20,00	7,16,00	0
224019200 - Establishmrrnt of PET CITY with CYLLOTION Facilities (01/10/2011-31/12/2017)	1-5	35,42,00	4,06,00	16,81,00	0	0	0
224019300 - Modernization of Food and Radiation Biology Facilities of AERE, Savar (01/04/2016 - 31/12/2018)	6	7,95,00	23,62,00	17,00,00	8,70,00	1,09,00	0
224019500 - Construction of Rooppur Nuclear Power Plant (Main Phase) (01/07/2016- 30/12/2025)		3262,33,31	11099,26,00	11313,38,00	14980,07,00	15764,00,00	18732,82,00
224019600 - Capacity Buildup of Nano-biotechnological Laboratory at Material Science Division, Atomic Energy Centre Dhaka (01/04/2016 - 31/12/2018)	7	1,54,00	23,39,00	30,47,00	0	0	0
224116600 - Enhancing the Capacity of Institute of Nuclear Medicine and Allied Sciences (INMAS) at Dhaka, Chattogram, Khulna, Sylhet, Rajshahi, Dinajpur and Rangpur (01/07/2017-30/06/2020)Approved	1-5	0	88,02,00	80,00,00	77,50,00	23,90,00	0
224126100 - Establishment of INMAS at Eight Medical College Hospital Campus of the Country (01/07/2017-30/06/2020) Approved	1-5	0	29,70,00	21,41,00	92,00,00	466,17,00	0
224126200 - Study Project for Site Selection to Construct Nuclear Power Plant at Southern Part of Bangladesh (01/07/2017-30/06/2019) Approved	-	0	6,50,00	1,50,00	5,94,00	0	0
224236600 - Establishment of Calibration and Quality Control Facilities for Radiotherapy, Diagnostic Radiology and Neutron	-	0	0	7,89,00	14,77,00	24,13,00	0
224242800 - Modernization and development of Laboratory Facilities of Institute of Electronics.	-	0	0	80,00	12,80,00	20,70,00	0
224247100 - BMRE of Safety Facilities of 3 Megawatt Research Reactor of AERE, Savar	-	0	0	1,34,00	25,76,00	47,84,00	0
224250300 - Screening of congenital hypothyroidism in newborn babies (2nd phase)	-	0	0	4,63,00	26,73,00	10,34,00	6,00,00
Total : Annual Development Program		3307,24,31	11288,88,00	11510,98,00	15251,21,00	16365,33,00	18738,82,00
Total : Development Activities		3307,24,31	11288,88,00	11510,98,00	15251,21,00	16365,33,00	18738,82,00
Total :		3514,34,78	11507,28,00	11730,10,00	15481,21,00	16607,33,00	18998,82,00

6.3 Bangladesh Council for Scientific Industrial Research (BCSIR)

6.3.1 Recent Achievements: In the last 03 (three) years, 325 R & D projects and implementation of 07 (seven) annual development projects (ADP), innovation of 39 new technologies, achieving 30 patents and transferring of 49 technology to entrepreneurs, awarding 150 fellowships, supervising 508 Students' research work and publishing 304 research articles have been taken place in the BCSIR . During this time, 15,727 product samples analysis was done at various industries / industries, import-export companies, government-private organizations and individual level and establishment of 1 new laboratory, modernization of 04 laboratories was happened.

6.3.2 Activities, Output Indicators and Targets

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18	2018-19	2019-20	2020-21	2021-22		
1	2	3	4	5	6	7	8	9	10	11
1. Conduct research on non-conventional and renewable energy and transfer of innovated technology.	Published research articles in the local and international journal	4	No.	21	22	22	22	23	23	24
	New technologies invention		No.	2	3	2	3	4	4	4
	Accept patent		No.	1	3	1	3	3	3	4
	Commercialized		No.	1	3	1	3	3	3	4
2. Conduct research and apply technologies innovated through this research to ensure, preserve quality of food and public health.	Published articles in the local and international journal	4	No.	31	35	32	35	33	34	35
	New technologies discovered		No.	3	3	4	3	4	4	5
	Accept patent		No.	1	3	2	3	3	3	4
	Commercialized		No.	3	4	4	4	4	4	5
3. Facilitate innovation of technology for using domestic raw materials for industrialization.	Published articles in the local and international journal	4	No.	54	55	56	53	59	60	61
	New technologies invented		No.	9	9	9	9	8	9	9
	Accept patent		No.	9	5	9	5	6	7	7
	Commercialized		No.	12	9	12	9	9	10	10
	Arrange meetings / seminars to disseminate appropriate technology in District or thana level.		No.	21	21	21	22	22	24	25
	Number of science fair held in various centers.		No.	4	4	4	4	4	4	4
	Number of participating school/colleges in the fair.		No.	150	150	155	145	150	155	160
	Number of participate in the fair with Invented technology.		No.	500	666	520	480	480	500	520
4. Provide technological service in trade, industrialization and economic development by examining and creating research facilities to calibrate and ensure the quality of local product and export-import goods.	Analysis of industrial/ commercial products/ Material analysis/service provided.	4	No. (Thousand)	5200	5938	5300	5300	5500	5800	6000
5. Publish basic and applied research work and papers to provide main technological service in trade, industrialization and economic development by creating research facilities.	Number and rate of implementation of project on new research lab	4	No.	2	2	2	3	4	4	5
	Number and rate of implementation of project on modernization research lab		No.	3	3	3	3	3	3	3
	Memorandum of		No.	4	16	5	16	17	18	20

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18		2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10	11
	understanding (MoU) signed in local and abroad.									
	Number of project under foreign fund assistance.		No.	1	0	1	1	1	1	1
	Students completed thesis MS/M.phil/Ph.D under supervised by scientists		No. (Person)	170	172	175	180	185	190	195
	Number of national/ International seminar/ workshop.		No.	29	20	30	20	25	28	30
6. Conduct training on Science and technology	Basic training for officers	1	No. (Person)	40	30	40	38	40	40	40
	Number of students/ trainees from in-house		No. (Person)	360	986	380	1104	1140	1160	1195
	Number of trainees in a variety of training institutions within the country.		No. (Person)	90	80	100	90	95	100	110
	Participation in meeting/seminar in abroad.		No. (Person)	15	30	18	35	38	40	42
	Participation in meeting/seminar within the country.		No. (Person)	20	34	25	25	30	35	40
	Number of supervisors for achieving research degree students.		No. (Person)	18	172	20	180	185	190	195
	Number of Officer/scientists completed higher education (Ph.D, M. Phil, MS)		No. (Person)	12	7	13	12	13	14	15
7. Provide fellowships and opportunity for higher study and research	Provided fellowship for researcher	1	No. (Person)	50	50	50	50	50	50	50

6.3.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects

(Taka in Thousands)

Name of the Institutional Unit/Scheme/ Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8
Operating Activities							
Support Activity							
131005600 - Bangladesh Council of Scientific and Industrial Research (BCSIR)	1-7	122,00,00	140,80,00	140,80,00	147,80,00	156,00,00	170,00,00
Total : Support Activity		122,00,00	140,80,00	140,80,00	147,80,00	156,00,00	170,00,00
Total : Operating Activities		122,00,00	140,80,00	140,80,00	147,80,00	156,00,00	170,00,00

Name of the Institutional Unit/Scheme/ Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8
Development Activities							
Annual Development Program							
223012200 - Establishment of Institute of Bio equivalence Studies & Pharmaceutical Sciences. (01/07/2017-30/06/2020) Approved	8	0	27,12,00	1,39,00	10,57,00	78,44,00	0
224019100 - Establishment of Centre for Technology Transfer and Innovation (ECTTI) (01/10/15 - 30/09/17)	1-7	17,50,00	2,20,00	1,84,00	0	0	0
224019400 - Strengthening of Leather Research Institute (01/07/2016 - 30/06/2019)	3	3,60,00	13,84,00	12,69,00	4,59,00	3,59,00	0
224019700 - Capacity Building of IFST for Research Milk and Dairy Products. (01/07/2016 - 30/06/2018)	2	2,62,00	1,29,00	1,29,00	0	0	0
224116500 - Establishment of Mineral Processing Centre at IMMM of BCSIR(01/01/2017-30/06/2019) Approved	5	0	46,26,00	34,15,00	29,43,00	0	0
224125200 - Establishment of Genomic Research Laboratory.(01/01/2018-30/06/2019)Approved.	5	0	44,98,00	41,35,00	3,63,00	0	0
224148400 - Augmentation of Chemical Metrology Infrastructure (01/01/2018-31/12/2021) Approved	5	0	4,80,00	3,33,00	41,08,00	58,13,00	30,00,00
224236300 - Strengthening of Institute of Glass and Ceramic Research and Testing (IGCRT) of BCSIR	-	0	0	1,12,00	24,64,00	12,65,00	0
224250200 - Establishment of Hydrogen Energy Laboratory	1	0	0	2,60,00	12,00,00	34,13,00	0
Total : Annual Development Program		23,72,00	140,49,00	99,76,00	125,94,00	186,94,00	30,00,00
Total : Development Activities		23,72,00	140,49,00	99,76,00	125,94,00	186,94,00	30,00,00
Total :		145,72,00	281,29,00	240,56,00	273,74,00	342,94,00	200,00,00

6.4 Bangladesh National Scientific and Technical Documentation Centre (BANSDOC)

6.4.1 Recent Achievements: In the last 03 (three) years, information collected 23,963, information distribution 29,660 pages, 50,916 beneficiaries, seminars / workshops / informing meetings 34 was held and internships for 136 students in 13 batch have been provided.

6.4.2 Activities, Output Indicators and Targets

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18		2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10	11
1. Collection, processing, preservation, editing and distribution of information in all fields of natural science, agricultural science, medical, engineering, industrial technology, scientific research and diagnostic development.	Information Collection	2	No.	5500	6725	6000	3305	6500	7000	7500
	Information Dissemination		Page	7400	11781	7500	4691	7600	7600	8000
	Beneficiaries		No.	10100	27217	10200	10192	15500	16000	16500
2. Organizing seminar and workshop on science.	Awareness Meeting, Seminar & Workshop	2	No.	10	10	11	9	12	13	14
3. Arranging training on science and technology.	Internship Courses	1	No.	90	109	100	64	110	120	130

6.4.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects

(Taka in Thousands)

Name of the Institutional Unit/Scheme/ Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8
Operating Activities							
Support Activity							
131005900 - Bangladesh National Scientific & Technical Documentation Centre (BANSDOC)	1-3	4,80,00	6,20,00	6,20,00	6,50,00	6,80,00	7,50,00
Total : Support Activity		4,80,00	6,20,00	6,20,00	6,50,00	6,80,00	7,50,00
Total : Operating Activities		4,80,00	6,20,00	6,20,00	6,50,00	6,80,00	7,50,00
Total :		4,80,00	6,20,00	6,20,00	6,50,00	6,80,00	7,50,00

6.5 National Museum of Science and Technology (NMST)

6.5.1 Recent Achievements: In the past three financial years, 2,27,200 visitors visited the Science exhibition at the permanent gallery of the National Science and Technology Museum. 60% of the ongoing package for the project of establishing National Science and Technology Complex has been completed. 15 sophisticated exhibitions have been collected and placed in the museum. 105 seminars on science related topic were organized. 67 science-related quiz competitions have been organized. Students from all the districts of the country participated in this competition. The winners of the quiz competition at the central level were sent to the ex-Bangladesh tour. In the last FY 2014-15 and FY 2015-16, 130 science fairs were held in 64 districts of the country and at National level at Dhaka including observation of National Science and Technology Week. In 2016-17, every Upazila, district and divisional level as well as central level, science and technology week observation, 565 science fairs and 567 science Olympiad was organized. 200 mobile science exhibitions were demonstrated with the help of muzubus and a full-length movie bus. The number of visitors to these exhibitions was approximately 50,000. Upazila Science and Technology Club has been formed in 478 upazilas of the country. Besides, 48 science clubs have been formed at the local level. Under the patronage of this organization, two young scientist has won the Salve-e-Than competition organized by A2i and has been listed for the Innovation Fund. Besides, this organization has organized 18 science-related Olympiad jointly with some renowned science based organizations and 18 international science conferences have been organized.

6.5.2 Activities, Output Indicators and Targets

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18		2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10	11
1. Conduct training on Science and technology	Internal Training	1	Man hour	60	83	60	60	60	60	60
	Foreign training		No.	10	9	12	10	12	14	15
2. Arrange science fairs / exhibitions / Olympiad at district and national level with permanent science exhibition	Science fair/Seminar/ Workshop/Olympiad	2	No.	1401	645	1401	1401	1401	1401	1401
	Visitors of the Science Museum		No.	115000	106000	115000	115000	115000	115000	115000
	Mobile Science fair		No.	105	105	110	105	110	120	130
	Arrange popular science lectures		No.	6	6	6	6	6	6	6
	Projects of displayed in Science Fairs in 64 districts		No.	10500	2620	10500	2600	10500	10500	10500

6.5.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects

(Taka in Thousands)

Name of the Institutional Unit/Scheme/ Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8
Support Activity							
131006200 - National Museum of Science & Technology	1	7,21,83	12,00,00	12,23,00	17,50,00	18,20,00	19,60,00
Total : Support Activity		7,21,83	12,00,00	12,23,00	17,50,00	18,20,00	19,60,00

Name of the Institutional Unit/Scheme/ Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8
Total : Operating Activities		7,21,83	12,00,00	12,23,00	17,50,00	18,20,00	19,60,00
Development Activities							
Annual Development Program							
224019000 - Establishment of National Science and Technology Complex (1st Phase) (01/01/2014 - 30/06/2019) Approved	1	41,30,00	95,00,00	98,54,00	0	0	0
224236800 - Mobile Science Exhibition and Science Educational Extension	-	0	0	12,79,00	21,20,00	34,00	0
Total : Annual Development Program		41,30,00	95,00,00	111,33,00	21,20,00	34,00	0
Total : Development Activities		41,30,00	95,00,00	111,33,00	21,20,00	34,00	0
Total :		48,51,83	107,00,00	123,56,00	38,70,00	18,54,00	19,60,00

6.6 Bangabandhu Sheikh MujiburRahmanNovotheatre

6.6.1 Recent Achievement: With aim to encourage all citizens and students of the country to learn space science through entertainment and to inculcate a positive and accurate idea about cosmic space in their mind, the upgradation of existing Opto-mechanical system at Planetarium of Novotheatre and ultra-modern digital and Hybrid system with synchronization has been established. A 30-minute-long digital film has been developed on the historic life struggle of Father of the Nation Bangabandhu Sheikh Mujibur Rahman. Watching this film, the people of Bangladesh have been receiving the knowledge about the contribution of Father of the Nation in the history and heritage of Bangladesh and other movements including the liberation war. Apart from this, 14 Scientific and 16 Digital Exhibitions, 40 Seated one 5-D Movie Theatre, Smart Games and Smart Step Floor, and one 12 Seated 5-D Edutainment Simulator have been set up. As an informal science educational institution, in the last three years, about 7,672,745 students and visitors have been provided with the right ideas and information about aerospace sciences in order to inspire science education. Online ticketing has been introduced for the convenience of Novo-Theatre visitors. Apart from the continuation of the establishment of the Rooppur nuclear power plant, the Nuclear Industry Information Center (NIIC), equipped with the latest 3D technology, has been established to give a correct idea to the public about nuclear power.

6.6.2 Activities, Output Indicators and Targets

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18		2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10	11
1. Conduct training on Science and technology	Internal training	1	Person No.	50	45	55		55	55	55
	number of saminer/ workshop		No.	3	3	3		3	4	4
2. Developing Navogaytor as a center of excellence through science education and space research through aerospace science education.	Visitor in Planetarium	2	Person	140	147	145		150	155	160
	Visitor in exhibits and Rides		Thousand	110	93	115		105	105	110
3. To provide accurate ideas and information about aerospace sciences, establish a network with public institutions including educational institutions	Letter for communication with the educational institution	2	No.	60	60	60		60	70	70
	Number of educational institutions coming to show the novoaster		No.	55	55	55		65	70	70
	Letter / leaflet distribution		No. Thousand	65	65	70		75	80	80

6.6.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects

(Taka in Thousands)

Name of the Institutional Unit/Scheme/ Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8
Operating Activities							
Support Activity							
131005500 - Bangabandhu Sheikh Mujibur Rahman Novotheatre	1-3	4,52,00	6,16,00	6,42,00	6,50,00	7,00,00	7,50,00
Total : Support Activity		4,52,00	6,16,00	6,42,00	6,50,00	7,00,00	7,50,00
Total : Operating Activities		4,52,00	6,16,00	6,42,00	6,50,00	7,00,00	7,50,00
Development Activities							
Annual Development Program							
224019800 - Establishment of Bangabandhu Sheikh Mujibur Rahman Novo Theatre at Rajshahi (01/07/2017 - 30/06/2020)	3	0	35,19,00	8,80,00	55,00,00	157,10,00	0
Total : Annual Development Program		0	35,19,00	8,80,00	55,00,00	157,10,00	0
Total : Development Activities		0	35,19,00	8,80,00	55,00,00	157,10,00	0
Total :		4,52,00	41,35,00	15,22,00	61,50,00	164,10,00	7,50,00

6.7 National Institute of Bio-technology

6.7.1 Recent Achievements: Aloe Vera sapling prepared in the laboratory following Tissue culture methods was ready to transfer at the end of the field level assessment evaluation. Low-cost tac-polymerase enzyme production from genetically modified organisms in the laboratory activities has been successfully completed. In order to improve the drug and vaccine, the whole-genome sequence of Hepatitis B virus obtained in Bangladesh has been done. Analysis of the 554 DNA samples of the cow has been done to determine the presence of A1 and A2 beta-cage genes related to certain diseases of people with heart disease. 221 samples of SNP have been identified for the diagnosis of pregnancy diabetes in Bangladeshi women with type 2 diabetes mellitus associated genetic variants. Through the process of cryopreservation, the sperm of extinct fish species (bangon fish) was collected and preserved in fluid nitrogen and the rate of fertilization of eggs was observed. In order to develop environment-friendly enzymes in the field of leather DEhearing and textile dyeing, micro-organisms selection and efficacy of manufactured caratenees and mileage enzymes have been examined. For the development and production of environmentally friendly germs for rice cultivation, Nitrogen Components have been selected and preserved from the root and root adjoining soil of the rice plant. Selection of chromium-tolerant 5 microbial chores has been done with the goal of mitigating the soil and water pollution caused by Heavy Metal.

6.7.2 Activities, Output Indicators and Targets

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18		2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10	11
1. Conduct training on Science and technology	Trained Manpower	1	No.	160	160	160	160	162	163	163
2. Arrangement seminar and workshop relating science	Arranged seminar and workshop	2	No.	2	2	2	2	2	3	3
3. The result of the study is the integration of steak holders	Published scientific journals and books	4	No.	8	8	9	8	9	10	11
	Organized seminars and workshops		No.	1	1	2	2	3	3	3
4. DNasequencing services are provided	Given DNA sequencing Service	4	No.	66	68	72	72	75	80	85
5. TAK DNA polymerase enzyme production	Generated TNA DNA Polymerase Enzyme	4	No.(iu)	26600	26350	29000	29000	30000	31000	32000
6. Development of the cultivation method for the production of Eco-seed plants and application of biotechnology in tissue culture method.	Elohera seed production and production of pest feeding through tissue culture and performance assessment of the field of organization	4	No.	500	500	-	-	-	-	-

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18		2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8	9	10	11
7. Innovative environment-friendly germs for rice	Separation, preservation and detection of nitrogen collagenator from the root and adjoining soil of the rice plant	4	No.	33	33	36	36	40	45	50
	Detection of active bacterio technology and active weather selection		No.	16	16	18	18	20	22	25
8. Environmental friendly microbial enzyme production for the textile and leather industry	Collection of microscopic samples, selecting the desired microscopic separation and enzymes to produce samples.	4	No.	34	36	36	50	55	-	-
	Determined microscopic detection and measuring their enzyme production capacity		No.	19	21	21	22	25	-	-
	Monitoring the results of enzymes produced by microbes and skin implants		No.	12	12	12	12	15	-	-
9. Diagnosis of pregnancy diabetes in Bangladeshi women with type-2 diabetes mellitus associated genetic variation	DNA segregation by collecting blood samples	4	No.	42	43	45	45	50	55	60
	Conducting polymerase chain reduction (PCR)		No.	118	118	135	135	150	165	175
	SNP detection		No.	118	118	135	135	140	165	175

6.7.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects

(Taka in Thousands)

Name of the Institutional Unit/Scheme/Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19		2019-20	2020-21	2021-22
1	2	3	4	5	6	7	8
Operating Activities							
Support Activity							
131006000 - National Institute of Biotechnology	1-9	6,53,86	10,30,00	10,75,00	10,50,00	11,00,00	13,50,00
Total : Support Activity		6,53,86	10,30,00	10,75,00	10,50,00	11,00,00	13,50,00
Total : Operating Activities		6,53,86	10,30,00	10,75,00	10,50,00	11,00,00	13,50,00
Development Activities							
Annual Development Program							
224247600 - Establishment of National Gene Bank	1,3,4	0	0	14,47,00	150,00,00	339,52,00	0
Total : Annual Development Program		0	0	14,47,00	150,00,00	339,52,00	0
Total : Development Activities		0	0	14,47,00	150,00,00	339,52,00	0
Total :		6,53,86	10,30,00	25,22,00	160,50,00	350,52,00	13,50,00

6.8 Bangladesh Atomic Energy Regulatory Authority

6.8.1 Recent Achievements: Issuing Design and Construction Licence for Unit 1 of Rooppur Atomic Power Plant on 02 November, 2017, was the main achievement of Bangladesh Atomic Energy Regulatory Authority in the last 3 (three) years. At the time specified, to help the establishment of this power plant by ensuring nuclear security, the Authority has signed the General Framework Agreement (GFC) (sign on November 18, 2016) for the Preliminary Safety Analysis Report, Feasibility Evaluation Report, Quality Assurance (QA) and Conformity Assessment with 'TSO JSC VO Safety' of Russian Regulatory Authority ROSETECHNADZOR. Besides, an agreement on 'Exchange of Technical Information and Cooperation in the Regulation of nuclear security and radiation protection' with Atomic Energy Regulatory Body (AERB), India has been signed (on 17 October 2016). Above all, Issuance of 1024 new licenses for nation-wide radiation installations (nuclear medicine, radiotherapy, diagnostic X-rays, education and research and industrial establishments) established in the last 3 years, renewal of 3525 radiation installations and radiation sources and inspection of 945 radiation installations including providing 1112 permits and NOCs

have been carried out by the Authority following the provisions of Bangladesh Atomic Energy Control Authority Act, 2012. For the radiation workers of these organizations, by organizing 36 training courses, a total of 1349 trainees have been provided training on radiation protection in the last three years.

6.8.2 Activities, Output Indicators and Targets

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18	2018-19	2019-20	2020-21	2021-22		
1	2	3	4	5	6	7	8	9	10	11
1. Authorization for operation of nuclear and radiation facilities	Issued license for the facilities	3	No.	400	445	410	410	420	420	425
	Renewed license for the facilities			1215	1321	1220	1220	1230	1240	1250
2. Authorization for import and export of nuclear and radioactive materials/radiation generators	Issued permit/NOC	3	No.	370	453	380	380	390	395	400
3. Certification of Radiation Control Officers	RCO certificate issued	3	No.	290	378	295	295	300	305	310
	RCO certificate renewed			290	391	295	295	300	305	310
4. Regulatory inspection of nuclear and radiation facilities	Regulatory inspection	3	No.	335	402	345	350*	361	366	371
5. Regulatory document preparation and technical document evaluation	Preparation and evaluation of regulatory documents	3	No.	15	17	16	16	17	17	18
6. Organizing seminars and workshops on science	Training courses organized	2	No.	13	13	14	12	13	15	15
	Trained manpower			410	442	410	420*	420	420	430
7. Participation on the training program organized by IAEA/RCA/FNCA/ANSN to implement agreement on regional cooperation	Participants	1	No.	50	88	55	62*	63	64	65
8. To arrange Seminar and workshop for Science affairs	Organized seminars and workshops	1	No.	6	8	7	7	8	9	10

6.8.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects

(Taka in Thousands)

Name of the Institutional Unit/Scheme/Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19	2019-20	2020-21	2021-22	
1	2	3	4	5	6	7	8
Operating Activities							
Support Activity							
131005800 - Bangladesh Atomic Energy Regulatory Authority	1-8	2,25,00	2,52,00	2,52,00	3,00,00	3,50,00	3,70,00
Total : Support Activity		2,25,00	2,52,00	2,52,00	3,00,00	3,50,00	3,70,00
Total : Operating Activities		2,25,00	2,52,00	2,52,00	3,00,00	3,50,00	3,70,00
Development Activities							
Annual Development Program							
224236700 - Strengthening the Infrastructure of Bangladesh Atomic Energy Regulatory Authority to ensure Nuclear and Radiation Safety of Public and Environment	1-6	0	0	2,90,00	9,18,00	19,66,00	0
Total : Annual Development Program		0	0	2,90,00	9,18,00	19,66,00	0
Total : Development Activities		0	0	2,90,00	9,18,00	19,66,00	0
Total :		2,25,00	2,52,00	5,42,00	12,18,00	23,16,00	3,70,00

6.9 Bangladesh Oceanographic Research Institute

6.9.1 Recent Achievements: Creation of 223 posts in three stages (1st phase: 137, second phase: 31, 3rd phase: 55 posts) have been done in the light of the Bangladesh Ocean Research Institute Act-2011.

Organogram was formulated on July 18, 2016. Efficient manpower making activities have been undertaken by providing technical training to scientists and officers. In the laboratory, 1096 different analytical sample collection tools have been collected for research activities.

6.9.2 Activities, Output Indicators and Targets

Activities	Output Indicator	Related Strategic Objectives	Unit	Revised Target	Actual	Target	Revised Target	Medium Term Targets		
				2017-18	2018-19	2019-20	2020-21	2021-22		
1	2	3	4	5	6	7	8	9	10	11
1. Research and development of sea related research and development projects	R & D Project	4	No.	-	-	5	5	5	6	7
	Notification of stake holders of R & D project results		No.	-	-	2	2	2	3	4
2. Providing sea-related sample analysis services and enriching information	Providing sample analysis services and data collection related to the sea		No.	-	-	2	2	2	3	3

6.9.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects

(Taka in Thousands)

Name of the Institutional Unit/Scheme/Project	Related Activity	Actual 2017-18	Budget	Revised	Medium Term Expenditure Estimates		
			2018-19	2019-20	2020-21	2021-22	
1	2	3	4	5	6	7	8
Operating Activities							
Support Activity							
131018300 - Bangladesh Oceanographic Research Institute	1-2	0	7,50,00	8,70,00	12,00,00	11,56,00	15,76,00
Total : Support Activity		0	7,50,00	8,70,00	12,00,00	11,56,00	15,76,00
Total : Operating Activities		0	7,50,00	8,70,00	12,00,00	11,56,00	15,76,00
Total :		0	7,50,00	8,70,00	12,00,00	11,56,00	15,76,00