**Grant No. 23**

**126 - Ministry of Science and Technology**

**Medium Term Expenditure**

(Taka in Thousands)

|  |  |  |  |
| --- | --- | --- | --- |
| Description | Budget  2024-25 | Projection | |
| 2025-26 | 2026-27 |
| Operating Expenditure |  |  |  |
| Development Expenditure |  |  |  |
| **Total** |  |  |  |
|  | | | |
| Recurrent |  |  |  |
| Capital |  |  |  |
| Financial Asset |  |  |  |
| Liability |  |  |  |
| **Total** |  |  |  |

**1.0 Mission Statement and Major Functions**

**1.1 Mission Statement**

To Assist 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. Review the existing policies on science and technology and formulation of new policy keeping consistence with national goals and plans;
    2. Coordination between the activities of various ministries to implement the National Policy on Science and Technology;
    3. Implementation of the recommendations of the National Council for Science and Technology (NCST);
    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 PhD and Post-Doctoral Studies in the Country under the Bangabandhu Science and Technology Fellowship Trust;
    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;
    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;
    7. Ddevelopment, promotion, expansion of Science and technology and to celebrate National Science and Technology Week for developing awareness amongst the students and popularizing science;
    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. Capacity building in research work in the field of science and technology | * Provide fellowships and opportunity for higher study and research to researchers | * Secretariat * BCSIR * Bangabandhu Science and Technology Fellowship Trust * Bangladesh Reference Institute for Chemical Measurements (BRICM) |
| * Provide grants to the researchers, concerned organizations and non-government scientific organizations and societies for scientific research | * Secretariat |
| * Conduct training on science and technology | * Bangladesh Atomic Energy Commission * BCSIR * National Institute of Bio-technology * National Science and Technology Museum * Bangabandhu Sheikh Mujibur Rahman Novo Theatre * Bangladesh Atomic Energy Regulatory Authority * BANSDOC * Bangladesh Reference Institute for Chemical Measurements (BRICM) |
| 1. Popularizing of Science & Technology | * To arrange Seminar and workshop for Science affairs | * Bangladesh Atomic Energy Commission * BCSIR * National Institute of Bio-technology * BANSDOC * Bangladesh Atomic Energy Regulatory Authority * Bangabandhu Sheikh Mujibur Rahman Novo Theatre * Bangladesh Reference Institute for Chemical Measurements (BRICM) |
| * Arrange science fairs/exhibitions/Olympiad at district and national level with permanent science exhibitions * Creation of space research and observation facility by establishing space observation center at the junction of Tropic of Cancer and 90 degrees east longitude | * National Science and Technology Museum |
| * Collect, process, preserve, edit and distribute information in all fields of natural science, agricultural science, medical, engineering, industrial technology, scientific research and research development | * BANSDOC |
| * Developing Navotheatre as a center of excellence through recreational science education and aerospace research. | * Bangabandhu Sheikh Mujibur Rahman Novotheatre |
| * To set up network with people including educational institutions for providing accurate information and information about aerospace science |
| * Conducting educational programs related to Chemical Metrology, Laboratory Quality Management System, Accreditation and Instrumentation etc. and providing related training and consultancy services and providing research assistance in higher degree. | * Bangladesh Reference Institute for Chemical Measurements (BRICM) |
| 1. Ensure safe and peaceful use of nuclear energy | * Providing medical care using nuclear technology | * Bangladesh Atomic Energy Commission |
| * Production and supply of ammonia tissue bone grafts |
| * Determine amount of radiation exposure to imported and exported food. |
| * Determination of the radiation dose received in the body of the radiation worker |
| * Food preservation by application of radiation |
| * Sterilization of medical equipment by application of radiation |
| * Chemical analysis of air/water/soil/food stuffs/vegetables etc. samples/other substances |
| * Culture and qualitative analysis of blood samples in nuclear medicine care centers |
| * Calibration of radioactivity monitors |
| * Research assistance/supervision in preparation of thesis/report | * Bangladesh Atomic Energy Commission * National Institute of Bio-technology |
| * Approval of the management of nuclear and radiation installations | * Bangladesh Atomic Energy Regulatory Authority |
| * Certification of Radiation Control Officers |
| * Regulatory inspection of nuclear and radiation facilities |
| * Conducting educational programs in chemical metrology and providing research assistance in higher degrees | * Bangladesh Reference Institute for Chemical Measurements (BRICM) |
| * Measurement and Reference Measurement Services, Proficiency Testing, Inter-Laboratory Comparison and Calibration Services, Chemical Measurement System Development, Validation and Transfer |
| 1. Environment friendly and sustainable technology innovation for socio-economic development | * Conduct research on non-conventional and renewable energy and transfer of innovated technology. | * BCSIR |
| * 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 product and export-import goods. |
| * 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 | * Bangladesh Atomic Energy Commission * National Institute of Bio-technology |
| * DNA sequencing service | * National Institute of Bio-technology |
| * Production of Taq DNA polymerase enzyme |
| * Production of aloe vera sapling following tissue culture method and development of farming system applying biotechnology. |
| * Isolation, identification and molecular characterization of the Lampy skin disease virus with an aim to invent vaccine |
| * Innovation of environment-friendly germs for rice |
| * Molecular characterization of pathogenic bacteria causing hornworm disease (MAS) |
| * Isolation and characterization of microorganisms capable of producing antimicrobial substances |
| * Undertake marine science research activities | * Bangladesh Oceanographic Research Institute |
| * Support marine science research |
| * Popularization of marine science activities |
| * Taking steps to sustainably use marine resources for socio-economic development |
| * Undertake, manage and implement basic and practical research activities related to chemical metrology, application of research results and management and coordination of all related activities. | * Bangladesh Reference Institute for Chemical Measurements (BRICM |
| 1. Development of infrastructure for expansion of science and technology | * The main construction work of Rooppur Nuclear Power Plant | * Bangladesh Atomic Energy Commission |
| * Modernization and expansion of services and research facilities of the Institute of Tissue Banking and Biomaterials Research |
| * Establishment of Institute of Nuclear Medicine and Allied Sciences (INMAS) at 8 Medical College Hospital's campus of the country |
| * Capacity building of Institute of Nuclear Medicine and Allied Sciences (INMAS) Dhaka, Chittagong, Rajshahi, Khulna, Sylhet, Dinajpur and Rangpur |
| * Labcom office and Gene Bank building under the development project titled “Establishment of National Gene Bank”. | * National Institute of Bio-technology |

**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 Capacity building in research work in the field of 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. It is possible to bring financial prosperity through production of quality food products and establishment of small scale industries through the use of technologies such as nutritious baby food, nutritious paparazzi, readily available fruit jelly-jelly-pickles, juices, hyprotein biscuits, diabetic flour etc. Moreover, self-employment is being created and poverty is being alleviated by using mushroom cultivation, fish meal, candles, lakshya and agar products etc. using the technology invented by BCSIR. Cultivation of orchids, neem and other medicinal plants through tissue culture is financially profitable and thereby alleviates poverty and improves living standards.

**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. In addition, women's self-employment is being created by making mushroom products, candles, lacquer and agar products, perfumes and nutritious baby food, nutritious paparazzi, gem-jelly-pickles etc. using the invented technology and making significant contribution to women's development.

**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 sabby 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 Thousand)

| Description | Budget  2024-25 | Projection | |
| --- | --- | --- | --- |
| 2025-26 | 2026-27 |
| Poverty Reduction |  |  |  |
| Gender |  |  |  |
| Climate Change |  |  |  |

**4.1 Priority Spending Areas/Scheme**

| Priority Spending Areas/Scheme | Related Medium Term Strategic Objectives |
| --- | --- |
| 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. | * Development of infrastructure for expansion of science and technology |
| 1. **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. | * Ensure safe and peaceful use of nuclear energy |
| 1. **Research and development on sustainable environment friendly technology suitable for the poor**   It is necessary to create mass awareness forthe 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. | * Invention of environment-friendly and sustainable technology for socio-economic development |
| 1. **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. | * Capacity building in research work in the field of science and technology |

**4.2 Medium Term Expenditure Estimates and Projection (2024-25 to 2026-27)**

**4.2.1 Expenditure by Department/Agencies/Institutional Units**

(Taka in Thousands)

| Description | Budget | Revised | Budget  2024-25 | Projection | |
| --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2025-26 | 2026-27 |
|  |  |  |  |  |  |

**4.2.2 Expenditure by Economic Group Wise**

(Taka in Thousands)

| Economic  Group | Description | Budget | Revised | Budget  2024-25 | Projection | |
| --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2025-26 | 2026-27 |
|  |  |  |  |  |  |  |

**5.0 Key Performance Indicator (KPIs)**

| Indicator | Related Strategic Objectives | Unit | Revised  Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1. Provided Fellowship | 1 | No. | 3552 |  | 3400 |  | 3400 | 3500 |  |
| 1. Annual growth rate of technological innovation | 4 | % (Number of technological Innovations | -0.04 (15) |  | 4 (26) |  | 3.9 (27) | -0.26 (20) |  |
| 1. Annual growth rate of technology transfer | 4 | % (Number of technology transfer | -0.2 (16) |  | 5 (21) |  | 4.5 (22) | -0.09 (20) |  |
| 1. Arranged Seminar and Workshop | 2 | No. | 281 |  | 322 |  | 325 | 326 |  |
| 1. Radioactivity measurement of Radiation worker and imported & exported food items | 3 | % (The number of services provided during the base year in 2018-19 is 19500) | 0.37(18000) |  | 0.76(13200) |  | 0.75 (13300) | 0.65 (22000) |  |
| 1. Annual Growth Rate of Medical Services Using Nuclear Technology | 3 | % (In 2018-19 the number of service recipients during the base year is 3.80 lakhs) | 0.36 (410000) |  | 0.17 (301000) |  | 0.17 (301500) | 0.06 (320000) |  |

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

**6.1 Secretariat**

**6.1.1 Recent Achievements:** Among the achievements of the Ministry of Science and Technology are research grants and fellowships to 13,266 researchers and students, Bangabandhu Fellowships to 375 people under Bangabandhu Science and Technology Fellowship Trust, Honorable Prime Minister inaugurated the 1st Concrete Pouring of 1st Unit and 2nd Unit of Rooppur project. At Rooppur Nuclear Power Plant, Reactor Pressure Vessel has been installed at the designed position at a height of 26.3 meters and 4 Active Core Cooling System (ACCS) and 8 Passive Core Cooling System (PCCS) have been installed in the Reactor Building of Unit-1. Apart from this, the construction of project site protection embankment and an artificial channel has been completed. The construction of the first cooling tower has been completed up to a height of 173.5 meters. Construction of 389 structures for Rooppur Nuclear Power Plant has been completed.

**6.1.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 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 | No.  (Person) | 3452 |  | 3400 |  | 3400 | 3400 |  |
| TK.  (core) | 22.32 |  | 23.41 |  | 24.43 | 26.69 |  |
| 1. Provide grants to researchers, concerned organizations and non-government scientific organizations and societies for science related research | Grant for research project | 1 | No. | 682 |  | 710 |  | 720 | 720 |  |
| Grant for other societies and institutions | No. | 490 |  | 860 |  | 870 | 870 |  |
| Grant for Educational Institute and Science Club | Tk.  (Lac) | 490.00 |  | 823.50 |  | 865.00 | 870.00 |  |

**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  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.2 Bangladesh Atomic Energy Commission**

**6.2.1 Recent Achievements:** National Institute of Nuclear Medicine and Allied Sciences (NINMAS) and Institute of Nuclear Medicine and Allied Sciences (INMAS) in Dhaka have set up 3 PET-CTs with high-quality equipment and advanced technology for cancer diagnosis to modernize medical care and “Cyclotron-equipped stomach” at NINMAS Sahbagh PET-CT is established. Radio isotopes produced from the cyclotran installed at NINMAS have been delivered to PET-CT at INMAS, Dhaka and NINMAS to provide patient care. Apart from the infrastructural development of the Institute of Food and Life Sciences of the Atomic Energy Research Institute under the Commission, the laboratories have been modernized. To increase the scope of research on nanotechnology, the Atomic Energy Centre, Dhaka has been modernized as well as equipped with modern equipment. Meanwhile, the capacity of Institute of Nuclear Medicine and Allied Sciences (INMAS) Dhaka, Chittagong, Rajshahi, Khulna, Sylhet, Dinajpur and Rangpur has been increased, among which 3 new buildings have been constructed in Rajshahi, Khulna and Dinajpur. The first phase of the survey for the selection of possible sites for the construction of a nuclear power plant in the southern part of Bangladesh has been completed and the technical survey project for the establishment of a high capacity nuclear research reactor in Bangladesh has been completed. Establishment of 8 Institutes of Nuclear Medicine and Allied Sciences (INMAS) is underway in the country. Under the project titled Prevalence of Congenital Hypothyroidism in Newborns (Phase II), Umbilical Cord screening is currently being conducted in 63 districts of the country in about 839 public and private hospitals, maternal and child health centers, maternity centers for the diagnosis of congenital thyroid hormone deficiency. Neonatal blood samples are currently being collected through Blood and Heel Prick sampling. Neonatal TSH screening of blood samples of about 4,20,881 newborn babies collected from public and private hospitals outside Dhaka and outside Dhaka under the project has already been done and so far 190 babies born with thyroid hormone deficiency have been identified and their treatment programs are available. The project for development and modernization of laboratory facilities of the Institute of Electronics was completed in December 2022.

**6.2.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Research assistance/supervision in preparation of thesis/report | Edited Thesis/Report | 3 | No | 41 |  | 44 |  | 46 | 48 |  |
| 1. Conduct training on Science and technology | Trained Manpower | 1 | No | 205 |  | 215 |  | 220 | 225 |  |
| 1. Organizing seminars and workshops on science | Organized seminars and workshops | 2 | No | 26 |  | 28 |  | 29 | 30 |  |
| 1. Providing medical care using nuclear technology | Service takers | 3 | No | 310000 |  | 312000 |  | 315000 | 320000 |  |
| 1. Production and supply of ammonia tissue bone grafts | Ammonium Graphite supplied | 3 | No | 4500 |  | 4600 |  | 5500 | 5600 |  |
| Provided bone graphite | Amount (c.c) | 12900 |  | 14500 |  | 16000 | 16500 |  |
| 1. Determine amount of radiation exposure to imported and exported food. | Radioactivity levels are determined | 3 | No | 18000 |  | 19000 |  | 20000 | 22000 |  |
| 1. Determination of the radiation dose received in the body of the radiation worker | TLD service provision | 3 | No | 8150 |  | 8250 |  | 8300 | 8400 |  |
| 1. Food preservation by application of radiation | Radiation applied food products | 3 | No | 105 |  | 100 |  | 155 | 160 |  |
| 1. Sterilization of medical equipment by application of radiation | Amount of radiation therapy applied | 3 | No | 2000 |  | 3500 |  | 5000 | 5500 |  |
| 1. Chemical analysis of air/water/soil/foodstuffs/vegetables etc. samples/other substances | Different samples/substances analyzed | 3 | No | 3500 |  | 4200 |  | 4300 | 4500 |  |
| 1. Culture and qualitative analysis of blood samples in nuclear medicine care centres | Analyzed blood sample | 3 | No | 55000 |  | 60000 |  | 6500 | 70000 |  |
| 1. Calibration of radioactivity monitors | Calibrated instrument | 3 | No | 92 |  | 94 |  | 95 | 95 |  |
| 1. Notification of stakeholders for research results | Articles and books published in scientific journals | 4 | No | 85 |  | 100 |  | 110 | 120 |  |
| Organized seminars and workshops | 4 | No | 5 |  | 6 |  | 7 | 8 |  |
| 1. The main construction work of Rooppur Nuclear Power Plant | Physical progress | 5 | % | 15 |  | 18 |  | 20 | 22 |  |
| 1. 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 | % | - |  | - |  | - | - |  |
| 1. Enhanced capacity of the Institute of Nuclear Medicine and Allied Sciences (INMAS) Dhaka, Chittagong, Rajshahi, Khulna, Sylhet, Dinajpur and Rangpur | Expenditure against the budget allocated for implementation of the project | 5 | % | 18.50 |  | 20.00 |  | 21.00 | 22.22 |  |
| 1. Modernization and expansion of services and research facilities of the Institute of Tissue Banking and Biomaterials Research | Expenditure against the budget allocated for implementation of the project | 5 | % | 27.50 |  | 28.00 |  | 30.00 | 13.96 |  |

**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  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.3 Bangladesh Council for Scientific Industrial Research (BCSIR)**

**6.3.1 Recent Achievements:** In the last 03 (three) years, BCSIR has implemented 504 R&D projects and 08 (eight) Annual Development Projects (ADPs), 51 science related seminars and demonstrations in 126 upazila’s to make the people science-minded. In order to advance the science education of school going students, BCSIR has been given opportunity to visit the laboratories by the students of various schools. In addition, BCSIR has organized 8 science fairs for young scientists from universities, colleges and schools. BCSIR has promoted 33 new technologies, acquired 20 patents and transferred 84 technology to industrialists, awarded 200 fellowships, supervised the research work of 305 students and published 347 research papers. At present BCSIR analysis 16430 product-sample of various industrial/industrial establishments, import-exporting establishments and various governmental and non-governmental organizations and at individual level. BCSIR has obtained ISO-IEC-17025 accreditation certificate of 88 analysis parameters, 04 new laboratories have been set up and labs have been modernized and 3 central laboratories have been set up to speed up the research work. The Genomic Research Lab has discovered the whole genome sequence of 1350 Corona virus samples and 863 data submitted to the International Data Bank in Full Form (GISAID) and dengue virus genome sequencing. BCSIR has developed an RT-PCR kit called “BCSIR-COVID Kit” for the detection of Corona Virus which has recently approved for production by the Directorate of Drug Administration.

**6.3.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 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. | 25 |  | 25 |  | 26 | 27 |  |
| New technologies invention | 3 |  | 4 |  | 4 | 4 |  |
| Accept patent | 3 |  | 3 |  | 4 | 5 |  |
| Commercialization | 3 |  | 4 |  | 4 | 5 |  |
| 1. 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. | 35 |  | 35 |  | 35 | 35 |  |
| New technologies discovered | 3 |  | 4 |  | 4 | 5 |  |
| Accept patent | 3 |  | 3 |  | 3 | 4 |  |
| Commercialization | 4 |  | 4 |  | 4 | 4 |  |
| 1. Facilitate innovation of technology for using domestic raw materials for industrialization. | Published articles in the local and international journal | 4 | No. | 55 |  | 60 |  | 60 | 60 |  |
| New technologies invented | 9 |  | 9 |  | 10 | 11 |  |
| Accept patent | 5 |  | 6 |  | 7 | 7 |  |
| Commercialization | 9 |  | 9 |  | 10 | 10 |  |
| Arrange meetings / seminars to  Disseminate appropriate technology in District or Upazila level. | 66 |  | 66 |  | 66 | 66 |  |
| Number of science fair held in various centers. | 4 |  | 4 |  | 4 | 4 |  |
| Number of participating school/colleges in the fair. | 145 |  | 150 |  | 155 | 160 |  |
| Number of participate in the fair with Invented technology. | 480 |  | 480 |  | 500 | 520 |  |
| 1. 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) | 5500 |  | 5500 |  | 5800 | 6000 |  |
| 1. 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. | 3 |  | 4 |  | 4 | 4 |  |
| Number and rate of implementation  of project on modernization research lab | 3 |  | 3 |  | 3 | 3 |  |
| Memorandum of understanding  (MoU) signed in local and abroad. | 15 |  | 17 |  | 18 | 20 |  |
| Number of project under foreign  fund assistance. | 0 |  | 1 |  | 1 | 1 |  |
| Students completed thesis MS/M.phil/Ph.D under supervised by scientists | No.  (Person) | 180 |  | 185 |  | 190 | 195 |  |
| Number of national/ International  seminar/ workshop. | No. | 20 |  | 25 |  | 28 | 30 |  |
| 1. Conduct training on Science and technology | Basic training for officers | 1 | No.  (Person) | 40 |  | 40 |  | 40 | 40 |  |
| Number of students/ trainees from  in-house | 1100 |  | 1120 |  | 1150 | 1160 |  |
| Number of trainees in a variety of training institutions within the country. | 90 |  | 95 |  | 100 | 110 |  |
| Participation in meeting/seminar in abroad. | 30 |  | 30 |  | 30 | 32 |  |
| Participation in meeting/seminar  within the country. | 25 |  | 30 |  | 30 | 35 |  |
| Number of supervisors for achieving  research degree students. | 180 |  | 195 |  | 190 | 195 |  |
| Number of Officer/scientists  completed higher education (Ph.D, M. Phil, MS) | 12 |  | 13 |  | 14 | 15 |  |
| Organization of scientific meetings  /seminars | 2 | No. | 15 |  | 15 |  | 16 | 17 |  |
| 1. Provide fellowships and opportunity for higher study and research | Provided fellowship for researcher | 1 | No.  (Person) | 100 |  | 100 |  | 100 | 100 |  |

**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  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.4 Bangladesh National Scientific and Technical Documentation Centre (BANSDOC)**

**6.4.1 Recent Achievements:** As a national information service organization, BANSDOC is enriching and modernizing the existing information services through the use, application and website of modern information technology, collecting, storing and distributing updated information on science and technology related to the country and abroad supporting research and development activities according to the needs of researchers, technicians, educators, students and the collected scientific data, biodata, etc. are being provided online services for all by uploading them to 10 (ten) databases. In last 03 (three) years data collection 17,818, information dissemination 25,005 pages, beneficiaries 1,00,944, scientific seminars/workshops/awareness 35 meetings, internship to 224 students in 12 batches and e-book preparation training provided to 265 people.

**6.4.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 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. | 7000 |  | 7200 |  | 7400 | 7600 |  |
| Information Dissemination | Page | 8000 |  | 8200 |  | 8400 | 8600 |  |
| Beneficiaries | No. | 17000 |  | 17500 |  | 18000 | 18500 |  |
| 1. Organizing seminar and workshop on science. | Awareness Meeting, Seminar & Workshop | 2 | No. | 14 |  | 15 |  | 16 | 17 |  |
| 1. Arranging training on science and technology. | Internship Courses | 1 | No. | 120 |  | 125 |  | 130 | 135 |  |
| E-book training | 110 |  | 115 |  | 120 | 125 |  |

**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  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.5 National Museum of Science and Technology (NMST)**

**6.5.1 Recent Achievements:** During the last three financial years (2019-20, 2020-21 and 2021-22) 105000 visitors visited the Science Exhibition of National Science and Technology Museum Permanent Gallery and 3588088 (thirty five lakh eight thousand eighty eight) people made virtual visits. During this period, 1553 science fairs and 349 science seminars were organized in 64 districts of the country and at the central level in Dhaka, including the National Science and Technology Week. During this period 161 state-of-the-art exhibits were collected and placed in museums and 523 traveling science exhibitions were organized with the help of museum buses and 4D movie buses. The number of visitors to these exhibitions was around 7,28,585 Organized 525 popular science lectures/workshops/seminars. Upazila Science and Technology Clubs have been formed in 493 Upazilas and Union Science and Technology Clubs in 40 Unions. 35 winners of the central level quiz competition have been sent on an educational tour outside Bangladesh. 26 officers and employees of this organization have been sent to UK, Romania, India, Sri Lanka, Malaysia, Indonesia, Sweden, Germany and Philippines to visit Science Museums of different countries including participation in International Astrolympiad. Apart from this, 37 Science Olympiads and 3 International Science Conferences have been organized jointly by this institution with some of the reputed scientific organizations of the country.

**6.5.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Conduct training on Science and technology | Internal Training | 1 | Man hour | - |  | - |  | - | - |  |
| Foreign training | No. | 23 |  | 23 |  | 23 | 23 |  |
| 1. Arrange science fairs / exhibitions / Olympiad at district and national level with permanent science exhibition | Science fair/seminar/workshop/Olympiad/Popular Science Subject Lecture Series | 2 | No. | 1695 |  | 1695 |  | 1695 | 1695 |  |
| Visitors to the Science Museum  (including virtual) | No. | 73123  physically) |  | 80000  physically |  | 100000  physically | 120000 |  |
| Mobile Science Exhibition | No. | 154 |  | 290 |  | 300 | 310 |  |
| Number of districts hosting fairs | No. | 64 |  | 64 |  | 64 | 64 |  |
| 1. Creation of space research and observation facility by establishing space observation center at the junction of Tropic of Cancer and 90 degrees east longitude | Space observation by acquiring 10 acres of land and setting up a main observatory and other exhibits of about 10 meters in diameter | 2 | Tk (Lac) | 649 |  | 5419.45 |  | 15252.99 | - |  |

**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  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.6 Bangabandhu Sheikh Mujibur Rahman Novotheatre**

**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. Besides, 14 scientific and 16 digital exhibits, 1 40-seat 5-D movie theater, smart game and smart step floor and 1 12-seat VR have been installed. Online ticketing has been launched for the convenience of Novotheater visitors. Bangabandhu Karnar, Sheikh Russell Karnar and 1 Scientific Library have been set up here. A children's park (Novopark) has been constructed in the empty space on the eastern side of Bangabandhu Sheikh Mujibur Rahman Novotheater. As part of the establishment of Bangabandhu Sheikh Mujibur Rahman Novotheater in every department of the country as per the instructions of the Honorable Prime Minister, the project of establishing Bangabandhu Sheikh Mujibur Rahman Novotheater in Rajshahi, the project of establishing Bangabandhu Sheikh Mujibur Rahman Novotheater in Barisal, the project of establishing Bangabandhu Sheikh Mujibur Rahman Novotheater in Rangpur, and the project of establishing Bangabandhu Sheikh Mujibur Rahman Novotheater in Khulna, The installation project has been approved and the project work is in progress. Apart from this, a state-of-the-art "Nuclear Energy Information Center" with 3D technology has been set up in Novotheater to give the public a proper understanding of nuclear power in the wake of the establishment of Rooppur Nuclear Power Plant. Bangabandhu Sheikh Mujibur Rahman Novotheater has been brought under National Web Portal and Apps have been opened.

**6.6.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Conduct training on Science and technology | Internal training | 1 | No. | 51 |  | 55 |  | 55 | 55 |  |
| 1. Arrange Science related seminar and workshop | number of saminer/ workshop | 2 | No. | 3 |  | 8 |  | 8 | 8 |  |
| 1. Developing Navotheatre as a center of excellence through science education and space research through aerospace science education. | Visitor in Planetarium | 2 | Person  (Thousand) | 150 |  | 160 |  | 160 | 160 |  |
| Visitor in exhibits and Rides | 100 |  | 110 |  | 110 | 110 |  |
| 1. 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. | 70 |  | 70 |  | 70 | 70 |  |
| Number of educational institutions coming to show the novoaster | No. | 60 |  | 70 |  | 70 | 70 |  |
| Letter / leaflet distribution | No.  (Thousand) | 25 |  | 80 |  | 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  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.7** **National Institute of Bio-technology**

**6.7.1 Recent Achievements:** Stress tolerant transgenic brinjal varieties have been developed at NIB. Whole genome sequence of 2 SARS-CoV-2 (COVID-19) viruses found in Bangladesh and new vaccine have been developed to develop new drugs and vaccines. Enzyme producing bacterial strain for use in textile and leather industry is currently being used in NIB's laboratory which will play an important role in preventing environmental pollution. Animal model experiments have been started by creating new drug models at NIB with the aim of discovering new drugs as an alternative to insulin. Also molecular structures of four (4) anti-diabetic compounds obtained from medicinal plants were determined by NMR. 286 DNA sequencing services have been provided in various educational institutions and research institutions of the country including the research department of NIB. A total of 485 people have been provided hands on training from NIB through 11 training programs to create skilled human resources in biotechnology including publishing a national database of researchers and biotechnology research.

**6.7.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Research assistance/ supervision in preparation of thesis/report | Edited Thesis/  Report | 3 | No. | 4 |  | 10 |  | 11 | 12 |  |
| 1. Conduct training on Science and technology | Trained Manpower | 1 | No. | 0 |  | 163 |  | 163 | 163 |  |
| 1. Arrangement seminar and workshop relating science | Arranged seminar and workshop | 2 | No. | 1 |  | 3 |  | 4 | 4 |  |
| 1. The result of the study is the integration of steak holders | Published scientific journals and books | 4 | No. | 5 |  | 9 |  | 9 | 10 |  |
| Organized seminars and workshops | No. | 1 |  | 3 |  | 3 | 3 |  |
| 1. DNA Sequencing services are provided | Given DNA sequencing  Service | 4 | working day | 5 |  | 120 |  | 130 | 140 |  |
| 1. TAK DNA polymerase enzyme production | Generated TNA DNA Polymerase Enzyme | 4 | No.(iu) | 15500 |  | 33000 |  | 34000 | 35000 |  |
| 1. 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. | 450 |  | - |  | - | - |  |
| 1. Innovative environment-friendly germs for rice | Isolation and preservation of nitrogen fixing bacteria | 4 | No. | 26 |  | - |  | - | - |  |
| Identification of nitrogen fixing bacteria | No. | 15 |  | - |  | - | - |  |
| Determination of nitrogen fixation activity of identified bacteria and selection of suitable strains | No. | 7 |  | - |  | - | - |  |
| 1. Isolation, identification and molecular characterization of the Lampy skin disease virus with an aim to invent vaccine | Collection of specimens from infected animals (blood, swabs, pus, skin scrapings etc.) | 4 | No. | 33 |  | 70 |  | - | - |  |
| Isolation of DNA from blood samples | No. | 33 |  | 70 |  | - | - |  |
| Polymerase Chain Reaction (PCR) | No. | 33 |  | 70 |  | - | - |  |
| Molecular characterization | No. | 5 |  | 10 |  | - | - |  |
| 1. Molecular characterization of pathogenic bacteria causing hornworm disease (MAS) | Horn fish  Sample collection | 4 | No. |  |  | 55 |  | 60 |  |  |
| Isolation and preservation of bacteria | No. |  |  | 165 |  | 175 |  |  |
| Identification of bacteria | No. |  |  | 165 |  | 175 |  |  |
| 1. Molecular characterization of pathogenic bacteria causing hornworm disease (MAS) | Isolation and characterization of microorganisms capable of producing antimicrobial substances | 4 | No. | 25 |  | - |  | - | - |  |
| Isolation and characterization of microorganisms capable of producing antimicrobial substances | No. | 25 |  | - |  | - | - |  |
| Isolation and characterization of microorganisms capable of producing antimicrobial substances | No. | 9 |  | - |  | - | - |  |
| 1. Labcom office and Gene Bank building under the development project titled “Establishment of National Gene Bank” | Physical progress | 5 | % | 28 |  | - |  | - | - |  |

**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  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.8 Bangladesh Atomic Energy Regulatory Authority**

**6.8.1 Recent Achievements:** The Design & Construction License of Unit-1 and Unit-2 has been awarded as part of the regulatory supervision activities of Rooppur Nuclear Power Plant under construction which is a major achievement of Bangladesh Atomic Energy Regulatory Authority. n order to control the radiation risk by complying with the existing laws and regulations in favor of various radiation installations using radiation producing equipment including radioactive materials in industrial plants, health, agriculture, education and research in the last 03 (three) years by the Bangladesh Atomic Energy Authority, the said radiation source import/ 1012 (one thousand twelve) radiation installations were inspected including 1,373 (one thousand three hundred and seventy three) approvals for export and use and A total of 1125 (one thousand one hundred and five) trainees have been provided training on radiation safety by organizing 35 (thirty five) training courses for the radiation workers of all these institutions in the last 03 (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 | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Approval of the management of nuclear and radiation installations | Import for installation/  Approval granted to exported radiation sources | 3 | working days\* | 30 |  | 30 |  | 30 | 30 |  |
| 1. Certification of Radiation Control Officers | RCO certificate issued | 3 | working days\* | 45 |  | 45 |  | 45 | 45 |  |
| 1. Regulatory inspection of nuclear and radiation facilities | Regulatory inspection | 3 | No. | 166 |  | 173 |  | 180 | 185 |  |
| 1. Conduct training on science and technology | training held | 1 | No. | 7 |  | 8 |  | 9 | 10 |  |
| Trained manpower | 210 |  | 220 |  | 230 | 240 |  |
| 1. Organizing seminars and workshops on science | Training courses organized | 2 | No. | 4 |  | 5 |  | 6 | 7 |  |

**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  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.9 Bangladesh Oceanographic Research Institute**

**6.9.1 Recent Achievements**: This institute has been working on maritime affairs research and skilled manpower with the aim of developing the Sunil economy by utilizing this huge resource of the sea border belonging to Bangladesh. Currently, this institute is conducting its own research as well as conducting joint research and providing research assistance with other domestic and foreign organizations, colleges and universities. In addition, marine consultancy services and sample analysis services are provided to various public and private organizations. Meanwhile, short, medium and long-term plans for the development of blue economy, election manifesto 2018, SDG Goal-14 and vision plans are in progress. Currently determining the geological and physical parameters of the sea area from Qutubdia to Feni, separating five types of heavy minerals from sea sand such as rutile, ilmenite, zircon, garnet, magnetite etc., commercialization of agar and carraginan produced from seaweed. , identification of well spills in port areas, collection of medicinal chemicals from horse crab (king crab), coral restoration in St. Martin's Island, phytoplankton and zooplankton cataloging in the Bay of Bengal and Research activities are underway to publish books on taxonomic studies of marine seaweeds and corals. A budget of Rs.132450.00 lakhs is available for running the institute in the current financial year 2022-23. The Bangladesh Oceanographic Research Institute (Phase 2) project was approved in the ACNEC meeting held on April 4, 2022 for the purpose of procurement of laboratory equipment, development of infrastructure, establishment of data center and purchase of own research vessel. Moreover, reconstruction of a DPP is underway with the aim of setting up an international standard marine aquarium on 29.30 acres of land adjacent to Marine Drive Road in Cox's Bazar.

**6.9.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Undertake marine science research activities | Undertake and carry out research projects on physical, chemical, geological, biological, environmental aspects of the ocean. | 4 | No. | 7 |  | 10 |  | 12 | 12 |  |
| 1. To support marine science research | Providing training to scientists and related officials | No. | 12 |  | 15 |  | 15 | 20 |  |
| Organizing follow up program of training activities | No. | 1 |  | 1 |  | 2 | 3 |  |
| 1. Popularization of marine science activities | Organizing workshops on marine science | 4 | No. | 1 |  | 2 |  | 2 | 3 |  |
| Promotion and creation of various marine related facilities | No. | 3 |  | 4 |  | 5 | 6 |  |
| 1. Taking steps to sustainably use marine resources for socio-economic development | Dissemination of research findings to stakeholders in socio-economic development. | 4 | No. | 1 |  | 2 |  | 2 | 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  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.10 Bangabandhu Science and Technology Fellowship Trust**

**6.10.1 Recent Achievements:** In the memory of Bangabandhu Sheikh Mujibur Rahman, the father of the nation, the greatest Bengali of all time, the visionary of Golden Bengal, with the conviction of building a science-minded nation, developing science-related research and building a digital Bangladesh, the Ministry of Science and Technology has implemented a project titled Bangabandhu Fellowship on Science and ICT. The main objective of this project is to create skilled and specially qualified scientists, technicians and researchers at the national level by obtaining degrees in research and higher education, especially MS and PhD programs conducted in renowned universities, laboratories and institutes of the developed world. The researchers who complete the course are able to make special contributions in the field of research and higher education in the country by innovating new technologies and methods. Fellows are selected by an expert committee consisting of senior professors from various public universities, representatives of relevant ministries and executives of national level institutions. From the financial year 2017-2018, the total number of fellowship recipients under the trust is 423, the number of fellows who have completed the course is 243 and the number of ongoing fellows is 180. Through regular circulars, fellowship awarding activities are ongoing in various programs every year.

**6.10.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2021-22 | | 2022-23 | | 2023-24 | 2024-25 | 2025-26 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Providing fellowships, higher education and research opportunities to researcher | Grant of fellowship | 1 | No. | 80 |  | 100 |  | 110 | 120 |  |

**6.10.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects**

(Taka in Thousands)

| Name of the Institutional Unit/Scheme/ Project | Related Activity | Actual  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |

**6.11 Bangladesh Reference Institute for Chemical Measurements (BRICM)**

**6.11.1 Recent Achievements:** BRICM has developed/developed various in vitro molecular diagnostic devices (VTM, PCR Kit, Antibody test, Sanitizer etc.) under government management for the first time in the country. Which has been used throughout the country by the Ministry of Health during the Corona period. Apart from laboratory instrument calibration service, calibration service of 32 types of medical equipment has been introduced for the first time in the country. Chemical Metrology Olympiad is organized every year with the participation of students across the country for the purpose of promotion and public awareness. Domestic laboratories are being actively supported by providing proficiency testing, certified reference materials, method validation, calibration services along with training to meet the prerequisites for achieving accreditation as part of international standards promotion. Besides, 150 student-researchers have been supervised. Already a fully online based service has been launched following 4IR.

**6.11.2 Activities, Output Indicators and Targets**

| Activities | Output Indicator | Related Strategic Objectives | Unit | Revised Target | Actual | Target | Revised Target | Medium Term Targets | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2022-23 | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Providing fellowships, higher education and research opportunities to researcher | Grant of fellowship | 1 | No. | 20 |  | 20 |  | 20 | 22 |  |
| 1. Conducting educational programs in chemical metrology and providing research assistance in higher degrees | Supervised Thesis | 3 | No. | 10 |  | 15 |  | 15 | 15 |  |
| 1. Conduct training on science and technology | Trained manpower | 1 | No. | 120 |  | 150 |  | 155 | 160 |  |
| 1. Conducting educational programs related to Chemical Metrology, Laboratory Quality Management System, Accreditation and Instrumentation etc. and providing related training and consultancy services and providing research assistance in higher degree. | Organized scientific seminars and workshops | 2 | No. | 05 |  | 06 |  | 06 | 06 |  |
| Chemical Metrology Olympiad | No. | 01 |  | 01 |  | 01 | 01 |  |
| 1. Undertake, manage and implement basic and practical research activities related to chemical metrology, application of research results and management and coordination of all related activities. | Ongoing and completed R&D projects | 4 | No. | 25 |  | 30 |  | 30 | 35 |  |
| Published books in scientific journals | No. | 20 |  | 25 |  | 25 | 30 |  |
| Domestic capacity building in product/service development (product development) | No. | 01 |  | 01 |  | 02 | 02 |  |
| Commercialization of products/services rich in indigenous technology (Product Commercialization) | No. | 01 |  | 01 |  | 02 | 02 |  |
| Service Agreement, Memorandum of Understanding (MoU) and Joint Research Agreement signed | No. | 10 |  | 12 |  | 15 | 15 |  |
| 1. Measurement and Reference Measurement Services, Proficiency Testing, Inter-Laboratory Comparison and Calibration Services, Chemical Measurement System Development, Validation and Transfer | Analysis services | 3 | No. | 4500 |  | 4600 |  | 4700 | 4800 |  |
| Calibration service | No. | 180 |  | 200 |  | 220 | 220 |  |
| Conduct of Proficiency Testing | No. | 20 |  | 20 |  | 20 | 20 |  |
| Method validation | No. | 10 |  | 10 |  | 10 | 12 |  |

**6.11.3 Medium Term Expenditure Estimates by Institutional Unit, Scheme and Projects**

(Taka in Thousands)

| Name of the Institutional Unit/Scheme/ Project | Related Activity | Actual  2022-23 | Budget | Revised | Medium Term Expenditure Estimates | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2023-24 | | 2024-25 | 2025-26 | 2026-27 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  |  |  |  |  |  |  |  |