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THE HEAT IS ON!

Towards a Climate Resilient Education System
in Bangladesh

Cover: Mayna, 14, with pitcher for collecting water at a Cyclone Aila affected area in Srinagar, Dakop, Khulna. Everyday she travels to the next village to collect safe water.

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Executive Summary

This Bangladesh country study forms part of a UNICEF Regional Office for South Asia (ROSA) study on the impacts of and responses to climate change across education systems in South Asia. The overall aims of the regional study are:

- To generate evidence on how education systems in South Asia are monitoring, assessing and responding to the impacts of climate change
- To identify the main educational tools and mechanisms being employed in planning for and addressing climate risks
- To showcase the perceptions of key education sector stakeholders regarding further embedding climate change considerations and concerns into education tools and mechanisms.

The research methodology employed includes desk-based documentary review, national-level key stakeholder surveys, school-level focus group discussions (FGDs) and a U-Report process targeting youth from 14 to 24 years old.

Bangladesh is one of the countries most affected by climate change due to its location on one of the world largest deltas. A predominantly flat and low-lying topography makes the densely populated country highly vulnerable to sea level rise. High dependency on climate-sensitive agriculture and fishery sectors aggravates Bangladesh's vulnerability to climate change. Food and water insecurities as well as internal climate migration from coastal and rural areas to urban cities are already serious concerns and are likely to magnify as issues under current climate change scenarios. Bangladesh ranks 15 out of 163 countries in UNICEF's children's climate risk index in 2021.

This study has examined the direct and indirect impacts of climate change on the education system in Bangladesh. In terms of learning facilities, destruction and damage has been caused by both fast- and slow-onset hazards including

storm surges, cyclones, flooding, waterlogging, river erosion and saline intrusion among others. Many schools struggle to ensure access to clean water throughout the school year. Used as temporary shelters in times of hazard, the majority of schools suffer from loss of education materials and destruction of furniture and WASH facilities, inhibiting the smooth resumption of schooling. While the existing guideline documents concerning school buildings consider some specific hazards, comprehensive and forward-looking consideration of climate change-induced hazards and shocks is currently lacking in policy thinking and practice.

Children's access to education is disrupted when schools are destroyed by natural disasters, or used as temporary shelters. Not only major disasters but also small-scale and recurrent events (e.g., regular high tides and heavy rains) make student travel to school challenging. The adverse impact on household economies of climate change-related hazards and shocks is one of the key factors to trigger school dropout and child protection issues such as child labour and child marriage.

As to student physical health and wellbeing, climate change-exacerbated water-borne and vector-borne diseases are increasing concerns. Excessive heat is making children feel faint and unwell at school. A very hot and crowded classroom lacking effective cooling and ventilation facilities negatively affects the quality of classroom teaching and learning experience. Air and water pollution is another major health concern for children in Bangladesh, as ill-health is highly likely to lower school attendance and educational achievement. Climate change also may very well be affecting student emotional wellbeing. 70 per cent of Bangladeshi U-Report respondents indicate that they are anxious about climate change and its implications for the future. Traumas, gender-based violence and sexual abuse experienced in the aftermath of climate-induced disasters are highly likely to leave long-lasting mental health impacts among children.



With regard to climate change impacts on education provision and learning quality, subjects such as secondary *Science*, *Mathematics* and *English* are among the least able to recover on lesson time lost due to natural disasters. Lesson time loss impacts are more severely felt by those in the double-shift schools. In the aftermath of disasters, teachers are involved in non-academic disaster response and recovery activities, which makes it difficult for them to focus on their main duty, i.e., teaching. Outdoor activity and school assembly opportunities are rapidly diminishing due to excessive heat and the increasing number of hazard events, leading to diminishing diversity in learning experiences at school.

This study has also examined education sector responses to climate change, exploring the seven key education system components (i.e., policies, plans and strategies; finance; curriculum, teaching and learning; teacher capacity development; communication, coordination and partnership; school/community student participation platforms; monitoring, evaluation and accountability). Main research findings include the following:

- The *Education Sector Plan* recognizes climate change to be a critical, cross-cutting issue calling for transformative strategies.
- The Bangladesh government has developed an innovative climate change budget tracking system across a wide range of Ministries/Divisions including the Ministry of Primary and Mass Education and the Ministry of Education.
- While climate change-related topics have been integrated in a number of textbook chapters from primary to higher secondary level, prevailing rote-learning practice in classrooms is a significant obstacle standing in the way of developing the student capacity needed in the face of multifaceted climate change challenges.
- There exist no systematic pre-service and in-service teacher training opportunities focusing on climate change risk reduction and resilience building.
- There is no coordination mechanism/platform focusing on education sector climate change adaptation, mitigation and resilience building.
- Student climate change and pro-environmental engagement opportunities outside of the classroom depend on the enthusiasm of individual teachers and schools. The provision is, thus, very hit-and-miss. Existing school-based platforms (e.g., Student Council, Student Cabinet, Little Doctors) carry considerable potential for enhancing student change agency and leadership capacities in general but also for developing climate change awareness and action.
- Bangladesh has taken concrete steps to gather and disseminate key climate change and disaster impact data in the education sector as part of the annual *Bangladesh Education Statistics*.

Recommendations to make the education system in Bangladesh more resilient in the face of increasing climate change risk are as follows:

Climate Change Impact Monitoring and Assessment

- Integrate climate change impact and vulnerability indicators into the existing data collection tools/mechanisms (e.g., salinity impacts in the Multiple Indicator Cluster Survey, Annual Primary School Census) and reporting tools/mechanisms (e.g., *Annual Sector Performance Report* from the Directorate of Primary Education).
- Consulting with relevant stakeholders, periodically review and update climate change and disaster impact indicators currently employed by BANBEIS.
- Monitor lesson time lost due to schools being used as emergency shelters.
- Monitor education continuity of children forced to migrate due to climate change impacts.
- Collaborate with relevant Ministries/Divisions (e.g., Ministry of Environment, Forest and Climate Change, Ministry of Disaster Management and Relief, Ministry of Health and Family Welfare, Ministry of Women and Children Affairs) in gathering, sharing and analysing climate change impact data as it concerns children and schools.

Policies, Plans and Strategies

- Incorporate climate change risk reduction and resilience building in a new *National Education Policy*. In such a process ensure that the needs of children who are most vulnerable are met (e.g., girls, children with disabilities, children from migrated families). Also integrate concrete steps to implement the Bangladesh Parliament's Planetary Emergency declaration in the education sector through a *New Education Policy* and other relevant strategy and planning documents.
- Develop practical safeguarding guidelines on using schools as emergency shelters in order to minimise damage to school infrastructures and facilities (including WASH facilities) and, post-usage, ensure swift follow through on necessary repairs with clear financial compensation mechanisms/procedures in place.
- Integrate education and health interventions more strongly to protect student health and wellbeing from the adverse effects of changing climate.
- Integrate child protection measures into formal and non-formal education programmes to protect children from early marriage, gender-based violence and child labours which are on the rise due to the adverse effects of climate change on the household economy.
- Plan to ensure that children who migrate or are displaced by the impacts of climate change have access

to education. Plan ahead for education continuity in the likely scenario of large scale migration and displacement due to climate change impacts.

- Integrate lessons learned and strategy for learning continuity developed during the COVID-19 school closure period into the national education system as standard operating procedures for education in emergencies.
- Ensure implementation of flexible school timetables by providing necessary support to sub-national and school-level stakeholders.

Finance

- Explore a legally guaranteed budget percentage dedicated to climate change risk reduction and resilience building initiatives within the education sector.
- Consider extending financial and resource allocation to support students, teachers and schools in climate hotspots. This might include provision of a hardship

allowance to teachers in the coastal belt and *haor* regions and provision of basic necessities (e.g., water-proofed school bags, water-proofed jackets, school materials) to highly vulnerable students who are repeatedly affected by high tide, waterlogging and flooding and those who have migrated to urban slums. This might also include a dedicated allocation for schools in lightning-prone areas to enable the installation of a lightning rod.

- Consider creating auditing systems to monitor whether climate change-relevant budget/expenditure are being used to reduce child vulnerability to climate-related hazards.
- Raise awareness among national government officials (especially in the Ministry of Primary and Mass Education and the Ministry of Education) regarding the benefit of financing climate mitigation and adaptation activities.
- Explore external climate change funding opportunities (e.g., Green Climate Fund) with a view to filling the current resource gap so enhancing climate resilience in the education system.



Curriculum, Teaching and Learning

- Identify contextually appropriate green skills for a low carbon and climate resilient economy and integrate them into the secondary curriculum and into assessable learning outcomes. Green skills should be an integral part of the emerging 21st century skills agenda in Bangladesh.
- In the revised curriculum and textbooks, ensure clear curriculum progression in terms of knowledge, skills and dispositional learning outcomes concerning climate change mitigation and adaptation; also forge cross-curricular and interdisciplinary links between treatment of climate change mitigation and adaptation in different subjects at the same grade level.
- As part of on-going curriculum revision initiatives, integrate life skills education opportunities which comprehensively address child protection, WASH, health and nutrition to better deal with multi-faceted climate change crises. Help students to develop critical and creative thinking skills, problem solving skills, self-management skills, advocacy and leadership skills, and the skills and attitudes to live in harmony with nature in an age appropriate manner.
- Ensure curriculum contextualization by working closely with regional stakeholders and relevant ministries.
- Provide students with opportunities, arenas and platforms to take concrete actions and play change agency and advocacy roles in mitigating climate change impacts at school, in their local community and beyond.

Teacher Capacity Development

- Conduct a thorough teacher education curriculum audit to identify existing opportunities and gaps for climate change risk reduction and resilience building. Build on the opportunities and close the gaps.
- Enhance teacher capacities to employ a wider range of active/participatory pedagogies through teacher training programmes for climate change.
- Build teacher capacity in facilitating student change agency capacities through school-based and community-based climate change mitigation and adaptation actions.
- Build teacher capacity in providing basic support to maintain student health and wellbeing if adversely impacted by climate change.
- Build teacher capacity in promoting environmentally sustainable practices at school that are most relevant to the locality (e.g., using and maintaining renewable energy technologies, wise use of natural resources, waste management, awareness raising and advocacy techniques).

Communication, Coordination and Partnership

- Incorporate climate change risk reduction and resilience building components in the existing education coordination mechanism/platforms at the national level (e.g., the Education in Emergency Cluster).
- Ensure multi-sector and partnership approaches in embedding climate change components in a new *National Education Policy*, the revised curriculum and teacher training programmes.
- Consider scaling up of innovations such as Solar-powered Floating Schools among river-based and coastal communities.
- Consider conducting capacity mapping among key education sector players and stakeholders to understand existing strengths and resources as well as capacity gaps and needs.

School/Community Student Participation Platforms

- Create and support school clubs aimed at raising climate change awareness and promoting environmentally friendly actions at school, at home and in the community.
- Identify and integrate climate change specific terms of reference and stipulate minimum levels of action for existing school-based student participation platforms (e.g., School Council, Student Cabinet).
- Develop tools and mechanisms to conduct a school environmental audit with students playing a key role in gathering and analysing the information. Such an audit can be linked to school-level hazard, vulnerability and capacity assessment wherever such takes place.
- Create child/youth peer-to-peer climate change learning exchanges between urban and rural children/youth.
- Develop an online platform to widely share climate change-related experiences and actions among students.
- Give necessary support to further promote child/youth climate change policy dialogue through the Generation Parliament.
- Ensure that on-going curriculum renewal purposefully links formal curriculum with various co-curricular, community and online learning opportunities.
- Ensure that trees and plants to be planted by students are suitable for changing climate and the specific local environment. Provide necessary professional advice and support from relevant Ministries/Departments for the choice and maintenance of the trees and plants.

Section 1 Introduction

1.1. Aims and Scope of the Study

This Bangladesh country study is one of the eight country studies undertaken as part of a UNICEF Regional Office for South Asia (ROSA) study on the Impacts of and Responses to Climate Change across Education Systems in South Asia.

The overall aims of the regional study are threefold:

- To generate evidence on how education systems in South Asia are monitoring, assessing and responding to the impacts of climate change
- To identify the main educational tools and mechanisms being employed in planning for and addressing climate risks
- To showcase the perceptions of key education sector stakeholders regarding further embedding climate change considerations and concerns into education tools and mechanisms.

In examining the interface between climate change and education, this study focuses on three areas:

- Direct and indirect climate change impacts on education systems in terms of learning facilities, access to education, student health and wellbeing, education provision (including teacher health and wellbeing) and learning quality, each having significant implications for the quality of education
- Education system responses to climate change, exploring seven key education system components (i.e., policies, plans and strategies; finance; curriculum, teaching and learning; teacher capacity development; communication, cooperation and partnership; student participation platforms; monitoring, evaluation and accountability)
- Key education sector stakeholder experiences, perceptions and needs concerning climate change education.



1.2. A Brief Note on Methodology

The methodology employed is a desk-based documentary review, combined with consultations with and information gathered from key stakeholders in Bangladesh through national-level stakeholder surveys, school-level focus group discussions (FGDs) and a U-Report¹ targeting youth from 14 to 24 years old.

13 national-level stakeholders from the Government, UN organizations, international/national NGOs and academic institutions were identified by the UNICEF Bangladesh Country Office according to the criteria set for the study and each was invited to participate in the national-level stakeholder surveys conducted via email or Zoom. Nine survey contributions followed (including three group contributions) between 20 June 2020 and 15 September 2020. Email follow-up communications with selected survey respondents took place for further information gathering and clarification. The SWOT (strengths, weaknesses, opportunities and threats) analysis discussion in *Section 5* was one element of the national stakeholder survey.

Four school-level FGDs were conducted between 15 and 24 November 2020, two FGDs in Sylhet Division², the northeast division, and two FGDs in Barishal Division, the south-central division, using the Zoom facility. In Sylhet Division, 8 secondary school teachers (4 female, 4 male) from two districts (i.e., Sunamganj, Sylhet) participated in the teacher FGD and 11 secondary school students (7 female, 4 male) from three districts (i.e., Moulvibazar Sunamganj, Sylhet) participated in the student FGD. In Barishal Division, 7 teachers and head teachers (3 female, 4 male) from 6 districts (i.e., Barguna, Barishal, Bhola, Jhalokathi, Patuakhali, Pirojpur) participated in the teacher FGD. 8 secondary school students (4 female, 4 male) from the same school located in the southernmost remote island of Bhola district participated in the student FGD. UNICEF Bangladesh Country Office personnel provided all necessary interpretation support. Before the FGD, student participants were asked to draw two images, i.e., one on 'climate change in my village/locality' and another on 'climate change impacts on my education'. Each drawing prepared by the students was presented and discussed at the FGD.

Analysis of the data gathered is woven into the relevant sections of this report. The U-Report process was implemented and analysed by a UNICEF ROSA team leading to the completion of their publication, *Rising to the Challenge: Youth Perspectives on Climate Change and Education in Bangladesh* (Lopez Rello & Ackers 2021)³ upon which this report draws.

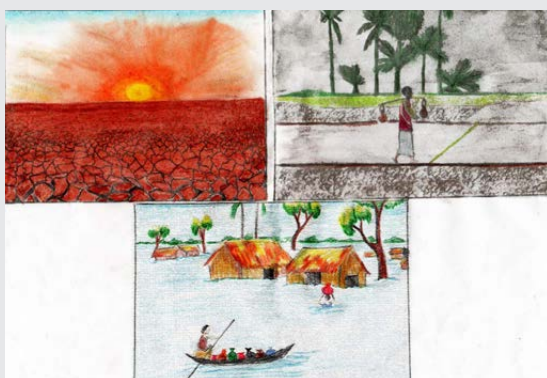
¹ U-Report, run by UNICEF and its partners, is a messaging tool that empowers young people around the world to engage with and speak out on issues that matter to them.

² Administratively, Bangladesh is divided into eight divisions.

³ For a full report, go to: <<https://www.unicef.org/rosa/reports/rising-challenge-0>>

Section 2

Climate Vulnerabilities in Bangladesh



Our country, Bangladesh, used to be known as a country of six seasons. Now we can feel only three seasons in our country. This picture of flooding symbolizes the summer season. My grandfather told me that it used to be a season of three months but it is now [one of] eight months. Winter used to start in October but nowadays the temperature is still high in October.

Maisha, Class 9, Sunamganj District, Sylhet Division

Bangladesh is extremely exposed and exceptionally vulnerable to the effects of climate change due to its unique geographical features and socio-economic conditions. Approximately 88 per cent of its landmass consists of flood plains situated at the intersections of the Ganges, Meghna and Brahmaputra rivers, constituting one of the world's largest river delta systems. The bulk of the land is flat and most of the landmass stands less than 10 meters above mean sea level, making the country highly vulnerable to sea level rise (General Economic Division 2015).

Bangladesh is one of the most densely populated countries in the world with a total population of 166.3 million in 2021. Young people between the ages of 10 and 24 years make up 27.5 per cent of the population (UNFPA 2021). It is projected that the current population will grow by more than 200 million by 2050 piling significant pressures on land and natural resource availability (Ministry of Foreign Affairs of the Netherlands 2018). About one-third of the total population of the country lives in the densely populated coastal districts. There are more than 50 million people living in poverty and many of them live in remote or ecologically fragile parts of

the country including river islands called *chars* and coastal areas or urban slums (Ministry of Environment and Forests 2009; Ministry of Environment, Forest and Climate Change 2018).

Different parts of the country are exposed to different hazards. Major hazards are drought and floods in the north, cyclone and tidal surges in the south and river erosion and floods in the centre of the country (Das 2010). The intensity and frequency of hydro-meteorological hazards are increasing due to climate change. Extreme temperatures, floods, drought, tropical cyclones, lightning, tidal surges and salt water intrusions are worsening and causing serious negative impacts on the lives and livelihoods of millions of people in the country (Ministry of Disaster Management and Relief 2020; Ministry of Environment and Forests 2015). The rate of disastrous river erosion has drastically increased due to climate change. Riverbank erosion affects millions of people and results in an enormous amount of land loss, homelessness and forced migration (Rahman & Gain 2019; Start Network Bangladesh 2019).

A 2019 UNICEF report indicates that nearly 20 million children in Bangladesh are already seriously exposed to climate hazards. Some 12 million children living in and around the river systems face increasing life-threatening flood risk. Another 4.5 million children living in the coastal areas are repeatedly affected by powerful cyclones, nearly half a million of them being Rohingya refugees who have very little means to protect themselves from fierce storms. A further 3 million children live inland where farming communities suffer a lengthening period of drought (UNICEF Bangladesh 2019a, 7). According to UNICEF's first child-focused climate risk index, based on children's exposure to climate and environmental hazards, shocks and stresses as well as children's vulnerabilities to the shocks, Bangladesh ranks 15 out of 163 countries (UNICEF 2021).

Women and girls are among the most vulnerable to climate change impacts due to limited access to resources, information and decision-making processes. They face more domestic burdens and have a poorer nutrition status. Their vulnerable status due to patriarchal norms and practices intensifies during climate induced disasters (General Economic Division 2015; Ministry of Foreign Affairs of the Netherlands 2018). Those who belong to low caste, indigenous groups, religious minority groups and those with disability especially suffer from discrimination (UNICEF Bangladesh undated).

Bangladesh's vulnerability to climate change is further aggravated due to its heavy dependency on the climate-sensitive agriculture sector, which employs nearly half of the labouring population. More frequent and intense hydrometeorological hazards, rising temperatures, erratic

rainfall patterns, a more intense dry season and encroaching salinity depress crop yields, including the country's main staples such as rice. Food and water insecurity and malnutrition are already serious concerns in Bangladesh⁴ and climate change is likely to exacerbate these problems. The majority of poor households, dependent on agriculture and fishery sectors for their livelihoods, have limited capacity to recover from the destruction of livelihoods, making them more vulnerable to climate change effects (ADPC & UNDRR 2020; Ministry of Foreign Affairs of the Netherlands 2018).

Many people in Bangladesh have already been forced to migrate from their communities due to climate-induced stresses and shocks including extreme weather events, rising sea levels, salinity intrusion and riverbank erosion. Every year there are an estimated half a million 'climate migrants' who move from coastal and rural areas to densely populated urban cities, especially to Dhaka, which increases pressures on already stressed infrastructures, food and water resources and basic public services and also exacerbates existing problems such as overcrowding and pollution. Many climate migrants end up in urban slums around the periphery of the city. Uncontrolled urbanization further exacerbates Bangladesh's vulnerability to climate change impacts (Environmental Justice Foundation 2018; Ministry of Foreign Affairs of the Netherlands 2018). There is an impending threat of approximately 27 million people becoming at risk due to sea level rise by 2050 (Ministry of Foreign Affairs of the Netherlands 2018).

It is important to note that the above-mentioned climate change-induced hazards, shocks and vulnerabilities do not occur in isolation. They interact with one another and exacerbate existing social and economic inequalities, while feeding from those inequalities in a complex web of relationships. Unaddressed, the combined effect of climate change hit marginalized groups in the society first, hardest and longest. It is therefore critical to address multiple risk factors simultaneously (UNICEF 2015, 2021).



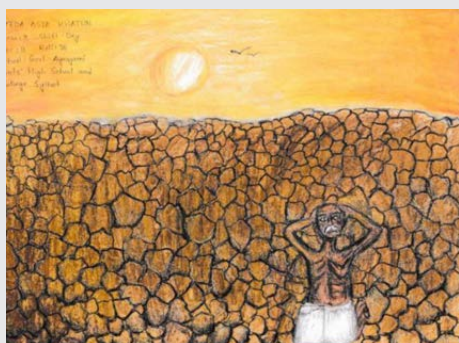
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⁴ According to FAO *et al.* (2019), in 2016-2018, 14.8 per cent of the total population in Bangladesh was undernourished and 30.5 per cent of the population was moderately or severely food insecure.

Climate Change in My Locality

Teacher and student FGD participants were asked about climate change impacts they have noticed and experienced in their locality.

Teacher FGD participants in Sylhet Division report that they notice 'a lot of changes' due to climate change. Irregular rainfall patterns, excessive rains and heat, a shorter monsoon season and extreme weather events have become common phenomena in their locality. They observe that rice and seasonal fruits have not grown as well as anticipated and landslide incidents have been increasing in recent years. A male teacher explains that in Sunamganj District, one of the most lightning affected districts in Bangladesh, there were 68 deaths in 2018 alone due to thunderbolts. In 2020, there were flash floods on five occasions which were 'quite unusual' with people 'not prepared to cope'. Unplanned urban development combined with a changing climate have resulted in significant biodiversity loss especially in Sylhet city areas, which were 'very green' just 5 or 6 years ago. Many plants and common animals have become endangered or extinct. According to a male teacher, 'It is not just climate change. We, human beings, are responsible [for biodiversity loss]. We are cutting a lot of trees.'



I have highlighted a drought problem in my village. As an impact of climate change the temperature of the earth is rising day by day. The rate of drought is also rising day by day. Due to drought, crops were destroyed. Farmers were hampered a lot. Many people do not have food to eat. Their families also suffer. The villagers suffer due to the shortage of the water. They cannot do anything properly about this situation.

Asia, Class 10, Sylhet District, Sylhet Division



In our urban area, the main calamity is flood. From June to August, floods occur many times and the impacts are very bad. Property damages, destruction of crops, and health problems. Floods disturb our normal life.

Khadija, Class 9, Sunamganj District, Sylhet Division



I live in Sunamganj, situated on the bank of river Surma. From my house it takes only 10 minutes to see the ocean-like open wild wetland, named haor, where people do cultivation in the dry season. Recently the climate has changed so badly. Heavy rains come when we are not expecting. All the hard work, investment and crops are washed away, which creates poverty. Kids who are not yet 18 years old have to start to work to support their families. This is how they end up with dropping out of school. We also face river erosions that take away everything situated on the riverbank. When people lose land in this manner they are totally lost and do not know what to do. They sometimes live on the roadsides or at bus or train stations. They become totally rootless. Children from these families do not go to school anymore. It takes a very long time to recover from the loss they faced.

Tasnia, Class 10, Sunamganj District, Sylhet Division



The left side of my drawing is the normal condition of my village - many trees, many houses, many boats, many fish. Air is clean. [In the right side] because of climate change, strong cyclones occur more frequently and hit my village. Many negative impacts on lives and properties. Houses were destroyed and many people lost their family members. Not enough food to eat. Secondary events such as storm surges and mudslides killed many people. It causes fear in the mind of those who survived. The government usually helps us but we need more help.

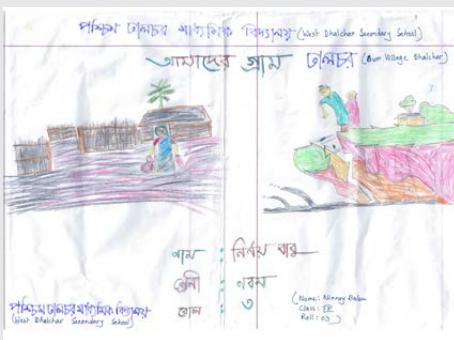
Ireane, Class 8, Sunamganj District, Sylhet Division

Teacher FGD participants in Barishal Division highlight excessive rains, the shifting of the monsoon seasons, scarcity of drinking water, increased damage caused by tropical cyclones, river erosion, thunderstorms and saline intrusion as among the key impacts of climate change. These issues are intensifying in recent years. A male teacher comments that 'the economic activities of people decreased, so they migrate from rural to urban areas, which creates another set of problems.' Three teachers in the FGD report that their school buildings were washed away due to river erosion. Another teacher whose school is very close to the river (0.5 km) states that teachers and students in her school are 'always scared of the bursting of the river bank and a dam.' In addition, due to salinity, her school buildings are deteriorating fast and she fears they 'will be damaged very soon.' Teachers observe that salinity intrusion has been threatening the survival of trees and plants. For instance, healthy coconut trees and other trees have lost leaves and been infected by fungal infections. 'It is very difficult to keep trees and plants alive,' a female teacher says.



Due to climate change the water level in the river is rising and because of that our village is being flooded frequently. People take shelter in higher places such as roofs. Storms damage the houses and trees and endanger lives. We are frustrated and depressed most of the time as we can't find any solutions.

Ridhoy, Class 7, Bhola District, Barishal Division



It is challenging to collect drinking water during the high tide. Due to river erosion we are losing our village. As a result, people are forced to migrate to another place. River erosion is also inflicting economic damage on people. People are very stressed about this situation. The migration process requires a lot of money, which is quite difficult for people to manage. About 1,500 families live in my village. In the last three months 30 families left the village...

Nirnoy, Class 9, Bhola District, Barishal Division



Due to climate change the river water is overwhelming my place. The water gets trapped inside our house and damages the crops we plant. Almost every week we go through this situation. When water gets inside my house, we take shelter in higher places such as bed, table and chair.

Minzu, Class 9, Bhola District, Barishal Division



Because of climate change we are losing lands, trees, homes and roads. The bank of the river is being swallowed up by the river and as a result we are facing the consequences. When we go across the river using our boat, sadly at times our boats get damaged by heavy and strong waves.

Runa, Class 9, Bhola District, Barishal Division

Section 3

Climate Change Impacts on Education System

The high prevalence of fast-onset natural disasters and slow-onset events (e.g., temperature rise, sea level rise, salinity intrusions) has been negatively affecting various aspects of the education system in Bangladesh. According to the U-Report survey conducted for this study, overall 78 per cent of Bangladeshi youth respondents (n=3,787) report that their education/studies have been affected by climate change (Lopez Rello & Ackers 2021).

The national-level stakeholders participating in the survey (n=9) consider that climate change impacts to be 'serious' or 'extremely serious' in the following areas: school infrastructure (7 responses); teaching and learning materials (7 responses); student access to school (7 responses); clean water availability at school (6 responses); lesson times (5 responses).

3.1. Learning Facilities



River erosion is one of the main dangers caused by climate change. In each region of Bangladesh, river erosion is happening. People lose their homes, trees, properties, everything. This has a direct impact on education. This year many schools were destroyed by river erosion. Because of that the number of student dropouts is rising in our country.

Zawadul, Class 9, Moulvibazar District, Sylhet Division

According to the 2019 *Bangladesh Education Statistics*⁵ a total 25,430 education institutions are located in disaster prone areas, the breakdown being as follows:

- 1,501 institutions in storm surge areas
- 2,893 in cyclone-affected areas
- 9,476 in areas open to flooding
- 2,051 in waterlogged areas
- 266 in salinity-affected areas
- 1,409 in areas experiencing river bank erosion
- 1,278 in areas experiencing drought
- 278 in landslide-affected areas (BANBEIS 2019).

Among those institutions surveyed in 2019, after the last disaster 19.49 per cent of institutions were unable to recover from the loss of buildings, 18.78 per cent from the loss of furniture, 18.09 per cent from the loss of doors/windows, 5.52 per cent from the loss of roofs, 8.13 per cent from the loss of water supply systems, 12.86 per cent from the loss of sanitation facilities, 11.56 per cent from the loss of connecting roads. Losses of learning materials in the wake of a disaster are commonplace: total loss of books (10.36 per cent), total loss of teaching materials (13.37 per cent), total loss of furniture (13.91 per cent), total loss of sports materials (15.19 per cent) (*ibid.*).

School WASH facilities have been affected by climate change induced natural disasters. They include frequent damage to water sources (both tube wells and ponds), limited fresh water availability, salinity intrusion of surface and ground water, frequent breakdown and poor functioning of latrines (UNESCO & BANBEIS 2015). One national stakeholder points out that repairing damaged WASH facilities at school takes long time because of internal administrative procedures (National Stakeholder 2). Many schools struggle to obtain clean water throughout the school year, rainwater being available at school for only 4-6 months (National Stakeholder 9). There is on-going work by authorities to install tube well facilities in schools (National Stakeholder 6).

A high percentage of primary and secondary schools in Bangladesh are used as temporary shelters in areas where a disaster frequently occurs (UNESCO & BANBEIS 2015). The majority of the schools serving as temporary shelters during disasters suffer from severe losses and damages, especially to school WASH facilities and furniture (INEE & Save the Children Bangladesh 2015). Teacher participants in the Barishal FGD explain that when their schools were used as cyclone shelters, they suffered from loss of education materials and destructions of furniture. 'A lot of time and effort are required to clean up the school after the people left, which interrupted our main duty, teaching,' a male teacher commented. In the words of a female student in the Sylhet FGD, 'When we go to the classroom after the flood, we see unusable furniture so it takes some time to start education activities. A huge amount of money is needed to recover the loss.'

⁵ According to the *Annual Survey 2019*, there were 171,779 education institutions (including primary and secondary schools, colleges and Madrasas) in Bangladesh (BANBEIS 2019).

Slow-onset hazards such as waterlogging and salinity intrusion gradually cause school buildings to deteriorate and make them more susceptible to further onsets of hazard. Poor drainage conditions in schools located at lower elevations result in wet and damp conditions, which leads to damage to school infrastructure and furniture (UNESCO & BANBEIS 2015, 61).

In highly saline coastal areas, higher planning specifications and special care of buildings are required, which suggests higher construction and maintenance costs (Das 2010). Hence, especially in coastal areas, repeated investments in school buildings are required to ensure learning continuity for school children (National Stakeholder 9). A female headteacher in the Barishal FGD explains that her school building walls are 'always salty and oily'. Every year she decorates her school walls colourfully with pictures and furnishes classrooms to make her school child friendly, but every year all the decorations and furniture are damaged due to cyclones and floods. 'Floodwater sometimes enters the classroom. The classroom is wet and dirty. Children cannot sit down on the floor. There is no government support for school decoration and for furnishing the classroom.'

River erosion washes away many school buildings every year in Bangladesh and disrupts education continuity (Directorate of Primary Education 2018a). Some participants in the Barishal teacher FGD describe how their schools were completely washed away. One of them reports that she has experienced such a devastation four times, including having the school rebuilt further inland with the result that some of her students migrated to another place.

Guideline documents for school buildings exist (e.g., *Bangladesh National Building Code, Infrastructure Development Guidelines* and *INEE Guidelines*) and are compiled to a large extent according to specific hazards. However, not all hazard contexts and issues are dealt with adequately, one national stakeholder highlighting current gaps in policy thinking and practice as follows:

In the disaster-prone area, school infrastructures are not designed considering major disasters, i.e., flood, cyclone, river erosion, salinity, water logging, excessive heat. In addition to the lack of consideration of slow-onset climate change, lack of analysis of forward-looking climate change scenarios are also absent. Infrastructures are only developed with past disasters in mind. Therefore, in terms of the actual damage and impacts of school infrastructure, the numbers are substantial (National Stakeholder 9).

3.2. Education Access



Due to waterlogging, damaged roads, excessive rain, we can't go to school. When strong winds and fallen trees damage our school, we can't go to school. Due to excessive rain we cannot go to school. Students often reach the school facing a lot of troubles and then are sent back to home [as the school is damaged].

Saida, Class 9, Bhola District, Barishal Division

In the areas prone to flooding, tidal surges, cyclones and waterlogging, children's access to education is interrupted when education infrastructures are destroyed and schools are used as temporary shelters (UNICEF Bangladesh 2016). When schools are used as shelters during an emergency, education activities at school are suspended and shelters temporarily belong to the Ministry of Disaster Management and Relief (National Stakeholder 8).

According to the 2019 *Bangladesh Education Statistics*, the three most frequently reported reasons for irregular student attendance in schools after disasters were as follows:

- Helping parents with household work (primary boys 17.9 per cent; primary girls 19.5 per cent; secondary boys 17.3 per cent; secondary girls 17.8 per cent),
- Transportation difficulties (primary boys 17 per cent; primary girls 18.8 per cent; secondary boys 16.4 per cent; secondary girls 17.3 per cent)
- Engaging in income generation activities (primary boys 13.8 per cent; primary girls 10.3 per cent; secondary boys 13.8 per cent; secondary girls 9.4 per cent) (BANBEIS 2019).

Other reasons for irregular student attendance include families move to another location, damage to learning materials, inability to pay school fees, lack of motivation to continue studies and feeling unsafe to go to school (*ibid.*)

Increasing hydro-meteorological events make student travel to school very challenging. In the U-Report survey conducted for this study, 23 per cent of Bangladeshi youth respondents (n=3,787) report that climate change has affected their journey to school (Lopez Rello & Ackers 2021). A female primary school head teacher in the Barishal FGD reports that during the rainy season her class attendance drops below 50 per cent. 'Children do not come to school for three or four days when it rains. Due to lack of umbrellas, parents prohibit children from attending school', she comments. For the student participants in the Barishal FGD their access to education is regularly disrupted by a high tide. In the words of a male student, 'We face a high tide one day in every 15 days. During the high tide the water manages to reach the school and it floods the roads. Water stays almost four days. In that time, we can't go to school because the roads become unusable.' Another male student from the same school explains that when students reach the school after experiencing a great deal of difficulties with their books soaked with water, they are often sent back home as the school is damaged or water is coming into the school. 'It is a matter of great frustration to us,' he says. He goes on to say that his parents have advised him to migrate to another place to get 'a proper education and do regular activities.'

Support needs expressed by participating students in the Barishal FGD include the construction of a strong school building on higher ground, raising the height of the roads to the school and provision of rain coat and boots. Sylhet students who live in an urban area also share challenges they face due to heavy rains and floodwater especially during the rainy season (from June to August/September). A male student says, 'Due to floodwater, we cannot move from one place to another. No transportation is available. We cannot go to school. Both students and teachers are unwilling to go to school.' Students attending both FGDs also expressed fears about going to school during thunderstorms. In addition to classroom learning, examination schedules are also affected by hydro-meteorological events. A female student in the Sylhet FGD reports that when an examination was re-scheduled, some of her peers did not come and subsequently they stopped their education completely.

Household livelihood is deteriorating due to specific or cumulative losses from disaster events or the gradual decline of agricultural income due to changing climate. This makes it more likely that parents remove their children from education. Migration by families who have lost livelihoods and assets has impacted on the continuity of children's schooling. Children are often required to engage in household and/or income generation activities to support their families (UNICEF Bangladesh 2016). Once out of school, children are highly unlikely to return to school again (National Stakeholder 1).

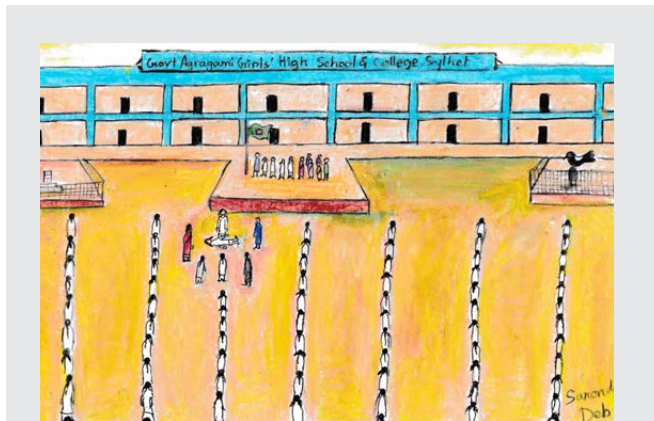
In the U-Report survey conducted for this study, 9 per cent of Bangladeshi youth respondents (n=3,787) report that climate change has affected their family's ability to afford schooling (Lopez Rello & Ackers 2021). According to a male primary school head teacher in the Barishal FGD, 'people in my areas are very poor. Due to cyclones, river erosion and floods they become poorer day by day. Families engage their children in child labour.' Another male head teacher in the same FGD reports that his students get used to begging before and after the school because of family poverty worsened by crop failures. Student participants in the Barishal FGD acknowledge that due to climate change they are witnessing increasing child protection issues amongst their peers:

To keep on running the wheel of family economy, parents send their children to work instead of school. They get their girl child married because of their safety. These girls face domestic violence at their husband place.

Barishal student FGD participants report that they have learned about early child marriage, sexual harassment (often known as 'eve teasing'), child health and school dropout through the UNICEF supported Bangladesh Global Programmes to End Child Marriage. As a result, they notice that child marriage incidents had been slightly reduced but they are concerned that it will increase again in the context of COVID-19 pandemic. In fact, in the aftermath of the 2020 Super Cyclone Amphan, combined with loss of schooling due to the COVID-19 pandemic and loss of livelihoods of families, girls in the affected areas were at greater risk of child marriage and gender-based violence (UN Women 2020). Government strategies to end child marriage include encouraging girls to stay in school, empowering girls and boys through life skills-based education, transferring cash to vulnerable families with adolescent girls, and raising awareness through community mobilization, among others (Ministry of Education 2020).



3.3. Student Health and Wellbeing



School assembly is an important part of education. From class three I attended the assembly regularly. Since last year the school assembly stopped because students fainted under the scorching heat of the sun. This is a drawing of a fainted girl. It has become a regular situation. Due to climate change the heat is very excessive. We face a lot of problems.

Sananda, Class 9, Sylhet District, Sylhet Division

Due to changing climatic conditions, the rates of communicable and non-communicable disease in children are increasing. Water-borne disease becomes more prevalent after floods, cyclones and droughts. Temperature rise changes the distribution and prevalence of vector-borne disease (UNICEF Bangladesh 2016). Teacher participants in the Barishal and Sylhet FGDs highlight that students become sick 'more often' (especially suffering from respiratory-related diseases such as asthma, influenza, pneumonia) and become ill 'easily' as their immune systems are weaker. Getting soaked on the way to school during a high tide is another reason students are more susceptible to various diseases, a female primary school teacher in the Barishal FGD points out. Participating teachers also indicate that household poverty due to failed cultivation is a cause of increasing child malnutrition, which, in turn affects student learning.

The changing climate negatively impacts student hygiene behaviours. For instance, hand washing after using latrines becomes irregular due to less water availability. Temperature increases make the toilets, which commonly use iron sheets and tin for roofs and walls, uncomfortable for children, which leads to open defecation. Some of the consequences of these behaviours include increasing germ infections and exposure to disease pathogens (UNESCO & BANBEIS 2015). Submerged toilets during floods heighten the risk of disease outbreak (National Stakeholder 9). Ensuring adequate menstrual hygiene management remains

a challenge for most schools in Bangladesh. A 2014 survey found that during menstruation 25 per cent of female students did not go to school and 33 per cent reported disruption in school performance (Ministry of Education 2020). When existing sanitation facilities are likely to be damaged by climate induced hazards and when less water becomes available at school, school attendance and the quality of learning of adolescent girls will be further impacted if not addressed.

Teacher and student FGD participants highlight that 'excessive heat' is 'unbearable' for both students and teachers. Incidents of students becoming sick or faint in the middle of lessons as well as in the school assembly are common. According to a female secondary school teacher in the Sylhet FGD, 'Both students and teachers are so exhausted because of the heat. Afternoon shift is too hot. 70 students in one classroom. It becomes too tough for both students and teachers to continue the lesson. We have fans but it is not enough as outside temperatures are rising too high now. In winter, it is tough for the morning shift as it is too cold.' A very hot and crowded classroom presents an additional challenge. A male secondary school teacher in the Sylhet FGD points out that 'all classes have an unbearable smell' as high temperature and humidity make students sweat a lot. Such a situation negatively affects the quality of the classroom teaching and learning experience.

Air and water pollution is also a major health concern for children in Bangladesh. The country is ranked the most air polluted⁶ country in the world, while Dhaka is the second most air polluted capital city globally (IQAir 2020). Children suffer disproportionately from air pollution. In 2016 some 6,000 deaths of children under 15 in Bangladesh were attributed to poor air quality (UNICEF Bangladesh 2019b). Air pollution from brick kilns, construction activities, vehicles, open biomass burning are some of the major drivers of air pollution as well as those of climate change in Bangladesh (General Economic Division 2020; MoEFCC 2018). In coastal Bangladesh salinity and naturally occurring arsenic are the prevailing problems and salinity issues are exacerbated by climate change (National Stakeholder 9). Skin diseases, acute respiratory infection, diarrhoeal disease and increased hypertension and miscarriage among pregnant women are some of the health impacts linked to salinity (UNICEF Bangladesh 2019b).

Climate change not only affects student physical health and wellbeing but also their mental and psychological health and wellbeing. Asked about how worried they were about climate change and what it means for the future, overall 70 per cent of Bangladeshi youth U-Report respondents (n=2,852) indicates that they are 'very/extremely worried' (40 per cent) or 'a little worried' (30 per cent) (Lopez Rello & Ackers 2021). Children are not only traumatized

⁶ Based on particulate matter (PM 2.5) concentration, the pollutant widely considered most harmful to human health (IQAir 2020).

by more frequent climate change-induced disasters but also affected by gender-based violence and sexual abuses that increase during times of disaster, resulting in life-long mental health impacts on children (National Stakeholder 9). While anecdotal evidence exists, climate change impacts on the mental health of children is widely under-researched, including in Bangladesh (Hayward & Ayeb-Karlsson 2021; Helldén *et al.* 2021).

3.4. Education Provision and Learning Quality



The calamities we face are many. In my area I have experienced excessive rainfall. The Bangladesh and Global Studies lessons have many topics about climate change. Whenever our teacher talks about climate change, we listen to it very carefully. We have become very conscious of climate change issues and we do our own google searches to find more about them. I have noticed that it is our responsibility to save our earth and reduce negative effects of climate change. When the earth is safe, we are safe.

Nafisa, Class 10, Sylhet District, Sylhet Division

While there are multiple student academic performance evaluation systems in existence, climate change-specific impacts on learning/academic performance have not been assessed (National Stakeholder 7). Through various governmental initiatives to ensure quality primary education, enrolment has been improved, but achieving quality remains a challenge (National Stakeholder 6). A majority of children do not achieve grade level competence (National Stakeholder 3). 'In most of the cases, children who live in climate change affected areas are low achievers and prone to school dropout' (National Stakeholder 9). The 2015 UNESCO and BANBEIS study identifies *English*, *Mathematics* and *Social Studies* are the three subjects

that are least able to recover from loss of lesson times. Education institutions generally lack qualified and trained teachers in these subjects, and a disaster-affected context exacerbates the situation (UNESCO & BANBEIS 2015). According to the *Bangladesh Education Statistics* competency loss in subjects arising from disaster is categorised as falling under three headings: being able to make up at home; facing massive problems; irrecoverable or permanent loss.⁷ The survey illuminates that irrecoverable/permanent loss on secondary subjects are most frequently reported in *Science* (71.95 per cent), *Mathematics/Accounting* (66.93 per cent), *English* (65.43 per cent) and *Bangla* (56.90 per cent) (BANBEIS 2019).

After disasters, irregular teacher attendance at their education institution increases due for reasons such as: more time required for being with family; being affected by their own illness or by family illness, injury and death; feeling unsafe; high traveling costs⁸ (BANBEIS 2019). A majority of primary school teachers in Bangladesh are female and have to maintain both household and school responsibilities, which implies that female primary teachers are more likely to manifest psychological vulnerability in disaster affected contexts (National Stakeholder 9).

While there is no mechanism to measure reduction of lesson time in relation to disasters (National Stakeholder 9), national and school-level stakeholders commonly highlight the reduction of lesson time due to climate change related disasters. As mentioned above, education activities are suspended when schools are used as temporary shelters. In Bangladesh, double-shift schools are prevalent and their lesson time is almost half of single shift schools (National Stakeholders 3 and 6). Consequently during crises, the impact of reduced lesson time is felt more severely in the double-shift schools. Teachers in the FGDs commonly indicate that teaching time reduction makes it very difficult for them to complete syllabuses.

According to the 2019 *Bangladesh Education Statistics*, while 55.79 per cent of primary schools and 65.24 per cent of secondary schools surveyed report that they have arranged necessary extra classes to support students affected by disasters, others report 'insufficient extra classes arranged' (10 per cent of primary schools, 11.83 per cent of secondary schools) or they 'did not do anything' about extra classes (16.84 per cent of primary schools; 9.66 per cent of secondary schools) (BANBEIS 2019).

A national stakeholder explains that in order to compensate for lesson time lost on account of disaster, schools can employ a flexible school calendar system in consultation with the local education administration. However, in reality, both

⁷ No detailed definitions were given to these three categories.

⁸ High travelling costs were not explained in the document. Some teacher FGD participants have indicated more expensive modes of transport (e.g., private taxis) they had to use after a disaster.

teachers and local education administrators are reluctant to implement the flexible school calendar. In the aftermath of disasters there are extra burdens put on teachers who are also severely affected by disasters, but need to engage in non-academic disaster response and recovery activities. Such a situation makes it difficult for teachers to consider learning continuity through special measures or adjusting school holidays. Economically wealthier families are able to arrange extra support for their children at home in the form

of private coaching which leads to the 'commercialization of education', while children from the most marginalized families are left further behind (National Stakeholder 8). Teacher FGD participants are concerned about loss of outdoor sports, recreational and school assembly opportunities due to increasing hazard and extreme heat events. As a result students are losing out on diverse learning opportunities of a collective and community nature at school.



Section 4

Education Sector Responses to Climate Change

4.1. Policies, Plans and Strategies

The Government of Bangladesh has been making substantial efforts to make the country more climate change resilient and less vulnerable to climate-induced risks by employing a range of means and measures. One recent initiative is the adaptation of the 2009 *Bangladesh Climate Change Strategy and Action Plan* (BCCSAP). Prioritising climate change adaptation and low carbon development, it acknowledges the needs of the poor and vulnerable including women and children as a priority in activities implemented under the *Action Plan*. The BCCSAP includes 44 programmes under six thematic areas related to climate change mitigation and adaptation:

- Food security, social protection and health
- Comprehensive disaster management
- Infrastructure
- Research and knowledge management
- Mitigation and low carbon development
- Capacity building and institutional strengthening (Ministry of Environment and Forests 2009)

To ensure women's specific contribution to and to mainstream gender equality in climate change actions, the *Climate Change and Gender Action Plan* was developed in line with the BCCSAP. The *Gender Action Plan* suggests curriculum integration of social security and protection of women, adolescents and children in emergency situations and energy consumption methodology (Ministry of Environment and Forests 2013).

Predicated on existing strategies and plans including those mentioned immediately above, Bangladesh's *Intended Nationally Determined Contributions (INDCs)* (Ministry of Environment and Forests 2015) and the updated *Nationally Determined Contributions (NDCs) 2021* (Ministry of Environment, Forest and Climate Change 2021) embrace plans for tackling greenhouse gas emissions and adapting to unavoidable climate change. Education is not a priority sector identified for mitigation and adaptation actions. Bangladesh's NDC makes no reference to children and youth.

In November 2019 Bangladesh's National Parliament declared climate change to be a 'Planetary Emergency' and called on the world to act 'urgently, decisively and with considerably higher ambition in achieving net zero emissions well before 2050' (CEDAMIA 2019). According to Rahman (2021), concrete steps to implement the declaration are yet to emerge.

The *Standing Orders on Disaster* (Ministry of Food and Disaster Management 2010, 2019) takes a comprehensive approach encompassing both risk reduction and emergency responses to all hazards and all sectors. It specifies duties of different ministries at disaster response and rehabilitation stages and during normal times. The Ministry of Education, the Ministry of Primary and Mass Education and the Directorate of Primary Education are mandated to designate a disaster management focal person and integrate disaster related topics in all school curricula.⁹

The *National Education Policy 2010* includes a broad climate change-focused education goal/objective as follows: 'to build students as skilled human resources to fight the challenges of the world threatened by climate change and other natural disasters and to create in them a social awareness about environment' (Ministry of Education 2010, 2). The *Policy* states that climate change should be one of the topics to be integrated in a number of compulsory subjects in the primary education curricula and syllabi, there is no reference to inclusion in secondary curricula and syllabi.

Planning and designing disaster resilient school infrastructures, facilities and services for primary education are central to the Fourth Primary Education Development Programme (PEDP4), a five-year primary education sub-sector programme (2018-2013).¹⁰ 'Education in Emergencies', one of the sub-components under the 'Equitable Access and Participation' component has earmarked funding and programmatic activities to strengthen the institutional capacity of the primary education sector and to enhance its coordination mechanisms to ensure uninterrupted education services. Climate and disaster impacts are to be considered in selection of school designs and 'climate-smart interventions' are to be implemented through energy efficiency and water and food security (Directorate of Primary Education 2018b). The *Infrastructure Plan and Planning Guidelines of PEDP4* call for an integrated disaster risk management framework that 'combines climate change adaptation, disaster risk reduction, disaster preparedness, post-disaster relief, early recovery and reconstruction' to ensure a good

⁹ The revised *Standing Orders on Disaster* has extended the roles and responsibilities of disaster management committees (DMCs) that are to be formed at local level to make for better preparedness alongside proper coordination.

¹⁰ PEDP4 consists of the following three components: *Component 1: Quality* (Teaching-learning practices in all schools enable children to acquire the essential grade-level competencies stipulated in the curriculum); *Component 2: Equitable Access and Participation* (Learning environments support participation of all children, ensure continuity of education, and enable quality); *Component 3: Management, Governance and Financing* (Strong governance, adequate and equitable financing and good management enable the provision of quality of education that is efficient, inclusive and equitable) (Directorate of Primary Education 2018b, 31).

learning environment and equitable access for all primary students (Directorate of Primary Education 2018a, 42). The *Environmental Management Framework* provides guidance for compliance to environmental safeguarding policies and a regulatory framework to ensure that the negative environmental impact of PEDP4 is low (Directorate of Primary Education 2018c).

In the *Minimum Standards for Education in Emergencies in Bangladesh* (INEE & Save the Children Bangladesh 2015) climate change effects are primarily mentioned in relation to safe restoration of construction of education facilities. Climate change risks and ‘climate-smart disaster risk reduction’ are broadly mentioned in the *Framework for Disaster Risk Reduction in Education and Education in Emergencies*, adapted from the *Comprehensive School Safety Framework* for risk planning and continuity of education in emergency situations (Ministry of Primary and Mass Education *et al.* 2013).

More recently, the *2020/21-2024/25 Education Sector Plan (ESP) for Bangladesh* recognizes climate change and natural and human-made emergencies as one of the six critical cross-cutting issues that present sector-wide and longer-term challenges and require transformative strategies. In line with the *Sustainable Development Goal (SDG 4) Strategic Framework for Bangladesh*,¹¹ ESP educational responses to climate change and emergencies include: integrating sustainable development, climate change and emergencies in the curriculum; linking education system responses in emergencies and national emergency preparedness and responses; promoting climate change and emergency resilient behaviours through curricular and co-curricular activities; developing ethics and values of living in harmony with nature, among others (Ministry of Education 2020).

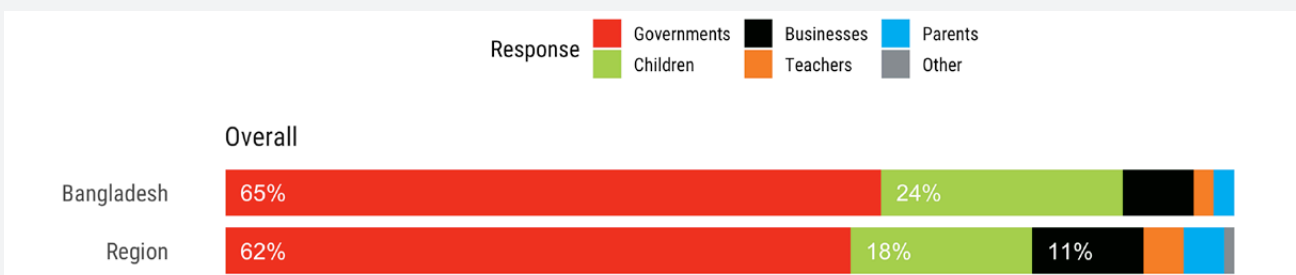
According to the U-Report survey conducted for this survey, 65 per cent of Bangladeshi youth participants consider that

the government should be taking most action to address climate change, followed by children (24 per cent) (see *Box 1*). 71 per cent of Bangladeshi youth respondents also think that it is at least ‘likely’ that the government will take action to address climate change in the wake of the COVID-19 pandemic (Lopez Rello & Ackers 2021).



BOX 1. UNICEF ROSA U-Report: Who should be taking the most action to address climate change? (n=3,457 in Bangladesh; n= 13,532 in the region)

(Lopez Rello & Ackers 2021, 21)



¹¹ The *National Sustainable Development Goal (SDG 4) Strategic Framework* includes climate change and DRR as one of the strategic priorities for the education sector (National Stakeholder 2).

4.2. Finance

To support climate change mitigation and adaptation actions, the Government of Bangladesh has created innovative resource allocation mechanisms aligned with policy frameworks. Channelling resources from its own revenue the *Climate Change Trust Fund* was established to finance the projects taken up by the relevant Ministries and government agencies to implement the programmes identified under the BCCSAP. The *Climate Fiscal Framework for Bangladesh* in 2014 proposes a climate-expenditure tracing framework (CETF) applicable to all Ministries. The CETF measures climate relevance and tags climate expenditure based on the six thematic BCCSAP areas (Ministry of Finance 2019).

The third climate budget report covering 25 Ministries/ Divisions of the government (including the Ministry of Primary and Mass Education and the Secondary and Higher Education Division under the Ministry of Education) analyses both climate change relevant budget allocation from financial year (FY) 2015-16 to FY 2019-20 and expenditure (from FY 2015-16 to FY 2017-18). The report indicates that the Ministry of Primary and Mass Education has annually allocated more than 5 per cent of the total budget to climate change relevant activities from FY 2015-16 to FY 2019-20. The BCCSAP thematic area of 'Infrastructure' received maximum allocation, followed by 'research and knowledge management' and 'capacity building and institutional strengthening'. In FY 2017-18, actual expenditure against the revised budget was nearly 80 per cent. In the case of the Secondary and Higher Education Division, the annual total budget allocation to climate change relevant activities was around 1 per cent. From FY 2015-16 to FY 2017-18, the average annual expenditure was about 96 per cent of the revised climate relevant allocation, indicating a high budget utilization rate. The BCCSAP thematic area of 'capacity building and institutional strengthening' received highest climate change relevant activity allocation, followed by 'research and knowledge management' (*ibid.*, 35-36, 43-44).

Under the Education in Emergency sub-component of the Third and Fourth Primary Education Development Programme (PEDP), the Ministry of Primary and Mass Education has dedicated budget for education in emergencies and developed guidelines on how to allocate funds to support primary school facilities damaged by natural or human-made disasters. Following the EIE Guideline, each affected primary school can access an amount of BDT from 50,000 to 300,000¹² based on verification on estimated needs. The

funding is not for building permanent structures, but for building temporary learning facilities, restoring/repairing tube wells for safe drinking water, repairing latrines, supporting activities to clean and repair schools after they have been used as emergency shelters (Ministry of Primary and Mass Education undated). The impacts of this programme are unknown and unreported (National Stakeholder 9). The Ministry of Education does not have a specific Education in Emergencies budget (National Stakeholder 2).

It is noteworthy that the Bangladesh government has allocated an increasingly large share of its education development budget for school feeding, various types of stipend programmes and free distribution of textbooks as incentives to primary and secondary schooling.¹³ These measures are part of the government's 'social safety-spending' and have contributed to heightening performance under education development indicators (Ministry of Education 2020). Based on the positive impacts of the pilot school feeding programme on enrolment rates, school attendance and primary education completion rates, the government has recently decided to gradually extend the programme to all primary schools (*ibid.*). Considering climate change impacts hit the household economy of already struggling families hard, these social safety-spending measures are making an indirect contribution to education sector resilience building in response to climate change. The existing incentive measures could target specific geographical locations and specific population groups most affected by the climate change impacts.

4.3. Curriculum, Teaching and Learning

The National Curriculum and Textbook Board (NCTB), an autonomous organization under the Ministry of Education, has sole responsibility for translating policy into curriculum through textbook and other teaching and learning material development from pre-primary to secondary education levels. NCTB has introduced disaster management and climate change-related chapters within the textbooks of a range of subjects under the Comprehensive Disaster Management Programme (CDMP) led by Ministry of Food and Disaster Management but networking with thirteen ministries including the Ministry of Education.¹⁴

According to a review of Bangladesh school curriculum from pre-primary to higher secondary levels through a DRR and CCA lens (Kagawa & Selby 2016), climate change-related topics appear in textbooks through the grade levels across a number of subjects (see *Box 2*).

¹² Approximately USD from 585 to 3505.

¹³ In FY 2019-20, 11.18 per cent and 22.24 per cent of education development budget were allocated for the school feeding programme and stipend programme respectively (Ministry of Education 2020).

¹⁴ The CDMP second phase (2010-14) aimed to strengthen the linkages and synergies between DRR and climate change adaptation efforts across the thirteen ministries. Under a 'Disaster-proofing of development funding' heading the Programme incorporated disaster management into textbooks from primary to higher secondary, followed by piloting DRR-related materials and implementation of training of trainers DRR courses.

BOX 2. Climate Change-related Topics in Textbooks

	Subjects Grade	Bangladesh and Global Studies	Science	Agricultural Studies	Others
Primary	1	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
	4	-	Ch 10: Weather and Climate Weather and Climate	-	-
	5	Ch 6: Climate and Disaster Weather and Climate; Causes/Drivers; Impacts; Disaster Link	Ch 11: Weather and Climate Weather and Climate Ch 12: Climate Change Mechanism; Causes/ Drivers; Impacts; CCM: CCA	-	-
Junior Secondary	6	-	-	Ch 4: Agriculture and Climate Weather and Climate; Mechanism; Causes/ Drivers; Impacts	-
	7	Ch 6: Climate of Bangladesh Weather and Climate; Causes/Drivers; Disaster Link; Justice	Ch 14: Change of Climate Weather and Climate; Mechanism; Causes/ Drivers; CCM	Ch 4: Agriculture and Climate Impacts	English Unit 9: Climate Change Mechanism; Causes/ Drivers; Impacts; Disaster Link; CCM
	8	Ch 8: Disaster in Bangladesh Mechanism; Causes/ Drivers; Impacts; Disaster Link	-	Ch 4: Agriculture and Climate Impacts; CCA	-
Secondary	9-10	Ch 5: The Configuration of Land and the Climate of Bangladesh Impacts; Disaster Link	Ch 9: Living with Disasters Mechanism; Impacts; Causes/Drivers; Disaster Link	Ch 3: Agriculture and Climate Impacts; CCA	English Unit 5: Climate Change Causes/Drivers; impacts Geography Ch 5: Atmosphere Causes/Drivers; Impacts; Disaster Link
Higher Secondary	11-12	-	-	Ch 4: Agriculture and Climate Weather and Climate; Impacts	Geography Ch 6: Climate Regions and Climate Change Mechanism; Weather and Climate; Impacts; CCM; Disaster Link Social Work Ch 3: Roles of Social Worker in Combating Problem of Climate Change Impacts; CCM; CCA Civics and Good Governance Ch 10: Civic Problems and Our Responsibilities Weather and Climate; Causes/Drivers; Impacts; Mechanism

Explanation of Keys

- **Mechanism**...Climate change mechanism
- **Weather and Climate**...Difference between weather and climate
- **Causes/Drivers**...Causes/drivers of climate change
- **Impacts**...Impacts of climate change in Bangladesh

- **CCM**...Climate change mitigation
- **CCA**...Climate change adaptation
- **Disaster Link**...Climate change/disaster link
- **Justice**...Climate change justice/injustice

(Kagawa & Selby 2016, 46-47)

There are multiple references to the impacts of climate change. There are also chapters in which personal and family behavioural change is suggested. On one occasion, there is reference to climate injustice (i.e., the developed world being primarily to blame for climate change but the developing world being most profoundly affected by its effects without due restitution). There are several openings for consideration of the fundamental steps that need to be taken for climate change mitigation and for discussion of how climate change justice might be achieved, but these are not capitalized upon in terms of discussion topics and learning activities. Climate change adaptation is well covered in Grades 8 to 12 *Agricultural Studies* (compulsory at Grade 8 but optional thereafter) but is at best superficially picked up elsewhere (*ibid.*, 44-47).

Key gaps identified through the above-mentioned review include the following:

- **Curriculum progression issues:** Climate change related topics appear across different subjects through the grade levels, but what is not clearly in evidence is curriculum progression and reinforcement vertically whereby climate change learning is successively broadened and deepened. For instance, while the topics of weather and climate and the greenhouse effect appearing in 9 textbook chapters (i.e., 3 chapters in primary, 3 in junior secondary, 3 in higher secondary) and 8 textbook chapters (i.e., 5 chapters in junior secondary, 1 in secondary and 2 in higher secondary) respectively, there is considerable repetition in textbook content. What is lacking are steadily diversifying and deepening conceptual understanding and progressively developing relevant skills matched to student maturation. Overt examples of interdisciplinary climate change learning linkages within the same grade level have not been found in Bangladesh textbooks.
- **Learning outcomes imbalance:** Bangladesh textbooks are heavily weighted towards knowledge acquisition linked to understanding of the science and mechanisms of natural hazard and climate change. They are very limited in skills and dispositional, values and attitudinal learning opportunities. What is lacking is the practical DRR/CCA skills such as coping, self-protection and self-management skills, action skills, socio-emotional skills.
- **Lack of local contextualization:** Locally bespoke hazard content (e.g., drought in the north, cyclone and tidal surges in the south, river erosion and floods in the middle of the country) and attendant learning activities within climate change related textbook chapters are largely missing in Bangladesh textbooks.
- **Missed learning encounters:** Climate change-specific learning opportunities are lacking in the early years (up to Grade 3). Student encounters with DRR/CCA may

in reality be thinner than *Box 2* would suggest due to student dropout¹⁵. Climate change-related chapters tend to appear late in a textbook, so it may not come to be taught during the school year due to an overcrowded curriculum with many schools having to operate on a double-shift system and with frequent school closures on account of hazards (*ibid.*, 41-59).

In the U-Report, 50 per cent of Bangladeshi youth respondents (n=5,503) are unable to explain what climate change and global warming are about. 49 per cent of the youth respondents (n=3,790) state that they have learned about climate change through *Science* and 33 per cent through the *Geography* lessons (Lopez Rello & Ackers 2021).

In terms of the pedagogical approaches, everyday practice predominantly focuses on rote learning, students appearing to perform better on topics requiring rote learning as against those engaging higher cognitive skills (Ministry of Primary and Mass Education 2018). The *National Education Policy 2010* lays down that 'teaching methods will be joyful, attractive and learner-friendly' and that 'an interactive learning method will be pursued to develop the



¹⁵ While 83 per cent of children complete primary school, only 29 per cent of children complete upper secondary school (UNICEF 2019).

creative faculties and skills of the children and help them do exercises through individual or group work' and students are 'discouraged from rote learning' and encouraged to 'use their own thoughtfulness, imagination and urge for curiosity' (Ministry of Education 2010, 2, 7, 9). These approaches, as will be discussed later, are key to action/activity-oriented climate change education.

Along the same lines, national stakeholders highlight the importance of employing more practical and action-oriented pedagogies for climate change education: 'learning by doing', 'field trips', 'project-based learning', 'active learning' and 'activity-based learning'. In terms of assessment for climate change learning, they commonly suggest formative assessment modalities focused on actions and behavioural changes (e.g., project-based individual and group assessment, observations of actions, peer assessment) rather than simply assessing knowledge acquisition.

When asked about what they most wanted to learn about climate change in the U-Report, 54 per cent of Bangladeshi youth participants (n=4,338) report that they would like to learn about all aspects of climate change, the second highest percentage among the eight countries surveyed. 15 per cent of Bangladeshi respondents report that they would like to learn about local actions. Only 5 per cent of the respondents report that they have no interest in learning anything about climate change, a lower percentage than the regional average (see Box 3).

At the time of this research, NCTB is working on curriculum revision from pre-primary to Grade 12, starting with developing a curriculum framework, followed by detailed curriculum and learning outcomes development (anticipated in 2021) and new textbook development (anticipated in 2022). NCTB's intention is to bring about more holistic and transformative education. It is anticipated that the issues and topics related to all 17 Sustainable Development Goals will be systematically addressed in the revised curriculum, climate change and disaster risk reduction being an integral part.

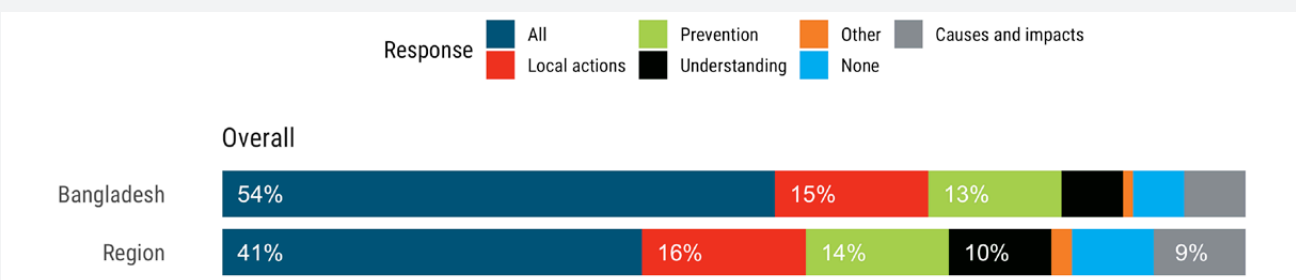
4.4. Teacher Capacity Development

Previous research indicates that teacher capacity for effective delivery of climate change and disaster risk reduction topic knowledge as well as facilitation of interactive and active pedagogies is a significant concern. A history of didactic teaching and learning from the textbook, combined with an untrained teaching staff, the short duration of class periods and the size of classes are key obstacles in implementing active learning in the classroom (Kagawa & Selby 2016, 2014). In spite of climate change-related content existing in the curriculum and textbooks, whether students acquire new knowledge and exercise pro-environmental behaviours and attitudes remains uncertain because of the didactic pedagogy commonly practiced in the classroom, a pedagogy that is inhibitive of attitudinal and behavioural shift.

In Bangladesh there is no well-established and widely used pre-service teacher education programme and existing professional teacher capacity development programmes are focused on theoretical knowledge and lack practical learning (Ministry of Education 2020). While during the third Primary Education Development Programme (2011-17) 85,000 teachers were trained on school health ('Better Health, Better Education' training) (National Stakeholder 6), there is no systematic and continuous climate change-related teacher training provision in Bangladesh.

An 18 month-residential programme called the Diploma in Primary Education includes pedagogical knowledge and subject knowledge courses. The *Science* and *Bangladesh and Global Studies* subject courses touch upon the issues of environment and disaster management, but thorough reflection of climate change is absent. In terms of teachers' continuous professional development, the subject based training on *Science* and *Bangladesh and Global Studies* are available but there is no climate change-specific training for in-service teachers. For education officials at the central and sub-national levels, there are orientation programmes on Education in Emergencies that are implemented

BOX 3. UNICEF ROSA U-Report: What do you most want to learn about climate change? (n=4,338 in Bangladesh; n= 18,266 in the region)
(Lopez Rello & Ackers 2021, 18)



sporadically (UNICEF Bangladesh 2020a). These gaps are likely to be addressed as part of ongoing revised curriculum development initiatives and through subsequent incorporation into relevant teacher training programmes.

Those who participated in the Barishal teacher FGD would like to have health-focused capacity building training to enhance student health and wellbeing. They would also welcome practical know how to create and support student climate change clubs to raise awareness among school and community members. Teacher participants would also like to receive practical skills-based training to cope with the climate change impacts (e.g., maintenance of solar panels or use of other renewable energies at school).

4.5. Communication, Coordination and Partnership

The Ministry of Environment, Forest and Climate Change (MoEFCC) is the main focal ministry to deal with climate change issues in Bangladesh. It is mandated to take the lead on policy and institutional arrangements as well as overall coordination concerning climate change issues both at national and sub-national levels. The Government of Bangladesh established Climate Change Cells (CCCs) in several ministries to ensure that their activities include climate change considerations. MoEFCC coordinates CCCs (MoEFCC 2018). While the Ministry of Primary and Mass Education does not have a Climate Change Cell, depending on the nature of the task required relevant wings within the Ministry (e.g., planning, development, school, coordination) can take up the necessary task (UNICEF Bangladesh 2021).

At the national ministry level, there is no coordination mechanism specifically focused on mitigating climate risks in the education sector (National Stakeholder 7). The Education in Emergency Cluster established in Bangladesh has activation protocols and pre-identified roles in the wake of emergencies. However, the cluster currently has a very limited focus on climate change (National Stakeholder 9). Considering the critical and active roles that NGOs/CSOs play in disaster and climate change risk reduction in Bangladesh, they could be part of education sector planning and response to reduce climate risk (National Stakeholder 8). See one of the examples of NGO innovation in *Box 4*.

4.6. School/Community Student Participation Platforms

In primary and secondary schools in Bangladesh, tree planting and environmental cleanliness activities are widely practiced (National Stakeholder 2). While teacher and student FGD participants shared their tree planting practice at their schools, homes and communities, such

BOX 4. Solar-powered Floating Schools

Every year during the monsoon season, thousands of schools are forced to be closed and many children, especially girls, cannot go to school. A founder of a Bangladeshi NGO, Shidhulai Swanirvar Sangstha based in the flood-prone country's northwest, came up with a creative solution to the problem by introducing 'floating schools' in 2002. The solar-powered floating school combines a school bus and school building, using the traditional wooden boat to create a floating teaching and learning space. After the 'boat school' collects children from riverside stops, it docks at the last destination and offers onboard classes. Each boat school has a classroom for 30 students and is equipped with an internet-linked computer, multimedia facilities and many books. It provides basic primary education up to Grade 5 and introduces a river-based environmental curriculum focused on environmental protection and water conservation. Thanks to solar power, late evening classes are provided for working children. The floating schools also provide practical training for villagers on sustainable agriculture, climate change adaptation and women's rights. Solar-powered library boats with some 1,500 books and computer facilities are also available for children, youth, senior citizens, especially women, so that they can obtain new information on agriculture, climate change, human rights among others and learn about computer skills (Shidhulai Swanirvar Sangstha 2021).

activities are not without challenges. Some note that the trees they planted have not grown due to temperature rise, floods or saline intrusions. A male teacher in the Barishal FGD comments that in his school, each student planted two trees each at home – more than 500 trees planted – but they have not been growing. 'This is demoralizing for children who invested their time and effort.' The participating teachers and head teachers also report that they are using existing school co-curricular opportunities (e.g., an annual school science fair or an annual cultural event) to raise student and community awareness on climate change.

Some national-level stakeholders indicate the following mechanisms could be tapped into to facilitate climate change learning actions: School Management Committees (SMCs); Parent Teacher Association (PTAs); mother's assembly/gatherings/groups; Upazila Resource Centres; Union/Upazila Disaster Management Committees; Campaign for Popular Education (the largest Bangladesh Education Coalition involving more than 2000 CSOs and NGOs). Furthermore, student-led platforms at school such

as the Student Council, Student Cabinet, Student Brigade¹⁶, Little Doctors¹⁷, Boys' Scout, Cub Group and Girls' Guide could be tapped into in promoting disaster preparedness, school safety and climate change mitigation and adaptation using a child-to-child approach. How these could be practically and effectively utilized requires further research.

Asked about if they were the Minister of Education in Bangladesh, what they would like to do to help children and young people to contribute to positive actions tackling climate change challenges, students were keen to share their creative visions (see Box 5 and Box 6 for some examples of student remarks).

BOX 5. If I were the Minister or Education in Bangladesh ...

Student FGD Participants, Sylhet Division

I would like to create awareness in every child to learn to love nature from an early age so they can become more caring toward nature (Shahed, Class 10).

I would make student groups in urban areas. We know what climate change is but people in the rural areas in our country don't. Have a group of 3 to 5 students go to the rural areas to make the people aware of climate change (Tasnia, Class 10).

I would like to create a website in every school. Students will write their stories of climate change. Through the website, their ideas and experiences will be easily shared with others in all parts of the country (Areeb, Class 10).

I would like to arrange a field trip for students to the areas where there are more trees. They can think what the nature is and why it is important to them. I would also make a school garden in every school. Have students plant fruit trees. They can have fruits from the trees they have planted (Asia, Class 10).

BOX 6. If I were the Minister or Education in Bangladesh ...

Student FGD Participants in the Barishal Division would like to:

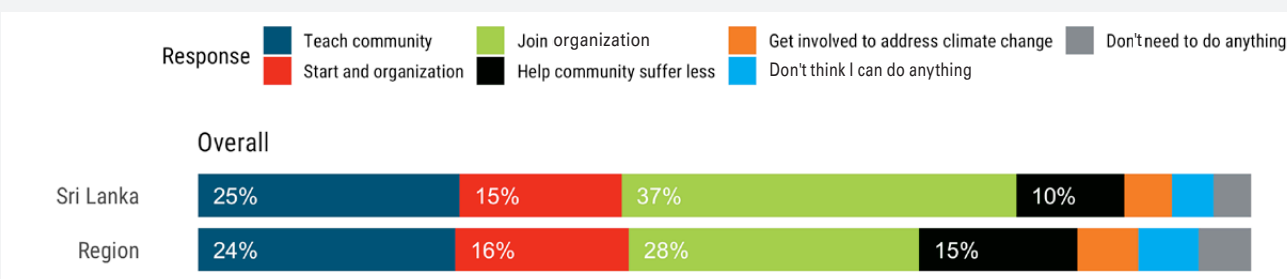
- Take effective action to prevent erosion
- Build strong school buildings on higher ground and fix damaged ones
- Set-up a tube well for safe drinking water
- Provide financial support and basic school materials to poor students
- Set up school climate change clubs
- Provide school electricity through solar power
- Build school canteens and provide mid-day tiffin for all students

According to the U-Report survey conducted for this study, 94 per cent of Bangladeshi youth respondents expresses that they would like to do something to address climate change with necessary support. 'Joining an organization that addresses climate change' is the most dominant with expressed (32 per cent) followed by 'teaching own community the impact of climate change' (27 per cent) (see Box 7).

BOX 7. UNICEF ROSA U-Report: If you had the necessary support, what would you like to do to address climate change in the future?

(n=3,120 in Bangladesh; n=11,607 in the region)

(Lopez Rello & Ackers 2021, 26)



¹⁶ Secondary school students are trained as 'student brigades' to lead the campaign of community-based disaster preparedness, mitigation, rescue, recovery and adaption (Hossain 2009).

¹⁷ In the 'Little Doctors' programme, school students (third, fourth and fifth grade) are selected as 'Little Doctors'. There are 15-21 members in each primary school. They play an important role in child-to-child health education on disease prevention, nutrition, health and hygiene (Rahman 2020).

Child and Youth Engagement and Action

Youth Conference on Climate Change, 2017

Bangladesh's first-ever Youth Conference on Climate Change was organized by the Government of Bangladesh in Barishal with UNICEF in 2017. It brought more than 500 adolescents and youth from schools, colleges, universities, and youth organizations from different coastal districts in Barishal Division to build partnerships and networks among the youth. During the two-day conference, youth participants engaged with government and NGO personnel through various interactive sessions. The *Barishal Youth Declaration* was made at the conference and shared with the National Parliamentarians' Caucus on Child Rights and the SDG coordinator to the Bangladesh Government based at the Prime Minister's Office to catalyse attention and commitment to the climate change issue by policy makers (UNICEF Bangladesh 2020b).

Climate Strike Week, 2019

Some 10,000 youth volunteers from 141 youth organizations of Barishal Division observed the Global Climate Strike Week from 20 to 27 September 2019 under a common platform called 'Alliance for Youth & Development' in collaboration with the Government of Bangladesh, UNICEF, INGO/NGOs, teachers and community members. Child and youth participants raised their voice through various activities. They formed human chains and joined in rallies with placards and banners in each district town of the Division. They organized games with vulnerable and destitute street and slum children to raise their awareness of climate change issues, impacts and vulnerabilities. They also organized folk song performance, street drama, photo exhibitions, demonstration to raise awareness among other young people and general public (UNICEF Bangladesh 2020b).

Children's Climate Summit, 2020

On World Children's Day, 20 November 2020, the virtual Children's Climate Summit hosted by UNICEF brought together 300 'children parliamentarians' representing all constituencies in Bangladesh to debate climate issues, policies and actions to safeguard their future. Over one million children were involved in preparation for the summit as part of the Generation Parliament, a joint initiative of UNICEF and Bangladesh Debate Federation connecting children to policies that have direct impact on their present and future wellbeing. The Summit adopted a *Children's Climate Declaration*, which was presented to national policy makers. In the Declaration children called for decision makers to reduce pollution and greenhouse gas emissions, climate resilient schools, equip children with green skills and protect them against the impacts of climate change, among other things (UNICEF Bangladesh 2020c).

4.7. Monitoring, Evaluation and Accountability

Working under the auspices of the Ministry of Education, the Bangladesh Bureau of Educational Information and Statistics (BANBEIS) is the designated government body responsible for collection, compilation and dissemination of education information and statistics for the entire education sector.

Recognizing the lack of data and information of climate vulnerability in the education sector as an obstacle for the government to design effective and timely interventions for addressing disaster impacts and climate adaptation in the education sector, BANBEIS and UNESCO conducted a pilot study titled *Climate Change Education for Sustainable Development* to fill the information gap. The study gathered and analysed disaster-related data from 1,800 education institutions distributed in different parts of the country representing 12 disaster-affected zones (UNESCO & BANBEIS 2015). Further to the pilot study, BANBEIS continues to gather climate change and disaster-related secondary data from relevant education sub-sectors including the Directorate of Primary Education and the Directorate of Secondary and Higher Education. A chapter on 'climate change and disaster impacts on education institution' is part of the annual publication, *Bangladesh Education Statistics* in 2018 and 2019.¹⁸ The data have been generated according to the 11 categories (see *Box 8*).

BOX 8. Climate change and Disaster Data Gathered by BANBEIS

1. Number of institutions affected by types of disaster
2. Damage/loss from which the institution did not recover after last disaster
3. Reasons for irregular attendance of students in the institution affected by disaster
4. Reasons for irregular attendance of teachers in the institution affected by disaster
5. Loss and damage assessment of education materials after last disaster
6. Subjects that are subject to competency loss due to disaster impacts
7. Measures taken by the institution for recovering affected subject
8. Teacher training on disaster management
9. Discussion of disaster impacts with stakeholders
10. Initiatives taken by institutions for increasing disaster recovery capacities
11. Evaluation report concerning disaster threats/risk

(BANBEIS 2019)

Climate change impacts in water quality and quantity at school are not systematically gathered in Bangladesh. While WASH in school data is available in the Multiple Indicator Cluster Surveys (MICS)¹⁹ conducted by the Bangladesh Bureau of Statistics (BBS) and UNICEF, salinity is not included (National Stakeholder 9).



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¹⁸ *Bangladesh Education Statistics 2019* <<http://data.banbeis.gov.bd/index.php>>; *Bangladesh Education Statistics 2018* <http://data.banbeis.gov.bd/index.php?option=com_content&view=article&id=119&Itemid=279>

¹⁹ The Multiple Indicator Surveys (MICS), carried out by UNICEF in partnership with Governments since 1995 in more than 100 countries, gather data on key indicators on the wellbeing of children and women worldwide. The last MICS was conducted in Bangladesh in 2019. <<https://mics.unicef.org/about>>

Section 5

Discussion and Recommendations

Box 9 below synthesises the perspectives of the national stakeholders participating in this study. It indicates the overall strengths and weaknesses of the education system's response to climate change in Bangladesh as well as opportunities presented and threats/obstacles to be faced.²⁰



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BOX 9. Education System Response to Climate Change in Bangladesh: National Stakeholders' Perspectives

Strengths

- Various national policies, action plans, strategies, frameworks and programmes
- Data available for CC/DRR
- Inclusion of the climate change topics in the curriculum
- A degree of public awareness
- Inter-Ministerial Committees
- Local knowledge on disasters

Weaknesses

- Shortage of appropriate resources
- Sector-specific adaptation plans
- Lack of teacher training on climate change education
- Poor intra & inter ministerial and departmental coordination
- Less focus on CC/DRR in education
- Weak policy implementation
- Not enough activism and sense of urgency in the education system
- Lack of investment in terms of knowledge and finance
- Predominant rote-learning approaches and lack of interactive and participatory pedagogical practice. Examination-driven assessment.
- Lack of sufficient understanding of climate change issues by different stakeholders, including policy makers
- Absence of a comprehensive plan to tackle climate change issues
- Focusing more on disaster response rather than climate change mitigation and adaptation

Opportunities

- Review national policies, plans, strategies and programmes to put more focus on climate change and DRR in the education sector (with budget, coordination, curricula and training/capacity building opportunities)
- Direct special attention to girls, children with disabilities and other vulnerable groups
- Mobilize public support for climate change action/behavioural change
- Human resource development (i.e., capacity building for education sector key stakeholders such as teachers, education policy makers and planners, implementation officers, curriculum developers, teacher educators)
- Awareness raising using media for social mobilization
- Community participation, ownership and action with a view to creating a climate resilient education system
- Enhance local knowledge to deal with disaster and climate change issues
- Institutions with technical knowledge on climate change
- Willingness of the Government to work on climate change issues

Threats/Obstacles

- Unpredictability and unforeseen impacts and acceleration of climate change
- Natural disasters
- Knowledge gap
- Change in decision making level
- Short-sighted political leadership
- Poor monitoring and coordination
- Funding gap (lack of financial allocation by Government and development partners)
- Corruption
- Lack of awareness of climate change in mass population
- Lack of education
- Increasing demand to incorporate new and emerging issues in the curriculum with the danger of curriculum overload
- Absence of an effective model for climate change education

²⁰ Note: SWOT entries indicates participants' own placement of ideas but some entries are open to different interpretation as to where they should be placed.

Climate Change Impact Monitoring and Assessment in the Education System

Further to the above-mentioned path finding pilot study on Climate Change Education for Sustainable Development by UNESCO and the Bangladesh Bureau of Educational Information and Statistics (BANBEIS), BANBEIS gathers and publishes climate change and disaster impact and vulnerability data as part of the annual *Bangladesh Education Statistics* since 2017. This is a noteworthy achievement contributing to evidence-based policy making and planning.

There are no mechanisms to monitor climate change impacts on student and teacher health and wellbeing. No mechanisms are available to monitor lesson times lost due to schools used as emergency shelters. No evidence on monitoring of education access of climate-driven migrant children and children with disabilities has been uncovered.

Recommendations

- Integrate climate change impact and vulnerability indicators into the existing data collection tools/mechanisms (e.g., salinity impacts in the Multiple Indicator Cluster Survey, Annual Primary School Census) and reporting tools/mechanisms (e.g., *Annual Sector Performance Report* from the Directorate of Primary Education).
- Consulting with relevant stakeholders, periodically review and update climate change and disaster impact indicators currently employed by BANBEIS.
- Monitor lesson time lost due to schools being used as emergency shelters.
- Monitor education continuity of children forced to migrate due to climate change impacts.
- Collaborate with relevant Ministries/Divisions (e.g., Ministry of Environment, Forest and Climate Change, Ministry of Disaster Management and Relief, Ministry of Health and Family Welfare, Ministry of Women and Children Affairs) in gathering, sharing and analysing climate change impact data as it concerns children and schools.

Policies, Plans and Strategies

In the key national climate change policy documents such as the *Bangladesh Climate Change Strategy and Action Plan*, *Bangladesh's Nationally Determined Contributions* the education sector is not identified as a priority sector or key player.

In parallel, the education sector has advanced planning for and design of disaster resilient school infrastructures and facilities considering climate change effects and those who are most vulnerable as evidenced in the *Infrastructure Plan and Planning Guidelines* for primary education, a document that could be further adapted for other education sub-sectors. Importantly, the *2020/21-2024/25 Education Sector Plan (ESP)* considers climate change as one of the critical crosscutting issues for the sector and lists objects and targets concerning education sector responses to climate change. Acknowledging that human destruction of the natural environment is a root cause of the COVID-19 pandemic and the likelihood of future pandemics, ESP calls for 'imagine the "new normal" that takes on board the interconnected impact of climate change and [COVID-19] emergencies' (Ministry of Education 2020, 110).

The 2010 *National Education Policy* is due to be revised, so there is an opportunity to closely align a new education policy with the above-mentioned key national climate change policies and strategies so that climate change vulnerability, risk reduction and resilience building are more strongly and widely integrated in the education system.

When education access is likely to be disrupted by recurring extreme weather events and oftentimes gradual but sometimes rapid environmental degradation, alternative learning pathways and greater cross-sectoral planning involving health, nutrition, WASH and child protection become vital in efforts to ensure education access, retention and quality of learning.

During the COVID-19 pandemic school closures, various distance education programmes were developed by the education authorities in Bangladesh. Broadcasting primary and secondary school lessons by a TV channel²¹ complemented by radio and an online platform is one of such examples. Its reach is, however, limited as only half of the households with children have a TV. Other distance education using digital means are even more limited in their reach (Ministry of Education 2020). Lessons learned from the COVID-19 responses should inform education system resilience building and be made a regular feature of school education in anticipating 'geographical locations and populations affected relatively more severely by climate change and natural disasters' (*ibid.*, 109).

Without the urgent and decisive climate action globally that the Bangladesh Planetary Emergency declaration calls for, the current climate change-induced migration trend continues and large-scale internal migration streams triggered by sea level rise, coastal and river erosion and saline intrusions are most likely to continue in the future, posing significant development challenges.

²¹ Normally used to broadcast national parliament proceedings.

On the issue of climate migration, ‘anticipatory development policies that respond to the scale of the issue over the medium and long term’ are urgently required in all sectors, including education. Such policy shifts include providing alternative job opportunities, investing in human capital, making social protection scalable and facilitating informed migration decisions so that vulnerabilities of climate migrants are lessened (World Bank 2018, 7). Education continuity and capacity to respond to large scale internal migration streams should be a prominent part of on-going education planning.

Recommendations

- Incorporate climate change risk reduction and resilience building in a new *National Education Policy*. In such a process ensure that the needs of children who are most vulnerable are met (e.g., girls, children with disabilities, children from migrated families). Also integrated concrete steps to implement the Bangladesh Parliament’s Planetary Emergency declaration in the education sector through a *New Education Policy* and other relevant strategy and planning documents.
- Develop practical safeguarding guidelines on using schools as emergency shelters in order to minimise damage to school infrastructures and facilities (including WASH facilities) and, post-usage, ensure swift follow through on necessary repairs with clear financial compensation mechanisms/procedures in place.
- Integrate education and health interventions more strongly to protect student health and wellbeing from the adverse effects of changing climate.
- Integrate child protection measures into formal and non-formal education programmes to protect children from early marriage, gender-based violence and child labours which are on the rise due to the adverse effects of climate change on the household economy.
- Plan to ensure that children who migrate or are displaced by the impacts of climate change have access to education. Plan ahead for education continuity in the likely scenario of large scale migration and displacement due to climate change impacts.
- Integrate lessons learned and strategy for learning continuity developed during the COVID-19 school closure period into the national education system as standard operating procedures for education in emergencies.
- Ensure implementation of flexible school timetables by providing necessary support to sub-national and school-level stakeholders.

Finance

The Bangladesh government has established an innovative climate change budget tracking system across a wider range of Ministries/Divisions including the Ministry of Primary and Mass Education and the Secondary and Higher Education Division. Predicated on this innovative system, a legally guaranteed budget percentage dedicated to climate change risk reduction and resilience building measures might be considered. Detailed climate change related budget analysis in the education sector was outside of this study and more detailed studies are required in this regard.

Existing ‘social safety spending’ measures in the education development budget play an important role in incentivising participation in primary and secondary schooling. Considering that climate change impacts are disproportionately affecting those who are experiencing the most severe disparities in conditions, stipend programmes could specifically target extremely vulnerable children and their families, teachers and schools in the coastal belt and *haor* regions and other climate hotspots.

Recommendations

- Explore a legally guaranteed budget percentage dedicated to climate change risk reduction and resilience building initiatives within the education sector.
- Consider extending financial and resource allocation to support students, teachers and schools in climate hotspots. This might include provision of a hardship allowance to teachers in the coastal belt and *haor* regions and provision of basic necessities (e.g., water-proofed school bags, water-proofed jackets, school materials) to highly vulnerable students who are repeatedly affected by high tide, waterlogging and flooding and those who have migrated to urban slums. This might also include a dedicated allocation for schools in lightning-prone areas to enable the installation of a lightning rod.
- Consider creating auditing systems to monitor whether climate change-relevant budget/ expenditure are being used to reduce child vulnerability to climate-related hazards.
- Raise awareness among national government officials (especially in the Ministry of Primary and Mass Education and the Ministry of Education) regarding the benefit of financing climate mitigation and adaptation activities.
- Explore external climate change funding opportunities (e.g., Green Climate Fund) with a view to filling the current resource gap so enhancing climate resilience in the education system.

Curriculum, Teaching and Learning

In Bangladesh climate change-related topics have been integrated in a number of textbook chapters. The achievement made so far will be further advanced by strengthening more systematic vertical and horizontal (i.e., cross-curricular) integration of climate change themes and topics, placing a greater emphasis on skills and attitudinal development within a broader life skills context and employing learner-centred active pedagogies. Facing multi-faceted climate crises, it is vital for students to acquire broad life skills to address inter-related issues of child protection, WASH, health and nutrition holistically. They need to develop and hone critical and creative thinking skills, problem solving skills, self-management skills to better cope with difficult emotions and uncertainties, advocacy and leadership skills as well as skills and attitudes disposing them to live in harmony with nature, among others.

In line with the Bangladesh government's vision to move to a 'low carbon and climate resilient economy' (Ministry of Environment and Forests 2015, 2), students should develop new skills and competencies necessary for contributing to a greener economy and sustainable livelihoods and living. This may include competencies concerning sustainable agriculture, environmental protection and conservation, protecting biodiversity, renewable energy, sustainable waste management, wise use of natural resources, among others. The skills for a new and emerging low-carbon economy can also be purposefully linked to the emerging 21st century skills agenda featured in the current *Education Sector Plan* (ESP).



Recommendations

- Identify contextually appropriate green skills for a low carbon and climate resilient economy and integrate them into the secondary curriculum and into assessable learning outcomes. Green skills should be an integral part of the emerging 21st century skills agenda in Bangladesh.
- In the revised curriculum and textbooks, ensure clear curriculum progression in terms of knowledge, skills and dispositional learning outcomes concerning climate change mitigation and adaptation; also forge cross-curricular and interdisciplinary links between treatment of climate change mitigation and adaptation in different subjects at the same grade level.
- As part of on-going curriculum revision initiatives, integrate life skills education opportunities which comprehensively address child protection, WASH, health and nutrition to better deal with multi-faceted climate change crises. Help students to develop critical and creative thinking skills, problem solving skills, self-management skills, advocacy and leadership skills, and the skills and attitudes to live in harmony with nature in an age appropriate manner.
- Ensure curriculum contextualization by working closely with regional stakeholders and relevant ministries.
- Provide students with opportunities, arenas and platforms to take concrete actions and play change agency and advocacy roles in mitigating climate change impacts at school, in their local community and beyond.

Teacher Capacity Development

According to participants in this study, there is no systematic teacher capacity building provision focused on climate change risk reduction and resilience building. Further research to analyse existing and potential windows of opportunity for integrating climate change-related knowledge, skills, attitudes and behaviours in teacher training programmes will be beneficial in efforts to mainstream climate change considerations in teacher training programmes.

Ingrained didactic teaching and learning practices in the Bangladesh classroom are a huge obstacle standing in the way of developing student capacity necessary in the face of multifaceted climate change challenges. However, the ongoing curriculum renewal process opens up opportunities to develop teacher capacity building programmes which are fit for purpose for facilitating action-oriented climate change teaching and learning.

Recommendations

- Conduct a thorough teacher education curriculum audit to identify existing opportunities and gaps for climate change risk reduction and resilience building. Build on the opportunities and close the gaps.
- Enhance teacher capacities to employ a wider range of active/participatory pedagogies through teacher training programmes for climate change.
- Build teacher capacity in facilitating student change agency capacities through school-based and community-based climate change mitigation and adaptation actions.
- Build teacher capacity in providing basic support to maintain student health and wellbeing if adversely impacted by climate change.
- Build teacher capacity in promoting environmentally sustainable practices at school that are most relevant to the locality (e.g., using and maintaining renewable energy technologies, wise use of natural resources, waste management, awareness raising and advocacy techniques).

Communication, Coordination and Partnership

There is no systematic national platform/mechanism focused on climate change risk mitigation and resilience building in the education sector. At the national level, little evidence has been found concerning inter-ministerial collaboration and coordination between the Ministry of Environment, Forest and Climate Change (MoEFCC) and education authorities.

The new *National Education Policy* development, and on-going revised curriculum development followed by teacher training development will greatly benefit from technical expertise and input from the relevant Ministries/ Divisions (e.g., MoEFCC, Ministry of Disaster Management and Relief, Ministry of Health and Family Welfare), from the UN, NGOs/CSOs and academic partners. In realizing climate smart school development (e.g., renewable energy technology, rainwater harvesting, roof top or floating gardens) expertise and resources could be widely mobilized. Remarkable innovations by NGOs such as Solar-powered Floating Schools (see *Box 4*) could be scaled up among river-based or coastal communities supported by the government and its partners. To address the points mentioned above, it would be of help to conduct a key player and stakeholder mapping exercise in the education sector in relation to climate change risk reduction and resilience building both at the national and sub-national levels.

Recommendations

- Incorporate climate change risk reduction and resilience building components in the existing education coordination mechanism/platforms at the national level (e.g., the Education in Emergency Cluster).
- Ensure multi-sector and partnership approaches in embedding climate change components in a new *National Education Policy*, the revised curriculum and teacher training programmes.
- Consider scaling up of innovations such as Solar-powered Floating Schools among river-based and coastal communities.
- Consider conducting capacity mapping among key education sector players and stakeholders to understand existing strengths and resources as well as capacity gaps and needs.

School/Community Student Participation Platforms

While there are some student climate change-related engagement opportunities outside of classroom (e.g., tree planting), they seem to be sporadic and depend on the enthusiasm of individual schools and teachers. Students in the FGDs welcome more frequent engagement through, for instance, climate change clubs at school. They are also interested in online and/or face-to-face exchanges with students living in different localities for mutual learning and support. Considering the incidents of trees and plants planted by students not growing due to salinity and other climate change related variables, schools should seek necessary professional advice and support from relevant authorities so that student efforts are not wasted. There should be special attention given to post-planting aftercare to heighten plant survival possibilities.

In the Bangladesh education system, there exist a number of school-based student participation platforms (e.g., School Council, Student Cabinet, Little Doctors) each carrying great potential for enhancing student change agency and advocacy capacities in general but also fostering climate change awareness and action. As an additional climate action platform for students, schools might consider conducting a periodic school environmental audit in which students take an active role in gathering and analysing data concerning resource usage and efficiency at school (e.g., energy, food, water, waste), followed by student-led action. Such a school environmental audit can be linked to the hazard, vulnerability and capacity assessment at school wherever such exists.

The significant momentum created by special climate change events (e.g., Children's Climate Summit) should be kept alive, for instance by continuous online discussions and exchanges linked to classroom learning and school-based actions.

Recommendations

- Create and support school clubs aimed at raising climate change awareness and promoting environmentally friendly actions at school, at home and in the community.
- Identify and integrate climate change specific terms of reference and stipulate minimum levels of action for existing school-based student participation platforms (e.g., School Council, Student Cabinet).
- Develop tools and mechanisms to conduct a school environmental audit with students playing a key role in gathering and analysing the information. Such an audit can be linked to school-level hazard, vulnerability and capacity assessment wherever such takes place.
- Create child/youth peer-to-peer climate change learning exchanges between urban and rural children/youth.
- Develop an online platform to widely share climate change-related experiences and actions among students.
- Give necessary support to further promote child/youth climate change policy dialogue through the Generation Parliament.
- Ensure that on-going curriculum renewal purposefully links formal curriculum with various co-curricular, community and online learning opportunities.
- Ensure that trees and plants to be planted by students are suitable for changing climate and the specific local environment. Provide necessary professional advice and support from relevant Ministries/Departments for the choice and maintenance of the trees and plants.



Section 6

Conclusion

Declaring a 'Planetary Emergency', the Bangladesh Parliament has urged the world to take decisive and ambitious actions to combat climate change working 'on a war footing, as custodians and as one team, to protect and fortify our Planet – the only Home we have' (CEDAMIA 2019). Far-reaching and integrated actions across society are required to meet the scale and urgency of the challenges posed by climate crisis and interrelated ecological and social crises.

This study has highlighted some examples of climate change impacts on the education sector as experienced in Bangladesh: school infrastructure destruction and damage caused by climate change-induced fast- and slow-onset hazards; interrupted education access due to recurring natural hazards of various scales; school dropout due to child marriage and child labour linked to household hardship caused by the climate induced shocks; an increasing incidence of student ill-health due to water- and vector-borne diseases, air and water pollution and excessive heat; difficulty in recovering from lesson time loss due to natural disasters; challenges in teaching and learning in the classroom with increasingly unbearable temperatures; loss of outdoor activities and school assembly opportunities under the harsh temperatures and hazard conditions.

Key recommendations included in this study are: further developing and integrating climate change impact and vulnerability indicators in the existing system developed by BANBEIS; ensuring strong alignment between education sector policy strategy documents and those concerning climate change; developing climate change education curriculum more systematically and making curriculum delivery more action-oriented; developing teacher capacity development

programmes that incorporate both climate change-related content and facilitation of active pedagogies; ensuring a multi-sector partnership and collaboration approach in mainstreaming climate change considerations in education policies, curriculum, and capacity building programmes; developing functioning student participation platforms for climate change learning and action.

The education sector has a critical role to play in protecting children and preparing present and future generations to face the full consequences of the climate crisis and in helping them to play a proactive part in finding solutions to the multi-pronged threats we face. It is hoped that this report helps stimulate the discussion and action that is urgently needed to make the Bangladeshi education system more climate change resilient and to empower Bangladeshi students – both girls and boys - to become advocates and agents of change possessing the knowledge, skills and dispositions to actively contribute to building a greener, low-carbon and safer future for their communities and country, and beyond.



জুপিটার প্রকাশিত শ্রেষ্ঠ
সহায়ক বইসমূহ
একের ভিতর সব



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| <p>মঠ শ্রেণি</p> <ul style="list-style-type: none"> ● সূজনশীল বাংলা অধ্যয়ন পর (চৌকপাঠ) ● বাংলা দ্বিতীয় পর ● ইংরেজি অধ্যয়ন পর (English for Today) ● ইংরেজি দ্বিতীয় পর ● সূজনশীল পাবিত ● সূজনশীল বাংলাদেশ ও বিশ্বপরিচয় ● সূজনশীল বিজ্ঞান ● তথ্য ও যোগাযোগ প্রযুক্তি ● সূজনশীল ইসলাম ও ঐতিহাসিক শিক্ষা ● সূজনশীল বৌদ্ধধর্ম ও ঐতিহাসিক শিক্ষা ● সূজনশীল খ্রিস্টধর্ম ও ঐতিহাসিক শিক্ষা ● সূজনশীল হিন্দুধর্ম ও ঐতিহাসিক শিক্ষা ● সূজনশীল জীববিজ্ঞান ● সূজনশীল পরিবেশ ● সূজনশীল পুষ্টিবিজ্ঞান ● সূজনশীল মানসিক স্বাস্থ্য | <p>সপ্তম শ্রেণি</p> <ul style="list-style-type: none"> ● সূজনশীল বাংলা অধ্যয়ন পর (সেতুখর্না) ● সূজনশীল আনন্দপাঠ ● বাংলা দ্বিতীয় পর ● ইংরেজি অধ্যয়ন পর (English for Today) ● ইংরেজি দ্বিতীয় পর ● সূজনশীল পাবিত ● সূজনশীল বাংলাদেশ ও বিশ্বপরিচয় ● তথ্য ও যোগাযোগ প্রযুক্তি ● সূজনশীল ইসলাম ও ঐতিহাসিক শিক্ষা ● সূজনশীল বৌদ্ধধর্ম ও ঐতিহাসিক শিক্ষা ● সূজনশীল খ্রিস্টধর্ম ও ঐতিহাসিক শিক্ষা ● সূজনশীল হিন্দুধর্ম ও ঐতিহাসিক শিক্ষা ● সূজনশীল জীববিজ্ঞান ● সূজনশীল পরিবেশ ● সূজনশীল পুষ্টিবিজ্ঞান ● সূজনশীল মানসিক স্বাস্থ্য | <p>অষ্টম শ্রেণি</p> <ul style="list-style-type: none"> ● সূজনশীল বাংলা অধ্যয়ন পর (সুইচিং কবিতা) ● সূজনশীল আনন্দপাঠ ● বাংলা দ্বিতীয় পর ● ইংরেজি অধ্যয়ন পর (English for Today) ● ইংরেজি দ্বিতীয় পর ● সূজনশীল পাবিত ● সূজনশীল বাংলাদেশ ও বিশ্বপরিচয় ● তথ্য ও যোগাযোগ প্রযুক্তি ● সূজনশীল ইসলাম ও ঐতিহাসিক শিক্ষা ● সূজনশীল বৌদ্ধধর্ম ও ঐতিহাসিক শিক্ষা ● সূজনশীল খ্রিস্টধর্ম ও ঐতিহাসিক শিক্ষা ● সূজনশীল হিন্দুধর্ম ও ঐতিহাসিক শিক্ষা ● সূজনশীল জীববিজ্ঞান ● সূজনশীল পরিবেশ ● সূজনশীল পুষ্টিবিজ্ঞান ● সূজনশীল মানসিক স্বাস্থ্য |
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THE HEAT IS ON!

Towards a Climate Resilient Education System in Bangladesh



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For further information:

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