

## Education Climate Change Co-benefits Case Studies

### Case study 1: P162619 Bangladesh Quality Learning for All

**The Program Development Objective (PDO)** is to improve the quality of and enhance equitable access to education from pre-primary to grade 5.

#### Step 1: Vulnerability Context

Bangladesh is frequently inundated with seasonal floods and flash floods and is periodically affected by cyclones, droughts, and earthquakes. Climate projections for the country point to an increase of 1.4 degrees centigrade in median temperature by 2050. The frequency of tropical cyclones in the Bay of Bengal may increase and, according to the Intergovernmental Panel on Climate Change's Third Assessment Report, there is "evidence that the peak intensity may increase by 5% to 10% and precipitation rates may increase by 20% to 30%" (IPCC 2001). Cyclone-induced storm surges are likely to be exacerbated by a potential rise in sea level of over 27 cm by 2050.

*The high frequency of regular and sudden natural disasters in Bangladesh weakens the education system, particularly in the coastal areas, low-lying lands, wetlands, and river islands. A baseline assessment of the impact of natural disasters on Bangladesh primary schools found that 84% of sampled schools in disaster-prone areas experienced extended closures lasting an average of 26 days. About 70% of sample schools were used as shelters, with the majority reporting severe losses and damages to school facilities, particularly to water sanitation facilities and furniture. Affected schools also reported a 3% increase in dropout rates and lowered competency achievement. In the past years, natural disasters, particularly cyclones have disrupted the education of more than 1.5 million children. Since 2007, about 9,000 of Bangladesh's primary schools have been affected. Given the country's vulnerability to climate change, the number and scale of natural disasters are predicted to increase.*

#### Step 2: Specific Intent

The country, therefore, must take a number of steps to ensure school safety and disaster risk reduction, including for preparedness, response, and recovery.<sup>7</sup> QLEAP will demonstrate solutions that enhance the resilience of the education sector to adverse weather and climate change impacts.

#### Step 3: Activity Linkage

##### Adaptation Co-Benefits

DLI	Adaptation co-benefits (US\$ million)	Adaptation actions linked to the vulnerability context
DLI 1 Curriculum & textbook (US\$ 85 million) – Result Areas 1.1, 1.2	10.6	Developing awareness/skills of students and teachers to understand and cope with climate change risks is eligible for adaptation co-benefits; a proportion of DLIs 1, 3, and 4 that is dedicated to climate change adaptation in curriculum/training is assigned adaptation co-benefits
DLI 3 Teacher Education and CPD (US\$ 80 million) – Result Areas 1.4, 1.5, 1.6, 2.4	15	
DLI 4 Learning Outcomes (US\$ 100 million) – Result Areas 1.7, 2.1	5	

<sup>7</sup> Draft Program Document, Primary Education Development Program 4, MoPME

DLI 5 Need-based Infrastructure (US\$175 m) – Result Area 2.1	21.9	Adaptation measures, including adoption of an infrastructure and maintenance policy that will be integrated in the construction or rehabilitation of classrooms/school facilities, are eligible for adaptation co-benefits; a proportion of DLIs 4, 5, and 6 that is integrating the adaptation measures is assigned adaptation co-benefits.
DLI 6 Out-of-school-children (OOSC) and student retention (US\$60 m) – Result Areas 2.1, 2.2	2.5	
<p><b>The project received US\$55 million<sup>8</sup> in adaptation co-benefits out of US\$700 million.</b> The project provided a very strong vulnerability context that illustrated climate change's impact on the education sector, such as the student retention rate and damages to the school facilities. The activity description under this PforR shows that the activities are designed to address these sector vulnerabilities, from teachers' disaster preparedness to integrating adaptation measures in rehabilitated classrooms.</p>		

### Mitigation Co-Benefits

DLI Description	Mitigation co-benefits (US\$ million)	Reason for assigning CCB
DLI 1 Curriculum & textbook (US\$ 85 million) – Result Areas 1.1, 1.2	10.6	<p>Developing awareness/skills of students and teachers to understand the challenges associated with climate change is eligible for mitigation co-benefits under <i>9.1: Support to national, regional or local policy, through technical assistance or policy lending</i> of the MDB List of Eligible Mitigation Activities; a proportion of DLIs 1, 3, 4, and 6 dedicated to climate change mitigation in curriculum /teacher training is assigned mitigation co-benefits.</p> <p>Mitigation co-benefits can be assigned to the proportion of DLIs 5 and 6 that requires the newly constructed or rehabilitated classrooms and other facilities to integrate energy-efficient architectural design or to use energy-efficient appliances, equipment, and building techniques under <i>3.2: Energy efficiency improvements in existing commercial, public and residential buildings</i> and <i>3.5: Energy efficiency in new commercial, public and residential buildings</i> of the MDB List of Eligible Mitigation Activities. The new or replacing appliances, equipment, and technologies should be substantially more energy-efficient than the replaced ones or the prevailing energy standard in the project location.</p>
DLI 4 Learning Outcomes (US\$ 100 million) – Result Areas 1.7, 2.1	5	
DLI 5 Need-based Infrastructure (US\$175 m) – Result Area 2.1	21.9	
DLI 6 OOSC and student retention (US\$60 m) – Result Areas 2.1, 2.2	2.5	
<b>TOTAL US\$700 million</b>	<b>40<sup>9</sup></b>	

<sup>8</sup> When assigned to the same activities, adaptation and mitigation co-benefits are netted-out to avoid double-counting.

<sup>9</sup> When assigned to the same activities, adaptation and mitigation co-benefits are netted-out to avoid double-counting.

## Case study 2: P165581 Africa Regional Scholarship & Innovation Fund for Applied Sciences, Engineering & Technology

**The Program Development Objective (PDO)** is to strengthen the institutional capacity for quality and sustainable doctoral training, research, and innovation in transformative technologies in sub-Saharan Africa.

### Step1: Vulnerability Context

“...At the same time, resilience to climate variability and change is vital to the region’s ability to reduce poverty and protect the development progress made in recent decades.”

“...Finally, climate change has been affecting the SSA region especially through an increase in temperature, extreme precipitation, floods, and droughts, which impact food security, migration, and infectious disease. In order to mitigate this impact, there is a need for developing human capital and knowledge base through research and innovation at the regional level.”

### Step 2: Specific Intent

**“The Project addresses climate change.** Some RSIF host institutions will focus on issues of climate change including biodiversity and food security, and energy leading to development of both human and institutional capacity for research and innovation in these fields, such as the RSIF PhD program at the center for Climate Change Biodiversity and Sustainable Agriculture (CCBAD) in the University Félix Houphouët-Boigny (Côte d’Ivoire). This center offers training programs on climate change, including: (i) climate change risk analysis, evaluation and management (climatic data, air pollution, water, soil pesticides), (ii) agro-climatology, (iii) modeling, (iv) mitigation strategies for climate change (carbon sequestration), (v) agrobiodiversity and agroforestry system, (vi) dissemination of agricultural technical innovations using information and communication techniques accessible to farmers, and (vii) adaptation of crop calendars to climate variability. In addition, the RCU will be building a knowledge base on climate change through development of the cross-cutting courses on climate change for PhD scholars and faculties. The IT vendors for the project will also require a submission of the disaster and risk mitigation plan and training of the operation staff on emergencies to ensure that the investment by the project will be least affected by the climate change and disaster risks.”

### Step 3: Activity Linkage

#### Adaptation Co-Benefits

Component description	Adaptation co-benefits (US\$ million)	Reason for assigning CCB
Subcomponent 1.1: Capacity building for managing and growing the RSIF General Fund and setting up a RSIF Permanent Fund (US\$3.5 million)	0.175	Adaptation co-benefits can be assigned to a proportion of activities under subcomponents 1.1, 1.3, and 1.4 that address climate change risks, such as <i>agro-climatology</i> .
Subcomponent 1.2: Capacity development for the operation and management of doctoral training in ASET fields in selected African universities (US\$5 million)	0.42	
Subcomponent 1.3: Capacity development for the operation and	0.2	Adaptation co-benefits can be assigned to subcomponent 1.2 for requiring IT vendors <i>to submit disaster recovery plans to address potential climate risks</i> .

management of research grants (US\$4 million)		
Subcomponent 1.4: Capacity development for the operation and management of innovation grants (US\$2.5million)	0.125	
Component 2: Scholarships and Research Grants for ASET (no IDA financing)	Zero	No climate co-benefits can be assigned since the component is not financed by IDA
<b>TOTAL (US\$ 15 million)</b>	<b>0.92<sup>10</sup></b>	
<p><b>The project received US\$0.92 million in adaptation co-benefits out of US\$15 million.</b> The project established why the development of human capital and knowledge base are crucial for effective climate change adaptation in the region and described how the Regional Scholarship and Innovation Fund will strengthen research in climate change innovation to contribute to climate change adaptation. The project also required the IT vendors to submit disaster recovery plans to improve the education management information system's resilience to the climate-change-induced natural disasters in the region.</p>		

### Mitigation Co-Benefits

Component description	Mitigation co-benefits (US\$ million)	Reason for assigning CCB
Subcomponent 1.1: Capacity building for managing and growing the RSIF General Fund and setting up a RSIF Permanent Fund (US\$3.5 million)	0.35	Mitigation co-benefits can be assigned to the proportion of topics that are covered under the Regional Scholarship and Innovation Fund (RSIF) and are relevant to climate change mitigation, such as <i>biodiversity and agro-forestry system</i> . The development of the cross-cutting courses on climate change for PhD scholars and faculties also qualifies for mitigation co-benefits under <i>9.1: Support to national, regional or local policy, through technical assistance or policy lending</i> of the MDB List of Eligible Mitigation Activities.
Subcomponent 1.2: Capacity development for the operation and management of doctoral training in ASET fields in selected African universities (US\$5 million)	0.14	
Subcomponent 1.3: Capacity development for the operation and management of research grants (US\$4 million)	0.4	
Subcomponent 1.4: Capacity development for the operation and management of innovation grants (US\$2.5million)	0.25	
Component 2: Scholarships and Research Grants for ASET (no IDA financing)	0.00	No climate co-benefits can be assigned since the component is not financed by IDA
<b>TOTAL (US\$15 million)</b>	<b>1.14<sup>11</sup></b>	

<sup>10</sup> When assigned to the same activities, adaptation and mitigation co-benefits assigned are netted-out to avoid the double-counting.

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### Case study 3: P159519 Guyana Education Sector Improvement Project

**The Program Development Objective (PDO)** is to (i) improve teaching practices and student achievement in mathematics at the primary level in selected schools; and (ii) strengthen the teaching capacity and improve the learning environment of the UG FHS.

#### Step 1: Vulnerability Context

Guyana is one of the countries that are most vulnerable to climate change. Parts of the country, which are the main agricultural regions, are low-lying, with some coastal areas below mean sea-level, and a high percentage of the population and critical infrastructure is located along the coast. Rising sea levels threaten to accelerate coastal erosion, increase flood risk, and lead to permanent loss of land in some areas. These adverse developments would be exacerbated by any increase in the destructiveness of tropical storms, the impacts of which will be greater because of rising sea levels, even without increases in storm intensity.

#### Step 2: Specific Intent

Building resilience to climate change and geophysical hazards is also a vital step in the fight against poverty and for sustainable development. To that end, the building constructed under the Project will consider vulnerability to climate change and disaster risks in its design and construction (for instance, using a suspended slab to locate the building above water lines in case of flood, and /or using specific material so the roof can sustain strong winds and rains).

#### Step 3: Activity Linkage

##### Adaptation Co-Benefits

Component description	Adaptation co-benefits (US\$ million)	Reason for assigning CCB
<b>Component 1: Integrated Curriculum Reform</b> (estimated total cost: US\$6.03 million, of which IDA: US\$5.36 million)	0.0	Adaptation co-benefits cannot be assigned since it is not clear how Component 1 will contribute to addressing the country's or sector's climate change vulnerability.
<b>Component 2: Strengthening the Teaching Capacity and Improving the Learning Environment for the University of Guyana Faculty of Health Sciences</b> (estimated total: US\$6.94 million, of which IDA: US\$6.91 million)		
<b>Subcomponent 2.1 –Strengthening Teaching Capacity</b> (estimated total cost: US\$0.06 million, of which IDA: US\$0.03 million).	0.0	Adaptation co-benefits cannot be assigned since it is not clear how Subcomponent 2.1 will contribute to addressing the country's or sector's climate change vulnerability.
<b>Subcomponent 2.2 – Improving the Learning Environment</b> (estimated total cost: US\$6.88 million, of which IDA: US\$6.88 million).	0.69	Adaptation co-benefits can be assigned to this subcomponent for considering and reducing the constructed education facilities' vulnerability to flooding and other climate change risks (for instance, <i>using a suspended slab to locate the building above water lines in case of flood, and /or using specific material so the roof can sustain strong winds and rains</i> ).

		10% adaptation co-benefits are assigned based on the estimated incremental cost
<b>Component 3: Project Implementation Support</b> (Total: US\$ 1.06 million; IDA: US\$1.06 million)	0.06	Pro-rated
<b>TOTAL US\$ 13.3 million</b>	<b>0.75</b>	
<p><b>The project received US\$0.75 million in adaptation co-benefits out of US\$13.3 million.</b> Building on the climate change vulnerability Guyana is facing, the project demonstrated which specific design measures the school buildings constructed under the project would incorporate, to improve their resilience to the relevant climate change and disaster risks.</p> <p>The project could have increased its adaptation and/or mitigation co-benefits if it had incorporated content on climate change actions in the curriculum and teacher training under Component 1.</p>		