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THE HEAT IS ON!

Towards a Climate Resilient Education System
in Nepal

Cover: Chahana, 13, holds a pole outside a tent shelter set up in a vacant field next to Nepal Army headquarters, in Kathmandu, the capital, following the massive earthquake. She and her extended family are sheltering in a large tent in the field after her home was damaged during the earthquake. “Right now I’m living in a camp in Kathmandu,” Chahana said. “It’s tough to live here. I’ve never experienced anything so difficult. But this is what life is about. That’s what I’m learning through this. I just hope everybody lives.”

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Executive Summary

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

The landlocked least developed country of Nepal is highly vulnerable to adverse effects of climate change. While the Terai region – the lowland region of southern Nepal - is particularly exposed to seasonal floods, the hill and mountain regions of northern Nepal are susceptible to landslides and debris flows. Rapidly melting glaciers and snow in the Himalayas elevate the risk of glacial lake outburst floods (GLOFs) threatening potentially catastrophic damage to downstream areas. Risk of wildfires is also on the rise mainly in southern Nepal.

Combinations of factors such as high population growth, high percentage of population experiencing multidimensional poverty, accelerating urbanization and heavy dependency on a climate-sensitive agriculture sector further aggravate

Nepal's vulnerability to climate change. In the context of the current ongoing transition to a three-tiered federal structure of government, sub-national governments are yet to be fully operationalised, which is another driver of vulnerability. Nepal ranks 51 out of 163 countries in UNICEF's children's climate risk index of 2021.

This study has examined the direct and indirect impacts of climate change on the education system in Nepal. Floods, landslides and strong winds are main causes of immediate and direct damage to school infrastructure. Climate change considerations are largely lacking in school infrastructure. Classrooms are not equipped with facilities to cope with the extreme temperatures accruing from climate change.

Many schools situated on steep terrain are exposed to landslide risk while schools built in very close proximity to rivers are subject to flooding risk. Declining clean water availability at school is another concern expressed by the stakeholders participating in the research.

Student access to school is being interrupted by infrastructural damage caused by hydro-meteorological hazards especially during the monsoon season. Small-scale recurrent events such as heavy rains, freezing cold and unbearably hot temperatures lead to irregular attendance especially among children from low-income families who cannot afford an umbrella and extra warm clothing. Vulnerable families facing economic hardship caused by the climate crisis tend to use negative coping strategies such as child migration, child labour and child marriage, resulting in school dropout.

In terms of student physical health and wellbeing, climate change-exacerbated water-borne and vector-borne diseases are on the rise. Children are the group most vulnerable to



the impacts of cold and heat waves. Air pollution, its causes overlapping with those of climate change, is another major health concern for children in Nepal. Climate change may very well also be affecting student psychosocial wellbeing. 78 per cent of Nepali youth, U-Report respondents indicate, are anxious about climate change and its implications for the future.

With regard to climate change impacts on education provision and learning quality, systematic monitoring of lesson time loss and the effect on student academic performance in relation to climate change-induced hazards and shocks is a current gap. A very hot classroom without cooling and ventilation facilities poses a significant challenge to both teachers and students. Teacher FGD members point out that the situation has led to lower educational achievement among their students.

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:

- Nepal has developed a set of comprehensive school safety policy, planning and implementation tools to build education sector resilience in the face of multi-hazards, but specifically addressing climate change-induced slow-onset hazards and shocks is a current gap.
- The Nepali government has developed an innovative climate change budget tracking system rolled out across a number of line ministries including the Ministry of Education, Science and Technology (MoEST).
- There is a patchwork of climate change-related textbook units and lesson titles, but more systematic curriculum integration is yet to happen. Localized curriculum, a unique feature in Nepal, offers great potential for developing and implementing locally relevant climate change learning and action.
- Systematic climate change-focused teacher training opportunities and resources are overall lacking in Nepal. MoEST's intention to shift to more child-centred and active pedagogies provides a springboard towards realizing action-oriented climate change education in Nepal.
- There is no coordination mechanism/platform focusing on education sector climate change adaptation and mitigation.
- Child clubs are popular child participation platforms providing a means of addressing various issues affecting children, more recently including disaster and climate change. No concrete examples linking non-formal child club activities with formal learning have been found. But the linking of formal and non-formal learning are proving to be an effective way of enriching disaster risk and climate change learning.

- No mechanisms and tools are in place to systematically monitor climate change impacts on school infrastructure, student and teacher health and wellbeing, education provision and learning quality.

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

Climate Change Impact Monitoring and Assessment

- Consult with relevant stakeholders, develop climate change impact and vulnerability indicators and subsequently integrate them into the comprehensive school safety indicators, Education Management Information System (EMIS) and/or school-level assessment tools.
- Develop inter-ministerial collaboration mechanisms between MoEST and relevant Ministries/Agencies (e.g., Ministry of Home Affairs; Ministry of Federal Affairs and General Administration; Ministry of Forests and Environment; Ministry of Health and Population) in gathering, sharing and analysing climate change impact data as it concerns children and schools; integrate such data into the Disaster Information Management System (DIMS).

Policies, Plans and Strategies

- Ensure continuous integration of resilience and school safety in the new *School Sector Development Plan*, addressing climate change mitigation and adaptation components more prominently.
- Ensure that Nepal's *National Adaptation Plan* which is currently under development incorporates the education sector's medium- and long-term needs concerning climate change vulnerability reduction and resilience building.
- Ensure climate change adaptation and mitigation are prominently addressed in the *Comprehensive School Safety Minimum Package* rollout.
- Raise awareness and build the capacity of local government personnel on the *Comprehensive School Safety Minimum Package* with an emphasis on climate change mitigation and adaptation.

Finance

- Raise awareness among government officials especially at the local government level regarding the benefits of financing climate change mitigation and adaptation activities in the education sector.
- Consider reviewing and updating the Equity Index by integrating climate change vulnerability components.
- Consider harmonizing the Equity Index, the climate budget coding and the *Climate Change Financing Framework* so that climate change budget allocations in the education sector are needs-based and equitable.

- Explore external climate change funding opportunities (e.g., Green Climate Fund, Adaptation Fund) with a view to filling the current resource gap so as to enhance climate resilience in the education system.

Curriculum, Teaching and Learning

- Conduct a thorough curriculum audit at both primary and secondary levels to identify existing opportunities and gaps for climate change risk reduction and resilience building learning and action. Build on the opportunities and close the gaps.
- In developing a comprehensive national curriculum framework, articulate clear grade-by-grade learning outcomes including knowledge, skills and attitudinal/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.
- Identify contextually appropriate green skills for a low carbon economy and integrate them into the forthcoming national curriculum framework.
- Integrate life skills education opportunities that comprehensively address child protection, water, sanitation and hygiene (WASH), health and nutrition to better deal with multifaceted climate change crises. Help students develop critical and creative thinking skills, problem solving skills, self-management skills, advocacy and leadership skills, coping skills, and the skills and attitudes to live in harmony with nature in an age-appropriate manner.
- Develop child-friendly learning support materials, such as grade-by-grade readers which introduce climate change issues and convey pro-environmental messages, while helping student develop basic reading skills in an age-appropriate manner.
- Develop federal and provincial government level strategies/guidelines to best support local government in utilizing the local curriculum for climate change learning and action reflecting unique local ecosystems, climate hazards and vulnerability at local level.
- Provide students with opportunities, arenas and platforms to take concrete actions and fulfil 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 for both pre-service and in-service training programmes to identify existing opportunities and gaps for climate change risk reduction and resilience building. Build on the opportunities and close the gap.
- Ensure integration of climate change mitigation and

adaptation components in Comprehensive School Safety teacher capacity development programmes.

- Build teacher capacities in employing a wide range of active/participatory and child-centred pedagogies, such learning modes being vital for action-oriented climate change education.
- Build teacher capacity in providing basic psychosocial support and basic support to maintain student health and wellbeing if threatened or adversely impacted by climate change.
- Build teacher capacity in promoting environmentally sustainable practices at school and in the community that are most relevant to the locality (e.g., water conservation; developing school gardens; tree planting; waste management; using and maintaining renewable energy technology; awareness raising and advocacy techniques) through in-service teacher trainings/workshops.

Communication, Coordination and Partnership

- Incorporate climate change risk reduction and resilience building components into the existing coordination mechanisms/platforms at national level (e.g., the Technical Working Group on Comprehensive School Safety); also incorporate them into existing or emerging vertical communication mechanisms between the MoEST, provincial and local governments and schools.
- Ensure a multi-sector partnership approach to embedding climate change components into the forthcoming curriculum framework, the next *Education Sector Development Plan*, teacher training and capacity building programmes and environmentally friendly actions and initiatives at the school level.

School/Community Student Participation Platforms

- Ensure that co-curricular and community-based learning and action via child clubs on disaster risk reduction (DRR), climate change and/or the environment are purposefully linked to the formal curriculum.
- Ensure effective coordination among different student participation platforms so as to create synergies between them.
- Create a 'green star' recognition scheme for individuals and schools making a unique contribution to mitigating and adapting to climate change.
- Develop youth-led radio programmes to raise climate change awareness and action among youth and community members.
- Develop an online platform, a 'clearing house', for sharing climate change-related experiences and actions among students in Nepal.
- Link Nepali students to national, regional and global climate change movements/networks through online platforms or face-to-face gathering as appropriate.

Section 1 Introduction

1.1. Aims and Scope of the Study

This Nepal 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 Nepal through national-level stakeholder surveys, school-level focus group discussions (FGDs) and a U-Report¹ targeting youth from 14 to 24 years old.

Eight national-level stakeholders from Government, UN organizations, national NGOs and academic institutions were identified by the UNICEF Nepal Country Office according to the criteria set for the study and each was invited to participate in national-level stakeholder surveys conducted via email or Zoom. Five survey contributions followed (including two group contributions) between 14 July and 13 October 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 in the national stakeholder survey.

Two school-level FGDs were conducted on 2 October 2020 using the Zoom platform. There were five primary school principals/teachers (4 male, 1 female) in the teacher FGD and seven primary and secondary students (5 girls, 2 boys) in the student FGD. All participants were from the Dhanusha District of Province 2, situated in the southeast of the country and forming part of the Terai region.

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'. Drawings prepared by the students were presented individually for discussion at the FGD.

Analysis of the data gathered is integrated into relevant sections of this report. The U-Report process was implemented and analysed by a UNICEF ROSA team leading to the completion of the publication, *Rising to the Challenge: Youth Perspectives on Climate Change and Education in the Nepal* (Lopez Rello & Ackers 2021)² 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 For a full report, go to: <<https://www.unicef.org/rosa/media/16961/file/Rising%20to%20the%20Challenge%20-%20Nepal.pdf>>

Section 2

Climate Vulnerabilities in Nepal

Located on the southern slopes of the central Himalaya, the landlocked least developed country of Nepal is highly vulnerable to the adverse impacts of climate change despite being responsible for a negligible portion of global greenhouse gas emissions. Nepal is the 10th most climate-affected country in the world according to the long-term *Climate Risk Index* covering the period 2000-2019 (Germanwatch 2021).

With widely ranging altitudes from 67m to 8,848.86m above sea level, 86 per cent of the country consists of mountains and hills, the remaining 14 per cent being the low lying flat Terai plains. Nepal has five distinct climate zones: the tropical climate of the Terai plains (below 500m); the sub-tropical climate of Siwalik (500m to 1,000m), the temperate middle mountains (1,000m to 3,000m), the alpine climate of the high mountains (3,000m to 5,000m) and the arctic climate of the high Himalayas (above 5,000m) (Ministry of Forests and Environment 2021).

Nepal is highly prone to natural disasters carrying high mortality risk. The Terai plains in the south are particularly exposed to seasonal floods caused by the monsoonal rains and complex river systems and exacerbated by the construction of embankments on the sides of rivers. The hill and mountain regions with fragile ecosystem are highly

susceptible to landslides and debris flows. Although Nepal has successfully increased forest cover in recent decades³, further efforts to protect the mountain environment need to be made in order to prevent soil erosion, mountain watershed degradation and unsustainable extraction of sand and pebbles (National Planning Commission 2020).

Due to global warming, snow and ice are very rapidly melting in the Himalayas and glacial lakes are expanding, increasing the risk of glacial lake outburst floods (GLOFs) with the potential to cause catastrophic flash floods in far-downstream areas (Ministry of Science, Technology and Environment 2014; USAID 2017). Among the 47 potentially dangerous glacial lakes which could affect Nepal, 21 are actually located in Nepal⁴ (Bajracharya *et al.* 2020). Nepal is also one of the most earthquake-prone countries in the world. As the number of glacial lakes multiply, the risk of GLOFs triggered by earthquakes also increases. Where the stability of terrain is affected by heavy rains and soil erosion, mudflows and landslides can also be triggered by earthquakes (World Bank Group & ADB 2021).

Nepal has been experiencing temperature rise and precipitation change at a higher rate than the global average, leading to prolonged dry spells and an increase in the frequency and intensity of droughts particularly during the winter months (USAID 2017). A drier environment and less rain in winter have led to an increase in incidence of forest fires in recent years.⁵ In 2016, forest fires impacted 50 districts damaging 12,000 community forests (*ibid.*). The year 2021 has become the worst year for wildfires since Nepal began to record wildfire incidents in 2012. From



³ In Nepal the forest cover was 39.6 per cent in 1987/88. Owing to a very successful community forestry programme protecting forests and promoting sustainable use of forest resources with community ownership, forest coverage has been increased. In 2019/20 the forest coverage consists of 44.74 per cent of the country (National Planning Commission 2020).

⁴ 25 are located in China and one in India. This signals the importance of bilateral collaboration between Nepal and China/India to reduce GLOF risk in Nepal (Bajracharya *et al.* 2020; Vallangi 2021).

⁵ In Nepal during the dry season villagers traditionally burn dry leaves in the woodlands to prompt fresh grass growth. A drier environment and lack of rain makes the environment more susceptible to wildfires (Mishra 2021).

November 2020 to April 2021, 2,700 wildfires were reported across a total of 22 districts (Mishra 2021).

Nepal's population is 29.7 million, young people between the ages of 10 and 24 years making 31.2 per cent of the overall figure (UNFPA 2021). Over the past five decades, the population has increased nearly threefold. The multi-ethnic, multi-lingual and multi-cultural population in Nepal is very sensitive to climate shock due to poverty, social disparity, illiteracy and the heavy dependency on natural resources for livelihood. Nearly 30 per cent of the population experiences multi-dimensional poverty. The historically excluded Dalit group is particularly vulnerable due to, *inter alia*, persistent discrimination, chronic poverty, the geographical location in which they live (i.e., marginal and hazard prone areas), and lack of access to clean drinking water and electricity, among others (Ministry of Forests and Environment 2021; UNDRR 2019).

Agriculture is the mainstay of economy and livelihoods supporting nearly 80 per cent of the total population. Predominantly rain-fed agriculture is highly climate sensitive. Floods, droughts and heavy monsoon rainfalls lead to reductions in crop and livestock production yields, threatening food security (Ministry of Science, Technology and Environment 2014). Many lower-income households never recover after disasters, remaining in a 'poverty trap' (Ministry of Finance 2017). In the period 2016-2018, 7.8 per cent of the total population were severely food insecure with 36 per cent of children under 5 years old identified as having stunted growth in 2018 (FAO *et al.* 2019, 127). According to UNICEF's first child-focused climate risk index, based on children's exposure to climate change and environmental hazards, shocks and stresses as well as children's vulnerabilities to shock, Nepal ranks 51 out of 163 countries (UNICEF 2021).

In Nepal, women are disproportionately affected by the adverse impacts of climate change due to highly inequitable gender division of labour, unequal access to and control and ownership to natural resources, prevailing cultural norms and limited decision-making powers. Decreasing availability of natural resources such as forests and water means that women have to spend more time and travel longer distances to collect fuelwood, fodder and water. Women's domestic and livelihood workload also increases when men have gone away for employment. In the case of disasters, women are more susceptible to injuries and death than men partly because they do not receive early warning information in time (Goodrich *et al.* 2017).

Due to rural-to-urban migration in search of economic opportunities, urbanization in Nepal is rapidly accelerating. As a result, the number of municipalities is increasing, urban areas are expanding and urban population growing.

This situation puts significant pressures on infrastructures and basic public service (e.g., water, sanitation, health care) in municipalities. Low-income migrants living in informal settlements, particularly along riverbanks, face elevated climate change risks (Ministry of Forests and Environment 2021).

Following the adoption of a new constitution in 2015, Nepal is transitioning to a fully-fledged three-tiered federal structure of government with national, 7 provincial and 753 local government administrations. Many functions relating to children's wellbeing, such as education and health, have been delegated to the provincial and local government (UNICEF ROSA 2020a). Sub-national governments are yet to be fully operationalised. Limited capacities at the sub-national government level mean that delivering all the public services becomes challenging even in normal times, let alone during the time of disasters. Combined with the unfolding impacts of the COVID-19 pandemic, the ongoing transition to federalism is another source of vulnerability in the face of frequent natural hazards (Gautam & Rooke 2020).

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 effects of climate change hit marginalized groups in society first, hardest and longest. It is therefore critical to address multiple risk factors simultaneously (UNICEF 2015, 2021).



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 report that due to climate change they encounter more frequent landslides and floods and suffer from extreme high temperatures in their locality. They feel that they are 'climate change victims'. One male principal explains that nowadays the temperature sometimes reaches 45°C in Terai. There was even a recent occasion when the temperature rose as high as 52°C. 'During that period, we left the school and did not come back to the school for a while', he says. Other teachers report that the cold season gets 'extremely cold.' In short, they witness irregular student school attendance due to 'too hot or too cold weather'.

Similarly, student FGD participants state that due to climate change, floods, extreme weather events and unpredictable weather patterns are common not only in their own locality but also in other parts of Nepal. Students are somewhat aware of what drives climate change. For instance, one female student says, 'Carbon dioxide is high on Earth and snow is melting in the mountains, so our lowlands in the Terai are flooded. We get sick.' They are very concerned about rampant deforestation and water and air pollution as caused by human activities.



There are a lot of beautiful trees, birds and greeneries. Due to climate change, my village will be like the right side of the drawing in a few years - all will be brown, dry and damaged. People are cutting a lot of trees. If we do not stop cutting trees and don't plant more trees, we are in the crisis scene in the near future. We cannot get clean air, clean water and fruits. We will die in that crisis. We should make our country beautiful by planting trees. If we plant trees immediately, we can save our country.

(Roshani, Grade 8)



The environment is too dry. Nothing is green. I am not getting fruits. People cut trees, even the very last one left. A very bad thing. Everyone should plant more trees. We should save nature.

(Jyoti , Grade 3)



People are cutting down a lot of trees. This is due to industrialization in my area.

Due to irregular rainfalls, we are not getting rains at the right time.

A clean pond near my village became dirty so now we cannot bathe using the pond water. People are getting sick and are even dying because of environmental pollution. Fumes and waste waters are the main problems which I see nowadays. I worry about the situation as the earth will be one day destroyed by these environmental issues. When people cut one tree, they should plant one tree.

(Omanika, Grade 7)

A lot of people in Terai depend on climate [for their livelihood]. Nowadays the climate has changed. I am the son of a farmer and help my father with agricultural work. We face many problems. When we want rains, we cannot get them. When rains come they wash down all the agricultural products. Everything was destroyed.... Coronavirus is here. It is good that there is an antidote for it. Exactly in a same manner, I want to have an antidote for the climate change problems. We are an agriculture-based country. It is difficult to survive.

(Roshan, Grade 10)

Section 3

Climate Change Impacts on Education System

While the impacts of climate change in the education sector have not been researched systematically in Nepal before, the national-level stakeholders participating in the survey (n=5) consider climate change impacts to be 'serious' or 'extremely serious' in the following areas: 'student access to school' (4 responses), 'lesson time' (3 responses), 'school infrastructure' (3 responses), 'clean water availability' (3 responses), 'student academic performance' (3 responses). According to the U-Report survey conducted for this study, 78 per cent of Nepali youth respondents (n=2,311) claim that their education/studies have been affected by climate change (Lopez Rello & Ackers 2021).

3.1. Learning Facilities

In August 2017, the heaviest monsoon rains in 60 years triggered widespread floods in the Terai region. 1,945 schools in 37 districts were damaged or destroyed by floods, affecting the education of 238,900 children (Ministry of Home Affairs 2019). According to the *Post Flood Recovery Needs Assessment*, the total damage to the education sector was estimated at NPR 1,193.8 million⁶, including damages to school buildings (NPR 538.9 million), classrooms (NPR 189.9 million), drinking water facilities (NPR 162.6 million), walls (NPR 141 million), toilet facilities (NPR 97 million) and textbooks and other teaching materials (NPR 64.4 million) (National Planning Commission 2017a).

According to 2021 research into climate change impacts on children and youth in Nepal conducted by the Child-Centred Disaster Risk Reduction and Climate Change (CDCC) Consortium,⁷ damage to schools and other key infrastructural features such as houses, roads, mountain trails and bridges was mostly caused by floods and, secondly, by damage from landslides and strong winds. Immediate and direct infrastructural damages caused by these hazards hampered children's education (CDCC Consortium 2021).

Overall, school infrastructure and facilities in Nepal is not 'climate friendly' (National Stakeholder 1). When it is hot, tin roofs, which are a common feature of Nepalese school buildings, intensify the heat. This makes the classroom environment, lacking good ventilation and cooling facilities very uncomfortable for teaching and learning (Plan Nepal 2012). A male teacher FGD participant elaborated the same point saying that tin roofs make the classrooms too hot to

learn, resulting in more students being absent during the hot season. When it rains and when it is cold, classrooms without glass windows and heating facilities are also challenging for teaching and learning. In classrooms without glass windows, heavy rainfall soaks student books and notebooks. Students from economically disadvantaged families cannot afford to replace their learning materials when damaged. The loud noise made by rain on tin roofs disturbs lessons as well (National Stakeholder 1; Plan Nepal 2012). Schools have not installed lightning resistant technologies (e.g., lightning rods) exposing students to lightning threat (National Stakeholder 2).

Many schools are located in disaster-prone locations (e.g., on river banks and steep terrain) (National Stakeholder 2) exposing students to high flood and landslide risks. Although standard building codes and policies exist, enforcement mechanisms remain weak (Gautam & Rooke 2020).

Issues surrounding water quantity and quality in schools were highlighted by national stakeholders participating in the survey. Changing precipitation patterns and a prolonged drought period have reduced water availability from all sources in all regions, while floods and landslides damage water supply system. Many schools relying on



⁶ 1,193.8 million Nepalese Rupees (NPR) are equivalent to 11.5 million US Dollars (National Planning Commission 2017a).

⁷ The CDCC Consortium consists of UNICEF Nepal, Plan International, Save the Children and World Vision.

rainfall harvesting⁸ have been adversely impacted (National Stakeholders 1, 4). Groundwater sources have become dry in the hilly regions following the 2015 earthquakes. Increasing flood and drought events have led to further deterioration in quality of water at school (National Stakeholders 1, 2, 3, 4). A lack of regular water supply at school, poor hygiene and a lack of privacy are major factors which cause discomfort and absenteeism among adolescent female students when they are menstruating⁹ (UNICEF 2018).

3.2. Education Access

Nepal faces significant challenges in education access especially for disadvantaged children including those with disabilities and those from poor families, remote and/or low caste families. While the net enrolment in primary education was in 96.3 per cent in 2019, the net enrolment in secondary level was only 61.9 per cent in the same year (UNESCO Institute of Statistics 2021).

Enrolment is one thing; attendance is another. Hydro-meteorological hazards have been interrupting student access to education. In the U-Report survey conducted for this study, 18 per cent of Nepali youth respondents (n=2,311) report that climate change has affected their journey to school (Lopez Rello & Ackers 2021). School attendance becomes irregular for many students when they encounter intense monsoon rainfalls. They cannot commute to school as roads, bridges and trails are damaged by heavy rains and/or flood water. Those who have to take alternative routes to the school miss lessons because their journey takes too long. During the hot season, the high heat deters children living far away from their school from walking to the school, leading to poorer school attendance (Plan Nepal 2012). During the above-mentioned Terai floods of 2017, 44,683 families were displaced and school closure continued for a number of weeks across the affected districts. At least 383 schools and learning centres were used as temporary shelters to accommodate displaced people, thus interrupting education continuity (Ministry of Education 2017; Ministry of Home Affairs 2019).

As mentioned earlier, extremely hot or cold conditions have also affected student access to education. Schools are closed if it is too hot and/or too cold (National Stakeholders 1, 2). A teacher at the FGD reports that his students do not come regularly when it is too hot or too cold as it is difficult for them to walk a long distance in harsh conditions. Teachers in the FGD commonly advise students to wear extra clothes in the cold season and lighter clothes in hot season. However, a female teacher points out that 'due to

poverty, some parents cannot provide extra clothing for their children. So they pretend that children are ill and have them stay at home. That is a reality.' Children from economically disadvantaged families do not have an umbrella, let alone waterproofed school bags and jackets. According to a male principal, students, mostly girls, have to walk some 5 km in rain simply holding their books close to their chest. 'No bags. Books get soaked. This affects their study. It is difficult for us to minimize the effects of climate change especially during the rainy season', he says.

Child migration, child labour and child marriage are among other key factors in school dropout (Ministry of Education *et al.* 2016; UNICEF & UNFPA 2017; UNICEF ROSA 2020b). When slow-onset events such as changing rainfall patterns as well as fast-onset hazards threaten those relying on agriculture for their livelihood, children are forced to look for alternative income sources to assist their families. Seasonal migration to work in brick kilns is an adaptive strategy to diversify agricultural livelihoods for many rural families. As it is difficult for children to change school every few months, many of them eventually dropout and become lifetime unskilled labourers (Terre des Hommes International Federation 2017). Child marriage remains prevalent in Nepal. Nearly 40 per cent of girls in Nepal are married by 18 years old. Married Nepali girls are 10 times more likely not to be in school than their unmarried peers (UNICEF & UNFPA 2017; Lama 2021). Child marriage is one of the negative coping strategies for vulnerable families facing the economic hardship caused by the climate crisis and other shocks such as the COVID-19 pandemic. Girls from marginalized families, especially those who are from the Dalit community, face significantly elevated risk of forced child marriage (Lama 2021). In the U-Report survey conducted for this study, 11 per cent of Nepali youth respondents (n=2,311) report that climate change has affected their family's ability to afford schooling (Lopez Rello & Ackers 2021).

3.3. Student Health and Wellbeing

Raising temperatures and increasing rainfall due to climate change are conducive to the spread of vector-borne diseases such as malaria, dengue, chikungunya and Japanese encephalitis. Most are endemic in the Terai and hill regions, putting 80 per cent of the population at risk. The warming climate is allowing disease vectors to move to highland areas, exposing more people to risk (Ministry of Forests & Environment 2021; WHO & UNFCCC 2016).

Floods caused by heavy rains contaminate water sources and destroy sanitation facilities, putting children at a higher risk of contracting water-borne diseases. Diarrhoea-related

⁸ This research has been unable to obtain data on the number of schools using rainwater harvesting facilities.

⁹ *Chhaupadi* (menstrual seclusion) restricts behaviours and movements of a woman during her menstruation period. While being outlawed by the Nepali Supreme Court in 2005 and *Chhaupadi* is on the decline, taboos around menstruation prevails in many communities (UNICEF 2018).

disease is a significant health risk to children in Nepal. Pneumonia, eye infection, fever and recurrent coughs can be also directly associated with flooding (CDCC Consortium 2021; Plan Nepal 2012; UNICEF ROSA 2020b).

Cold waves have become a serious health threat in the Terai region¹⁰, which has the largest population size and higher poverty levels than other regions in Nepal. Poor families living in sub-standard housing and lacking adequate clothing, food and fuel wood suffer especially. Cold-related diseases such as viral flu, respiratory problems, cold diarrhoea (a symptom of certain cold viruses) are common. Cold waves claim many children's lives each year, children under five being most affected. Heat waves are also common in the Terai region, children having been identified as one of the groups particularly vulnerable to heat-related conditions (Ministry of Forests and Environment 2021; WHO & UNFCCC 2016). During the hot season, common symptoms that students manifest include weariness, loss of appetite, vomiting and fainting (Plan Nepal 2012).

Air pollution is also a major health concern for the children of Nepal. The country is ranked the 12th most polluted country and Kathmandu the 10th most polluted capital city in the world¹¹ (IQAir 2020). Emissions from old and poorly maintained vehicles and coal-burning brick kilns in and around Kathmandu and the burning of biomass in rural areas are major contributors to air pollution (Aljazeera 2021; UNICEF ROSA 2020b), just as they are major drivers of climate change. Polluted air increases the risk of chronic and acute lower respiratory infections, pneumonia and associated mortality among young children (UNICEF India 2017). According to UNICEF (2017) air pollution not only harms children's lungs but also potentially damages the brain tissue of young children, hence undermining their cognitive development.

Climate change not only affects students' physical health and wellbeing but also their emotional health and wellbeing. Asked how worried they were about climate change and what it means for the future, 78 per cent of Nepali youth U-Report respondents (n=2,506) indicated that they are 'very/extremely worried' (46 per cent) or 'a little worried' (32 per cent) (Lopez Rello & Ackers 2021). According to the above-mentioned CDCC research on climate change impacts on youth, interviewed youth participants report that they suffer from psychological stress and traumas due to climate-induced disasters, which affect their wellbeing and ability to concentrate in school (CDCC Consortium 2021). Participants in the student FGD are 'worried' about climate change impacts and fear that 'one day the earth will be destroyed' should the current environmental destruction

by humans continue. In hot and uncomfortable classrooms without functional cooling and ventilation facilities, many students, according to one of the national stakeholders, are 'psychologically impacted and cases of hysteria are also reported in many schools'¹² (National Stakeholder 3).

3.4. Education Provision and Learning Quality

While systematic monitoring is yet to happen, national stakeholder survey participants think that due to extreme weather events and natural disasters, available lesson time has declined, especially during the disaster-prone monsoon season, negatively impacting student academic performance. A national stakeholder estimates that 20 to 40 per cent of lesson time is impacted, and that many lessons are skipped due to climate-induced hazards (National Stakeholder 3). According to respondents in the above-mentioned CDCC research, due to climate change-induced hazard students are losing up to three months of education every year. When school buildings are used as temporary shelters for the disaster victims, schools are closed, interrupting schooling for several weeks (CDCC Consortium 2021). Reduced lesson time means that teachers struggle to complete the whole syllabus on time (National Stakeholder 1). Curtailed lesson time compounded by a poor learning environment caused by extreme weather events and disasters is influencing student learning negatively (National Stakeholder 3).

In the teacher FGD, a male principal reports that during the hot season with the temperature around 40°C, teaching and learning in a classroom without effective cooling facilities is a tall order for both teachers and students. 'Students cannot sit for more than half an hour. Regarding this situation we are helpless. We don't have any other options. We just have to face this problem directly.' He goes on to say that 'this is one of the major reasons why our students are not achieving the learning goals as our curriculum has decided.' Teachers commonly report that no government support has been provided to ease this situation. A practical strategy voluntarily employed by schools is the adjustment of the school timetable, i.e., during the very hot period starting school earlier in the morning and during the very cold period starting school later in the morning. Teacher participants would welcome more flexibility in timings so the schools can choose the most appropriate school hours taking into consideration seasonal weather patterns and hazard conditions.

¹⁰ Over the last two decades, unlike other regions in Nepal the Terai region has experienced lowering of minimum temperatures during the winter months. The duration of cold waves has also been prolonged (Pradhan *et al.* 2019).

¹¹ Based on particulate matter (PM 2.5) concentration, the pollutant widely considered most harmful to human health (IQAir 2020).

¹² This research has unearthed no further details.

Section 4

Education Sector Responses to Climate Change

4.1. Policies, Plans and Strategies

The Government of Nepal has taken a number of critical steps to manage its response to climate change. In the *Fifteenth Plan* (Fiscal Year 2019/20-2023/24), the latest five-year development plan, climate change is highlighted as a crosscutting issue. The *Plan* outlines a vision to build a 'climate resilient-society' by increasing adaptation capacity and minimizing the negative impacts of climate change. It envisages that 'approximately 90 per cent of schools will be providing climate change education' by the end of the planned period (National Planning Commission 2019, 466, 469). Similarly, one of Nepal's targets under Goal 13 (Climate Action) of the Sustainable Development Goals includes climate change education by 2030 (National Planning Commission 2017b, 35).

Nepal's newly endorsed *Climate Change Policy, 2019*¹³ is the centrepiece of the country's climate change policy response. In line with the *Fifteenth Plan*'s vision of creating a climate resilience society, the *Policy* objectives include enhancing climate change adaptation capacity, building resilient ecosystems, promoting green economy by reducing carbon emissions, mobilizing financial resources for climate change mitigation and adaptation, integrating climate change into all policies, plans and programmes at all levels and in all sectors and mainstreaming gender equality and social inclusion (GESI) into climate change mitigation and adaptation programmes. While the eight key sectors¹⁴ identified do not include education, one of the 'inter-thematic areas' (i.e., Awareness Raising and Capacity Development) includes one education-specific strategy:

Subject-matters related to causes and impacts of climate change and climate-friendly traditional knowledge, skills and practises will be incorporated into formal and non-formal educational curricula (Government of Nepal 2019, 17).

The Government of Nepal submitted their first and second *Nationally Determined Contribution (NDC)* to UNFCCC in 2016 and 2020 respectively. While the first *NDC* lacks reference to the education sector, the second *NDC* suggests the inclusion of climate-related education in all secondary schools by 2025 as one of the key adaptation policy priorities, making no reference to primary schools.

The second *NDC* also identifies children and youth as one of the groups to which climate change adaptation (CCA) and disaster risk reduction (DRR) efforts should be directed (Government of Nepal 2016, 2020). The *Second National Communication to UNFCCC* recognizes the important role the education sector can play in preparing children to adapt to climate change effects and to enhance their resilience capacities to mitigate its effects (Ministry of Science, Technology and Environment 2014,165).

There are other sector policy documents with no primary remit for education but where specific reference to the education sector is included. The *National Policy for Disaster Risk Reduction 2018* and the *Disaster Risk Reduction National Strategic Plan of Action 2018-2030* - both proposing alignment between DRR and CCA - suggest integrating DRR in the school curriculum, developing inclusive school infrastructure and ensuring meaningful participation of children in DRR processes and platforms among others (Ministry of Home Affairs 2018a, 2018b). In the *Climate Change Health Adaptation Strategies and Action Plan of Nepal (2017-2021)* climate change curriculum development and delivery by 2021 is one of the proposed actions (Ministry of Health and Population 2018).



¹³ The earlier version, *Climate Change Policy, 2011*, was revised to make it compatible with the new federal governance structure.

¹⁴ Eight key sectors are: agriculture and food security; forest, biodiversity and watershed conservation; water resources and energy; rural and urban habitats; industry, transport and physical infrastructure; tourism and natural and cultural heritage; health, drinking water and sanitation; disaster risk reduction and management.

Nepal has a long history of mainstreaming school safety in the education sector. Over the years different initiatives supported by various development partners remained fragmented with structural safety the focus (Gautam & Rooke 2020). The devastating 2015 earthquakes, exposing the education sector’s vulnerability, triggered the Government of Nepal to develop a more systematic and holistic policy framework to enhance education sector resilience. Several policy initiatives have since been undertaken. In the 2016/17-2022/23 *School Sector Development Plan* (SSDP) ‘resilience’ is one of five key dimensions. The *Plan* calls for mainstreaming comprehensive school safety and DRR in the education sector by enhancing school-level disaster management and building resilience capacity among school and local communities (Ministry of Education 2016).

The SSDP’s resilience building commitment has been reinforced by the development of the *Nepal Safe School Policy* and the *Master Plan for Comprehensive School Safety* (Ministry of Education 2017). In line with the global Comprehensive School Safety Framework, these documents affirm that child access to a safe learning environment should be achieved through safe school infrastructure, school disaster management and risk reduction and resilience education. The *Master Plan* notes that this long-term road map is not limited to earthquakes and affirms that other natural and human-made hazards as well as the impacts of climate change are also part of the scope. However, the *Master Plan* contradictorily indicates that the following hazards are not directly addressed: epidemics, drought and air pollution (Ministry of Education 2017).

The *Master Plan* is accompanied by the following practical tools designed to enable schools and local level authorities implement the *Plan*:

- *Comprehensive School Safety Minimum Package* (MoEST 2018) lays out a minimum set of measures to achieve an adequate level of school safety in Nepal.

It includes 16 activities (4 activities for safe learning facilities; 8 activities for school disaster management; 4 activities for risk reduction and resilience education). The government anticipates the phased rollout of the *Minimum Package* to all schools by 2030.

- *Comprehensive School Safety Implementation Guidelines* (MoEST 2019a) is a standalone guide for schools and local governments to implement the *Minimum Package*, providing more than 30 practical implementation tools/guides.
- *Comprehensive School Safety Communication and Dissemination Strategy* (MoEST 2019b) offers various communication and dissemination methods to increase knowledge and awareness among all types of stakeholders at all levels so that they will be able to support the implementation of the *Minimum Package*.

In the *National Education Policy 2076* the ‘one student, one sapling’ and ‘one school, one garden’ programmes are suggested as vehicles for creating environmentally friendly schools (MoEST 2019c, 36-37).

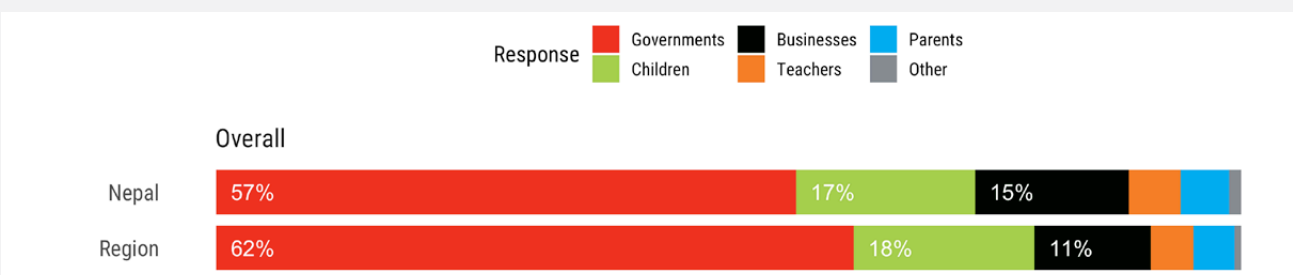
According to the U-Report survey conducted for this study, 57 per cent of Nepali youth respondents consider that the government should be taking most action to address climate change, followed by children (17 per cent) and businesses (15 per cent) (see *Box 1*). 63 per cent of Nepali youth respondents 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).

4.2. Finance

In order to improve climate-related public financial management, the Government of Nepal introduced an innovative climate change budget code in the Fiscal Year (FY) 2013/14. It is a tracking system of budget allocations to climate change-relevant programmes and activities. Eleven climate change-relevant development activity areas (see *Box 2* below) are identified and coded using the climate

BOX 1. UNICEF ROSA U-Report: Who should be taking the most action to address climate change? (n= 2,025 in Nepal; n= 13,532 in the region)

(Lopez Rello & Ackers 2021, 21)



change relevance index, i.e., 'highly relevant', 'relevant' and 'neutral'¹⁵ (NPC 2012). Since the introduction of the climate change budget code, the climate change budget allocations have increased by almost 6.5-fold, i.e., NRs 53.5 billions (10 per cent of the total government annual budget) in the FY 2013/14 and NRs 350.67 billions (27 per cent of the total government annual budget) in the FY 2018/19 (UNDP 2019).

The Government of Nepal has also developed the *Climate Change Financing Framework* (CCFF), a strategic framework for more effective and equitable climate investment. The CCFF is designed to help enhance government's capacity to 'mobilize, manage, and target climate finance at different levels' ensuring that funds can reach the most vulnerable local population groups, a priority under the *Climate Change Policy*¹⁶ (Ministry of Finance 2017, 6, 7).

BOX 2. Climate Change Related Activities

1. Sustainable management of natural resource and greenery promotion
2. Land use planning and climate resilient infrastructures
3. Prevention and control of climate change-induced health hazards
4. Prevention and control of climate change-induced hazards to endangered species and biodiversity
5. Management of landfill sites and sewage treatment for greenhouse gas (GHG) emissions reduction
6. Sustainable use of water resource for energy, fishery, irrigation and safe drinking water
7. Plan/programmes supporting food safety and security
8. Promotion of renewable and alternative energy; technology development for emission reduction and low carbon energy use
9. Preparedness for climate-induced disaster risk reduction
10. Information generation, communication, research and development and creation of data base
11. Preparation of policy, legislation and plan of action related to climate change

(Taken from National Planning Commission 2012, 13)

The climate change budget codes have been incorporated into the Ministry of Education, Science and Technology (MoEST) system through the Line Ministry Budgeting Information System (LMBIS)¹⁷ (National Stakeholders 1, 5). There is no MoEST budget directly addressing climate change although some climate change adaptation interventions are built into the school safety and DRR budget (National Stakeholder 4).

The *Consolidated Equity Strategy for the School Education Sector in Nepal* (Ministry of Education 2014) adapted in 2014 is an innovative government financing mechanism to address existing disparities in terms of education access, retention/participation and learning outcomes due to gender, caste, ethnicity, disabilities and socioeconomic conditions among others. An Equity in Education Index (or Equity Index), launched in 2017, is a core tool to measure and analyse disparities in evidence-based planning so that public funds get to where they are most needed. In 2018 the Equity Index was used to rank all the newly created 753 local governments mandated with the management of school education. The Equity Index has helped the government make targeted interventions to respond to identified disparities (Ministry of Education 2016; UNICEF ROSA 2020c). Considering that climate change impacts are disproportionately affecting those who are experiencing the most severe disparities in conditions, the Equity Index is making an indirect contribution to education sector resilience building in response to climate change.

4.3. Curriculum, Teaching and Learning

The majority of national-level stakeholders participating in the survey conducted for this study indicate that climate change education curriculum development is overall 'non-existent' or 'limited' at primary level (n=4) and 'limited' at secondary level (n=4). They also indicate that the main curriculum subjects that include climate change-related topics at primary school level are *Science, Health & Physical Education, Social Studies* and *Science & Environment*. At secondary level, *Health, Population & Environment Education, Science* and *Social Studies* and *Geography* are highlighted.

In the U-Report, 66 per cent of Nepali youth respondents (n=4,145) are unable to explain what climate change and global warming are about. 51 per cent of youth respondents (n=2,926) state that they have learned about climate change through *Science* and 26 per cent through *Geography* lessons (Lopez Rello & Ackers 2021).

The Curriculum Development Centre, an academic centre within the MoEST, is responsible for developing curricula, textbooks and other instructional materials for school education. *Box 3* is an indicative list of climate change-related topics in selected key subjects solely based on a curriculum unit/lesson title analysis. A detailed analysis of curriculum content has not been conducted.

¹⁵ Programmes are considered 'highly relevant' if 60 per cent or more of the allocation is related to climate change. Programmes are considered 'relevant' if 20-60 per cent of the allocation is related to climate change. Budget allocation below 20 per cent is 'neutral'.

¹⁶ The Government of Nepal is committed to use at least 80 per cent of total climate budget allocations to support climate change-related programmes at the community level (Government of Nepal 2011).

¹⁷ LMBIS is an online programme which interlinks and interfaces line ministries programme budget formulation and implementation with the Budget Management Information System of the Ministry of Finance (Ministry of Finance undated).

BOX 3. Climate Change-Related Unit/Lesson Titles: Indicative List

	Subjects	Topics
Primary (Grades 1-5)	Science, Health & Physical Education	<p>Grade 2</p> <ul style="list-style-type: none"> • Our environment • Our Earth <p>Grade 3</p> <ul style="list-style-type: none"> • Our environment • Use of wind and water • A windy day • A cold day • Cloud and rain • The Earth <p>Grade 4</p> <ul style="list-style-type: none"> • Interrelationship between living things and environment • Natural disaster • Energy • Weather • Seasons • The Earth • Environment • Safe environment • First aid <p>Grade 5</p> <ul style="list-style-type: none"> • Effects of human activities on environment • Environment conservation • Weather • The Earth • Solid waste
	Social Studies & Creative Arts	<p>Grade 2</p> <ul style="list-style-type: none"> • Our Earth (Our living place; Our village and town) <p>Grade 3</p> <ul style="list-style-type: none"> • Our Earth (The place where I live; My surrounding; Outline of my living place; My living place in the map) <p>Grade 4</p> <ul style="list-style-type: none"> • Our Earth (Our district; Structure of the Earth) <p>Grade 5</p> <ul style="list-style-type: none"> • Our Earth (Climate and lifestyle of Nepal; Natural vegetation of Nepal; The soil of our country)
Lower Secondary (Grades 6-8)	Science & Environment	<p>Grade 6</p> <ul style="list-style-type: none"> • Structure of the Earth • Weather • Environment and its balance • Environmental degradation and conservation • Environment and sustainable development <p>Grade 7</p> <ul style="list-style-type: none"> • Structure of the Earth • Weather and climate • Environment and its balance • Environmental degradation and conservation • Environment and sustainable development <p>Grade 8</p> <ul style="list-style-type: none"> • Structure of the Earth • Weather and climate • Environment and its balance • Environmental degradation and conservation • Environment and sustainable development
	Health & Physical Education	<p>Grade 6, Grade 7, Grade 8</p> <ul style="list-style-type: none"> • Environmental health • Safety and first aid

BOX 3. Climate Change-Related Unit/Lesson Titles: Indicative List

	Subjects	Topics
Secondary (Grades 9-10)	Environment Science	<p>Grade 9</p> <ul style="list-style-type: none"> • Nepal's natural resources and biodiversity • Atmospheric pollution • Climate change and its impact • Alternative energy • Environment and sustainable development • Environmental health • Natural disasters and disaster management • Environmental management <p>Grade 10</p> <ul style="list-style-type: none"> • Atmospheric pollution • Climate change and its effects • Alternative energy • Environment and sustainable development • Natural disasters and disaster management • Environmental management
	Geography	<p>Grade 9</p> <ul style="list-style-type: none"> • Definition of heat and pressure and effects of solar energy • Weather and climate • Climate regions of Nepal <p>Grade 10</p> <ul style="list-style-type: none"> • Types of climate • Climate conditions of Nepal • Biodiversity • The impact of natural resources on human life • Disaster reduction and management • People and the environment • The impact of the environment on human activities
	Health, Population & Environment Education	<p>Grade 9, Grade 10</p> <ul style="list-style-type: none"> • Natural resources and biodiversity • Environmental health and diseases
	Science	<p>Grade 9</p> <ul style="list-style-type: none"> • Nature and environment • Natural hazard
	Social Studies	<p>Grade 9</p> <ul style="list-style-type: none"> • Our Earth (Nepal's climate; Condition and use of Nepal's water resources) <p>Grade 10</p> <ul style="list-style-type: none"> • Types of climate change in the world

Source: Curriculum Development Centre. (2021).

According to a climate change lower-secondary curriculum review conducted by the Ministry of Science, Technology and Environment (2014), climate and environment-related contents exist in the curriculum. However, textbooks developed by the Curriculum Development Centre are 'not friendly to the level of students' in that the contents and language are not sufficiently simplified for target students. Implementation of the climate change-related curriculum components is 'poor' as teachers are not sufficiently oriented to the new content and teacher support materials are lacking (155-56). The latest government review of the role of education in developing climate change-related knowledge, skills and awareness has found that practical climate change content is missing in educational

programmes. It points out that curricula at all levels need periodical updating to include new information concerning climate change while making the issue more locally relevant. Teaching and learning support materials in Nepali and/or local languages would, it finds, be of help to both teachers and students (Ministry of Forests and Environment 2021).

The 2016/17-2022/23 *School Sector Development Plan* (SSDP) proposes a curriculum review and subsequent development of a revised comprehensive national curriculum framework in which life skills, environmental awareness and disaster preparedness will be included. The SSDP also notes that curriculum development should include local curriculum components¹⁸ that will

¹⁸ The idea of local curricula is not new in Nepal but goes back to the early 1990s. The primary school curriculum of 2005 allowed for the provision of 20 per cent weightage for the study of local content in *Social Studies*, *Creative Arts* and *Physical Education*. It has also made provision for local need-based studies which aim at fulfilling the diverse needs and interests of students and localizing the learning to make it more relevant to them (Curriculum Development Centre 2007).

be determined by provincial and local governments (Ministry of Education 2016). This opens great potential for integrating contextualized climate change teaching and learning in the local curricula. Effective deployment of local curricula, however, is highly dependent on provincial and local government capacity as well as willingness and engagement on the part of teachers in helping develop materials relevant to their local context.

When asked about what they most wanted to learn about climate change in the U-Report, 50 per cent of Nepali youth participants (n=2,930) report that they would like to learn about all aspects of climate change. 16 per cent of Nepali 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 (see Box 4).

Student FGD participants are keen to learn more about climate change solutions and practical actions (e.g., use of renewable energy technologies, sustainable agricultural practice, sustainable waste and water management and individual environmentally friendly behaviours). They are also interested in 'exposure visits' so that they can learn about good practice examples and apply what they have learned to their own context.

During the teacher FGD, participating school principals report on some of the actions they have taken to address climate change in their schools using extracurricular opportunities. Examples include: occasional classroom visits by the school principal to talk about climate change and disaster-related topics; gardening and tree plantation work within the school premises and also in surrounding areas; photo, speech, essay and drama competitions on climate change.

National-level stakeholders participating in the survey commonly consider that project-based, inquiry-based and field-based teaching and learning are desirable for climate change education. This is in line with the Ministry

of Education's intention to shift 'textbook-focused' 'lecture-oriented' and 'overly exam-oriented' pedagogies to more 'child-friendly, learner-centred and interactive pedagogies for active learning and the development of a range of skills' (Ministry of Education 2016, 9, 22; MoEST 2019c, 4). In terms of climate change learning assessment, the national stakeholders surveyed commonly suggest employing continuous and formative assessment modalities such as observation and project-based assessment.

Asked to imagine that they were the Minister of Education in Nepal and what they would like to do to help children and young people to contribute to positive actions aiming at tackling climate change challenges, student FGD participants were keen to share their creative visions. See Box 5 for some examples of student remarks.

BOX 5. If I were the Minister of Education in Nepal...'

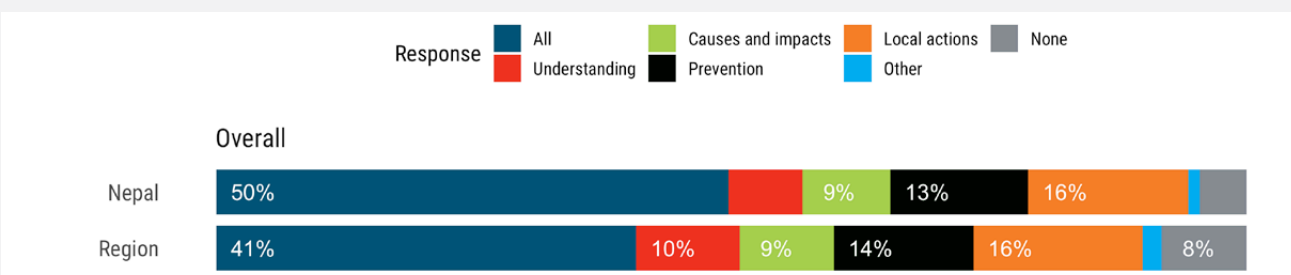
I would like to add a separate subject on climate change to the school curriculum, including components such as climate change effects, impacts and mitigation measures. I would also like to support child clubs so that children can be mobilized and active. (Soni, Grade 10)

I would like to raise student awareness on climate change through school competitions. I would like to support poor children – enrol them in school and provide some food, school materials and funding. (Roshani, Grade 8)

I would encourage students to conduct special awareness raising initiatives for illiterate people in the village using dramas and local languages. (Abishek, Grade 7)

BOX 4. UNICEF ROSA U-Report: What do you most want to learn about climate change? (n=2,930 in Nepal; n=18,266 in the region)

(Lopez Rello & Ackers 2021, 18)



4.4. Teacher Capacity Development

Provincial Education Training Centres are in charge of providing in-service teacher professional development. Climate change-related content within the existing professional teacher training programmes and materials is very limited. Back in 2016, the Curriculum Development Centre developed a *Training Manual on Teaching Climate Change* and conducted a three-day training programme for secondary level teachers from different regions of Nepal. The manual has not been updated since then and the training did not continue (National Stakeholders 1, 4). Topics such as climate change impacts and local level climate change mitigation planning should be part of in-service training programmes using activity-based and practical pedagogies (National Stakeholder 1).

There are no pre-service teacher training programmes and support materials focussing on climate change education in Nepal (National Stakeholders 1, 2, 3, 4).

4.5. Communication, Coordination and Partnership

In Nepal, overlapping themes of climate change, disaster risk reduction and the Sustainable Development Goals are led by the following federal institutions respectively: the Climate Change Management Division of the Ministry of Forests and Environment, the Ministry of Home Affairs and the National Planning Commission. The Ministry of Federal Affairs and General Administration is responsible for local government and coordinates the development of guidelines for the integration of disaster risk reduction and climate resilience into the local planning process. It is vital to systematically align the processes and governance structures attached to these thematic areas, but coordination between these communities needs to be improved (Ministry of Forests and Environment 2020; Regmi *et al.* 2019).

At the national level, there are inter-ministerial coordination mechanisms on climate change as follows:

- *The Climate Change Council*: Established in 2009, the council is responsible for high-level coordination, guidance and direction on climate change policies. It is chaired by the Prime Minister.
- *The Multi-Stakeholder Climate Change Initiative Coordination Committee (MCCICC)*: Established in 2010, MCCICC serves as the key national platform for ensuring regular dialogue and consultation on climate change-related policies, plans, finance, projects and activities among state and non-state actors at the executive level.
- *The Climate Change Coordination Committee (CCCC)*: Initially created in 2011, the committee coordinates,

facilitates and shares information on climate change programmes and activities at the ministerial level. CCCC is chaired by the Minister for Forests and Environment (Ministry of Forests and Environment 2018, 2020).

In the education sector at national level, there is no coordination mechanism directly addressing climate change. There is a Technical Working Group (TWG) on the Comprehensive School Safety Framework. This TWG consisting of education sector stakeholders normally meets on a quarterly basis (National Stakeholder 4).

While the comprehensive school safety framework developed in Nepal includes climate change adaptation, to what degree this TWG addresses climate change-related concerns in the education sector is a moot point.

See *Box 6* for a successful micro hydropower project supported by multiple partners.

BOX 6. A school-owned Micro Hydropower Plant, Phugmoche, Solukhumbu District

The Himalayan Sherpa Buddhist Lower Secondary School is a boarding school attached to a Buddhist monastery and is located in the remote mountainous north-eastern part of Nepal. In order to reduce high financial and environmental costs associated with annual use of firewood, the school community came up with the idea of building a school-owned micro hydropower plant back in 1998. With financial and technical support from foreign aid and private partners and labour provided by local villagers, a 35kW Basa Khola micro hydropower plant was built in 2005. The plant provides electricity to the school, a monastery and two neighbouring villages in Pankarma and Tajinma. After the establishment of the hydropower plant, consumption of firewood by the school and the villagers was significantly reduced, hence contributing to forest conservation and reduction of CO₂ emissions. Availability of hydroelectricity triggered growth of local industries such as paper-making and yak cheese production. Thanks to the electricity, the school can provide heating for classrooms and sleeping rooms and treat water using electrical water boilers, leading to a significant reduction in water-borne disease (e.g., diarrhoea) among students. Computer lessons in winter and English lessons using cassette recorders have also become possible (Bräunig 2011).

4.6. School/Community Student Participation Platforms

In Nepal child clubs have a long history. They have provided an inclusive platform for addressing a wide range of issues revolving around the rights of the child. Through child clubs, children obtain knowledge, share views and concerns and take action to address issues (UNICEF 2009; UNICEF Nepal 2019). In recent years, child clubs have been used to address issues concerning disasters and climate change (see the CCDRR Programme in *Box 8*). The *School Sector Development Plan* calls for mobilizing 'child clubs to engage children in active learning on DRR' (Ministry of Education 2016, 57).

Predicated on a government directive to promote 'Eco Clubs' in government schools, the *Green School Guidelines* were developed by the MoEST in partnership with NGOs (WWF Nepal and SENSE Nepal) in 2016. The guidelines envision transforming government schools into 'living laboratories' where children could engage in various environmental awareness and conservation activities. Underpinned by the concept of 'One Garden, One School', the guidelines encourage schools to create a garden of medical herbs and varieties of fruits and to become more environmentally friendly. Schools are also encouraged

to conduct plantation initiatives on empty lands and to establish 'eco-library' and 'bio-museum' initiatives, among others (Mandal 2018; WWF Nepal 2018).

The *National Climate Change Policy* suggests forming and mobilizing 'Youth Volunteer Committees for climate-induced disaster management' at the local level (Government of Nepal 2019, 24) but without offering further details. How such committees could be operationalized is not clear but linking the youth committees with child clubs might provide synergy to accelerate local climate action.

Participants in the student FGD report that they have obtained climate change awareness from formal lessons (e.g., *Science* and *Social Studies*) and, importantly, from extracurricular/community activities. In the latter case, through the child club activities supported by a local NGO, Aasman Nepal, they not only learned about the basics of climate change, its effects and mitigation measures but also engaged in awareness raising and environmental protection/conservation activities (e.g., tree planting) at the village level. Students report a dilemma concerning the advocacy work in their village in that their efforts clearly raised awareness among village adults and they stopped cutting trees, but after a while they resumed cutting trees 'for survival'.





The radio drama series called ‘Milan Chowk’¹⁹ is another unique platform that could be galvanized behind climate change learning and action for children and youth. Spread over a year, weekly 20-minute episodes were broadcasted in Nepali and four other languages targeting families and communities. Key messages and critical information concerning DRR, child health (including nutrition) and child protection were embedded in stories of everyday life for villagers living in imaginary villages in Nepal. Stories are well aligned with seasonal and geographical characteristics and potential natural hazards (e.g., floods and landslides). Ten minutes of local content was added to adapt the key messages to the particular local context and local languages through 16 selected radio stations across the country (UNICEF Nepal 2018).

According to the U-Report survey conducted for this study, 96 per cent of Nepali youth respondents express that they would like to do something to address climate change with necessary support. ‘Teaching own community the impact of climate change’ (31 per cent) is the most dominant wish expressed, followed by ‘starting an organization’ (20 per cent) and ‘helping my family and community to suffer less from the impacts of climate change’ (16 per cent) (see Box 7). See also Box 8 for some noteworthy child and youth engagement opportunities to raise their awareness of climate change and exercise their agency to make positive changes.

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=1,735 in Nepal; n=11,607 in the region)

(Lopez Rello & Ackers 2021, 26)



¹⁹ Developed by UNICEF Nepal in partnership with the World Association of Community Radio Broadcasters Asia-Pacific, the Association of Community Radio Broadcasters Nepal and Ujyaalo Multimedia Nepal.

BOX 8. Child and Youth Engagement and Action

UNICEF-supported Child-Centred Disaster Risk Reduction (CCDRR) Programme (2013-16 for Phase I²⁰; 2016-19 for Phase II²¹)

The CCDRR programme approach is focused on educating children on disaster risk at home, in their school and community and empowering them to use their new knowledge, while also ensuring child voice and participation in DRR efforts. The CCDRR programme uses community-based and school-based child clubs and child club networks for identification of hazards and risk analysis, communicating risks for action and influencing local level development planning processes and resource allocation for risk mitigation. In schools, school safety clubs offer a platform for students to learn and share information about comprehensive school safety and DRR. Under the CCDRR programme supported by UNICEF, 81 child clubs were formed at ward level as well as 9 children's networks consisting of representatives from each club at municipal level (*Phase I*). 57 school safety clubs were also formed (*Phase II*) (UNICEF Nepal 2019; UNICEF Nepal 2018 cited in Ministry of Home Affairs 2019).

During the monsoon season, most child clubs organized door-to-door campaigns within their own communities

to raise household awareness on flood risks and possible outbreaks of water- and vector-borne diseases. During the dry season child club members in Terai passed on fire safety messages through door-to-door visits. Focusing particularly on climate change, the school safety club at Sodasha Devi Higher Secondary School in Achham District developed solid waste management pits, planted trees in school premises and maintained the water supply tank (*ibid.*).

Nepalese Youth for Climate Action (NYCA)

Established in 2008, the Nepalese Youth for Climate Action (NYCA) is a youth-led national network to tackle climate change. Its goal is to protect Nepal and its people from adverse impacts of climate change by raising awareness at local, national and international levels, advocating policy changes and taking action. NYCA promotes active roles by youth in Nepal's transition towards a greener future through climate change adaptation and mitigation efforts. Educating, empowering and mobilizing youth, pressurizing the large GHG emitting countries for deeper emission cuts and urging the Nepalese government to move towards a low carbon economy are some of the NYCA's key objects (Nepalese Youth for Climate Action undated).

4.7. Monitoring, Evaluation and Accountability

In general, gathering, analysing and managing disaster and climate change-related data remains a major challenge. Risk assessment practices have been project-based, each using different assessment tools and standards (UNDRR 2019).

While available data and observation suggest that climate change has already severely impacted poor and vulnerable populations and different sectors including education, the available evidence is 'insufficient for formulating and updating policies that address linkages between ecosystem degradation, increased disaster risks and climate change'. Existing data is 'so haphazardly stored that it is neither coherent nor consistent' (Gautam & Rooke 2020, 74).

In the education sector, no detailed studies prior to this have been conducted concerning the impacts of climate change. Rigorous climate change impact data in the education sector are also absent. The Education Management Information System (EMIS) does not include specific questions/

indicators concerning DRR, climate change, emergency, while school-level monitoring tools do not include climate change-specific impact indicators (National Stakeholders 1, 5).



²⁰ Programme pilot districts: Achham, Dhanusha, Parsa and Saptari.

²¹ Programme districts: Achham, Baitadi, Bajura, Dhading, Dhanusha, Dolakha, Parsa and Saptari.

Section 5

Discussion and Recommendations

Box 9 below synthesises the perspectives of the national stakeholders participating in the survey for this study. It indicates the overall strengths and weaknesses of the education system's response to climate change in Nepal as well as opportunities presented and threats/obstacles faced.²²



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

Strengths

- National policies, plans, strategies referring to climate change
- Active child clubs working on DRR and climate change issues
- Climate Change Council (chaired by Prime Minister)
- Good level of commitment to DRR and climate change at different levels
- Sector-wide approach and Technical Working Group to support the government
- Climate Change Financing Framework

Opportunities

- Local government autonomy to manage school education (plan, implement and monitor climate change risk mitigation)
- Local government autonomy to develop and implement local curriculum focusing on climate change
- Collaboration between the Federal government and development partners
- Increasing donor interest in funding climate change
- Developing policy instruments on DRR and climate change at local government level
- Developing climate resilient schools and communities
- Three-tier government system – local governments being close to schools; budget mobilization and allocation at local government level

Weaknesses

- Absence of teacher capacity building opportunities on climate change risk mitigation
- Lack of climate change awareness programmes at school
- Lack of climate change education curriculum content and skills/practice-focused teaching and learning
- Inadequate teaching and learning materials
- Limited understanding of DRR and climate change among the stakeholders
- Lack of capacity to support teachers and monitor climate change adaptation interventions systematically
- Varying level of climate change understanding and commitment among the newly formed 753 local governments

Threats/Obstacles

- Lack of budget in the COVID-19 pandemic context
- Ineffective and inefficient policy implementation
- Lack of climate change understanding at the local level
- Climate change not a priority for local governments
- DRR/climate change seen as emergency responses with risk reduction not being prioritized at the implementation level
- Accelerating pace of climate change and its impacts with lack of teacher and school capacity to cope with them

²² Note: SWOT entries indicate 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

Overall, there are no mechanisms and tools in place to systematically assess and monitor climate change impacts on school infrastructure, student and teacher health and wellbeing, education provision and learning quality. The Education Management Information System (EMIS) and school-level monitoring tools do not capture any data concerning climate change, DRR, emergency and the environment. Lack of reliable data is an obstacle for policy development and budget allocation for climate change vulnerability reduction and resilience building in the education sector.

Recommendations

- Consult with relevant stakeholders, develop climate change impact and vulnerability indicators and subsequently integrate them into the comprehensive school safety indicators, EMIS and/or school-level assessment tools.
- Develop inter-ministerial collaboration mechanisms between MoEST and relevant Ministries/Agencies (e.g., Ministry of Home Affairs; Ministry of Federal Affairs and General Administration; Ministry of Forests and Environment; Ministry of Health and Population) in gathering, sharing and analysing climate change impact data as it concerns children and schools; integrate such data into the Disaster Information Management System (DIMS).

Policies, Plans and Strategies

In key national climate change policy documents such as the *Climate Change Policy 2019* and the *Nationally Determined Contribution* documents, education is not identified as a priority sector and children and young people's active roles in climate action are not recognized.

In the aftermath of the 2015 earthquakes, Nepal has adapted the global comprehensive school safety framework and developed a set of policy, plan and implementation tools ensuring harmonization with the *School Sector Development Plan*. While there is a clear intention to build resilience in the face of multi-hazards facing the education sector, mitigating impacts of climate-induced events such as drought, heat and cold waves and environmental degradation in the education are current gaps.

Active participation of stakeholders at all levels is clearly required for effective implementation of the *Comprehensive School Safety Minimum Package*. However, awareness

of school safety is low among local government officials, which makes implementation and resource allocation for school safety at the local government level challenging. The ongoing federal transition makes the capacity development efforts at the sub-national levels difficult not least because the roles and responsibilities at different government levels are yet to be fully clarified (Gautam & Rooke 2020).

When education access is likely to be disrupted by recurring extreme weather conditions and more frequent and intensifying meteorological hazards, diversifying alternative learning pathways becomes vital in efforts to ensure education access, retention and quality of learning. This might include, depending on learners' access to resources, Internet technology, TV, radio and/or resource-drop at home. In this regards, lessons learned during school closure due to the COVID-19 pandemic²³ should be applied in existing and new education policies, plans and guidelines as appropriate.

Recommendations

- Ensure continuous integration of resilience and school safety in the new *School Sector Development Plan*, addressing climate change mitigation and adaptation components more prominently.
- Ensure that Nepal's *National Adaptation Plan* which is currently under development incorporates the education sector's medium- and long-term needs concerning climate change vulnerability reduction and resilience building.
- Ensure climate change adaptation and mitigation are prominently addressed in the *Comprehensive School Safety Minimum Package* rollout.
- Raise awareness and build the capacity of local government personnel on the *Comprehensive School Safety Minimum Package* with an emphasis on climate change mitigation and adaptation.

Finance

The Government of Nepal has established an innovative climate change budget tracking system. It has been rolled out to a number of line ministries including the Ministry of Education, Science and Technology (MoEST). Detailed climate change budget and expenditure analysis in the education sector lay outside of this study and more detailed studies are required in this regard. Such studies could examine the relationship and synergies between school safety budget allocations and those budget lines linked to climate change within the education sector.

²³ UNICEF working in partnership with the provincial Education Cluster, local governments and implementation partners provided self-learning packs to 2,000 children who are most in need in Bajura District. Each self-learning pack consists of workbooks, stationary and games. Care givers and teachers were given orientations to better support children using the pack (UNICEF ROSA 2020c).

The existing Equity Index in the education sector has great potential for supporting students and school communities disproportionately affected by climate change. Climate change-related vulnerability components could be explicitly integrated into the Equity Index. Harmonization of the Equity Index, climate change budget coding, and the *Climate Change Financing Framework* will help institutionalize needs-based budgeting, planning and programming to make the education sector more climate responsive.

Recommendations

- Raise awareness among government officials especially at the local government level regarding the benefits of financing climate change mitigation and adaptation activities in the education sector.
- Consider reviewing and updating the Equity Index by integrating climate change vulnerability components.
- Consider harmonizing the Equity Index, the climate budget coding and the *Climate Change Financing Framework* so that climate change budget allocations in the education sector are needs-based and equitable.
- Explore external climate change funding opportunities (e.g., Green Climate Fund, Adaptation Fund) with a view to filling the current resource gap so as to enhance climate resilience in the education system.

Curriculum, Teaching and Learning

There exist pockets of climate change-related unit/lesson titles in the school curriculum but systematic integration of climate change-related themes and topics - vertically through curriculum progression and horizontally through cross-curricular reinforcement - is not evident.

A revised comprehensive national curriculum framework is forthcoming. As it plans to articulate not only knowledge but also skills, attitude/values outcomes and to integrate life skills, environmental awareness and disaster preparedness, the new curriculum framework will provide an opportunity for more systematic climate change integration in the national curriculum.

Localized curriculum, a unique feature in Nepal, presents an ideal opportunity to develop and implement locally relevant and contextualized climate change teaching and learning. Local people working on green initiatives can be invited to the school as guest speakers or resource persons. Local elders can also be invited to the school to share their traditional/indigenous knowledge and practices concerning environmental conservation and protection. Teachers can

organize field visits so that students can have first-hand opportunities to learn about climate change impacts and local good practice examples. However, without necessary awareness raising, capacity building and resource allocation at the local government level, such opportunities are likely to be missed.

In line with government ambitions to build a climate resilient society, students should develop new skills and competencies necessary for contributing to a greener and more sustainable economy and lifestyles. This may include competencies concerning sustainable agriculture, environmental protection and conservation, renewable energy, sustainable waste and water management among others. Advocacy and leadership skills to facilitate the change should also be developed in an age-appropriate manner.

Multidimensional climate crises require broad life skills to address mutually reinforcing issues of child protection, WASH, health and nutrition holistically. Students need to develop and hone critical and creative thinking skills, problem solving skills, self-management skills, coping skills for difficult emotions and uncertainties, advocacy and leadership skills as well as skills and attitudes disposing to live in harmony with nature among others.



Recommendations

- Conduct a thorough curriculum audit at both primary and secondary levels to identify existing opportunities and gaps for climate change risk reduction and resilience building learning and action. Build on the opportunities and close the gaps.
- In developing a comprehensive national curriculum framework, articulate clear grade-by-grade learning outcomes including knowledge, skills and attitudinal/ 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.
- Identify contextually appropriate green skills for a low carbon economy and integrate them into the forthcoming national curriculum framework.
- Integrate life skills education opportunities that comprehensively address child protection, WASH, health and nutrition to better deal with multifaceted climate change crises. Help students develop critical and creative thinking skills, problem solving skills, self-management skills, advocacy and leadership skills, coping skills, and the skills and attitudes to live in harmony with nature in an age-appropriate manner.
- Develop child-friendly learning support materials, such as grade-by-grade readers which introduce climate change issues and convey pro-environmental messages, while helping student develop basic reading skills in an age-appropriate manner.
- Develop federal and provincial government level strategies/guidelines to best support local government in utilizing the local curriculum for climate change learning and action reflecting unique local ecosystems, climate hazards and vulnerability at local level.
- Provide students with opportunities, arenas and platforms to take concrete actions and fulfil change agency and advocacy roles in mitigating climate change impacts at school, in their local community and beyond.

Teacher Capacity Development

There are no climate change-specific in-service and pre-service teacher training programmes and materials in Nepal. The *Comprehensive School Safety Minimum Package* activities have a very limited focus on teacher capacity development programmes but, if developed, could include climate change components as an integral part of their programming.

The MoEST's overall intention to shift from teacher-centred and exam-oriented teaching and learning to more child-centred, active and practical pedagogies could be a springboard towards realizing action-oriented climate change education in Nepal.

Recommendations

- Conduct a thorough teacher education curriculum audit for both pre-service and in-service training programmes to identify existing opportunities and gaps for climate change risk reduction and resilience building. Build on the opportunities and close the gap.
- Ensure integration of climate change mitigation and adaptation components in Comprehensive School Safety teacher capacity development programmes.
- Build teacher capacities in employing a wide range of active/participatory and child-centred pedagogies, such learning modes being vital for action-oriented climate change education.
- Build teacher capacity in providing basic psychosocial support and basic support to maintain student health and wellbeing if threatened or adversely impacted by climate change.
- Build teacher capacity in promoting environmentally sustainable practices at school and in the community that are most relevant to the locality (e.g., water conservation; developing school gardens; tree planting; waste management; using and maintaining renewable energy technology; awareness raising and advocacy techniques) through in-service teacher trainings/workshops.



Communication, Coordination and Partnership

There are no systematic coordination and communication mechanisms focusing on education sector climate change risk mitigation and resilience building. Inter-ministerial collaboration and coordination between the MoEST and the Ministry of Forests and Environment is overall lacking.

Climate change national and local curriculum development, teacher professional programme development, and greening actions at school and in the community will all greatly benefit from technical expertise, input and resources from relevant government Ministries/Agencies (e.g., Ministry of Federal Affairs and General Administration, Ministry of Home Affairs, Ministry of Forests and Environment, Ministry of Health and Population) and from donors as well as from UN agencies and NGOs/CSOs. In realizing climate smart school development (e.g., solar energy technology and facilities; tree planting and school gardens) expertise and resources should be widely mobilized and integrated.

Recommendations

- Incorporate climate change risk reduction and resilience building components into the existing coordination mechanisms/platforms at national level (e.g., the Technical Working Group on Comprehensive School Safety); also incorporate them into existing or emerging vertical communication mechanisms between the MoEST, provincial and local governments and schools.
- Ensure a multi-sector partnership approach to embedding climate change components into the forthcoming curriculum framework, the next *Education Sector Development Plan*, teacher training and capacity building programmes and environmentally friendly actions and initiatives at the school level.

School/Community Student Participation Platforms

In Nepal child clubs have been popular child participation platforms to address various issues and challenges children face. Disasters and climate change have been increasingly addressed via child clubs. Eco-clubs also exist and are promoted in the school system by the MoEST but it is not clear if and how DRR-focused clubs and eco-clubs are harmonized. The 'Youth Volunteer Committees for climate-induced disaster management' is another local platform for young people but details are yet to be determined. Necessary support should be given to help them operationalize.

Predicated on lessons learned from the unique radio programme 'Milan Chowk,' young people can be trained

and supported to develop youth-led radio programmes to raise climate change awareness and promote climate action among peers and community members.

This research has not come across any concrete examples of linking non-formal climate change activities (e.g., child clubs) with formal learning.

Recommendations

- Ensure that co-curricular and community-based learning and action via child clubs on DRR, climate change and/or the environment are purposefully linked to the formal curriculum.
- Ensure effective coordination among different student participation platforms so as to create synergies between them.
- Create a 'green star' recognition scheme for individuals and schools making a unique contribution to mitigating and adapting to climate change.
- Develop youth-led radio programmes to raise climate change awareness and action among youth and community members.
- Develop an online platform, a 'clearing house', for sharing climate change-related experiences and actions among students in Nepal.
- Link Nepali students to national, regional and global climate change movements/networks through online platforms or face-to-face gathering as appropriate.



Section 6

Conclusion

While the mechanisms and tools to systematically monitor and access climate change impacts on the different aspects of education system are currently lacking in Nepal, this research has highlighted some examples of climate change impacts on the education sector as experienced in Nepal: school infrastructure destruction and damage caused by climate change-induced disasters; lack of water at school; interrupted education access due to natural hazards and increasingly harsh weather conditions; a growing incidence of student ill-health due to water- and vector-borne diseases; declining lesson time due to increasing hazard events; difficulties in teaching and learning in the classrooms with extreme temperatures without facilities to ease the adverse impacts.

Key recommendations included in this study are: developing and integrating climate change impact and vulnerability indicators for the education sector; integrating climate vulnerability components to Nepal's innovative Equity Index; more prominently integrating climate change considerations in key education sector policy and planning documents; developing climate change education curricula and teacher capacity development programmes systematically; supporting local governments in utilizing the local curriculum for climate change learning and action; ensuring a multi-sector partnership and collaboration approach in mainstreaming climate change considerations in education policies, curriculum, and capacity building programmes; linking school and community based learning and action platforms (e.g., child clubs) purposefully to create maximum synergies.

The education sector has a critical role to play in protecting children and preparing present and future generations of children 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 education system in Nepal more climate change resilient and to empower Nepali 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 and safer future for their communities and country, and beyond.



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THE HEAT IS ON!

Towards a Climate Resilient Education System in Nepal



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