

# Impact of Climate Change on Students: A Case of a Private High School in Zimbabwe

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**Citation:** Florence Zimunya, Constance Chifamba and Elisha Chembwa (2025). Impact of Climate Change on Students: A Case of a Private High School in Zimbabwe. *Environmental Reports; an International Journal*.

**DOI:** <https://doi.org/10.51470/ER.2025.7.2.150>

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Received 20 July 2025 | Revised 17 August 2025 | Accepted September 15 2025 | Available Online October 09 2025

## ABSTRACT

Climate change poses fundamental threats to humans, especially students. The researchers carried out a descriptive Qualitative case study with 34 participants and a secondary school setting. In-depth interviews were done with school administrators, teachers, and support staff, (some of these were parents of learners). Two focus group discussions were carried out, one with Boarding students and the other with Day scholars. Findings indicate that although climate change has a host of negative impacts on students, there are some positive impacts that emerged from their experience. Major themes that emerged were the direct and indirect impacts of climate change on the students. The major impact was on the students and the physical environment and this cascaded to affect the economy. Students' health and students' academics. This, in turn, led to other emerging themes emanating from how these direct impacts influenced the students' social and psychological well-being. Other themes that emerged are the coping strategies. As the community accepts the fact that climate change is here to stay, they come up with strategies for surviving through climate change and developing resilience. They learnt to be a caring community, the school offering food to all day scholar students and providing piece jobs to some parents so they keep their children in school. In brief, 4 themes emerged from this study. These are: direct impacts, indirect impacts, coping strategies, and developing resilience and a caring community. The study recommends adequate disaster preparedness in schools and communities to ensure they develop coping strategies in case of other future crises.

**Keywords:** Climate Change; Disaster; Student.

## 1.0 INTRODUCTION

Climate change is the significant variation of average weather conditions becoming, for example, warmer, wetter or drier over several decades. It is the longer-term trend that differentiates climate change from natural weather variability [17]. This variation of weather conditions poses many risks to human beings and all other forms of life on earth. Many countries in Sub-Saharan Africa have been experiencing the negative impacts of climate change [20]. Extremes in weather patterns have resulted in water shortages in some places while other places experience floods. Consequently, the quality of life declines due to inadequate food supplies due to drought, reduced income, unhealthy environmental conditions, water shortages, contaminated drinking water sources and malnutrition. This study seeks to delve into the different negative impacts of climate change and how some of them affect students as they pursue their studies [18, 16].

### Research objectives

The study is guided by the following research objectives

1. To determine the extent to which climate change has affected the physical infrastructure and resources of Junction Adventist High School.
2. To determine the extent to which students at the School understand and perceive climate change and its impact.
3. To establish the perceived effects of climate change on students' education in the following aspects: Health, Financial support by parents, Psychological well-being, School attendance, and Academic performance.

4. To establish the coping strategies that the students, teachers, and the administration have implemented in response to climate change-related challenges.

### Research questions:

1. How has climate change affected the physical infrastructure and resources of the private High School?
2. To what extent do the students at the private Adventist High School understand and perceive climate change and its impact?
3. How did climate change affect the students in terms of Health, Financial support by parents, Psychological well-being, School attendance, and Academic performance?
4. What coping strategies have the students, teachers, and the administration implemented in response to climate change-related challenges?

## 2.0 LITERATURE REVIEW

Many countries in Sub-Saharan Africa have been experiencing the negative impacts of climate change. Climate change is a significant and long-lasting change in the Earth's climate and weather patterns [33]. This involves long-term shifts in weather patterns, usually resulting in rising temperatures. Such shifts from the usual climate are generally considered Climate change. Climate Change is characterized by changes in weather patterns, leading to unusually warmer temperatures in some areas, whereas in other places, there are floods; on the other hand, other places experience inadequate rainfall. Such extremes in weather patterns have resulted in water shortages in some places; while other places experience floods. These trends of extremes in weather patterns have been observed in the last few

decades. According to the EPA, the average global temperatures have shown a marked rise in global temperatures, thus concluding that 2014–2023 is the warmest decade on record worldwide {4,5}. Extreme weather patterns characterized by relatively high-temperature conditions, unusually hot summer nights and unusually very low temperatures are becoming more common since the 1970s. Actually, unusually hot summer days (highs) have become more common over the last few decades in the United States {4}. Extreme heat is usually associated with droughts and famines. According to the UNCCD, 2016 publication, in Malawi, 2.8 million people were facing food insecurity. Swaziland has been affected by severe drought, causing extensive crop loss and cattle deaths. In Zimbabwe, 26 per cent of the whole population was facing food shortages and 600,000 people were at IPC phase 3 because of drought. Maize production declined by about 50 per cent compared to the previous year's harvest. Zambia was reported to have almost 800,000 food-insecure people. As drought caused low water levels in the hydro-electric Kariba Dam. Thousands of people lost their jobs {18,21}.

Traditionally, the two hazards, drought and floods, were not commonly associated with the same geographical regions. floods have traditionally been associated with tropical regions and droughts with arid areas but of late, climate change, has redefined this geographical distribution {17}. Both Arid regions and low-lying regions are experiencing more floods due to extreme precipitation. Unfortunately, such catastrophic hazards are experienced by vulnerable communities, that lack the preparation and infrastructure to cope. These include Asia, Africa, and South America {5}. In addition to these negative effects of extreme heat, scanty rainfall results in droughts and famine. Experiencing extreme drought seasons means poor crop yields, which in turn leads to famines and malnutrition. During the drought periods, it becomes difficult to have access to potable water. Young school-aged children have to walk long distances to fetch water for drinking, for bathing, and even for their livestock {24}. Consequently, the quality of life declines due to inadequate food supplies due to drought, reduced income, unhealthy environmental conditions, water shortages, contaminated drinking water sources, malnutrition, school dropouts, early marriages, etc {1}

### Causes of Climate Change

There are several causes of Climate change but most of these are anthropogenic activities These include the use of Fossil fuels – coal, oil, and gas, which produce large amounts of carbon dioxide and emission of greenhouse gas emissions. This is a leading cause of global warming and climate change. Other causes of climate change include poor agricultural practices and environmental mismanagement, such as deforestation, change of land use, and water mismanagement, use of fossil fuels {26}. Global warming and climate change pose many health risks to human lives and other life forms on Earth {26}; Intergovernmental Panel on Climate Change (IPCC). Climate change has both direct and indirect health impacts. WHO observed that, “Climate change directly contributes to humanitarian emergencies due to heatwaves, wildfires, floods, tropical storms and hurricanes” {31}. Global climate change has drastic impacts on human health since it increase the spread of some vector-borne, food-borne, and water-borne diseases {20}. Among the diseases that affect tropical countries such as Zimbabwe is malaria {18}.

Climate change is characterized by changes in weather patterns that keep increasing in frequency and intensity, resulting in drastic effects on human lives as well as wildlife. They disrupt the usual balance in ecosystems. The imbalance in ecosystems affects not only wildlife but also poses a greater risk to human lives in several ways {34}.

### Effects of Climate Change on the Economy

Extreme heat can make it difficult to work in outdoor jobs. Water scarcity may affect crops. Over the past decade (2010–2019), weather-related events displaced an estimated 23.1 million people on average each year, leaving many more vulnerable to poverty {1}. Flooding in some places results in loss of crops due to waterlogging of some crops, leading to poor harvests. The major negative effects of Climate change exacerbate the impacts of poverty. Storms and Floods may sweep away poorly built infrastructures, destroying homes and schools or leaving some people without homes or shelter, thus many livelihoods are endangered {17}. In other cases where homes are destroyed, people end up using schools as emergency shelters, thus disrupting the continuation of education {34; 28}. In some cases, climate change leads to climate-driven displacement and economic migration, resulting in poverty and more impediments to children's education. This deprives some learners of their right to Education.

The economic consequences of Climate change include heat wave-induced heat stroke. high morbidity-reduced work capacity. Climate Change-induced droughts and floods are two hazards that come coupled with a host of negative ripple effects such as water scarcity. Drought-induced water scarcity translates to famines, low agricultural incomes, food insecurity, food price volatility, hunger and consequently, malnutrition {21}. A rise in food insecurity due to reduced crop yields may lead to violence and crime as some may resort to stealing.

Agriculture is extremely vulnerable to climate change. Higher temperatures eventually reduce yields of desirable crops while encouraging weed and pest proliferation {12}.

Before, Climate change effects, traditional rain-fed agriculture sustained the food security and micro economy for many Zimbabweans. However, prolonged droughts and other shocks resulting from climate change and variability have heavily impacted traditional farming practices such as extensive cattle ranching, semi-pastoralism, and cultivating of rain-fed crops like maize and groundnuts {16, 19}. The extreme weather patterns result in scanty rainfall in some places, while other places experience unexpected heavy rains, leading to floods. Zimbabwe relies heavily on the agro-economy. Many rural parents, being subsistent farmers, depend on small-scale farming to raise money for food, for clothes and for school tuition. Unpredictable climate and shortened rain season greatly impact the income of farmers {15, 25}.

### Impact of Climate Change on Health

Global climate changes have drastic impacts on human health. Extreme heat is usually associated with heat waves, heat strokes and other heat-related deaths {4}. Studies indicate that extreme heat impacts schools, recreation, homes, workplaces, and other parts of daily life for children and adults {5}. Extremely high temperatures at home or at school can make it harder to learn and are associated with learning losses for children {25}. Such impacts of extreme heat are greatly felt in rural settings, especially in schools where students learn in classrooms that are not air-conditioned.

In addition to the impact on school learners, extreme heat tends to affect recreation, homes, workplaces, and other parts of daily life for children and adults {4}. These extremely hot temperatures make outdoor recreational activities unsafe, particularly during summer at around midday and early afternoons when the sun is at its highest angle and is most intense {25}. Apart from affecting students' learning directly, extreme heat also affects their parents who are mostly peasant farmers, working outdoors on agriculturalists, farming, fishing, and even those engaged in construction {15}.

Flooding in some places results in, drowning and the development of swamps where mosquitoes and other pathogenic microbes breed. This in turn leads to a rise in some tropical diseases such as malaria, sleeping sickness (Human African trypanosomiasis (HAT) is caused by protozoan parasites transmitted by infected tsetse flies. It is endemic in sub-Saharan Africa. Other consequences of Climate change are intense drought, heat waves. Extreme changes in weather patterns associated with Climate change lead to droughts and famines. In regions prone to droughts, climate change makes water shortages more severe and more frequent, causing major crop failures and famines {32}. Some children have to walk long distances to fetch water before school or after school. As water tables sink further down, water dries up from major water bodies such as wells and boreholes, and food supplies decline. Unfortunately, the slogan is not "Children First" in some families; instead, it is "Children last". Consequently, children are hit hardest. This is rather unfortunate to note that the most vulnerable populations are the low-income populations, Children, and adults over 65, pregnant people, people with pre-existing medical conditions or who are taking medications, and people with mental health {2,5}.

Heat waves disproportionately impact communities and people who have been marginalized, including people of color and low-income individuals {5}. Climate change is also associated with wildfires and unexpected storms that sometimes destroy human lives and wild animals' natural habitats, disrupting their seasonal activities such as breeding and migrations. Some wild animal species are being endangered and on the verge of extinction, while other wild animals escape from their flooded habitats and encroach on human dwellings. This has led some wildlife to move closer to human dwellings, putting humans at risk of attacks from wild animals or contracting zoonotic diseases and adverse health outcomes such as high morbidity and high mortality rates. Waterborne as well as vector-borne diseases{10}.

In addition, it also leads to the development of swamps where mosquitoes and other pathogenic microbes breed. This, in turn, leads to a rise in some tropical diseases such as malaria. The rising environmental temperatures and increase in swamps due to floods create a conducive environment for mosquitoes to breed, thus leading to higher transmission of malaria and its effects on children and their parents (31). This raises the morbidity rates, resulting in low school attendance {31}. This concurs with a prediction by WHO that "between 2030 and 2050, climate change is expected to cause around 250,000 additional deaths per year because of malnutrition, malaria, diarrhoea and heat stress alone {34}. Severely malnourished children tend to codevelop other health issues, which can make them vulnerable to life-threatening conditions. Studies indicate that the highest increases in childhood asthma are associated with climate-driven changes {25, 31}. Other health challenges include respiratory disorders, including those exacerbated by

air pollution and aeroallergens, such as asthma; infectious diseases, including vector-borne diseases and waterborne diseases, such as childhood gastrointestinal diseases. When exposed to extreme heat, children are more prone to heat stroke, which in turn may cause organ and brain damage. In addition, children are also at greater risk of asthma and pneumonia when exposed to air polluted with damp air due to extreme floods. This, in turn, may inflame young lungs, impede brain development, and affect mental health and immunity {25, 31}.

### Impact on Psychological and Emotional Well-being

Intense heat arising from global climate change results in psychological and physical stress when it becomes too hot to concentrate and learn. When it is too hot to concentrate on learning, this means school administrators need to create a conducive learning environment. Heat waves, exacerbated by climate change, are becoming more frequent and intense in some countries to the extent that this disrupts learning. Unfortunately, the most disadvantaged learners in rural schools are the ones mostly affected by the effects of climate change {7}. Studies show that extreme heat can lead to negative impacts on mental health and has been linked to increased rates of suicide, interpersonal violence, and mental health disorders, such as posttraumatic stress disorder and depression, that are associated with natural disasters.

### Impact on Academics (Attendance and performance)

Climate change is usually associated with extremely hot temperatures. Extreme heat interrupts learning. Heat waves, exacerbated by climate change, are becoming more frequent and intense. This in turn, poses a significant educational challenge, particularly in regions with inadequate infrastructure and resources {6}. Although some students may brave it and continue attending classes during heat waves, their education will likely suffer. 'High air temperatures lead to dehydration, and lower hydration levels are known to affect childrens ability to concentrate, retain, and process information, impacting overall school achievements {6}. In South Asia, 78 percent of students surveyed said that their studies had been affected by climate change. Most cited either an inability to concentrate during heatwaves, damage to their school buildings, or disruptions to their journey to school {6}. One of the major consequences of climate change is that it is associated with storms. In some places, Climate change-induced storms destroy pupils' homes, schools, and learning materials. When it is too hot to learn, this means school administrators need to create a conducive learning environment. Heat waves, exacerbated by climate change, are becoming more frequent and intense in some countries to the extent that this disrupts learning. Unfortunately, the most disadvantaged learners in rural schools are the ones mostly affected by the effects of climate change {6, 11, 14, 16}.

### Coping Strategies

It seems climate change is here to stay {15}. Unless there is a drastic change in the anthropogenic activities that promote global warming, it may be difficult to slow down the effects of climate change. While climate change is closely associated with multiple hazards such as floods, pandemics, drought, famines, etc, the concept of ripple effects may be applied to taking action for better environmental management and developing resilience, beginning with small positive actions that can save our planet {8, 14}. Studies {9, 10, 15}.

indicate that these coping strategies include the following;

1. Better water management strategies such as harvesting roof water and storing that in reservoirs.
2. Adopting new agricultural practices that focus on growing crops that are better adapted to dry short growing seasons {10,15}
3. Developing Food security strategies such as utilizing local or Indigenous fruits and vegetables that are resilient and better adapted to dry, short growing seasons,
4. Better preservation and storage of harvested crops.
5. Utilizing water conservation strategies in farming, eg, drip irrigation technology
6. Adopt Hybrid learning, this may include utilizing multimodal learning whereby schools adopt modern technology such as Flipped classrooms {6}
7. Avoid mental exertion under intense heat conditions. There is also a need for air-conditioned classrooms.
8. Better forestry management and sustainable agricultural practices {19}

Application of the Disaster Management Cycle significantly contributes to preparing for disasters, managing and mitigating the impacts, and developing recovery strategies that foster resilience. Disaster preparedness helps in the response and recovery process {12}.

### Theoretical Framework

This study is underpinned by the Disaster Management Cycle. The Disaster Management Cycle is also described as the Hazard Management Cycle. The Disaster Management Cycle was developed through the work of organisations such as United Nations Development Program and individual researchers such as Alexander {12, 22} as a response to world crises. It comprises the following four phases, which include: Onset of Disaster, Response, Recovery, Preparedness and Mitigation. In essence, it is a proactive process, with a focus on learning from past events to improve future responses to hazards and disasters. Studies indicate that if correctly applied, the Disaster Management Cycle can help address climate change and possibly mitigate its negative impacts. This is important as climate change is associated with multi-hazards such as drought, famines, heat waves, heat strokes and flood-related hazards. A Multi-hazard is defined as multiple individual hazards that affect a specific region and the interrelationships. Multi-hazard means “(1, 30) the selection of multiple major hazards that the country faces, and (2) the specific contexts where hazardous events may occur simultaneously, cascadingly or cumulatively over time, and taking into account the potential interrelated effects.” {8; 13, 16}.



Source: disaster-management-cycle {3}

### 3.0 METHODOLOGY

The researchers intend to follow a qualitative approach using a descriptive case study. Qualitative case studies are guided by concepts, models and theories {33}. It involves describing, analysing a specific case and interpreting data in detail {35. 6, 3}. A typical case study design has 5 basic components. These are; research question(s), its propositions, its unit(s) of analysis, a determination of how the data are linked to the propositions and criteria to interpret the findings (35). A descriptive case study involves a detailed examination of a particular person, event, or community (6, 35)). In this case the data is collected through diverse methods, including interviews and Focus group discussions. A case study is considered the most appropriate for this type of study as it seeks to focus on one rural secondary school surrounded by subsistent farmers who depend on the few cash crops such as maize, groundnuts and few livestock for getting additional income for basic necessities such as food, clothes and learning resources. In-depth interviews of the school teachers and Focus Group discussions were the most suitable methods for gaining total in-depth knowledge of this particular issue {3} in this case, Climate Change. In a descriptive and interpretive case study, the researcher analyses, interprets, and theorizes about the phenomenon against the backdrop of a theoretical framework. {33, 12}) states that qualitative case studies in education are often framed with concepts, models, and theories. In this case, the guiding framework is the Disaster Management Cycle. The Disaster Management Cycle allows the community affected to think of ways to prepare for each phase to prepare, respond, and mitigate against further drastic occurrences come up with recovery strategies that ensure adaptation and resilience {8,22}.

To ensure the validity of the data collected, the researchers involved triangulation by using complementary data collection methods. and member checking to ensure trustworthiness and credibility. Thick descriptions of the responses from the interviews and focus group discussion. Thick descriptions provide detailed, rich descriptions of the research context and participants. The researchers also ensured reflexivity and disclosed their backgrounds to avoid researcher biases. Audit trails of the records of the research process for transparency were done to help maintain the trustworthiness, credibility, and transferability of the qualitative research.

Since climate change is a precursor to disasters (such as floods) that impact children and adults, supporting vulnerable regions will not only directly contribute to Goal 13 Climate action; but it also contributes to achieving the other SDGs such as SDG 3, Good Health, SDG 4 Quality Education and Education for All, SDG 17: partnerships for all SDGs, End poverty in all its forms, everywhere. · End hunger, achieve food security and improved nutrition, and promote sustainable agriculture {29, 23}.

### Population

Populations are the people who will provide the researcher with information. Chambers and Skinner (2003), cited by Machingura (2016). The target population is the total group of participants about whom the investigator is interested and to whom the results could reasonably be generalized. The population of this study will be students, school administrators and teachers from XXXX Secondary school, which is located in Mhondoro, Chegutu district in Mashonaland West Province of Zimbabwe. The Secondary School is located in the Southern part of Harare. It is 70 km from Harare CBD. Although it is close to the capital city, XXXX Secondary School is surrounded by a community of rural subsistent farmers.

Hence, most of the students enrolled at the school come from nearby villages. The enrolment at the school comprises of boarding students and day scholar students who live in the local community (Please see the summary in Table 1)

### Sampling

Machingura (2016) postulates that the main function of sampling is to allow the researcher to conduct the study to individuals from the population so that the resultSs of the study can be used to derive conclusions that will apply to the entire population. The researcher used Purposive sampling as well as the stratified sampling technique and then a simple random selection on the participants will be done. Stratified sampling will enable the researcher to pick participants representing all strata i.e. administrators, teachers, boarding students and day scholars. This sampling strategy will also ensure gender and age representation. The inclusion criteria for the sample are based on the suitability of the participant to provide the needed information. Although there are support staff at the school, only the Boarding Deans have been included for the interview because they are the ones who mostly interact with the students. Hence, the use of purposive sampling.

### Age range

13-18 years for students

25-60 for Adults

### Gender balance

Both sexes will be considered. This will enable the researcher to get responses on both experiences.

**Table 1. Population and Sample**

| CATEGORY              | Population | Sample | Data collection method/<br>Research instrument |
|-----------------------|------------|--------|------------------------------------------------|
| Boarding Students     | 410        | 10     | Focus Group Discussion                         |
| Day students          | 130        | 10     | Focus Group Discussion                         |
| School administrators | 3          | 2      | Interview                                      |
| Teaching Staff        | 25         | 10     | Interview                                      |
| Support Staff         | 24         | 2      | Interview                                      |
| Parents               |            | 2      |                                                |
| Total                 |            | 34     |                                                |

### Data Analysis

The data collected was coded, cleaned, and then analyzed using Thematic data analysis.

### Ethical Considerations

Ethical clearance for carrying out the study was sought from the school administrators and responsible authorities. Since some of the participants are students, ethical consent for each student will be obtained from the parent or guardian.

The researchers ensured the following

- participation is voluntary, a participant is free to withdraw at any time.
- Anonymity of participants by not using names of participants, but using codes.
- Consent was sought from parents and guardians for students since they are all below 18 years old/
- Verbal Consent was sought from all individuals who participated in the interviews.
- Official consent was sought from School Administrators

**Table 2. Participant Codes**

| Category | Participants          | Codes                             |
|----------|-----------------------|-----------------------------------|
| A        | Day- Scholar students | A1-A10                            |
| B        | Boarding Students     | B1-B10                            |
| CA       | School Administrators | CA1 &CA2                          |
| CT       | Teachers              | CT1-CT10                          |
| CD       | Boarding Deans        | CD 1 (Female)<br>&<br>CD 2 (Male) |
| P        | Parents               | P1 & P2                           |

### 4.0 FINDINGS

Data was collected using in-depth interviews with teachers, administrators, parents and staff and Focus group discussions with students. The following six steps for inductive thematic analysis as outlined by {33}, were followed.

- Familiarization with data
- Generating initial codes
- Searching and Identifying patterns and recurring themes
- Reviewing the themes
- Defining and renaming themes
- Writing up

During familiarization with the data, the researchers read through the field notes and listened to the audio recordings of the interviews. After this, the data was transcribed and coded ( developing initial generalized codes based on the notes). The next step was to go through the coded notes, identifying patterns and recurring themes. At first, the general themes were into two categories, direct impacts of climate change on students and indirect impacts of climate change on students. As the researchers continued to review these initial themes, other themes emerged as participants opened up and shared different strategies they have been using for survival. The findings are reported according to the responses to research questions.

#### **RQ 1: How has climate change affected the physical infrastructure and resources of the private High School?**

Climate change effects have been intensifying of late, especially when the heavy rains come accompanied by vehement windstorms. This had drastic effects on the school infrastructure. *Climate change had drastic effects on the school, It blew off the roof of one of the Boys hostels and a faculty member's house ( CA1). This posed a financial strain on the school as the roofs needed replacement and some students had to stay home for some weeks while the hostels were under repair (CA2 added).*

#### **RQ 2: To what extent do the students at the private Adventist High School understand and perceive climate change and its impact?**

Most of the students have a clear understanding of climate change as reflected in their definitions. They also have felt firsthand effects of climate change healthwise, psychologically and financially. *"I now know the practical effects of climate change after I lost a week of class attendance when it rained every day and the river was flooded (one day school student, A3 reported).*

Another boarding student expressed the following, *"I now appreciate the importance of keeping the body well hydrated after fainting and feeling dizzy during examinations in the extremely hot afternoons. I now move around with a water bottle"* (B7). Since the school under study is situated within a rural farming area. Hence, it is surrounded by some trees, small hills, and some

perennial rivers. Hence, about 40 % of the students are from the surrounding rural community. Unfortunately, very few parents can afford to enrol their children in Boarding school, hence they attend as Day scholars. The effects of climate change on physical infrastructure. Climate change has had drastic impacts on the physical infrastructure of XXXX High School as reported by some of the participants. *Last year is when this school was hardest hit: We experienced violent windstorms, we experienced floods and extreme heat.* (CA 1). *Twice last year there was a terrible storm and one of the boys' hostels and one faculty house had its roofs blown off* (CT2, CT5). Unfortunately, when that happens, there are expenses incurred. This disrupted the progress of other projects that were going on at the school *"We had to spend a lot of money to repair the damages"* (CA).

### **RQ 3: How did climate change affect students' education in the following aspects: Health, Financial support by parents, Psychological well-being, School attendance, and Academic performance?**

#### **Impact of climate change on health and psychological well-being**

Climate change has a negative influence on people's health. One participant who interacts closely with the students as a boarding matron indicated that, of late they have been facing a hard time with the students, especially the girls. *"Several students have been experiencing severe headaches, dizziness and nose-bleeding"* (CD1). *We had to refer them to the nearest clinic too frequently so we ended up opening a local medical dispensary at the school for basic assistance* (CD2). Unfortunately, climate change is associated with extremes. When it is very cold our students suffer from allergies, such as asthma attacks. When it is too wet some experience fungal infection such as thrush (CD1). With their health compromised, this has also led to poor school attendance and poor academic performance and a lower overall school pass rate.

Climate change influences students directly and indirectly. Since some students' parents rely on rainfed agriculture, when there is inadequate rain, there is drought, scarcity of water, and famine. This implies that some children walk for long distances to come to school on an empty stomach. When in class, they can hardly concentrate. This negatively impacts their academic performance, especially during the third term when it is extremely hot and they are sitting for their national exams. *"I have witnessed some students doze off in the exam room," said one participant* (CT 4). When asked about the impact of climate change, some parents testified that *"I could not afford to have my children drop out of school, so I have to come and work as general hand at the school to raise money for my 2 children* (P1). Another parent added, *"We are facing extreme drought due to climate change, we lost some livestock, and at the same time food is scarce and expensive, As the local rural parents, we do not have any other sources of income except the cash crops they did not manage to harvest. This means, no money for food, for uniforms, for stationary and nothing allocated as pocket money -its unnecessary luxury- yet psychologically the child does not feel comfortable attending school without books or uniforms"* (P1).

#### **Effect of Climate change on School attendance**

Faced with the dilemma of scouting for food or continuing in school, some students have dropped out of school. On the other hand, when there are extreme floods, other students have failed to attend school when it rained continuously for days, the small rivers were flooded and some bridges were swept away, This

kept some students and teachers away from school for days as one teacher participants said; *"I could see the school is just a few kilometres across the flooded river, but neither of us could cross the flooded river, We were stuck at home for almost a week. So we lost some days"* (CT3) Other students failed to attend school regularly because of morbidity caused by heat wave associated sicknesses, *"they would be around, in the hostels, but unable to attend classes"* (CD 2).

### **RQ 4: What coping strategies have the students, teachers, and the administration implemented in response to climate change-related challenges?**

The impact of climate change has affected almost every sector of life. Climate Change also affected the health sector, the country's economy, and even the education sector. Consequently, the government and the other stakeholders have committed themselves to finding ways of alleviating these effects. For students whose parents desperately need assistance with school fees, the government has the BEAM initiative. This is an initiative to assist worthy students with school tuition. Some schools that used to supply meals to boarding students have gone out of their way to provide lunch to all their students, including non-boarding students, on every school day. Hence, no one learns on an empty stomach. *"This has greatly helped the mental health and socioemotional well-being of the learners as they eat together"* commented one of the school administrators. Another adaptive strategy that schools have embarked on is for schools to venture into horticultural farming, growing their own vegetables and grain crops with a shorter growing season. *This has helped to cut the costs of procurement of food from expensive suppliers* (CA 2). This has helped both the parents and the school administrators, as there is no need to hike the school fees when food is scarce. Some parents decided to work at the school farm to supplement the fees for their children, as one parent P2 stated; *"I could not sit at home watching my children become school dropouts because we had not harvested much due to climate change. So I decided to come at the school farm where they have better irrigation scheme and farm implements and my children could continue attending classes while I work at the farm."*

Previously, the school used to provide food to boarding students only. But after intense dry spells due to climate change, most day scholars came to school on empty stomach and had no food packed for lunch. Then the school took the initiative of serving food to all the students, both boarding and day scholars. *"I really appreciate the free lunches we get at school, it keeps us healthy and alert in class"* said a Day scholar, A8. *"I used to feel embarrassed to just sit under a tree throughout the lunch break because I had not eaten any breakfast and not carried any lunch provisions either* (A2). *I now look forward to lunch break,* added (A10, another day scholar.

The school also offered piece jobs for parents who were struggling to pay for their children in school. *"We live a bit far from the school, and my parents had enrolled me in boarding school. But, my parents, being peasant farmers, due to climate change, could not get much money from farming, so they opted to work at the school to raise money for my school fees. Thanks to the school administrators for the initiative of providing piece jobs, now I can continue attending school as a boarding student"* (B9).

## **5.0 DATA ANALYSIS & DISCUSSION**

The data collected was analyzed using thematic data analysis. The major themes that emerged were the direct and indirect impacts of climate change on the students.

The major impact was on. The environment and this cascaded to affect the economy. Students health and students' academics. This in turn led to other emerging themes emanating from how these direct impacts influenced the students' social and psychological well-being. Other themes that emerged are the coping strategies {18}, As people realize and accept the fact that climate change is here to stay, they have come up with strategies for surviving through climate change and developing resilience. They learnt to be a caring community, the school offering food to all the day scholar students and providing piece jobs to some parents so they keep their children in school. In brief, 4 themes emerged from this study. These are Theme One, direct impacts, Theme Two, indirect impacts, Theme Three, coping strategies and Theme Four; The ultimate result- a resilient and caring community.

**Table 3. Inductive Thematic Analysis**

| IMPACT OF CLIMATE CHANGE                  | INITIAL THEMES<br>DIRECT IMPACT                 | SUBTHEMES                                                                  | SUBTHEMES                                      |
|-------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------|
|                                           | →                                               | →                                                                          |                                                |
| ENVIRONMENTAL CHANGES                     | EXTREME HEAT                                    | IMPACT ON<br>HEALTH                                                        | IMPACT ON ACADEMIC PERFORMANCE                 |
|                                           | DROUGHT- LOW WATER TABLE                        | HEATWAVE RELATED DISEASES,                                                 | IMPACT ON- ENROLMENT                           |
|                                           | FAMINE                                          | HEADACHES & NOSE BLEEDING                                                  | ACADEMIC PERFORMANCE,                          |
|                                           | EXTREME COLD-                                   | COLD SORES                                                                 | PASS RATE                                      |
|                                           | EXCESSIVE RAINS-<br>ACCOMPANIED BY HEAVY STORMS | ALLERGIES                                                                  | IMPACT ON PARTICIPATION IN SPORTS & RECREATION |
|                                           | FLOODS- HUMID WEATHER                           | RASHES, FUNGAL INFECTIONS                                                  |                                                |
| OTHER EMERGING THEMES<br>INDIRECT IMPACTS | • IMPACT ON ECONOMY                             | • COST OF LIVING<br>• FOOD SCARCITY,<br>• COST OF UNIFORMS<br>& STATIONERY | EFFECT ON PSYCHOLOGICAL WELL-BEING             |

### Discussion Based on the Disaster Management Cycle

Disaster Preparedness is key. It determines the response and recovery rate, as well as mitigation strategies All the relevant stakeholders developed coping strategies and learnt to be prepared lest any day disaster may strike {8, 12, 26}, they have any idea about how to respond and mitigate or cope. In brief, they developed a RECOVERY plan and resilience. Some of the coping strategies implemented (as supported by other scholars), include the following;

1. Harvest & Preserve water in dams and reservoirs tanks.
2. Utilizing water conservation strategies in farming, eg drip irrigation technology,
3. Adopt agricultural practices - Grow more indigenous drought-resistant crops,
4. Adopt Hybrid pedagogical modes, utilizing multimodal - Flipped classrooms. Schedule classes for early morning and let learners be free in the afternoon.
5. Avoid mental exertion in intense heat conditions and air-condition the classrooms as recommended by several scholars {8, 9, 15, 18}.

Linking this with the disaster management cycle means that once people are aware of the nature and effects of climate change, they can be prepared before the next disaster strikes or think of ways of mitigating or recovery strategies.

### 6.0 LIMITATIONS

The major limitation faced by the researchers was time constraints. The timing of the study came when schools were closed and students were on holidays. However, as soon as schools opened, although everyone was busy with registration process, the researchers went to seek ethical clearance with school authorities and assent from parents, then the data were collected immediately. Although the school administrators and students were very busy, there was cooperation.

### 7.0 CONCLUSIONS AND RECOMMENDATIONS

Although climate change poses drastic impacts and fundamental threats to humans, especially students. The study concludes that it has resulted in both negative and positive impacts on the scholars, the school administrators, teachers and

the community at large. Though the negative impacts seem to outweigh the positive impacts {11, 13}, it is worth mentioning that some participants reported seeing the challenges of climate change as opportunities for growth {19}. Students learnt some health principles such as always drinking lots of water to keep hydrated and alert in class. The parents learnt to be proactive about their children's education, seeking piece jobs at the school to raise money to keep their children in school. On the other hand, the school administrators learnt to be a caring community, offering free lunches to day scholars and contracting some parents for piece jobs on campus to raise money to supplement the children's school fees. The teachers learnt to be innovative and adopt diverse pedagogical strategies such as flipped classrooms to cope with the intense heat waves. In brief, the findings can be summed up into 4 themes that emerged from this study. These are, Theme One, direct impacts, Theme Two, indirect impacts, Theme Three, coping strategies and Theme Four, The ultimate result resilient and caring community. The study recommends adequate disaster preparedness in schools and communities to ensure they fast recovery, develop coping strategies, become resilient, and a caring community.

### References

1. Children and Climate Change in Zimbabwe Key Findings and Recommendations, Policy (2013) Children and Climate Change in Zimbabwe, Unicef <https://www.google.com/search?q=Children+and+Climate+Change+in+Zimbabwe+Key+Findings+and+Recommendations%2C+Policy&dq=Children+and+Climate+Change+in+Zimbabwe+Key+Findings+and+Recommendations%2C+>
2. Climate Crisis (2024) Memorial Sloan Kettering Cancer Center Library MSK Library Guides [https://libguides.mskcc.org/ClimateCrisis/HumanitarianCrises#:~:text=Over%20the%20past%20decade%20\(2010,the%20impacts%20of%20climate%20changeBrief](https://libguides.mskcc.org/ClimateCrisis/HumanitarianCrises#:~:text=Over%20the%20past%20decade%20(2010,the%20impacts%20of%20climate%20changeBrief)

3. Cresswell, J.W & J.D. (2016) File Name: Research Design Qualitative Quantitative And Mixed Methods Approaches Creswell EPA U.S. Environmental Protection Agency. <https://www.epa.gov/climate-indicators/view-indicators>
4. EPA. 2021. Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts. U.S. Environmental Protection Agency, EPA 430-R-21-003. <https://www.epa.gov/cira/social-vulnerability-report>
5. Jenkins, R. and Beardmore, S. (2024). The impact of climate change on education Too hot to learn: The impact of climate change on education- <https://www.globalpartnership.org/blog/too-hot-learn-impact-climate-change>
6. Kahn, Himayatullah, P.D.H. (2008) DISASTER MANAGEMENT CYCLE – A THEORETICAL APPROACH Professor DISASTER MANAGEMENT CYCLE – chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.mnmk.ro/documents/2008/2008-6.pdf
7. Kalim, Shahina & Kumar, Manish & Arya, Sandeep & Lagarkha, Rekha. (2025). Climate Change and Its Ripple Effects: Analyzing the Impact on Ecosystems, Environment, and Agriculture. International Journal of Global Science Research. 12. 10.26540/ijgsr.v12.i1.2025.302.
8. Merriam- webster Disctionary <https://www.merriam-webster.com/dictionary/climate%20change>
9. Mwadzingeni, L. Mugandani, R., & Mafongoya, P.L. (2023). Perception of climate change and coping strategies among smallholder irrigators in Zimbabwe. <https://www.frontiersin.org/journals/sustainable-food-systems/articles/10.3389/fsufs.2023.1027846/full>
10. Mwendwa, P., & Giliba, R. A. (2012). Climate Change Impacts and Adaptation Strategies in Kenya. *Chinese Journal of Population Resources and Environment*, 10(4), 22–29. <https://doi.org/10.1080/10042857.2012.10685104>
11. Ngcamu, B. S. (2022). Application of the disaster management cycle and climate change: Studying flood disasters in South Africa. *Social Sciences & Humanities Open*, 8(1), 100657. <https://doi.org/10.1016/j.ssaho.2023.100657>
12. Nelson, G.C., Rosegrant, M.W., Koo, J., Robertson, R., Sulser, T., Zhu, T., Ringler, R., & Msangi, S. (2007). Climate change: Impact on agriculture and costs of adaptation books.google.com [https://scholar.google.com/scholar\\_lookup?title=Climate%20change,%20impact%20on%20agricultural%20costs%20and%20adaptation&publication\\_year=2007](https://scholar.google.com/scholar_lookup?title=Climate%20change,%20impact%20on%20agricultural%20costs%20and%20adaptation&publication_year=2007)
13. Ndlovu A., 2016, *Effects of climate change in agriculture (crop production) and food security and suggested adaptation priorities: A working paper to a climate change, policy Workshop*, AGRITEX, Bulawayo.
14. Ndhlovu M.P. & Mpofu T., 2016, 'Communal farming, climate change adaptation and the media in Zimbabwe', *Jamba* 8(3), 239 10.4102/jamba.v8i3.239
15. Ndlovu, E., & Prinsloo, B. & Tanya le Roux. (2020). Impact of climate change and variability on traditional farming systems: Farmers' perceptions from south-west, semi-arid Zimbabwe. *Jàmbá : Journal of Disaster Risk Studies*, 12(1), 742. <https://doi.org/10.4102/jamba.v12i1.742>
16. Patz JA, Frumkin H, Holloway T, Vimont DJ, Haines A. Climate change: challenges and opportunities for global health. *JAMA*. 2014 Oct 15;312(15):1565-80. doi: 10.1001/jama.2014.13186. PMID: 25244362; PMCID: PMC6108836.
17. Pizzorni, M., Innocenti, A., & Tollin, N. (2024). Droughts and floods in a changing climate and implications for multi-hazard urban planning: A review. *City and Environment Interactions*, 24, 100169. <https://doi.org/10.1016/j.cacint.2024.100169>
18. Sheffield PE, Landrigan PJ. Global climate change and children's health: threats and strategies for prevention. *Environ Health Perspect*. 2011 Mar;119(3):291-8. doi: 10.1289/ehp.1002233. Epub 2010 Oct 14. PMID: 20947468; PMCID: PMC3059989.
19. Tshuma, N. & Mathuthu, T. (2014). Climate Change in Zimbabwe: Perceptions of Smallholder Farmers in Mangwe District. *THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES*. Volume 2. 318-325.
20. The Regional Impacts of Climate Change – IPCC Intergovernmental Panel on Climate Change (IPCC) <https://archive.ipcc.ch › ipccreports › sres › regional> UNCCD Publication (2016). The ripple effect: A Fresh Approach to Reducing Drought Impacts and Building Resilience <https://www.unccd.int/resources/publications/ripple-effect-fresh-approach-reducing-drought-impacts-and-building>
21. UNDP, Disaster Management Cycle. <https://disaster-management.piarc.org/en/management-disaster-management/disaster-management-cycle>
22. SDG 'Goal 13 calls for urgent action to combat climate change and its impacts. It is intrinsically linked to all 16 of the other Goals of the 2030 Agenda for Sustainable Development. To address climate change, countries adopted the Paris Agreement to limit global temperature rise to well below 2 degrees Celsius. Climate action Goal 13 <https://www.undp.org/sustainable-development-goals/climate-action>.
23. UNICEF, (2023 <https://www.globalpartnership.org/blog/too-hot-learn-impact-climate-change-education> UNICEF and the Sustainable Development Goals Unicef <https://www.unicef.org>
24. Unganai L. & Murwira A., 2010, *Challenges and opportunities for climate change adaptation among small-holder farmers in southeast Zimbabwe*, viewed 17 June 2017

25. United Nations, Causes and Effects of Climate Change <https://www.un.org/en/climatechange/science/causes-effects-climate-change#:~:text=Climate%20change%20is%20the%20single,grow%20or%20find%20sufficient%20food.>
26. UNESCO How climate change and displacement affect the right to education <https://www.unesco.org/en/right-education/climate-change-displacement#:~:text=Climate%20directly%20destroys%20schools%20and,to%20even%20more%20barriers%20to> <https://www.unesco.org/en/search?category=UNESCO&text=>
27. UNICEF, (2023) 3 ways climate change threatens children's lives <https://www.unicef.org/stories/3-ways-climate-change-threatens-childrens-lives#:~:text=In%20extreme%20heat%2C%20children%20are,the%20hottest%20year%20on%20record>
28. WHO (2023). <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health> World wildlife. Org Threats/ Effects of Climate Change <https://www.worldwildlife.org/threats/effects-of-climate-change#:~:text=Impacts,-%C2%A9%20USGS.gov&text=Humans%20and%20wild%20animals%20face,on%20people's%20livelihoods%20and%20communities.>
29. Saldaña, J. (2014). Coding and analysis strategies. In P. Leavy (Ed.), *The Oxford handbook of qualitative research* (pp. 581–605). Oxford University Press.