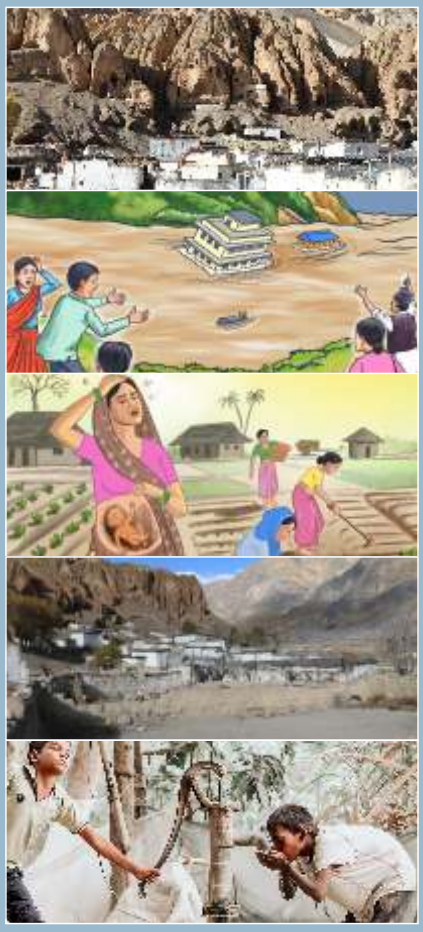

2025

Understanding Non-Economic Loss and Damage: The Human Cost of Climate Change

Compendium of articles produced under the media fellowship on non-conomic loss and damage

CANSA NIMIN CIK

Understanding Non-Economic Loss and Damage: The Human Cost of Climate Change

It is crucial to recognize the impacts of Loss and Damage (L&D) caused by climate change, particularly Non-Economic Loss and Damage (NELD) — the irreversible losses to culture, identity, mental health, and ways of life. These articles, produced under Climate Action Network South Asia (CANSA) media fellowship programs with Nepal Investigative Multimedia Journalism Network (NIMJN) Nepal and The Center for Investigative Reporting (CIR) Sri Lanka, shed light on how communities in these regions are experiencing and responding to these challenges.

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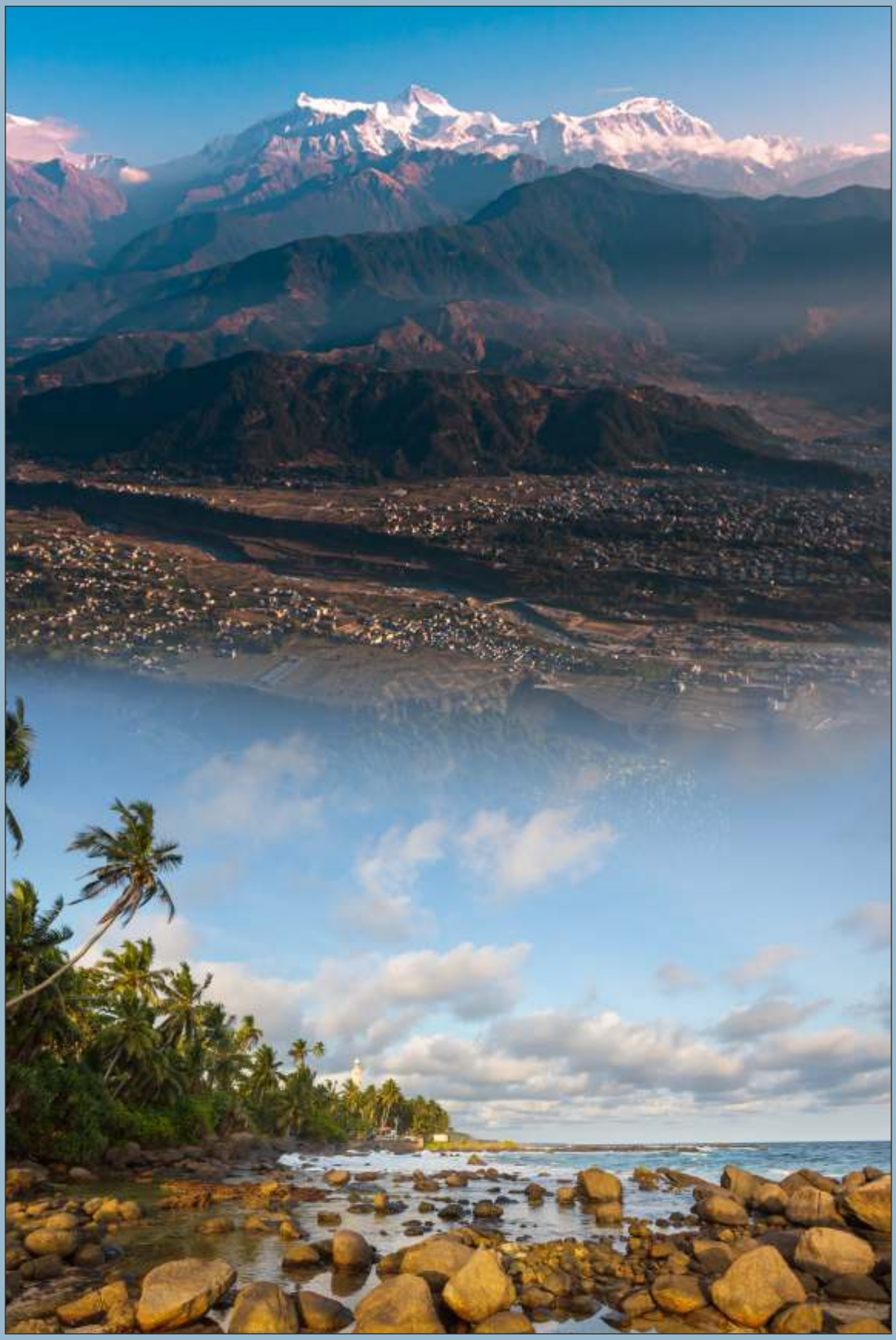


Preface

Climate change is no longer a distant threat—it is a reality, etched into the everyday experiences of communities across South Asia. While economic losses are more readily quantified, it is the non-economic losses—of identity, culture, health, dignity, and belonging—that often remain unseen, unheard, and underreported. These losses are deeply personal, yet they are shared across vulnerable communities struggling to survive on the frontlines of a changing climate.

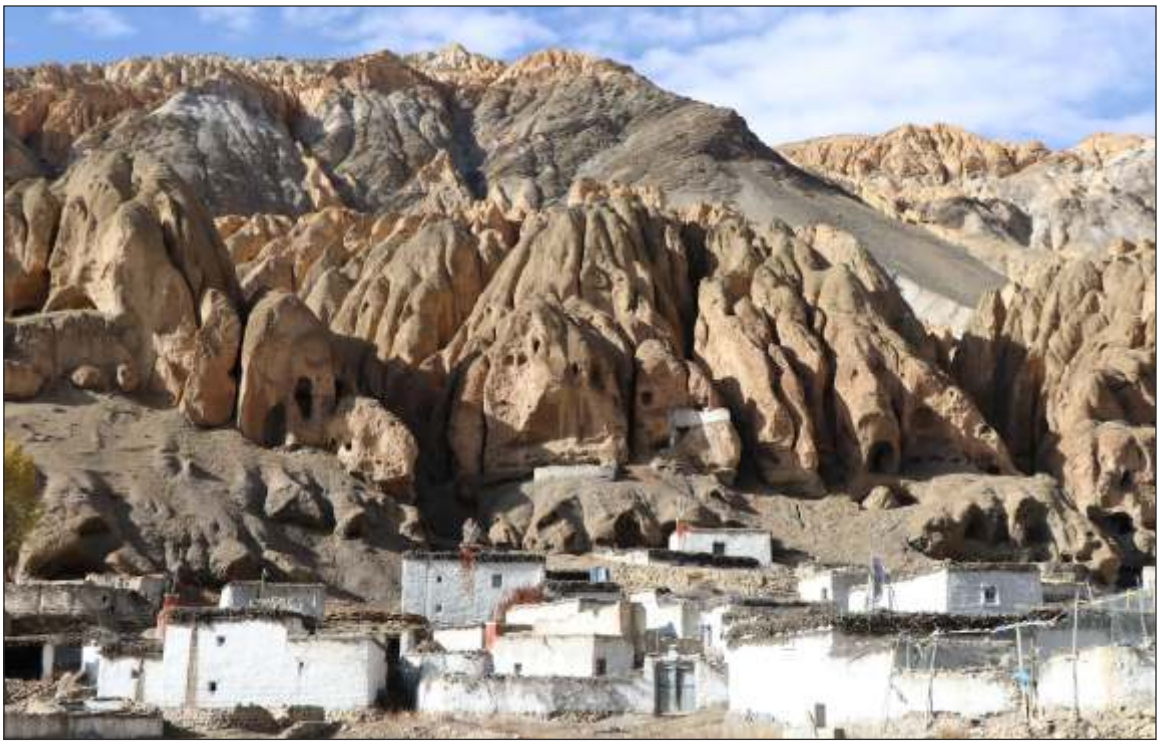
This compendium is an attempt to bring those invisible stories to light. Through the voices of individuals in Nepal and Sri Lanka, these narratives reveal the multifaceted nature of climate-induced loss and damage—whether it's a mother giving birth in extreme heat, a heritage site crumbling under intense rainfall, or a child's education disrupted by rising temperatures. These are not just stories of suffering, but also of resilience, memory, and the urgent call for climate justice.

We are proud to have partnered with Nepal Investigative Multimedia Journalism Network (NIMJN) in Nepal and the Centre for Investigative Reporting (CIR) in Sri Lanka to support a new generation of climate journalists. Their work under the CANSA-NIMJN and CANSA-CIR Media Fellowships represents a critical step in bridging the gap between climate science and human stories. With compelling visuals, local insights, and on-the-ground reporting, these stories help to shape public discourse, influence policy, and inspire action.

As we move forward in the global climate conversation, the narratives from the Global South must be not only included but placed at the centre. We hope this compendium will serve as a reminder of the urgent need to integrate non-economic loss and damage into climate policy frameworks and funding mechanisms.

Sanjay Vashist
Director
Climate Action Network South Asia

NEPAL



Climate Change Takes Toll On The Himalayas: Nepal's Upper Mustang Could Soon Lose Its Cultural Identity And Existence

Ghanshyam Khadka

To the south, majestic mountain peaks rise – Nilgiri, Tilicho, Manang, Damodar Himal, Sail, Gaugiri, Lugula, and others. To the southwest, towards the China border, the Chuama range, Chungen, Ghyu and Mansayal mountains are visible. From the south, the elevation gradually decreases northward, revealing mud hillocks. The weather is dry and cold, with a stark landscape devoid of plants, shrubs, and greenery.

This is Upper Mustang, a majestic valley nestled in the lap of the Himalayas. Here lies Lo Manthang, a settlement enclosed by mud walls, after which the rural municipality is named. Within this settlement stands the Lo Manthang palace.

The topography of Lo Manthang and the neighboring Loghekar Damodar Kunda Rural Municipality shares similarities. Caves, carved into the rocks by humans centuries ago, hold historical and architectural significance. Archeologists suggest that available materials indicate these caves date back to the Neolithic Age – a period defined by the Nepali encyclopedia as preceding the Bronze Age and following the Middle Ages, characterized by the use of stone tools and weapons.

The Buddhist gumbas that grace the palace and caves further enhance the historical and architectural significance of the area. The gumbas, palaces and individual homes are constructed with traditional and historical architectural styles, making Lo Manthang renowned both in Nepal and internationally for these monument-like structures.

However, this centuries-old settlement and its cultural heritage are facing the imminent threat of collapse due to the impacts of climate change. Locals express deep concern that not only the architectural heritage but the very existence of Upper Mustang could be jeopardized, a possibility supported by available studies and research.

Mud house on the verge of collapse

Houses in Lo Manthang. Photo: Ghanshyam Khadka/NIMJN

Due to the Annapurna-Dhaulagiri Himalayan range obstructing monsoon clouds, Mustang often experiences a rain shadow effect, resulting in dry, cold winds. The traditional houses in Mustang are constructed with raw bricks designed to withstand snow, rain, and cold winds. The roofs are also made of mud, and to prevent rain from washing it away, firewood is stacked along the edges. These houses embody the identity of Mustang's residents. Although their ancestors inhabited caves, their descendants transitioned to building these mud houses. prevent rain from washing it away, firewood is stacked along the edges. These houses embody the identity of Mustang's residents. Although their ancestors inhabited caves, their descendants transitioned to building these mud houses.

These traditional houses are resilient to snow and rain. Constructed using local resources, indigenous skills, knowledge, and technology, they also contribute to maintaining the local climate and environment. However, these aesthetically pleasing houses of significant architectural value are beginning to suffer the consequences of climate change – increasing droughts and irregular, unnatural rainfall are gradually eroding the roofs and walls.

According to Chhwang Rinjin Lowa, a ward member of Lo Manthang Rural Municipality-5, locals are finding it difficult to preserve the indigenous knowledge, skills, and architecture passed down by their ancestors, as well as the houses built using this knowledge. Lowa, himself a skilled artisan in constructing these traditional houses, explains that their foundations are laid with stones, similar to houses in the hills, but the walls above ground are built with brick-like materials made by pressing sticky mud into wooden frames.

Unlike bricks in the plains and valleys that are kiln-fired, these bricks in Mustang are sun-dried for a week to ten days. Once the bricks are in place, the walls are coated with a sticky mud mixture both inside and out, making them as strong as the cement walls of concrete houses.

Lo Manthang. Photo: Ghanshyam Khadka/NIMJN

In 2008, the government of Nepal recommended that Upper Mustang be listed as a heritage site by the United Nations Educational, Scientific and Cultural Organization (UNESCO). UNESCO defines heritage as 'our legacy from the past, what we live with today, and what we pass on to future generations'. According to UNESCO, our cultural and natural heritage is an irreplaceable source of life and inspiration. Cultural heritage encompasses more than just artifacts or materials; it includes the language, skills, and identity of local communities passed down through generations. Heritage serves as a mirror, allowing us to understand lifestyles and cultures, and it provides insight into social evolution from its origins to the present day.

Climate change impacts, such as decreasing snowfall, rising temperatures, more frequent rainfall, and melting snow, are emerging as significant threats that could devastate the ancient culture, civilization, and identity of Mustang. This has already resulted in both economic and non-economic losses in the region.

Climate change has inflicted both economic and non-economic losses and damage upon Upper Mustang. According to the UN Convention on Climate Change 2012, non-economic losses encompass, among other things, the loss of territory, cultural heritage, indigenous or local knowledge, societal or cultural identity, and the loss of biodiversity or ecosystem services.

Upper Mustang is currently confronting these very challenges.

According to Lowa, traditional palaces, houses, schools, gumbas, and other community buildings in Upper Mustang are constructed using this traditional engineering. The houses in Mustang utilize the same type of wood – bhote pipal – for windows, doors, beams, pillars, and roofs. Thus, the bhote pipal tree species essentially sustains the structural integrity of these houses. To adapt to modernization and climate change, locals have started incorporating cement concrete pillars in new constructions, using interlocking bricks instead of traditional raw bricks. For roofing, they employ wooden beams, upon which plywood is placed, followed by zinc sheets or plastic, and finally, the

surface is coated with mud again to prevent leaks. Locals express concern that this adaptation of traditional technology poses a risk of displacing indigenous skills.

“The negative impacts of climate change, which are not our fault, have become evident in Mustang," stated Lopsang Chhompel Bista, the chair of Loghekar Damodarkunda Rural Municipality. "While there might be an immediate impact in the short term, the fear is that in one or two hundred years, the identity and appearance of Mustang will vanish entirely."

Saubhagya Pradhananga, the Director General of the Department of Archaeology, mentioned that preparations are underway to develop guidelines for future infrastructure construction, taking into account the impacts of climate change on the cultural settlements of Upper Mustang. Although mud itself is not an insulating material, it possesses thermal mass, allowing it to absorb heat and cold rather than transmitting it, thereby keeping houses cool in the summer and warm in the winter. Stone and cement cannot fulfill this function.

Based on the specific heat capacity of materials, objects that heat up quickly also cool down quickly, and objects that heat up slowly cool down slowly. This explains why houses built with RCC (Reinforced Concrete Cement) technology tend to be excessively hot in summer and extremely cold in winter, according to Bishnu Paudel, the chief engineer at the Infrastructure Development Office of Myagdi. He suggests that 'making walls thicker and using wood powder instead of sand for plastering can help keep houses warm during winter'.

Devendra Bhattarai, archeologist with Department of Archeology, says that though the residents of Mustang have been building expensive concrete houses to keep themselves safe from climate change impacts, there are concerns that such houses are not environment-friendly. Indradhara Bista, local politician and leader, says that in extremely cold places like Mustang, RCC houses are inappropriate not only from cultural and economic perspectives but also from a health perspective. He says this has raised the prospect of identity loss.

A dog guards the palace

Lo Manthang, also called a tasi lhundub in local language, is a major tourist attraction in Upper Mustang. The five-story palace, which lies in Lo Manthang Rural Municipality-5, was built by the first king of Lo Manthang, Ama Pal, in 1440. The palace, renovated after it was destroyed by 2015 earthquakes, however, stands unoccupied and unused. The palace, now under the ownership of cultural king of Mustang, Jigme Sigme Parbal, was renovated with the assistance from his family and the locals. When Bista comes to Mustang, which he does occasionally, he stays in the part that was not damaged by the earthquake. Bista has opened a resort named Royal Mustang Resort, outside the old settlement of Upper Mustang.

A dog at the Lo Manthang palace.
Photo: Ghanshyam Khadka/NIMJN

A caretaker has been assigned to guard and maintain the palace, and he also feeds the sheepdog that primarily watches over the premises. Locals say that when the caretaker is away, it is this dog that truly guards the palace. Palaces also exist in places like Ghami, Charang, and Thegar, all featuring Tibetan roof styles.

However, these palaces, owned by the former Mustang king, have fallen into disrepair and become like ghost houses due to lack of use, protection, and renovation. Several sections of these palaces have crumbled. Changes in humidity, temperature, and light, all consequences of climate change and global warming, have resulted in decreased snowfall and increased rainfall, causing the mud walls to become saturated. These palaces are on the verge of collapse.

Cracked wall of Lo Manthang Palace.
Photo: Ghanshyam Khadka/NIMJN

The outer covering of the Jhong Cave.
Photo: Ghanshyam Khadka/NIMJN

Ancient civilization under threat

Caves, called fug in local language, are central to the religious and social life of people of Lo Manthang and Mustang. These unique caves evoke mystery about the history of ancient Mustang. These caves made by breaking hard rocks are a unique heritage. Annapurna Conservation Area Project (ACAP) estimates that around 100 such man-made caves exist in different parts of Mustang. The caves in Jhong, Marchung, Niphu, Garphung, Luri, Chunsi, Chhyojong, Medrak, Chaile, Chhuksang, Tuksche, Kowang and Samjong are the major ones. Jhong cave, with five storeys and 150 rooms, is a major attraction for visiting tourists. Folklore says these caves were used as shelters by the Lamas and Jhumas. It is said that long ago, villagers would seek refuge in these caves, hiding from bandits who came from Tibet after destroying the path to the caves.

Another local belief suggests that religious leaders of Buddhism created the caves by carving into the rocks for meditation, prayer and scholarly pursuits. Chhimi Gurung, an 89-year-old resident of Lo Manthang, recounts, "Such caves were made to protect religion from Tibetan looters and to ensure that religious leaders could attain enlightenment."

During their exploration of ancient civilization in Mustang (from 1992-1997), German and Nepali archaeologists had found a 'child mummy' in Mebrak cave. According to the DNA record of the Department of Archeology, the skeleton of the child was around 2,414 years old. Studies have concluded that people lived in these caves until 8th century BC and these caves have been in existence since the Stone Age.

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Inside the Jhong Cave.
Photo: Ghanshyam Khadka/NIMJN

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Dr. Madan Lamsal, a culture expert and archaeologist directly involved in studying human civilizations in Mustang's caves, states that these caves date back to the eighth century BC – 200 years before the birth of Lord Buddha. "The human remains discovered in a cave below Muktinath were 3,000 years old. The cave itself could be even older," says Dr. Lamsal, who is involved in the study of that particular cave. In 2011-2012, a team led by Dr. Jacqueline Eng, a bioarchaeologist from Western Michigan University, and Dr. Mark S. Aldenderfer, an American anthropologist and Professor of Anthropology at the University of California, Merced (formerly the Dean of the School of Social Sciences, Humanities, and Arts), conducted a survey and study of caves in the hills near the village of Samjong in

Upper Mustang, in collaboration with the Department of Archaeology. According to Prakash Darnal, a Nepali archaeologist on the team, human remains found in burial sites dated back to 700 BC, and golden masks, beads, and other archaeologically significant items were discovered at that time.

These caves are at risk of collapsing due to climate change-induced weather patterns, characterized by the absence of monsoon rains and only snowfall during winter. According to Prakash Darnal, the archaeologist studying caves in Mustang, the palaces, houses and gumbas constructed with mud walls and structures are disintegrating after being saturated with water. He notes that caves dating back to 700 BC, located in the hills of Urkeni in Lo Manthang Rural Municipality-2, have been swept away by flash floods. Dr. Regmi concurs, stating that the steadily shifting rainfall patterns in Mustang, a region historically known for scarce or low rainfall, could lead to mud collapses and the eventual destruction of the caves.

Archaeologist Bhattarai cites the mudslide behind Charang Palace in Upper Mustang, triggered by rainfall, as an example of hill collapse resulting from increased precipitation. He believes that these caves, created by excavating rocks, could collapse in the long term. Archaeologist Darnal states, "The conflict between ancient heritage and development has become apparent. Therefore, the Department of Archaeology itself needs to actively explore, research, preserve, and document issues related to settlements, houses, palaces, and gumbas." Indra Dhara Bista, a former lawmaker in Gandaki province actively involved in preserving the archaeological, religious, and cultural heritage of Upper Mustang, argues that local governments must work towards the preservation of these caves. "These are not just caves; they are the relics of Mustang civilization passed down to us by our ancestors. Now, local governments need to unite for their preservation," he stated.

A modern monastery built using cement in the Charang, Mustang. Photo: Ghanshyam Khadka/NIMJN

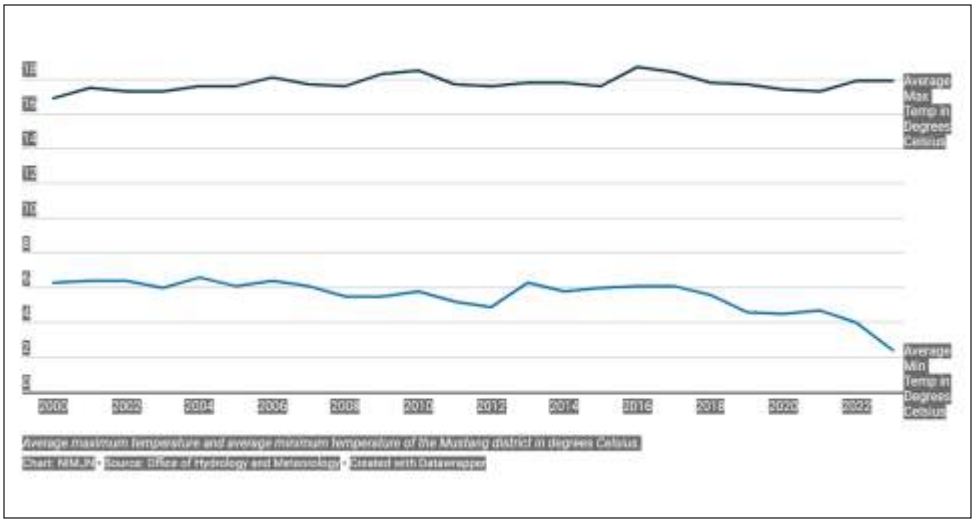
Fate of gumbas

The historical gumbas, also known as tapo kuti in Buddhist religion and culture, in Lo Manthang are also constructed from mud. Among all the significant gumbas in Mustang, Jyampa gumba in Lo Manthang is considered a cultural heritage site of Nepal.

Pragya Sherchan, a climate change scholar at Prakriti Resource Center, has observed during her studies and explorations how the increasingly frequent rains in Mustang are causing mud structures such as gumbas and ancient palaces to rot and erode. Her observations revealed that wooden pillars and supports within these structures are being damaged by the rain.

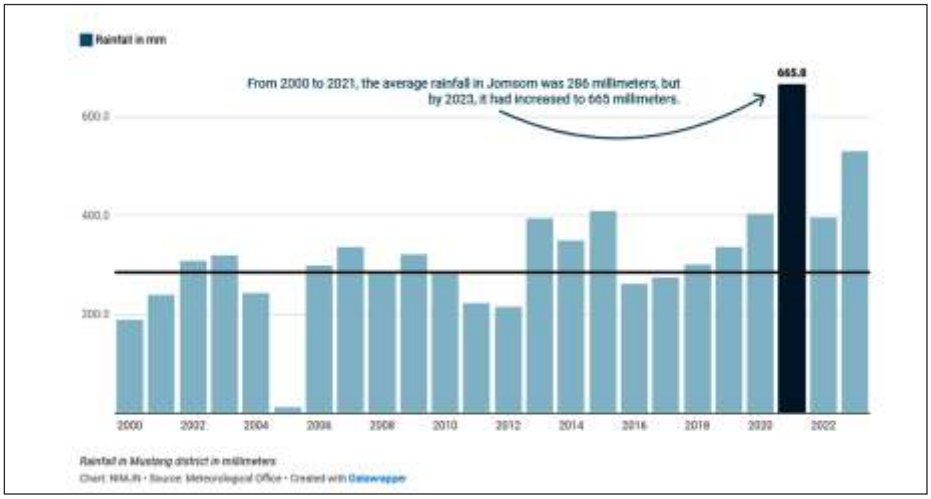
Locals have attempted to protect these structures by covering them with plastic or zinc sheets, similar to what they do with their own homes. "The unused ancient gumbas will collapse due to lack of preservation within a few years. Their existence is in jeopardy," she stated.

Mustang is among the places that faces the risks of multiple disasters – the melting of the glaciers, floods and mudslides, among others.



More rains, more danger

According to statistics from the Office of Hydrology and Meteorology, Pokhara, the maximum annual rainfall in Upper Mustang was below 200 millimeters until 2009, as recorded by the Weather Station located in Chhosare, Lo Manthang Rural Municipality-1. Since then, the amount of rainfall has consistently increased. In 2023, the rainfall reached 331 mm.



Similarly, records from the Weather Station in Jomsom indicate that the maximum rainfall until 2010 was below 300 mm, but by 2023, it had risen to 665 mm.

Data from the Department of Hydrology and Meteorology shows that the annual average temperature in Nepal is increasing by 0.056 degrees Celsius, which, although seemingly insignificant, has begun to have a substantial impact. According to the International Centre for Integrated Mountain Development (ICIMOD), while the global temperature is rising at a rate of 1.1 degrees Celsius, the rate of snowmelt in the Himalayan region is rapid.

Prabin Man Singh, a climate change expert who has also served as the director of Prakriti Resource Center, explains that Mustang's topography is not suited to withstand heavy rainfall. While 50 mm of rain is considered normal in Pokhara, the same amount of rain in Lo Manthang within an hour can lead to unimaginable loss and damage. Therefore, Singh warns that increasing rainfall in Mustang is a sign of danger. "Mustang is essentially a place with mud houses. Now that heavy rain has started there, where it used to be very rare in the past, it has saturated the mud structures, and rooftops have begun to leak. The unique appearance of the houses has started to disappear. When hot weather became common, traditional attire like Bakkhu vanished," he said.

Karma Namgel, the ward chair of Lo Manthang Rural Municipality-2, has witnessed the drastic change in weather patterns in Mustang. In his younger days, there would be as much as four feet of snow in November and December. However, this year, there was very light snowfall in February. Mustang, traditionally known as a town of snow, has begun to experience low snowfall.

In the last two decades, low snowfall has led to early melting of snow which has led to rise of temperature. Rising temperature has meant that there is more rain which wets the mud strictures and which finally pushes them to collapse.

Need for preservation

Each year, over 4,000 international tourists embark on an adventurous trek to the Mustang mountains to witness its cultural heritage. According to data from the Lo Manthang Office of ACAP, 3,484 foreign tourists visited Upper Mustang in 2023, and 4,061 made the journey to these Himalayan wonders in 2024. Domestic tourists, for whom ACAP does not have data, also contribute significantly to the visitor numbers. This increasing human presence could pose a challenge to preserving the archaeological town. Nasi Narbu Gurung, the Chair of Lo Manthang Rural Municipality, emphasizes the necessity of preserving the caves and gumbas. "Tourists flock to Upper Mustang to observe ancient civilization. Locals are also earning some income, but this has raised concerns that it could present a significant challenge to preservation efforts," he stated.

Lopsang Chhomphel Bista, the chair of Loghekar Damodarkunda Rural Municipality, mentions that his municipality is developing a work plan to protect residents from climate change impacts and to safeguard the heritage. Archaeological Officer Devendra Bhattarai argues that measures must be explored to preserve the mud city, as

the gumbas and palaces of Upper Mustang are bearing the brunt of climate change.

"As the rainy season is extending in Mustang, locals are seeking alternatives to mud structures, opting for concrete. Instead of using zinc sheets on the roofs of palaces and gumbas for protection and instead of building concrete houses, it would be better to use bitumen waterproof tar felt on the house roofs," he suggested.

Mustang's Chorten.
Photo: Ghanshyam Khadka/NIMJN

Nabha Basnet Thapa, the chief of the Cultural Division at UNESCO Nepal, states that a study on the impacts of climate change in Lo Manthang has yet to be conducted, but discussions regarding the preservation of Mustang's heritage are ongoing. "Locals bear the primary responsibility for preserving the heritage of archaeological value. If external assistance is needed for preservation, UNESCO is ready to provide support," Thapa said.

This article was first published in www.nimjn.org on March 28, 2025.*

NIMJN (Nepal Investigative Multimedia Journalism Network)

* *https://www.nimjn.org/268/climate-change-takes-toll-on-the-himalayas-nepals-upper-mustang-could-soon-lose-its-cultural-identity-and-existence*

How Risky Is Heat For Pregnant Women?

Bhagirathi Pandit

Kathmandu: Maya Kohar (21) of Dhakadhai, Rohini Rural Municipality-3, Rupandehi, like every day, worked in the fields all day on October 8, 2024 (Ashoj 22, 2081 BS) and went to sleep. She started experiencing unbearable abdominal pain in the middle of the night. She was then taken to the health post and admitted. Around 2 a.m., she gave birth.

Maya delivered her baby 5 weeks earlier than the date given by the health workers, at 34 weeks and 6 days. Her baby also had a lower than normal weight (1 kg 800 grams) compared to the standard 2.5 kg. The World Health Organization defines low birth weight as less than 2 kg 500 grams (5.5 pounds).

Sixteen months prior, on May 25, 2022 (Jestha 11, 2079 BS), Maya gave birth to her first child at the time specified by the health workers and in a normal manner. She is concerned that her second child was born prematurely. She said, "I started experiencing abdominal pain earlier than the date given by the doctor. The baby was born that same day. I don't understand why it was born early."

Although there are no specific scientific studies on Maya's problem, it is found that the increasing heat worldwide is affecting pregnant women, which is impacting births. Studies have also shown that excessive heat affects fetal development and increases the risk of premature birth.

A report titled 'Extreme Heat, Pregnancy and Stillbirth: Expert Review' by researchers including Ana Bonell of the London School of Hygiene & Tropical Medicine in the UK has shown that rising temperatures are affecting pregnant women. This study found that heat increases the risk of stillbirths, neonatal mortality, and affects the baby before birth.

A Systematic Review and Meta-Analysis of the Impact of Heat Exposure Risks on Maternal, Fetal, and Neonatal Health' published in Nature Medicine also states that the risk of premature birth increases by 4% with every one-degree Celsius rise in temperature. During heat waves, this can reach up to 26%, according to the study.

A study led by Dr. Louise Wida, a researcher at the Wal-yan Respiratory Research Centre at the South Australian University and Telethon Kids Institute, and Professor Matthew Flinders and Corey Bradus of Global Ecology at Flinders University, showed that exposure to extreme temperatures increases the risk of premature birth by an average of 60%. This study, which reviewed global research, claimed a concerning increase in premature birth rates.

The health post building where Maya gave birth. Photo: Bhagirathi Pandit/NIMJN

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The study 'Development, Validation and Reliability of Scales and Items for Heat Wave Risk Assessment of Pregnant Women' showed that increasing heat increases the risk of preterm birth, stillbirth and low birth weight.

Public health expert Sujina Maharjan, who was involved in the study, says, "Fluctuations in temperature can cause mental stress and release stress hormones, which can cause the membranes to rupture prematurely. This leads to premature birth. In such cases, low birth weight babies are born."

The United Nations Framework Convention on Climate Change (UNFCCC) has included such current and potential impacts on human health due to rising temperatures in the non-economic losses caused by climate change.

Dr. Bijay Lamsal, a gynecologist at Siddhartha Children and Women's (AMDA) Hospital in Butwal, says that the impact of heat on pregnant women is a subject that needs to be studied and that it has an indirect effect.

According to him, working women come to the hospital. They do not pay attention to hygiene while working in the heat, which causes vaginal infections and urinary tract infections. Dr. Bijay said that these infections are a cause of preterm birth.

Normally, babies are born at 40 weeks of pregnancy, or 280 days. In medical terms, birth before 37 weeks is called preterm birth.

According to the 'Profile on Prevention and Care of Preterm and Low Birth Weight Births,' 14% of infants in Nepal are born prematurely. Out of the 577,000 babies born annually, approximately 81,000 are born before 37 weeks. Among them, 4,100 babies are born even before 28 weeks.

The '47 Studies on Premature Birth and Low Birth Weight Associated with Environmental Risks' published in Oxford Academy states that more than 20 million low birth weight babies are born worldwide every year. According to the study, 95% of low birth weight births occur in developing countries. Demographic studies indicate that 18% of babies born in Nepal have low birth weight.

According to Dr. Kalpana Upadhyay Subedi, Chief Consultant at Paropakar Maternity and Women's Hospital in Thapathali, it is very difficult to save a baby born before 28 weeks.

According to her, it is also difficult to save a baby born between 28 and 32 weeks. A baby born between 32 and 36 weeks is premature. It is somewhat easier to save them. Babies born between 37 and 40 weeks are not as difficult to raise. Dr. Kalpana says, "The earlier the birth, the more problems there are."

According to the 'Extreme Heat, Pregnancy and Stillbirth: Expert Review' report, problems such as premature birth, low birth weight, and abnormal fetal development can be caused by excessive heat.

This problem is not limited to Nepal but is emerging as a crisis worldwide, as shown by the 'Systematic Review and Meta-Analysis of the Impact of Heat Exposure Risks on Maternal, Fetal, and Neonatal Health' published in Nature Medicine. This study shows that rising temperatures have increased other adverse outcomes such as stillbirths, congenital anomalies and obstetric complications.

Premature birth affects the development of the child. Also, as it is difficult to save them, the Sustainable Development Goal of reducing child and infant mortality is also affected, Dr. Kalpana explains.

While there has been significant improvement in maternal and infant mortality rates in Nepal, the neonatal mortality rate has remained stagnant since 2016, according to the

Nepal Demographic and Health Survey.

According to this 2022 survey, 21 out of every 1,000 deliveries result in stillbirths. One out of every 30 live-born children does not reach their fifth birthday. This indicates that achieving Nepal's Sustainable Development Goal (SDG) target of reducing the neonatal mortality rate to 12 per 1,000 live births by 2030 will be difficult, according to gynecologists Dr. Swaraj Rajbhandari and Dr. Kalpana.

Dr. Kalpana says, "The government has introduced programs to address problems such as preterm birth and low birth weight. There is a special training package for providing services to neonates and preterm babies. Focused work is being done on this, but it is still difficult to reduce the rate from 21 to 12."

Climate change also affects nutrition

Maya, who gave birth five weeks before her due date, is a farmer. Having become a mother of two children within three years of marriage, she was never free from household chores and farming work.

She said that she worked in the field until the day of delivery and that she felt the heat was more intense that year. When asked if she experienced the heat more because she was pregnant, she said that it was not like that the previous time.

Kamhariya Health Post.
Photo: Bhagirathi Pandit/NIMJN

"This year, it was very difficult to bear the heat; it was so hot that I couldn't even stay at home, and it was even more suffocating in the field; I carried a bottle of water, but it didn't last for an hour," Maya said. According to her, she experienced a lot of body fatigue, thirst and lethargy.

Research conducted by Ana Bonell and others has shown that intense heat affects the thermoregulation system in pregnant women's bodies, increases blood flow by up to 50%, and makes it difficult to keep the body cool. The study also found that dehydration, increased blood pressure, and a decrease in oxygen supply to the fetus can occur.

Like Maya, Muskan Mallah (20 years old) of Mahadeva, Mayadevi Rural Municipality-2, Rupandehi, also gave birth at 33 weeks of pregnancy. Health workers had given her a delivery date of December 11, 2024 (Mangsir 26, 2081 BS). However, seven weeks early, on October 18, 2024 (Kartik 2, 2081 BS), she went into labor and gave birth to a lower-than-normal weight baby (2 kg).

Manisha Baduwal Khadka, an auxiliary nurse midwife at Kamhariya Birthing Center who assisted her during delivery, says, "It was my duty during Muskan's delivery. Her baby was born prematurely and was also underweight."

According to Manisha, Muskan's health condition was critical, so she was referred to Bhim Hospital in Bhairahawa. The baby was treated in the NICU at Bhim Hospital. However, the baby's health did not improve, and the baby died on October 20, 2024 (Kartik 4, 2081 BS).

"Why was my baby born before the scheduled time? When it was born, it only had the form of a human, it was so soft and wobbly when I held it," Muskan lamented. "Even though I'm a mother, my lap is empty."

Saraswati Kohar (25) of Komrahiya, Mayadevi-1, shares a similar plight. A mother of two daughters, she gave birth prematurely both times. The first time, she delivered at 30 weeks on June 16, 2020 (Ashad 2, 2077 BS). The second time, on November 11, 2024 (Kartik 26, 2081 BS), she delivered at 32 weeks and 2 days.

Both daughters were underweight due to their premature births. She said she is having a much harder time raising her younger daughter than her elder one. Saraswati says, "It's very difficult to even feed her."

Saraswati Kohar.
Photo: Bhagirathi Pandit/NIMJN

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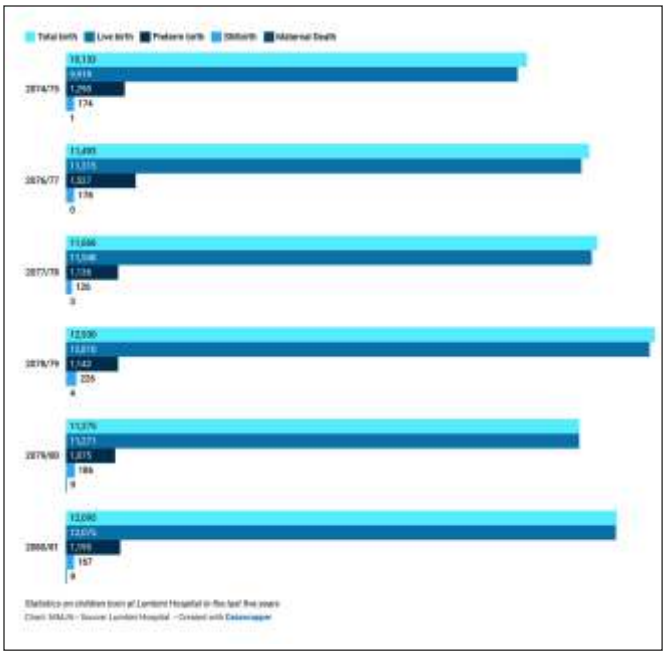
Like Maya and Muskan, Saraswati is also a farmer. Not only are their educational, social and economic conditions similar, but the problems they experienced during pregnancy are also shared.

Their village is located in one of the hottest regions of Nepal. They make a living by cultivating vegetables in an area where rice, wheat and vegetables are produced. They ate their usual food (rice, vegetables and occasionally lentils) during pregnancy, just like they did at other times. "What are nutritious foods?" Maya said. "We don't get to eat when we're hungry."

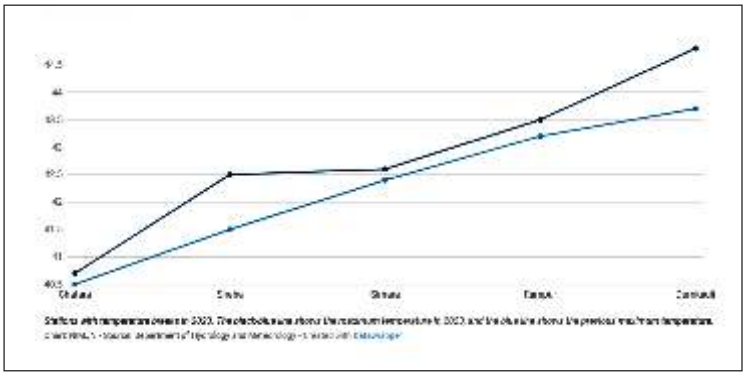


According to the data from the health post in Kamhariya, Mayadevi Rural Municipality-3, Kapilvastu, out of 91 deliveries up to the month of Mangsir 2081, 13 babies were born with low birth weight. The health post does not keep data on preterm births.

At Siddhartha Children and Women's Hospital in Butwal, out of 2,307 deliveries in 2078/79, 818 (35.45%) babies were born with low birth weight. In 2079/80, out of 1,791 deliveries, 630 (35.17%) babies were born with low birth weight, and in 2080/81, out of 1,324 deliveries, 498 (37.61%) babies were born with low birth weight, according to the hospital's data.

Although there are no official statistics on preterm births at Mayadevi's health post, nurse Sangita Sharma stated that preterm births are occurring. According to her, if a critical condition is seen, it is referred to Bhim Hospital in Bhairahawa.

Auxiliary nurse midwife Manisha says that she has not been able to find out the exact cause of preterm births. She says that one of the reasons for the birth of a low birth weight baby is premature birth.



According to Manisha, since many women are farmers, they work in the sun most of the time, and they do not eat enough nutritious food, which leads to the birth of low birth weight babies.

According to Nepal's census 2078, 68% of women are farmers. Among farmer families, only 44% are aware of climate change. Of those, 91% of farmer families said that climate change has affected agriculture. Among them, 85% reported a decrease in production.

Dr. Kalpana Upadhyay Subedi, Chief Consultant at Paropakar Maternity and Women's Hospital in Thapathali, stated that the decline in food production due to climate change is impacting nutrition.

The changed environment

A 2017 study published by the Department of Hydrology and Meteorology showed that Nepal's temperature is increasing by 0.056 degrees Celsius annually.

In some areas of Kapilvastu, Rupandehi, Nawalparasi-West, Chitwan, Parsa, Bara, Sarlahi, Dhanusha, Mahottari and Siraha districts, temperatures exceed 42 degrees Celsius.

From mid-April, most parts of the Terai region experience mild to severe heat waves. In 2023, maximum temperatures set new records in some places.

A study by Oxford Policy Management on climate change and disaster risk and vulnerability also showed that the annual minimum and maximum temperatures in the districts of Lumbini Province are increasing. The study, based on climate trend and scenario analysis, predicts an increase in extreme events of hot days and warm nights, with further increases expected in the future.

Rupandehi, Kapilvastu, Banke and Bardiya are at high risk of heat. The study includes that the increasing temperature trend leads to heat waves and heat waves pose a significant threat to healthy living.

The study has shown that there is an unequal impact on senior citizens, children, pregnant women, and poor and marginalized people.

The effects of heat during pregnancy

An article published in 'The Guardian' states that pregnant women, whose bodies carry a developing fetus, are at high risk of heat stroke as physical fatigue and hormonal changes during pregnancy affect thermoregulation.

The fetus, amniotic fluid (a clear or slightly yellow fluid that surrounds and protects the developing fetus in the uterus), and the placenta (a temporary organ that connects the mother's uterus to her developing baby through the umbilical cord) are all present. And, they are generating heat.

Extreme heat causes fatigue and dehydration, which triggers hormones involved in uterine contractions. If other problems accumulate, this can lead to labor and increase the risk of premature birth, low birth weight and stillbirth.

To maintain blood flow to the placenta and fetus, a pregnant person's blood volume increases by approximately 40% to 50% during pregnancy. Given the increased blood volume, amniotic fluid and other physical changes, pregnant women need to consume plenty of fluids to support fetal growth and prevent dehydration.

The 'Study of the Impact of Extreme Heat Exposure on Pregnant Women and Newborns'

has shown that impaired fetal growth during pregnancy is associated with high temperatures.

High heat during pregnancy can contribute to fetal oxidative stress (a condition in which an imbalance of free radicals and antioxidants in the body damages cells and tissues) and inflammation. This can affect fetal growth and ultimately lead to low birth weight.

'A Study of the Relationship between Temperature and Preterm Birth Weight in Latin America' has shown that high heat exposure during pregnancy is associated with low birth weight.

A study by the 'Centers for Disease Control and Prevention' has shown that pregnant workers, in particular, are more susceptible to the risks of excessive heat exposure. According to the study, pregnant individuals are more likely to experience heat fatigue and heat stroke.

The 'Study Related to Risk Perception and Care Adaptation of Heat Wave in Nepalese Pregnant Women' shows that when the body's ability to regulate temperature decreases in heat, pregnant women are more at risk of heat stress than normal people.

The study showed a relationship between long and short-term heat exposure during pregnancy and an increased risk of severe maternal mortality.

The study was conducted using the Health Belief Model (HBM), a theoretical framework used to predict health behaviors. It researched to identify heat risks to pregnant women and related prevention and mitigation strategies, and the barriers to adopting such behaviors.

Most respondents participating in the study mentioned feeling high risk during heat waves. Pregnant women reported risks such as dehydration, increased body temperature, body weakness and sunburn. These are known physical challenges faced by pregnant women, which reduce thermoregulation capabilities.

The study found the severity of heat to be high. It showed that many women experienced heat-related conditions that could lead to serious health consequences, including hospitalization.

Problems in treatment

The World Health Organization has stated that climate change poses a threat to pregnant women, newborns and children due to various physical, clinical, social and behavioral factors.

The 'Call to Action: Protecting Maternal, Newborn, and Child Health from the Impacts of Climate Change' study states that climate change is a growing threat to maternal, newborn and child health, and should not be ignored. The study emphasizes the need to

protect past progress in maternal, newborn, and child life and well-being.

At 37 weeks, all systems of the fetal physical structure are developed. The earlier a baby is born before 37 weeks, the less developed their physical structure is. Therefore, problems arise such as breathing difficulties due to poorly developed lungs, heart failure, difficulty following orders due to underdeveloped brains, and digestive problems due to poorly developed intestines. Every system is underdeveloped, making it difficult to adjust to the external environment.

In Nepal, some programs are underway to prevent premature births and neonatal mortality. Dr. Gauri Pradhan Shrestha, a gynecologist at the Family Welfare Division, informed that there are 61 Special Newborn Care Units (SNCUs) in government hospitals to treat infants with complications from premature birth.

However, according to gynecologist Dr. Swaraj Rajbhandari, district hospitals do not have pre-mature units. There are also not enough pre-mature units and NICUs in medical colleges and hospitals. Therefore, it is difficult to save neonates (newborns).

"The window period for a neonate is 1 hour. If they cannot be placed in the NICU within that time, it is difficult for our country," says Dr. Swaraj. "We have a shortage of neonatologists. We lack other resources. Therefore, we are taking this as a challenge."

She also states that there are not enough NICUs in Kathmandu. According to Dr. Swaraj, Thapathali Maternity and Women's Hospital has a 35-bed NICU (including a 10-bed ventilator-equipped NICU).

More studies needed to formulate policy

Issues related to the impact of heat on pregnant women worldwide have started to come under discussion. However, sufficient studies and research on this are still lacking. A study conducted by Ana Bonell and others emphasized that more research is needed on the relationship between excessive heat and pregnancy.

In Nepal, discussions and deliberations on this issue have also gradually begun. Dr. Kritipal Subedi, a gynecologist at Bheri Hospital, says that pregnant women are experiencing indirect effects due to environmental impacts. He points out the need for detailed studies to ascertain whether there are direct effects.

Dr. Gauri from the Family Welfare Division says that preterm births are happening in Nepal, but it is not possible to definitively say that this is due to environmental impacts. She says, "There has been no study on the issue of environmental impact; we also do not have the resources to conduct a study."

Although the issue of environmental changes affecting pregnant women is being raised worldwide, there are no studies or policies on this in Nepal. Organizations such as the

World Health Organization and UNICEF are making efforts to find adaptation strategies to protect women and children from extreme heat in Africa, Latin America, and some countries in South Asia.

With the support of UNICEF, the Directorate General of Health Services (DGHS) in Bangladesh has developed national guidelines on heat-related illnesses to protect children and pregnant women from heat-related health risks.

The guidelines include topics such as being aware of heat stress, keeping oneself safe, identifying the symptoms of heat stress, making efforts to protect oneself and others, and taking a person to a health center if they experience severe symptoms.

The study emphasizes the need for a multi-sectoral approach that links health system strengthening, urban planning, social security, and climate change mitigation to address increasing climate-related risks and protect maternal health. It shows that there is a need to improve public health communication, improve health service system preparedness, and address practical obstacles such as water and electricity shortages.

It states that these initiatives, especially if focused on rural and socio-economically disadvantaged women, can mitigate the adverse effects of heat waves on both maternal and fetal health.

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NIMJN (Nepal Investigative Multimedia Journalism Network)

* *https://www.nimjn.org/264/how-risky-is-heat-for-pregnant-women*

Four Years After Melamchi Flood Disaster: Trauma Of The Affected Remains Unhealed

Bhagirathi Pandit

Chanute Bazaar is located 40 kilometers northeast of the capital Kathmandu, on the banks of the Melamchi River. Mahankalphant is located above Chanute Bazaar, which is reached by following the Melamchi River from Melamchi Bazaar, which was destroyed by the floods on June 15, 2021.

Tiksani Tamang (30) lives in a tent made of tin on this field. The mother of five daughters, she spends her days in this tent with her husband and children.

Tiksani is the youngest daughter of Saili Tamang (50), who went missing in the Melamchi flood. Before her mother (Saili) went missing, Tiksani lived with her parents and brothers in the same house. She has not been able to forget the day her mother went missing and the hardships she has faced since then.

As usual during the monsoon, the Melamchi River was flowing with muddy water that day. After finishing her morning chores, she went to plant paddy in the field. When she returned home after planting, there was a light rain and the water level in the river was rising. The residents of this area used to collect the driftwood brought by the Melamchi River during the monsoon and store it for the whole year. After seeing the flood,

she also went towards the river to collect driftwood. Both mother and daughter sat on either side of the river and started taking out driftwood.

Before they knew it, the river started to rise. The villagers who were collecting driftwoodon the river bank started running away. She also climbed up. "There was a smell like gas exploding in the river, and the ground was shaking as if there was an earthquake," she recalls the day of the flood, having experienced the 2015 earthquake as well.

Those who were collecting driftwood in the river a while ago had already reached the hillside. When she looked up, she saw a flood of mud and debris flowing far above her own house. She looked across at her mother, who was gathering driftwood. But the flood was coming in a smoky way from the river, and nothing could be seen. She looked for her mother, but could not find her. "I shouted at my mother to run away, others also told her to climb to higher ground when the river got bigger, but she didn't listen, maybe because she was taking out the driftwood that had come into the river," she says, "The flood came down suddenly. It must have taken her somewhere. There was no one to see, and no one to pull her out even if she was buried."

Tiksani Tamang.
Photo: Bhagirathi Pandit/NIMJN

Both the house and her mother she had seen just a while ago disappeared in an instant. She remembers spending many days after that sleeping on straw.

"What a terrible disaster, what a terrible disaster," Tiksani says, feeling discouraged, "If it had been someone else, I guess it would have been time to die..., they probably would have died."

The body of her mother, who went missing in the flood, has not been found yet. Even though the body has not been found, the family has performed her 'Ghewa' (last rites) according to Buddhist culture, believing that she died in the flood. But still, she cannot forget her mother. "It feels like my mother is here, just unseen. It feels like she is walking around there," she said, pointing forward with her finger, "Many things play in my mind. I can't sleep for many nights when I go there." She said that she has not been able to go to Palchoksera, the place where her mother was swept away, and her birth home in Helambu-6.

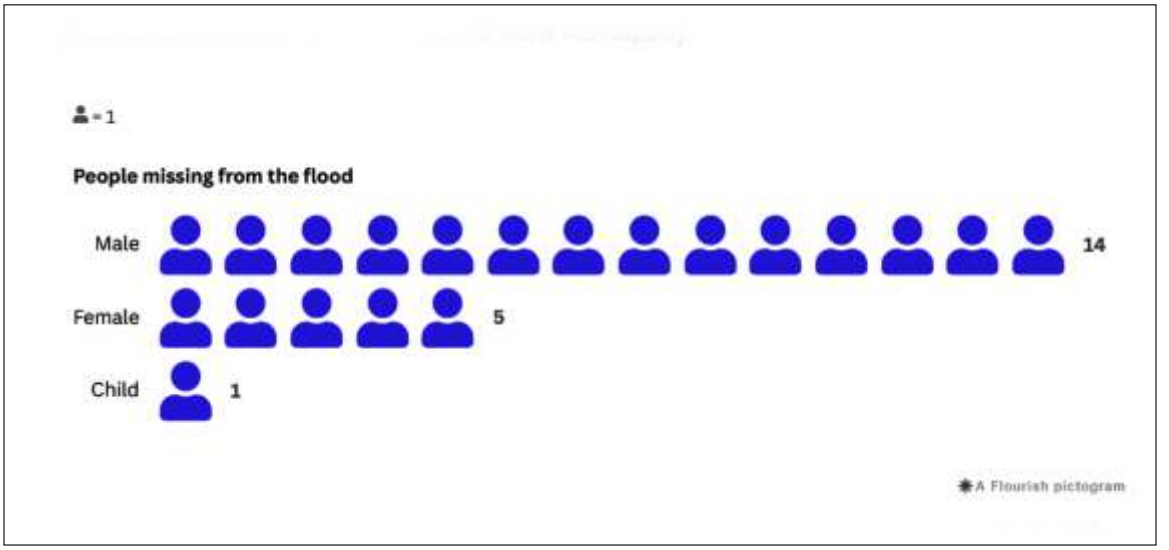
According to her, there is a world of difference in her life with and without her mother. "My mother was a world of work, she never kept her hands idle for a moment," Tiksani says, "When my mother was there, the house was full of food, now I have neither my mother nor my house."

She says that she feels like she has lost her whole world since her mother is gone.

"Everyone has their share of joys and sorrows in life, but after losing my mother, the world feels empty," she said, "I don't even feel like celebrating festivals."

In the flood of June 15, 2021, five people died and 20 went missing. All of them were from the Helambu area, according to the Helambu Rural Municipality.

Like Tiksani, families who have lost loved ones in the Melamchi flood are found to be going through various stresses. A study conducted by Prakriti Resources Center focusing on the Melamchi area (titled "Assessment of Local Leadership in Financing Disaster Risk Reduction in Nepal: The Case of the 2021 Melamchi Flood") also shows that flood victims have mental health problems. The report concludes that 85% of the flood-affected participants in the 539 households surveyed showed signs of mental health problems.



The report mentions that not only the family members of the missing and deceased, but also those who lost their businesses, homes and crops due to the flood, have been experiencing problems with sleeplessness due to anxiety, mental stress, and fear.

Families who lost relatives in the flood have faced social and practical problems, cultural obstacles, displacement and migration in their daily lives after becoming mentally distraught. All of these are non-economic losses caused by climate change-induced disasters and their aftermath. These cannot be directly compared to economic losses in monetary terms. However, their impact is much greater than economic losses. The United Nations has also considered the damage to human life and health caused by floods as non-economic losses. A study conducted by ICIMOD has called the Melamchi flood a result of human and climate factors and processes.

Four years after the flood, the mental health problems of the residents of the Melamchi Helambu area have reached a dangerous level, says Pravin Man Singh, director of Prakriti Resources Center. He says, "The flood-affected people seem to be suffering from two types of mental health problems."According to him, one type of problem has arisen from

the fear of seeing the flood, while another type of stress is seen in those who have lost their relatives, sources of livelihood, and businesses in the flood as they see a bleak future.

The new market where the displaced people of Chanaute Bazaar live.
Photo: Bhagirathi Pandit/NIMJN

Pangs of Loss

Among those who went missing in the Melamchi flood was Madhav Bhandari (32) of Kiul, Helambu Rural Municipality-2. Madhav's father, Baburam Bhandari, witnessed Madhav being swept away by the flood. After seeing two people, trying to cross the river and getting caught in the middle of the flood, Madhav called the police for rescue. Then, handing his mobile phone to his father, Baburam, he left to block the river flow coming to the local trout fish farm, when he was enveloped by river flood.

"He had only gone about 5 meters down, I was standing and watching, and while I was still saying 'Hey, hey,' he was gone. He disappeared right before my eyes," Baburam was speechless.

After a moment of silence, he spoke, "Whether it rained from the sky or boiled up from below, the river changed its course unexpectedly, coming around from this side (towards the settlement) in a way no one could have imagined."

With tears in his eyes, he was silent for a while, then spoke again, "...it was written in his [Madhav's] fate."

In the Melamchi flood, Baburam lost his young son, who was his support in his old age. His two-and-a-half-story concrete house, which he had rebuilt after it was damaged in the 2015 earthquake by taking loans, 12 ropanis of land, buffalo farm, trout fish farm, and mill were all washed away.

Baburam, who lost his home, his profession, his source of income, and his son, whom he considered the pillar of his house, is also worried about the future of his daughter-in-law (Madhav's wife) and his grandson.

"My daughter-in-law works as a cleaner in the same municipality, and the household expenses are somehow managed," he says, "I need to educate my grandson and help him stand on his feet, but she is not in a position to do that. There is no one to help."

He is saddened that even though many organizations have come to understand the problems in the three years since the flood, he has not received any help from anywhere. He says, "In society, there are only those who say 'how pitiful,' and the government is as if it doesn't exist for us."

Additional Hardships

Ganesh Jyoti, who was running a fish farm on the banks of the Melamchi River in Kiul, Helambu-2, also went missing in the same flood. Ganesh's wife, Kanchi Maya Jyoti, has not yet been able to forget the sight of her husband being swept away before her very eyes. She says, "After muddy water came into the river, he went to stop the water. He had come right near the farm after stopping the water. It was probably a distance of 10 meters, my daughter pulled me up. He disappeared right there before my very eyes."

Kanchi Maya's problems are different. She not only lost her husband, but her house is mortgaged at the bank, and her fish farm and farmland were lost in the flood. She knew that along with fish farming, Ganesh had taken a loan by mortgaging the land and was involved in other businesses too, however, Kanchi Maya was unaware of other transactions.

Destruction after the Melamchi flood.
Photo: Bhagirathi Pandit/NIMJN

He used to collect and sell rice from the village. Within a month of his death, people started coming to the house to collect the money for the rice," she recalls, "Their words and behavior were difficult to bear. Even when I went out into the village, they would make snide remarks."

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At the same time, she was frustrated by the notices and phone calls the bank sent every week. Her family was not in a position to pay the bank installments. She says, "The bank blacklisted everyone in the family. Where could we go? There was nowhere to go. I so wished that I could get lost in the sky or sink into the ground."

Kanchi Maya says that after Ganesh's loan was transferred to the name of his mother, Bel Kumari, in whose name the land was registered, Bel Kumari also passed away while the bank was in the process of putting the land in auction, after which the land registration was transferred in the name of a neighbor who had stood witness while obtaining the bank loan, on the condition that the latter would pay back the loan.

She says that after the bank auctioned off the land, she is now making a living by farming other people's fields. The responsibility of raising and educating her two daughters and one son rests on her shoulders. "The person who took responsibility for the family is gone, my heart breaks when I remember," she laments.

Leaving One's Homeland

Dil Kumari Khadka, from Jai Bagheshwari Trout Farm on the banks of the Melamchi River in Palchok Sera, went missing in the flood. Her daughter-in-law was also trapped in the flood. She was rescued by neighbors, but Dil Kumari was late to escape and disappeared forever. After the flood swept away his mother, house, business and farmland, her son and daughter-in-law left their homeland and moved to Kathmandu.

According to them, the river is now flowing over where their house and business used to be. A pile of sand has accumulated in the field. There is no way to return to the village.

"The city is not like the village; we have to live like squatters with nothing," says Maiya Khadka, Dil Kumari's daughter-in-law. "There is no social feeling here like in the village, where everyone unites when someone has a problem, sharing each other's joys and sorrows."

The river is flowing over their old home. There is a pile of sand on the remaining land. She says that there is no condition to go and live there. Their neighbors are also in the same situation. Almost all families have left their homeland and moved elsewhere. But the municipality does not have any data on where some families have moved.

ICIMOD's study, "Melamchi Flood Disaster: Cascading Hazards and the Need for Multi-Hazard Risk Management," also predicts that those affected will be forced to relocate. According to the study, the flood displaced various groups, particularly families engaged

in subsistence farming. It has affected their livelihoods as valuable agricultural land has been turned into barren land. ICIMOD's study mentions that this could lead to migration.

Toll on Rituals

Gyanendra Kakshapati, a fish businessman, went missing after going to save workers who were trapped after the flood. His son, Upendra, says, "We searched for the body for the final rites, but it was not found."

According to Hindu tradition, the death rituals must be completed on the 12th day. Upendra explains that even after they could not locate his father's body for nine days, they created a symbolic representation of the body using Kusha grass (Darbha grass) and performed the final rites.

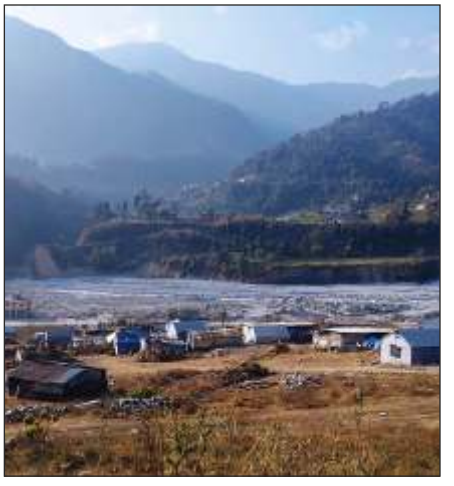
Upendra informed us that the final rites for his father were performed in Kathmandu because the flood had also damaged the structures on the river bank that had been set up for performing final rites.

"We moved to Kathmandu after August my mother came here only after two years. I, on the other hand, returned after a month to manage things," Upendra said. "Where we used to have our house, fields, and business, there is now just a pile of sand and stones."

Like Upendra, the locals of the Helambu-Melamchi region have lost the places where they used to perform final rites according to their traditions. More than 20 cremation sites and buildings have been damaged in the Helambu-Melamchi area.

The Melamchi Municipality has stated that 10 cremation sites and buildings in the Melamchi area, the Krishna Temple in Melamchi Dobhan, and a Radhe Radhe building have been damaged by the flood.

Similarly, Top Bahadur Adhikari, information officer of Helambu Rural Municipality, informed that the flood has damaged more than 10 cremation sites and buildings in the Helambu Rural Municipality area. He also said that cultural structures such as the Ganesh temple in the Helambu area and the Radha Krishna temple in Chanute were also lost in the flood. He said that the local residents are also under stress due to the loss of their cultural heritage.

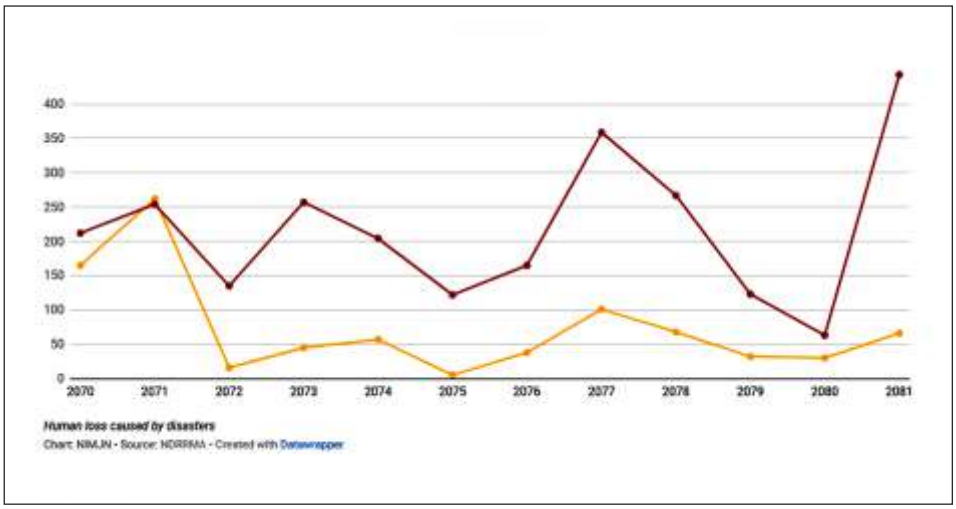


Aftermath of flood
Photo: Bhagirathi Pandit/NIMJN

Rising Risks, Weak Policies

Looking at the events of the last 10 years, it is clear that the damage to lives and property from floods and landslides is increasing every year. Floods cause death, injury, and economic and social disruption.

Data visualization of fatalities due to floods and landslides in the last 10 years.



Studies have shown that families who have suffered human loss due to floods experience trauma from losing loved ones and the consequences that follow. A study published in the International Journal of Social Science, titled "Counseling to Reduce Psychosocial Trauma of Flood Disaster Victims," shows that deaths and property damage caused by floods affect both men and women psychologically.

The study concludes that professional counseling is necessary for victims who have experienced trauma. Various studies have concluded that natural disasters occur without warning, and the distressing experiences of those affected can lead to post-traumatic stress disorder.

In Nepal, there is no clear policy on providing need-based psychosocial counseling to communities after a flood. The National Health Policy (2019) mentions that cooperation and coordination will be done to mitigate the adverse effects of climate change on health. The National Mental Health Strategy and Action Plan (2020) states that mental health prevention, treatment and rehabilitation programs will be conducted by local levels for vulnerable communities or groups, including victims of natural disasters.

However, Gyanendra Sigdel, Senior Health Officer of the Health Post of Melamchi Municipality, said that these policies and action plans are not effective. He was the head of the health post of Helambu Rural Municipality when the flood hit the Helambu Melamchi area. He says that the responsible bodies have not been able to address it. According to him, they now have to rely on non-governmental organizations. Even those have limitations.

The state of psychosocial counseling in Nepal is quite weak. "The government has neither a clear policy nor manpower regarding the provision of psychosocial counseling services, and all three levels of government have failed in this," he says. "Even the local government can take the initiative to produce mental health counselors by investing something in health workers."

Anup Acharya, a psychologist at Koshish Nepal, which has started the work of providing psychosocial counseling in disasters, says, "There is a great need for psychosocial counseling in the society. There is still a lot of work to be done for that."

Due to a lack of policy and manpower, those affected are not getting the counseling they need because help cannot reach the affected areas. Psychological first aid is needed at the community level in disaster-stricken areas. In some cases, there are also complex problems. Counseling alone is not enough for them, and they need to see a psychiatrist.

Dr. Pomawati Thapa, head of the mental health department, said that the government has not appointed any manpower in any local level focusing on the problems of disasters at the community level. She said that psychosocial counseling is being provided at disaster sites in coordination with non-governmental organizations.

She acknowledges that the current efforts are insufficient. According to her, given the annual investment the government allocates to the Ministry of Health, there is no possibility of increasing investment in mental health. Similarly, there is also a shortage of skilled manpower to address mental health problems.

Urgent Need for Counseling

"Those affected have suffered loss of life and property, and because they have witnessed the disaster firsthand, their minds are also deeply wounded," says psychologist Acharya. "Mental health problems appear when the loss in personal life causes even more stress." He said that in such a situation, counseling services are provided after initially assessing the need for counseling in the community.

Some people experience complex trauma due to the disaster, which requires medication. Stress and anxiety can be resolved with counseling. However, those with complex anxiety, depression, psychosis, and other problems need to see a psychiatrist and take medication.

Senior Health Officer Sigdel said that some non-governmental organizations came to provide mental health counseling after the flood in the Helambu/Melamchi area. He said that there was no mental health counseling service from the government's side.

According to him, some of the people who received services from non-governmental organizations were found to be in a condition requiring medication. According to Sigdel, who was the head of the Helambu health post during the flood, one organization arrived

with a three-day program at that time. They provided counseling to about 45 people.

A meta-analysis study on post-traumatic stress disorder rates after floods, published in PubMed, has shown that flood victims have a high rate of post-traumatic stress disorder (PTSD). This has been found to affect their habits, interests and lifestyles. This emphasizes the need for medical assistance. The study highlights the need for developing countries like Nepal to formulate policies for flood victims and provide timely treatment to reduce psychological consequences.

The study conducted a meta-analysis of 23 events to identify the prevalence of post-flood PTSD in flood victims. The study found a high rate of PTSD at 29.48%. The study found that the prevalence of PTSD in Asia was higher than in other regions. The highest prevalence in Asia, 57.35, was associated with natural disasters. The study showed that Asia experiences a high rate of natural disasters, and women experience more trauma.

The study showed that the frequency and severity of disasters in Asia contribute to the increasing incidence of PTSD.

A study titled "The impact of floods on life and human health" states that in the past 40 years, crisis prevention efforts in wealthy countries have helped maintain lower mortality rates. According to the study, to prevent human loss, it is important to prioritize data collection, analysis, and interpretation of population safety, and to identify weaknesses and behaviors for risk prevention. It is necessary to focus on the humanitarian risks posed by the effects of unexpected floods and to address the health impacts.

Floods, landslides, heavy rainfall and droughts are some of the effects Nepal has been experiencing. As a result, local people have been suffering from psychosocial problems. Nepal, as a developing country, despite having minimal greenhouse gas emissions, has become a victim of its effects. Due to this, issues of non-economic loss, such as psychosocial impact, are still in the shadows.

No initiative has been taken at the national and international levels to identify the psychosocial condition and help them adapt. As a result, disaster-affected people are deprived of psychosocial support from the local level.

Dr. Thapa says that to solve this problem, it is necessary to first study what kind of problems are seen in the disaster area. She says that she will take the initiative to formulate policies based on that. Believing that the service can be started from even one affected local level and that it can be expanded, she says that to solve the problem, it is necessary to go for a public-private partnership model.

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NIMJN (Nepal Investigative Multimedia Journalism Network)

* *https://www.nimjn.org/251/four-years-after-melamchi-flood-disaster-trauma-of-the-affected-remains-unhealed*

Non-Economic Losses In Upper Mustang: Samjong Residents Displaced By Climate Change

Ghanshyam Khadka

This is Samjong, a village located 3,800 meters above sea level on the western bank of the Pemara River. The river flows down from the northern ridge in Upper Mustang, near Nepal-China border pillar number 31. Samjong, a strikingly beautiful but terribly isolated village in Lo Manthang Rural Municipality-1, is reached by following the trail to the Himalayan cowsheds. The village has many houses close together, but they are empty. The whole place feels deserted, with no people and barren land.

Two decades ago, Samjong was a completely different place—a happy place to live. According to Chhiring Dhindu Gurung, 25, the village used to produce plenty of barley, buckwheat, potatoes, and mustard seeds to feed everyone in the village. The sheds were full of Himalayan cattle and goats.

Then, climate change began to harm this beautiful village. Less snow meant it got hotter, and because of this, the Pamera River, which was fed by snow, started to dry up. This meant the villagers couldn't water their fields anymore. Slowly, they also started to run out of drinking water. How much longer could they live like this? Finally, on May 19, 2015, 85 people from 18 families in Samjong left, saying goodbye to the place they had lived for generations.

Dr. Arunbhakta Shrestha, a climate change expert at the International Centre for Integrated Mountain Development (ICIMOD), explains that the water source began to dry up because of less snowfall, which led to smaller water reserves. "The way snow and rainfall in the Himalayas has changed because of climate change," he said. "It started raining in places where it used to snow, pushing the snowy areas higher up." This change has caused local people to experience many kinds of losses and damage, both economic and otherwise.

Shilshila Acharya, an environment expert, says that people having to leave their homes due to lack of water is the biggest non-economic impact of climate change. Acharya, who was named one of the BBC's 100 inspiring and influential women, said, "When people have to leave their homes because of low rain and snowfall caused by climate change, it means they become climate refugees, from a social justice point of view."

Barren land in Samjong after the residents migrated.
Photo: Ghanshyam Khadka/NIMJN

The water drying up in Samjong didn't happen suddenly. As early as 2005, people stopped planting in the higher areas because there wasn't enough water. Then, they started having water shortages in the lower areas, too, and eventually, the land became unusable. By 2015, the lack of water was severe, and people began leaving to find new homes.

Chhiring Dhindu Gurung was 12 when his family, like others, moved away. Chhiring says that people in his remote village are suffering the consequences of global development while rich countries are enjoying the benefits. The skies over Upper Mustang are indeed clean, with no pollution. Mustang doesn't contribute to carbon emissions, but it still feels the effects of global warming. Rain in the summer causes floods, and it either snows very little in the winter or not at all. It rained when they didn't need it, and the water sources they relied on during the winter started to dry up, with the snow melting too quickly.

Changing patterns of snow and rain

Samjong isn't the only village suffering from climate change. The village of Dhe, in the neighboring Lodhekar-Damodarkunda Rural Municipality-5, also faced the risk of being abandoned because of a water crisis caused by climate change. When their drinking and irrigation water sources dried up, the people of Dhe moved to a place on the bank of the Kaligandaki River, 3,700 meters below Dhe, in 2007, according to Lopsang Chhoppel,

the head of Lodhekar-Damodarkunda Rural Municipality.

Chhiring Dhindu Gurung at Samjong village. Photo: Ghanshyam Khadka/NIMJN

Tetang, in Baragung Muktikshetra Rural Municipality-3, is also experiencing drying water sources. Water is brought to this village from higher up, but because there is less snowfall, the water source is drying up, and the village doesn't get enough water for irrigation. "We used to have plenty of water in the irrigation canal," said Dharpo Gurung, a ward member of Baragung Mukti-kshetra Rural Municipality-3. "Now, the water level has dropped at the source itself, and we get very little water for irrigation," Gurung says that water is essential for life and worries that if the water source dries up even more, the people of Dhe might have to leave their village and move somewhere else. "I hope that doesn't happen," he said.

When the people of Samjong left, they entrusted the village to Mathi Hyamo and Phuchyawa, whom they see as their goddess and god. However, they took their family deity with them to their new home. "We loaded some household items and food onto the horse. My father carried the bedding," Chhiring said. According to Chhiring, the horses went first, followed by his 11-year-old brother and his sisters, who were nine and six. Then came the adults, including Chhiring, his parents, and the rest of the villagers. Chhiring's mother had passed away a long time ago.

The group of people who had to move stopped at Namsung, an area on the bank of the Kaligandaki River. There, they built a new settlement similar to Samjong – beautiful to look at from the outside. But the pain of leaving their old home is still fresh and troubling for them.

Chhingju Gurung, 60, was in tears when she had to leave her village and the deities behind. She explained why they had to go: there was no snow in winter, which left the land dry, preventing them from planting any crops. As the water source dried up, irrigation became impossible, and so did farming. "When there was no food production, the village faced famine. So, we took our children and came down to this place," she said.

Environment expert Acharya says that when water sources dry up and crop production declines, creating the threat of starvation, migration becomes the only option for people. She also warns that this water crisis will not only affect humans but will also cause unprecedented damage to the entire ecosystem.

Samjong is located at the bottom of a hill, Urkin Ri, which used to absorb most of the monsoon rain and protect the village. But over the last 20 years, the monsoon season (July-September) has brought heavy rain. This means the hill can no longer absorb the water, and it washes sand and rocks down onto the village, covering the houses.

Samjong village and the Urkin Ri hill.
Photo: Ghanshyam Khadka/NIMJN

"There used to be light rain in the monsoon season. Now, we have heavy rain in August and September. Our ancestors wouldn't have settled here if there had been such heavy rain in the past," Chhingju said. She explained that there were floods every year before they left Samjong. "When it rained, we wouldn't sleep all night, afraid of the floods," she remembered. "Then, the snow didn't fall on time either. It snowed during planting season and rained during harvest time."

Some years, there was a complete lack of rain, which led to famine. When the snow didn't fall, the temperature started to rise, the water in the Pamera River dried up, there was no water for irrigation, and the drinking water source began to shrink. There wasn't enough water for the people or the more than 300 animals (horses, Himalayan cattle, and goats). This ultimately threatened the village's survival.

Chhingju, one of the oldest people from Samjong, remembers the years when the snow started to melt earlier in the winter. "That year, during the monsoon, the Pamera River flooded terribly. The river coming from Urkin Ri Hill flooded the village," she said. This year, there were also two straight days of heavy rain in September – something unusual for Mustang, which is used to little rain.

Mustang is nestled in the Himalayas, which appear to be within arm's reach. This district once experienced abundant snowfall in winter, but that is no longer the case. A 2015 ICIMOD study, "The Himalayan Waters: Complex Challenges and Regional Solutions," notes the rapid melting of snow and glaciers in the Himalayas. It also warns that the water crisis in the region will worsen and affect everyone.

Toll on lifestyle

Karma Namgyal Gurung, the ward chair of Lo Manthang Rural Municipality-2, states that

"the lack of snowfall in winter and the unusual rainfall during the monsoon season have negatively impacted agriculture, livestock, and the entire way of life.

According to Umesh Paudel, chief of the Annapurna Conservation Area Project (ACAP) in Lo Manthang, the low snowfall and receding snow lines have also pushed grasslands to higher altitudes. This has reduced the available pasture land, and what remains is far from the settlements. This forces farmers to take their cattle and goats higher up to graze, which strains livestock. "Irregular snowfall and rain have affected Himalayan pastureland," Paudel said. "Because goat sheds have to be moved higher, the goats are more vulnerable to attacks by snow leopards."

Thorny bushes, which grow on the hills and produce sour fruits used by locals to make chuk amilo (a sour juice concentrate) for household use and medicine, are also grazing areas for goats and cattle from Samdong and the upper region. "When there's plenty of snow in winter, the grass grows better nearby, and farmers don't have to take their cattle far away to graze, which makes goat farming easier," said Chhimi Dorje Gurung, 65, who herded cattle for 45 years. "But now, there's no snow in winter, or very little. The snow melts quickly, so the grass doesn't grow, and because of this, the number of goats has decreased."

The people of Mustang used to plant barley, buckwheat, mustard, and potatoes from March to April after the snow melted. After harvesting, they would move to lower elevations to avoid the extreme cold in September. The planting and harvesting seasons have shifted, disrupting their traditional calendar. This is one non-economic impact of climate change in Mustang.

Namsong, sometimes called the "youngest village," may seem better than Samjong because it's connected to the Chinese border and has access to roads. However, those who moved there are not happy They may be physically present in Namsong, but their hearts and minds remain in Samjong. Yuk Gurung, 41, explains, "There may be water here in Namsong, but we always think about Samjong. Our land up there is barren. Even if we have water here, we don't own this land. We don't have land ownership certificates here."

The people living in Namsong, a village established through the combined efforts of Jigme Palwar Bista (the former king of Mustang), Lama Nawang Kunga Bista, and Swiss photographer Manual Bauru, do not have land ownership certificates. They are essentially taking refuge on land that belonged to the former king.

The people living in Namsong, a village established through the combined efforts of Jigme Palwar Bista (the former king of Mustang),

The settlement of Namsong.
Photo: Ghanshyam Khadka/NIMJN

Lama Nawang Kunga Bista, and Swiss photographer Manual Bauru, do not have land ownership certificates. They are essentially taking refuge on land that belonged to the former king.

This land belonged to the former king and was flooded after a glacial lake beyond Chhonhu burst in 1984. The climate refugees are now living on this same land, which is covered in sand, and they don't feel safe there. "The settlement in Namsong is still not safe. Erosion by the Kaligandaki River has threatened the pastureland and farmland," said Thakyung Gurung, 51. "We have shelter and water here but nothing else." She considers herself very unlucky to have had to move to Namsong just two years after her marriage. Topke Gurung, the former village chief who now lives in Namsong, is also unhappy about leaving his birthplace. "But there was no other choice," he said. "If our gods are happy, then we will be too."

Shilshila Acharya, founder and director of Avni Ventures, an organization working for environmental sustainability, explains that people have emotional ties to their ancestral homes. When forced to leave these places, they lose their ancestral identity, cultural norms, and values. According to her, the migrants face new problems in their new locations, including conflicts with the residents of Namsong. She also points out the potential for conflict between the new migrants and the original inhabitants of Namsong over natural resources. This type of conflict is another non-economic loss.

What may be done?

The residents of Samjong are not responsible for what has happened to them. They are victims of global warming and climate change, which developing countries like Nepal cannot combat alone. However, Nepal can work on adaptation and risk reduction. Dr. Shrestha of ICIMOD explains that because climate change and rising temperatures impact different locations, the methods and strategies to combat these impacts must also vary. "We cannot determine how to combat the impacts of climate change without studying the geographical features of the specific location," he said. "Based on the problems faced by the Samjong and Dhe villages residents, potential solutions could include lifting water from nearby rivers using solar energy and creating reservoirs for irrigation."

Acharya emphasizes the importance of resource preservation and management to prevent further migration from Samjong and Dhe. "If we face a water crisis in the Himalayan region, we need to protect the water sources there," she said. She suggests creating ponds wherever possible to allow the land to absorb water and starting reforestation efforts to create new forests and woodlands. Planting native crops and preserving native livestock breeds are equally important, she added.

Tasi Norbu Gurung, the chair of Lo Manthang Rural Municipality, says that the municipality is developing an adaptation program to help local people combat the

effects of climate change. He explains that the Tasi Norbu Gurung, the chair of Lo Manthang Rural Municipality, says that the municipality is developing an adaptation program to help local people combat the effects of climate change. He explains that the municipality has launched initiatives to mechanize agriculture, introduce innovative farming techniques to replace traditional methods, adjust planting and harvesting schedules in response to climate change impacts, and start reforestation campaigns. They are also encouraging locals to explore alternative employment opportunities. This is because we may not be able to stop climate change, but we can adapt.

Gurung suggested that other high-altitude settlements facing similar situations should learn from Samjong's experience. Indra Dhara Bista, a former lawmaker from Gandaki Province, stated that efforts are being made to help the displaced villages become self-reliant. This involves using federal and provincial constituency development funds to build necessary infrastructure, such as greenhouses for vegetable farming.

The Annapurna Conservation Area Project (ACAP) is also involved in risk reduction and adaptation efforts in Upper Mustang. Umesh Paudel, chief of the ACAP Lo Manthang office, explained that "after addressing insect problems in Upper Mustang's crops, we have begun working on local crop preservation, afforestation, and improving goat sheds to protect goats from snow leopard attacks."

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NIMJN (Nepal Investigative Multimedia Journalism Network)

* *https://www.nimjn.org/239/non-economic-losses-in-upper-mustang-samjong-residents-displaced-by-climate-change*

SRI LANKA

Warmer Oceans, Acidification Endanger Sri Lanka's Maritime Heritage

Malaka Rodrigo

Sri Lanka's waters are home to over 200 shipwrecks, each holding a unique story of trade, war, and maritime heritage. Among the most significant are the Godawaya Shipwreck, which dates back over 2,000 years, and HMS Hermes, the world's first purpose-built aircraft carrier built by British and sunk by Japanese dive bombers during World War II (1931-1945).

Over time, these shipwrecks have transformed into artificial reefs, supporting marine biodiversity and playing a crucial role in ocean ecosystems. However, climate change is now emerging as a major threat to their survival, potentially shortening their lifespan.

“Shipwrecks face multiple threats from climate change,” says Prof. Sevvandi Jayakody of the Department of Aquaculture and Fisheries at Wayamba University of Sri Lanka. “These include extreme weather events, ocean acidification, invasive species, and rising sea temperatures, all of which can accelerate the degradation of wrecks.”

Marine archaelogists exploring Godawaya shipwreck2. Pic courtesy Maritime Archaeology Unit of Sri Lanka.

Sri Lanka is increasingly vulnerable to extreme weather events, with storms becoming more intense due to climate change. A literature review published in the Sri Lanka Journal

of Economic Research highlights a significant rise in tropical cyclone intensity in the Bay of Bengal between 1981 and 2010, a trend scientists attribute to higher sea surface temperatures. Other studies suggest this intensification has continued over the past two decades.

“More intense storms and cyclones generate powerful waves and strong currents that can impact shipwrecks, specially those in shallow waters,” explains Dharshana Jayawardane, a researcher of shipwrecks for over two decades. “Even after heavy monsoon seasons, we've seen cases where shallow-water wrecks suffer damage due to rough seas. If storm intensity increases, the risk to these wrecks will only grow."

Strong waves also shift sand and sediment, exposing previously buried wrecks to deterioration or burying them deeper, which can hinder archaeological research and conservation efforts, he said.

Diving tourism.
Photo: Malaka Rodrigo/CIR

Human-induced climate change, driven by greenhouse gas emissions such as carbon dioxide (Co_2), not only warms the planet but also increases ocean acidity when the ocean absorbs carbon dioxide from the atmosphere, which lowers the ocean's pH.

“Globally, research has shown that ocean acidification speeds up the corrosion rate of iron and steel wrecks,” notes Prof. Jayakody. “This is especially concerning for wrecks like HMS Hermes, which may still contain live ammunition. As the metal weakens, there is a risk of explosive materials being exposed.”

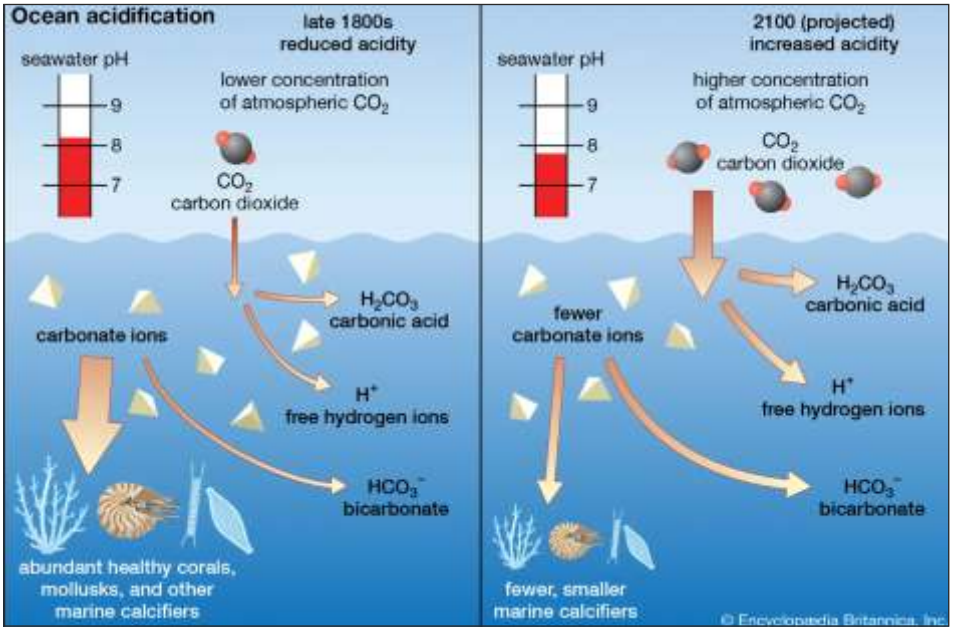
Another alarming consequence of corrosion is the potential release of bunker oil from sunken ships. If intact fuel tanks begin to leak due to rapid deterioration, it could cause secondary environmental pollution, further harming marine ecosystems.

Although ocean acidification studies in Sri Lanka are still in their early stages, the National Aquatic Resources Research and Development Agency (NARA) is monitoring pH levels in coastal waters.

“We take regular measurements from stations on both the east and west coasts,” says Dr. Kanapathipillai Arulananthan director general of NARA. “Additionally, the Norwegian research vessel Nansen is expected to provide further insights into changing ocean parameters in the Northern Indian Ocean.”

Another hidden threat is the rise of invasive species that could now establish in different areas due to warming waters. Changes in ocean temperature and acidity alter microbial activity, leads to faster decomposition of wooden shipwrecks according to research.

"Wooden wrecks are particularly vulnerable to wood-boring organisms like shipworms, which thrive in warmer conditions," warns Prof. Jayakody. "As ocean temperatures rise, these organisms could spread to areas where they previously could not survive, accelerating the breakdown of historical wrecks."



Ballast water from ships can introduce these invasive species to new environments. While differences in salinity, temperature, and acidity once prevented their survival, climate change is making new habitats more suitable for these species, increasing the risk of bioerosion.

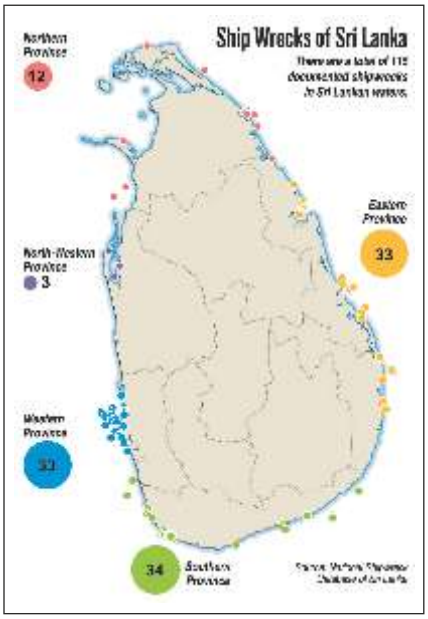
Beyond their historical importance, shipwrecks serve as artificial reefs, providing shelter and breeding grounds for marine life. However, climate change threatens their ability to sustain biodiversity. Rising sea temperatures can lead to coral bleaching and degradation, weakening the ecosystem surrounding wreck sites.

Sri Lanka has experienced several significant coral bleaching events over the past few decades, mainly due to higher sea temperatures and other environmental stressors. 1998 Mass Bleaching Event that was triggered by a strong El Niño effect , led to the destruction of over 50% of some coral reefs in Sri Lanka. Another substantial bleaching occurred in 2016, causing extensive coral damage. Sri Lanka is frequently experiencing heat waves, so more such coral bleachings are expected.

Also, stronger storms and shifting currents could damage or bury shipwrecks, leading to habitat loss for marine organisms. Combined with disruptions in food chains and breeding patterns, these factors pose a significant risk to the stability of these underwater ecosystems according to Prof. Jayakody.

With shipwrecks spanning ancient, colonial, and modern eras, Sri Lanka holds a treasure trove of global maritime heritage.

According to Rasika Mutukumarana of the Department of Archaeology, about 40 shipwrecks in Sri Lankan waters are of significant historical value. However, the full extent of he impact of climate change on these wrecks are still unknown.



"These changes can be slow but significant," Mr Mutukumarana explains. "Long-term monitoring is crucial to assess and mitigate damage, but securing funding for such research remains a challenge."

Prof. Jayakody echoes this concern, emphasising the unpredictability of climate change's effects on shipwrecks. "We may not even have seen the full extent of these impacts yet. Biological changes triggered by global warming could bring consequences we haven't even imagined. That's why continuous monitoring and conservation efforts are essential to safeguard this invaluable maritime heritage."

As climate change intensifies, Sri Lanka's shipwrecks face an uncertain future.

Without proactive measures, these historical and ecological treasures could deteriorate beyond recognition, taking with them invaluable insights into the past —and a crucial refuge for marine life in the present.

Mr. Mutukumarana said every shipwreck is unique and when one disintegrates so goes its story, too. The only way forward would be to reduce the rate of global warming.

Marine archaelogists exploring Godawaya shipwreck.
Photo: Malaka Rodrigo/CIR

Taprobane East Wreck2_Ales Reich.
Photo: Malaka Rodrigo/CIR

This article was first published in Sunday Times - English Weekly, Sri Lanka on March 30, 2025.*

* *https://www.sundaytimes.lk/250330/news/warmer-oceans-acidification-endanger-sri-lankas-maritime-heritage-593710.html*

Sweltering Conditions Put Young Lives And Learning At Risk

Malaka Rodrigo

Although the annual school sports events concluded without major incidents this year despite the rising heat, the traditional Aluth Avurudu games — once a source of joy for children — now warrant extra caution in the face of a changing climate.

In March 2024, sixteen-year-old Vidurshan, a student from Ampara in Eastern Sri Lanka, collapsed midway through the inter-house marathon event. He died in hospital.

The post-mortem by the Judicial Medical Officer, issued an open verdict, but the signs were clear that the student faced a heat stroke-related illness.

This tragedy unfolded during one of the hottest months Sri Lanka has experienced in recent times.

“Many factors can contribute to heat stroke, but high environmental temperature is the dominant cause,” said Dr. Lal Ekanayake, director general of the Institute of Sports Medicine, highlighting the dangers of outdoor physical exertion in extreme heat.

Deaths during sports events or physically demanding activities are often attributed to heart issues. However, these cardiac events can themselves be triggered by high temperatures, noted Dr. Ekanayake.

“When the body is stressed by heat, the heart rate increases to regulate internal temperature. But heavy sweating leads to loss of vital minerals and electrolytes, disrup-

ting heart signals and potentially causing heart arrhythmia — one of the leading causes of sudden deaths during sports," Dr. Ekanayake told Sunday Times.

What makes Vidurshan's case even more tragic is that it could have been prevented. Just weeks before the event, the Education Ministry had advised schools to postpone sports meets until late April due to soaring temperatures. Such warnings are not new. Over the past five years, the ministry has issued heat stroke alerts to schools during the hot season on four occasions .

"We issue these heat stress warnings considering the recommendations we received, but regional-level decisions are permitted based on the severity of heat experienced in each area," says Sujatha Kulendrakumar, deputy director of education at the Ministry of Education.

In Sri Lanka, the districts most affected by extreme heat are in the Dry Zone and parts of the Intermediate Zone. Areas such as Anuradhapura, Polonnaruwa, Trincomalee, Batticaloa, Ampara, Vavuniya, Mannar, Monaragala, and Hambantota often record the highest temperatures in the country and it is expected that global warming will make things particularly worst for these areas.

"Children hardly get time to play outdoors anymore, and now even that is affected by the heat," lamented retired civil servant Indrasena Muthukumarana, 82. "In our time, we were always outside playing or engaged in other activities at our leisure times, but the heat never bothered us like this." Mr Muthukumarana's observations are backed by scientific evidence. A World Bank report titled 'The Impact of Climate Change on Education and What to Do about It' published last year reveals that a child born in 2024 will face twice as many wildfires and tropical cyclones, three times more river floods, four times more crop failures, and five times more droughts in a warmer world than a child born in 1970.

The rising heat is not only a threat to physical safety but also to education as the World Bank Report also highlights that extreme heat can lead to learning losses. While small shifts in average temperatures might seem negligible, they accumulate over time — especially in already hot regions — resulting in significant setbacks in education. Performance on exams drops noticeably on hotter days, disproportionately affecting students in poorer, less-equipped schools, the publication stated.

Extracurricular activities like physical education, sports, and field trips are frequently canceled during heatwaves, further impacting children's holistic development, which has become common in this part of the world according to this report.

In Sri Lanka, many rural schools lack fans or air conditioning. "Heat in classrooms on some days become unbearable, so high temperatures lead to fatigue and lower alertness," noted Science teacher Suneetha Ramanayake. "Not just students – teachers, too, feel the heat which affects total quality of the teaching.

Conditions could be worse in tuition classes, as some are held in makeshift huts with tin-

sheet roofs. Such premises turn into ovens under the midday sun. Even electric fans can't offset such intense heat, Ms Ramanayake said.

The current hot weather is expected to last until May, until monsoon winds start to sweep across Sri Lanka, warns Dr. Anusha Warnasuriya, a forecasting director of the Meteorology Department. While average temperatures in Sri Lanka have increased only slightly, it's the combination of heat and humidity that makes the situation dangerous. "When there's high humidity, sweat doesn't evaporate easily, so the body can't cool itself — from February to May, limited wind and cloudless skies make things worse." said Dr. Warnasooriya.

To alert the public, the Department of Meteorology of Sri Lanka uses a Heat Index Advisory system. This system calculates the apparent temperature by factoring in both the air temperature and relative humidity, offering a more accurate reflection of how hot it feels to the human body. Warnings are issued using a colour-coded system, ranging from green for normal conditions to dark red for extreme danger, where heat stroke is imminent.

A recent UNICEF report showed that in 2024, heat-related events became the most significant climate hazard disrupting education globally, affecting an estimated 171 million students. In Asia, the highest disruptions were in April, with heatwaves impacting at least 118 million children.

Sri Lanka is highly vulnerable to climate change and has consistently ranked among the countries most affected by extreme weather events, being ranked No 2 in the Global Climate Risk Index of 2019. The country has already experienced a temperature rise of about 0.8 to 1.0°C, and projections indicate a further increase of 1.0 to 1.2°C by 2030, potentially reaching up to 4°C by the end of the century under high-emission scenarios.

Even after the school sports season ends, risks remain. April also brings traditional Avurudu games such as marathons and bicycle races held at the village level. "We've recorded deaths during these games, too," said Dr. Ekanayake.

To address the issue, Sri Lanka issued a set of guidelines particularly for event organisers of sports events, also covering heat-related illnesses. These guidelines include being in close contact with nearby hospitals for emergencies and ensuring events start early to avoid the peak heat. "Don't delay the start waiting for politicians or chief guests — it's safer to begin before the sun gets too harsh," Dr. Ekanayake advised.

As Sri Lanka faces increasingly extreme weather, it is crucial for schools, communities, and policymakers to adapt and prioritise the safety and well-being of children — both in sports and in learning, Dr. Ekanayake said.

This article was first published in Sunday Times - English Weekly, Sri Lanka on March 30, 2025.*

* *https://www.sundaytimes.lk/250330/news/sweltering-conditions-put-young-lives-and-learning-at-risk-593689.html*

The Disastrous Floods Of Kalutara

Buddhika Samaraweera

Climate change-related weather events prove to be an increasing challenge for most districts of Sri Lanka including Kalutara

The rain poured down heavily, turning narrow roads into muddy streams. Ten-year-old Dineth held his mother's hand tightly as they watched the water rise near their home in Agalawatta in Kalutara. His schoolbag, packed and ready, lay untouched by the door. “No school today,” his mother sighed. It was not the first time. Every time the floods came, Dineth and his friends stayed home, missing lessons, exams, and the joy of being with schoolmates.

Rain is no longer just a minor disturbance for the Kalutara District; it has become a force severely impacting the residents' lives. Floods submerge homes, schools, and livelihoods several times a year, leaving in their wake, much more than material losses. Friends and neighbours, once a community of support, are now scattered as families scramble, looking for safe dwellings during regular flooding events. With floods occurring a few times each year, community bonds are at risk, as is children's education.

The 2018 Global Climate Risk Index report, first highlighted the extent of Sri Lanka's vulnerability to climate change, identifying the island as one of the highly affected countries with regard to extreme weather events. It assessed the impacts of extreme weather for two decades, from 1998 to 2017.

With a population of around 22 million, Sri Lanka's population grows at an annual rate of 1.1%. According to experts from several sectors, nearly 50% of the population is highly vulnerable to climate change-related impacts, particularly flash floods.

A closer look at the Kalutara District, which has a notably wet climate with abundant precipitation – recording over 2,880 millimetres (mm) of rainfall per year – reveals its vulnerability to climate change.

The first Biennial Transparency Report of Sri Lanka's Climate Secretariat, which was submitted to the United Nations Framework Convention on Climate Change last year (2024), identified changing rainfall trends in Sri Lanka. It noted increasingly erratic rainfall due to climate change, with both South-West and North-East monsoons showing variability that results in excessive rainfall or extended dry spells.

The 17 experts who prepared the report identified the doubling of flash floods in the Kalutara District since 1990, attributed to the increased intensity of inter-monsoon rains. They also anticipate a 5-10% decrease in the annual rainfall in the dry zones and an increase in extreme rainfall events in the wet zones, to which the Kalutara District belongs, by 2030.

Kalutara's increasing vulnerability

The Kalutara District's rainfall trends support concerns raised in the said report, showing how extreme weather is already shaping its future.

'Spatial Variability of Rainfall Trends in Sri Lanka as an Indication of Climate Change', a research published in the *International Journal of Geo-Information* further highlights the island's climate related vulnerabilities. A researcher with the International Water Management Institute with a focus on remote sensing and disaster risk Niranga Alahacoon, and a Professor in Engineering Physics at the Department of Physics, University of Colombo Mahesh Edirisinghe, have examined the spatial variability of rainfall trends in Sri Lanka from 1989 to 2019.

The study highlights the considerable increase in annual rainfall across all climatic zones – wet, dry, intermediate, and semi-arid. The wet zone recorded the highest increase in rainfall, while the semi-arid zone recorded the least. This suggests that Districts in the wet zone are at a higher risk of floods. During the considered period, the Kalutara District recorded the highest average annual rainfall of 3,340.2 mm including the highest maximum annual rainfall of 4,489.4 mm in 2019.

A trend analysis conducted by them using Kendall's tau value – a non-parametric measure of the strength and direction of a monotonic relationship between two ranked variables – and Sen's slope – a non-parametric method to estimate the slope of a trend line - shows that while rainfall has generally increased across all Districts between 1989 and 2019, Kalutara recorded the highest annual rainfall, with an increase of 34.84 mm per

year. Further analysis of the Southwest monsoon rainfall trends showed a significant rainfall increase in seven wet zone districts – Kalutara, Colombo, Gampaha, Galle, Matara, Ratnapura, and Kegalle. Kalutara recorded the highest rainfall during the Southwest monsoon, increasing at 21.943 mm per year.

The Meteorology Department Director Anusha Warnasooriya, who holds a Doctor of Philosophy degree in climate studies, told *The Daily Morning*: "Rainfall in Sri Lanka is increasing. Our average annual rainfall typically ranges between 1,800 mm and 1,900 mm. In recent years, including 2024, it has exceeded 2,000 mm. The variability of rain is also high. For example, in 2024, rain has been heavier than predicted, with increased intensity, sometimes delivering a month's worth of rain in just two days. Such extreme events are becoming more frequent due to climate change."

The rising trend of extreme rainfall in Kalutara is not merely statistical; it is a reality that impacts the residents' lives each year. As scientific studies highlight the steady increase in rainfall, disaster records show the human cost of these extreme weather events.

Statistics from the National Disaster Relief Services Centre (NDRSC) from 2016 to 2024 show repeated flooding incidents in Kalutara impacting 148,580 families (582,489 individuals) and being responsible for 40 reported deaths. In 2016, floods impacted 4,563 families (16,458 people) and killed six. The following year (2017), the situation worsened, with 48,889 families (183,835 people) being affected, with 17 fatalities. The subsequent year 2018 saw 7,438 families (28,876 individuals) impacted with no lives lost.

In contrast, 2019 marked the worst year, with 61,301 families (255,964 people) affected with one reported death. In 2020, the floods impacted 1,599 families (6,255 people), killing two. In 2021, 4,318 families (16,482 people) were affected, and five lives were lost. The floods slightly receded in 2022, affecting 1,759 families (8,971 people) were affected, with two deaths reported. In 2024, floods once again tore through communities, forcing 16,283 families (58,831 individuals) to flee their homes and claimed six lives.

Disaster prone

A resident of the Kithulgoda Grama Niladhari Division in the Kalutara District, Ashoka Swarnalatha recalls the loss of her neighbours in a 2017 landslide. The family next door – a mother, father, and daughter – was buried when the floods triggered a collapse. "I've been living here for over 50 years. When I was young, flooding wasn't a problem. But now, it rains almost every day. Small streams we played in as children have turned into raging waters that overflow. That year, the rain didn't stop, and my neighbours were gone in seconds in a landslide. We were like one family. We cooked together, shared food, and looked out for each other."

Pathma Priyanthika used to live in Ihala-Kudaligama, a village where her family had lived for over 80 years. It was a place untouched by floods or landslides, even in the days of

their grandparents. In 2014, two families, including theirs, had to flee, fearing the risk of rain-induced landslides. The house that formed their family's foundation for generations was no longer safe. Now, living 20 kilometres away, they have lost touch with childhood friends, relatives, and neighbours. She says: "It was a lifetime of memories that we had to leave. We left everything familiar, from the trees that we planted as children to the neighbours who felt like family. Our children had friends there, a school that they loved, and a place that they belonged to. Now, they struggle to adjust in a new place. Our business, which we built with so much effort, had to be rebuilt from scratch."

Meanwhile, Disaster Management Centre (DMC) Director – Awareness Pradeep Kodippili said that the relevant authorities including the DMC are currently working to develop early warning systems related to natural disasters including floods, and to strengthen social welfare systems to support vulnerable populations. He says that there are plans to reduce morbidity and mortality from extreme weather events by establishing warning systems using the latest technology, carrying out timely risk assessments, and improving health preparedness.

Disruption to school education

According to the Education Ministry, the Kalutara District has 419 schools, including 50 in Category 1AB (Grades One-13 or Six-13 with all three curriculum streams for the General Certificate of Education [GCE] Advanced Level [A/L]), 66 in Category 1C (Grades One-13 or Six-13 without the science stream for A/L), 162 in Category Two (classes up to the GCE Ordinary Level), and 141 in Category Three (Grades One-Five or One-Eight). Frequent flooding in the District severely impacts students, teachers, and parents, with unavoidable school closures due to floods disrupting education.

The Kudaligama Maha Vidyalaya, located in the Bulathsinhala Divisional Secretariat Division of Kalutara, is one of the many schools that face disruptions due to flooding. Every year, the school is forced to close for nearly five days when heavy rains make it impossible for students and teachers to attend. In 2024, apart from the regular holidays announced by the Education Ministry, students were given an additional four days of holidays due to floods.

School Deputy Principal Pushpa Ranjani told *The Daily Morning*: "Our school has 274 students. When I first started working here, there were occasional floods, but they were mainly caused by the low-lying road next to the School. Later, the road was raised, and for some time, the problem disappeared. But now, despite the improved road, flooding has become more frequent again. It rains so often that even a short downpour of one or two hours can make the main road unusable. On such days, students and teachers have to take longer, more expensive routes just to reach school."

When other roads are also affected by flooding, she says that students and teachers are left with no way to reach school, forcing it to close. She noted that over the past five years, the school has had to grant around 25 extra days of holidays due to floods.

Although the Education Ministry has instructed schools to hold compensatory sessions to cover teaching activities missed due to flood-related school closures, teaching professionals charge that the approach is ineffective.

Ceylon Teachers' Union President Priyantha Fernando told *The Daily Morning* that these sessions are usually scheduled on Saturdays or Sundays. However, since most students attend extra classes on weekends, participation in compensatory sessions remains very low. He also noted that the arrangement disrupts both students' and teachers' personal commitments.

Education Ministry Secretary Nalaka Kaluwewa said that the number of school days has already decreased due to crises such as the Easter Sunday terror attacks, the Covid-19 pandemic, and the economic crisis, and admitted that making up for the lost time is not easy. "It takes time, but we plan to recover to some extent by next year (2026). By then, exams and school terms can be scheduled as they were in the past. When another disruption like flooding occurs, it becomes even harder to recover. The only option that we have is to hold compensatory sessions on Saturdays or Sundays. We cannot prevent natural disasters, and right now, this is the only solution. Whether it works or not is a question, but there's no alternative."

Photo: Buddhika Samaraweera/CIR

Photo: Buddhika Samaraweera/CIR

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* *https://www.themorning.lk/articles/z2gKiwaRPsjySCkoyJ0V*

Seinulabdeen Haleema stands on her father's land, where she once played with her siblings. Now, the sea has claimed it. Photo: Aanya Wipulasena

Eroding Shorelines, Vanishing Memories: Families In Kalpitiya Battle Climate Woes

Aanya Wipulasena

Vinisious Obrey Fernando, 42, points at a map of Keerimundalam, a village located on Kalpitiya peninsula in north-western Sri Lanka. "This is where my father's house used to be," he said. "Now our house and most of that land has gone to the sea." His face wore a sad smile.

About 20 years ago, Mr Fernando's village was a tranquil coastal haven with a thriving community of nearly 300 families living in cadjan houses.

It had a school, a post office, and a church more than 210 years old. Now, with the land swallowed by the encroaching sea, Mr Fernando could only reminisce about what once was his family home and vibrant neighbourhood.

In 2014, he and his family relocated to Kalpitiya town area, with a population of around 96,000, like most of his neighbours as their village became uninhabitable.

The map depicting the grave reality of the situation shows over 90 per cent of his land has been lost to sea erosion. He only managed to salvage parts of the roof and doors of the house as the water rose.

By mid-2024, Mr Fernando could still see the last remaining wall jutting out of the water.

By the time of the publication of this article, Mr Fernando's father's house was completely washed away.

During the low tide, he can stand where his father's house once was.

Vinisious Obrey Fernando stands in front of his father's old post office.
Photo: Aanya Wipulasena/CIR

"That was the house my two siblings and I grew up in. I used to play volleyball and elle, a popular bat and ball game in Sri Lanka, with my brother on the land in front," he said. "We used to catch fish in the sea. My father was the village sub-postmaster, and I even met my wife there."

Old Post Office.
Photo: Aanya Wipulasena/CIR

On the weekends, the coastal village (Keerimundalam) is eerily deserted.

"This village used to be filled with chatter and laughter. Our friends and relatives have all left now. I feel very lonely sometimes", said local resident Mekala Santhanal Peiris.

“Will the rest of the village also go into the sea? This is all I think about. I am scared we will lose everything we have."

Ms Peiris moved to Keerimundalam about 20 years ago after her marriage. When the water kept rising, she said, the villagers did everything they could to save it.

With the help of the church and villagers, they built a monument for Sinthathiri Maatha (Lady of Good Voyage), whom the villagers believed would save the village from the sea.

However, now, the sea engulfs the monument's base when the tide is high.

Mekala Santhanal Peiris says all her relatives and friends have left the village.
Photo: Aanya Wipulasena/CIR

Villagers fear that soon the sea will claim the Holy Cross Church. Photo: Aanya Wipulasena/CIR

As the sea continued to claim the land, Mr Fernando and other villagers tried to stop by stacking sandbags, to no avail.

The president of the Uchchamunai, Velankanni Matha Rural Fisheries Organisation, Sebastian Dias, said the sandbags were placed two years ago.

"That plan was a failure. Now even the sandbags are in the sea," he said.

For villagers like Ms Peiris, Mr Fernando and Mr Dias, this is not just about the loss of property; it's the erosion of a way of life which was deeply rooted in the rhythms of sea, community, and spirituality.

The profound loss of their homes and lifestyle carries a heavy weight. Most of their neighbours and loved ones have relocated to Kalpitiya town.

"During the church feast, the whole village celebrated, and when there was a funeral, the whole village mourned. That has all changed now. Now we don't even know who died," Mr Dias said. "The sea took away our identity from us".

Seinulabdeen Haleema, 59, strolls along the sand with her two grandchildren. A light rain forces the children to find refuge as Ms Haleema takes out her umbrella.

Closer to the seawater, to her right, a once-thriving plantation of mangroves withers, and to her left, further inland, barren stumps of coconut trees punctuate the landscape. She remembers well what the coastline looked like in Kalpitiya decades ago.

"Can you imagine, we used to play on the sand there?" she said, looking into the sea.

Inside the village school, now abandoned. Photo: Aanya Wipulasena/CIR

Seinulabdeen Haleema stands on her father's land, where she once played with her siblings. Now, the sea has claimed it.
Photo: Aanya Wipulasena/CIR

Her father bought land in Muhuttuwaram, Dutch Bay, about 40 years ago. They had a mud-thatched house, now claimed by the sea, where her grandparents used to live.

"We were seven siblings in the family. We came to this land on my father's bullock cart. It was a joyous time," she recalled.

The land she stood on now, she said, is unrecognisable. It was abandoned. Ms Haleema rarely makes the journey to visit it.

Father Sampath, who has been serving in the Kalpitiya Peninsula for 15 years, said the village church, Holy Cross Church, was important to Keerimundalam and surrounding villages.

With its long-standing history and spiritual presence, the Holy Cross Church brings villagers together.

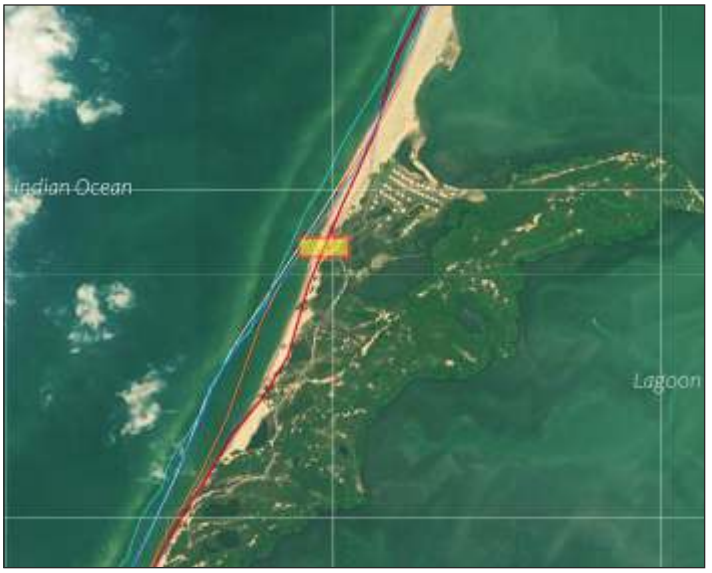
"During the church feast, which we have in the second week of September every year, almost 3,000 people come to the celebrations. It is a big function," Father Sampath said.

“Now the sea is near the church. So many houses in front of it are gone to the sea."

The Holy Cross Church of Keerimundalam is over 210 years old.
Photo: Aanya Wipulasena/CIR

A recent comparison by Geographic Information System (GIS) experts between a survey plan made in January 2005 and a high-resolution satellite photo reveals there is nearly no land left.

A 2023 study highlighted that wave climate data from the area shows significant morphological changes, meaning that there are alterations observed in the shape, structure, and features of the coastal line, while intensified wave climate, especially during the south-west monsoon, leads to slow erosion of the Kalpitiya peninsula.



A satellite image of Mr Fernando's land depicting shore erosion from 2005 (light blue line) to 2024 (dark red line). (Photo courtesy: Construction Technological Services)

Another study, also in 2023, found that the island's western coast shows high vulnerability as a result of fewer coastal barrier ecosystems, meaning that most barrier-effective coastal ecosystems in the area have already been degraded and removed.

D.T. Rupasinghe, chief engineer at the Coast Conservation Department, has been studying erosion in the Kalpitiya peninsula.

"This is Sri Lanka's most sensitive area due to its geomorphology. It is very dynamic with big variations", he said, adding that years of research have shown that the islands in Kalpitiya are eroding and shifting landward.

Mr Rupasinghe said that changes in wind patterns, wave patterns, and changes in current were causing the shift.

A satellite image of Ms Haleema's land depicting shore erosion from 2005 (light blue line) to 2024 (dark red line).

(Photo courtesy: Construction Technological Services)

"We know that these changes are driven by climate change, but we need a database and run numerical models to make that connection. We don't have the resources to do that," he said.

He pointed out that human activities and natural changes in the environment also contributed to aggravating sea erosion in Kalpitiya.

D.T. Rupasinghe studies a Google Earth map of the Kalpitiya Peninsula in his office.
Photo: Aanya Wipulasena/CIR

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The Coast Conservation Department is planning to use geo-bags to stop sea erosion in the Kalpitiya Peninsula following the villagers' request. However, officials are concerned that it would worsen the situation rather than help.

The Intergovernmental Panel on Climate Change (IPCC), in its sixth assessment report, projects a likely global mean sea level rise of up to 1 metre by 2100, relative to the beginning of this century, under a very high emissions scenario.

The report also presents a low likelihood, high-impact storyline where the global mean sea level rise (relative to 1995-2014) could be up to 1.6m by 2100, further increasing up to 4.8m by 2150.

Roshanka Ranasinghe, Professor of Climate Change Impacts and Coastal Risk and member of the expert scoping team for IPCC, said it was essential that detailed studies were done in coastal hotspots to see what adaptation measures were necessary.

"I recommend authorities look at the results of global trends and identify areas that are vulnerable and have a big impact on the economy," he said.

Mekala Santhanal Peiris's younger daughter holding a starfish.
Photo: Aanya Wipulasena/CIR

State authorities are both aware and concerned about the situation. The director of the country's Climate Change Secretariat, Leel Randeni, agreed there was a need for real-time data.

"There is some research on sea erosion, [but] there are many gaps that need to be revisited", he said, adding that though Sri Lanka is not a major carbon emitter, it was among the most affected countries by climate change.

Meanwhile, Mr Dias is leading the call to protect the area. His organisation has also written the state officials regarding the villagers' plight.

Fishermen returning home at sunset.
Photo: Aanya Wipulasena/CIR

A letter dated October 6, 2024 and addressed to President Anura Kumara Dissanayake, calls for urgent intervention to protect the coast.

"In Keerimundalam village, there is a 211-year-old church, 50 houses built by the state, a sub-post office, and an electricity transformer. While villagers have worked hard to protect these, their fishing activities have been affected," the letter points out.

In reply, senior assistant secretary to the president W.M. Bathiya Wijayaratne wrote an official letter asking the District Secretary to present the villagers' appeal to the next coordination committee and provide a "quick" solution.

Mr Dias said there had been no reply to this letter. He said he was observing the sea claiming the village, and with it, his people's lifestyle, identity, and culture.

Keerimundalam today, at risk of complete erasure.
Photo: Aanya Wipulasena/CIR

Santhi, one of the oldest remaining villagers in Keerimundalam.
Photo: Aanya Wipulasena/CIR

The villagers are keen to have discussions with relevant authorities. They worry that their calls are not heard.

When discussions around climate change often take the form of economic impacts, it is crucial for authorities to listen to the profound human stories behind the numbers and to address their concerns, Mr Dias and Mr Fernando said.

When he finds time, Mr Fernando still goes to where his family's house once was in Keerimundalam. Following in his father's footsteps, he is the area postman. The post office has now shifted to the abandoned school building after the original building was damaged by the sea.

Often, he wishes he could return to his village. Many houses are submerged, out of sight.

Now, the sea levels have reached the churchyard.

"If the church goes to the sea, there will no more be a village there, and that is my biggest worry."

Vinisious Obrey Fernando's sister with his first-born in front of his father's house, now washed away in the sea.
Photo: Aanya Wipulasena/CIR

This article was first published in ABC Asia - Online Portal, Sri Lanka on March 6, 2025.*

* *https://www.abc.net.au/asia/sri-lanka-kalpitiya-battle-climate-change/104991418*

How Climate Change Impacts Sri Lanka's Dengue Disease Burden

Kamanthi Wickramasinghe

Three-year-old Nethmi Sehansa* from Dematagoda, a suburb of Colombo, succumbed to dengue in May 2023. Her parents and elder siblings remain devastated by her untimely demise. Even though they had big plans for their little daughter, the dengue endemic shattered their dreams.

The Western Province of Sri Lanka had been identified as a high-risk Medical Officer of Health (MOH) area since 2010 with a high density of dengue infected patients. As of March 1, 2025, as many as 4119 cases have been reported from the Western Province, which is the highest recorded number of patients among nine other provinces in the country. The fact that many dengue cases have been reported during a usually low peak season has raised concerns among health officials.

- As of March 1, 2025, as many as 4119 cases had been reported from the Western Province
- Western Province of Sri Lanka had been identified as a high-risk Medical Officer of Health (MOH) area since 2010
- Increasing evidence also suggests that peak dengue seasons may stretch due to unseasonal rains and warmer temperatures

** Child's name withheld on request from parents under conditions of anonymity*

Surge in dengue cases

Dengue is a viral infection transmitted following the bite of infected Aedes species of mosquitoes. According to the National Dengue Control Unit, dengue has a seasonal transmission with two peaks occurring with monsoon rains between June-July and October-December respectively.

Usual symptoms of dengue fever include high fever, pain behind eyes, severe headache, nausea, vomiting etc. Little Sehansa had had high fever and her parents took her to the hospital on the second day. The doctor had asserted that her platelet count was low and advised her parents to admit her to the hospital. Unfortunately, the doctors couldn't save her life.

Since the beginning of 2023, the National Dengue Control Unit (NDCU) in Sri Lanka has reported 36,628 dengue cases. These figures are around three times higher than the cases reported during the same period in 2021 and 2022.

Colombo is a high risk MOH area for dengue due to the lack of a proper solid waste management system Photo: Kithsiri de Mel

A 2024 research conducted to investigate reasons behind the outbreak of dengue in 2023 explains the fluctuating incidence of dengue fever that occurred in Sri Lanka since 1989. The largest outbreak due to dengue was reported in 2017 with 186,101 cases, associated with the cosmopolitan strain of the dengue virus (DENV) serotype 2. DENV-2 continued to be the predominant circulating serotype until October 2019. In Sri Lanka, the number of cases began to gradually increase from June 2022 onwards with a total number of 89,799 cases reported in 2023, with 18,650 from Colombo equivalent to one fifth of the caseload. Usually, Sri Lanka has two seasons of intensified dengue activity coinciding with the monsoon seasons. One season typically spans November to early February and the second season runs from May to July.

According to Dr. Preshila Samaraweera, Consultant Community Physician at the NDCU, the endemicity of the dengue virus has increased since 2000. “Therefore the number of cases cannot be brought down to zero even during a drought period. Due to the tropical climate the incidence of dengue is high and there is high transmissibility,” said Dr. Samaraweera.

When asked why there had been a sudden spike of dengue cases during the pre-monsoon period in 2025, Dr. Samaraweera said it cannot be described as a surge in

cases because a similar trend had been observed during the past few years during the same period.

Dengue vector and climate change

But increasing evidence also suggests that peak dengue seasons may stretch due to unseasonal rains and warmer temperatures.

More rain also creates more stagnant water bodies and receptacles that mosquitoes may breed in. Three of the four stages of the mosquito life cycle take place in water – eggs are laid in pools of stagnant water, which hatch into larvae and pupae which develop within them.

Colombo is a high risk MOH area for dengue due to the lack of a proper solid waste management system
Photo: Kithsiri de Mel

A 2020 research on climate change induced vulnerability and adaptation for dengue incidence in Colombo and Kandy explores how numerous models have predicted that climate change would increase the geographic distribution and potential risk of dengue incidence.

Relative humidity is a vital factor, which directly enhances the feeding frequency, inter sexual attractions and oviposition rates of Aedes mosquitoes. The adult longevity and survival success after being infected by DENV have also been found to increase under high humid conditions leading to a wide geographical dispersion of dengue.

Colombo – A high risk MOH area

As for the Colombo district, a combination of factors make it a highly vulnerable area for dengue fever. A study on the impact of environmental factors on the spread of dengue fever in Sri Lanka reveals that dengue fever incidence was caused by following factors: precipitation, wind, urbanization, land management, socio-demographic characteristics.

Consequently, western province possessed higher dengue cases (41% in 2017) than the eastern parts of the country (7% during the 2017 outbreak).

A 2024 research on dengue dynamics and environmental impact indicates that in

Sri Lanka, the tropical climate, marked by seasonal weather primarily influenced by monsoons, fosters optimal conditions for the virus to spread efficiently. This heightened transmission results in increased per-capita vector density. Dr. Samaraweera further said that every year 45-50% of cases are always being reported from the Western Province of Sri Lanka. "Out of 57 MOH areas in the Western Province, a high number of cases are often being reported in areas such as Nugegoda. The reasons are manifold including high population density, flash flood situations after a heavy rain that would usually increase the number of stagnant water bodies and most importantly the lack of a proper solid waste management system," said Dr. Samaraweera.

She said that potential breeding sites for the dengue vector include discarded items such as yoghurt cups, coconut shells etc., mostly found in the backyards of houses and commercial buildings.

Speaking about changes in weather patterns over the years, Dr. Lareef Zubair, Principal Scientist at the Federation of Environment, Climate and Technology, observe some 'unusual rain events' in dry seasons thereby delaying wet seasons at times. It appears that the frequency of such extremes has changed.

"Certainly, the temperature highs, the air quality highs and evaporation has been exacerbated due to the already observed climate change. The argument that the warmer atmosphere has the capacity to hold much greater amounts of water vapour is sound and when large clouds burst it can lead to extreme rainfall," said Dr. Zubair who had been observing weather patterns over the past 15 years.

He further said that people are experiencing a hydrological change. "Both maximum and minimum temperature is higher than in the last century. As a result, evaporation is much higher. Sri Lanka experiences lower air quality, which influences rain formation and the acidification of rain," he stated.

Dengue infection and non-economic losses

So far, the dengue infection has claimed four lives during the first two months of 2025. In 2024, dengue claimed the lives of 24 individuals. Dr. Samaraweera further said that by reducing the number of cases, it would also save the expenses borne in treating patients with dengue. "When a patient is diagnosed with dengue, his or her economic productivity drops for three weeks. On the other hand the intensity of the infection varies from person to person. Therefore as the apex body to control dengue infections, we carry out targeted interventions such as fogging activities, source reductions and so on," she added.

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A 2014 study done on the economic cost of non-fatal paediatric dengue cases indicate that the average cost to hospital per case of dengue haemorrhagic fever (DHF) and dengue fever (DF) was SLR 24,856 (US$ 191) and SLR 10,348 (US$ 80) respectively.

Sehansa's case is a classic example which indicates that dengue infection affects individuals irrespective of age. Other non-economic losses associated with dengue fever includes potential long-term health complications and psychological impact on caregivers.

However, the NDCU has been taking various measures to bring down the frequency of deaths by dengue. Dr. Samaraweera said that compared to 72 deaths in 2023 the number of deaths were brought down to 24 by 2024," she added.

According to WHO, improper water storage practices and high population density are risk factors for dengue. But even though the authorities are taking steps to bring down the cases of dengue, V. Chithra, Sehansa's mother, claims that even though fogging activities are being conducted by authorities on a regular basis, none of those interventions could save her daughter. "Fogging alone isn't enough. If you check around these flats, the drainage systems are blocked and there are many stagnant water bodies. People aren't interested in cleaning their sewage lines or cleaning the surroundings because poverty is a bigger burden they have to face on a daily basis," she added.

In her comments, Dr. Anoja Dheerasinghe, Consultant Community Physician at NDCU said that there's no stigma attached to the dengue infection unlike for diseases such as tuberculosis and HIV. When asked whether the urban poor is more vulnerable to the dengue infection Dr. Dheerasinghe said that people in highly populated areas are more vulnerable. "The population density in underserved settlements is high and the mosquitos' flight range is between 100-200 metres. Therefore chances of an outbreak is highly likely in these areas and people therefore have to take all precautions," she underscored.

According to the newly drafted National Strategic Plan for Prevention and Control of Dengue – 2024-2030, Sri Lanka has made a commitment to reduce dengue deaths to zero by 2030. The authorities are determined to bring down the average infection rate by 40%. But whether increasing risk factors such as climate change and the adaptability of the dengue vector would pose significant challenges in reaching this target, remains a doubt.

This article was first published in Daily Mirror - English Daily, on March 6, 2025.*

* *https://www.dailymirror.lk/news-features/How-climate-change-impacts-Sri-Lankas-dengue-disease-burden/131-303747*

Rathugala Adivasis Struggle To Preserve 'Bee Honey Harvesting' Amidst Climate Change

Kamanthi Wickramasinghe

Bee researchers maintain that traditional bee honey collecting methods would hinder the sustainability of honeybee populations as collectors would crush honeycombs to extract all honey. The picture shows Giant honeybee (Apis dorsata) colonies in Sigiriya

For Danigala Mahabandalage Suda Wannila Aththo, the incumbent leader of the Rathugala adivasi community, bee-honey harvesting is part of their traditional lifestyle. Rathugala is a scenic village in the Eastern Province of Sri Lanka, located bordering the Gal Oya region in Ampara District. Following a prayer dedicated to Kalu Bandara deiyo, a local deity whom they believe is a guardian of the thick jungles they live in, Suda Wannila Aththo and his group would carefully advance into the jungles, in search of bee hives, usually located atop steep cliffs. Unlike in the past, the chances of returning with a bounty of bee honey is rare as this forest-dwelling tribe faces multiple challenges to collect bee honey. Amongst them are a long list of government regulations that prohibit them from entering jungles and a decline in honeycombs due to loss of pollinator habitats largely due to climate change impact.

A fading tradition

Traditional bee honey harvesting is a risky occupation. According to Charles Gabriel

Seligmann's book titled 'The Veddas', published in 1911, bee honey harvesting was once referred to as a 'game' where young boys in a tribe are taught to extract honeycombs without getting stung. They would initially set fire to some leaves beneath them as they believe that the smoke would chase away the honeybees (Apis cerana). The boys would then suspend themselves with a ladder made of creepers to slowly carve out the honeycomb off the rock using a tool known as the masliya, a stout stick about two and a half metres long with four prongs at one end, which the adivasi carries hanging by a loop from his forearm and which he uses to detach the comb and convey it into the maludema, the vessel that is used for collecting honeycombs. The thrill of bee honey collecting on an onlooker hasn't changed (much) from how Seligmann, a lecturer in ethnology at the University of London described it from a first-hand experience. But today, this traditional practice is coupled with multiple challenges that have restricted the Rathugala adivasi community to a limited area within their home ground.

A display at the Rathugala Vedda Heritage centre underscores the risks associated with wild bee honey harvesting.
Photo: Kithsiri De Mel

One of the earliest references to the adivasi community (previously known as Veddas) was by Robert Knox. In his accounts in 1681 believed to be the first accurate description of the Veddas, Knox describes a peculiar way in which they store venison. "They cut a hollow in a tree, put honey, fill it with flesh and stop it with clay," it reads.

The Rathugala adivasi community is considered among the last remaining forest-dwelling people of Sri Lanka, carrying with them a rich cultural heritage. According to a 2023 research by the Centre for Policy Alternatives (CPA), the adivasi community lost some of their best hunting grounds and caves which were inundated by the Senanayaka Samudraya built as part of the Gal Oya Irrigation Scheme between 1949 and 1952. Since then, their traditional lands were destroyed and some of these lands were declared as catchment areas of the reservoirs, banning their hunter-gatherer practices.

Various rituals are being done to seek permission from local deities. Photo: Kamanthi Wickramasinghe/CIR

"Back in the day we used to walk freely in these jungles and collect bee honey for our daily requirements," Suda Wannila Aeththo told the Daily Mirror during our visit to the Rathugala Vedda Heritage Centre situated along B562 (Bibile-Ampara road). "Today, we observe serious changes in these environments. The jungles of yesteryear were so rich in diversity.

There were various native plants which we used for medicine and food. We didn't have to worry about food, and it wasn't costly like today," said Suda Wannila Aeththo.

Bee honey harvesting was more of a cultural practice, he said. "If a girl is of marriageable age, the potential partner would carry honey, dried venison and other cultural gifts to express his interest in marrying her. But today, it has become difficult to collect bee honey. One reason is the existing government regulations: many of these jungles are now designated as forest reserves. Another reason: there are less suitable trees for pollinator insects like bees to thrive on. We find more invasive plant species such as lantana spreading rapidly, dominating the space required for native species. Many native plant species such as Bin Kohomba (*Munronia pinnata*) have become so rare that we doubt whether such plant species have already become extinct," he added. According to the 2020 National Red List Bin Kohomba falls under the Endangered list of medicinal plants.

Rathugala adivasi tribe is now restricted to a limited space and are unable to go hunting or collect bee honey due to government regulations and climate change

Photo: Kamanthi Wickramasinghe/CIR

Rapid forest degradation

Pollinator insects such as bees and butterflies play a crucial role in ensuring food security, globally. Sri Lanka is home to nearly 150 species of bees—and four of them produce their own honey. Amongst them, the Asian honeybee (*Apis cerana*) is the most common species. However, bee researchers observe changes in bee populations due to rapidly diminishing forest cover.

"With rapid human population and the progressive denudation of forests in the past few centuries, bee honey production from natural forest reserves has been rapidly declining," writes Dr. S. P. R Weerasinghe, Director of Agriculture in Dr. R. W. K Punchihewa's book 'Beekeeping for Honey Production' published in 1994.

Sri Lanka is a signatory to the United Nations Framework Convention on Climate Change (UNFCC), ratified in November 1993 and was put into effect in March 1994. The 2017 Forest Level submission indicates that Sri Lanka has a forest cover of 29.1% thereby making a commitment to increase it to 32% by 2030 including forests as well as plantations.

People who engage in domestic bee honey production have started selling bee honey at nominal rates. So, we can't charge a premium price. It's a premium product because we provide authentic bee honey. Many of us are indebted. Some of us have even obtained bank loans. Back in the day we weren't indebted to anyone when collecting bee honey. But things have changed.

- Suda Wannila Aththo, Leader of Rathugala Adivasi Community

There are around 20,000 species of bees around the world and Sri Lanka has around 150 species. We are particularly interested in the Asian honeybee (Apis cerana).

- Dr. Anura Indrajith, Entomologist at Rajarata University

It is important to protect honeybees and wild bees because they are key pollinators in any ecosystem. Providing legal protection for honeybees will also put a halt on wild harvesting of bee honey which has a negative impact on their survival.

- Dr. Jagath Gunawardena, Senior Environmental Lawyer

Bee honey is used as a supportive material when preparing Ayurveda pharmaceuticals. It is used as a natural sweetener and a preservative as well. But there are two types of bee honey, the new and old and each one of these types has their own medicinal properties.

- Dr. Nirasha Gunaratne, Head, Department of Dravyaguna Vignana at Gampaha Wickramarachchi University of Indigenous Medicine

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A 2001 study on forest policy trends in Sri Lanka indicates that the island's natural forest cover decreased from 85-70 percent during 1881 to 1900, a time period which belonged to British rule of Ceylon. The central hills were cleared for export crop plantations, while the dry zone forests were logged for valuable timber. After the country gained independence in 1948, 2.9 million hectares (44 percent of the total land area) were still under forest cover (Dissanayake et al., 1983). By 1981 forest cover had been reduced to 1.63 million hectares (85 percent of total land area), representing a decrease at the rate of 50,000 hectares per year (Bandarathilleke, 1991).

Pollination crisis

A 2023 study on forest cover and natural vegetation loss shows that in 2000, 61.38 percent of the country had above 25% canopy density. But by 2020, the forest cover of these areas decreased by 52.78 percent. Data gathered during this study shows that the forest cover density in Anuradhapura, Kurunegala and Monaragala districts remain at 12.06%, 9.82% and 8.49% respectively.

A decline in forest cover also means a decline in potential pollinator habitats. The Intergovernmental Panel on Climate Change (IPCC) in its special report on Global Warming shows that climate change directly contributes to the loss of insects' habitats.

According to Dr. Anura Indrajith, Entomologist at Rajarata University, one of the persisting issues is the lack of data on the number of natural honeybee colonies in the country. "There are around 20,000 species of bees around the world and Sri Lanka has around 150 species. We are particularly interested in the Asian honeybee (*Apis cerana*). Ten years ago, if we wanted to find a honeybee colony, we would go to a forest area. But nowadays it's very difficult to find natural honeybee colonies. The European honeybee (*Apis mellifera*) can be found in the West," said Dr. Indrajith explained.

Honeybees are also prone to pests and diseases in the face of climate change. Studies indicate that warmer falls allow the varroa mites season to last longer. "In addition, honeybees are also threatened by wax moths that increase with changing climatic conditions. Even though the Asian honeybee is resistant to most pests and diseases, it's smaller in size when compared to the European honeybee and is less adaptable to climate change," Dr. Indrajith added.

As told by Suda Wannila Aththo earlier, climate change is one factor that fosters the growth of invasive species such as lantana, Guinea grass (*Megathyrsus maximus*) which further compromise pollination patterns of pollinator insects. When invasive plants overrun native plants and establish a monoculture, the area may be more susceptible to wildfires or pests. This phenomenon may intensify the effects of climate change on humans and the environment.

A 2023 study on beekeeping under climate change indicates that the brood-free period for colonies will likely be shorter or even completely absent due to raising temperatures. This will cause a negative feedback loop, which will increase the impact of pests depending on the brood for their reproduction.

Demand for pure bee honey

Pure bee honey also includes various health benefits in traditional schools of Sinhala medicine including Hela Vedakama and Deshiya Chikitsa in addition to Ayurveda and Unani schools of medicine. "According to Ayurveda textbooks, there are various types of bee honey depending on the color, the type of bee that produces the honey and various

other factors," said Dr. Nirasha Gunaratne, Senior lecturer in Ayurveda Pharmaceutics and Head, Department of Dravyaguna Vignana at Gampaha Wickramarachchi University of Indigenous Medicine. "According to *Charaka Samhita*, a Sanskrit text in Ayurveda medicine there are four types of bee honey whereas the *Sushruta Samhita* mentions eight varieties. Bee honey is used as a supportive material when preparing Ayurveda pharmaceuticals. It is used as a natural sweetener and a preservative as well. But there are two types of bee honey, the new and old and each one of these types has their own medicinal properties," explained Dr. Gunaratane.

Dr. Gunaratne explained that 'new bee honey' includes Vrumhana Guna (properties that nourish the body), properties to increase energy and strength while enhancing nutritional support for three bio energies in the body (*Vatha*, *Pitha,* and *Kapha)* in addition to laxative effects. "Old bee honey on the other hand supports anti-diarrheal actions, controls obesity and has more medicinal properties than new bee honey," she explained while adding that it also includes anti-diabetic properties.

But she warned that pure bee honey is slowly becoming a rarity in the market. With adulterated bee honey, it has become a challenge to obtain pure bee honey that's prescribed for patients. But there are several parameters to check if a bee honey sample has been adulterated. "There are simple tests such as adding a teaspoon of bee honey into a cup of water. If the honey settles at the bottom, it is pure. Adulterated bee honey would mix with water without a trace. Then there's a flame test. You can simply soak a wick in bee honey and burn it. If its pure bee honey, the flame would spread. Adulterated bee honey has a certain percentage of moisture, and the flame would go out. A blot test is where you add a drop of bee honey on a tissue paper and firmly squeeze it. There would be some moisture if the sample has been adulterated. Another way to check for adulterated bee honey is to add a drop of bee honey onto your thumb. If it moves, then the sample is adulterated," Dr. Gunaratne said, adding that patients should always look for pure bee honey in the market.

Sustainable beekeeping – The way forward?

Bee researchers such as Dr. Indrajith argue that traditional bee honey collecting methods would hinder the sustainability of honeybee populations as collectors would crush honeycombs to extract all honey. This would pose a threat to larvae and young stages of growth inside the honeycomb that could ideally develop into the next colony of honeybees.

From a state level, the primary measure for the conservation of honeybees is the Pollinator Conservation Action Plan (PCAP) which was put forward by the Ministry of the Environment in 2012. However, this conservation policy is not specific to bees and takes into consideration all insects which are categorised as pollinators. But, there is no legal protection for the honeybee.

"All Lepidoptera including butterflies and moths are protected under the Flora and Fauna Protection Ordinance, but not honeybees or wild bees," said Senior Environmental Lawyer Dr. Jagath Gunawardena. "But it is important to protect honeybees and wild bees because they are key pollinators in any ecosystem. Providing legal protection for honeybees will also put a halt on wild harvesting of bee honey which has a negative impact on their survival." He further said that the Pollinator Conservation Action Plan never saw light of day.

In this backdrop, bee researchers are pushing for improved beekeeping education while encouraging domestic bee honey production. The breeding of resistant bee strains that are more adaptable for climate change has been discussed.

Dr. Indrajith further noted that without depending on wild colonies, methods to multiply by artificially rearing the queen bee could be developed. "Some bees are productive and some are lethargic. After finding a good strain of bees we can multiply them in the lab," he said while adding that shelters could be provided for solitary bees that don't join colonies.

Initiatives to introduce apitourism - an extension of ecotourism, are being discussed to make sustainable beekeeping popular among Sri Lanka's ecotourism niche.

Today, adivasi tribes must bear a heavy cost when entering the jungles to collect bee honey unlike in the past. It would cost anything between Rs. 10,000-15,000 for a group of 5-6 individuals to go into the thick jungles in search of bee hives and honeycombs. Unlike in the past, adivasi tribes are unable to hunt and a huge expense is borne on food. They stay in the jungles for 5-6 days or sometimes even longer to obtain a good yield. "On most days we come back empty-handed. During the season we can collect around 50-60 bottles. But we are unable to even cover the production cost. The market price fluctuates because people who engage in domestic bee honey production have started selling bee honey at nominal rates. So, we can't charge a premium price. It's a premium product because we sacrifice our blood and sweat to provide authentic bee honey to people. Many of us are indebted. Some of us have even obtained bank loans. Back in the day we weren't indebted to anyone when collecting bee honey because it's part of our tradition. But things have changed," Suda Wannila Aththo said, adding that perhaps in time to come their community too would have to adjust to modern methods of bee honey production as it has now become a costly process.

This article was first published in Daily Mirror - English Daily, Sri Lanka on February 19, 2025.*

* *https://www.dailymirror.lk/news-features/Traditional-lifestyle-under-threat-Rathugala-adivasis-struggle-to-preserve-bee-honey-harvesting-amidst-climate-change/131-302676*

Media Fellows

Meet the NIMJN-CANSA Climate Reporting Fellows

Bhagirathi Pandit and Ghanshyam Khadka - the recipients of the NIMJN-CANSA Climate Reporting Fellowship have been selected on the basis of their story pitch, ideas, time commitment, and climate reporting experiences among a pool of qualified applicants. Under this fellowship, they worked on producing original and in-depth multimedia stories related to non-economic loss and damage issues resulting due to climate change in Nepal.

Ghanshyam Khadka - Correspondent, Kantipur Publications

Ghanshyam Khadka from Beni Municipality-8, Myagdi from Gandaki Province, is one of the recipients of the NIMJN-CANSA Climate Reporting Fellowship (NCCRF). This fellowship was open for all Nepali journalists to report on non-economic loss and damage due to climate change in Nepal. Ghanshyam was chosen based on his story pitch, time commitment, and investigative reporting experiences covering climate change issues.Ghanshyam graduated from the Tribhuvan University's Dhaulagiri Campus in Baglung with a master's in Sociology. He is a correspondent for Kantipur Publications.

Bhagirathi Pandit - Independent Journalist

Bhagirathi Pandit is one of the recipients of NIMJN's Investigative Reporting Fellowship. With over six years of reporting experience, she mainly reports on crucial topics such as the environment, education, health, and marginalized communities. She is also pursuing a Masters in Journalism and Mass Communication at Tribhuvan University. Bhagirathi is especially interested in exploring the impact of climate change on the indigenous communities in Nepal and investigating the role of government accountability in the climate change crisis. At NIMJN, she will be covering the Climate Change beat and investigating these issues at an in-depth level.

Meet the CIR-CANSA Climate Reporting Fellows

Under CIR's latest evidence-based reporting initiative in collaboration with the Climate Action Network South Asia (CANSA), the following four competitively selected journalists focussed on non-economic loss and damage from environmental disasters (NELD), exploring multiple topics; extreme weather events such as storms, floods, and heatwaves, as well as the slow-onset changes like sea-level rise, biodiversity loss, and desertification.

Malaka Rodrigo - Freelance Environmental Journalist – The Sunday Times, Contributor to Mongabay

Malaka is an IT expert by profession, but a naturalist and a passionate environmental journalist who believes in 'conservation through awareness'. He won many awards for his work and writes extensively on biodiversity, wildlife, oceans, water, climate change and environmental issues. Malaka is a regular writer to Mongabay and many local publications.

Kamanthi Wickramasinghe - Deputy Features Editor, Daily Mirror

Kamanthi is an environmental journalist who has been reporting on many sensitive issues for about a decade. She has received many local and international awards and recognition including the Denzil Pieris Young Reporter Award 2015 and Michael Konig Young Journalist Bursary at the Cannes Lions International Festival of Creativity, 2017. Kamanthi has a BSc in Psychology from the Missouri University of Science and Technology, USA, a Postgraduate Diploma from Manorama School of Mass Communication, Kerala and an MA in Mass Communication from University of Kelaniya.

Aanya Wipulasena - Freelance journalist

Aanya Wipulasena is a journalist with experience in print and broadcast media, specializing in human rights, politics, and social issues in Sri Lanka. She has contributed to international news agencies, networks, and publications such as Al Jazeera, The Guardian, Australian Broadcasting Corporation, The New York Times and Agencia Efe. Aanya is a Chevening (UK) and Reporters Without Borders (Berlin) fellow. She was the recipient of the Laadli Media and Advertising Awards for Gender Sensitivity 2024 (India) and Denzil Peiris Young Reporter of the Year Award in 2013 (Sri Lanka).

Buddhika Samaraweera - Deputy Features Editor, Daily Mirror

With more than five years of progressive career in print media, Buddhika is the Deputy News Editor of the Daily Morning, a daily English national in Sri Lanka. Buddhika has been reporting on a number of beats such as politics, education, health, and economy. He recently completed a journalism fellowship on electoral integrity with the Center for Investigative Reporting where he produced an in-depth report revealing a decade-long unsolved flooding issue related to one of the four main rivers of the country.

Media Fellowship Partners NIMJN, CIR, CANSA

Nepal Investigative Multimedia Journalism Network (NIMJN)

The Nepal Investigative Multimedia Journalism Network (NIMJN) is a Nepal-based non-profit media organization, founded on April 27, 2020. It is dedicated to producing investigative multimedia stories that focus on social justice and accountability issues. Using the latest tools and techniques in digital journalism, NIMJN works to uncover stories that are evidence-based and impact-driven, aiming to serve the public interest by holding those in power accountable. Beyond its editorial role, NIMJN also plays an important capacity-building function by providing advanced investigative multimedia reporting training and mentorship for journalists. It actively supports the promotion of investigative and independent journalism in Nepal, with a particular emphasis on equipping journalists with the skills needed to navigate complex accountability stories. The organization is equally committed to journalist well-being, recognizing the physical, emotional, and psychological challenges faced in the field of investigative reporting. NIMJN's vision is rooted in impact-driven journalism that prioritizes public interest, while its mission centers on producing powerful, evidence-based multimedia investigations through a strong emphasis on skill-building and innovation.

Centre for Investigative Reporting (CIR)

The Centre for Investigative Reporting (CIR) is Sri Lanka's first investigative journalism center, established with the aim of promoting excellence in investigative journalism within Sri Lanka and across South Asia. CIR's key objectives include producing high-quality investigative stories, contributing to the development of a highly skilled and ethical community of investigative journalists, and supporting investigative journalists and journalism initiatives. The center is actively engaged in collaborative investigative storytelling through partnerships with other investigative journalism centers and journalists across South Asia. In addition to producing content, CIR delivers investigative journalism training and contributes to the advancement of media literacy by offering certificate courses in collaboration with media institutions and universities. CIR promotes the use of investigative tools such as access to information laws, data journalism, mobile technology, and artificial intelligence to strengthen investigative storytelling. Its focus lies in the continuous enhancement of skills and the development of investigative journalism content that brings attention to issues often overlooked in mainstream media, while fostering a culture of transparency and accountability. CIR's work reinforces the role of investigative journalism as a key pillar in democratic societies by ensuring that critical stories are told and systemic issues are brought to light.

Climate Action Network South Asia (CANSA)

Climate Action Network South Asia (CANSA) is Asia's largest coalition of NGOs addressing the climate crisis. With over 250 member organisations from eight South Asian countries, CANSA promotes sustainable climate, energy and development policies in India, Nepal, Bhutan, Bangladesh, Sri Lanka, Maldives, Pakistan and Afghanistan. Find us online at www.cansouthasia.net; Twitter: @CANSouthAsia; Facebook: Climate Action Network South Asia (CANSA); LinkedIn: CANSouthAsia; and YouTube: @CanSouthAsia

Understanding Non-Economic Loss and Damage: The Human Cost of Climate Change

Compendium of articles produced under media fellowship on non-economic loss and damage, 2025