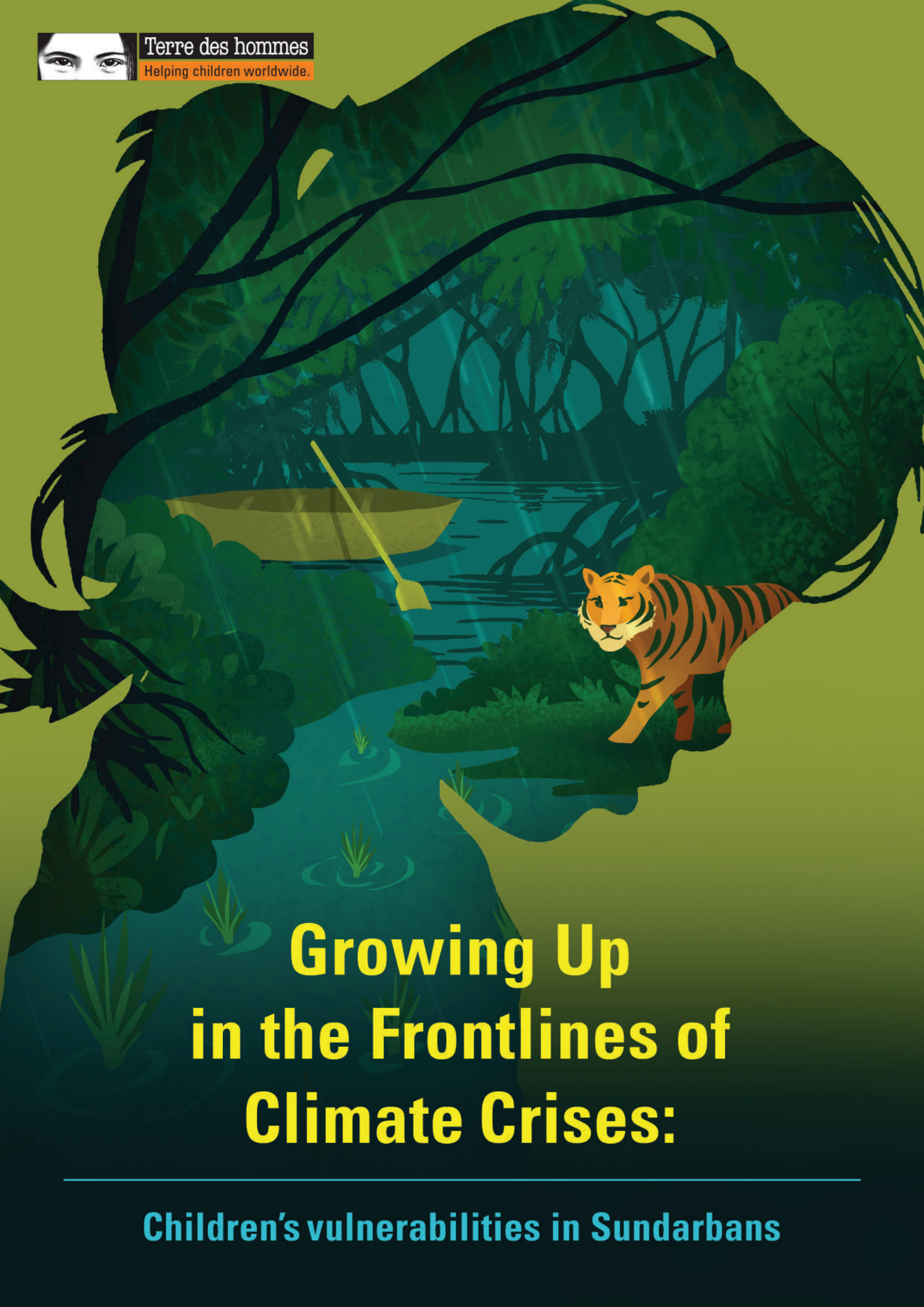




Terre des hommes  
Helping children worldwide.



# Growing Up in the Frontlines of Climate Crises:

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Children's vulnerabilities in Sundarbans

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# Growing Up in the Frontlines of Climate Crises:

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Children's vulnerabilities in Sundarbans

"In the climate discourse, we often think of children as our future, but what we tend to forget is that children are not just our future, they are NOW!"

**Anindit Roy Chowdhury**

Country Director - India and Nepal,  
**Terre des hommes**





# PREFACE

Climate change is no longer a distant environmental concern- it is a pervasive human rights and development issue that is posing to be one of the largest generational threats to the most vulnerable- children. Despite their least contribution to the problem of climate change, children and young people face a disproportionate impact of climate exacerbated disasters and environmental degradation. Globally, every child (>99 per cent) is exposed to at least one major climate and environmental hazards, shocks and stresses, while approximately 1 billion children (nearly half of the world's children) live in extremely high-risk countries in terms of climate impact.<sup>1</sup> From displacement and malnutrition to increased exposure to violence and disease, their rights to survival, protection, and development are increasingly compromised.

In India, children represent nearly a third of our population, and children in the Sundarbans presently experience an “extremely high ( $\geq 5$ )” exposure to overlapping climate and environmental hazards, shocks and stresses, as illustrated by The Climate Crisis is a Child Rights Crisis report by the United Nations Children's Fund (UNICEF 2021). This extreme and escalating exposure ultimately makes the Sundarbans a particularly precarious place for children, with the climate crisis swiftly spiralling into a child rights crisis.

This knowledge product draws on multi-year evaluations led by Terre des hommes across key themes, including health, WASH, child protection, and disaster response, to illustrate how climate change is reshaping childhood vulnerabilities in the Sundarbans. It intentionally weaves children's voices and lived experiences into the evidence, moving from data visualisation to data visceralisation- data that not only informs but also evokes emotions and urgency. Designed in a child-friendly format, this product aims to bring the realities of the most vulnerable children closer to those who can act to protect them-You!

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1. <https://www.unicef.org/media/105376/file/UNICEF-climate-crisis-child-rights-crisis.pdf>



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“My grandparents experienced one intense cyclone in their lifetime, while my parents say they saw one every decade. But for me, I see such a cyclone every year now!”

# INCREASED EXPOSURE WITH RISING FREQUENCY OF DISASTERS

Formed at the confluence of river Ganga, Brahmaputra and Meghna, the Sundarban delta is caught amidst an oxymoronic existence between nature's beauty and catastrophe. Accounting for 40% of the world's largest continuous mangrove forest, the Indian Sundarbans encompasses a mosaic of 102 tidally active, low-lying islands along the Bay of Bengal, housed in the state of West Bengal. Despite its rich biodiversity, the Sundarbans is rapidly recognized as a climate change hotspot, particularly prone to cyclones and flooding, and considered endangered under the Red List of Ecosystems (RLE) by the International Union for the Conservation of Nature.<sup>2</sup> With a dense human habitation of 4.5 million people, the climate crisis, acts as a threat multiplier posing eminent risks thereby increasing the human vulnerability of the people, especially children, living in this region. The exposure to climatic events and shocks, both in the form of sudden disasters and long-term onset events, presents itself in four major ways, which include the following;

- Increasing frequency of extreme weather events with more than triple the number of annual cyclone and flood occurrences in recent years, including 13 super-cyclones in the past two decades.
- Rising sea levels with an average increase of three millimetres per year over the past two decades, twice as fast as the global average.
- Land erosion with shoreline loss of nearly 12% in the past four decades; land and water salinization with projected near ocean-level salinity by 2050.
- Elevating air and sea temperatures with surface water temperatures rising at a rate of 0.5 degrees per decade compared to the global rate of 0.06, based on data in the Coping with Climate Change in the Sundarbans study by the World Bank.<sup>3,4</sup>

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2. <https://iucnrle.org>

3. [World Bank Document](#)

4. <https://zerocarbon-analytics.org/archives/justice/loss-and-damage-in-the-sundarbans>



“It is impossible to access a latrine during a flood. Either we defecate near the river or make some temporary arrangements. That situation persists for months. We face a lot of problems.”

# SALINITY, SCARCITY AND DISEASE BURDEN

Progressive salinization of rivers and groundwater in the Sundarbans has sharply reduced access to safe drinking water. 85% of households face water scarcity, with 36% reporting rising salinity in their drinking water. These water-related stresses have direct implications on child and maternal health with nearly 40% of caregivers reporting worm infestation, skin rashes, and skin infections among children, conditions which are strongly associated with exposure to contaminated or saline water, poor hygiene, and post-disaster waterlogging.

Recurring disasters also translate into poor sanitation and heighten exposure to diseases. During floods, households' use of latrine fell sharply from 50% to 15% as they became inundated and unusable. Dependence on flush/pour-flush toilets connected to piped sewer systems also falls from 34.1% to 17.1% during post-disaster contexts, forcing people into overcrowded, unsafe, and unhygienic sanitation facilities, including incidences of open defecation, that significantly increase disease transmission. Climatic factors like rising temperature, humidity, precipitation, etc impinge upon every component of the host-agent-environment epidemiological triad, mutating and extending the survival and reproductive capacity of pathogens and vectors. This has resulted into the rise of waterborne (diarrhoea, cholera, typhoid) and vector-borne diseases (malaria, dengue, chikungunya). Nearly 24% of children were reported to be suffering from diarrhoea post-disasters, a clear violation of the UNCRC principle of the child's right to survival and development (Article 6).<sup>5</sup>

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5. [Convention on the Rights of the Child | OHCHR](#)

Data quoted in this are based on a study conducted by [Tdh in Sundarbans Impact of climate change on health, migration and child protection in the Sundarbans region of India](#)



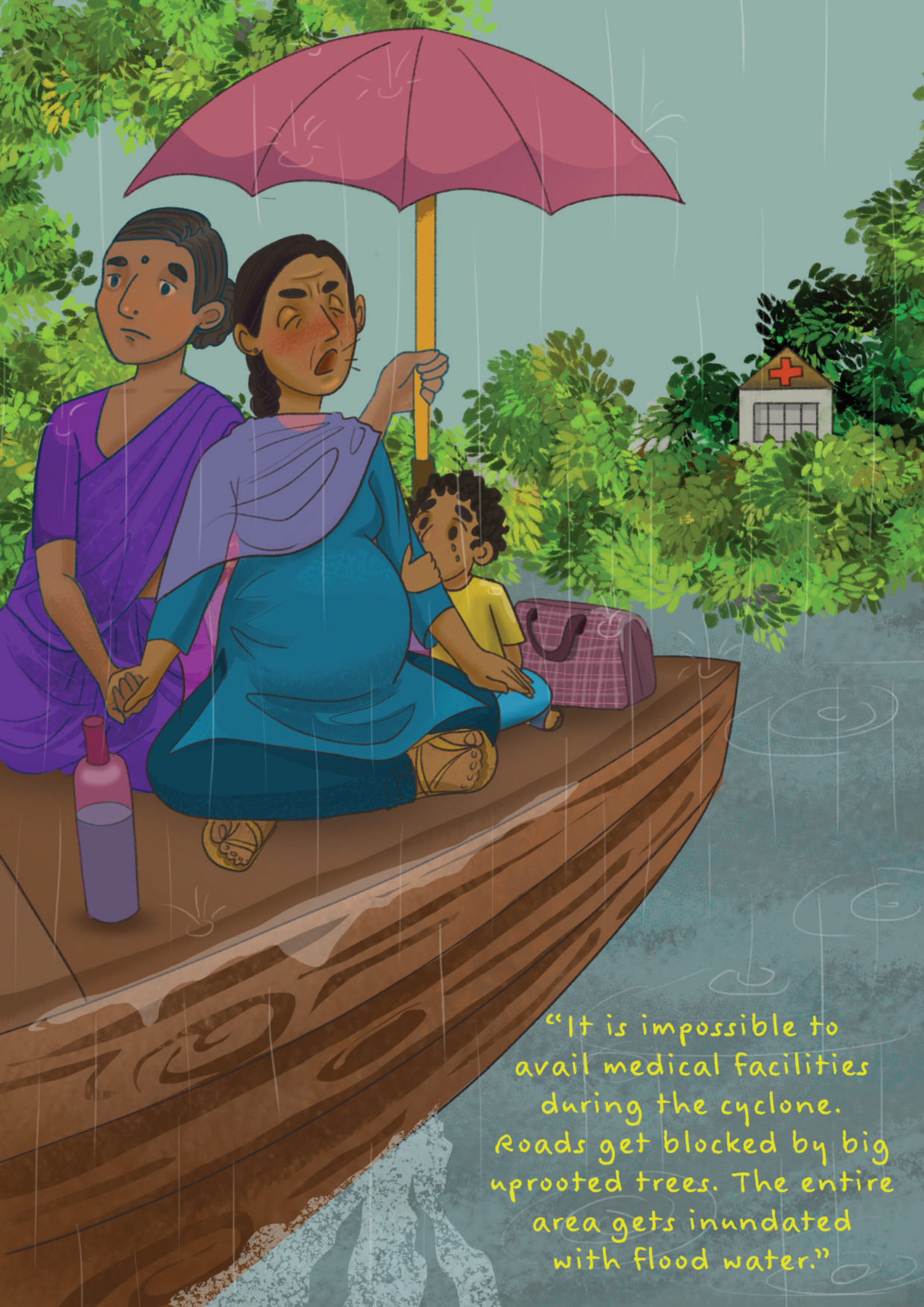
“In the villages of Sundarban, most of us only eat rice and mashed potato for dinner almost on a daily basis.”

# FOOD INSECURITY AND CHILD MALNUTRITION

Frequent flooding and inundation of lands with sea water has increased soil salinity, eroding livelihoods and altering agricultural patterns in a predominantly farm-based region. Salinization and changing components of the soil have sharply reduced agricultural productivity and freshwater fish availability. The long-term slow onset effects of climate change have negatively impacted dietary diversity in households, with families increasingly relying on low-nutrient, carbohydrate-heavy diets, marking a stark reduction in their vegetable and protein intake. In a region where household dependence on market-based products for daily consumption is as low as 18%, studies highlight rising incidences of malnutrition and anaemia with over one-third of children reporting malnourishment. This is further substantiated by 40% of households reporting inadequate food intake as one of the major problems among children, further skewed for adolescent girls.

The maternal health status is equally poor in the Indian Sundarbans with high fertility, high infant mortality, low birth rate and spontaneous abortions/miscarriages reported widely as the most common maternal health problems in the region. Increasing temperatures are also linked to heat stress-induced complications such as preterm labor, pregnancy-induced hypertension (PIH), and postpartum hemorrhage (PPH)- a leading cause of maternal mortality. Pregnancy Induced hypertension is also responsible for preterm birth and low birth weight babies. Programmatic evaluations in the region find severe anemia, PIH, hypothyroidism and young primi (pregnancy below the age of 20 years) as the leading causes for high risk pregnancy in women. Moreover, the psychological burden of repeated climate shocks, displacement, and economic instability has led to rising mental health issues among pregnant and lactating women translating into anxiety, depression, and deliberate self-harm, indicating the convoluted intersections between climate change and health.

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“It is impossible to avail medical facilities during the cyclone. Roads get blocked by big uprooted trees. The entire area gets inundated with flood water.”

# DISRUPTION OF HEALTH SYSTEMS AND BARRIERS TO CARE FOR CHILDREN

Extreme weather events such as cyclones Aila (2009) and Amphan (2020) contribute to mammoth damages to health infrastructure in the region. Amphan alone damaged more than 563 primary health care centres in West Bengal,<sup>6</sup> disproportionately affecting the delta. With villages interspersed by a network of rivers, accessing health care facilities in Sundarbans poses a momentous challenge. Our studies find that inhabitants from 34% of villages need to travel more than 10 kilometres to avail treatment in community health centres. Among villages disconnected from the mainland, this access is even more fragmented with about 30% of mothers, who have given birth in the last 5 years having to reach the health centres by crossing rivers on boats.

For children, this translates into disrupted immunization schedules, delays in treatment for common illnesses, and increased reliance on untrained rural medical practitioners with 85% of the OPD treatment for ailing children in Sundarbans being provided by Rural Medical Practitioners or quacks, who lack professional training and licenses. In the few places where private health care services are available, they remain exorbitantly expensive and unaffordable for the vast majority. While community health workers and staff at under-resourced government health facilities play a critical role in disaster preparedness, the infrastructural damage post disasters significantly disrupt transportation, cutting off families and children's access to health infrastructure and services, and amplifying preventable morbidity and mortality.

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6. Amy Lieberman // 08 October 2020, "In India's Sundarbans Region, Natural Disasters Will Continue to Complicate Vision, Health Care," Devex, October 8, 2020,

<https://www.devex.com/news/sponsored/in-india-s-sundarbans-region-natural-disasters-will-continue-to-complicate-vision-health-care-98268>

Data quoted in this are based on a study conducted by [Tdh in Sundarbans Impact of climate change on health, migration and child protection in the Sundarbans region of India](#)



"I live with my paternal grandparents. My parents work in Delhi, and my younger brother stays with them and studies there. My family comes back home once a year for a month. I miss them.

After a month's stay, when they go back, I cry myself to sleep every night. I don't feel like doing anything or talking to anybody. They bring me gifts, but that's not what I want. I await the day when I can stay with them permanently."

# CLIMATE MIGRATION AND THE RISK OF TRAFFICKING

Whilst migration is a long-standing coping mechanism for people, increasing incidences of climate migration<sup>7</sup> are vastly reported by 87% of respondents due to growing climate stressors (including rising salinity, land loss, and disaster induced damages). Nearly 60% of households have at least one member who has migrated to various corridors internally (in Andhra Pradesh, Tamil Nadu and Gujarat) as well as externally (in the Middle East). This includes temporary circular migration with an average duration of 8 months in a year, disaster induced displacement as well as permanent relocation from eroding islands (like Ghoramara) to safer lands.

People migrate under unsafe conditions marked by little to no information and high reliance (87%) on middlemen and sourcing agents. Children who migrate without their parents are especially vulnerable to exploitation, coercion, deception, and violence. In instances of male selective outmigration or the migration of both parents, children left behind often face neglect, early dropout and increased burden of household chores.

Climate fragility is also expanding trafficking networks. Studies show strong correlations between climate shocks and spikes in trafficking cases, with traffickers targeting families staying in temporary shelters after embankment breaches as easy targets. Trafficking for sexual exploitation, domestic labour, and forced marriage presents itself as significant, yet under-reported protection concern in high-vulnerability blocks such as Kultali and Gosaba where 38% of the children reported child trafficking as a perceived issue impinging upon them post disasters in their communities.

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7. International Organisation for Migration (IOM) coined the term “climate migration” as the movement of people, predominantly for reasons of sudden or progressive change in the environment due to climate change, either temporarily or permanently, [Environmental Migration | IOM](#), [UN Migration | Environmental Migration Portal](#)  
Data quoted in this are based on a studies conducted by Tdh in Sundarbans [Impact of climate change on health, migration and child protection in the Sundarbans region of India](#), Process evaluation, Sankalpa baseline study (to be linked)



“I can see my parents stressed and anxious all the time because they need to save money for my marriage. That is a major discussion at home.

My brother is just two years younger. My parents allow him all the freedom to roam around freely and mingle with friends. There is no expectation from him.

On the other hand, I feel restricted. I feel like a burden all the time, and I also feel that I have been raised only to to be married off.”

# CHILD MARRIAGE AND UNDERAGE ELOPEMENT

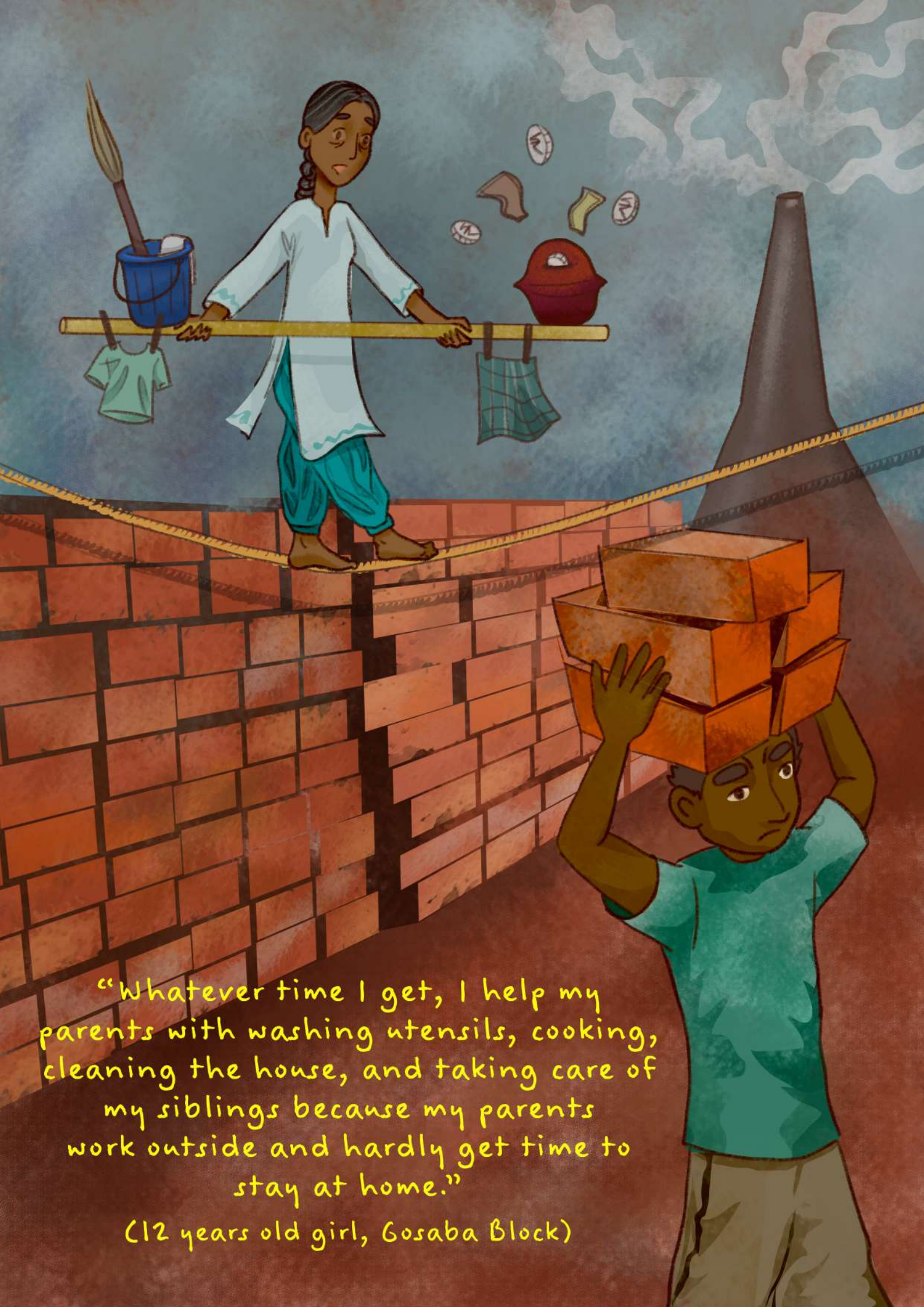
Climate-related displacement and livelihood loss have strengthened drivers of child marriage in Sundarbans. 55%<sup>8</sup> households report that underage marriage has massively increased in the last 10 years, with spikes following disruptive shocks such as Cyclone Aila, Cyclone Amphan and the COVID-19 pandemic. The economic and climatic strains force families to push their adolescent girls into marriage as a way to 'protect' them from future disasters and as an opportunity to economically 'unburden' themselves of a financial responsibility.

There is also an increasing trend of underage elopements with the proliferation of smartphones and social media penetration opening a new virtual world for adolescents where they can meet discreetly and elope. Qualitative enquiries with young girls also highlight that excessive parental control and restrictions on mobility leave them feeling suffocated. Elopement is then seen as a lucrative alternative to exercise freedom of choice at par with men and boys. For many, this new medium has also opened up exposure to new forms of digital harms with girls facing threats of their private photographs being released on the internet by strangers, unless they agree to marriage.

Girls married early face heightened risks of teenage pregnancy, malnutrition, domestic violence, and limited mobility, locking them into a vicious cycle of vulnerability. Child brides often show signs symptomatic of child abuse and post-traumatic stress, including feelings of hopelessness, helplessness and severe depression.

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8. Data quoted in this are based on studies conducted by Tdh in Sundarbans: [Evaluations](#)



“Whatever time I get, I help my parents with washing utensils, cooking, cleaning the house, and taking care of my siblings because my parents work outside and hardly get time to stay at home.”

(12 years old girl, Gosaba Block)

# CLIMATE STRESSORS FORCING CHILDREN INTO LABOUR

Disaster related income shocks push adolescents into work, with every disaster bringing in its wake a financial burden on the family, given the destruction that it causes. Studies show that 50% of children (especially girls) between the age of 13-17 years, and 20% children between the age of 6 to 12 years, are involved in unpaid household labour. Socializing children into the world of work by increasing their roles in productive activity is common in rural communities in Sundarbans. Children participate in family agriculture, household activities and food production according to their ability from as early as 6-7 years of age. This activity is not seen as work but as “training,” for the future.

Additionally, 13% of the households also self-reported children being engaged in agriculture, fishing and other paid employment contributing to household earnings. Among boys, the situation is further precarious as patriarchal norms of being the provider compel them to drop out of school and earn a living for the family, pushing them into the unorganised labour market at a very young age. Children who migrate for work are especially vulnerable to lower wages, occupational hazards and accidents leading to injury and even death. Independent child migration is also a part of a family’s survival strategy as the migration of a child decreases the dependency ratio in the household, even when the child does not earn enough to save (because there is a decrease in household consumption demand). In addition, some children are able to save and send remittances, adding to the family’s financial health, at the risk of eroding childhoods.<sup>9</sup>

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9. Data quoted in this are based on a study conducted by [Tdh in Sundarbans Impact of climate change on health, migration and child protection in the Sundarbans region of India](#), and [Other Evaluations](#)



ফুল



খুশি



বিড়াল

মাছ

চাঁদ



“Our school becomes a shelter during floods, but it feels crowded and unsafe. We miss our classes, and there’s no place to study.”

## DISRUPTED EDUCATION

Children who migrate with their parents for work often drop out of school due to differences in the medium of instruction at destination schools. Among children left behind at the source, parental migration negatively affects school attendance, especially for girls aged 14-18, as they are expected to take on household duties in place of schooling.

Climatic disasters also have a direct correlation with education disruption as school buildings are often repurposed as temporary shelters, prolonging school closures and resulting in children missing out on school days. Despite doubling up as shelters, none of schools interviewed had any robust risk analysis comprising the hazard and vulnerability assessment that shelters must comply with. Additionally, many of the schools are located near embankments, making the school infrastructure susceptible to damages during disasters. In Kultali and Gosaba, of the 23 government schools that Tdh implemented project engages with, 56% or 13 are located beyond the mainland, which require students from neighbouring areas to cross the river by boats on a regular basis. Heavy waterlogging, post disasters, makes it difficult for children to access schools as they wade through inundated roads filled with live wires and open potholes making it a dangerous ordeal. Disrupted electricity supply and unhygienic sanitation facilities post overuse of school infrastructure as relief shelters also make the infrastructure inhospitable to support education.<sup>10</sup>

As per the Government of West Bengal's concept note on school safety, there is a step wise guide on disaster management activities comprising of awareness building, formation of a school disaster management committee, hazard identification and safety assessment, mapping inventory of sources, development of disaster management plans for schools Mock drills and simulations have also been advised at regular intervals. However, there is minimal engagement of the schools and school authorities around preparedness measures for disasters due to capacity, personnel and prioritisation gaps as many of the schools in the region are running on severe shortage of staff.

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10. Data quoted in this are based on a study conducted by [Tdh in Sundarbans Impact of climate change on health, migration and child protection in the Sundarbans region of India](#), and [Other Evaluations](#)



“Look at these parks. They were once filled with children playing! Today, most have migrated and the ones who remain, will sit idle on the sides playing games on their phones, instead of interacting with real people.”

## WIDENING CHILD PROTECTION GAPS

During disasters, when children relocate to shelter homes with their families, the absence of child-friendly spaces creates significant protection risks. Overcrowded shelters often lack segregated areas and functional washrooms for girls and women, as well as accessible facilities for children with disabilities-conditions that contribute to repeated instances of harassment and heightened vulnerability. At the same time, mounting household stress is pushing parents and caregivers toward negative coping mechanisms and harsher parenting practices.

Children left behind when parents migrate are three times less likely to share their feelings or difficulties with adults compared to children from non-migrant households, increasing their emotional isolation.

Compounding these risks is the rapid rise in smartphone penetration across the region. With limited adult supervision, many children and adolescents develop problematic, addiction-like patterns of mobile use, disconnecting from real-world interactions, thereby reducing participation in sports and creative activities, and struggling to focus on academics. Unmonitored access further exposes them to pornography, online predators, cyberbullying, and excessive social networking, adding a new layer of protection concerns to an already fragile environment.

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‘I have a secret dream to share with you. I want to join the Indian Army. Whenever I have access to my father’s smartphone, I keep watching army related videos on YouTube. If I get the job, I will no longer allow my father to work in the farm. I also want to support my sister’s higher education and build a concrete house, so we don’t have to evacuate during floods and storms and take shelter in schools or flood centers. However, there is no one I can seek support from. Given my household’s financial condition, I will most likely be forced to work early. Will my situation allow my dream to come true, Didi?’

# CHILDREN'S EXCLUSION AND LACK OF COMMUNITY SAFETY NETS

Local child protection systems remain weak and largely non-functional. In most villages, Village Level Child Protection Committees (VLCPCs) are either not formed or exist only on paper, offering little real support. At baseline, only 11% of children in Tdh's intervention areas were able to approach any authority during disasters. Low confidence and lack of clarity regarding the roles of different authorities were mentioned as key reasons for not seeking active help.

Despite being among the most affected, children are rarely included in disaster risk reduction (DRR) processes. Qualitative inquiries show that they are seldom consulted, even though they clearly articulate climate-related risks, often subsumed under the unit of the family and considered passive agents, grossly overlooking their unique needs.

This exclusion is further reinforced within households. Nearly 52% of children reported having no say in decisions related to migration, while an overwhelming 99% stated they were not involved in major life decisions such as school dropout, marriage, or engagement in labour-matters which fundamentally shape their lives.<sup>11</sup>

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11. Data quoted in this are based on a studies conducted by [Tdh in Sundarbans Impact of climate change on health, migration and child protection in the Sundarbans region of India](#), and [Other Evaluations](#)



“Earlier, we could play throughout the year. But now, playing during summer has become rare; even going out from home between 10 a.m. and 4 p.m. has become difficult due to the intense heat. It makes me sad, and worried. As a kid, I enjoyed six seasons, which brought with itself various seasonal festivities and cultural practices. Now, we only have three seasons—summer, rains, and winter.”

# PSYCHOSOCIAL STRESS AND MENTAL HEALTH IMPACTS ON CHILDREN

The increasing frequency of cyclones, tidal floods, and climate-related displacement takes a profound toll on children's mental health. The region's fragile ecosystem is closely linked to rising emotional distress and psychological stress in children, coined as climate anxiety.<sup>12</sup>

Studies find that households located in the blocks having high exposure to climatic shocks have reported more cases of mental health problems among children than those located in low to moderate exposure regions. Children experience intense fear during disasters, struggle to escape harm, and often face separation from caregivers, loss of homes, and prolonged instability. These experiences manifest as anxiety, sleep disturbances, depression, and post-traumatic stress.

Qualitative insights reveal that children suffer twice, first through physical danger during disasters, and then through the trauma of displacement, uncertainty, and disrupted family structures. 41% of children report feeling unsafe during disasters, driven by mental stress, loneliness, neglect, and exposure to violence. Girls reported fear of violent situations 7 percentage points higher than average, indicating the gendered nature in which violence manifests in these situations.

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12. [Climate anxiety | UNICEF Parenting](#)

Data quoted in this are based on a studies conducted by Tdh in Sundarbans [Impact of climate change on health, migration and child protection in the Sundarbans region of India](#), and [Other Evaluations](#)





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