GENDER & ADOLESCENCE: GLOBAL EVIDENCE

‘The first thing that I fear for my future is lack of rain and drought’: climate change and its impacts on adolescent capabilities in low- and middle-income countries

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Introduction

Climate change is one of the most critical global challenges. The 2015 Paris Agreement acknowledges that climate change is 'an urgent and potentially irreversible threat to human societies and the planet' (United Nations (UN), 2015: 1). Climate change is influencing the severity and frequency of climate-related hazards, including drought, floods, changes in weather patterns and seasonal rainfall. These shifts are coupled with contextual changes which increase vulnerability and decrease the capacity to prepare for, and recover from, climate-related hazards. Put together, these changes can result in indirect impacts on food security, water availability, migration patterns, health, and psychosocial well-being (Diwakar et al., 2019; Sanson and Burke, 2019). From 1990 to 2015, it is estimated that the richest 10% of the world's population were responsible for 52% of global cumulative carbon emissions, while the poorest 50% were responsible for just 7% (Gore et al., 2020). Yet low-income countries are disproportionately affected by the effects of climate change. Many low income countries will experience greater climate-related hazards such as increased daily temperature extremes and droughts (Islam and Winkel, 2017; Harrington et al., 2016) (see Figure 1). Additionally, people living in low-income countries are more vulnerable to the impacts of these hazards due to high reliance on agriculture and limited resources and infrastructure needed to prepare and recover from these events (Islam and Winkel, 2017; Lahsen et al., 2010).

Children and future generations are also likely to face starker consequences. Children and youth are more vulnerable to both the direct impacts of climate change (such as injuries and death, and household poverty) as well as the indirect impacts (such as conflict and migration, and disruption to services central to children's well-being including health and education) (Diwakar et al., 2019; Sanson and Burke, 2019). Climate change will exacerbate inequalities, with the most vulnerable and disadvantaged children at greatest risk. Children and their families living in poverty or with inadequate access to facilities to support their wellbeing will be more affected by weather and climate-related hazards such as drought or floods, and will have fewer resources to enable them to prepare for, cope with and recover from these events (UNICEF, 2015).

This report focuses on the unique experiences of adolescents in LMICs in the face of the current climate crisis, bringing to light some of the multidimensional challenges they face and calling attention to the multiple and intersecting layers of vulnerability they experience based on gender, age, socioeconomic, disability, geography or refugee status. The report is organised as follows: it begins with a brief overview of the evidence base on climate change and impacts on adolescent capabilities, and then presents our conceptual framework and the qualitative research methodology underpinning the report findings. It next turns to a discussion of the direct and indirect impacts of climate change on adolescents' multi-dimensional capabilities, before concluding and outlining priority actions for policy, programming and evidence generation.

Background context: climate change and adolescents

Climate-related hazards impact children and adolescents in different ways at different points of their lives. Children under five are more likely to be impacted by poor nutrition and suffer from diarrhoea, whereas adolescents are more likely to be impacted by disruptions to education or income-generation activities. It is therefore important to consider the whole life course of adolescents, focusing on longer-term climate impacts on their development (Diwakar et al., 2019).

The intersection between gender inequality and age vulnerabilities heightens adolescent girls' risks of adverse climate impacts. Women, children and youth are recognised to be most at risk to the impacts of climate-related hazards; however, there are significant gaps within the current data due to a lack of disaggregation and visibility of minority and marginalised groups (Brown et al., 2019). Climate-induced displacement and conflict can put girls at increased risk of sexual violence, while household stressors, as a result of climate events such as drought, can increase rates of domestic violence (Pereznieto et al., 2020). Additionally, climate-related shocks can amplify girls' risk of dropping out of school and can disrupt access to sexual and reproductive health facilities and services (Plan International, 2019b). Although boys also experience climate-related impacts on health and food security, among others (Sanson and Burke, 2019), the gender-

Figure 1: Map showing likely future changes to the climate in Jordan, Ethiopia and Bangladesh

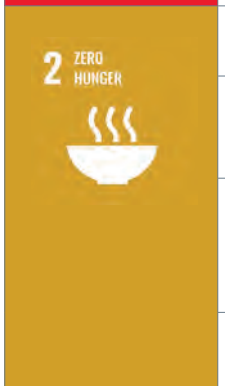
specific impacts on boys are largely absent from the literature.

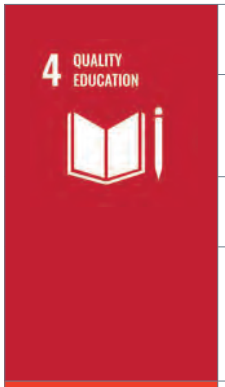
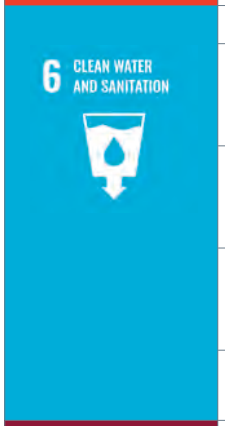
Young people have not remained passive in the face of this knowledge, and in recent years we have seen young climate activists from around the world taking action, challenging policy-makers and holding governments to account (Pereznieto et al., 2020). While Greta Thunberg has come to symbolise this movement, climate change activism has also been championed by young people in a range of low- and middle-income countries (LMICs), for example Kherann Yao from Côte d'Ivoire who has founded Green Ivory which aims to create awareness around environmental issues (UNICEF, n.d). The YOUNGO Children and Youth constituency to United Nations Framework Convention on Climate Change is one such example of youth participation in the UN climate talks and provides a platform for young people to be engaged in climate action.

Adolescent voices are critical in identifying key age-specific risks and experiences in relation to climate change, particularly highlighting challenges or providing solutions that adults may overlook (Pereznieto et al., 2020). A growing number of analysts highlight that adolescents' experiences, and their agency to contribute to adaptation methods, must be taken into account when designing policies and programming, whilst recognising the importance of ensuring this is voluntary in order to not place additional burdens on young people (UNCRR, 2020).

While the Paris Climate Agreement overview highlights the need to 'change, respect, promote and consider...the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations...as well as gender equality, empowerment of women and intergenerational equity' (United Nations (UN), 2015: 2), age and gender considerations are not present in any of the 29 articles. Sustainable Development Goal (SDG) 13 on climate action also highlights the importance of 'focusing on women, youth and local and marginalized communities'; however, its indicators are not disaggregated by gender or age. As a result, the specific needs of adolescents, as well as the gendered implications of climate change, are often invisible to policy-makers and programme implementers. This is underscored by analysis from Equal Measures 2030, which found that SDG 13 is one of the goals that is lagging most in terms of gender equality (Equal Measures 2030, 2020). Also, at the national level, only three countries (out of the 160 analysed) have Nationally Determined Contributions that explicitly refer to girls, and only seven highlight children and youth as key stakeholders in climate action (Plan International, 2019a). A number of other SDG targets are also related to climate change (see Table 1).

Table 1: Impacts of climate change on SDG targets and the extent to which indicators are disaggregated by gender and adolescent/youth age

SDG	Targets	Climate change impacts	Indicators disaggregated by gender and adolescents/youth
	1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day.	Climate-related hazards can push people further into poverty, through destroying homes and infrastructure, reducing harvests, reducing access to livelihoods.	✔
	1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.		
	1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.		✔
	1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.		
	2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.	Increases in daily temperatures and droughts can result in high rates of food insecurity and malnutrition and lower agriculture productivity.	
	2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.		
	2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.		
	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.		
	3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.	Changes in the climate can change the occurrence and susceptibility to vector-borne and water-borne disease. Increases in exposure to pollution and heat stress. Increases in stress and anxiety due to the impacts of climate change.	
	3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases		✔
	3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.		
	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.		

	4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and Goal-4 effective learning outcomes.	Disruptions to due to climate-related hazards. Children and youth are pulled out of school due to household climate-related poverty or to help with increased household chores.	✔
	4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.		
	4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.		✔
	4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.		
	5.1 End all forms of discrimination against all women and girls everywhere.	Increases in gender-based violence due to the impacts of climate change on displacement, conflict etc.	
	5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation.		
	5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation.		✔
	6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.	Impacts to the quality and quantity of water as a result of drought, flooding and pollution.	
	6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.		
	6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.		
	6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.		
	6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.		
	8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries.	Threats to jobs in agriculture, fisheries, forestry and tourism. Increases in temperatures resulting in workplaces that are too hot to work.	
	8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.		

	8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.	Increases in precarious and informal work.	
	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.		✔
	8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training.		
	8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment		
	8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products		
	10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.	Increases in existing inequalities, climate change impacts will hit the most vulnerable people hardest. Increases in rates of migration due to climate-related natural hazards.	
	10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies.		
	11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.	Climate-related natural hazards can impact infrastructure within cities and increase air pollution. Rapid urbanisation can also influence exposure to hazards due to environmental degradation, poor land-use planning, and higher-population density.	
	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons		✔
	11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries		
	11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage		
	11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations		
	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management		
	11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.		✔

	11.B By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.		
	11.C Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials		
	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Deteriorating ecosystem and biodiversity in waters due to pollution, and ocean acidification.	
	14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels		
	14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information		
	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.	Deforestation and desertification caused by climate change present a risk to the sustainable management of land and forests.	
	15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.		
	15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.		
	15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.		
	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.		
	15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed		
	16.1 Significantly reduce all forms of violence and related death rates everywhere.	Increases in fragility and conflict over limited resources such as land and water.	
	16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children.		
	16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all.		

Conceptual framework

This report is informed by an adapted version of GAGE's '3 Cs' conceptual framework, a socio-ecological model that highlights the close connections between adolescent 'capabilities', 'contexts' and 'change strategies',- which is informed by Amartya Sen's (1984, 2004) capability approach. This framework recognises that adolescents' lives are situated in interconnected contexts at the household, family, community, state and global levels, which broadly shape adolescents' capabilities. Programmatic change strategies can intervene at each of these levels to support adolescent empowerment and capability development. Here, we also recognise that climate change events such as changes to daily temperature, drought and flooding, can also have direct and indirect impacts on adolescents' capabilities in the domains of education and learning, health and nutrition, bodily integrity and freedom from violence, and psychosocial-wellbeing (amongst others). These direct and indirect impacts shape adolescents' contexts, which are also influenced by their existing identities linked to their geography, gender, age, ethnicity, sexuality, refugee, disability or socioeconomic status (amongst others). We also highlight that, when appropriately supported, adolescents' voice and agency can feed into climate change adaptation strategies and contribute towards age- and gender-sensitive approaches (see Figure 2).

Methods

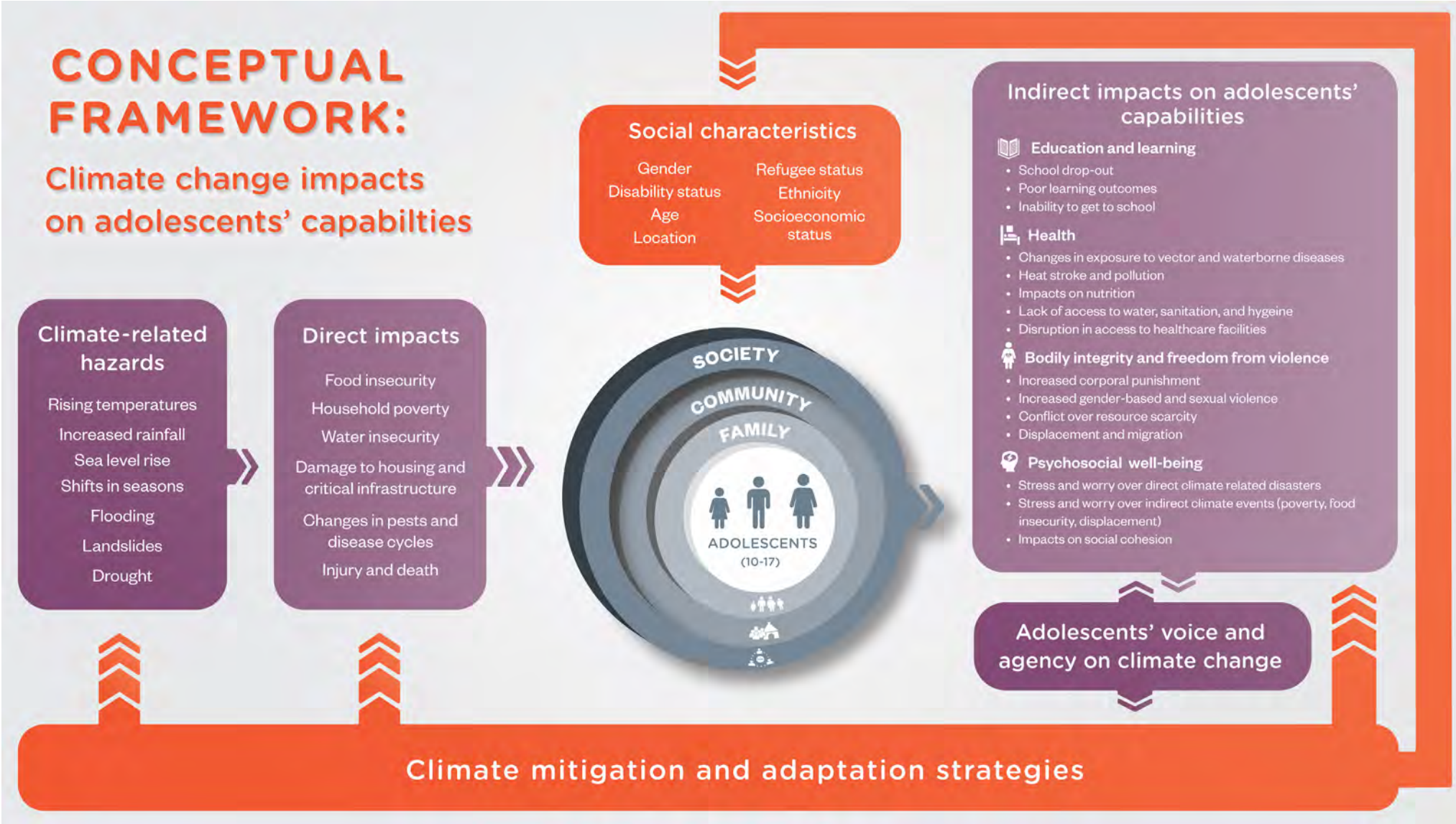
In order to explore these questions about climate change and their effects on adolescent capabilities, we draw on qualitative research findings from the Gender and Adolescence: Global Evidence (GAGE) longitudinal study in Jordan, Ethiopia and Bangladesh exploring the impact of climate change and climate variability on adolescents' lives. The report draws on qualitative interviews with 788 adolescent boys and girls (260 in Bangladesh, 278 in Ethiopia and 250 in Jordan) aged 10–20 years along with their caregivers, community members and key informants. Respondents in Ethiopia are from three rural areas – South Gondar (Amhara), East Hararghe (Oromia) and Zone 5 (Afar) – as well as three urban areas (Batu in East Shewa (Oromia), Debre Tabor in South Gondar (Amhara), and Dire Dawa City Administration). In Jordan, the research sample includes Jordanians and Syrian refugees living in host communities, and Palestinian and Syrian refugees in UN refugee camps. In Bangladesh, research participants are drawn from Rohingya refugees and Bangladeshi communities from Chittagong Division and Dhaka City.

Findings

Our findings indicate that adolescent boys and girls are directly and indirectly impacted by climate change and climate variability. Furthermore, climate-related impacts intersect with existing social characteristics such as

Adolescent girl fetching water in Amhara © Nathalie Bertrams / GAGE 2020

Figure 2: Conceptual framework: Climate change impacts on adolescents' capabilities



gender, age, location, refugee status and disability, leaving the most vulnerable adolescents more at risk of – and less able to adapt to – the adverse impacts of climate change.

Direct impacts of climate change on adolescent capabilities

Drought, livelihoods and food insecurity

The economic impacts of climate change are generally more severe where communities have high reliance on rainfed agriculture, and are therefore more vulnerable in times of climate shocks such as drought or floods. Ethiopia has one of the highest rates of drought and its economy largely relies on agriculture, contributing nearly half of national gross domestic product (GDP) (United States Agency for International Development (USAID), 2016). As a result of this, GAGE's baseline findings (conducted in 2017 and 2018) highlight major challenges in terms of crop production during times of drought, which has implications for poverty dynamics. As described by a participant in a focus group discussion (FGD) with community members in South Gondar (in Ethiopia's Amhara region): *'There is a shortage of rain... We have lost our cattle. We became poor because of the drought... The shortage of the rain is getting worse from time to time as a result we are not able to produce good crops like sorghum, beans pea and teff. So we are in a problem.'*

These climate-related impacts in turn exacerbate the vulnerabilities of adolescents at risk of food insecurity due to poor crop production, contributing to malnutrition and hunger especially in lowland regions of Afar and Oromia in Ethiopia, where communities are heavily reliant on agriculture (see Figure 3). As the grandmother of an adolescent girl in East Hararghe commented: *'They are not eating properly, since there is a shortage of food. There are children that die because of lack of food... Still some children get thin and die because of malnutrition.*

> There is a shortage of rain... We have lost our cattle. We became poor because of the drought... The shortage of the rain is getting worse from time to time
>
> (Participant in a focus group discussion in South Gondar (in Ethiopia's Amhara region))

This time there is not enough rainfall.' Internally displaced adolescents in our sample were especially negatively affected by recurrent drought due to a dearth of productive assets. Additionally, poor harvests can force adolescents into precarious and poorly paid daily labour. This is particularly common in Amhara where adolescents (especially boys) are migrating in large numbers to plantation farms in Humera and Metema to cope with livelihood challenges and face poor working conditions. As a 10 year old boy from South Gondar (Amhara) explained: *'The majority of adolescents migrate to Humera and Metema....It is mainly due to drought incidents that occur in our village which often affect crop production and productivity..... They usually migrate in search of wage-earning employment. But the living situation is worse'.*

In East Hararghe (Oromia region), due to drought-induced crop failure, some families have no other choice but to turn to charcoal production as an alternative livelihood source. This produces a vicious cycle, as this results in further deforestation and environmental degradation in the area, leading to higher exposure to climate-related hazards. As a woman in a focus group discussion explained: *'We are farmers. When there is enough rainfall we get good harvest of sorghum, then we get food to eat. When there is not enough rain we sell firewood, and charcoal... We use money from the sale of charcoal to cover family expenses.'* However, awareness on this issue is increasing and there are a number of initiatives (especially in South Gondar) aiming to tackle

Figure 3: Timeline showing climate-related events in Ethiopia

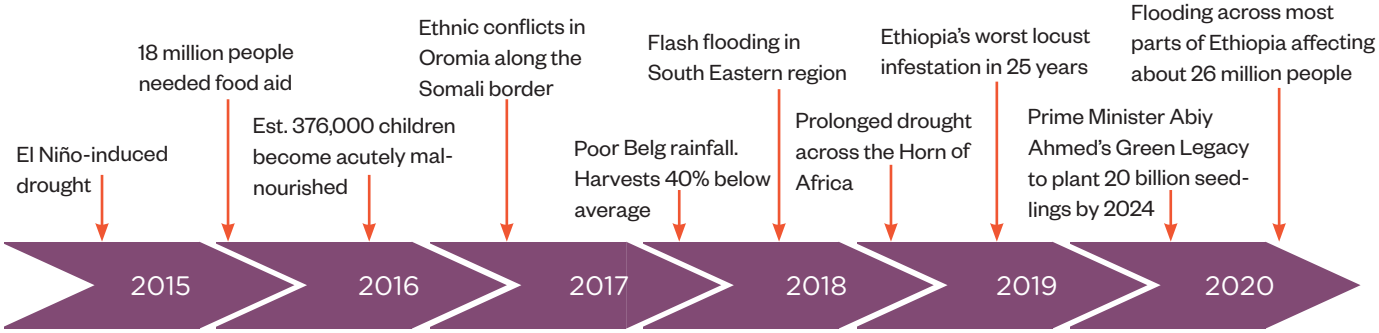
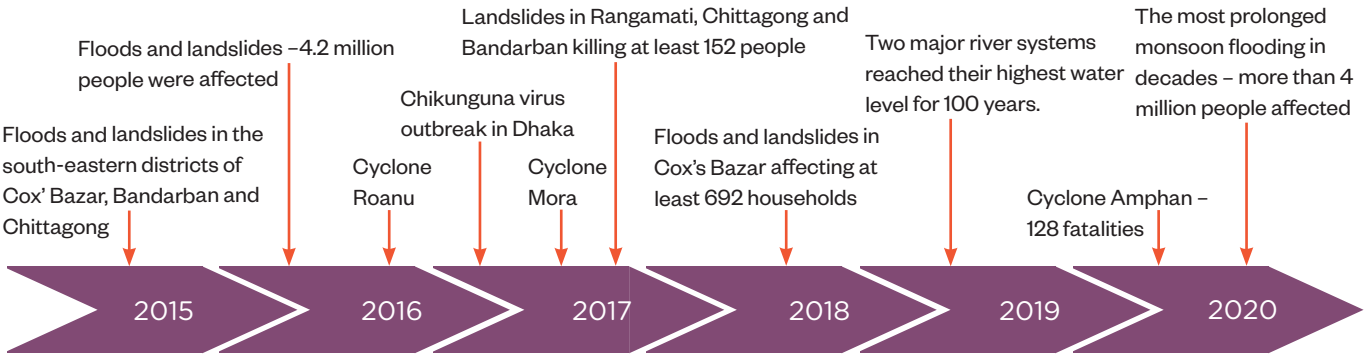


Figure 4: Timeline showing climate-related events in Bangladesh



deforestation. The ambitious 2020 Green Legacy initiative, introduced by Prime Minister Abiy Ahmed in 2019, aims to plant 20 billion trees in four years and has already seen record-breaking tree planting in both 2019 and 2020. Although this initiative was not explicitly mentioned by participants, many adolescents in our sample highlighted the importance of tackling deforestation.

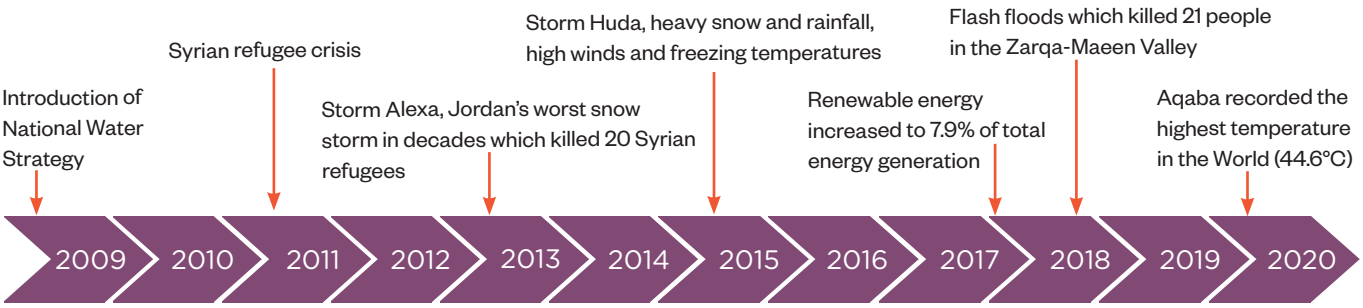
GAGE's midline findings in Ethiopia (conducted in late 2019/early 2020), however, suggest that food security and crop production appear to be improving, due to increases in rainfall in the previous year (2019). As described by a 14-year-old girl from East Hararghe: *'This year there has been good rain so we hope we will harvest better product… We are harvesting* khat[1] *better than before. We sell* khat *and we buy food until we harvest sorghum, if there is no rain we can't get* khat *and we don't eat until harvesting time.'* Nevertheless, climate change is expected to increase incidence of drought over time in Ethiopia and so its impacts on food security and poverty are estimated to worsen in the years to come (USAID, 2016).

Ethiopia's flagship public works programme, the Productive Safety Net Programme (PSNP), aims to mitigate some of the impacts of drought on food security. The fourth phase of the PSNP (2015–2020) is part of the government's response to growing climate vulnerability. As a grandmother of an adolescent boy from South Gondar described: *'The government helped the whole area; when we were affected by drought… They gave us wheat flour. Yes, everyone received wheat flour. Even the farmers received some. But we didn't receive anything afterwards.'* However, our findings suggest that in some communities the PSNP did not always reach the most vulnerable people, due to problems with targeting, reported corruption in distribution processes, and static registration lists. For example, in South Gondar, we found that the PSNP registration list had not been revised for almost a decade, and it often excluded married adolescent girls and adolescents with disabilities living alone from social assistance. Some internally displaced adolescents also highlighted problems in accessing social protection, due to the eligibility criteria which prioritised families and excluded youth. As a 20-year-old young man from Batu (Oromia region) explained: *'Yes. It was only for those who have families. During that time all the youths were here. We requested them to register and organise us. They responded that it was not our chance, and no support came for us. The vast majority of youths went away since they lost hope here.'* In Zone 5 (Afar), our findings also indicate high rates of corruption in the distribution system of the PSNP.

In Chittagong, Bangladesh, those working in agriculture have also been affected by climate-related hazards (see Figure 4). Our findings suggest that crop production has reduced in recent years. As a father of an adolescent from Chittagong explained: *'Now, there is shortage of land. Crop production is not good also.'* Our findings suggest that this could be linked to land shortages and overpopulation as a result of climate-related migration. As one participant in a focus group discussion (men only) in Chittagong explained: *'After the cyclone in 1991 our area was less populated but people started coming after the cyclone… People came from different parts of Chittagong, that's why land prices increased.'* For some, agriculture is no longer seen as a profitable form of livelihood and so they are moving to larger cities to work in salaried professions. As a key informant from Dhaka explained: *'There are not enough people working in agriculture. Because they are only getting payment after a year, or after the crop is harvested. If they come to Dhaka and pull rickshaws, then*

1 *Khat* is a plant commonly grown in the Horn of Africa, the leaves of which are chewed for a stimulant effect.

Figure 5: Timeline showing climate-related events in Jordan



they are able to earn some money within 10 minutes... So the agriculture sector is dying. It cannot be sustained.'

In Jordan, lower reliance on agriculture for sustained livelihoods can result in less severe economic impacts of weather and climate-related hazards (see Figure 5). However, (and although a lot less common than in Ethiopia), our findings highlight that some adolescent refugees working on farms in informal tented settlements are impacted by poor crop production, which can put their jobs and incomes at risk. As a 13-year-old Syrian girl highlighted: *'There is no more water and the farm became unfruitful. Cucumbers, tomatoes and peppers [were all destroyed]. Probably we will stop working... We may stay at home and not work.'*

> We are not satisfied with this service because the water only reaches the camp every five days. Also, the water does not reach the camp clean, sometimes it is contaminated...
>
> (Participant in a focus group with 15–16-year-old Syrian boys in a refugee camp in Jordan)

In addition to climate-related shocks and changing weather patterns, pest outbreaks and locust infestation can further impact livelihoods. The 2019–2020 locust outbreaks across East Africa were the worst infestations in a quarter of a century and have been linked to a hotter climate (Salih et al., 2020). According to recent reports, since the start of 2020, 200,000 hectares of cropland in Ethiopia have been destroyed by swarms of locusts, with Oromia being the worst affected area (Interchurch Organisation for Development Co-operation (ICCO), 2020). As a participant in a focus group discussion for mothers in Zone 5 (Afar) noted: *'There was [a locust outbreak], it destroyed all the crops here and it is almost a month since the locusts disappeared... The goats and sheep ate the crop that remained from the locusts and they got sick, they started having diarrhoea. Some of them died, some recovered.'*

Lack of water

Changing weather patterns can directly influence water availability, and by 2050 it is estimated that more than half of the world's population will be living in water-stressed areas (United Nations World Water Assessment Programme (WWAP) and UN-Water, 2018). Jordan is already one of the most water-constrained countries in the world, with water availability levels far below the standard water poverty threshold (USAID, 2017), and this is expected to be exacerbated by climate change. Population growth, largely due to the displacement of Syrian refugees into Jordan, has also increased pressure on water availability. Our findings indicate that many adolescents, especially in camp settings, lack access to adequate and safe water. As a participant in a focus group with 15–16-year-old Syrian boys in a refugee camp explained: *'We are not satisfied with this service because the water only reaches the camp every five days. Also, the water does not reach the camp clean, sometimes it is contaminated... A time ago there was great pollution in drinking water and there was a combination of sewage and clean water. The water was cut off from the camp for two weeks.'* Similarly, in Bangladesh, shortage of water in Cox's Bazar district (home to over 742,000 Rohingya refugees who fled conflict in Myanmar since 2017) emerged as a significant issue. A Bangladeshi women in the host community highlighted: *'Another problem is shortage of water in summer time. It became hard to clean our children; we have to bring water from far away. Now, in monsoon season it is peace.'*

The lack of water can increase the amount of time spent collecting water and, in some cases, can cause conflict or disputes at water sources, as described by a

A recently improved road © GAGE Ethiopia Participatory Research Team/GAGE 2019

Improving roading infrastructure

Mustafa and Ali are working adolescent boys, aged 17 and 18 respectively, and are taking part in the GAGE Ethiopia participatory research in East Hararghe Zone. This is a picture of the road being constructed in their *kebele*. The boys are very pleased with the new road – in part because of the opportunities that it opens for the community and in part because they know that local adolescents played a key role in advocating for its construction. They suggest that government officials continue to listen to local people, including adolescents, in order to build trust.

16-year-old adolescent with a disability from Jordan's Azraq refugee camp: *'I fill water every day. It takes me an hour… In winter, it is fine. But in summer, the place would be so crowded with people and sometimes I can't get water from the whole place so I move to another.'* The most vulnerable adolescents are often worst affected, particularly those in refugee camps, where water infrastructure is already inadequate.

Women and girls are particularly vulnerable to the impacts of water scarcity, because prevailing gender norms mean that adolescent girls are typically responsible for collecting water for the household. In Ethiopia, water shortages due to drought have caused longer queues at water sources and longer distances to travel to collect water. When collecting water becomes a more onerous task, it can take up significant proportions of the day and increase the workload, as a 15-year-old girl in Zone 5 (Afar) described: *'Females like us face different suffering when there is shortage of water in the area. It is their responsibility to go long distances early in the morning to fetch water. The workload increases for girls when there is shortage of water.'* In a community in East Hararghe (Oromia), one girl (who had married at age 12 but was now separated) noted that her father had intervened in her marriage, not out of concern about her age and her well-being, but due to concern that without any other girls in the household, they would find it challenging to manage water collection in the context of drought, claiming that the daughter's husband had effectively prematurely *'robbed'* the household of their designated *'water collector'*.

Damage to infrastructure: shelter and transportation

Due to its low-lying geography, Bangladesh is one of the most vulnerable countries to climate-related hazards, including sea-level rise, landslides, monsoons and cyclones (USAID, 2018). This was evident in our findings, particularly in Chittagong, where there are multiple examples of adolescents who have lost their homes due to these events. As a 12-year-old boy described: *'I used to have a bicycle but it was destroyed during the landslide. [My home] it was gone.'* This was echoed by a participant of a focus group discussion with men in Chittagong: *'We faced a landslide on 13 June 2017… about 117 people died in that landslide… many schools and roads were destroyed by the landslide.'*

In particular, transportation and road infrastructure are badly affected during the monsoon season due to flooding and landslides, resulting in challenges to adolescents' mobility and ability to access healthcare facilities and schools. As a 17-year-old Rohingya girl from Cox's Bazar noted: *'We can't move easily in the rainy season… We also can't go to the latrine… Old people use to get injured during moving in the rainy season… Young people also have to walk with a stick.'*

Again, we found that refugees in Cox's Bazar (Bangladesh) are disproportionately impacted by weather and climate-related hazards due to poor infrastructure. This was highlighted by a male Rohingya focus group participant: *'The year before the last year there was a disaster in the camp. There was no house. Everything*

> The year before the last year there was a disaster in the camp. There was no house. Everything was broken.'
>
> (Male Rohingya focus group participant in Bangladesh)

was broken.' Another participant added: *'Everything was flown by the extreme wind. We couldn't use the stove at the house, we couldn't cook and eat. It was raining at that time. We had suffered a lot. We lived with many difficulties.'*

Echoing this, in Jordan, refugees living in informal tented settlements and camps experience poor living conditions, which are exacerbated by large variations in temperature and rainfall. As the mother of an adolescent from Zaatari camp explained: *'In the winter, water comes down from the surface of the caravan... I cook and sleep and sit in the same caravan... There are no windows so it is very hot in the summer, we do not know to sit in the summer because it is very hot. In the winter it is very cold.'* In addition, poor infrastructure can lead to fears of safety and security. As a mother from a refugee camp in Jordan highlighted: *'She was frightened because of the tents and a huge number of people were over there. The toilets were unsafe and water was inaccessible. Even though, my daughter was young and I used to keep her inside the tent and I used to go outside to bring things. People had fears about their daughters'.*

Indirect impacts of climate change on adolescent capabilities

A number of the climate-related impacts discussed in the previous section can have further indirect implications on other aspects of adolescents' lives. Here, we discuss these impacts on some of GAGE's key capability domains: education and learning, bodily integrity and freedom from violence, psychosocial well-being and voice and agency.

Education and learning

Drought in Ethiopia can contribute to high levels of poverty, and this in turn leads to school drop due to the family's inability to afford school material or transportation, and the need for adolescents to support the family by doing household chores and/or paid work. As a key informant in East Hararghe highlighted: *'This change in climate is the major reason for students to drop out of school. Since most of the parents are poor, they cannot educate their children.'* Food insecurity can also result in adolescents, particularly in East Hararghe where there has been recurrent drought in recent years, being unable to concentrate in school, which can have adverse impacts on school performance. School feeding programmes can help mitigate this; however, some have been discontinued as they were only introduced on an emergency basis in times of severe drought and food insecurity. Further challenges to learning can stem from a lack of climate-proofed infrastructure; changes in

Adolescent boy working in Jordan © Nathalie Bertrams / GAGE 2020

> One of the problems to educate our children is that... our livelihood is attached to a nomadic life ... The climate conditions of the area have changed from the past. There is drought every year so we migrate with our animals to other areas
>
> (The mother of an adolescent girl in Zone 5 (Afar, Ethiopia))

daily temperatures caused by climate change are likely to accentuate this problem, resulting in unconducive learning environments, particularly for schools with poor infrastructure. In Bangladesh, an 11-year-old girl explained: *'Classrooms are very congested so we need to sit four persons in one bench... After the tiffin [light snack] period, I wish to take a nap, feeling sleepy... I feel headache... but especially when there is hot weather, I feel too bad.'*

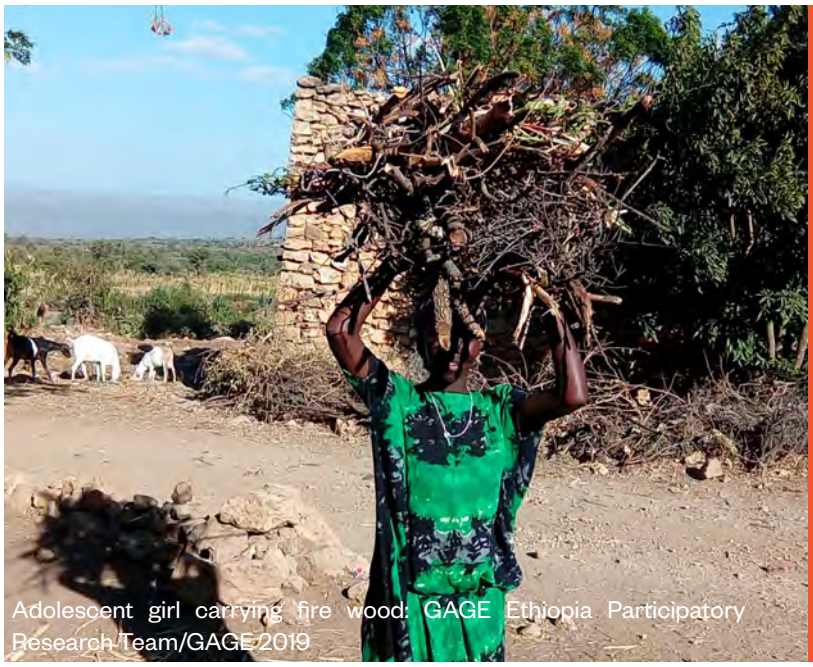
In pastoralist communities, drought also results in seasonal migration to more fertile ground, and this can have implications for adolescents' ability to attend school if it requires more distant travel. As the mother of an adolescent girl in Zone 5 (Afar) commented: *'One of the problems to educate our children is that... our livelihood is attached to a nomadic life, so we are wandering here and there to find water and pasture for the animals. The climate conditions of the area have changed from the past. There is drought every year so we migrate with our animals to other areas.'* This is also the case in East Hararghe where adolescents migrate either with their families or alone to urban areas in search of paid work during severe drought, and can result in them dropping out of school.

Conversely, in some regions of Ethiopia, the lack of viability of agriculture as a main source of livelihood due to the changing climate has, in some cases, increased aspirations (of adolescents and their parents) for adolescents to get an education. As the mother of an adolescent in Afar highlighted: *'I hope my daughter will get a good education... because we haven't enough cattle to feed our children and also we are in trouble due to lack of rain, epidemic, and also drought, so I want my daughter to get education.'*

Furthermore, water shortages due to climate change can make it difficult for some adolescents to attend school. In Jordan, our findings suggest that water scarcity in refugee camps can result in increased time spent collecting water, which can decrease the time adolescents can spend studying. As highlighted by an 18-year-old boy: *'We go back from school at 3 o'clock, the water only reaches at 4 o'clock, you go to bring water to the house [and] you do not find time to study.'* In Ethiopia, the burden of household chores disproportionately falls on girls, and during drought the long distances they have to walk to collect water can make it very difficult for them to attend school. This is a significant problem in East Hararghe and Afar where girls are often very late to school due to the time taken to collect water, which can have implications on their educational performance. As a 15-year-old girl from Zone 5 (Afar) explained: *'If there is no rainfall, we quit our education and went to... fetch water. If there is rainfall, we can fetch water in the river very near to here. It may take one hour to reach there. There is too much crowd there and we may sit for a long time to get the water.'* Also in Afar, adolescents and their caregivers reported that they are reluctant to go to school due to a lack of drinking water at the school site.

A significant problem for adolescents in many countries during the rainy season is challenges around transportation and mobility. This can also have significant implications for their education. In each of the three countries studied, adolescents and parents highlighted challenges in getting to school during the rainy season due to erosion and flooding. Some were also refused entry to school due to mud on their clothes or were punished for arriving late, which is likely to discourage adolescents further from attending during the rainy season. A 17-year-old Syrian girl from Zaatari camp recounted her sister's experience: *'My sister missed her exam because the ground was muddy and she did not make it for the exam... It is the same thing for Makani.*[2] *We do not go there when it rains... It gets slippery and you can get your clothes dirty on the way back.'* This can be particularly challenging for adolescents with disabilities who often have to rely on family members and friends to help them move around during the rainy season. As an 11-year-old Rohingya boy with a physical disability noted: *'He [the boy's uncle] guides me when I am unable to go to school. When it storms... It gets slippery... There is a lot of mud.'*

2 Makani is a UNICEF non-formal education centres in Jordan which provides refugee and Jordanian host community adolescents with learning support, life skills, child protection and psychosocial support.



Adolescent girl carrying fire wood: GAGE Ethiopia Participatory Research Team/GAGE 2019

Impacts of deforestation on girls

Zeyneba and Musliya are internally displaced adolescent girls, aged 15 and 16 years respectively, and are taking part in the GAGE Ethiopia participatory research in East Hararghe Zone. They took this picture of a girl carrying firewood on her head to demonstrate how married girls and women spend their time. The girls explained that because of deforestation and recurrent drought there are no nearby forests, and they must travel three hours – each way – to collect wood. Along the way they face snakes, hyenas and wild hogs. Unmarried girls are not allowed to travel far from home. Married girls have no choice, '*since they have their own house*'.

Health

Vector-borne diseases (such as malaria, dengue fever and Chikungunya virus) are highly sensitive to climatic changes. The relationship is complex; factors such as changes in temperature and precipitation, as well as indirect factors such as land use, irrigation practices, and population movement, can either increase suitability for vector-borne diseases or counteract them (Campbell-Lendrum et al., 2015).

In Ethiopia, historically, the cooler climate of the highland regions (which includes East Hararghe) has protected the area from high rates of malaria; however, temperature rises over recent years have meant that the climate has become more favourable for malaria (Lyon et al., 2017). In our baseline, although many participants stated that cases of malaria are reducing due to increased awareness and availability of protection methods, some community members and key informants in East Hararghe have noted increased cases of malaria in areas that were previously free of the disease, as a result of changing climatic conditions: *'After 20 years we have experienced the climate change in our village from wet to dry... and the climate changed from mid-temperate to hot. Earlier, there were no malarial diseases but now it started to be seen in our village... This year there are some five or six people who are affected by malaria from the same family.'*

In addition to malaria, new cases of Chikungunya virus were observed in our findings. Recent modelling studies have predicted that areas with climatic conditions suitable for Chikungunya in sub-Saharan Africa are projected to increase within the next 20 years, with high suitability in the Ethiopian plateau (Tjaden et al., 2017). This was highlighted by a 13-year-old adolescent girl: *'There is also an epidemic... Chikungunya... I heard it came from Tanzania. I have heard there were more than 25,000 people who got treated in a hospital.'* Furthermore, in Bangladesh, the first recorded case of Chikungunya was in 2008, and since then it has become a major health threat. In 2017, Dhaka experienced its first large-scale outbreak with more than 13,176 clinically confirmed cases from April to September (Kabir et al., 2017). A 17-year-old Bangladeshi boy from Chittagong noted: *'Recently the outbreak of Chikungunya disease has occurred in Dhaka and Chittagong.'*

Bacterial infections, such as typhoid, can also be influenced by changes to the climate. Climate variability, including increases in temperature, rainfall and river levels have been linked to increased rates of typhoid in Dhaka (Dewan et al., 2013). Supporting this, we found high self-reported rates of typhoid in the community and among adolescents in Dhaka, and in one school around half the students were reported to have had typhoid, which may have implications for their school attendance. A 12-year-old participant in a focus group discussion explained: *'This occurs more. The school that we went to, I can say that almost everyone got typhoid fever... I mean out of 120, half of them had typhoid... many failed to attend school because of typhoid fever.'*

Additional climate-related health impacts are caused by a lack of water. This is a key issue in Jordan, where there is a significant issue with water scarcity. The lack of water

A girl carrying water © GAGE Ethiopia Participatory Research Team/ GAGE 2019

Challenges of water collection

Risko and Roza are married adolescent girls, aged 16 and 17 respectively, and are taking part in the GAGE Ethiopia participatory research in East Hararghe Zone. They took this picture of an adolescent girl carrying water on her back to show the burden that girls in their drought-prone community face. Girls must wake up early every morning and travel long distances over steep and rocky roads. *'We have travel 2 hours one way every day,'* they explained. Sometimes, they added, they carry water and firewood at the same time. They suggest that the government build water taps in every community in order to free up girls' and women's time for other work.

can result in adolescents drinking dirty water, putting them at risk of water-borne disease, and it can also put some at risk of dehydration. As a 17-year-old Syrian girl from a Jordanian host community noted: *'The situation in the camp was bad, it was a camp… The camp is in a desert area, we felt ill, we suffered from dehydration because of the lack of water and the lack of food… the water was polluted.'* Another challenge facing adolescent girls in particular is that they need water for menstrual hygiene management, which is even more difficult in areas with high water scarcity. A 12-year-old Palestinian girl explained: *'My mother taught me that when I finish my menstrual period, I have to bathe or I will get sick… Whenever I woke up, I bathed… I used the whole water tank.'* In the informal tented settlements, wash facilities are extremely poor and adolescents and mothers highlight a lack of privacy and cleanliness. A 17 year old Syrian girl explained: *'In the bathrooms, I was embarrassed to show the pads so that I preferred to do it at the tent. I put all the pads together then I burn them [as] there was not trash cans there.'*

> Flooding washes all garbage into the pond. The garbage is stored in the pond. We use this pond for drinking and it causes various disease to us… Like diarrhoea, and diseases caused by germs…
>
> (Participant in a focus group discussion for 17 to 19-year-olds in East Hararghe (Ethiopia))

In Bangladesh and Ethiopia, water-borne diseases (as a result of drinking dirty water) were also highlighted as a common problem. Flooding can further escalate this by polluting water sources. This was highlighted by a participant in a focus group discussion for 17 to 19-year-olds in East Hararghe (Ethiopia): *'Flooding washes all garbage into the pond. The garbage is stored in the pond. We use this pond for drinking and it causes various disease to us… Like diarrhoea, and diseases caused by germs… Diarrhoea, kidney and lung illnesses… It also causes intestinal health problems… It causes breeding of worms in the abdomen, especially among children.'*

As with the other impacts of climate change, the most vulnerable adolescents are most at risk. In Jordan, Syrian refugees from an informal tented settlement, working in local farms, are also at risk of heatstroke, and exposure to dust and pollution due to the hot climate and poor working conditions; Aqaba in Jordan reached the highest temperature in the world in 2020 (Al Nawas, 2020), and related health impacts are only going to intensify in the coming years. As highlighted by a participant in a focus group of 15–17-year-old Syrian girls: *'We work in plastic houses… It is hot in plastic houses. The temperature would be 1,000… I now have a disease because of work… I got a heatstroke.'*

Finally, access to healthcare facilities can also be disrupted by weather and climate-related hazards. This can be particularly challenging for pregnant adolescent girls and women in Ethiopia, resulting in problems accessing healthcare facilities during labour, as noted by a participant in a focus group discussion for fathers in East

Hararghe: *'Last year two mothers died because of absence of road... The ambulance does not come... if it starts raining. The flood damages the road.'* Additionally, our Covid-19 virtual research in East Hararghe found that disruptions in access to health care- due to travel restrictions during Covid-19- have been aggravated by the heavy rains and flooding. This was especially challenging for pregnant women who were sometimes forced to give birth at home.

Conflict and migration

Migration is a common strategy employed by households to cope with climate-related hazards. In Ethiopia, climate shocks such as drought have resulted in high rates of migration, as highlighted by a health extension worker in South Gondar (Amhara region): *'Such climate change and drought incidents have been a common phenomenon. The magnitude and frequency of the impacts of such natural [hazard-related] disasters has increased in the past five years. So, these days, migration is carried out as a coping strategy by many household numbers.'* In particular, our findings indicate high rates of adolescent migration in times of drought, from Oromia region to Somali region, to find alternative work when agriculture is not seen as a viable option. In Bangladesh, climate-related hazards can also cause high migration to safe or unaffected regions, resulting in overpopulation of certain areas (as discussed earlier). As a 15-year-old girl in a focus group in Dhaka discussion explained: *'Many people here are migrants... they are victims of river erosion'.*

> Many people here are migrants... they are victims of river erosion.
>
> (15-year-old girl in a focus group in Dhaka, Bangladesh)

Pastoralists in Ethiopia's Afar region are heavily reliant on fertile ground for grazing cattle and, as such, migration to areas with land more suitable for herding is common. This has been a key cause of conflict between Amhara communities and Afar pastoralists when they migrate to each other's land. As described by a participant in a focus group discussion for 16 to 18-year-old boys: *'The Amhara never want to see us when we keep cattle near their farm. If Afar cattle may eat their crops, they will attack our cattle and camels using hatchets, and then Afars will not tolerate them, and we will conflict with them. They will kill Afars and they killed many of us and we also killed many of them... [We migrate] in search of pasture for our cattle and camels that we go to these areas. It is to save our cattle from drought that we go to these places.'*

Evidence on the links between climate change and conflict is inconclusive. Research has shown that climate-related resource scarcity is not the sole cause of violent conflict, but that climate factors interact with existing stresses (ethnic tensions, social and economic instability),

Community water collection point in Bangladesh © Nathalie Bertrams / GAGE 2020

> Land dispute is very acute in Chittagong Hill Tracts... There is a problem between Pahari (indigenous people) and Bengalis... this conflict rises day by day.
>
> (A man in a focus group discussion in Chittagong, Bangladesh)

which may increase the likelihood of violence (Peters et al., 2020). Significant ethnic violence has occurred between Somali and Oromia regions of Ethiopia in recent years, and this has caused high rates of displacement. Violence along the border in May 2018 resulted in 93,870 people internally displaced, 3,702 of which were children (United Nations Office for the Coordination of Humanitarian Affairs (OCHA), 2018). In line with reporting on the issue (Mohamed, 2018), we also found that resource scarcity may have contributed to tensions and conflict in the region. Land in Oromia is generally known to be more fertile than Somali region and has better access to water, and this has resulted in conflicts between the two regions, whose populations can clash over access to fertile land and water sources. As described by a participant in a focus group discussion for 15 to 17-year-old girls who are internally displaced: *'The Somalis may come and attack us. They come here because they lack grazing land for their cattle. That is why they claim our land and settled on it. We both are struggling over the land for ownership. We used the land for different purposes. We plough it, our cattle graze it, and we collect firewood...'*

Similarly, in Bangladesh, the migration of Bengali people to the Chittagong Hill Tracts since the 1970s has been a significant factor in the long-standing conflict in this region. A recent report has found that climatic shocks such as floods, cyclones and erosion were key factors driving the Bengali settlers' decision to migrate (Islam et al., 2020). As a man in a focus group discussion in Chittagong explained, conflicts can occur due to long-lasting land disputes in the region: *'Land dispute is very acute in Chittagong Hill Tracts... There is a problem between Pahari (indigenous people) and Bengalis is that has been going on since before independence. But this conflict rises day by day'.* Another participant added: *'The government formed a judiciary board to mitigate the land dispute of Chittagong Hill Tracts. But it has no effectiveness. Unlawful acquisition of land is very common. Despite the fact that the indigenous people have been living here since ancient times, they didn't get legal levels. So they have been opposing the Land Dispute Resolution Commission.'*

Finally, water scarcity may also negatively impact social cohesion between host and refugee communities. Our findings provide some evidence that in Jordan tensions between Jordanians and Syrian refugees may be exacerbated by the scarcity of water, as described by a participant in a focus group discussion with Jordanians: *'Syrians waste a lot of water...we got the water twice a week on Tuesday and Friday. However, you see Syrians who live next to us refill water on Monday. While if you look, I have a family of 5 persons but they are only 3 people. They do it daily not weekly. They consume our resources'.*

Adolescent girl in an ITS in Jordan © Nathalie Bertrams / GAGE 2020

A pond used for people and cattle © GAGE Ethiopia Participatory Research Team/GAGE 2019

Recurrent drought and water contamination due to over-use

Abdi and Ahmed are adolescent boys, aged 17 and 18 respectively, and are taking part in the GAGE Ethiopia participatory research in East Hararghe Zone. They took this picture of a muddy pond to highlight the critical shortage of safe drinking water in their community. They explained that because the only accessible water tap is hours away and there is recurrent drought, during the rainy season the community constructs small ponds which are used to catch and store water for both humans and livestock. The water is not clean and many people are continuously ill. They suggest that the government follow through on its stated objective of bringing potable water to the community.

Violence

Climate-related hazards can also put adolescents at increased risk of violence. Our findings indicate that the increased time and distance it takes adolescents to do their daily chores, particularly in situations of resource scarcity, can have implications for their experiences of violence. In Ethiopia, adolescents (mainly girls) described being beaten by their parents when refusing to collect water due to the long distances to travel. As a 12-year-old girl in a focus group from East Hararghe (Oromia) explained: *'Yes, she [mother] has beaten me. I refused her to fetch water because it is far from our area.'* Married adolescent girls can also be at risk of domestic violence from their husbands if they take too long collecting water. As a 17-year-old married girl from (Zone 5) Afar region commented: *'My husband beats me regularly. Even my father never beats me like him... I may go to the river to fetch water. When I am a bit late, he feels upset as if I am late due to another reason. Then he beats me seriously. He could beat me with a stick, leg, hand or using any other thing available to him.'*

Furthermore, while on their way to collect water in remote regions, adolescents are at risk of harassment or sexual violence from adolescent boys and men. Multiple adolescents raised fears of experiencing sexual abuse while travelling to get water and firewood. As a girl from South Gondar (Amhara region) explained: *'Let me tell you, there was this boy whom everyone used to be afraid of. Before we had tap water we used to go to the river to fetch water and when girls went to the river, the boy approached them and attacked one of the girls. Since it was far in the woods, no one could help them. People say he raped her but the girl said he didn't.'* During long dry seasons (which result in a shortage of pasture for livestock), parents force their children to find pastures in areas that are far away, placing young people at increased risk of violence stemming from clan or community tensions, and/or attack from wild animals.

In both Jordan and Ethiopia, the lack of water can cause tensions at water sources and put adolescents at risk of violence while trying to collect water. As an 11-year-old Syrian girl from a refugee camp commented: *'We do nothing to them but they attack us. The other day, it was our turn to use the water... their turn was the day after. They came here and attacked us.'* This can sometimes result in more extreme violence, particularly against girls and women in Ethiopia who are targeted by older male youth. A 17-year-old adolescent boy in a focus group discussion explained: *'A lot of women have been hurt at the water point... People are fighting over the existing scarce water resource because of the shortage... People have been attacking each other when fetching from the water source. Pregnant women have been hit in the abdomen... There are a lot of women who have been taken to health facilities as a result of injury to their pregnancy.'*

At a more macro level, as mentioned above, our findings show that adolescents are being affected by conflict that has, its roots in tensions over access to land and resources that are becoming more precarious due to climate change. This is the case with adolescents from internally displaced

communities in our study sites in East Hararghe in Ethiopia, who were forced to flee intense and widespread violence in Somali region due to tensions over land use and grazing rights in the context of drought in 2017 and 2018.

Psychosocial impacts

There has been increasing attention to the psychological impacts of climate change, and studies suggest that climate change has both direct and indirect impacts on adolescents' mental and emotional health. Studies have shown that adolescents face an increase in anxiety disorders, depression and post-traumatic stress disorder (PTSD) after a climate-related disasters (Burke et al., 2018). Climate change also exacerbates existing economic and social issues, such as poverty, malnutrition and forced migration (Cianconi et al., 2020). In Ethiopia, the strongest psychosocial effects of the changing climate were found among adolescents in Afar region due to their strong reliance on the climate for their households' livelihoods. A high number of adolescents in the sample were worried about the impacts of drought on their future livelihoods, which in some cases had severe impacts on their current psychosocial well-being. A 12-year-old boy described the significant stress and fear he felt due to the implications of drought: *'I was worried about the animals that were dying. Then I was worried that we might not have anything to eat, when many animals were dying and I was crying on the roads while walking. I was too much worried about the future, if all our animals were going to die.'* Some adolescents were also worried about the wider implications of droughts, such as having to drop out of school. As a 14-year-old boy from (Zone 5) Afar explained: *'The first thing that I fear for my future is lack of rain and drought in our locality. Because if there is no rain here, drought will occur, and then we will migrate to another locality looking for good pasture and water for our animals, and then we will drop out of school, since we can't get to school in the place where we migrate to.'*

> I fear when forests have reduced and drought has increased. I worry when vegetation has cleared and the number of human beings increases. Moreover, I worry when industries expand and vegetation is deforested in the area. Then this causes air pollution and ozone layer depletion. So, I fear this in the future.
>
> (An 11-year-old boy from Debre Tabor (Amhara region in Ethiopia))

In general, relatively few adolescents in our sample expressed explicit fears about climate change. However, a few adolescents in urban areas had more detailed understandings of climate change and this could result in anxiety over the future of the planet. As an 11-year-old boy from Debre Tabor (Amhara region) described: *'I fear when forests have reduced and drought has increased. I worry when vegetation has cleared and the number of human beings increases. Moreover, I worry when industries expand and vegetation is deforested in the area. Then this causes air pollution and ozone layer depletion. So, I fear this in the future.'*

In Bangladesh, adolescents are more directly impacted by weather and climate-related hazards such as monsoons, landslides and flooding in their day-to-day lives. The impact of these extreme weather events can take a psychosocial toll on some adolescents. As a 10-year-old girl from Dhaka commented: *'It was raining... We got afraid too much. Then in the morning we came back to our home... it was thundering and raining... everyone got wet at that time... Many people died that day... It was a scary matter.'*

Similar to Ethiopia, some adolescents in Bangladesh experienced stress and anxiety over the possible impacts of future climate events on their economic status and livelihoods, particularly boys who are, in many societies, responsible for providing for the household, as highlighted by a 15-year-old Rohingya boy from Cox's Bazar: *'If suddenly my home gets damaged then I have to bring bamboo to repair it. If it's raining and the rain gets inside the home and we get a lot of trouble I have to buy some materials for repairing... I have to earn money to manage that money.'* Unsurprisingly, those who have experienced previous disasters were more likely to worry about the future, as highlighted by a 12-year-old boy from Chittagong: *'We were there, after the landslide we stayed at my aunt's place, then we came here... I'm worried about the rainy season... because the landslide happened in the rainy season.'*

In Jordan, however, we found limited evidence of psychosocial impacts from climate-related disasters, most likely because adolescents in host communities are less directly impacted by the climate in their daily

Flood victim in Bangladesh, 2019 © UN Women/Mohammad Rakibul Hasan

lives, unlike pastoralists in the Afar region of Ethiopia, who are heavily reliant on agriculture, or adolescents in Bangladesh who have experienced floods and landslides. An important exception is the Syrian refugee adolescents in our sample living in informal tented settlements whose families often migrate seasonally in search of agricultural work and whose livelihoods are vulnerable to climate-related hazards. A number of adolescents talked about the stress they face when they do not know if they and their families will be able to secure sufficient agricultural work to cover the household's basic expenses in the event of a climate shock. Poor housing infrastructure can also leave adolescents vulnerable during severe weather events, and this can have additional psychosocial impacts, as a 11-year-old girl noted: *'When the storm comes, the tent may be damaged and everything falls to the ground and I feel afraid of that. When the storm comes, we pray to God to keep the tent safe and say Oh. God!'*

Voice and agency

Our findings presented above highlight that adolescents- particularly girls, adolescents with disabilities and refugees- are often more vulnerable to the effects of climate variability, however, with support that nurtures their capacities they can build resilience to climate-related hazards. Throughout this report we have included images from GAGE's participatory photography exercises in Ethiopia, where adolescents have put forward suggestions to governments on a number of issues, including those related to the impacts of climate change (see 'Improving roading infrastructure' above). Adolescents are increasingly vocal and visible agents of change within climate change action and can bring new ways of thinking, as well as highlighting child-specific problems in the community (Pereznieto et al., 2020). Each of the three study countries has a gender-specific climate change policy, which pays close attention to the inclusion of gender-sensitive goals. However, there is more limited attention to the specific challenges facing young people in these same policies and in particular a lack of recognition of the importance of including youth voices in adaptation strategies (see Table 2). In Ethiopia, our findings highlight some youth involvement in environmental protection schemes. Environmental conservation schemes have been introduced to combat deforestation and erosion in some areas and some adolescents have contributed to this. As a *kebele* (neighbourhood) chairperson explained: *'The areas were highly vulnerable for erosion. Then we gave the area to the youth to plant trees and get benefits. Accordingly, now it is covered with forest, which generates more income for the youth. It has two advantages: protects the areas from erosion and used as a source of income for the youth.'* Furthermore, some adolescent boys are acutely aware of the impacts of deforestation and

environmental degradation (in some cases this knowledge is learnt at school or through other community members) and are strong advocates for reducing deforestation in their communities, as a 17-year-old *Qeerroo*[3] from East Hararghe explained: *'The people have been clearing forest for expanding their farmland... This has reduced the forest coverage [and] will lead to soil erosion. This plight will lead us to lose clean air. This is causing the significant rise of carbon dioxide... The government should understand the problem clearly and stop it from further plight. The people may clear the forest because of shortage of farmland. They may also cut trees to build houses. These people should be made to plant trees in place of the trees they cut. They should be provided with the seedlings to be planted.'* In general, adolescents tend to favour education and community awareness rather than punishments such as fines, as highlighted by a participant in a focus group discussion for 15 to 17-year-old boys: *'In my view, instead of penalising, it is better to enhance community awareness about the impact of deforestation.'*

Although our findings highlight that girls are especially vulnerable to the impacts of climate change, their voices on this issue are largely silent in the community. We found a significant lack of girls in our sample who were outspoken about these issues. Girls can also be excluded from decision-making platforms where climate issues may be discussed. In Afar (Ethiopia), climate-related hazards such as drought are discussed in '*dagu*', a traditional form of information sharing and decision-making. As a participant in a focus group for 15 to 16-year-old boys explained: *'We will also solve our problems of drought through* dagu. *Because in* dagu *we will also talk with people about rain, migration, drought, pasture, and we will ask the place where there is rain and good pasture, then after we get the information we will migrate with our cattle, so it is very important for us.'*

However, although girls also are involved in *dagu,* the information shared usually focuses on family issues rather than wider societal issues such as drought and migration. As a participant in a focus group discussion for 15 to 18-year-old boys noted: *'Yes, they make* dagu. *However, they never make* dagu *in detail like elders. They only share information about themselves, and also about other girls and boys, weddings and the like. They never talk about big social issues, like drought, migration, conflict with other peoples and the like... Boys make* dagu *in detail on societal issues, but girls do not. Because we are males and they are females.'*

> I joined the Environmental Committee [at school]. We also implemented the Saving Power project. We asked the school principal to bring workers to install a solar power system for the school. The school went green...
>
> (An 18-year-old Jordanian girl from Mafraq)

In Jordan, some adolescents are also involved in environmental protection initiatives. In non-formal education programmes such as UNICEF's Makani, some adolescents have been encouraged to think about solutions to environmental problems in their community. As an 11-year-old Syrian girl from Zaatari camp explained: *'They taught us how to deal with problems, problems in the street, or environmental problems. Also, we participated in awareness-raising campaigns, wrote people's problems, and suggested solutions. For example, we warned families of the risks and diseases of the trash next to trash containers.'*

Some adolescents were also involved in environmental initiatives in school. For example, an 18-year-old Jordanian girl from Mafraq explained: *'I joined the Environmental Committee [at school]. We also implemented the Saving Power project. We asked the school principal to bring workers to install a solar power system for the school. The school went green... Saving power. Now the school has pays nothing in electricity bills. We learned a lot. We learned how to recycle things instead of throwing them away.'* However, this level of knowledge and involvement in climate-related issues was generally rare in our findings.

We have highlighted some examples of promising practices of engaging youth in climate action at the local level. However, as we highlight in the conclusions, more needs to be done to ensure the active participation of youth, including the most left behind, at all levels including engaging them as key stakeholders when designing policy and programming (UNCRR, 2020) (see Table 2).

3 Organised groups of adolescent boys and young men who have formed in many parts of the Oromia region in response to political tensions prevailing in the country.

Table 2: National environmental policies and the extent to which they reflect gender- and adolescent/youth-responsive considerations

Country	Environment policy	Examples of action with a gender or youth focus	Gender-responsive considerations	Adolescent/ youth-responsive considerations
Jordan	The National Climate Change Policy of the Hashemite Kingdom of Jordan, 2013–2020 (MoEnv, 2020).	**Agriculture, food security/production, desertification, and land-use planning** 'Identify and strengthen the community based approach to adaptation accounting for gender issues' (p. 27) **Education** 'Start systematically integrating in particular climate change aspects with emphasis on provisions of this Policy into different grade levels of schools and other relevant components of the academic framework' (p.43) 'Re-evaluate the curricula aiming at better educating and raising awareness of the students on climate change issues with emphasis on special departments teaching environmental sciences and management and issues related to climate change' (p.43) **Research** 'To support development of local and community-level knowledge (including indigenous and traditional knowledge) on adaptation to climate variability to enhance gender specific adaptive capacity for future climate change' **Gender and vulnerability** 'Build capacity at all levels to design and implement gender responsive climate change policies, strategies and programs' (p.46) 'Ensure that financing mechanisms on mitigation and adaptation address the needs and conditions for implementation of poor women and men equally' (p.46) 'Develop, compile, and share practical tools, information, and methodologies to facilitate the integration of gender into policy and programming' (p.46)	Includes a section on vulnerable groups and gender mainstreaming. Attention to gender in other sections of the policy are lacking; only mentioned in agriculture and research sections. Priorities and measures are generally broad and unspecific.	Highlights youth as a vulnerable group but lacks age-sensitive priorities. However, it includes a section on education with priorities and measures on improving education on climate change in schools.
	Jordan's Climate Change Gender Action Plan (ccGAP) 2010 Programme for Mainstreaming gender in climate change efforts in Jordan (MoE et al., 2010).	**Water** 'To enhance the capacity of women and men from local communities to save water' (p.15) **Energy** 'To ensure women and men involvement in decision-making process related to climate change at local government level' (p.22) **Agriculture and food security** 'To increase women participation in adaptation projects/ programs related to agriculture' (p.26) **Waste reduction and management** 'To raise awareness and build capacity in schools, community centres and places of worship such as mosques and churches' (p.32)	Contains detailed and clear objectives, actionable steps and key indicators for monitoring progress such as gender-disaggregated data.	Includes limited attention to children, adolescents and youth. However, includes objectives on awareness raising in schools and for children in waste reduction.

Jordan	Green Growth National Action Plan 2021–2025, July 2020, Jordan (MoEnv, 2020)	**Agriculture** 'Improve the skills and capacity of farmers, rural communities, youth and women to undertake sustainable agriculture' (p.18) 'Reduce the impact of environmental and economic shocks on the most vulnerable members of society (particularly farmers, women, youth, and rural communities)' (p.18) **Innovation** 'Develop recommendations for TVET and education sectors on reforms needed in training and education curricula to support research to impact pathways (p.33) **Social Development and Poverty Reduction** 'Increase awareness and exposure to sustainable agriculture practices, particularly among youth (p.34)	Highlights women as a vulnerable group however it lacks clear actionable gender-sensitive policies with the exception of agriculture.	Highlights youth as a vulnerable group however it lacks clear actionable age- sensitive policies with the exception of agriculture and innovation within the education sector.
	Hashemite Kingdom of Jordan Intended Nationally Determined Contribution (INDC) (2015).	**Post-2020 action** 'Integrating gender considerations and the interest of vulnerable group in climate change policies and strategies in all relevant sectors particularly in national strategies for social development, poverty eradication, childhood and early childhood development in Jordan and develop, compile, and share practical tools, information, and methodologies to facilitate the integration of gender into policy and programming' (p.17) 'Ensuring that financing mechanisms on mitigation and adaptation address the needs and conditions for implementation of poor women and men equally' (p.17) Building capacity at all levels to design and implement gender-responsive climate change policies, strategies and programs (p.17). 'Ensuring that sector ministries will adopt the Action Plans suggested by the Program for Mainstreaming Gender in Climate Change Efforts in Jordan, the action plans specified the objectives, the actions and the indicators required. MoEnv and NCCC to monitor and encourage the implementation' (p.17) 'Aligning Jordan's INDC to the Sustainable Development Goals (SDGs) agreed by the international community in August 2015 which will cover all development goals until 2030. Special attention will be put on linking the mitigation and adaptation measures specified in the INDC and beyond to SDGs from 1-5 which focus on addressing challenges of poverty, education, health, gender equality and other socioeconomic conditions' (p.17)	Women are highlighted as a vulnerable group and attention to gender is paid in many of the post-2020 action points. For detailed action points the policy refers to Jordan's 'Program for Mainstreaming Gender in Climate Change Efforts' (described above).	Children are highlighted as a vulnerable group but are not mentioned in any of the post-2020 action points.

Ethiopia	Ethiopia's Climate Resilient Green Economy, National Adaptation Plan, 2019 (Federal Democratic Republic of Ethiopia, 2019)	**Social protection and livelihood options** 'This adaptation option will give special emphasis to women, children and impoverished communities by putting in place safety net schemes, supporting asset creation, improving access to credit, promoting livelihood diversification and arranging voluntary resettlement/ migration' (p. 27)	Gender-sensitivity is a key guiding principle of the policy and gender-disaggregated data will be collected at all levels. However, attention to gender is only highlighted in 1/18 major adaption options: social protection and livelihoods.	Attention to age is only highlighted in 1/18 major adaption options: social protection and livelihoods.
	Integrating Gender Considerations in Ethiopia's National Adaptation Plan (NAP-ETH) Process Analysis and recommendations, 2019 (MoEnv, 2019)	**Recommendations for adaptation options** 'Address attitudes, social norms and personal security issues that exacerbate vulnerability to climate change' (p.13). 'Address imbalances in access to information and knowledge for adaptation'. (including collection gender-disaggregated data) (p.14) 'Promote equitable access to and control over the natural resources needed for adaptation'. (p.15) 'Enable sustainable and resilient livelihoods for women and men' (p.17) 'Address gender considerations in governance systems and structures' (p.18) 'Engage in gender-responsive technology promotion' (p.19) 'Value and utilize diverse knowledge held by women and men in identifying and implementing adaptation actions'. (p.20) **Recommendations for strategic priorities** 'Ensure participation of gender actors in NAP-ETH institutional arrangements and stakeholder engagement processes' (p.22) 'Increase the capacity of institutions involved in the NAP process to integrate gender considerations' (p.22) 'Institutionalise gender-responsive resource allocation' (p.23) 'Invest in adaptation research and development to facilitate gender-responsive adaptation' (p.23) 'Integrate gender issues in the monitoring and evaluation system for the NAP process' (p.23)	Includes detailed recommendations for gender-specific adaptation options and strategic priorities including addressing social norms, participation of women, equal livelihoods.	Lack of attention to children, adolescents or youth.
	Intended Nationally Determined Contribution (INDC) of the Federal Democratic Republic of Ethiopia	**Long-term goals** 'Ethiopia's response to climate change aims to integrate actions that improve the status of women and the welfare of children' (p.4).	Includes a general statement on improving the status of women but lacks detailed objectives	Includes a general statement on improving the welfare of children but lacks detailed objectives

Bangladesh	Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009 (MoEF, 2009)	**Food security, social protection and health** 'Increase the resilience of vulnerable groups, including women and children, through development of community level adaptation, livelihood diversification, better access to basic services and social protection (e.g., safety nets, insurance) and scaling up'. (p.27) **Capacity building and institutional strengthening** 'Mainstream climate change in national, sectorial and special development planning...and ensure the impacts on vulnerable groups and women are prioritised in plans' (p.29) **Other** 'Comprehensive of the impact of climate change on women and gender relations and the development of recommendations to address these in all actions' (p.41) 'Development of criteria and approach for inclusion of gender considerations in all climate response activities' (p.74) 'Build the capacity of the gender focal point in all ministries and agencies to incorporate gender issues in all climate response activities' (p.74)	Lack of attention to gender. Includes some attention to gender within food security, social protection and health. It calls for comprehensive research on women and the inclusion on specific recommendations in the action plan.	Lack of attention to children, adolescents and youth. Highlights children as a vulnerable group.
	Bangladesh climate change and gender action plan 2013 (MoEF, 2013)	**Food security social protection and health** Ensure women's access to land tenure ship/ leasing for cultivation (p.41) Enhance women knowledge and access to financial instruments (p.41) Introduce innovative agriculture and aquaculture technologies for female farmers and entrepreneurs (p.42) Ensure women's involvement in efficient water management (p.44) **Comprehensive Disaster Management** Ensure participation of women in community risk assessment (CRA) vulnerability and capacity assessment activities. (p.55) Develop adequate communication facilities to ensure movement of women to reach safe places (cyclone shelters, flood shelters, killahs, & others). (p.55) **Infrastructure** Transform the infrastructure sectors in Bangladesh to be more gender inclusive and equitable (p.65) Increase women's participation in climate change related infrastructure development (planning, designing, construction and maintenance (p.65). **Mitigation and low carbon development** Ensure that gender considerations are address in the process of reviewing energy and technology policies. (p.78).	Contains detailed and clear objectives and actionable steps and key indicators for monitoring progress such as gender-disaggregated data.	Lack of attention paid to children, adolescents or youth. Children and adolescents are included in some indicators (social security and protection)
	Bangladesh's Intended Nationally Determined (INDC) Contributions (2015)		No mention of women/ gender	No mention of children/adolescents/ youth

Conclusions and policy implications

This report has highlighted the age- and gender-specific characteristics which influence adolescents' vulnerabilities and capacities to manage climate-related shocks and stresses, and has outlined the multiple direct and indirect pathways through which climate change can impact adolescents' wellbeing and development outcomes. Although the Paris Agreement highlights that funding for adaptation and mitigation policies should have an equal balance, currently there is a large gap in financing with only 25% of funding provided to developing countries going towards adaptation (UNFCCC, 2016). Our findings have highlighted the pressing need to prioritise adaptation strategies in global financing and thus we conclude by reflecting on some policy implications that stem from our findings.

- **Ensure that children's and young people's unique perspectives and experiences inform climate change adaptation strategies.** Children and youth (particularly girls) are disproportionately impacted by climate change, and their voices and experiences can be vital in ensuring that adaptation strategies are age- and gender-responsive. Adolescents' active participation at all levels should be promoted, with special attention paid to increasing adolescent girls' participation in community decision-making on climate change. Formal and non-formal education is also important in increasing adolescents' awareness of climate-related hazards, so that they can take action to reduce their vulnerability and build their capacity to cope with these events, as well as to support their voice and agency within their communities.
- **Scale up access to age- and gender-responsive social protection to support adolescents and their caregivers who are vulnerable to climate-related shocks.** From a design perspective, Ethiopia's PSNP provides a good example of climate-responsive[4] social protection. However, in practice, some of the most vulnerable adolescents, including migrants and married adolescents, are often excluded from its benefits. Social protection programmes should ensure that the poorest are effectively targeted, and that they are designed so as to be able to respond quickly to climate shocks and can be tied to school attendance and nutrition programmes.
- **Adapt schools and education services to climate-related challenges.** Changes in the climate can have a number of impacts on adolescents' access to education and their academic performance. In order to mitigate some of the challenges regarding transportation to school during the rainy season, safe and affordable transportation and improved roading infrastructure should be prioritised. Additionally, for livelihood-related challenges school policies should be adapted to allow for flexibility in the school year and provide mobile schooling for pastoralists. School infrastructure should also be strengthened to allow appropriate protection against climate extremes and be adequately supplied with drinking water. There should also be investments in school-feeding programmes in times of drought.
- **Strengthen health and WASH facilities to respond to changing disease patterns induced by climate change.** Provide community awareness on protection methods against vector-borne (and water-borne) diseases, including malaria, targeting areas that were previously free of such diseases and are likely to see an increase due to climate-related factors. Ensure that in efforts to tackle water scarcity, the most vulnerable (such as refugees in Jordan) are not left behind and in particular ensure appropriate wash infrastructure during menstruation. Increase access to healthcare-including child and maternal health interventions-during climate-related hazards for example using motorcycle ambulances to access remote areas.
- **Address climate stressors in order to mitigate an important driver of intra-household and community-level violence.** Our findings indicate that climate stressors can increase the risk of age- and gender-based violence, both in the household and within the community. There is a need to address

4 The fourth phase of Ethiopia's PSNP is part of the response to increasingly unpredictable weather patterns in Ethiopia which are likely to bring challenges to traditional low-input crop and livestock-base livelihoods. Both the core multi-year transfers and the annual contingency budget (for response to food insecurity as a result of drought) aim to support households in the face of changing climatic variability.

the root causes of these drivers, such as adverse gender norms, while taking into account the impact that climate-related hazards will have on experiences of violence. Climate adaptation strategies should be mindful of existing conflict over resources or land and not exacerbate these tensions – for example, through favouring one ethnic group, religion or nationality.

- **Ensure that psychosocial services are adapted to climate realities.** There is growing evidence that climate change can contribute to challenges to adolescents' mental and emotional health. Psychosocial services can be important in allowing adolescents to cope with the current climate crisis and its implications for food security, conflict, access to systems and services which will support adolescent wellbeing, including education and healthcare. In order to provide appropriate support to adolescents, these services need to take into account the wider immediate and longer-term socio-ecological factors that impact adolescents' mental and emotional health. Climate events may also disrupt adolescents' access to psychosocial services and so appropriate measures should be taken to ensure that these services reach the most vulnerable and that there is continuity of these services after a disaster.
- **Invest in data and evidence on the risks of climate change for children and adolescents.** Data on the impact of climate change should be strengthened with a focus on improved use of data disaggregated by sex, age and other socio-economic factors to understand different people's needs and vulnerabilities, pre- and post-disasters. As the impacts of climate change begin to be more pronounced in local communities, up-to-date data is required to appropriately adapt to climate shocks, particularly for psychosocial well-being, an area in which research is still in its infancy. Additionally, collection of longitudinal data is also important to understand the impacts of disasters across the course of adolescence and beyond.

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About GAGE

Gender and Adolescence: Global Evidence (GAGE) is a nine-year longitudinal research programme generating evidence on what works to transform the lives of adolescent girls in the Global South. Visit www.gage.odi.org.uk for more information.

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