

# **The Influence of Climate Change on the Drivers of Child Marriage in Ethiopia: A Literature Review**

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**Master of Science in Public Health and Health Equity**

**KIT Institute**

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# DECLARATION

## **The Influence of Climate Change on the Drivers of Child Marriage in Ethiopia**

A thesis submitted in partial fulfillment of the requirement for the degree of Master of Science in Public Health and Health Equity

by:

Dagmawit Workagegnehu Shewandegif

Declaration:

When other people's work has been used (from either a printed source, internet or any other source), this has been carefully acknowledged and referenced in accordance with academic requirements.

The thesis titled "**The Influence of Climate Change on the Drivers of Child Marriage in Ethiopia**" is my own work

Signature:



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KIT gave me the courage to critically reflect on the health system I came from. I have learned to see that the diagnosis I once made as a doctor often pointed to deeper structural inequities and policy failures. This shift in perspective has reshaped how I define impact; not only in treating illness, but in advocating for systems that prevent it in the first place.

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And finally, above all I thank God. Without His grace, none of this would have been possible.

# ABBREVIATIONS

CRGE - Climate Resilient Green Economy  
CSA- Central Statistical Agency  
EDHS- Ethiopian Demographic and Health Survey  
GDP- Gross Domestic Product  
MOH- Ministry of Health  
NAP ETH- National Adaptation Plan of Ethiopia  
NGO- Non Governmental Organization  
OECD- Organization for Economic Cooperation and Development  
PSGR- People Serving Girls at Risk  
SRHR- Sexual and Reproductive Health and Rights  
UNFPA- United Nations Population Fund  
UNICEF- United Nations Children’s Fund  
WHO- World Health Organization  
PSNP- Productive Safety Net Programme  
LEAP- Livelihood Early Assessment & Protection drought early warning system  
HSNP- Hunger Safety Net Programme  
AGI-K Adolescent Girls Initiative –Kenya  
SWEDD- Sahel Women’s Empowerment & Demographic Dividend project  
IRC- International Rescue Committee  
DHS- Demographic and Health Survey  
SNNP-Southern Nations, Nationalities and People (Regional State)  
GAGE- Gender and Adolescent: Global Evidence Programme  
AYH –Adolescent and Youth Health  
MoWSA- Ministry of Women and Social Affairs  
DRM – Disaster Risk Management  
WASH- Water, Sanitation and Hygiene  
GBV- Gender Based Violence  
CRANK- Child Marriage Research to Action Network  
COVID-19- Coronavirus Disease 2019

## GLOSSARY OF TERMS

- **Adolescent:** “the period of life spanning between the ages 10-19”(1).
- **Agro-Pastoral System:** “those that, in addition to livestock production, involve some form of crop cultivation”(2).
- **Bride Price:** “a payment from the groom to the bride’s family at the time of marriage”(3).
- **Dowry:** “All fixed and transportable, money or benefit, which the wife gives to her husband from her own funds or from her family”(4).
- **Climate Change:** “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”(5).
- **Climate Resilience:**“ the capacity to anticipate climate risks and hazards, to absorb the impact of shocks and stresses and to reshape development pathways in the longer term”(6).
- **Intersectionality:** “recognizes that people’s lives are shaped by their identities, relationships and social factors”(7).

## **ABSTRACT**

**Background:** Ethiopia remains a global hotspot for child marriage and is among the most climate-vulnerable countries worldwide. While social and economic drivers of early marriage are well known, the intersection with climate stress remains poorly understood. Emerging evidence shows rising trends in drought and flood-affected regions of Ethiopia. This study examines how climate change is reshaping child marriage and identifies strategies to reduce climate-induced cases.

**Method:** A structured literature review was conducted using PubMed, Scopus, VU Library, and institutional repositories. Peer-reviewed and Grey sources were inductively synthesized and mapped onto the five levels of socio-ecological model. No primary data were collected.

**Findings:** Climate change intensifies existing drivers of child marriage by disrupting livelihoods, education and services, especially in fragile and climate affected regions like Afar, Somali, and Oromia. These indirect pressures are poorly captured in national data and plans. Evidence from similar contexts shows that anticipatory cash transfer; safe spaces and educational support can help blunt post-disaster marriage spikes when implemented early and tailored to local realities.

**Conclusion and Recommendations:** Climate change intensifies child marriage risk in Ethiopia by worsening poverty, food insecurity, and disrupting services, especially in drought affected, underserved regions. Despite legal protections, enforcement is weak and climate impacts on girls remain overlooked. This thesis recommends linking early warning system to social protection, embedding adolescent rights in climate programs, generating localized, disaggregated data to guide action and, safeguarding girls' education before, during, and after crises.

**Keywords:** Ethiopia; Child Marriage; Climate Change; Adolescent Girls; Vulnerability

**Word count: 10,761**

## **INTRODUCTION**

My professional journey in adolescent and youth sexual and reproductive health has shaped the motivation behind this thesis. I have worked across Ethiopia and East Africa with organizations such as Women Deliver, Deutsche Stiftung Weltbevölkerung Ethiopia, and Sidama National Regional State Health Bureau. These experiences exposed me to both grassroots level realities and policy blind spots affecting adolescents. On the ground, I have met girls whose lives were interrupted not by choice but by poverty, silence and systemic neglect.

In adolescence, the world is supposed to feel wide open, full of possibility and dreams for the future. Yet for millions of girls in Ethiopia, that future is decided for them far too soon. Instead of preparing for school, many are preparing for marriage. Their childhood is cut short. Their education ends.

This reality is at the heart of this thesis, which focuses on child marriage in Ethiopia; a persistent issue affecting millions of girls across the country. At the intersection of this challenge lies a growing, underexplored risk: climate change. While child marriage is deeply embedded in social, economic and cultural systems, climate related stressors are increasingly exacerbating the drivers of early marriage. These links remain under researched especially in Ethiopia.

I choose this topic because protecting adolescent girls is not just an academic interest; it is a central to my professional and personal mission. The impact of climate change on child marriage is still invisible in much of national and global discourse, yet it is becoming a risk multiplier in an already fragile protection system.

Through this thesis, I aim to contribute to a more action oriented understanding of the issue, one that not only documents how climate change influences child marriage but also reinforce the need for climate response that prioritizes young girls, not just crops and infrastructures.

## **1. CHAPTER ONE: BACKGROUND**

# **The Influence of Climate Change on the drivers of Child Marriage in Ethiopia: A Literature Review**

## **1.1 Context**

Climate change increasingly worsens social and economic vulnerabilities, often deepening preexisting inequalities and placing the greatest burden on those already disadvantaged(8,9). Among these, the rise in harmful coping strategies including child marriage has emerged as an urgent yet understudied issue(10).

Ethiopia, Africa's second most populous nation and one of the world's most climate vulnerable countries, offers a unique context to examine how climate variability may be reshaping the landscape of child marriage(11–13). The country's heavy reliance on rain-fed agriculture coupled with diverse climate zones and a high prevalence of child marriage, makes Ethiopia a critical case for understanding this intersection(14,15).

Despite a notable progress in health and education, millions of girls in the country still remain at risk of early marriage, a practice now exacerbated by recurrent droughts, food insecurity, and economic instability(16). Despite a growing awareness, the mechanisms by which climate change stressors reshape child marriage in Ethiopia remain insufficiently explored(8,10). This thesis seeks to explore the influence of climate change on the drivers of child marriage and investigate how climate-induced hardships may be accelerating early marriage in an already vulnerable Ethiopia community.

## **1.2 Demographic, Geographical, and Socio-Economic Context**

According to the World Bank's 2023 estimate, Ethiopia's population is 126.5 million, making it one of the most populous countries in Africa (12). It is a land locked country in the Horn of Africa, covering approximately 1.1 million square kilometers. It borders Eritrea to the North, Sudan and South Sudan to the West, Kenya to the South and Djibouti and Somalia to the

east(17). Ethiopia’s real GDP growth is estimated at 6.6% for 2025, with a projection of 7.1% in 2026(11).

Geographically, the country includes highland plateaus, mid altitude valleys and arid lowlands, each with distinct climate conditions and vulnerabilities(18). Highland regions such as Amhara, parts of Tigray, SNNPR and parts of Oromia experience temperate climates with seasonal rainfall. In contrast, lowland areas like Afar, Benshangul Gumuz, Somali, and parts of Southern Oromia have dry, arid conditions with rainfall often falling below 300 mm annually (19,20). These stark climatic disparities contribute to Ethiopia’s ranking among the most vulnerable countries in Sub-Saharan Africa(21).

Administratively, Ethiopia is divided into regions and woredas, with varying socio-economic and environmental conditions(22). An estimated 78% to 80% of the population reside in rural areas(23). Factors such as poverty, low education attainment and harmful traditional practices, including child marriage vary widely across regions.(24). The female literacy rate is 47.6% with regional disparities more pronounced in Somali (12.3%) and Afar (19.8%). (25). The national total fertility rate is 4.1 births per woman(26).

- **Population:** 126.5 million
- **Location & Area:** Land Locked in the Horn of Africa; ~1.1 million km<sup>2</sup>
- **Economy:** \$1,200 GDP per Capita
- **Physical Geography:** Highland plateaus, mid-altitude valleys and arid lowlands
- **Administrative Units:** Regional States and Chartered Cities
- **Settlement Pattern:** ~78%-80% of people live in rural area
- **Female Literacy:** 47.6%
- **Fertility:** 4.1 births per women

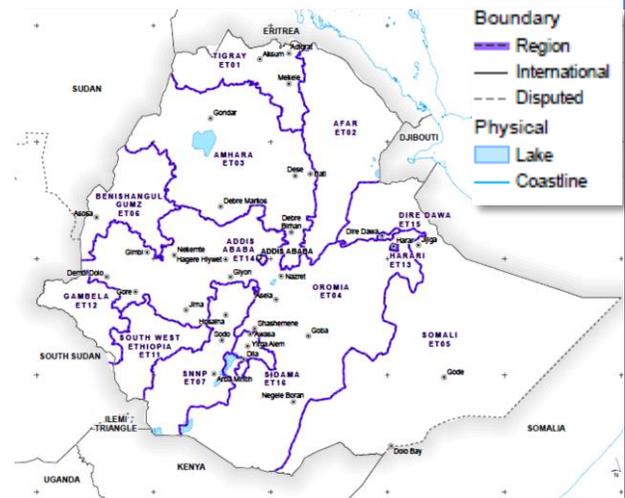


Figure 1 Administrative Regional Boundaries of Ethiopia as of April 2023 (28)

## **1.3 Health System Overview**

Ethiopia's health system operates through a three tier decentralized structure. The primary level consists of health posts, health centers and primary hospitals, forming the foundation of rural healthcare. The secondary level includes of general hospitals providing advanced services and referrals. The tertiary level consists of specialized referral hospitals(27).

Over the past decades, Ethiopia has achieved a significant improvement in the health status of the population particularly of women and children(28). Life expectancy rose from 52.1 years for female and 49.5 for male in 2000 to 69.7 for female and 66 for male in 2021(29). The maternal mortality ratio declined from 1,329 per 100,000 live births in 2000 to 195 per 100,000 in 2023(13).

Despite these gains, Ethiopia remains one of the poorest nations, with a gross national income per capita of \$1,200(12).

## **1.4 Adolescent Sexual and Reproductive Health (ASRH)**

World Health Organization defines adolescence as a stage of life between age 10 to 19 (30). It is a unique period that bridges an important transition from childhood into adulthood marked by rapid physical, emotional and psychological changes(31). Adolescents and youth make up approximately a third of Ethiopia's population, making their sexual and reproductive health a key national priority(32).

Ethiopia has made strides in advancing adolescent health through adoption of progressive policies such as The National Adolescent and Youth Health Strategy 2021-2025 and The Adolescent and Youth Health Minimum Service Delivery Package, which expanded access to youth friendly health services across the country(33,34). These initiatives contributed to the reduction in adolescent fertility rate and improvements in access to family planning, HIV prevention and maternal health services. This progress reflects a successful collaboration between government agencies, communities and development partners(33).

Nonetheless, Ethiopian adolescents continue to face major challenges(25). About 13% of girls aged 15-19 have begun childbearing; the child marriage rate is 40%, 33% of married adolescent

girls have an unmet need for family planning and adolescent fertility rate is 69.9 birth per 1000 girls aged 15-19(35,36). These issues are compounded by negative social norms and service delivery disparities particularly in rural and marginalized areas(32).

## **1.5 Child Marriage in Ethiopia**

UNICEF defines child marriage as “any formal or informal union between two individuals where one or both of them are under the age of 18”(37). In Ethiopia, 40% women aged 20-24 were married before the age of 18 and the country is home to 15 million child brides, which of these 6 million were married before age 15(38).The practice is driven by a complex mix of factors that vary widely between regions and districts, often shaped by intersecting individual, familial and community level factors(39).

Nationally, child marriage has declined from 70% in 1990 to 50% in 2015. However, progress is uneven. Localized hotspots include Jawi Woreda (Amhara), where 57% of girls aged 15-17 were married, and Jikawo Woreda(Gambella), where 43% of girls age 10-14 were married(40). Addis Ababa has the lowest rate at 8%(40,41). Afar leads with the highest rate (66.7%), followed by Benshangul Gumuz and Somali, both around 50% (41).

Early marriage contributes to maternal and child morbidity and mortality, school dropout, intimate partner violence, depression, and intergenerational poverty(42–45).Economically, child marriage is projected to cost \$4 trillion globally by 2030(46). In Ethiopia, ending child marriage could raise national income by 1.5% and increase life time GDP contribution by 15% if girls delay pregnancy until adulthood(47). The estimated economic benefit of eradicating child marriage and early child birth was \$117 million in 2015, with this figure rising to \$4.9 billion by 2030(47).

Despite legal prohibitions under the Ethiopian Federal Constitution, the Revised Family Code, and the Criminal Code (Proclamation No. 414/2004), child marriage persists due to entrenched customs and economic hardships(22,48,49). Article 35(4) of Ethiopia’s National Constitution mandates protection of women from any physical, mental or harmful practices(22). The Revised Family code sets minimum age of marriage at 18 for both boys and girls (48,49).

While the traditional drivers of child marriage are well known, emerging evidence shows that climate change worsens these underlying factors, especially in the most vulnerable areas(8,16,50). Climate change is increasingly acting as an added pressure influencing family decisions in places facing drought, hunger and economic hardship(51).

## 2. CHAPTER TWO: PROBLEM STATEMENT, JUSTIFICATION AND OBJECTIVES

### 2.1 Problem Statement

Child marriage remains deeply entrenched in Ethiopia. Over 40% of women (around 15 million) were married before 18, and 14% (around 6 million) before 15(37,52). While the national prevalence declined from 49% in 2005 to 40% in 2016, regional progress has been uneven(53,54). Addis Ababa, Amhara and Tigray have seen significant reduction, while rates in Afar, Somali, and Oromia have stagnated or even increased(54). The burden remains most severe in rural areas, where cultural norms, limited education and poverty intersect(53,55). While poverty, gender inequality and lack of education are long recognized drivers, recent evidence points to climate change as an emerging catalyst that may be intensifying these risks(56,57).

Around the world, about 640 million women and girls were married before they turn 18(58). Although global rates have declined, the pace of progress would need to accelerate twentyfold to reach the 2030 Sustainable Development Goal of ending child marriage(58). Despite national progress, recent evidence shows that child marriage rates have increased sharply in areas most affected by climate change. In drought-impacted regions of Ethiopia, the incidence of child marriage increased by over 119% in 2022 compared to the previous year, as families struggled with severe resource shortages and displacement(59). In Dassenech Woreda, Southern Ethiopia, UNICEF reported a two-fold increase in child marriages linked to drought conditions, with some girls married as young as 12 to ease financial pressures(51). Beyond environmental consequences such as rising temperature, erratic rainfall, and recurring droughts, climate change is disrupting livelihoods and displacing communities especially in rural and agro-pastoralist regions like Afar, Somali, parts of Amhara and Oromia(60,61). For adolescent girls, the fallout is particularly acute, at times leaving their families with no option but to turn to harmful coping strategies - one of these being marrying off their daughters at a young age(50,62,63).

While most studies on child marriage in Ethiopia focus on cultural and socio-economic determinants, they rarely explore climate-related dimensions(39,64–66). Similarly, climate studies tend to center on agricultural resilience or economic impacts without integrating gendered social impacts like child marriage(67). This disconnect creates a major evidence gap.

Without integrated, context specific research, national climate adaptation plans risk being gender-blind and misaligned from lived realities. Ethiopia's National Adaptation plan (NAP ETH) and the Climate Resilient Green Economy (CRGE) framework both promote gender sensitive approaches, yet they lack concrete measures to protect adolescent girls in vulnerable communities(68,69). While they emphasize equitable implementation, concrete adaptation responses focusing on safeguarding adolescent girls' rights in climate vulnerable areas are largely absent in policy documentation and implementation plans(70,71).

## **2.2 Justification**

Ethiopia's situation is particularly urgent due to its heavy reliance on rain-fed agriculture (about 85%), limited adaptive capacity, and recurrent drought; factors expected to intensify further unless a strategic intervention is put in place (44,45). In 2023, drought affected 8.1 million people, including 2.8 million in Amhara alone(12,72). Climate projections estimate a temperature increase of 1.5-3.1° by 2050, alongside rising drought frequency. By 2050, the Somali region may face up to 1.5 times greater drought risk, with northwestern areas potentially seeing the probability double by 2070, threatening both agricultural production and household water security(73–75).

Without timely evidence informed action, climate change will continue to accelerate harmful social practices such as child marriage(8,50). This not only threatens Ethiopia's commitments to the Sustainable Development Goals but also undermines the resilience of communities already facing environmental stress(76,77).

This literature review will examine how climate change, mainly drought and rainfall variability interacts with social, economic, and cultural drivers of child marriage in Ethiopia. It aims to fill evidence gap and provide context-specific, actionable recommendations for climate, gender and Sexual and Reproductive Health (SRH) actors at national and subnational levels to mitigate climate-induced child marriage in the country.

## **2.3 Study Question**

### **2.3.1 Primary Research Question:**

How does climate change influence the social, economic and cultural drivers of child marriage in Ethiopia and what evidence informed interventions can reduce climate-induced child marriages in Ethiopia?

## **2.4 Study Objectives**

### **2.4.1. General Objective:**

To examine how climate change influences the drivers of child marriage in Ethiopia, and to develop evidence-informed recommendations for climate, gender and SRH policy actors to mitigate climate-induced child marriage in the country.

### **2.4.2 Specific Objectives:**

1. To identify and analyze the key social, economic, and cultural factors that drive child marriage in Ethiopia
2. To analyze how climate change is influencing well-established drivers of child marriage in Ethiopia, including poverty, educational access, gender inequality and health service availability
3. To synthesize existing evidence from Ethiopia and comparable climate vulnerable countries on the links between climate change and child marriage.
4. To review effective interventions and best practices from other climate vulnerable contexts that could inform action in Ethiopia
5. To develop literature-based recommendations for policymakers and NGOs working across climate adaptation, SRH, and gender sectors at national and subnational levels to reduce climate-induced child marriage in Ethiopia.

### **3. CHAPTER THREE: METHODOLOGY**

This section details the literature review approach used to address the objectives of assessing the relationship between climate change and drivers of child marriage in Ethiopia.

#### **3.1 Method**

This thesis used a literature review methodology, combining systematic search strategies with thematic synthesis to examine the influence of climate change on the drivers of child marriage in Ethiopia. Given the relationship between climate change and child marriage is an emerging area of study; it requires synthesizing a diverse range of evidence types. While there is substantial literature on child marriage and climate change separately, there is a limited exploration of the intersection between the two issues, especially in Ethiopia's context. Therefore, a combination of existing knowledge and perspectives from peer reviewed articles, grey literatures, and reports from international organizations are crucial to get a comprehensive understanding of their interaction in the country. Integrating global and local insights is also critical to place Ethiopia's perspective within a broader global context and literature review methodology provides the framework for drawing these connections. Primary data collection was not feasible within the scope of the study and thus not used for this thesis.

#### **3.2 Analytical Framework**

The thesis applies the socio-ecological model framework(78) to guide the analysis. This framework helps organize the complex and multi-level factors that influence child marriage, across individual, interpersonal, institutional, community, and policy levels. It is particularly relevant to this thesis as it captures the interaction between climate change and existing social structures that drive child marriage. The model also helps explain how environmental stressors impact individuals at the individual level, affect relationships at interpersonal level, influence institutions, shape community dynamics, and ultimately inform policies at policy level. Additionally, it facilitates connections across both climate change and child marriage issues making it the most suited for this study. This socio-ecological model is also widely used in health and social research and is particularly relevant for identifying context specific entry points for policy and programming.

The findings are structured according to the model with subthemes such as education (individual level), social norm (community level) and legal enforcement (policy level), derived from recurring patterns in the literature. All components of the model were used as the guiding framework, without adaptation. While subthemes were identified inductively from the literature, these were aligned with the existing levels of the model. The framework itself was not modified; rather, it served to structure and contextualizes the emerging themes.

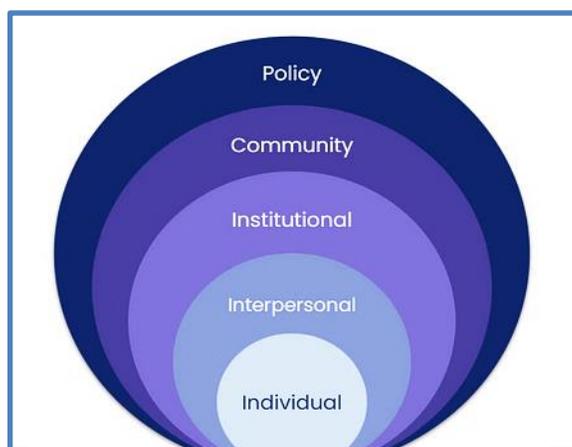


Figure 2 Socio Ecological Model , McLeroy et al: An ecological perspective on health programs. Health Educ Q. 1988 (79)

### 3.3 Search Strategy

A structured literature search was conducted between June and July 2025, using a combination of academic databases, grey literature platforms, and institutional websites. Peer reviewed articles were searched from PubMed, Scopus and VU Library databases. To further enrich the literature, targeted grey literature was sourced from international and governmental bodies, non-governmental Organizations, and search engines. Additionally, a snowballing approach was applied by reviewing the reference lists of key articles to identify further sources. Different search strings were developed for each objective to ensure the inclusion of relevant studies (See Annex I & II).

**Academic Databases:** PubMed, SCOPUS, Vrije University (VU) Library databases

**Institutional and Governmental Sources:** WHO, UNICEF, UNFPA, World Bank, IMF, EDHS program, Ministry of Health Ethiopia, Ethiopian Central Statistical Agency, Save the Children, , OECD

**NGO and Grey Literature Sources:** Girls Not Brides, ReliefWeb, Equality Now, ODI, GAGE, IRC and Women Deliver

**Search Engines:** Google (targeted grey literature), Google Scholar

**Search Terms and Boolean combinations used:**

**Table 1 Search Terms and Boolean Combinations Used**

<b>Theme</b>	<b>Keywords and Combinations</b>
Climate Change	“climate change” OR “drought” OR “climate variability” OR “environmental stress” OR “famine” OR “heat” OR “flood” OR “food insecurity”
Child Marriage	“child marriage” OR “early marriage” OR “adolescent marriage” OR “forced marriage”
Geography	“Ethiopia” OR “East Africa” OR “Horn of Africa” OR “Sub-Saharan Africa” OR “LMIC”
Drivers and Impacts	“poverty” OR “education” OR “food insecurity” OR “gender inequality” OR “livelihood”

See Annex: I and Annex: II for full search strings and combinations

## **Inclusion and Exclusion Criteria**

The criteria were defined before the search to ensure a consistent scope that is aligned with the study objectives. Articles published after 2015 and onwards were included to ensure relevance and alignment with a major shift in climate and gender discourse. 2015 marked the adoption of the Paris Agreement(79), which emphasized the need for gender responsive climate action. Additionally the same year also saw the launch of Sustainable Development Goals(80) , including Target 5.3, which commits all United Nations member states to eliminate child, early and forced marriage by 2030.

Articles were screened manually after applying the following criteria

**Table 2 Inclusion and Exclusion Criteria**

<b>Criteria Type</b>	<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
Timeframe	Published between 2015 and 2025	Studies published before 2015
Language	English	Non-English publications
Geographical Focus	Ethiopia, selectively East African, Sub-Saharan African, or global studies with context comparable to the study objective	Studies not related to Ethiopia or without comparable context
Topic Relevance	<ul style="list-style-type: none"> <li>- Studies discussing child marriage in Ethiopia</li> <li>- Studies discussing child marriage and link it either directly or indirectly to climate change</li> <li>- Climate change studies that examine its influence on one or more of child marriage drivers</li> </ul>	Child marriage studies outside Ethiopia without a climate lens; climate studies not linked to child marriage outcomes or child marriage drivers
Publication Type	Peer reviewed articles, government and NGO reports	Editorials, opinion pieces, conference abstracts, unpublished studies
Study Design	Qualitative, quantitative and mixed-method studies, including systematic reviews, meta-analysis, panel data analyses, case studies and program evaluations	Articles lacking any empirical, conceptual, or theoretical foundation
Population /Subjects	Studies focusing on adolescents/children affected by child marriage and/or climate change	Studies focusing on unrelated age groups or populations

**Review and Selection Process:**

The initial search yielded approximately 4,548 records across databases. After removing duplicates using Zotero 7.0.16 and performing manual check, 3,542 records remained. Titles and abstracts were screened for relevance, resulting in 168 full text articles being assessed using predefined inclusion criteria. In addition to these databases, snowballing technique were applied to identify further relevant studies, alongside studies and reports sourced from grey literature. These sources contributed to the final list of 133 articles included in the review.

**Analysis Approach:**

Articles meeting the inclusion criteria were retrieved in full text and reviewed manually. Key findings were charted in an excel spreadsheet with columns for author, year, study design, geographic focus, main outcome, and noted climate related factor.

A thematic synthesis was conducted using socio-ecological model as the guiding analytical framework. An inductive approach was applied to identify recurring patterns across studies. No qualitative software (NVivo) was used given the manageable number of sources, manual review was considered appropriate.

**Ethical Consideration:**

This study did not require ethical clearance, as it relied solely on publicly available secondary data. No human subjects were involved, and all sources used were already in the public domain.

**Methodological Limitation:**

A key limitation of this study is that there are limited peer reviewed articles directly discussing climate change and child marriage, especially in Ethiopia. When such articles are available, they often stem from broader regional and global studies rather than focusing specifically on the Ethiopian context. To address this, the study triangulated insights from grey literature and broader regional studies. Furthermore, the heterogeneity of included literatures in terms of study design, and regional focus made it difficult to draw direct comparisons and generalize findings. However, organizing findings within the socio-ecological framework helped maintain analytical coherence. Additionally, there is heavy reliance on grey literature, while necessary for context specific insights, may introduce bias due to variability in reporting standards. This was mitigated by sourcing from reputable institutions such as UNICEF, WHO and Save the Children and cross referencing with peer reviewed studies. Quality concerns were explicitly acknowledged where applicable.

**Tools:** Zotero 7.0.16 reference manager was used to manage and organize all retrieved records.

## 4. CHAPTER FOUR: RESULTS

This chapter presents the results of the literature review in line with the study's research objective. The findings are structured using the socio-ecological model framework. Section 4.1 presents the key social, economic and cultural factors that drive child marriage in Ethiopia. Section 4.2 explores how climate change influences well established drivers of child marriage in Ethiopia. Existing evidences on the links between climate change and child marriage from Ethiopia and other climate vulnerable countries are presented in Section 4.3. And finally section 4.4 presents' effective interventions from similar context that could inform action in Ethiopian setting.

### **4.1 Key social, economic and cultural factors that drive child marriage in Ethiopia**

This section identifies the primary drivers of child marriage in Ethiopia through the lens of socio-ecological model.

#### **4.1.1 Individual Level**

##### **Education:**

A strong link was consistently observed between lower levels of education and an increased likelihood of child marriage in Ethiopia. This association is supported by multi-country baseline study from Yes I Do! Program(39), a systematic review and meta-analysis specific to early marriage in Ethiopia(42), and a regional study focusing on the Amhara Region(81). All three studies argue that girls with lower educational attainment are significantly more likely to marry early (39,42,81). The systematic review and meta-analysis combined findings from multiple studies across Ethiopia, enhancing the overall statistical weight of the evidence but also reporting substantial heterogeneity(42). The Yes I Do! Baseline study was geographically narrower, targeting specific intervention sites in Ethiopia(39), while the regional study focused solely on data from Amhara region(81). A separate qualitative study found that girls who expressed motivation for education were more likely to remain in school and delay marriage(82).

## **Awareness of Legal Age**

A matched case-control study conducted in West Guji zone of Southern Oromia found that girls who were unaware of legal minimum age were nearly three times more likely to marry before 18. The authors suggest that this knowledge gap is key factor sustaining the practice(83). Similarly, a survey from Amhara region identified lack of awareness about legal age as a significant factor contributing to early marriage(81).

Another study that examined the process of early marriage decision making in Oromia reported that girls without a parent, particularly a male caretaker, reported feeling more socially vulnerable. According to the authors, this vulnerability often pushes them to early marriage as a means of security(82). A spatial analysis using data from the 2016 demographic health survey also showed that school dropout was significantly associated with early marriage(84).

## **Health**

The Yes I Do! Baseline study found that teenage pregnancy was frequently associated with child marriage in Ethiopia. Respondents in the study described child marriage as a socially acceptable solution to teenage pregnancy(39). The study used cross-sectional design and was limited to specific intervention areas in the country.

### **4.1.2 Interpersonal Level**

#### **Parental Wealth**

Parental wealth and family size were identified as key determinants for early marriage in Ethiopia. A study found that girls from households with larger family size and low parental wealth were 7.65 times more likely to be married before age 18(83). The same study also reported that when marriage decisions were made by others, mostly parents, girls were twice as likely to marry early(83). These findings are supported by other studies which also point to poor parental wealth as a strong predictor of early marriage(14,39).

One study observed that maternal asset ownership tended to reduce the risk of early marriage while parental asset ownership have weaker or not protective effect (85). Although methodologically diverse ranging from case-control designs(83), to asset comparison(85), and

mixed-method baseline(39), these studies converge on the conclusion that low parental wealth is a consistent risk factor to child marriage.

### **Agency in Marriage Decision**

Fathers or male guardians are often the most important decision makers in child marriage(82). It was found that educated fathers are less likely to support early marriage for their daughter(39,86).

Although some adolescent girls in Ethiopia appear to consent to early marriage, a study showed girl's agency is highly constrained. Choice is often shaped by poverty and absent of viable alternatives such as education or economic independence (87).

A prospective cohort study using data from Young Lives longitudinal study found that, girls who reported strong parent to child communication and higher quality relationships with parents at age 12 were less likely to marry before age of 16. Interestingly, the study also noted that in some contexts, better parent to child communication may be linked to marriage occurring after the legally permissible age(88).

In the humanitarian setting of Kobe Refugee camp in Somali Region, community based cross sectional survey found that child marriage was more common among households with lower educational levels, male heads of household, unemployed heads of households, and a higher number of girls under age 18(89). This study showed that child marriage continues in humanitarian context and is linked to house-hold level vulnerabilities and community norms(89).

### **Religion**

In Harari Region of Eastern Ethiopia, a study found that women who reported being Muslim had 2.3 times higher odds of marrying before age 18 compared to Orthodox Christian women(64). Religion remained a significant in multivariate regression analysis, even after controlling for education and rural residence(64). Another study using data from 2016 Ethiopian Demographic and Health Survey identified religion as one of several significant factor associated with early marriage, alongside education, place of residence, and decision making dynamics(42). However, this study included religion as a variable but did not present religion specific findings.

In the West Guji zone of Southern Oromia, Protestant and Muslim women had 1.88 and 2.1 times higher odds, respectively, of early marriage compared to Orthodox Christian women. Authors attributed these differences to religious norms around premarital sex and purity which may influence community expectations around early marriage(90).

#### **4.1.3 Institutional level**

In Amhara region, analysis of nationally representative EDHS data over 16 year period found that women who were exposed to media such as radio, television, and newspapers were more likely to delay marriage(65). The authors attributed this trend partly to behavioral change influenced by media exposure.

A separate study using similar EDHS data across all regions linked the slower decline in child marriage in remote and underserved regions of Ethiopia, such as Afar, Benishangul-Gumuz, Somali, and parts of Oromia, to the limited access to schools and health care, as well as weak enforcements of these services(41).

#### **4.1.4 Community Level**

##### **Social Norm**

A range of studies consistently identify social norms as a major driver of child marriage in Ethiopia. These studies concluded that social norms often link early marriage to maintaining family honor, fulfilling societal expectations, and preventing premarital sex.(43,82,86,91). Among these, three studies used qualitative methods(43,82,91), and one used quantitative method(86). Geographically, some were region specific(43,86), while others drew on multi-country data(82,91). Despite these differences, the studies present thematically consistent evidence on the role of social norm in perpetuating early marriage. At the same time, social support from parents, teachers, and the broader community has been identified as protective factor that helped girls stay in school and delay marriage(82).

## Regional Variation

Child marriage rates also show marked regional variation. From 2005 to 2016, significant decline were recorded in Addis Ababa (-52.1%), Amhara (-46.3%) and Tigray (-37.8%) while rates increased in Oromia (+12%) and Somali (+11.3%). Persistently high prevalence has also been observed in remote and underserved regions such as Afar, Benshangul-Gumuz, Somali and Oromia, with rates often exceeding 50%(53). Even in Amhara, where rates have declined, child marriage remains markedly high(65). These variations are linked to local customs, economic conditions, and deeply embedded social norms that differ from one community to another(53,65).

**Table 3 Regional Trends in Prevalence of Child Marriage among women aged 20-24 married before age 18 in Ethiopia, 2005 – 2016**

Region	2005(%)	2016(%)	Percentage Point Change	Relative Percentage Change
Oromia	42.6	47.7	+5.1	+12.0%
Somali	44.4	49.4	+5.0	+11.3%
SNNP	31.2	30.8	-0.4	-1.3%
Afar	70.0	66.7	-3.3	-4.7%
Benshangul Gumuz	59.3	50.0	-9.3	-15.7%
Gambela	62.5	44.4	-18.1	-29.0%
Tigray	68.8	42.8	-26.0	-37.8%
Amhara	79.	42.9	-37.0	-46.3%
Addis Ababa	16.9	8.1	-8.8	-52.1%

*Source:* Author's own table using data from Erulkar A. Changes in the prevalence of child marriage in Ethiopia, 2005-2016(53).

## Residency

Multiple studies have identified rural residency as a significant factor associated with early marriage. Girls living in rural area are more likely to marry before the age of 18 compared to their urban counterparts(42,81). Both studies support the claim with methodologically complementary evidence, one through national synthesis(42), the other through local data(81).

## **Peer Pressure:**

Several studies have documented the influence of peer pressure on child marriage in Ethiopia(85,86). A qualitative vignette-based study from rural West Hararghe found that adolescent girls' decisions to marry were strongly shaped by their peers and community members. The study argues that fear of social stigma plays an important role in driving girls willingness to accept early marriage(93).Another study in Amhara and Oromia similarly reported peer influence as a contributing factor(92). In this study peer pressure was intertwined alongside broader parents and community expectation, shaping adolescent's choice around marriage.

### **4.1.5 Policy level**

#### **Law Enforcement**

A quasi-experimental difference in difference study using DHS data found that the implementation of Ethiopia's revised family code which sets minimum legal age for marriage at 18 was linked to both delayed and an overall reduction in child marriage rates(94).

Another study evaluating the enforcement of child marriage laws in Ethiopia reported a significant impact, particularly in delaying early marriage for girls under 16. The research estimated that legal enforcement contributed to an approximate 17% reduction in child marriages (95). However, the law's impact was statistically insignificant among ethnic groups with the strongest cultural norms in favor of early marriage.

## **4.2 Influence of climate change on well-established drivers of child marriage in Ethiopia**

This section builds on the first objective by analyzing how climate change interacts with drivers of child marriage. The evidences are drawn from localized studies, regional analysis and national surveys documenting how climate change impacts education, gender, health and livelihood.

#### 4.2.1 Individual Level

##### **Education and Climate**

A longitudinal study by Randell and Gray (2016) found that climate variability has a negative impact on school enrollment and educational attainment in rural Ethiopia. Favorable climate conditions during early childhood were associated with a greater likelihood of educational attainment while exposure to drought in early life was linked to a 16% reduction in the odds of finishing school(96). In contrast, another study examining objective climate variation and its relationship to concurrent school attendance in rural Ethiopia reported that more rainfall anomalies were associated with increased attendance for girls but decreased attendance for boys(97).

A regional analysis study using geolocation data and DHS surveys from Ethiopia, Cameroon, Guinea and Nigeria assessed education completion at community level. It found that higher temperatures, lower rainfall, increased aridity and degraded vegetation were linked to lower rates of education completion. These effects were more pronounced in socioeconomically disadvantaged communities(98). However, the study did not provide country specific result for Ethiopia which may limit the ability to draw direct conclusion for the country and was limited to identifying association.

A comparative study using young lives data set which includes Ethiopia, India, Peru and Vietnam examined the impact of disasters such as floods and droughts on educational outcomes. In Ethiopia, exposure to floods was associated with greater reduction in the number of completed school grades than exposure to drought(99).The data for this study were collected from purposively selected sites and national representativeness in not claimed.

#### 4.2.2 Interpersonal Level

##### **Livelihood and Climate**

In Borana Zone of Oromia Region, a household's survey using climate resilience index (ranging from 0 to 1) found a low average livelihood resilience score of 0.33. Agro-pastoralist households scored 0.41 while pastoralist households scored lower 0.25(60). The same study reported a 100% food shortage and a 95% livestock loss among respondents in the area.

In Harshini District, Somali Region, long term trends from 1983 to 2017 showed rising temperature, irregular rainfall, and six major droughts. Households reported repeated loss of livestock, reduced crop yields, food shortages, and difficulties accessing water during these periods(100).

A study from Raya Kobo district in northeast Ethiopia also found that rural households demonstrated low resilience to drought. Contributing factors included limited household assets, poor diversification of livelihoods, low levels of education, and inadequate access to infrastructure and technology(101). All three studies document local drought era, and relied on self-reported data.

At the national level, a 2025 systematic review found that climate change significantly threatens household food security in Ethiopia by reducing agricultural productivity and worsening food insecurity(102). Complementing this, a narrative review covering the period between 2000 to 2024 documented an increased frequency, severity, and unpredictability of climate related extreme events. This review revealed a +1.3° C temperature rise since 1960, 274 flood events in 2020 alone, and prolonged droughts between 1964 and 2023 that affected 96.5 million people. These shocks were linked to a -4% reduction in national GDP and -12% drop in agricultural output, indicating a widespread livelihood disruption(103).

Further, a summary based on the 2016 Household Consumption Expenditure and welfare Monitoring Survey revealed that vulnerability to poverty is significantly higher in Ethiopia's drought prone lowlands. The vulnerability rate in these regions was 56%, more than twice the poverty rate of 27% in the same areas. According to the authors, this means that although fewer people may currently live in poverty, a much larger share is at risk of falling into poverty if exposed to climate shocks such as drought or flooding(104).

### **4.2.3 Institutional level**

#### **Health and Climate**

A scoping review covering the period from 2020-2024 highlighted how recurring droughts and other shocks including COVID-19 and armed conflict repeatedly disrupted health care delivery in Ethiopia. Climate related constrains such as water scarcity, road inaccessibility, and mobility

of pastoralist population were found to undermine routine health service delivery(105). Findings used in this review were drawn from heterogeneous, largely descriptive evidence base and climate impacts are discussed alongside other crises.

According to the World Health Organization (WHO) flooding in Ethiopia in 2024 affected over 560,000 people and displaced more than 57,000. In Somali Region, roads were damaged and five health posts along with one health center were rendered non-functional. Additionally, 39% of surveyed households in Somali Region reported at least one unmet health care need(106). Complementing this, in a localized case, flooding in West Guji zone, Oromia, affected around 120,481 individuals and displaced over 102,128. The flood caused damage to homes and cropland, further limiting access to essential health services(106).

Another study found that climate change exacerbates public health vulnerabilities in Ethiopia through both direct impacts such as heat stress and extreme weather events and indirect impacts including higher incidence of climate sensitive diseases, malnutrition and food insecurity(107).

A cross sectional study in Sayint district, South Wollo Zone, Amhara Region also assessed household level vulnerability to climate related health impacts. The study revealed that approximately half of the district's resident were classified as highly vulnerable to health effects attributed to climate change(108).

#### **4.2.4 Community level**

##### **Gender and Climate**

Several studies have examined gender disparities in relation to the context of climate change in Ethiopia(67,109–112). In one study focused on Afar pastoral communities, deeply rooted customary tradition particularly the Adda system were identified as amplifying women's vulnerability to food insecurity and related risk brought on by climate change(109). The authors argue that restrictive gender norms limit women's access to resources, constraining their ability to adapt to climate change.

In the districts of Amibara and Gewane, also in the Afar Region, a stratified household survey found that female headed households had higher climate vulnerability and livelihood

vulnerability compared to male headed households(110). Similarly in Lokka Abay, Sidama Region, household headed by women were found to be more vulnerable to climate induced shock(112). In Arsi Negele, Oromia lower levels of women's empowerment in agriculture were linked to weaker climate adaptation capacity at household level(67).

In Tigray, another study concluded that female headed households were more vulnerable to climate impacts compared to male headed households. The authors attributed this disparity to systemic gender inequalities in access to and control over land, agriculture, technology and climate information(111). While these studies consistently document gender based vulnerabilities under climate stress, they differ in their sample sizes, index and measurement tools, and timing which may limit comparability.

At a broader level, systematic review examining climate change and gendered health vulnerabilities in low and middle income countries found that climate change act as a threat multiplier worsening existing gender inequalities. The review noted that women and girls often face increased caregiving responsibilities and reduced access to resources during climate shocks, further limiting their decision making power and adaptive capacity(113).

#### **4.2.5 Policy Level**

The National Roadmap to End Child Marriage and FGM/C (2020-2024) outlines five key strategies for accelerating progress, including empowering girls and engaging communities(114). While it acknowledges that the plan's strategies are designed to address the increased risk of child marriage that arises during humanitarian and emergency situation, climate induced emergencies are not explicitly mentioned and discussed.

### **4.3 Existing evidences from Ethiopia and comparable climate vulnerable countries on the links between climate change and child marriage**

This section presents findings on how climate change contributes to child marriage by intensifying vulnerabilities as documented by peer reviewed articles, humanitarian organizations and international agencies. It draws on evidence from both Ethiopia and global sources.

#### **Evidences from Ethiopia**

Save the Children documented a story of 12 year old girl in whose family was pushed into poverty by prolonged drought and food shortage, increasing her risk to child marriage(62). Complementing this, the guardian captured testimonies from girls in drought stricken kebeles in Ethiopia's Somali Region describing how livestock lose, prolonged food scarcity and repeated school withdrawal led their families to arrange marriage as survival strategy. Girls married off at 15 and 14 due to loss of cattle and fears of gender based violence during long walks for water(115). A similar case was also recorded by Global Girlhood and UNICEF, in which a family that lost its livelihood due to drought and conflict agreed to a marriage proposal for their 13 and 14 year old girl in hopes of financial relief(50,116)

UNICEF's 2023 global synthesis warns that climate change and conflict threaten to reverse years of progress on reducing child marriage in Ethiopia. It notes a projected 1.5% rise in child marriage for each year of intense conflict and highlights that drought conditions further exacerbate these risks(58). Similarly, a scoping review of 24 peer reviewed and grey literature from Sub-Saharan Africa, South Asia and the Middle East links environmental crises particularly drought, food insecurity and displacement to increases in child, early and forced marriage. Within this review, Ethiopia is identified as one of the countries where climate induced poverty in rural and pastoral regions has triggered early marriage as coping mechanism(117).

## **Evidences from Global Sources**

A targeted synthesis of quantitative studies across 61 countries examined the effect of extreme weather events including drought, floods, storms and heat waves on child marriage prevalence. The study found that drought did not change national rates of child marriage in most countries. Authors cannot conclude that extreme weather events necessarily lead to increases in child marriage on a larger scale; however they also argued that this does not mean weather events do not affect child marriage patterns among smaller groups (118). Authors' critique the exposure definitions and outcomes measure vary widely and the included studies carry moderate to serious risk of bias. However, a recent mixed-method systematic review examined 20 studies published between 1990 and 2022 found a positive association between extreme weather and an increase in child marriage. The review concluded that child marriage is often used as coping mechanism to deal with economic hardship(119). Authors reflected that the conclusions are limited by factors such as reporting bias, non-representative sample and a narrow geographic scope.

Additionally, a 31 country DHS and rainfall data showed that drought raises the annual hazard of child marriage by approximately 3% in bride price contexts, like Ethiopia, but reduces it by approximately 4% in India's dowry system(120). The study emphasized that the direction of marriage payments determines whether climate shock accelerate or delay girls' marriage.

Findings from Women Deliver's 2021 evidence review, which drew on over 100 sources, finds that climate related livelihood shocks reduces access to sexual and reproductive health services, increases gender based violence and entrench patriarchal norms, all of which indirectly contribute to child marriage(121). The report notes that girls in rural, subsistence farming households are disproportionately affected.

A scoping review of 75 studies from 99 LMIC countries from 1944 to 2023 found climate hazards such as drought, flood , heat , cyclones were associated with increased Gender Based Violence, HIV risk and harmful practices such as FGM early or forced marriage(122). Complementing this , A post disaster assessment by the international Rescue Committee in the cyclone and flood prone costal districts of Bhola and Shatkihira recorded a 39% increase in reported child-marriage cases in the months following recent climate induced disasters(123).

Further context from Bangladesh, a three year ethnographic study of flood and cyclone areas identified key pathways linking environmental disaster to child marriage. These include dowry inflation due to loss of land and livestock prompting parents to marry off daughters before the price rises, prolonged school closures when classrooms double as emergency shelters with many girls permanently withdrawn after major floods and a feedback loop of early marriage and low agency that deepens future climate vulnerability(124).

A long panel analysis matching district level weather records to women's marriage histories in Bangladesh showed that the probability a girl marries rise in the year or the year after a severe heat wave(125). Authors argue that heat related income loss in labor and agriculture pushes families toward accepting less desirable marriage proposals. Similar study using a five round of DHS again in Bangladesh found that each additional dry month in a year significantly increases the likelihood of marriage before 18 for rural but not for urban girls(126). This according to the authors is consistent with an income shock channel that operates through rain fed agriculture.

## **4.4 Effective interventions and best practices from similar climate vulnerable context that could inform action in Ethiopian setting**

This section presents successful intervention models from countries facing similar challenges of climate change and child marriage, including Kenya, Niger and Bangladesh. These examples emerged from the literature search conducted to address the study's objectives, revealing relevant interventions in response to these issues.

### **4.4.1 Kenya – Turkana & Wajir: move cash before the drought bites**

Hunger Safety Net Programme (HSNP) loads every registered pastoral household onto a digital roster, then releases emergency cash the moment satellite rainfall data signal “severe” or “extreme” drought. During the 2015 and 2017 drought cycles, the scale-ups reached more than 200,000 households; transfers arrived while animals were still alive and girls were still in school. An independent evaluation reports that HSNP cash smoothed food gaps and let families keep girls enrolled instead of exchanging them for bride-price livestock(127,128).

Adolescent Girls Initiative-Kenya (AGI-K) added a “cash-plus” layer in neighboring Wajir: small conditional cash for 11-14-years olds, weekly safe space clubs, SRHR classes and community norm dialogues. Four-year follow up shows girls in the full package were two thirds less likely to marry and five times more likely to be in school than controls even after drought seasons(129,130).

#### **4.4.2 Niger & the Sahel-drought belt safe space and future husbands clubs**

The World Bank/UNFPA SWEDD project set up thousands of weekly safe-spaces for adolescent girls plus “future-husbands” clubs for boys in drought-hit Sahel districts. By 2022, countries set up 2,111 safe spaces and 1,006 boys’ club. Over 95% of the girls attending safe spaces could name the harms of child marriage, up from 32% at baseline; school retention in SWEDD zones topped 93% despite the continuing drought(131,132).

#### **4.4.3 Bangladesh-cyclone belt stipends and post disaster cash plus protection**

The Female Secondary School Stipend Programme pays rural girls a monthly stipend but only if they attend 75% of classes, pass exams and remain unmarried until completion of Grade 10. A World Bank analysis finds the stipend boosted female enrolment by 2 – 8%, delayed marriage by 1.4-2.3 years and kept girls in school even after major floods(133).

After cyclones, the IRC cash and protection bundle issues rapid grants to families and sets up child protection committees plus mobile psychosocial teams. In 2023 the IRC documented a 39% surge in child marriage in coastal districts after disasters and showed that pairing cash with protection services curbed the spike within six months(123).

## **5. CHAPTER FIVE: DISCUSSION**

### **5.1 Revisiting the Objective and Key Insights**

This thesis set out to understand how climate change reshapes the social, economic and cultural drivers of child marriage in Ethiopia, using the socio-ecological model lens. It reveals that climate stress does not create new causes, but compounds existing social, and economic pressures, especially in underserved, drought prone regions. The section also discusses promising, context specific interventions that can disrupt the climate driven risk before marriage decisions are made.

### **5.2 Key Results**

The findings reveal that while child marriage has long been linked to education, poverty, and social norms, climate change act as a threat multiplier intensifying existing vulnerabilities such as poverty, gendered labor burdens and weak institutional capacity rather than a standalone driver.

Girls in drought affected areas like Somali, Afar, and Borena are more vulnerable to child marriage due to household economic collapse and disruptions to education and health services. Regions with already poor literacy rates and weak access to services, such as Afar, Somali, and Benishangul-Gumuz are also among the most climate vulnerable regions in Ethiopia and show the least progress in reducing child marriage.

National level data suggest an overall decline in child marriage. However, localized pockets of hotspots still remain, such as in Amhara's Jawi woreda, Gambela's Jikawo Wereda and parts of Oromia. These hotspots are masked by national average.

Although Ethiopia has adopted gender sensitive climate strategies on paper, these frameworks fail to address adolescent girls specifically. They lack strategies for protecting adolescent girls during climate induced emergencies, leaving a crucial population exposed to cascading climate risks.

### 5.3 Inter-linkages between Drivers and Climate Shocks

This thesis shows that climate change does not introduce new drivers of child marriage; rather, it exacerbates the ones that already exist. Every layer of the socio-ecological model is pressured by climate stress.

At individual level, drought and flooding disrupts education. At household level, climate shocks erode assets and income, leaving girls more exposed to early marriage as a financial coping strategy. These shocks also affect the adults in the adolescents' lives, increasing their exposure to gender based violence in the absence their protection.

At institutional and community level, climate related disruptions weakens access to health services, protection systems and safe spaces. For instance, food insecurity and livestock loss due to droughts in Borena and Somali regions drive early marriage not just for traditions but as survival response.

Data from Afar, Somali and Benshangul-Gumuz, regions with both high child marriage rates and high climate vulnerability, point to this compounded risk. These are the same regions with the lowest literacy rates and weakest service infrastructure, making them least prepared to protect girls.

The other intersection is education. Drought and flood don't just close schools temporality; they cause permanent dropout, especially for girls. Studies from rural Ethiopia and across Sub-Saharan Africa showed that when schools shut down girls are often the first to be pulled out. Once out, the road back is rare and marriage then becomes a destination by default.

These inter-linkages also highlight that climate change isn't just a background issue. It also changes the very context in which families make decisions about their daughter. This is what makes this intersection urgent. Climate change is changing social realities often in ways that further disadvantage girls.

## 5.4 Regional Disparities

Child marriage is not evenly spread across Ethiopia. National DHS trend data mask sharp intra-regional contrasts, child marriage prevalence fell by 46% in Amhara 2005-2016 but rose 12% in Oromia and 11% in Somali.

Hot spot analyses confirm pockets where over 50% of girls still marry before 18, even in regions reporting overall progress. These findings warn against climate blind national averages when targeting resources.

Rates remain high in Afar, Somali, Benishangul-Gumuz and parts of Oromia, these are regions also hardest hit by drought, poor infrastructure and low female literacy. These overlapping vulnerabilities further increase girl's exposure.

Even in regions where national level progress is reported, such as in Amhara and Gambela, localized hotspots persist. These are often underserved and invisible in national average.

Most studies rely on aggregated data, masking critical local variation. Without district level and sex disaggregated data we risk designing generic interventions that miss the girls most at risk, particularly those in rural and climate affected zones.

## 5.5 What we know vs. what we don't

The literature confirms that climate change amplifies known drivers of child marriage. It disrupts livelihoods, pushes families into poverty and interrupts girl's education. However, while these associations are increasingly acknowledged, key adolescent specific data is missing.

Coping strategies of adolescent girls themselves are also under documented. Most studies focus on household or community level decisions, with limited insight into how girls navigate displacement, school dropouts or return after shock. For example, while education disruptions is a recurring theme, there is no data tracking how many girls actually return to school after drought or floods, or how long the interruption lasts. This lack of tracking obscures how climate stress compounds with existing gender gaps in education.

Moreover, mobility patterns during climate shocks are rarely analyzed through a gendered lens. Pastoral and displaced populations are frequently discussed in livelihood terms but the specific experience of adolescent girls on the move are missing. This gap limits our understanding of how exposure to violence, marriage pressure or service inaccessibility unfolds during migration.

Policy and monitoring frameworks often refer to youth or vulnerable populations in broad terms. Adolescent girls are rarely centered as a distinct group and their compounded risk, age, gender and geography are flattened out. Even Ethiopia's National Roadmap to End Child Marriage and FGM/C acknowledges emergencies but does not explicitly address climate induced risk.

As a result climate adaptation and resilience planning continues to overlook adolescent girls, despite evidence that drought affected areas (e.g. Somali, Afar, Borena) are also child marriage hotspots. Therefore while we know climate change is intensifying pressures that lead to child marriage, we don't know enough about how girls are individually affected, how they respond or what system catch them when they fall out of school, loss access to SRH services or face early marriage risk during crisis.

## 5.6 Transferability of Interventions

Ethiopia has policies on climate change and ending child marriage, but these plans don't directly focus on adolescent girls, especially in climate affected areas. While girls face higher risk during drought and disaster, there are limited specific systems in place to protect them during these times.

Lessons from other countries and their applicability to Ethiopia:

### **Kenya: Cash Transfers to Delay Marriage**

In Kenya's drought prone areas, families get emergency cash transfers when drought is predicted. Girls aged 11 to 14 also receive extra support like safe spaces, SRH education and community discussions. This helped reduce child marriage and keep girls in school even during drought.

Ethiopia can use the Productive Safety Net Program and link it with LEAP's drought early warning system. When drought is predicted, send small top-up cash to families with young girls

before they feel pressured to marry them off. Add weekly girls clubs, basic SRH education and norm change dialogues. These educations however, need to continue after the crisis.

### **Niger: Safe Spaces and Community Based Engagement**

Niger set up thousands of safe spaces for girl and clubs for boys in drought hit areas. Girls learned about the harms of child marriage and school attendance stayed above 90% even during crisis

Ethiopia can bring safe space to Somali, Afar, Oromia and similar areas. Community leaders, elders and role models could help run these initiatives. Integrating small cash incentives and structured community dialog would enhance impact especially if maintained post crisis.

### **Bangladesh: Conditional Stipend and Post Disaster Protection**

In Bangladesh, girls received monthly stipends if they stayed in school, passed exams and did not marry early. During floods and cyclone, families were supported with cash and child protection services. These approach delayed marriage and protected girls after disasters.

Ethiopia could introduce similar stipends via the national school feeding program, using Telebirr to transfer funds directly to mothers or girls. During climate shocks, this could be combined with emergency cash and mobile protection teams like what IRC does in Bangladesh

Ethiopia already has systems like Productive Safety Net Program and Telebirr. With modest adjustment, these systems could be targeted to reach girls at heightened risk or early marriage during climate shock. These global examples demonstrate that timely interventions can prevent harmful coping strategies before they take root.

While these examples can be adapted in Ethiopia, it is crucial to strength families economically before disaster hits, so that harmful coping mechanisms won't be their options.

**Table 4 Climate Shaped Drivers, Evidence, and Action Windows**

Climate shaped driver	Indicative evidence	Action window
Income shock and food insecurity	95% Livestock loss and widespread universal food gaps in Borena	Early cash or in kind transfers before herds collapse
School disruption	Flood damage to six health posts and multiple schools is Somali region	Emergency budgets to keep schools operational or provide mobile classrooms.
Gendered labor burden	Women’s higher vulnerability in Afar, Somali, Tigray, Oromia and Sidama	support for female headed households and household with adolescent economically
Weak legal reach	17% child marriage reduction only in areas with functioning enforcement	Mobile paralegal teams, cross kebele registry sharing for age of marriage

### 5.7 Framework Reflection

The socio ecological model provided a useful framework to structure the findings linking individual level experiences to broader institutional and policy level dynamics. It was particularly effective in illustrating how drivers of child marriage are layered and interconnected across different social systems.

However, climate related stressors such as drought, displacement, and loss of livelihood often cut across multiple levels. For example, school closures during droughts disrupt not only individual education trajectories but also household coping strategies and institutional continuity. These intersections between climate change, school dropouts and adolescent vulnerability don’t map neatly into one layer.

Another limitation is that the model lacks an explicit environmental lens. Climate induced displacement, for example, challenges the model’s assumptions about stable communities and fixed geographic contexts.

Nonetheless, the model made visible how climate stress doesn’t act as a standalone driver of child marriage but instead intensifies existing vulnerabilities across all layers of the social system.

## **5.8 Study strengths and Limitations**

The study's main strength lies in its layered synthesis of the findings using the socio ecological model, which captured how drivers of child marriage intersect across levels. However, being a literature review, it depends on available studies, many of which are not disaggregated by age, gender or region. Grey literature was heavily utilized. While valuable, it often lacks methodological transparency.

Some regions like Benshangul-Gumuz, Sidama and SNNP are underrepresented in peer reviewed data, despite being highly affected. The study also drew on reports from the Ethiopian Demographic and Health Survey, which provides the most recent nationally representative data on child marriage. However, this data is nearly ten years old. Therefore, current realities may not be fully reflected. In addition, frequent changes in national and regional boundaries in Ethiopia may also affect how the data is interpreted, particularly when comparing regional disparities over time.

## **5.9 Ethical and Fairness Reflection**

Most cited studies rely on parental or household head reporting, raising concerns about girl's agency in knowledge generation.

## **5.10 Implications for policy and research**

The intersection between climate change and child marriage remains significantly underexplored especially in Ethiopia, a country with one of the highest child marriage rates in Africa and extreme vulnerability to climate shocks. This lack of attention presents a serious risk; policies that fail to connect the dots will continue to overlook the most vulnerable rural adolescent girls.

Policy action must therefore become sharper and more targeted. General "gender sensitive" approaches are insufficient. Adolescent girls face unique risks from both climate stress and social norms. This calls for policies that explicitly address girls aged 10 to 19, not just women's empowerment.

In terms of intervention, education and economic resilience must be prioritized. Educated women drive national development and preventing dropouts among adolescent girls is both a protective

measure and an investment in Ethiopia's future. Economic support, especially for girls in pastoral and climate stress areas should be mainstreamed into climate adaptation programs.

Future adaptation efforts must address the current blind spots in research and programming. This includes:

- Generating localized and disaggregated data ( age, sex, region)
- Tracking school re-enrolment rate post-disaster
- Monitor longitudinal patterns in child marriage following extreme weather events
- Developing gender-specific adaptation metrics that capture how girls experience and respond to climate shocks

Without these measures, we risk repeating the cycle; drought leads to poverty which leads to early marriage which leads to lifelong disadvantage for girls, their children, and ultimately the nation.

## 6 CHAPTER SIX: CONCLUSION AND RECOMMENDATION

### 6.1 Conclusion

This thesis examined how climate change intersects with the drivers of child marriage in Ethiopia guided by the socio-ecological framework. The review identified a convergence. Ethiopia's persistently high rates of child marriage intersect with climate stress. Although child marriage is a long standing socio-cultural issue, climate change now acts as a threat multiplier intensifying existing drivers of child marriage. It undermines livelihoods; weaken education pathways and intensify gendered vulnerabilities.

In underserved and climate vulnerable regions such as Somali, Afar, and Oromia, repeated climate shocks destabilize household coping mechanism. These regions report some of the highest child marriage rates, coupled with the lowest levels of female literacy, weak infrastructure, and high climate vulnerability. Even in regions where child marriage rates have declines overall, localized hotspots persist. However, the intersection of climate change and child marriage remains underexplored in Ethiopia. There is a lack of district level and disaggregated data.

While global literature is expanding, Ethiopia specific research that captures the unique pressures faced by adolescent, especially during and after climate shocks is still missing. As climate shocks increase in frequency and intensity, the absence of targeted data and protective policy, risks causing intergenerational cycles of poverty and gender inequality. To change this trajectory, Ethiopia must explicitly include adolescent girls in climate adaptation, education continuity, and protection strategies from national level to the kebeles.

## **6.2 Recommendations**

The following actionable recommendations aim to reduce climate induced child marriage risk in Ethiopia. They build directly on the evidence and discussion presented in this study.

### **A. Legal and Enforcement**

#### **Close the enforcement gap on legal age of marriage**

- Direct Woreda and Kebele offices to require proof of age, birth certificate, school record or health post registration before approving marriage contract before or during crisis
- Provide mobile paralegal teams to help rural families secure birth certificates

### **B. Protect Girls Education Before, During and After Climate Crises**

#### **Keep girls in school during and after climate shock**

- Prioritize girl's education during and after climate crisis by keeping schools open and accessible even in emergencies.
- Prohibit use of school buildings as storage or shelter during emergencies to avoid prolonged closures.
- Regional education bureaus must guarantee temporary learning spaces and catch up classes in displacement sites e.g. along Somali Afar border.
- NGOs can supply solar powered learning to schools in off grid pastoral zones
- Allocate federal contingency funds from the Disaster Risk Financing

### **C. Climate Policy that Centers Girls**

#### **Make climate action gender responsive from day one**

- Require all Climate Resilience Green Economy proposals to include a Gender Based Violence and child protection budget line.

## **D. Economic and Livelihood Strengthening**

### **Scale up climate-responsive social protection**

#### **Invest in climate resilient livelihoods that remove the economic trigger for child marriage**

- Link the Productive Safety Net Program to LEAP drought warning system in hotspot woredas. When LEAP flags a crisis, trigger cash top-ups to households with girls aged 11-19
- Extend Productive Safety Net Program to poor families in adjacent kebeles temporarily; ensuring no adolescent girl is missed.
- Prioritize economic support to families with adolescent girls in climate vulnerable zones.
- Support women's income generating activities and adult education programs. An educated woman contributes to national growth and raises daughters with greater options.
- Include adolescent girls and their families in the design and implementation of climate adaptation and emergency programs to ensure their needs are met.

## **E. Social Norm Change and Community Engagement**

### **Shift harmful social norms at kebele level**

- Collaborate with religious leaders (Orthodox church, Ethiopian Islamic Council, Protestant Church Leaders) to broadcast age of marriage messages on faith based networks
- Engage traditional leaders such as GADA leaders in Oromia and Aba Guddi elders in Afar to champion girls schooling over early marriage as well as other regions.
- support boys club and male mentorship initiatives to reframe masculinity and address bride price expectations

## **F. Improve Data and Evidence System**

### **Fill the evidence gabs**

- Fund longitudinal studies in Somali, Amhara, Oromia , Afar and Benishangul-Gumuz regions to test how different climate shocks alter marriage decisions and encourage locally led research
- Convene an Ethiopia specific Child Marriage Research Action Network working groups in universities, government institutions and NGOs to co-design research and share data for policy use.

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## ANNEXURES

### Annex I: Search Strategy table showing the key words for the literature search

Subject (OR) Problem / Issue terms		Factor related terms (OR)		Geography (OR)
climate change	<b>AND</b>	education	<b>AND</b>	Ethiopia
drought		Health		East Africa
climate variability		poverty		Horn of Africa
environmental stress		gender		Sub- Saharan Africa
famine		Gender inequality		LMIC
food insecurity		food insecurity		
Flood		livelihood		
Extreme Weather Event				
Heat				
child marriage				
early marriage				
adolescent marriage				
forced marriage				

## Annex II: Search Strategy and Results by Objective and Database

Objective	Search String	Databases Used	Articles Found (PubMed)	Articles Found (SCOPUS)	Articles Found (VU)
Objective 1: Child Marriage in Ethiopia	<b>PubMed:</b> ("child marriage"[MeSH Terms] OR "early marriage" OR "adolescent marriage" OR "forced marriage") AND ("Ethiopia"[MeSH Terms] OR Ethiopia) <b>SCOPUS &amp; VU:</b> ("child marriage" OR "early marriage" OR "adolescent marriage" OR "forced marriage") AND ("Ethiopia")	PubMed, SCOPUS, VU Library	106	204	886
Objective 2: Climate Change and drivers of Child Marriage	<b>PubMed:</b> ("Climate Change"[MeSH Terms] OR "drought" OR "climate variability" OR "environmental stress" OR "famine" OR "heat" OR "flood" OR "food insecurity") AND ("poverty"[MeSH Terms] OR "education"[MeSH Terms] OR "food insecurity" OR "gender inequality"[MeSH Terms] OR "livelihood") AND ("Ethiopia"[MeSH Terms] OR "East Africa" OR "Horn of Africa" OR "Sub-Saharan Africa" OR "LMIC") <b>SCOPUS &amp; VU :</b> ("Climate Change" OR "drought" OR "climate variability" OR "environmental stress" OR "famine" OR "heat" OR "flood" OR "food insecurity") AND ("poverty" OR "education" OR "food insecurity" OR "gender inequality" OR "livelihood") AND ("Ethiopia" OR "East Africa" OR "Horn of Africa" OR "Sub-Saharan Africa" OR "LMIC")	PubMed, SCOPUS, VU Library	100	2574	534
Objective 3: Global and Local Evidence on Climate Change and Child Marriage	<b>PubMed:</b> ("climate change" OR "drought" OR "climate variability" OR "environmental stress" OR "famine") AND ("child marriage" OR "early marriage" OR "adolescent marriage" OR "forced marriage") AND ("Ethiopia" OR "East Africa" OR "Horn of Africa" OR "Sub-Saharan Africa" OR "LMIC") <b>SCOPUS &amp; VU:</b> ("climate change" OR "drought" OR "climate variability" OR "environmental stress" OR "famine") AND ("child marriage" OR "early marriage" OR "adolescent marriage" OR "forced marriage") AND ("Ethiopia" OR "East Africa" OR "Horn of Africa" OR "Sub-Saharan Africa" OR "LMIC")	PubMed, SCOPUS, VU Library	3	10	131

## Annex III: Original Table from Erulkar A. Changes in the prevalence of child marriage in Ethiopia, 2005–2016 (2022)

Percentage of young women aged 20 to 24 married by age 18 and age 15, by year and region for 2005, 2011 and 2016

	Percent 2005 (n = 2844)	Percent 2011 (n = 3022)	Percent 2016 (n = 2903)	Percentage point change 2005–2016	Percent change 2005–2016
<b>Married by age 18</b>					
Addis Ababa	16.9	11.8	8.1	- 8.8	- 52.1
Afar	70.0	55.2	66.7	- 3.3	- 4.7
Amhara	79.9	55.6	42.9	- 37.0	- 46.3
Beneshangul-Gumuz	59.3	57.6	50.0	- 9.3	- 15.7
Gambela	62.5	47.1	44.4	- 18.1	- 29.0
Oromia	42.6	40.8	47.7	+ 5.1	+ 12.0
Somali	44.4	52.9	49.4	+ 5.0	+ 11.3
SNNP	31.2	29.7	30.8	- 0.4	- 1.3
Tigray	68.8	43.0	42.8	- 26.0	- 37.8
<b>Married by age 15</b>					
Addis Ababa	6.6	3.0	2.7	- 3.9	- 59.1
Afar	20.0	10.7	18.5	- 1.5	- 7.5
Amhara	50.2	32.8	16.4	- 33.8	- 67.3
Beneshangul-Gumuz	25.9	21.2	15.6	- 10.3	- 39.8
Gambela	14.3	17.6	22.2	+ 7.9	+ 55.2
Oromia	10.3	11.9	17.3	+ 7.0	+ 68.0
Somali	7.4	9.6	9.9	+ 2.5	+ 33.8
SNNP	5.0	8.0	9.6	+ 4.6	+ 92.0
Tigray	26.1	17.0	15.8	- 10.3	- 39.5

This table presents data on the prevalence of child marriage in Ethiopia by Region and by Age: 2005-2016 reproduced from Erulkar A. Changes in the prevalence of child marriage in Ethiopia, 2005-2016 (2022)(53)



## Annex IV: Declaration for Use of Generative AI

### KIT Institute (Masters or Short course) Participants Declaration for Use of Generative AI (GenAI)

*Please complete and submit this form as an annex on the last page of your assignment file; and not as a separate document.*

**Check the box that applies to your completion of this assignment:**

I confirm that **I have not used** any generative AI tools to complete this assignment.

I confirm that **I have used** generative AI tool(s) in accordance with the “***Guidelines for the use of Generative AI for KIT Institute Master’s and Short course participants***”. Below, I have listed the GenAI tools used and for what specific purpose:

Generative AI tool used	Purpose of use
1. Grammarly	Grammar and spelling checking
2. Gemini AI & ChatGPT free Versions	Brainstorming, grammar and spelling checking
...	

