

IMPACT OF CLIMATE-INDUCED DROUGHT ON SEXUAL AND REPRODUCTIVE HEALTH SERVICES: A COMPARATIVE POLICY ANALYSIS FROM EAST NUSA TENGGARA AND TURKANA COUNTY

A Capstone

**Submitted to the Master of Public Policy Specialization in Climate
Change at the Faculty of Social Sciences in partial fulfillment of the
requirements for the degree of**

Master of Public Policy (M.P.P)



by:

**Zainab Manzoor (02222320008)
Muhammad Akbar Rahmadi (02222310008)**

UNIVERSITAS ISLAM INTERNASIONAL INDONESIA

DEPOK

2025

IMPACT OF CLIMATE-INDUCED DROUGHT ON SEXUAL AND REPRODUCTIVE HEALTH SERVICES: A COMPARATIVE POLICY ANALYSIS FROM EAST NUSA TENGGARA AND TURKANA COUNTY

A Capstone

**Submitted to the Master's Public Policy Specialization in Climate
Change Faculty of Social Sciences in partial fulfillment of the
requirements for the degree of**

Master of Public Policy (M.P.P)



by:

**Zainab Manzoor (02222320008)
Muhammad Akbar Rahmadi (02222310008)**

UNIVERSITAS ISLAM INTERNASIONAL INDONESIA

DEPOK

2025

ABSTRACT

Zainab Manzoor 02222320008
Muhammad Akbar Rahmadi 02222310008
zainab.manzoor@uiii.ac.id
MA in Public Policy
Universitas Islam Internasional Indonesia

This report examines the impact of climate-induced drought on the sustainability of sexual and reproductive health (SRH) services, with a particular focus on maternal healthcare and contraceptive access in two drought-prone and resource-limited regions: East Nusa Tenggara (NTT) in Indonesia and Turkana County in Kenya. The study employs a comparative case study approach, analysing secondary data from 2008 to 2023 to assess how prolonged drought conditions affect key SRH indicators, including antenatal care (ANC), skilled birth attendance (SBA), and modern contraceptive use. Findings reveal that both regions exhibit significant service delivery challenges during droughts, including decreased ANC and SBA coverage, reduced contraceptive uptake, and increased food insecurity, all of which disproportionately affect women and adolescent girls. In Turkana, drought has led to severe declines in skilled birth attendance, while NTT continues to lag in maternal health indicators due to geographic isolation and systemic underinvestment. The policy analysis of Kenya's Health Sector Disaster Risk Management Plan (2014–2018) and Indonesia's MoH Regulation No. 75 of 2019 concerning Health Crisis Management reveals critical gaps in disaster preparedness and the integration of SRH services, as both frameworks lack specific guidance on maternal health continuity, emergency contraception, and SRH monitoring. While Kenya focuses on emergency response strategies, such as mobile clinics and dignity kits, Indonesia emphasizes long-term solutions, including midwife training and community outreach initiatives. The report concludes that a hybrid approach combining rapid response with sustained health system strengthening is essential for building climate-resilient SRH services. Key recommendations include integrating the Minimum Initial Service Package (MISP) into national health sector frameworks, improving contraceptive supply chains, tracking sexual and reproductive health (SRH) data during crises, and strengthening coordination between disaster management and health ministries. By implementing these measures, governments and health actors can better safeguard reproductive health rights and ensure continuity of care in the face of growing climate threats.

Keywords: Drought; Sexual Reproductive Health Services, Maternal Health, East Nusa Tenggara, Turkana County

TABLE OF CONTENTS

STATEMENT OF AUTHENTICITY.....	ii
ANTI-PLAGIARISM STATEMENT	iii
ANTI-PLAGIARISM STATEMENT	iv
CAPSTONE ATTESTATION	v
CAPSTONE DEFENSE APPROVAL	vi
ABSTRACT	vii
LIST OF TABLES	x
LIST OF FIGURES.....	xi
ABBREVIATION DIRECTORY	xii
CHAPTER I.....	1
INTRODUCTION.....	1
1.1 Background.....	1
1.2 Research Questions.....	3
1.3 Research Objectives.....	3
1.4 Scope:	4
1.5 Limitations	4
1.6 Ethical Considerations	5
1.7 Approach:.....	5
1.8 Data Sources	5
1.9 Analysis Strategy	6
CHAPTER II.....	7
LITERATURE REVIEW	7
2.1 Climate Change and Drought Risks	7
2.2 Climate-induced Drought and SRH: Emerging Intersections.....	8
2.3 Health System Resilience and SRH Service Continuity in Climate Context	9
2.4 GAP in Existing Literature, and Emerging Directions in SRH and Climate Adaptation.....	11
2.5 Conceptual Framework.....	12
CHAPTER III.....	14
FINDINGS AND DISCUSSION.....	14
3.1 The Impact of Drought on SRH Services.....	14
3.2 Within Country Analysis Indonesia (National Vs. East Nusa Tenggara)	14
3.2.1 Macro Context.....	14
3.2.2 Drought and Food Security.....	14
3.2.3 Maternal Health (SBA & ANC)	15
3.2.4 Contraceptive Access	15
3.3 Within Country Analysis Kenya (National Vs. Turkana County)	16
3.3.1 Macro Context.....	16

3.3.2	Drought and Food Security.....	16
3.3.3	Maternal Health (SBA & ANC)	16
3.3.4	Contraceptive Access	17
3.4	Cross Country Comparison.....	17
3.5	Discussion.....	19
3.5.1	Impact of Drought on ANC and SBA.....	20
3.5.2	Impact of Drought on Contraceptive Use	22
3.5.3	Climate-induced drought and Food Insecurity: A shared Driver.....	22
3.5.4	Programmatic Responses.....	24
3.5.5	Comparative Insights and Trends: (Turkana Country and East Nusa Tenggara)	24
CHAPTER IV.....		26
POLICY ANALYSIS		26
4.1	International Standard: Minimum Initial Service Package (MISP).....	26
4.2	Overview of the Policies.....	27
CHAPTER V.....		33
CONCLUSION AND RECOMMENDATION		33
5.1	Proposed Recommendations (Both Countries)	33
5.2	Conclusion	34
REFERENCES.....		35

LIST OF TABLES

Table 3.1 Cross-Country Comparison - Source: Author Computation	19
Table 3.2 Cross region Comparison (East Nusa Tenggara Vs. Turkana).....	19
Table 4.1 Policy Analysis	28

LIST OF FIGURES

Figure 2.1 Conceptual Framework.....	12
Figure 3.1 District level hotspot mapping – East Nusa Tenggara (NTT) (very high risk) (UNICEF. 2024.	15
Figure 3.2 Source: Map by ACAPS using IPC, 2022	16
Figure 3. 3 Drought Events by Period;(BNPB., 2025; EMD-DAT., 2025).....	17
Figure 3.4 Prevalence of Severe Food Insecurity (%); (FAO., 2025).....	17
Figure 3.5 Modern Contraceptive Methods Use (%); (DHS., 2022)	18
Figure 3.7 Skilled Birth Attendance Coverage (%); (DHS., 2022).....	18
Figure 3. 8 Maternal Mortality Ratio per 100000 live births; (WHO., 2023).....	18

ABBREVIATION DIRECTORY

ANC	: <i>Antenatal Care</i>
ASAL	: <i>Arid and Semi-Arid Lands</i>
BKKBN	: <i>National Population and Family Planning Board (Indonesia)</i>
BNPB	: <i>National Disaster Management Agency (Indonesia)</i>
CDKN	: <i>Climate and Development Knowledge Network</i>
DHS	: <i>Demographic and Health Survey</i>
DRM	: <i>Disaster Risk Management</i>
EC	: <i>Emergency Contraception</i>
EMDAT	: <i>Emergency Events Database</i>
IDSR	: <i>Integrated Disease Surveillance and Response</i>
IAWG	: <i>Inter Agency Working Group</i>
KNBS	: <i>Kenya National Bureau of Statistics</i>
MISP	: <i>Minimum Initial Service Package</i>
MOH	: <i>Ministry of Health</i>
NTT	: <i>East Nusa Tenggara</i>
SBA	: <i>Skilled Birth Attendance</i>
SRH	: <i>Sexual and Reproductive Health</i>
STI	: <i>Sexually Transmitted Infection</i>
UNFPA	: <i>United Nations Population Fund</i>
UNICEF	: <i>United Nations Children's Fund</i>
WASH	: <i>Water, Sanitation, and Hygiene</i>
WHO	: <i>World Health Organization</i>

CHAPTER I

INTRODUCTION

1.1 Background

Climate change is driving more frequent and severe droughts worldwide, turning what were cyclical dry seasons into prolonged, unpredictable environmental crises. These droughts are driven by shifting rainfall patterns, global warming and ecosystem degradation caused by greenhouse gas emissions and land use. The World Health Organisation notes that as the climate warms, more frequent weather extremes occur, including droughts, which undermine food and water supplies and degrade the social and environmental determinants of health (WHO., 2023). According to the 2024 Lancet Countdown report, nearly half (48%) of the global landmass experienced at least one month of extreme drought in 2023 while 151 million more people were pushed into moderate or severe food insecurity as a result of these climatic conditions (Fletcher, 2024).

The economic impacts of drought are far-reaching. Agriculture is typically the first sector affected with reduced rainfall and water scarcity leading to crop failure, livestock loss and subsequent income declines for households reliant on subsistence farming. In water stressed communities, drought induced shortages compromise drinking water supplies and sanitation system making populations more vulnerable to infectious diseases including cholera and other waterborne illnesses. These shocks can cascade into nutrition deficits and economic hardship, which in turn threaten maternal nutrition and the ability of pregnant women and their families to access and afford healthcare (Rosen et al., 2021; Fletcher, 2024).

Sexual and reproductive health is one of the most critically yet quietly affected sectors. Pregnant women, newborns, and adolescents are especially at risk in drought prone settings. Women and girls often bear the brunt of climate shocks due to gendered roles and preexisting inequalities. For example, female headed households tend to face more severe economic hardship during droughts, and increased hunger and stress can drive girls to drop out of school or marry early. Affected families may cut back on health spending, and women may forego antenatal care (ANC) or give birth at home rather than travel long distances to clinics on scarce fuel or unpaved roads (Rosen et al., 2021). Disruptions to water and sanitation can also elevate risks of infection and maternal morbidity. Extreme weather events in lower source settings negatively affect maternal health through multiple

pathways, reducing access to skilled care, increasing maternal stress and malnutrition, and even contributing to higher pregnancy and neonatal mortality (Pappas A, et al.2024). Contraceptive access and other SRH services also suffer. Supply chains for commodities can be disrupted when roads are impassable, or budgets are diverted to emergency relief. Moreover, drought driven migration and conflict can leave women without access to nearby clinics. For instance, extreme weather events (including drought) have been shown to “reduce access to SRH services” and increase risky behaviours like transactional sex, which can heighten unplanned pregnancy and STI risk (Paul A. Burns, 2024).

Resilient SRH systems are, therefore, essential. A climate resilient health system can absorb shocks and adapt to maintain core services even during crises. In practice, this means ensuring that antenatal care (ANC), safe childbirth, and contraceptive supply chains continue to function during drought emergencies. World Health Organisation frameworks emphasize that resilient systems must prepare for crises, maintain critical functions during disruptions, and reorganize quickly to recover (Ansah et al., 2024). For SRH, this could involve contingency plans such as mobile clinics, emergency family planning stocks, and targeted outreach for pregnant women in displaced populations. Such measures are vital not only to save lives but also to uphold the rights of women and girls to health services.

Despite these stakes, the intersection of drought and SRH service continuity remains understudied, especially in lower resource settings. Recent reviews conclude that climate change and SRH research has received “little attention to date” (Women Deliver., 2021; Rosen et al., 2021). Most climate health literature focuses on infectious diseases and extreme events like floods, whereas slow onset shocks like drought (and their effects on maternity and reproductive care) are often overlooked. Similarly, policy documents on health system resilience seldom address specific SRH needs. This gap is striking, given evidence that climate disruptions erode women's health and rights. As one evidence review notes, climate impacts “have a detrimental effect on an individual's SRHR” but remain largely unaccounted for in adaptation planning (Women Deliver., 2021).

This capstone, therefore, examines two drought prone, highly vulnerable regions — East Nusa Tenggara in Indonesia and Turkana County in Kenya — as comparative case studies. Both regions are semiarid, socioeconomically marginalized and characterized by poor infrastructure and limited access to health services, yet they differ culturally and administratively, offering rich cross cultural learning opportunities. In East Nusa Tenggara, prolonged dry seasons have disrupted agriculture, reduced household income, and made it harder for women to access antenatal care or contraception, particularly in remote districts.

Similarly, in Turkana, recurrent drought has led to food insecurity, population displacement, and declining skilled birth attendance. These challenges have weakened reproductive health service delivery, especially for pregnant women and adolescent girls, and underscore the urgent need for system level resilience. This study addresses these gaps by comparing how drought has affected SRH services in both regions and what policy responses have been used to sustain care.

1.2 Research Questions

1. How does climate-induced drought impact the sustainability of sexual and reproductive health (SRH) services, particularly maternal health and contraceptive services?
2. What are the programme and policy interventions that can ensure SRH services remain resilient despite climate disruptions, particularly droughts, in the regions of East Nusa Tenggara (Indonesia) and Turkana County (Kenya)?

1.3 Research Objectives

To address these questions, this study will:

- a. Assess the impact of drought on SRH service coverage. Evaluate trends in ANC attendance, skilled birth attendance, and contraceptive uptake over 2008–2023 in East Nusa Tenggara and Turkana, correlating them with drought episodes and food insecurity indicators.
- b. Evaluate and compare policy/intervention responses. Examine Kenya's Health Sector Disaster Risk Management Strategic Plan (2014–2018) and Indonesia's MoH Regulation No. 75 of 2019 concerning Health Crisis Management using Minimum Initial Service Package (MISP) as standard in both contexts that aim to bolster SRH access during crises.
- c. Extract best practices across contexts. Highlight examples where Kenya's experience or programs (e.g., mobile clinics during droughts, community health volunteers, integrated nutrition SRH programs) have supported SRH resilience, with an eye to lessons that could inform Indonesian strategies (and vice versa, as applicable).
- d. Formulate evidence-based recommendations. Based on the comparative analysis, propose actionable policy and program recommendations for governments, donors,

and health and disaster management agencies to strengthen the climate resilience of SRH systems in resource poor, drought-prone settings.

1.4 Scope:

This study investigates the impact of Climate-induced drought on the resilience of maternal and contraceptive health services in two drought-prone and socioeconomically vulnerable regions: East Nusa Tenggara (Indonesia) and Turkana County (Kenya), during the period 2008–2023. It focuses on three key variables:

- a. Drought frequency and severity.
- b. % of births attended by skilled birth attendance (SBA) and antenatal care (ANC) visits.
- c. % of Modern Contraceptive use (Pills, Injectables)

The study adopts a comparative embedded multiple-case study design, relying solely on secondary data sources. It draws upon both international standards and national-level frameworks to assess the capacity of health systems in both regions to sustain essential SRH services during droughts.

The study analysed the national policy frameworks: Indonesia's MoH Regulation No. 75 of 2019 concerning Health Crisis Management and Kenya Health Sector Disaster Risk Management Strategic Plan (2014–2018) using Minimum Initial Service Package (MISP) for reproductive health in emergencies as a standard for ensuring SRH service delivery during humanitarian crises, including droughts.

1.5 Limitations:

The study is constrained by data availability and comparability. Subnational health data (especially in remote regions) may be sparse or inconsistent over time. Official records of drought impacts and local SRH utilization may be underreported. Reliance on secondary sources means findings reflect existing published data, which may omit some localized adaptation efforts or unrecorded innovations. Additionally, contextual differences (e.g. health system structure, cultural norms) between Indonesia and Kenya may limit direct comparability. These limitations are acknowledged and do not invalidate the analysis; however, they suggest caution in generalizing the results beyond the chosen cases. Comparative analysis is further limited by variations in terminology, data collection

intervals, and regional disaggregation across Indonesia and Kenya. In some instances, regional indicators were unavailable or estimated based on the closest reporting years.

1.6 Ethical Considerations

Since the project uses only publicly available data and does not involve human participants, no formal ethical approval was required. All sources are correctly cited, and data privacy standards have been respected.

1.7 Approach

This capstone project employs a comparative case study approach to examine the impact of Climate-induced drought on the resilience and continuity of sexual and reproductive health (SRH) services, with a particular focus on maternal health and access to contraceptives. Two drought-prone regions, East Nusa Tenggara (Indonesia) and Turkana County (Kenya), were selected as case studies due to their vulnerability to climate stress and existing gaps in sexual and reproductive health (SRH) services.

The project follows an embedded multiple-case study design, where each region is treated as a separate case, and three key areas (subunits) are analysed within each case:

- a. Drought frequency and severity
- b. Maternal health services (especially antenatal care and skilled birth attendance)
- c. Access to contraceptive services

This structure enables both in-depth analysis within each region and comparative analysis across regions, facilitating the identification of patterns and differences in how SRH systems respond to climate challenges.

1.8 Data Sources

Data used in this study are entirely secondary and were collected from:

- a. Demographic and Health Surveys (DHS)
- b. EMDAT (International Disaster Database)
- c. Reports by international organizations (e.g., UNFPA, WHO, World Bank)
- d. Government policy documents and health strategies
- e. Academic and grey literature
- f. News articles (used carefully to confirm events or contextual developments)

All data cover the period from 2008 to 2023 and were selected to ensure coverage, reliability, and relevance to the research focus.

1.9 Analysis Strategy

The analysis was carried out in two stages:

- a. **Within-case analysis:** Each region's data was organized and analysed under the three subunits to assess how SRH services were affected during drought periods.
- b. **Cross-case comparison:** The findings from both cases were compared to identify similarities and differences in resilience patterns, institutional responses, and service delivery outcomes.

A mix of quantitative indicators (e.g., antenatal care coverage and contraceptive prevalence) and qualitative insights (e.g., policy responses and supply chain issues) was employed to conclude. All findings were carefully crosschecked across multiple sources to ensure accuracy (triangulation).

CHAPTER II

LITERATURE REVIEW

Climate change particularly in the form of droughts, poses serious risks to sexual and reproductive health especially for women in vulnerable countries. These risks are exacerbated by weak health systems, limited infrastructure and gender-based inequalities. This literature explored the complex and multifaceted relationship between climate induced drought and SRH services with a specific focus on Indonesia (East Nusa Tenggara) and Kenya (Turkana County). The chapter offers a comprehensive review of the existing literature and policy & program frameworks to highlight the theoretical foundations, empirical analysis, and major debates on this intersection. This chapter is organized thematically to examine different dimensions of the issue and helps to identify gaps in current knowledge and position the current study within the broader academic discourse.

2.1 Climate Change and Drought Risks

Drought remains one of the most pressing environmental threats that both human and ecological systems face in vulnerable areas such as East Nusa Tenggara (Indonesia) and Turkana County, Kenya. Kuswanto et al., (2021) conducted a spatial-drought risk analysis in East Nusa Tenggara, identified five homogeneous drought-prone regions. Regions 3 (Fransiskus Xaverius, Gewayantana, Mali) and Region 5 (Kupang, Elta) were found to experience drought every four years. Kenya's drought of 2016 studied by Uhe et al., (2017), assigned its primary causes mainly from natural climatic events like La Niña and the negative Indian Ocean Dipole while acknowledging the activating role from human induced warming. Prolonged droughts in Turkana, compounded by governance challenges, intensify water scarcity and disrupt livelihoods particularly pastoralism. This highlights urgency of improved water management, better governance and community-based resilience strategies (Muliyl et al., 2025).

However climatic conditions alone do not account for all vulnerabilities. Institutional constraints prevent efficient response to drought in both countries. In Indonesia, Mursidi and Sari., (2017) criticized the way drought was being managed through reactivity as a result of overlapping authority and the poor coordination between the agencies involved. Similarly, Nurlambang et al (2024) underscored the continuity of institutional fragmentation even with the recent growth. At the community level, although households implement coping strategies for example, store water or migrate, but local

adaptation knowledge is rarely integrated into long term mitigation planning (Kuswanto et al., 2019; Huho & Kosonei, 2013). In Kenya, traditional knowledge is highly critical in drought adaptation but is largely excluded from formal disaster governance frameworks (Muragijimana et al., 2024).

2.2 Climate-induced Drought and SRH: Emerging Intersections

Apart from environmental impacts, Climate-induced drought has profound implications for sexual and reproductive health especially among marginalized population. According to Rousseau (2023), climate change is increasingly recognized as a social determinant of SRH, affecting access, outcomes and service delivery in complex ways. This necessitates intersectional and equity-based approaches. Segal and Giudice (2022) provide evidence for this claim by revealing how such factors as heat, drought, and floods are associated with poor reproductive outcome, including miscarriage and low fertility. Similarly, Roos et al. (2021) and Beek et al. (2021) found that SRH service disruptions during the extreme weather events weakens maternal and newborn care provision, revealing gaps in the preparedness.

Gender based vulnerabilities are central to this discourse. Dimitrov (2019), Desai and Zhang (2021) and Pappas et al (2024) stress that the women in low to middle income countries (LMICs) are exposed to disproportionately high risks because of the socioeconomic and biological vulnerability. This concern is further extended by Rashid et al. (2024), by linking food insecurity and displacement with poor maternal and child health outcomes they stated that these vulnerabilities are exacerbated by the lack of resilient health infrastructure and gender sensitive programming.

Ray Bennett et al. (2024) reviewed SRH interventions during disasters, focusing on menstrual regulation (MR), safe abortion (SA), and postabortion care (PAC). They found that while some interventions improved service availability, barriers like stigma, shortage of trained staff, and infrastructure gaps hindered effectiveness, calling for better integration of SRH into disaster planning. The impact of climate change on the SRH of adolescent girls and young women (AGYW) in LMICs is studied by Burns and Mutunga (2024). Their research linked Climate-induced stressors like droughts and food insecurity to increased risks of HIV, early sexual debut, and gender-based violence. They called for integrating SRH into climate policies and investing in SRH services for AGYW. Vulnerable groups such as women, youth, and LGBTQIA+ populations are at risk, with climate change

shocks disrupting access to sexual health services and increasing risky behaviours (Logie, 2024).

2.3 Health System Resilience and SRH Service Continuity in Climate Context

The concept of health system resilience becomes progressively seen as an indispensable component in reducing the effects of climate change. Biddle et al. (2020) believe that studies favour crisis response over a focus on the long-term adaptability or institutional transformation. Capitalizing on this, Mosadeghrad et al. (2023) identify 87 strategies organized under WHO's six building blocks. They emphasized that governance, early warning systems and sustainable infrastructure are the main interventions to support climate-resilient health systems. The need for contextualized approaches in LMICs remains critical, as fragmented leadership, weak data systems and underfunding persists despite reforms (Myhre, 2024). Community Health Workers (CHWs), as it is discussed by Domingo et al., (2024) are key actors in resilience strategies, but remain underutilized due to limited training and resources. Even family planning services, though consistently in demand, are hampered, because of lack of prepositioned supplies and weak policy integration (Rich et al., 2024). Both Indonesia and Kenya serve as illustrative cases of how climate vulnerability intersects with systematic health inequities.

In Indonesia, geographical disparity of health services is a significant problem. Evi Martha (2025) found that adolescents in Eastern Indonesia, have significant lower climate change literacy particularly in vocational and private schools, indicating deep rooted educational and structural inequalities. In Ende District, although contraceptive knowledge is high but actual utilization was still low due to cultural beliefs for large families and fear of side effects, showing that awareness alone does not ensure service uptake, and household dynamics as well as community cultures need to be tackled. They recommend education efforts that involve husbands and primary care providers (Santoso & Surya, 2017). According to Tat et al. (2020) and Florentianus & Maria (2019), in East Nusa Tenggara (NTT) limited number of skilled personnel, poor transportation, and weak referral systems directly correlates with low maternal health outcomes indicating that availability of health infrastructure also limits the services offered. This is worsened by the traditional beliefs as noted by Aryastami and Mubasyiroh (2021) and Nasir et al (2016) that communities would prefer traditional birth attendants (TBAs) compared to formal health services, suggesting a need for health interventions anchored on cultural sensitivity which embrace tradition while championing safe care practices. Poor transport and referral structure contribute to delay in care, most especially during emergencies as showed by Ngana and karyawati's (2021).

Their findings highlight the immediate need to scaleup contingency planning, and intersectoral linking for SRH services in climate vulnerable settings.

Systemic governance and decision-making structures also make an important contribution. According to Tampubolon et al (2023), village leadership and local governance mechanisms could increase mother child Health service uptake through family level decision-making. This coincides with the ethnographic conclusions made by Belton, et. al (2014) who are concerned with the roots of maternal mortality in terms of wider social hierarchies and systemic underdevelopment. At a macrolevel, Budi Utomo et al. (2025) have discovered that reductions of maternal mortality are associated with increased antenatal care (ANC) coverage, supply of antenatal caregivers such as midwives, socioeconomic strides of a wider nature, but have warned that inequities still exist, namely, in poor areas and where there is a dearth of hospitals. Supporting this, Silaen et al (2025) identified health and nutrition as constant predictors of ANC utilization in pregnancy, but carelessly executed social protection schemes, designed to improve access, often undermined it. Factors such as young maternal age, maternal education defined as low and limited access to ANC are instrumental contributors to low birth weight and neonatal mortality in East Nusa Tenggara, such negative consequences simply call for improvement in risk screening, early intervention, and referral systems (Handayani et al., 2024) and Davidz et al., 2022).

In Kenya similar patterns also exists especially in drought susceptible and underserved counties such as Turkana. In Kenya vulnerability mapping demonstrates how environmental exposure overlap with limited health access particularly for women facing compounded structural and gender-based inequalities (Marigi's, 2017; Nidhi & Charles, 2020). Kenya's health systems as Fortnam et al. (2020) point out remain largely unprepared for recurring climate shocks. Use of SRH services by the adolescents was found to be low (Lobolia, 2024), most of which were related to economic barriers and absence of adolescent friendly care structures. Interestingly, cultural and religious beliefs had a weaker position than anticipated and financial insecurities and a weak health system responsiveness were more important. Okenyuru and Matoke (2024) also further demonstrated that uptake of contraceptive is driven by age, income, marital status, and awareness indicating that women's empowerment through education and access to information use does influence the uptake of better health choices. At a policy level, partial alignment with global SRH standards is observed in Kenya. Perehudoff et al. (2022) conducted a human rights-based review and determined that Kenyan contraceptive policies overall demonstrate a human

rights compliance for availability and accessibility, but fail to demonstrate accountability and implementation an issue differentiated in pastoralist areas. Griffith et al. (2020) suggested the One Health framework which involves delivery of multiple services, which they noted, would face challenges of interdepartmental coordination, resource availability, and cultural adaptation.

Governance and infrastructure problem further limit health system capacity. According to Nyambura (2017), chronic underfunding, weak governance, and poor road networks were persistent under Kenya's devolved health system. These are echoed by Maina et al. (2017) who noted a stagnation in the ANC and the immunization coverage despite the national uplifts regarding the facility-based deliveries. Poor quality of care is still a major problem. In a study in peri-urban Nairobi, communication, and autonomy and respect in maternity services were quantifiably marginalized by OluochAridi et al. (2021). This served to emphasize the need for patient centred service models. Simultaneously, Obiezu Umeh et al., (2021) reviewed youth friendly SRH service implementations in Sub-Saharan Africa, highlighted the lack of sustainability in youth friendly SRH service models.

2.4 GAP in Existing Literature, and Emerging Directions in SRH and Climate Adaptation

Despite growing attention to the intersection of Climate-induced drought and sexual and reproductive health (SRH), significant gaps remain in the existing literature. Most of the studies examine environmental risks or SRH challenges individually, with limited integration between the two. Studies such as Kuswanto et al. (2021) & Uhe et al. (2017) explore drought vulnerability in East Nusa Tenggara and Turkana without addressing its implications for SRH services. While works like Rousseau (2023) and Burns & Mutunga (2024) emphasize SRH risks during climate shocks, but provide limited analysis of health system responses. In addition, despite studies have focused on health system resilience (e.g., Mosadeghrad et al., 2023; Biddle et al., 2020) provides strategies, rarely addresses the continuity of SRH services such as contraception and maternal care during Climate-induced disruptions. Moreover, local studies from Kenya and Indonesia report structural and sociocultural barriers, but rarely adopt comparative or longitudinal perspective, while they also do not explore how community-based practices and local governance may facilitate SRH continuity.

2.5 Conceptual Framework

This study's conceptual framework is grounded in the causal relationship between climate-induced drought and the disruption of sexual and reproductive health (SRH) services, particularly in climate vulnerable and resource poor settings such as Turkana County in Kenya and East Nusa Tenggara in Indonesia. At the core of the framework is the recognition that climate change acts as a systemic driver of prolonged and recurrent droughts, which are especially severe in arid and semiarid lands (ASALs). These droughts exert direct pressure on health systems by damaging infrastructure, reducing mobility, straining human resources, and diverting public expenditure away from routine health service delivery.

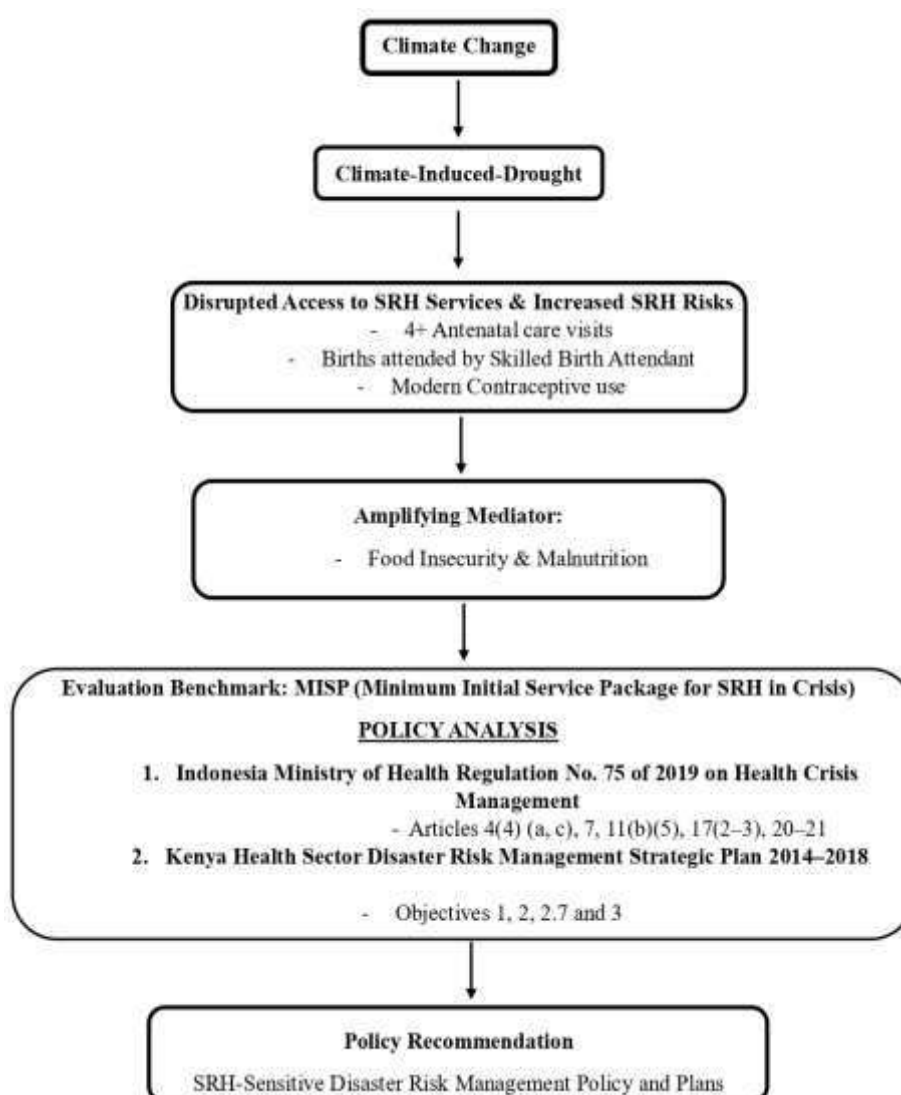


Figure 2.1 Conceptual Framework

Above figure posits that such climate induced droughts significantly disrupt access to essential SRH services including antenatal care (ANC), skilled birth attendance (SBA),

and modern contraceptive use. These disruptions increase health risks for women and adolescent girls, leading to greater maternal morbidity, unintended pregnancies, and unmet family planning needs during emergencies. An amplifying factor within this pathway is food insecurity, which arises from drought-driven crop failures and livestock loss. Food insecurity not only compromises maternal nutrition and immune resilience but also reduces household capacity to afford or prioritize health services.

To evaluate the adequacy of SRH service continuity during crisis periods, this framework adopts the Minimum Initial Service Package (MISP) for reproductive health as a comparative benchmark. Specifically, it focuses on four key MISP objectives that are most relevant to policy planning and emergency service delivery: ensuring a designated lead agency for SRH coordination during crises (Objective 1), preventing maternal and newborn deaths through skilled care and functional referrals (Objective 4), guaranteeing uninterrupted access to contraception, including emergency methods (Objective 5), and monitoring SRH service availability and access throughout emergencies (Objective 6). These objectives serve as analytical lenses to assess whether national level health crisis policies support or hinder the integration of sexual and reproductive health (SRH) services during drought and climate emergencies. The framework further integrates a policy analysis dimension to examine how governance structures and institutional mechanisms either facilitates or hinder the implementation of these priorities. The study compares Kenya's Health Sector Disaster Risk Management Plan (2014–2018) and Indonesia's MoH Regulation No. 75 of 2019 concerning Health Crisis Management by mapping each against the selected MISP objectives. The analysis focuses on whether these policies provide clear mandates, operational guidance, and intersectoral coordination to ensure the continuity of SRH services. This structured comparison highlights both the strengths and gaps within each country's policy environment in supporting climate resilient reproductive health systems.

CHAPTER III

FINDINGS AND DISCUSSION

3.1 The Impact of Drought on SRH Services

Due to the breadth of indicators across two countries and regional contexts, the results are presented in a synthesized format, focusing on the indicators most relevant to the sustainability and resilience of sexual and reproductive health (SRH) services in the context of Climate-induced drought. Each country is discussed separately, providing macrolevel context, regional differentiations, and primary system-level strengths and weaknesses. A comparative analysis follows, organized around the research questions.

This section explores the intersection of Climate-induced drought and sexual and reproductive health (SRH) outcomes through a comparative case analysis of East Nusa Tenggara (Indonesia) and Turkana County (Kenya). Drawing on national and subnational data, the findings reveal how prolonged droughts undermine access to maternal health services, including antenatal care (ANC), skilled birth attendance (SBA), and modern contraceptive use. Despite differences in health system design and policy responses, both regions exhibit a familiar pattern: climate shocks exacerbate structural vulnerabilities, such as poverty, geographic isolation, and food insecurity, leading to declining uptake of SRH services. The section further contrasts reactive emergency-based interventions in Turkana with long term system building approaches in NTT, offering critical insights into how resilience in SRH service delivery can be strengthened amidst escalating climate challenges.

3.2 Within Country Analysis Indonesia (National Vs. East Nusa Tenggara)

3.2.1 Macro Context

Indonesia has made substantial national level investments in maternal health, particularly through a widespread network of midwives and national family planning programs. However, regions like East Nusa Tenggara (NTT) face persistent development and infrastructure challenges, including seasonal droughts and limited access to health services.

3.2.2 Drought and Food Security

East Nusa Tenggara (IDNR) experiences frequent severe dry seasons, with 43 events in 2014–2022 affecting over 14.6 million people, nearly matching the national

drought impact during the same period (324 events; 14.6 million people). Despite this exposure, Indonesia's prevalence of severe food insecurity has remained below 1% in every three-year window since 2014; however, the subnational data for NTT is limited. The limited subnational data raise concerns that national figures may mask the local disparities. UNICEF (2023) identifies NTT as highly vulnerable to the combined effect of climate risks and malnutrition.

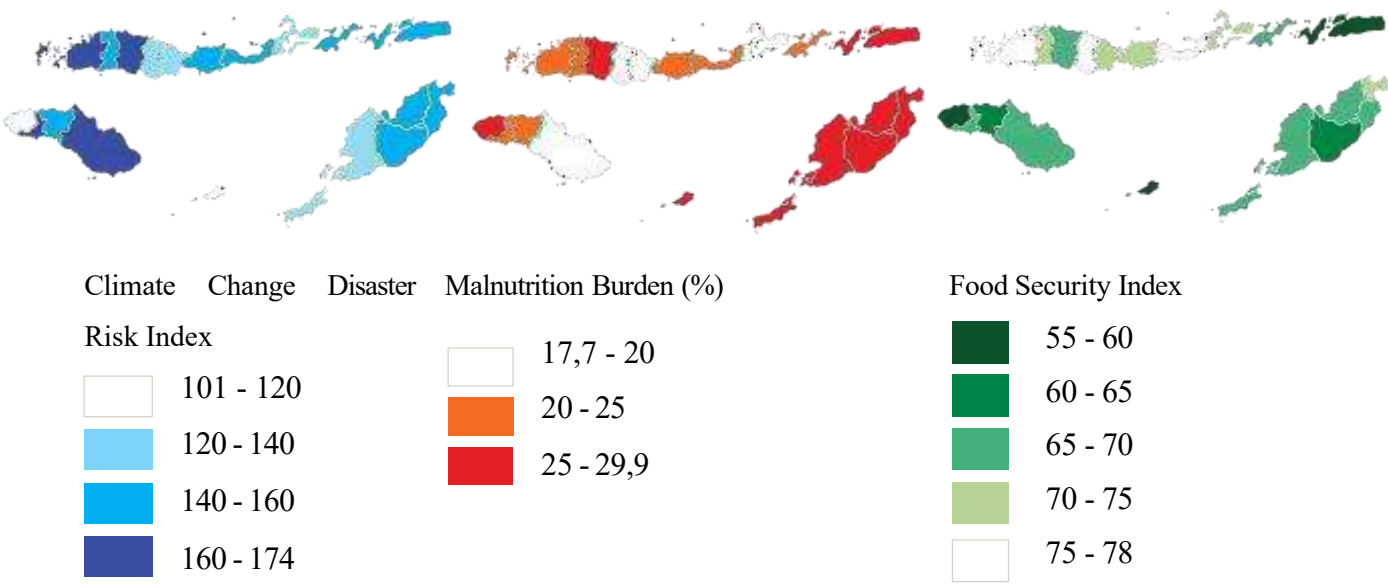


Figure 3.1 District level hotspot mapping East Nusa Tenggara (NTT) (UNICEF. 2024).

Climate Change and Nutrition in Indonesia. A review of the evidence for policy and programme strengthening. United Nations Children’s Fund. Jakarta, Indonesia.)

3.2.3 Maternal Health (SBA & ANC)

At the national level, skilled birth attendance increased from 83.20% (2012–17) to 90.90% (2017–23), and the number of 4+ ANC visits rose from 87.8% to 90.6%. In East Nusa Tenggara, SBA increased from 56.80% to 72.70%, and the number of 4+ ANC visits rose from 65.5% to 66.8%, representing gains but still below the national average. Persistent water scarcity and long distances to clinics in remote districts limit service uptake during drought peaks.

3.2.4 Contraceptive Access

The modern method uses, nationally dipped slightly (23.5% → 20.9%), whereas in NTT, it slightly decreases (13.1% → 12.5%). Local WASH spending constraints, at only

1.6% of on budget revenue in 2020, divert fiscal capacity away from health outreach and commodity prepositioning, contributing to occasional stockouts during drought periods.

3.3 Within Country Analysis Kenya (National Vs. Turkana County)

3.3.1 Macro Context

Kenya operates under a devolved health system, where counties are responsible for delivering sexual and reproductive health (SRH) services. Turkana County, one of the most climate affected ASAL regions, has experienced persistent and severe drought effects, leading to escalating food insecurity.

3.3.2 Drought and Food Security

Kenya's ASAL counties, including Turkana, suffered only few drought events per period, but each affected over 9–10 million nationally and 1.6–3.4 million in Turkana. Severe food insecurity nationally increased from 15% to 28% (2014–2022), while Turkana's localized malnutrition rates among pregnant women exceeded national averages, reaching acute levels that forced mass migrations and clinic absences during the 2020–2022 drought.

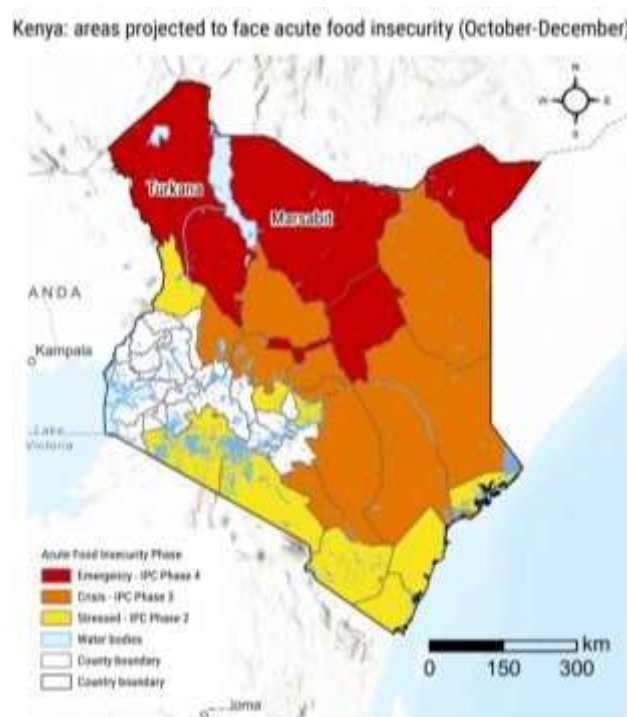


Figure 3.2 Source: Map by ACAPS using IPC, 2022

3.3.3 Maternal Health (SBA & ANC)

National SBA surged from 43.7 % (2008–14) to 89.3 % (2022–23), and 4+ ANC visits from 47.1 % to 66.0 %. Turkana's SBA increased from 33.7% to 52.7%, and the 4+ ANC rate progressed from 51.7% to 57.7%, but it still lags behind the national average.

3.3.4 Contraceptive Access

Kenya's modern method use specifically Injectables and pills respectively rose from 14.8% to 18.7% & 4.7% to 5.5% (2008–22) before dropping to 13.6% & 5.3% (2022–23), reflecting stock disruptions during the worst drought in 40 years. In Turkana, the overall modern use rate including injectables and pills increased from 34.7% to 46.8% (2008–17) and then drop to 30.7% by 2022–23, underscoring both programmatic efforts and lingering access gaps.

3.4 Cross Country Comparison

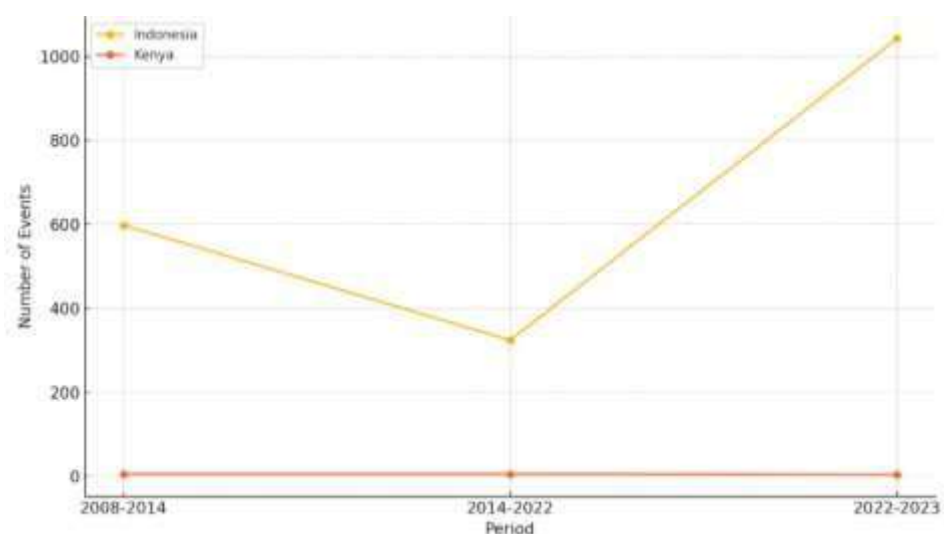


Figure 3.3 Drought Events by Period; (BNPB., 2025; EMD-DAT., 2025)

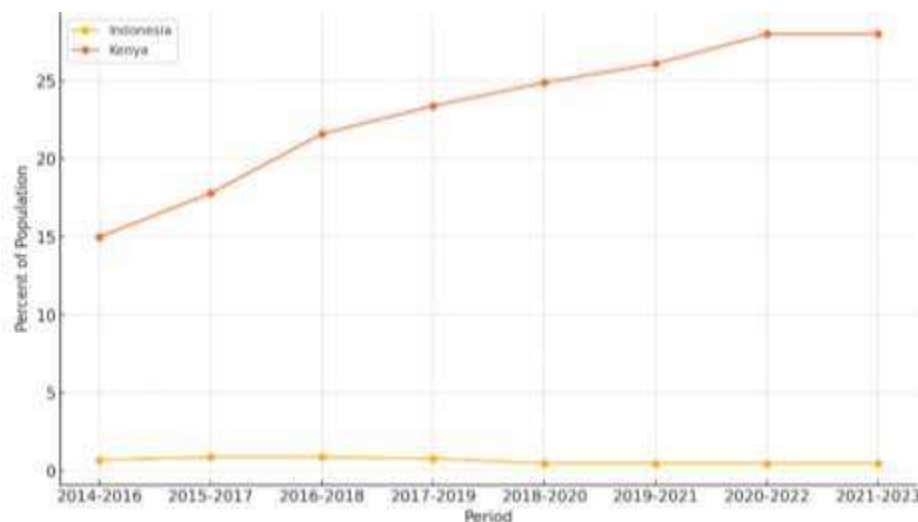


Figure 3.4 Prevalence of Severe Food Insecurity (%); (FAO., 2025)

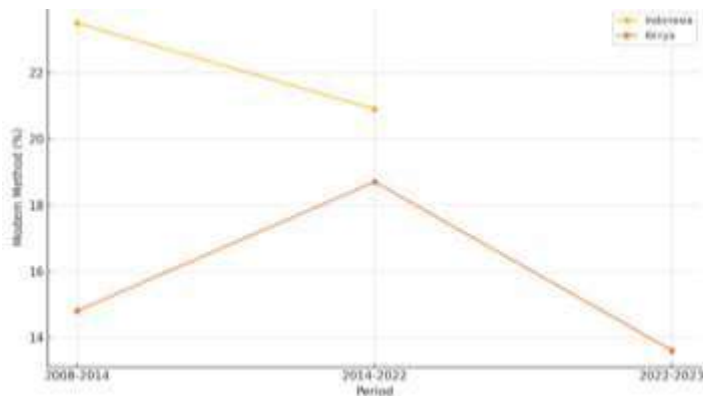


Figure 3.5 Modern Contraceptive Methods Use (%); (DHS., 2022)

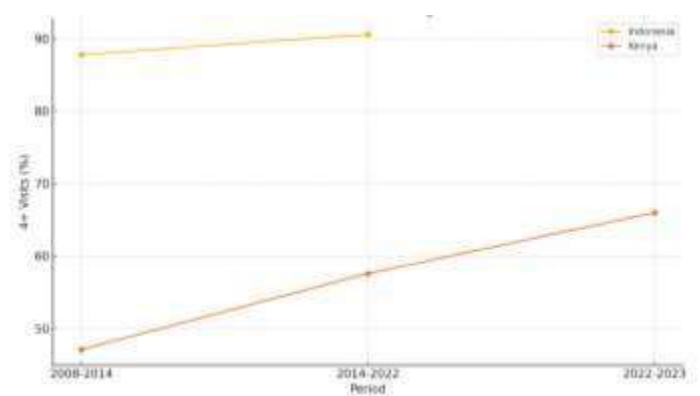


Figure 3.6 ANC 4+ Visits Coverage (%); (DHS., 2022)

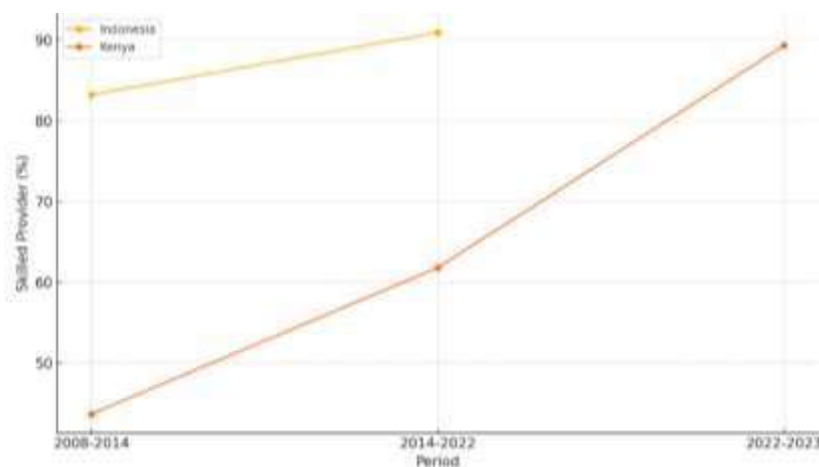


Figure 3.7 Skilled Birth Attendance Coverage (%); (DHS., 2022)

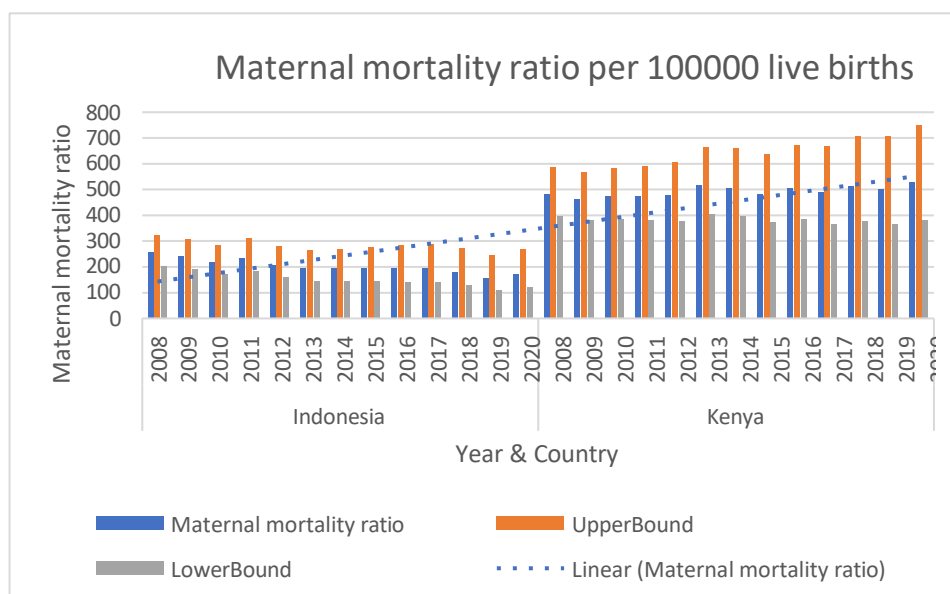


Figure 3. 8 Maternal Mortality Ratio per 100000 live births; (WHO., 2023)

Table 3.1 Cross-Country Comparison - Source: Author Computation

Indicator	Indonesia (National)	Kenya (National)
Drought events (2008–23)	1,965 events; 21.6 M affected	14 events; 22.3 M affected
Severe food insecurity	< 0.5 %	28 %
SBA coverage	90.9 %	89.3 %
4+ ANC visits	90.6 %	66.0 %
Modern contraception use	41.4 %	42 %

Table 3.2 Cross region Comparison (East Nusa Tenggara Vs. Turkana)

Indicator	East Nusa Tenggara (NTT)	Turkana County
Drought events (2008–23)	91 events; Unreported	9 events; 7.6 M affected
SBA coverage	72.7 %	52.7 %
4+ ANC visits	66.8 %	57.7 %
Modern contraception	27.4 %	30.7 %

Despite Indonesia's higher SRH coverage and lower food insecurity nationally, in NTT droughts continue to disrupt service delivery by revealing weaknesses in contingency planning and emergency response at local levels. In Kenya, rising food insecurity in drought-prone areas, such as Turkana, hampers access to SRH services despite targeted interventions. These cases confirm that drought significantly impacts SRH services in both countries, underscoring the urgent need to integrate drought preparedness into health system planning to ensure service continuity during climate crises.

3.5 Discussion

Based on the data analysed from East Nusa Tenggara (NTT), Indonesia, and Turkana County, Kenya, there is a discernible relationship between Climate-induced disasters, particularly drought and disruptions in sexual and reproductive health (SRH)

services, including antenatal care (ANC), skilled birth attendance (SBA), and contraceptive use. In both case study areas, the data reflects a clear pattern: During periods of prolonged drought, there are observable reductions in ANC visits and SBA coverage, as well as declining contraceptive uptake.

East Nusa Tenggara (NTT) is one of Indonesia's provinces with a high poverty rate and longstanding reproductive health challenges. Fertility remains high: According to the Manggarai District Health Office Report (NTT), the total fertility rate in Manggarai is approximately 4.87, which is about twice the national average. Additionally, the adolescent pregnancy rate is three times higher than Indonesia's national level (Inside Indonesia, 2016). Though direct data on SRH service access during drought in NTT is limited, the mechanisms of impact are well understood malnourished pregnant women face higher risks, and food insecure families may forego antenatal care due to financial and logistical barriers. Indonesian obstetricians have confirmed that climate shocks, heatwaves, floods, and drought are straining pregnancy care access and increasing maternal risk (UNICEF, 2023).

In Turkana, maternal health outcomes are one of the poorest in Kenya. The 2022 Kenya Demographic and Health Survey (DHS) revealed extremely high fertility and low service coverage in Turkana, with a total fertility rate of approximately 6.0 children per woman, compared to 3.4 nationally.

3.5.1 Impact of Drought on ANC and SBA

The impact of drought on Antenatal care (ANC) and Skilled birth attendance (SBA) has been consistently disrupted by Climate-induced drought in Turkana and East Nusa Tenggara. In Turkana, the 2021/2022 drought sharply reduced health service utilization. According to the 2022 Kenya Demographic and Health Survey (DHS), only 52.70% of births in Turkana were attended by a skilled provider, as compared to the national average of 89.30%. Similarly, only 57.7% of women received four or more antenatal visits, below the national average of 66%.

UNFPA and government reports further illustrate the decline in service access during the drought; in one of the Turkana subcounty facilities that had previously recorded an average of 411 births per month, with around 70% skilled attendance, only 100 births were reported in November 2022, representing a steep decline to 24.6% skilled deliveries. The underlying causes are both physical and economic in nature. Many pregnant women reported having "never experienced a drought as bad as this," with many going days without

food or losing livestock, leaving them too weak or distant from clinics to seek care; for example, one mother described trekking 10 km without food for antenatal care, adding: "When my husband has left to find pasture, I have to be ready to fend for myself if need be" (UNFPA, 2022). Historical context from earlier droughts, such as the 2017 La Niña-driven rainfall deficits, reinforces these patterns. At the time, malnutrition reached critical thresholds, and women's ability to seek care declined as pastoralist families migrated in search of food and water (CDKN, 2017). Sexual and reproductive health (SRH) issues in Turkana County are also based on structural challenges that have been experienced over a long time like poor infrastructure, remote geographic location, inadequate health workforce and sociocultural issues in the county including early marriage and use of traditional birth attendants. The access to care is further restricted by the high levels of poverty, low education of females and gender inequality. These structural weaknesses existed prior to the onset of climate change but due to the current and more frequent droughts, the gaps in service and the disparities in health outcomes prevailing in the region are exacerbated.

East Nusa Tenggara also continues to face critical maternal health challenges with indicators that lag behind national averages. According to the 2017 Demographic and Health Survey (DHS), only about 72.70% of deliveries in NTT were attended by skilled providers. The maternal mortality ratio (MMR) in East Nusa Tenggara (NTT) is approximately 320 deaths per 100,000 live births, which is considerably higher than the national average of around 189 per 100,000 live births (Muhidin, S., 2022). Contraceptive use in NTT is low, with only 27.4% of women using modern methods in 2022, compared to 41.4% nationally (DHS, 2022). While these rates have improved slowly, NTT still trails national targets.

Several structural factors exacerbate these outcomes, including poverty, remote terrain, and short wet seasons. These challenges are magnified during climate shocks, such as droughts, which compromise food security, reduce mobility, and weaken families' capacity to seek care. As seen in other regions, such as Central Sulawesi, drought has caused families to reduce their food intake by over 60%, triggering immediate nutritional crises (UNICEF, 2023). Similar patterns are likely to occur in NTT's drought affected districts, where antenatal care (ANC) attendance and institutional delivery rates tend to decline during periods of rainfall deficit and crop failure. The health outcomes are severe. Davidz et al. (2022) identified inadequate ANC and nonskilled birth attendance as key contributors to early neonatal deaths in NTT. Structural and cultural barriers further reinforced gendered vulnerabilities. For instance, Belton et al. (2014) found that maternal

mortality in eastern Indonesia is closely linked to delayed care seeking, reliance on traditional birth attendants, and restrictive gender norms, factors that continue to affect NTT despite national efforts.

Geographic isolation is another key constraint. Although Indonesia's national ANC coverage for four or more visits exceeds 85%, coverage in remote islands like NTT is both lower and highly uneven. This limited coverage is rooted in geographic and transportation barriers. Florentianus and Maria (2019) demonstrated that poor accessibility, characterized by long distances and limited transportation, significantly reduces the effectiveness of maternal and child health policy implementation. Subnational data remain limited, but NTT consistently underperformed compared to more developed provinces. Moreover, underlying maternal risks are widespread. These include early maternal age, low levels of education, history of illness, pregnancy complications and poor nutritional status, all of which are strongly associated with low birth weight (Handayani et al., 2024). Women in NTT already face heightened reproductive health vulnerabilities, and climate shocks like drought only further erode their access to critical services and outcomes.

3.5.2 Impact of Drought on Contraceptive Use

Modern contraceptive use remains critically low in both Turkana and East Nusa Tenggara. In Turkana, only 30.7% of married women use modern contraceptives, with Injectable (9.3 %) and Pills (0.3%) being the most common methods, far below the national average of 42% (DHS Program, 2022). Drought exacerbates this gap. According to Ipas (2024), health workers in northern Kenya observed a drop in preventive SRH utilization during drought periods, as women migrate with livestock and "have no time to come and seek health care."

Similar trends are found in NTT, where modern contraceptive use lags at 27.4% below the national rate of 41.1% (DHS., 2017). Access limitations, social norms, and misinformation drive poor uptake. An Ipas (2023) assessment revealed that many women in NTT discontinue contraception after initial adoption due to persistent myths and the lack of follow up support, a finding echoed in our observations.

3.5.3 Climate-induced drought and Food Insecurity: A shared Driver

Turkana County and East Nusa Tenggara (NTT) are both semiarid, climate vulnerable regions where prolonged droughts have significantly reduced food production

and worsened household nutrition. In both areas, Climate-induced food insecurity has emerged as a critical underlying driver of poor reproductive and maternal health outcomes.

In Kenya, the 2021–2022 drought, described as the worst in 40 years, followed four consecutive failed rainy seasons. By late 2022, over 4.3 million Kenyans were acutely food-insecure, including 134,000 pregnant or lactating women suffering from severe malnutrition (UNFPA, 2022). The direct link between climate stress and nutrition was especially stark in Turkana, where food insecurity strained household resilience and maternal nutrition, undermining the ability of women to access reproductive health services.

Similarly, East Nusa Tenggara faces compounded risks of food insecurity and climate vulnerability, drought and extreme weather events have deepened the region's existing vulnerabilities. Climate risk assessments classify NTT as being at "very high risk" for the combined effects of climate change and malnutrition (UNICEF, 2023). Climate shocks, particularly droughts, are well documented to curtail food yields and rural incomes in Indonesia severely. In 2023 alone, eight districts in NTT experienced 50–60 consecutive rain free days, which devastated rice paddies and livestock holdings. The damage included the loss of over 180.9 hectares of rice and 1.1 million cattle (RDI Global, 2023). Such agricultural shocks directly impact maternal and child nutrition and reduce households' ability to afford or prioritize reproductive health services.

Such environmental stressors directly undermine women's access to sexual and reproductive health (SRH) services. As families grapple with economic instability, spending on preventive care, including antenatal visits and contraception, often declines. National climate–nutrition analyses confirm that provinces like NTT experience significant reductions in crop yields and rising rates of undernutrition among women and children during prolonged droughts (UNICEF, 2023). By late 2023, media outlets also reported a notable increase in anaemia and malnutrition among pregnant women in drought affected communities (Reuters, 2024). These patterns illustrate how Climate-induced drought magnifies the barriers women face in obtaining essential reproductive health services in NTT.

Child undernutrition in both regions is especially concerning. In Turkana, 23% of children under five are stunted, and another 23% are wasted, figures that are well above Kenya's national average of 18% and 5%, respectively (DHS Program, 2022). East Nusa Tenggara also suffers from some of the highest rates of under5 stunting and infant mortality

(UNICEF, 2023). These elevated rates point to longstanding health system contains that have only worsened under drought conditions.

3.5.4 Programmatic Responses

The Kenyan government and its partners, including UNFPA and the Kenya Red Cross, have responded with emergency outreach strategies to these prolonged drought crises. These include mobile outreach, ANC services, family planning counselling, dignity distribution kits, and prenatal consultations in villages such as Lokapararai (UNFPA Kenya, 2023). In 2023, UNFPA launched a one-year program across six drought affected northern counties (including Turkana) titled Building Resilient Health and Protecting Systems to support SRH services (Kenya News Agency, 2023). Partners, including the Kenya Red Cross, Peace Winds Japan, and the International Rescue Committee (IRC), distributed essential reproductive health commodities and trained mobile health workers to enhance service delivery.

In contrast, Indonesia's SRH response to NTT is more systematic and long term. Ipas Indonesia responded to low contraceptive use in NTT by launching the TAKENUSA program ("Joint Determination for NTT Women") across three districts in 2023–2024. The program focuses on intensive training for midwives in modern contraceptive methods (e.g., long-acting methods) and community engagement to debunk contraceptive myths (Ipas Indonesia, 2023). Government programs, such as Revolusi KIA (Maternal and Child Health Revolution), aim to expand maternal health services through village midwife cadres. This developmental model, while less reactive, aligns SRH with nutrition support and climate adaptation, such as early warning systems and harvest related food aid, which are implemented by the World Food Programme and national agencies. Civil society actors, including UNFPA supported youth networks, played a vital role in raising awareness in remote areas.

3.5.5 Comparative Insights and Trends: (Turkana Country and East Nusa Tenggara)

Both Turkana and East Nusa Tenggara (NTT) demonstrate how climate shocks exacerbate sexual and reproductive health (SRH) vulnerabilities, including limited antenatal care, reduced skilled birth attendance, lower contraceptive uptake and heightened maternal risks. Food insecurity acts as a key driver of maternal health risks, with both regions suffering from high undernutrition and maternal complications.

While Turkana has adopted an emergency focused model, relying on mobile outreach clinics and dignity kit distribution to address acute needs, NTT emphasizes a developmental strategy centred on midwife training and community education to build long term resilience. These contrasting models offer valuable lessons: Turkana's rapid interventions are critical during immediate crises, whereas NTT's sustained investments enhance systematic capacity. Moving forward, an integrated approach combining emergency response with health system strengthening, food security and youth engagement could offer a more comprehensive and climate resilient SRH framework for both regions.

Current evidence is primarily derived from secondary reports, national surveys, and NGO assessments, which, although informative, do not always distinguish between climate specific effects and other socioeconomic drivers. Therefore, while these trends strongly suggest a linkage, more granular, longitudinal field research is needed to quantify the exact attribution and understand the relative contribution of climate shocks versus structural health system weaknesses. The reliance on small or nonrepresentative samples further constrains the ability to establish causal links between drought and SRH outcomes. Such research should include ethnographic components, facility level service data tracking before and during climate events, and household level interviews to capture barriers to care. Only with this deeper empirical foundation can we accurately measure the extent to which Climate-induced droughts are driving SRH service disruptions in NTT and Turkana and design targeted resilience interventions accordingly.

CHAPTER IV

POLICY ANALYSIS

Climate-induced disasters such as prolonged droughts are posing significant threat to the sustainability of essential health services particularly for the vulnerable groups like women and adolescent girls. Sexual and Reproductive Health (SRH) service delivery is one of the areas that is most impacted because it is often overlooked in traditional disaster preparedness and response frameworks. Ensuring uninterrupted access to services such as antenatal care, skilled birth attendance and contraception is critical to reducing maternal and newborn morbidity and mortality during crisis.

This report compares two national health emergency policies: Kenya's Health Sector DRM Plan (2014–2018) and Indonesia's MoH Regulation No. 75 of 2019 concerning Health Crisis Management to assess how each country integrates SRH into disaster preparedness and response. The analysis uses selected objectives from the Minimum Initial Service Package (MISP) for reproductive health in crisis settings as the evaluative framework. These include: 1) SRH leadership and coordination during emergencies; (4) prevention of maternal and newborn deaths through skilled care and referrals; (5) access to contraception, including emergency contraception; and (6) SRH monitoring and evaluation mechanisms. These policies were selected based on their institutional relevance, national scope and potential for cross-contextual learning.

This comparative approach highlights the structural and implementation level gaps in both policies in addressing sexual and reproductive health (SRH) during disasters. The analysis advocates for the explicit incorporation of MISP standards into national Health crisis frameworks and recommends targeted reforms to address overlooked areas, such as skilled birth attendance, emergency contraception stockpiling, and surveillance of SRH services.

4.1 International Standard: Minimum Initial Service Package (MISP)

The Minimum Initial Service Package (MISP) is an important framework developed by the Inter-Agency Working Group (IAWG) to address sexual and reproductive health (SRH) needs during humanitarian emergencies, including those climate-related emergencies (Drought).

1) Key objectives of MISP:

- a. Ensure Health Sector Leadership: Identify an organization to lead the implementation of the MISP within the health sector or cluster, ensuring coordinated efforts in providing SRH services.
- b. Prevent Sexual Violence: Implement measures to prevent sexual violence and respond effectively to the needs of survivors, ensuring they receive appropriate care and support.
- c. Prevent HIV Transmission: Take steps to prevent the transmission of HIV and reduce morbidity and mortality associated with sexually transmitted infections (STIs).
- d. Reduce Maternal and Newborn Morbidity and Mortality: Provide essential services to prevent excess maternal and newborn morbidity and mortality, ensuring safe childbirth and access to emergency obstetric care.
- e. Prevent Unintended Pregnancies: Ensure access to family planning services to prevent unintended pregnancies, which can lead to increased health risks for women in crises.
- f. Plan for Comprehensive SRH Services: As the situation stabilizes, plan to integrate comprehensive SRH services into primary healthcare, ensuring these services are accessible to all affected populations.

The Minimum Initial Service Package (MISP) is crucial in humanitarian settings as it addresses the often overlooked sexual and reproductive health needs of affected populations, particularly women and girls. By implementing these objectives, humanitarian responders can significantly reduce health risks and improve outcomes for vulnerable groups during crises.

4.2 Overview of the Policies

Kenya's Health Sector DRM Strategic Plan (2014–2018) was developed by the Ministry of Health to institutionalize disaster risk reduction and emergency response across national and county levels. It is one of the few plans in sub-Saharan Africa to incorporate health specific components under the broader national disaster risk management framework. The plan emphasizes multisectoral coordination, risk communication, contingency planning, and health system resilience, with specific attention to vulnerable populations such as pregnant women and children. However, it does not directly reference SRH or the MISP framework, and SRH service delivery remains weakly integrated into disaster planning. Although the Plan is already completed, it remains the

most comprehensive and publicly accessible health sector specific disaster policy available for Kenya. In the absence of an officially published successor as of mid2024, this document continues to guide county level activities, including in Turkana, where its structures and recommendations such as for intersectoral coordination and contingency stockpiling are still referenced in practice.

Indonesia's Ministry of Health Regulation No. 75/2019 serves as the national document that governs the health crisis in a tier and decentralized system of management. It brings the health cluster model that includes subclusters like Reproductive Health to organize the health responses on national, provincial, and district levels. The regulation identifies three most important phases of disaster management, namely precrisis (mitigation), emergency response (rapid assessments, service continuity), and postcrisis (recovery). Although SRH is not specifically described in the regulation, other technical guidance documents provide support to incorporate it.

Kenya's integration of health and disaster risk management (DRM) alongside its devolved county health system which allows for locally tailored disaster responses, offers important learning opportunities for Indonesia. Conversely, Indonesia's structurally embedded reproductive health subcluster and its phased disaster response model provide a valuable insight for Kenya in strengthening the disaster preparedness. Therefore, comparing both policies against Minimum Initial Service Package (MISP) standards allows for the identification of critical gaps and transferable practices that can strengthen the resilience of sexual and reproductive health (SRH) systems in both countries.

Table 4.1 Policy Analysis:

Comparison of Kenya's Health Sector DRM Plan (2014–2018) and Indonesia's MoH Regulation No. 75 of 2019 concerning Health Crisis Management Using MISP Objectives

International Standard (MISP)	Kenya Health Sector Disaster Risk Management Plan (2014–2018)	Gaps (Kenya)	MoH Regulation No. 75 of 2019 concerning Health Crisis Management	Gaps (Indonesia)
Objective 1: Ensure the health sector identifies an organization to	(Objective 1) Leadership, Governance, Coordination, and Collaboration:	MISP requires a designated SRH lead, dedicated coordination meetings, and operational support	Articles 4–7: A formal health cluster system is established at national, provincial, and district/city levels. Within	The regulation partially meets the requirement of MISP by establishing a Reproductive Health

International Standard (MISP)	Kenya Health Sector Disaster Risk Management Plan (2014–2018)	Gaps (Kenya)	MoH Regulation No. 75 of 2019 concerning Health Crisis Management	Gaps (Indonesia)
lead implementation of services including maternal health	Interventions under this objective are designed to strengthen coordination mechanisms, structures, and partnerships at all levels. They also aim to improve the regulatory and policy environment to firmly embed disaster risk management within the health sector and enhance capacity for DRM program management. Though the plan includes general coordination but no specific SRH agency is mentioned which will lead during disasters.	during disasters. While the Plan mentions general coordination structures like disaster risk management focal persons and the Health Sector Inter Agency Coordinating Committee, it didn't specify a specific SRH coordinator or subcluster. This weakens leadership, risks fragmented SRH service delivery, and undermines timely, coordinated response during crisis.	it, a Reproductive Health Sub Cluster is mandated to coordinate reproductive health services during crises. Leadership is clearly assigned through existing health governance.	Sub Cluster within the national health cluster system. However, the regulation lacks operational clarity it does not assign a specific SRH coordinator, define coordination procedures, or outline protocols for staffing, funding, or reporting. Although supplementary guidelines like the Pedoman Pelaksanaan PPAM offer implementation details, their nonbinding nature weakens consistency, especially in a decentralized system. As noted by the AIHSP (2021) review, coordination remains fragmented, with unclear roles between key emergency bodies like the Emergency

International Standard (MISP)	Kenya Health Sector Disaster Risk Management Plan (2014–2018)	Gaps (Kenya)	MoH Regulation No. 75 of 2019 concerning Health Crisis Management	Gaps (Indonesia)
				Operations Centre (EOC) and the Public Health EOC. These gaps compromise MISP’s goal of timely and effective SRH leadership during emergencies.
Objective 4: Prevent maternal and newborn death through skilled care and referrals	(Objective 2) To enhance prevention, mitigation, preparedness & response planning and building back better” – mentions pregnant women as vulnerable. Referral systems included but no clear commitment to skilled birth attendance.	MISP calls for skilled birth attendants, emergency obstetric care, clean delivery kits, and a 24/7 referral system to prevent maternal and newborn deaths during disasters. While the Plan recognizes pregnant women as vulnerable, it lacks specific provisions for maternal and newborn care in emergencies. The absence of strategies for skilled attendance, antenatal care, or delivery kits highlights that it may undermine the availability and quality of lifesaving	Article 4(4) (a, c), Article 11(b)(5): Maternal health is implicitly included under RH Sub Cluster. Referral services are addressed under general “health services.” Pregnant women and other vulnerable groups must be prioritized in emergencies.	While maternal health is formally situated within the reproductive health subcluster as outlined in the regulation, there is an absence of specific guidance regarding the continuity of essential maternal services particularly skilled birth attendance (SBA) and antenatal care (ANC) during disaster. The regulation does not provide detailed clinical protocols, implementation strategies, and logistical

International Standard (MISP)	Kenya Health Sector Disaster Risk Management Plan (2014–2018)	Gaps (Kenya)	MoH Regulation No. 75 of 2019 concerning Health Crisis Management	Gaps (Indonesia)
		maternal health services during crises.		arrangements necessary to ensure uninterrupted and quality maternal and newborn care. This poses a significant risk to the survival and wellbeing of mothers and infants in crisis affected settings.
Objective 5: Prevent unintended pregnancies by ensuring availability of contraception (including emergency contraception)	(Objective 2.7) “Systems and capacity for contingency planning and creating contingency stockpile of health products.” Mentions stockpiles but no reference to contraceptives or reproductive health kits.	MISP mandates access to a full range of contraceptive methods, including emergency contraception, along with informed choice counselling. The Plan does not provide detail for family planning, contraception, or counselling, nor does it provide measures for equitable access. This omission leaves women and adolescent girls at increased risk of unintended pregnancies, unsafe abortions, and related complications, while also undermining	Article 4(4)(c), Article 17(2–3): Contraceptives fall under broader category of RH services. Article 17 allows buffer stock of medical supplies.	The regulation mentions reproductive health in general terms but makes no specific reference to the provision or protection of contraceptive services during emergencies. The omission of emergency contraception and lack of a stockpile mechanism further exposes vulnerable populations to the risk of unintended pregnancies.

International Standard (MISP)	Kenya Health Sector Disaster Risk Management Plan (2014–2018)	Gaps (Kenya)	MoH Regulation No. 75 of 2019 concerning Health Crisis Management	Gaps (Indonesia)
		reproductive rights during emergencies.		
Objective 6: Plan for comprehensive SRH services including monitoring and evaluation of SRH access	(Objective 3) “Finalize and implement Risk Communication Strategy.” Risk surveillance into Integrated Disease Surveillance and Response (IDSR) framework, but SRH services and access indicators not included in the monitoring & evaluation framework.	MISP requires integration of specific sexual and reproductive health indicators such as contraceptive use, skilled birth attendance, and antenatal care into emergency health monitoring systems. While the Plan refers to general data systems, it does not define SRH specific indicators or mandate disaggregated data collection by sex, age, or disability. The absence of these elements’ limits evidence-based decision making and obscures reproductive health needs during crises, weakening accountability and the overall emergency response.	Articles 20–21: Health crisis information system must collect sex and age disaggregated data and consider vulnerable groups.	While data disaggregation is mandated, the absence of defined SRH indicators (e.g., contraceptive prevalence, SBA coverage, ANC completion) results in a lack of visibility for reproductive health in emergency data systems. This limits evidence-based decision making, underreporting SRH needs during climate related disasters or humanitarian crises.

CHAPTER V

CONCLUSION AND RECOMMENDATION

5.1 Proposed Recommendations (Both Countries)

Leadership and Coordination of SRH Services During Disasters
To ensure timely and effective sexual and reproductive health (SRH) responses during emergencies, it is essential to establish robust leadership and coordination mechanisms. A dedicated national SRH emergency coordination team should be formally appointed to lead planning and implementation during crises. Coordination protocols between the National Disaster Management Agency and the Ministry of Health (MoH) must be institutionalized to ensure seamless collaboration. Additionally, reproductive health (RH) stakeholders, including NGOs and community-based organizations, should be actively involved from the onset in disaster preparedness and response planning.

Emergency Maternal Care: Skilled Birth Attendance and Antenatal Services
Emergency health protocols must explicitly include guidance on maintaining maternal care services, particularly skilled birth attendance and antenatal care (ANC). Clear referral systems for obstetric emergencies should be established and maintained even during climate disruptions. Simulation exercises and emergency preparedness drills should incorporate maternal care continuity to enhance system readiness for real time disasters.

Family Planning and Contraceptive Access During Emergencies
To prevent unintended pregnancies and uphold reproductive rights during emergencies, it is critical to integrate reproductive health kits including oral contraceptives, injectables, and emergency contraception into national and subnational contingency stockpiles. Health authorities should collaborate with technical partners such as UNFPA to strengthen supply chains and ensure timely delivery of family planning commodities, especially in remote or disaster affected regions.

Monitoring and Evaluation of SRH Services in Crisis Contexts
Effective monitoring and evaluation (M&E) systems are vital for tracking SRH service delivery during disasters. Key SRH indicators such as the number of ANC visits, institutional deliveries, contraceptive uptake, and overall access to reproductive health services must be clearly defined and incorporated into post disaster health reporting templates. Disaster response teams should be trained in SRH specific data collection to

ensure accurate, timely, and gender sensitive data is available for informed decision making and accountability.

5.2 Conclusion

This capstone demonstrates that Climate-induced droughts severely disrupt sexual and reproductive health (SRH) services in vulnerable regions like Turkana (Kenya) and East Nusa Tenggara (Indonesia), where women and adolescent girls face heightened risks due to food insecurity, economic stress, and weakened health systems. The study documents significant declines in antenatal care, skilled birth attendance, and contraceptive use during droughts, driven by disrupted supply chains, reduced mobility, and lack of preparedness. While Turkana's emergency-driven approach, which includes mobile outreach and dignity kits provides a vital short-term relief but it lacks the long-term integration of SRH services into health system resilience frameworks. In contrast East Nusa Tenggara's more developmental approach involving midwife training and community engagement offers a sustainable model but struggle with emergency responsiveness. Both systems demonstrate partial alignment with the Minimum Initial Service Package (MISP) but fall short of fully embedding SRH continuity with national health preparedness frameworks. This comparative analysis highlights the urgent need for a hybrid approach combining rapid emergency responses with long term health system strengthening to ensure SRH resilience in the face of climate challenges. The report concludes that policy frameworks in both countries must prioritize the institutionalization of SRH leadership in disaster coordination, ensure uninterrupted maternal and contraceptive services during emergencies, and improve monitoring through gender disaggregated data collection. To ensure the sustainability and equity of SRH service delivery in the era of climate change, governments, donors, and health partners must urgently invest in localized, gender sensitive, and climate resilient healthcare strategies that uphold reproductive rights even during the most extreme environmental shocks.

REFERENCES

- Andung, P. A., Jelahun, F. E., Swan, M. V. D. P., & Ali, Mohd. N. S. (2025). Community-based health communication model as maternal mortality mitigation. *Interface - Comunicação, Saúde, Educação*, 29, e230652. <https://doi.org/10.1590/interface.230652>
- Ansah, E. W., Amoadu, M., Obeng, P., & Sarfo, J. O. (2024). Health systems response to climate change adaptation: A scoping review of global evidence. *BMC Public Health*, 24(1), 2015. <https://doi.org/10.1186/s12889-024-19459-w>
- Aryanty, R. I., Romadlona, N., Besral, B., Panggabean, E. D. P., Utomo, B., Makalew, R., & Magnani, R. J. (2021). Contraceptive use and maternal mortality in Indonesia: A community-level ecological analysis. *Reproductive Health*, 18(1), 42. <https://doi.org/10.1186/s12978-020-01022-6>
- Aryastami, N. K., & Mubasyiroh, R. (2021). Traditional practices influencing the use of maternal health care services in Indonesia. *PLOS ONE*, 16(9), e0257032. <https://doi.org/10.1371/journal.pone.0257032>
- Asokan, S. M., Kweyu, R. M., Kalibbala, M. M., & Obando, J. A. (2025). Prolonged drought and governance challenges in Turkana County, Kenya – Access to water and livelihood changes. *Environmental Development*, 55, 101193. <https://doi.org/10.1016/j.envdev.2025.101193>
- Australia Indonesia Health Security Partnership (AIHSP). (2021). *Review of Regulations on Health Emergency Operation Centres in Indonesia*. [Review Report]. Australia Indonesia Health Security Partnership (AIHSP).
- Beek, K., Drysdale, R., Kusen, M., & Dawson, A. (2021). Preparing for and responding to sexual and reproductive health in disaster settings: Evidence from Fiji and Tonga. *Reproductive Health*, 18(1), 185. <https://doi.org/10.1186/s12978-021-01236-2>
- Belton, S., Myers, B., & Ngana, F. R. (2014). Maternal deaths in eastern Indonesia: 20 years and still walking: an ethnographic study. *BMC Pregnancy and Childbirth*, 14(1), 39. <https://doi.org/10.1186/1471-2393-14-39>
- Biddle, L., Wahedi, K., & Bozorgmehr, K. (2020). Health system resilience: A literature review of empirical research. *Health Policy and Planning*, 35(8), 1084–1109. <https://doi.org/10.1093/heapol/czaa032>
- Burns, P. A., & Mutunga, C. (2024). Addressing the Impact of Climate Change on Sexual and Reproductive Health Among Adolescent Girls and Young Women in Low- and Middle-Income Countries. *Global Health: Science and Practice*, 12(1), e2300374. <https://doi.org/10.9745/GHSP-D-23-00374>
- CDKN. (2017). The drought in Kenya: 2016–2017. *CDKN (Climate and Development Knowledge Network)*. <https://cdkn.org/sites/default/files/files/The-drought-in-Kenya-2016-2017.pdf>
- Davidz, I. K. L. A., Kuntoro, K., Joewono, H. T., & Irwanto, I. (2022). Risk factors of early neonatal death in East Nusa Tenggara, Indonesia: A case-control study. *Paediatrica Indonesiana*, 62(4), 282–290. <https://doi.org/10.14238/pi62.4.2022.282-90>
- Desai, Z., & Zhang, Y. (2021). Climate Change and Women's Health: A Scoping Review. *GeoHealth*, 5(9), e2021GH000386. <https://doi.org/10.1029/2021GH000386>
- Dimitrov, Dr. B. E. G. (2019). *Effects of Climate change on Women*. 04(05), 201-215.
- Domingo, A., Little, M., Beggs, B., Brubacher, L. J., Lau, L. L., & Dodd, W. (2024). Examining the role of community health workers amid extreme weather events in low- and middle-income countries: A scoping review. *Public Health*, 236, 133–143. <https://doi.org/10.1016/j.puhe.2024.07.023>
- Douglas Sendora Okenyori*, & Vincent Omwenga Matoke. (2024). *SOCIO-DEMOGRAPHIC FACTORS INFLUENCING MODERN CONTRACEPTIVE UTILIZATION AMONG*

- WOMEN OF THE REPRODUCTIVE AGE IN TURKANA COUNTY, KENYA. <https://doi.org/10.5281/ZENODO.12632419>
- Fletcher, E. R., & Bhattacharji, C. (2024). Climate and Health. *Health Policy Watch News*.
- Florentianus, T., & Maria, B. M. (2019). The Effect of Accessibility on Performance of Maternal and Child Health Policy Implementation in East Nusa Tenggara Province, Indonesia. *Global Journal of Health Science*, 11(11), 180. <https://doi.org/10.5539/gjhs.v11n11p180>
- Fortnam, M., Hailey, P., Mbelenga, E., Balfour, N., Odhiambo, S., & Odundo, E. (2020). *Climate shock responsiveness of the Kenya health system* (p. 57) [OPM]. Oxford.
- Griffith, E. F., Kipkemai, J. R., Robbins, A. H., Abuom, T. O., Mariner, J. C., Kimani, T., & Amuguni, H. (2020). A One Health framework for integrated service delivery in Turkana County, Kenya. *Pastoralism*, 10(1), 7. <https://doi.org/10.1186/s13570-020-00161-6>
- Handayani, S., Febriani, T., & Handito, A. (2024). *Risk Factors for Low Birth Weight (LBW) Infants in East Nusa Tenggara (NTT) Province*. 18(02), 46–54.
- Huho, J. M., & Kosonei, R. C. (2013). *THE OPPORTUNITIES AND CHALLENGES FOR MITIGATING CLIMATE CHANGE THROUGH DROUGHT ADAPTIVE STRATEGIES: THE CASE OF LAIKIPIA COUNTY, KENYA*. 04(03), 453.
- Inside Indonesia. (2016). Teen pregnancy in Manggarai. Inside Indonesia. <https://www.insideindonesia.org>.
- James, S., Wilczek, L., Kilian, J., Timonen-Kallio, E., Bravo, A., Del Valle, J. F., Formenti, L., Petruskiene, A., Pivoriene, J., & Rigamonti, A. (2022). A Comparative Analysis of Residential Care: A Five-Country Multiple Case-Design Study. *Child & Youth Care Forum*, 51(6), 1031–1062. <https://doi.org/10.1007/s10566-021-09666-6>
- Kenya National Bureau of Statistics (KNBS), & ICF Macro. (2010). *KENYA DEMOGRAPHIC AND HEALTH SURVEY 2008-09* (p. 430) [Kenya Demographic and Health Survey 2008-09.]. KNBS and ICF Macro.
- Kenya News Agency. (2023). UNFPA launches maternal and child health project in drought-affected counties. *Kenya News Agency*. <https://kenyanews.go.ke>
- KNBS, & ICF. (2023). *Kenya Demographic and Health Survey 2022* (p. 656) [Kenya Demographic and Health Survey 2022]. KNBS and ICF.
- KNBS, & ICF International. (2015). *Kenya Demographic and Health Survey 2014* (p. 575) [Kenya Demographic and Health Survey 2014]. KNBS and ICF.
- Kuswanto, H., Hibatullah, F., Soedjono, E. S., & Efendi, F. (2019). Survey data of household perceptions of drought, mitigation and adaptation practices in East Nusa Tenggara, Indonesia. *Data in Brief*, 24, 103944. <https://doi.org/10.1016/j.dib.2019.103944>
- Kuswanto, H., Puspa, A. W., Ahmad, I. S., & Hibatullah, F. (2021). Drought Analysis in East Nusa Tenggara (Indonesia) Using Regional Frequency Analysis. *The Scientific World Journal*, 2021, 1–10. <https://doi.org/10.1155/2021/6626102>
- LOBOLIA, W. A. (2024). *Factors Influencing Utilization of Sexual and Reproductive Health Services among Adolescents in Turkana South Sub County, Turkana County, Kenya*. KeMU.
- Logie, C. H., Toccalino, D., MacKenzie, F., Hasham, A., Narasimhan, M., Donkers, H., Lorimer, N., & Malama, K. (2024). Associations between climate change-related factors and sexual health: A scoping review. *Global Public Health*, 19(1), 2299718. <https://doi.org/10.1080/17441692.2023.2299718>
- Maina, I., Wanjala, P., Soti, D., Kipruto, H., Droti, B., & Boerma, T. (2017). Using health-facility data to assess subnational coverage of maternal and child health indicators, Kenya. *Bulletin of the World Health Organization*, 95(10), 683–694. <https://doi.org/10.2471/BLT.17.194399>
- Marigi, S. N. (2017). Climate Change Vulnerability and Impacts Analysis in Kenya. *American Journal of Climate Change*, 06(01), 52–74. <https://doi.org/10.4236/ajcc.2017.61004>
- Martha, E., Besral, Zainita, U. H., Rilfi, N. A., & Aminudin, S. A. (2025). Adolescents' Knowledge on Climate Change: A Nationwide Study in Indonesia. *International Journal*

- of *Environmental Research and Public Health*, 22(4), 571. <https://doi.org/10.3390/ijerph22040571>
- Ministry of Health. (2014). *Health sector disaster risk management strategic plan 2014-2018*. <http://www.health.go.ke>
- Ministry of Health, R. of I. (2019). *Regulation No. 75 of 2019 concerning Health Crisis Management*. [Regulation]. Ministry of Health.
- Mosadeghrad, A. M., Isfahani, P., Eslambolchi, L., Zahmatkesh, M., & Afshari, M. (2023). Strategies to strengthen a climate-resilient health system: A scoping review. *Globalization and Health*, 19(1), 62. <https://doi.org/10.1186/s12992-023-00965-2>
- MUHIDIN, S. (2022). Working together to improve maternal health. *Inside Indonesia*. <https://www.insideindonesia.org/working-together-to-improve-maternal-health>.
- Muragijimana, C., Ntakirutimana, T., & Khan, S. (2024). Climate change, culture and health: Indigenous resilience, a study from Turkana County, Kenya. *Jàmá: Journal of Disaster Risk Studies*, 16(1). <https://doi.org/10.4102/jamba.v16i1.1647>
- Mursidi, A., & Sari, D. A. P. (2017). *Management of Drought Disaster in Indonesia*. 03(02), 165–171.
- Myhre, S., Frønsdal, K., Ames, H., & Papadopoulou, E. (2024). *Building and strengthening climate resilient health systems in low- and middle-income country contexts*. Norwegian Institute of Public Health.
- Nasir, S., Ahmed, R., Kurniasih, M., Limato, R., Tulloch, O., Syafruddin, D., & Koning, K. D. (2016). Challenges that Hinders Parturients to Deliver in Health Facilities: A Qualitative Analysis in Two Districts of Indonesia. *Makara Journal of Health Research*, 20(3), 80–88. <https://doi.org/10.7454/msk.v20i3.6072>
- National Population and Family Planning Board (BKKBN), Statistics Indonesia (BPS), Ministry of Health, & ICF. (2018). *Indonesia Demographic and Health Survey 2017* [Indonesia Demographic and Health Survey 2017].
- Nidhi, A., & Charles, D. M. (2020). *Climate Change Impacts on Women's Health in Kenya: Issues and Challenges*. 7(11).
- Nurlambang, T., Dimyati, R. D., Purbantoro, B., Rahatiningtyas, N. S., Legowo, D. A., Fakhruddin, A., Dimyati, M., & Enshito, G. P. S. (2024). State-of-the-Art Drought Handling in Indonesia. *Indonesian Journal of Geography*, 56(3). <https://doi.org/10.22146/ijg.92812>
- Nyambura, M. I. (2017). Access to Healthcare among Marginalised Kenyan Communities: A Case Study of the People of Turkana County, Republic of Kenya. (*Doctoral Dissertation, Strathmore University*).
- Obiezu-Umeh, C., Nwaozuru, U., Mason, S., Gbaja-Biamila, T., Oladele, D., Ezechi, O., & Iwelunmor, J. (2021a). Implementation Strategies to Enhance Youth-Friendly Sexual and Reproductive Health Services in Sub-Saharan Africa: A Systematic Review. *Frontiers in Reproductive Health*, 3, 684081. <https://doi.org/10.3389/frph.2021.684081>
- Obiezu-Umeh, C., Nwaozuru, U., Mason, S., Gbaja-Biamila, T., Oladele, D., Ezechi, O., & Iwelunmor, J. (2021b). Implementation Strategies to Enhance Youth-Friendly Sexual and Reproductive Health Services in Sub-Saharan Africa: A Systematic Review. *Frontiers in Reproductive Health*, 3, 684081. <https://doi.org/10.3389/frph.2021.684081>
- Oluoch-Aridi, J., Afulani, P., Makanga, C., Guzman, D., & Miller-Graff, L. (2021). Examining person-centered maternity care in a peri-urban setting in Embakasi, Nairobi, Kenya. *PLOS ONE*, 16(10), e0257542. <https://doi.org/10.1371/journal.pone.0257542>
- Owolabi, O. O., Giorgio, M., Leong, E., & Sully, E. (2023). The confidante method to measure abortion: Implementing a standardized comparative analysis approach across seven contexts. *Population Health Metrics*, 21(1), 9. <https://doi.org/10.1186/s12963-023-00310-0>

- Pappas, A., Kovats, S., & Ranganathan, M. (2024). Extreme weather events and maternal health in low-income and middle-income countries: A scoping review. *BMJ Open*, 14(6), e079361. <https://doi.org/10.1136/bmjopen-2023-079361>
- Perehudoff, K., Kibira, D., Wuyts, E., Pericas, C., Omwoha, J., Van Den Ham, H. A., Mantel-Teeuwisse, A. K., & Michielsen, K. (2022). A comparative human rights analysis of laws and policies for adolescent contraception in Uganda and Kenya. *Reproductive Health*, 19(1), 37. <https://doi.org/10.1186/s12978-021-01303-8>
- Rambu Ngana, F., & Eka Karyawati, A. A. I. N. (2021). Scenario modelling as planning evidence to improve access to emergency obstetric care in eastern Indonesia. *PLOS ONE*, 16(6), e0251869. <https://doi.org/10.1371/journal.pone.0251869>
- Rashid, M. A., Fareed, M. S., & Murtaza, M. (2024). Impact of Climate Change on Maternal and Child Health. *Research Article*, 01(02), 6.
- Ray-Bennett, N. S., Ekezie, W., Biswas, I., Choudhary, N. I., Cowie, D., Dissanayake, L., Macleod, L., Nnaji, A., & Sahoo, M. (2024). Sexual and Reproductive Service Interventions for Menstrual Regulation, Safe Abortion, and Post-abortion Care and Their Effectiveness During Disaster Response: A Global Systematic Review. *International Journal of Disaster Risk Science*, 15(3), 359–373. <https://doi.org/10.1007/s13753-024-00565-7>
- Rich, S., Jacobi, L., Talbi, N., Wolfington, A., & McDonald, K. (2024). No Matter When or Where: Addressing the Need for Continuous Family Planning Services During Shocks and Stressors. *Global Health: Science and Practice*, 12(6), e2400124. <https://doi.org/10.9745/GHSP-D-24-00124>
- Roos, N., Kovats, S., Hajat, S., Filippi, V., Chersich, M., Luchters, S., Scorgie, F., Nakstad, B., Stephansson, O., & CHAMNHA Consortium. (2021). Maternal and newborn health risks of climate change: A call for awareness and global action. *Acta Obstetrica et Gynecologica Scandinavica*, 100(4), 566–570. <https://doi.org/10.1111/aogs.14124>
- Rosen, J. G., Mulenga, D., Phiri, L., Okpara, N., Brander, C., Chelwa, N., & Mbizvo, M. T. (2021). “Burnt by the scorching sun”: Climate-induced livelihood transformations, reproductive health, and fertility trajectories in drought-affected communities of Zambia. *BMC Public Health*, 21(1), 1501. <https://doi.org/10.1186/s12889-021-11560-8>
- Rousseau, C. (2023). Climate change and sexual and reproductive health: What implications for future research? *Sexual and Reproductive Health Matters*, 31(1), 2232196. <https://doi.org/10.1080/26410397.2023.2232196>
- Santoso, B. I., & Surya, R. (2017). Knowledge, Attitude, and Practice of Contraception among Pregnant Women in Ende District, East Nusa Tenggara, Indonesia. *Journal of South Asian Federation of Obstetrics and Gynaecology*, 9(2), 110–118. <https://doi.org/10.5005/jp-journals-10006-1470>
- Segal, T. R., & Giudice, L. C. (2022). Systematic review of climate change effects on reproductive health. *Fertility and Sterility*, 118(2), 215–223. <https://doi.org/10.1016/j.fertnstert.2022.06.005>
- Silaen, M., Rahayu, S., Aryanti, I., Prasetyo, A., Wahyuni, S., Wahyono, T. T., Sumarno, Mumfangati, T., Irmawan, Saksono, H., Rachmadhani, A., Nur, Y. H., & Marannu, B. (2025). Health and socio-economic factors as determinants of antenatal care service access in Indonesia. *Clinical Epidemiology and Global Health*, 33, 102010. <https://doi.org/10.1016/j.cegh.2025.102010>
- Statistics Indonesia (Badan Pusat Statistik—BPS), National Population and Family Planning Board (BKKBN), Kementerian Kesehatan (Kemenkes—MOH), & ICF International. (2013). *Indonesia Demographic and Health Survey 2012* (p. 520) [Indonesia Demographic and Health Survey 2012].
- Tampubolon, R., Nusawakan, A. W., Tauho, K. D., & Sujana, T. (2023). *VILLAGE GOVERNMENT'S STRATEGY IN IMPLEMENTING THE MATERNAL AND CHILD HEALTH REVOLUTION POLICIES*. 5(01).

- Tat, F., Irfan, I., & Bait, M. M. (2020). The Availability of Health Resources on the Performance of Maternal and Child Health Policy Implementation in East Nusa Tenggara. *Global Medical & Health Communication (GMHC)*, 8(3). <https://doi.org/10.29313/gmhc.v8i3.6082>
- The New Humanitarian. (2017). *Drought pushes Kenya's pastoralists to the brink*. <https://www.thenewhumanitarian.org/2017/10/12/drought-pushes-kenya-s-pastoralists-brink>
- Uhe, P., Philip, S., Kew, S., Shah, K., Kimutai, J., Mwangi, E., Van Oldenborgh, G. J., Singh, R., Arrighi, J., Jjemba, E., Cullen, H., & Otto, F. (2018). Attributing drivers of the 2016 Kenyan drought. *International Journal of Climatology*, 38(S1). <https://doi.org/10.1002/joc.5389>
- UNFPA, K. (2022a). Kenya drought crisis: A generational disaster for women and girls. *UNFPA Kenya*. <https://kenya.unfpa.org>
- UNFPA, K. (2022b). Mothers are walking 10 kilometers without food: Drought and maternal health in Turkana. *UNFPA Kenya*. <https://kenya.unfpa.org>
- UNFPA, K. (2023). Emergency outreach and dignity kits in Turkana County: UNFPA field response. *UNFPA Kenya*. <https://kenya.unfpa.org>
- UNICEF. (2023). *Climate, nutrition, and maternal health risks in Indonesia: A province-level risk map* (p. 44) [ANNUAL REPORT]. <https://www.unicef.org/indonesia/media/20911/file/UNICEF%20AR%202023%20English.pdf>
- UNICEF Indonesia. (2023). *CLIMATE CHANGE AND NUTRITION IN INDONESIA A REVIEW OF THE EVIDENCE FOR POLICY AND PROGRAMME STRENGTHENING* [A REVIEW]. <https://www.unicef.org/indonesia/media/22726/file/climate-change-nutrition-Indonesia.pdf>
- Utomo, B., Romadlona, N. A., Naviandi, U., BaharuddinNur, R. J., Makalew, R., Liyanto, E., Nanwani, S., Dibley, M. J., & Hull, T. H. (2025). Census block based loglinear regression analysis of health and social determinants of maternal mortality in Indonesia 2010–2021. *Scientific Reports*, 15(1), 9397. <https://doi.org/10.1038/s41598-025-91942-9>
- Women Deliver. (2021). *THE LINK BETWEEN CLIMATE CHANGE AND SEXUAL AND REPRODUCTIVE HEALTH AND RIGHTS* (p. 48) [AN EVIDENCE REVIEW]. <https://womendeliver.org/>
- World Health Organization. (2023). *Climate change and health*. <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>
- Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods* (6th ed.). SAGE Publications.