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On Our Lands, On Our Bodies.

Climate Change, Gender, and Sexual and Reproductive Health in Rural and Indigenous Communities in Brazil, Kenya, and Tanzania

With people, from the margins to the centre

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ACRONYMS

CEDAW – Convention on the Elimination of All Forms of Discrimination Against Women

CIOMS – Council for International Organizations of Medical Sciences

FGDs – Focus Group Discussion(s)

GBV – Gender-Based Violence

GDPR – General Data Protection Regulation

HIV – Human Immunodeficiency Virus

KAP – Knowledge, Attitudes, and Practices

KIIs – Key Informant Interview(s)

LCIs – Life-Course Interview(s)

LGBTQI+ – Lesbian, Gay, Bisexual, Transgender, Queer/Questioning, Intersex, and others

LMICs – Low- and Middle-Income Countries

ODK – Open Data Kit

PII – Personally Identifying Information

SOGIESC – Sexual Orientation, Gender Identity and Expression, and Sex Characteristics

SRH – Sexual and Reproductive Health

SRHR – Sexual and Reproductive Health and Rights

SRJ – Sexual and Reproductive Justice

STIs – Sexually Transmitted Infection(s)

TBAs – Traditional Birth Attendant(s)

TPB – Theory of Planned Behavior

UN Women – United Nations Entity for Gender Equality and the Empowerment of Women

UNFPA – United Nations Population Fund

UNICEF – United Nations Children's Fund

WASH – WAter, Sanitation and Hygiene

WHO – World Health Organization

EXECUTIVE SUMMARY

Launched during COP30 in November 2025, this report highlights the **crucial links between climate change and sexual and reproductive health and justice (SRHJ), with a particular focus on Indigenous and rural communities.** Hosted in Belém — at the heart of the Amazon — COP30 provides a powerful backdrop to emphasise that **climate justice must also entail gender justice**, and to centre those who have long safeguarded vital ecosystems and are now among the most affected by the climate crisis. Far from being solely an environmental concern, **climate change has emerged as a multi-dimensional public health crisis**, with its most severe impacts disproportionately affecting women and girls in low- and middle-income countries.

The study examines these dynamics across three regions: **Ceará state in Brazil, the counties of Isiolo, Kwale, and Narok in Kenya, and the island of Pemba in Tanzania**. Despite differences in geography and culture, these areas face comparable challenges—such as drought, erratic rainfall, land degradation, and rising sea levels—which exacerbate pre-existing inequalities in access to healthcare, food security, economic opportunity, and bodily autonomy. The research was carried out by a joint team from **WeWorld and ARCO**, working closely with WeWorld's **local teams in Brazil, Kenya, and Tanzania.**[1]

These local teams were instrumental throughout the project, from shaping research questions and collecting data to developing policy recommendations. Their deep community knowledge and long-standing relationships ensured that **the research remained relevant and responsive to local priorities.**

Adopting a feminist, decolonial, and intersectional approach, and grounded in participatory research methodologies, **this report provides robust evidence to support integrated, community-led responses**. It calls for SRHJ to be recognised as a key and cross-cutting pillar of just and sustainable climate action. The study presents valuable evidence, testimonies, and potential pathways for action in dedicated sections for each country, while also offering overarching recommendations to promote integrated and inclusive responses to the complex challenges identified. The research process has also significantly strengthened the skills and capacities of the local teams involved.

Building on this solid foundation, WeWorld intends to use the study's insights to strategically inform and shape future programmes, ensuring that interventions are responsive to community needs, culturally relevant, and effective in advancing both climate resilience and sexual and reproductive health and justice.


Photo: WeWorld


Photo: WeWorld


Photo: WeWorld

1 In Brazil, the research was conducted with the support of Avuar Social

BRAZIL: How Environmental Stress Affects Intra-Household Power Dynamics and Gender Relations Among Indigenous Communities in Ceará

In Brazil, the study was conducted in collaboration with Indigenous communities in the state of Ceará. The study focuses on **how the effects of climate change are reshaping intra-household power dynamics, particularly in relation to sexual negotiation, family planning, early marriage, gender-based violence, and access to care and information**. Given the complexity and sensitivity of these issues, the study deliberately prioritises qualitative insights over quantitative data, placing greater value on the detailed narratives and lived experiences of community members; this approach allows for a deeper understanding of the social realities and nuances that numbers alone cannot capture. Indeed, three main qualitative tools have been integrated: 24 biographical interviews to women aged 18 and above, 6 focus group discussions in six Indigenous villages, involving a total of 59 women, and 11 key informant interviews.

Key Findings

- Climate change is destabilising family farming and severing historical ties to the land, knowledge, and seasonal cycles, while land insecurity and extractive activities threaten ecosystems, Indigenous sovereignty, and community stability.
- Environmental degradation, including poor water quality and food insecurity, is having a severe impact on Indigenous health—particularly for women and children—leading to higher rates of respiratory, gastrointestinal, and chronic illnesses.
- Extreme weather events and damaged infrastructure are restricting access to healthcare services, including prenatal and specialist care, especially during the rainy season.
- Indigenous women are increasingly taking on leadership roles in family and community decision-making, yet male dominance in areas such as reproductive health and contraception often persists.
- Early cohabitation and pregnancies are widespread, driven by poverty, cultural expectations, and gendered domestic responsibilities, despite rising awareness and access to contraception among younger generations.
- Gender-based violence—rooted in patriarchal norms and exacerbated by climate stress, male migration, and economic pressures—is present and sometimes hidden, while informal women's support networks, though emerging, remain fragile, especially in more conservative communities.

KENYA: Climate Challenges on Sexual and Reproductive Health: Insights from Isiolo, Kwale and Narok Counties

In Kenya, the study focused on **how climate change-related factors affect reproductive and maternal health, particularly through the interconnected pathways of poverty and infrastructural disruption.** It was conducted across three counties—Narok, Isiolo, and Kwale—using a mixed-methods design. This included two focus group discussions per county (one with women under 25 and one with women over 25), each involving 6 to 10 participants; six key informant interviews; and a structured quantitative questionnaire administered to 50 women aged 18 and above in each county.

Key Findings

- Climate-related hazards such as drought, flooding, and extreme heat are widely felt across Narok, Isiolo, and Kwale, with 85% of women reporting significant changes in climate conditions, impacting water access, crop yields, and livestock health.
- Climate change is severely disrupting food systems and increasing the burden of unpaid labour for women, as 64% report difficulty accessing nutritious food due to declining agricultural productivity, rising prices, and income loss.
- Water scarcity is a critical issue, affecting not only food and income security but also women's health, hygiene, and safety—particularly in relation to menstrual and reproductive health.
- Women face compounded vulnerabilities, with 91% reporting reduced access to health services, 89% experiencing negative impacts on pregnancy, and 83% facing worsened menstrual health management under climate stress.
- Structural and environmental barriers—such as damaged infrastructure, lack of transport, and long distances—are severely limiting access to maternal healthcare, contributing to widespread pregnancy-related complications.
- More than half of respondents (52%) still exercise reproductive autonomy, primarily through long-acting contraceptives—although male permission, economic hardship, and limited information continue to restrict access to family planning.

TANZANIA: Exploring the Relationship Between Climate Change and Maternal Health on Pemba Island

In Tanzania, the study was conducted on the island of Pemba, specifically in the areas of Konde, Micheweni, and Majenzi, to examine **how climate change influences maternal health—particularly through its impact on socioeconomic conditions**. A mixed-methods approach was adopted to gain a comprehensive understanding of these complex dynamics; this included interviews with 10 key informants, 5 biographical interviews, and a structured quantitative questionnaire administered to 100 women aged 18 and above.

Key Findings

- Extreme heat and drought are the most commonly reported climate phenomena, with significant consequences including damage to homes, loss of livestock, and reduced agricultural and fish yields.
- Water access is a major challenge, with 58% of women reporting difficulty and 81% forced to travel long distances to obtain water—posing risks to their health, particularly during pregnancy, and safety.
- Although 97% of women now give birth in health facilities, traditional birth attendants continue to play a vital role in early labour and postpartum care, illustrating an evolving synergy between cultural and biomedical maternal care practices.
- Gender norms continue to limit women's reproductive autonomy, with male relatives often controlling decisions around childbirth and contraceptive use, while pregnant women remain heavily burdened with unpaid domestic labour.
- Climate-induced food insecurity—driven by rising prices and reduced fish availability—is negatively affecting maternal nutrition and breastfeeding, with over half of women (56%) struggling to access nutritious food.
- Environmental stress is exacerbating maternal health risks by increasing vulnerability to climate-sensitive illnesses and weakening social support systems through migration, while also influencing family planning decisions amidst economic uncertainty.

CONCLUSIONS AND RECOMMENDATIONS

The findings reveal both unique and shared and interconnected challenges across Brazil, Kenya, and Tanzania. While these must be situated within their distinct geographical, historical and cultural landscapes, several salient themes resonate across all three regions: **climate change intensifies existing inequalities and exacerbates women's workloads through resource scarcity; cumulative burdens lead to psychological and health impacts, in particular on pregnant women; economic strain fuels household stress and gender-based violence; damage to infrastructure obstructs access to essential SRHR services; and migration induced by resource depletion fractures social networks**. These findings underscore that gender emerges as a critical, cross-cutting lens through which climate change impacts are experienced and mediated. Therefore, **gender-transformative analysis is essential to climate justice.**

Addressing these complex issues requires centring Indigenous, rural, and marginalised voices in rights-based, resilient solutions. Accordingly, we offer targeted recommendations for international and local key stakeholders:

FOR DONORS AND INTERNATIONAL FUNDERS

- Channel resources directly to local feminist and women-led organisations, ensuring funding bypasses bottlenecks at international intermediaries and reaches grassroots actors.
- Provide long-term, flexible, core funding that allows local and international organisations to adapt to evolving climate–SRHR challenges beyond short-term project cycles.
- Invest in interdisciplinary and intersectional research connecting climate, gender, SRHR, race, class, and geography, with priority for justice-oriented and participatory approaches.
- Create dedicated funding windows for SRHR within climate portfolios, recognising reproductive health as essential to resilience and adaptation.

FOR POLICYMAKERS (National Governments, COP30 Delegates, Multilateral Institutions)

- Institutionalise women's leadership in climate governance by addressing structural barriers to participation and ensuring that Indigenous, young, and marginalised women have meaningful roles in decision-making.
- Integrate SRHR into national climate adaptation and mitigation strategies, embedding sexual and reproductive healthcare and justice within broader resilience frameworks.
- Adopt rights-based, intersectional climate frameworks that explicitly recognise and address with targeted interventions the links between gender inequality, health disparities, environmental degradation, race, class, and origin.
- Establish transparent monitoring and accountability mechanisms, including gender-responsive budgeting and SRHR-sensitive indicators, to track whether gender justice commitments are fulfilled in both policy and practice.

FOR CIVIL SOCIETY ORGANISATIONS (CSOs)

- Innovate localised adaptation solutions that centre women's and girls' reproductive health needs, while addressing broader structural issues such as food insecurity, water scarcity, and the increasing burden of unpaid care work.
- Claim political space by demanding structured and ongoing participation in national delegations, COP processes, and climate financing mechanisms.
- Strengthen accountability mechanisms by tracking financial flows, monitoring the implementation of commitments, and mobilising affected communities to hold donors and governments to account.
- Build transnational solidarity to amplify local struggles on global platforms, making visible the interconnectedness of reproductive and climate justice across different geographies.
- Drive intersectional advocacy by forging coalitions across feminist, Indigenous, youth, health, and environmental movements to shift dominant narratives and influence global climate–SRHR agendas.
- Generate and legitimise alternative knowledge by amplifying community-based practices, Indigenous epistemologies, and feminist approaches to resilience.

FOREWORD

In Ceará, Brazil, Indigenous women describe how changing rainfall patterns and degraded soils have unsettled not only their crops but also the balance of their households. In Kenya, women link longer walks to collect water with increased risks to their health and safety, while in Tanzania, the rising cost of food makes adequate maternal nutrition almost impossible. These stories remind us that **the impacts of climate change are never just environmental; they reverberate through people's bodies, livelihoods, and social relations.**

Yet, despite the urgency, there remains a **striking gap in knowledge on how climate change intersects with gender** and, in particular, with **sexual and reproductive health and justice** (SRHJ). Research in this field is limited, and too often it overlooks the perspectives of the very communities most affected. ***On Our Lands, On Our Bodies*** seeks to help fill this gap. It provides rare and needed evidence that climate disruption is simultaneously a health crisis, a care crisis, and a justice crisis, and that these dimensions cannot be separated from one another.

The significance of this study lies not only in its findings but also in its approach. Grounded in **feminist political ecology** and guided by **decolonial and participatory methods**, the research was **co-developed with local teams and communities across Brazil, Kenya, and Tanzania**. Women's testimonies and priorities informed the design of the study and shaped the conclusions. In doing so, **the research challenges extractive models of knowledge production** and demonstrates the value of community-led evidence: it is richer, more contextual, and more immediately relevant for shaping policies and programmes.

The findings are compelling. In Ceará, climate stress is reshaping gender relations, as women assume new leadership roles while still facing constraints on reproductive autonomy and persistent gender-based violence. In Isiolo, Kwale, and Narok counties in Kenya, 91% of women surveyed reported reduced access to health services under climate pressure, and 64% struggled to secure nutritious food, illustrating how environmental shocks translate directly into reproductive and maternal health risks. On Pemba Island in Tanzania, women face the dual challenge of extreme heat and food insecurity, with 56% unable to access nutritious food during pregnancy and 81% travelling long distances to fetch water.

These patterns clearly show that climate change amplifies inequalities, places disproportionate burdens on women, and undermines rights to health and autonomy.

But the report also documents resilience and adaptation. In all three contexts, **women are innovating**: combining traditional and biomedical maternal care, exercising reproductive decision-making despite the odds, and organising informal support networks. **Such agency is often invisible to policymakers**, yet it is precisely here, in the interplay of environmental stress, gendered labour, and community strategies, that resilience is being built.

For WeWorld, this study also reflects our broader **commitment to community-owned practices**. In Brazil, our transition to Avuar Social marks a milestone in shifting power and resources to local leadership. Avuar Social is not an offshoot but a transformation: a newly established Brazilian organisation with deep community roots and the autonomy to chart its own course. This journey illustrates that if international actors are to remain relevant, they must do more than "partner", they must actively create space for local organisations to lead, while committing to long-term, flexible support.

The timing of this report is equally important. COP30, hosted in the Amazon, is both a symbolic and material reminder of what is at stake. Thirty years of climate negotiations have brought commitments, but too often without accountability. Today, in a context of political polarisation and denial of scientific evidence, the temptation is to simplify, to depoliticise, or to detach climate responses from the daily realities of communities. This study resists that drift. It insists that **gender and reproductive justice are not peripheral but integral to climate justice, and that ignoring them will only deepen the very crises we seek to resolve.**

> It is precisely here, in the interplay of environmental stress, gendered labour, and community strategies, that resilience is being built.

The gaps in evidence are real, but they are not insurmountable. Research like *On Our Lands, On Our Bodies* begins to address them, while also building the capacity of local teams and organisations to continue generating knowledge. It offers policymakers, donors, and civil society actors practical insights into how climate change is mediated through gender, health, and social relations, and why interventions must reflect this complexity if they are to be just and effective.

Civil society organisations such as WeWorld have a role in amplifying these insights, but the leadership must remain with local and locally-led organisations. Their expertise and legitimacy are indispensable, and their voices must be heard not only in community spaces but also in national strategies and global negotiations.

At WeWorld, we see this study as both a contribution and a challenge. It contributes urgently needed knowledge, grounded in the realities of Indigenous and rural women to support locally-led research, to embed SRHJ within climate policies, and to treat gender justice as integral, not peripheral, to climate action. *On Our Lands, On Our Bodies* is a reminder that the path to resilience lies not only in technical solutions but in rights, care, and justice. This study points us in that direction. The responsibility to follow through is ours.

Stefania Piccinelli,
Head of International Programmes

> This study challenges us, as international organisations, policymakers, and funders, to act differently: to support locally-led research, to embed SRHJ within climate policies, and to treat gender justice as integral, not peripheral, to climate action.

CHAPTER 1.
Intersecting Crises: Climate Change, Gender, and Health

Climate change is increasingly recognised as a multidimensional public health crisis with far-reaching consequences for Sexual and Reproductive Health (SRH) and Justice, particularly in low- and middle-income countries (LMICs) (WHO, 2023). The intersections between environmental degradation and reproductive health outcomes constitute a critical yet underexplored frontier in global health research, with profound implications for some of the world's most vulnerable populations.

A recent scoping review by Arunda et al. (2024) has identified **strong associations between climate-related phenomena—including extreme temperatures, flooding, droughts, and rainfall variability—and a range of adverse SRH outcomes.** These environmental stressors have been linked to increased incidences of low birth weight, stillbirths, and pregnancy complications, while also limiting access to contraceptive services and contributing to heightened rates of HIV and other infections. Moreover, **climate-induced displacement and resource scarcity have been shown to exacerbate the risk of gender-based violence (Deasi & Mandal, 2021) and reinforce practices such as early marriage and female genital mutilation** (Pope et al., 2022).

Despite growing evidence of these interconnections, significant gaps remain in research and knowledge production: particularly concerning the effects of climate change on access to abortion, fertility care, gynecological cancers, and contraception in LMIC settings. These gaps are especially stark when considering how climate-related stressors disproportionately impact marginalised communities, such as Indigenous and rural populations, who frequently bear the brunt of both environmental degradation and entrenched health inequities.

Climate-related stressors act as threat multipliers, intensifying existing gender inequalities and placing women, adolescents, and children at heightened risk. Food insecurity and water scarcity contribute to maternal and infant malnutrition, compromising reproductive health across the life course. At the same time, **climate-induced displacement—driven by flooding, desertification, and land degradation—creates conditions that increase vulnerability to sexual violence, transactional sex, period poverty and the systemic disruption of essential SRH services** (IPCC, 2019). These cascading effects give rise to a complex web of interlinked vulnerabilities that demand urgent and coordinated responses from researchers, policymakers, and practitioners.

Given the overlapping nature of environmental and social vulnerabilities, integrated and context-sensitive approaches are essential. These must address not only ecological stressors and health disparities, but also broader concerns of social justice. In this sense, applying an intersectional lens is vital for unpacking how climate change impacts SRH outcomes, as it underlines the ways in which multiple identities and social positions—including gender, ethnicity, socio-economic status, geographic location, and age—interact to shape patterns of vulnerability and resilience, as well as women, racialised individuals, people with disabilities, and those with diverse SOGIESC (sexual orientation, gender identity and expression, and sex characteristics), who face intersecting forms of marginalisation that compound their exposure to both environmental risks and reproductive health challenges.

Another key analytical is **Feminist Political Ecology (FPE)**, which serves as a generative space for fostering engaged and dynamic research at the intersection of feminist and environmental theory and practice. FPE places strong emphasis on the lived and embodied experiences of individuals and communities, promoting research that is grounded in place-specific realities and attentive to the ways people emotionally and physically respond to environmental, social, and economic change. It also highlights that knowledge is situated and produced at multiple scales, including through everyday practices and interactions, thereby challenging dominant narratives and making visible the often-overlooked political dimensions of environmental and reproductive justice (Harcourt et al., 2021).

Understanding these complex intersections requires careful examination of the specific socio-ecological contexts[2] in which they unfold (Siegel, 2024). **This comparative study aims to**

2 In recent ecofeminist thinking, the term socioecological contexts refers to the deep interconnectedness between human lives, social structures, and ecological systems. It recognises that social inequalities—such as those based on gender, race, class, and ability—cannot be separated from environmental issues like climate change, pollution, or biodiversity loss. They are all part of the same complex and interwoven system. This newer phase of ecofeminist thought builds on posthumanist and material feminist theories to move beyond traditional divides between human and non-human, nature and culture, body and mind. It invites us to think in terms of relationships: not only between people, but also between humans, other species, the environment, objects, and systems of power. From this perspective, a socioecological context is not just a physical location. It includes the web of material, emotional, historical and political relationships that shape how people experience and respond to environmental and social change. For example, an Indigenous woman's experience of climate breakdown may differ significantly from that of an urban white woman, because their socioecological contexts—shaped by place, identity, and systems of privilege or marginalisation—are profoundly different (Siegel, 2024).

explore these critical dynamics through focused research on Indigenous and rural communities in Brazil, Kenya, and Tanzania—three countries that, despite their diverse geographical, cultural, and socio-economic landscapes, share common challenges related to climate vulnerability and disparities in sexual and reproductive health and justice. Each, indeed, is experiencing the accelerated impacts of climate change, with women and girls in rural and Indigenous communities disproportionately bearing the burden (Barnard, 2022; UNFCCC, 2022; FAO, 2024).

Research Goals: Towards Community-Led Climate Resilience and Gender Justice

This study seeks to **deepen understanding of the complex ways in which climate change impacts sexual and reproductive health and justice across diverse ecological and cultural settings.** It focuses particularly on those most affected—such as women and girls in rural and Indigenous communities—who face multiple, overlapping forms of marginalisation including epistemic injustice, gender-based violence, social discrimination, and heightened environmental risks (FAO, 2023; Ram & Shahzar, 2024; Wei et al., 2024; Maliganya et al., 2025).

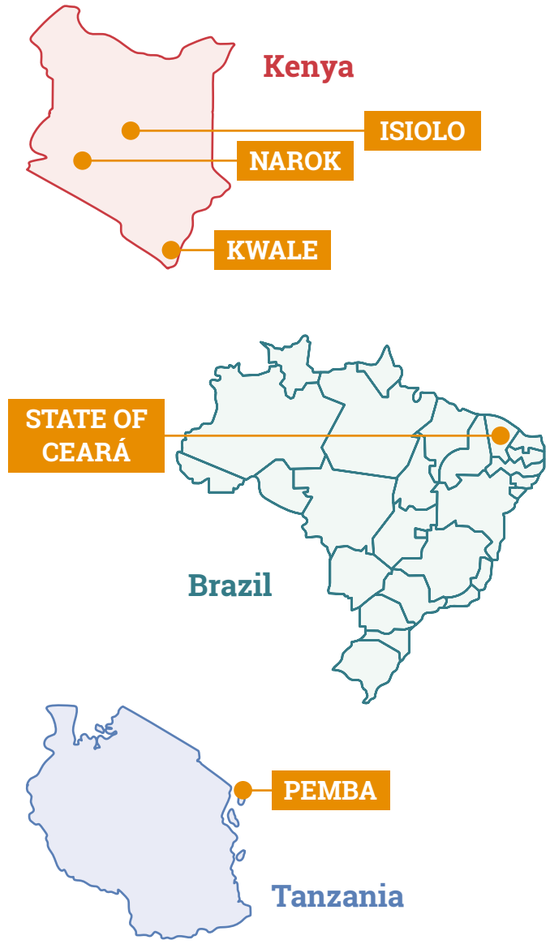
In addition, this study aims to inform tangible actions that enhance climate resilience while upholding the rights and health of women and girls. By grounding the research in the knowledge, experiences, and leadership of the communities themselves, and by addressing both vulnerabilities and strengths (Sen, 2000; Nussbaum, 2002), the project seeks to **foster more equitable and contextually sensitive responses to the intertwined and ongoing crises of climate change and gender inequality**. Emphasising community-led approaches, the study recognises that **truly sustainable solutions must originate from—and be owned by—those most directly affected by these overlapping challenges** (Rawling et al., 2021). This perspective not only respects and enhances local expertise, but also promotes empowerment, ensuring interventions are culturally appropriate and capable of tackling systemic barriers.

Moreover, the research responds to the frequent lack of mainstreaming of climate and SRH linkages in intervention programmes, where these issues are often overlooked or considered secondary priorities (UNFPA, 2024). By producing evidence grounded in participatory, locally-led research facilitated by WeWorld—an organisation deeply rooted in the study territories—**this project strives to deliver practical, context-specific recommendations**. These recommendations aim to guide policy and programme design in ways that are realistic, implementable, and responsive to the lived realities of the communities most impacted. In this sense, it aligns with **the Gender-Transformative Climate Action Framework** (Saigal & Shrivastava), which challenges dominant top-down approaches to climate action by placing gender equality, justice, and social transformation at the heart of climate resilience. Rather than treating gender as a marginal or add-on concern, **this framework recognises that climate change is deeply embedded in existing systems of power and inequality.** Addressing these inequalities—particularly those affecting women, girls, and marginalised communities—is not just a matter of fairness, but a necessary pathway for building a sustainable resilience.

Therefore, the research aspires to **bridge grassroots realities with policy development,** contributing to systemic change that integrates environmental sustainability with social justice imperatives, ensuring that interventions not only mitigate climate impacts but also advance gender equity and community resilience.

In Brazil, the focus is on the sertão, a semi-arid inland region already undergoing desertification, where Indigenous communities face increasing food and water insecurity (Gori et al., 2018; Obermaier et al., 2014). In Kenya, the research encompasses both the ASAL (arid and semi-arid lands) regions such as Narok and the coastal area of Kwale, which are highly vulnerable to droughts, floods, and economic instability (Acaps, 2022; ASAL Humanitarian Network, 2022). Additionally, informal settlements in Nairobi represent urban spaces where climate change, poverty, and social vulnerabilities intersect, further hindering access to vital SRHR services. The multifaceted nature of these challenges creates a precarious environment for women and girls, amplifying risks related to maternal health, sexual violence, and reproductive autonomy. In Tanzania, the focus is on Pemba Island, where rising sea levels, water salinisation, and food insecurity (McCormack, 2019) are recognised as significant drivers of health risks, particularly for pregnant women (Roos et al., 2021; Hadley et al., 2023; WHO, 2023). The compounded effects of environmental degradation and limited healthcare resources intensify maternal and infant health vulnerabilities, underscoring the urgent need for integrated and context-sensitive interventions.

This comparative, multisite study combines shared methodological principles with locally adapted priorities and tools. **It is situated within the framework of sexual and reproductive and climate justice, contributing to the international debate on the necessity of integrated policies and the strengthening of gender equality and human rights in the most critical climate contexts.** The study has been **conducted through a participatory and decolonial lens** (Lenette, 2022; Udah, 2024), **ensuring that local voices were central not only in shaping the research questions but also in the design of tools and interpretation of findings,** actively challenging epistemic injustice by valuing local knowledge systems and lived experiences as equally legitimate sources of understanding[3] (Fricker, 2007; Agra, 2020). All phases of the research—from the formulation of the guiding questions in the three contexts to the development of research instruments—were fully co-designed.



This process involved local WeWorld teams, including in the case of Brazil, where the team underwent a localisation process[4], working as non-professional researchers in close and continuous collaboration with the professional research team from the WeWorld Research Centre and the ARCO research centre at the University of Florence. This approach ensured methodological rigour while preserving local relevance and ownership. Particular attention has been given to Indigenous and rural communities, who are often excluded from decision-making processes despite being central to effective adaptation, mitigation, and resilience strategies. These communities possess invaluable knowledge systems and innovative practices that are crucial for developing contextually appropriate responses[5].

3 Epistemic injustice, a concept developed by Miranda Fricker (2007), refers to the forms of inequality and harm that occur specifically in the domain of knowledge—how it is produced, shared, and valued. Emerging from the field of social epistemology, this framework shifts the focus from the isolated individual to the social and structural conditions that shape who is recognised as a credible knower. It highlights how power relations within society affect the distribution and legitimacy of knowledge. These injustices are particularly pronounced for women and for groups whose knowledge systems have been historically stigmatised, especially when they do not conform to dominant Western epistemological frameworks. This is especially true for Indigenous women, whose ways of knowing have been excluded, dismissed, or appropriated through colonial and patriarchal systems. Such epistemic violence is not merely interpersonal but systemic, as Martinez Dy (2020) argues, calling attention to the institutional and structural foundations of such injustices. In response, epistemic resistance—through the affirmation of Indigenous epistemologies, oral traditions, and embodied and relational ways of knowing—emerges as a vital form of decolonial and feminist praxis. It reclaims the authority to name, interpret, and transmit experience, challenging hegemonic narratives and redefining what counts as knowledge and who holds the power to produce it.

4 Localisation is a collective process aimed at repositioning local actors—such as civil society organisations and local public institutions—at the centre of humanitarian systems and responses. This involves fostering more equitable partnerships between international and local stakeholders, increasing funding that reaches local organisations as directly as possible, and enhancing their central role in aid coordination and delivery. The localisation process acknowledges the expertise, proximity, and legitimacy of local actors in addressing community needs, and seeks to shift power and resources accordingly to improve the effectiveness, sustainability, and contextual relevance of aid. It also entails strengthening local structures and partnerships to ensure that programmes are designed and led by those most closely connected to the affected communities.

5 The methodological process will be outlined in detail at page 16.

From Sexual and Reproductive Health to Sexual and Reproductive Justice

The term **"sexual and reproductive justice" has its roots in 1994, when a collective of 12 Black feminists in the United States coined the expression "reproductive justice"** (Morison, 2021). Their objective was to shift the debate, then dominated by the "pro-life" versus "pro-choice" dichotomy, towards a broader vision that accounted for the social, economic, and racial dimensions of reproductive issues. The collective denounced how reproductive rights movements primarily focused on the experiences of white, cisgender, and heterosexual women, excluding those of Black and racialised women and other marginalised groups.

In the same year, **the Cairo Conference on Population and Development (ICPD) recognised sexual and reproductive health, including family planning, as an essential condition for women's empowerment, full realisation of rights, and gender equality.** The 1994 ICPD marked a historic shift from population control narratives to a people-centred vision of reproductive health, and the frameworks used to define and act upon sexual and reproductive issues have continued to expand. **Twenty-five years later, the United Nations General Assembly renewed these commitments, calling on countries to address both longstanding and emerging inequalities in sexual and reproductive health**[6]. This progression from Sexual and Reproductive Health (SRH) to Sexual and Reproductive Health and Rights (SRHR), and finally to the more encompassing and justice-oriented framework of Sexual and Reproductive Justice (SRJ), is not simply chronological or semantic—it reflects the growing recognition that access to services and legal rights, whilst necessary, are not sufficient to ensure equity, dignity, and freedom in matters of sexuality and reproduction.

Today as yesterday, freedom of choice and sexual and reproductive health, especially of women, continue to be subject to social, cultural, and institutional control. **The shift towards SRJ acknowledges that reproductive oppression is not merely about individual access to services, but about systematic power structures that seek to control women's bodies and reproductive decisions** (Onwuachi-Saunders et al., 2019; Eathon & Stephens, 2020; Morison, 2021). Patriarchal control has not disappeared but has evolved, adapting to contemporary contexts whilst maintaining its fundamental objective of limiting women's autonomy.

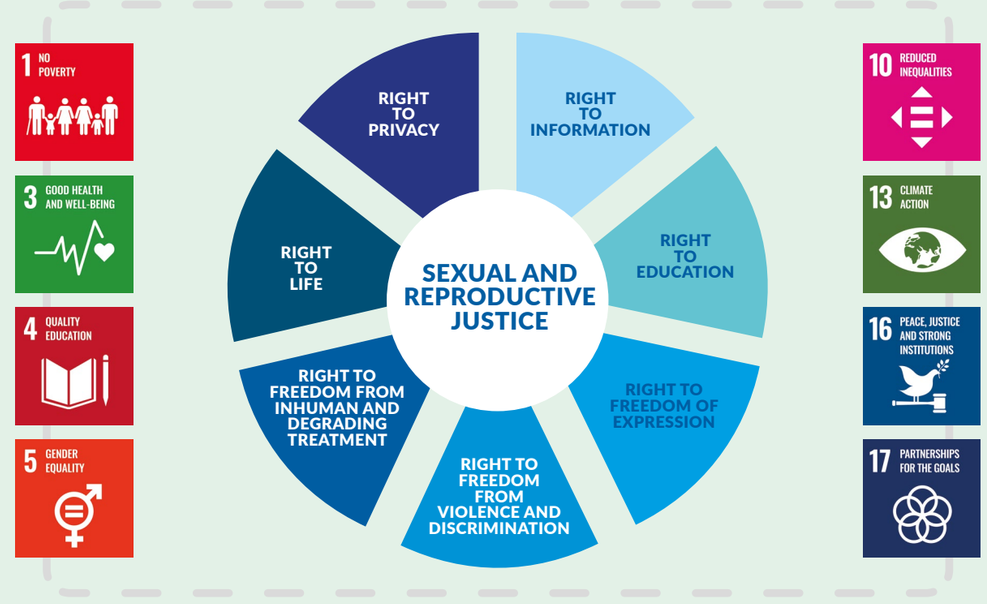
These dynamics persist in more subtle, context-specific forms, embedded in policies, institutions, and social norms that continue to constrain reproductive freedom.

The reinstatement of the Global Gag Rule by the US government in January 2025 exemplifies how this control operates through policy mechanisms that extend far beyond national borders. This policy severely limits global access to safe abortion and comprehensive reproductive healthcare, demonstrating how political decisions in one country can undermine women's rights worldwide. The impact has been profound: **the drastic reduction in funding is pushing many NGOs to the breaking point, with almost half (47%) expecting to shut down within six months if current funding levels persist. A staggering 51% of organisations have already been forced to suspend programmes, including those supporting survivors of gender-based violence and providing critical access to protection, livelihoods, multi-purpose cash, and healthcare**. Almost three-quarters (72%) report having been forced to lay off staff—many at significant levels (UN Women, 2025).

Therefore, **adopting a sexual and reproductive justice approach today means recognising the interconnection between fundamental human rights—such as the right to health, life, privacy, information, and freedom from violence, discrimination, and inhumane treatment—and each person's power to make autonomous choices about their own body and life.** It means ensuring access to contraception, safe abortion, menstrual health, and adequate care in an environment free from pressure and discrimination. Upholding bodily autonomy involves ensuring each person's right to make free choices, respecting their own desires and values, without suffering violence or impositions—a crucial objective for gender equality and full respect for human rights. Furthermore, **bodily autonomy is also a profoundly political and collective issue.** Promoting it means **confronting the systemic structures of oppression, such as patriarchy, racism, and economic inequalities, that restrict people's reproductive freedoms and shape whose bodies and choices are deemed legitimate** (Pacia, 2020). Transforming the broader social, cultural, and institutional conditions that continue to reproduce power imbalances is therefore essential. In this sense, bodily autonomy becomes both a personal right and a collective endeavour—a cornerstone of gender justice and of a more equitable society.

The framework of sexual and reproductive justice

WeWorld's elaboration based on High-Level Commission on the Nairobi Summit, 2022



The relevance of the SRJ framework becomes even more urgent when considering the intersection with climate change. Environmental degradation, resource scarcity, extreme weather, and displacement all have direct and indirect effects on reproductive health and autonomy, with women and girls in rural and Indigenous communities disproportionately affected, often facing compounded risks to their health, safety, rights and future.

6 In 2019, on the 25th anniversary of the landmark Cairo Conference, the Nairobi Summit renewed global commitments to the implementation of sexual and reproductive rights through the Nairobi Statement, which outlined 12 specific objectives. These include universal access to sexual and reproductive health and rights—even in humanitarian settings—combating gender-based violence and harmful practices and promoting gender equality. To monitor the implementation of these goals, a High-Level Commission was established, which publishes an annual progress report assessing how countries are advancing in ensuring sexual and reproductive rights. The latest report is available here: https://www.nairobisummiticpd.org/sites/default/files/HLC%20Report%202023_Report_28%20Sept.pdf

Over recent decades, indeed, **global understanding of climate change has evolved beyond purely environmental concerns to embrace critical dimensions of social and gender justice** (Terry, 2009; Kaijser & Kronsell, 2014; IPCC, 2022). From the early recognition that vulnerable communities disproportionately suffer the consequences of climate change, to landmark international agreements such as the Paris Agreement, there has been a growing emphasis on equity and the principle of common but differentiated responsibilities. In the same year, the 2030 Agenda for Sustainable Development integrated climate action (SDG 13) with goals addressing poverty, gender equality, and health, making it clear that environmental sustainability must go hand in hand with human rights and social equity. **The emerging concept of a "Just Transition" — ensuring that workers and communities are not left behind in the shift to renewable energy — has further deepened our understanding of what a fair and inclusive climate response should look like (Hizliok & Scheer, 2024). Today, the notion of climate justice encompasses racial, gender, economic, and intergenerational justice.** To address these challenges effectively, therefore, climate governance must actively include the voices of those most impacted—such as Indigenous communities, women, and those living in poverty—to ensure just and equitable solutions.

In this context, the timing is especially significant as COP30, scheduled from 10 to 21 November 2025, in Belém (Brazil), is expected to place unprecedented focus on the role of rural and Indigenous communities in climate solutions, recognising their vital contributions to environmental stewardship and climate adaptation strategies. This moment offers an opportunity to challenge long-standing forms of *epistemic injustice* (Fricker, 2007), by centring knowledge systems that have historically been marginalised, dismissed, or appropriated within dominant climate discourses. Ultimately, **this study aims to promote integrated and intersectional approaches to climate and gender justice while strengthening the relevance of SRJ within international cooperation agendas and multilateral processes** ahead of COP30. By demonstrating the critical linkages between climate change and SRHR through rigorous comparative analysis, this research seeks to elevate reproductive health considerations within global climate governance frameworks and advocate for more comprehensive, rights-based responses to the climate crisis.

WeWorld's Commitment to Climate Change and Sexual and Reproductive Health and Justice: An Intersectional and Decolonial Approach for Equity and Sustainability

At WeWorld, **we approach both climate change and SRJ through an ecofeminist[7], feminist political ecology (FPE)[8], intersectional, and decolonial lens[9]**. This means **centring the experiences of those most affected by injustice—women, girls, marginalised communities, and recognising the deep interconnections between the exploitation of the planet, patriarchal structures, and systemic inequality**. Both climate and SRHJ are, indeed, part of our work strategy, as domains of change —areas where transformation is not only necessary, but urgent, to achieve gender justice, human rights, and sustainable development.

WeWorld operates in over 20 countries, addressing the interconnections between environmental and gender-based vulnerabilities. We believe that tackling SRH and climate change together strengthens individual and collective agency, supports resilient communities, and promotes equity across generations. In the countries where we operate, WeWorld carries out a wide range of actions—**from awareness-raising, education and training to concrete, community-based interventions**—to advance SRHJ and promote gender equality.

7 Ecofeminism is a branch of feminism that explores the deep-rooted connections between the oppression of women and the degradation of nature. Coined by French scholar Françoise d'Eaubonne in her 1974 essay *"Le féminisme ou la mort"*, the term gained momentum through a series of conferences in the United States during the 1970s and 1980s, where feminist scholars and environmentalists came together to analyse the intertwined structures of patriarchy, capitalism, and ecological exploitation. Ecofeminists argue that both the subordination of women and the destruction of the natural world stem from deliberate systems shaped by patriarchal and capitalist values. At its core, ecofeminism draws on key feminist principles—gender equality, non-hierarchical structures, and respect for interdependence, and care. It expands these ideas to include a commitment to the environment and a critique of how patriarchal systems have historically associated women with nature in ways that justify the subjugation of both. By highlighting the interconnectedness of sexism, animal exploitation, and the abuse of natural resources, ecofeminism calls for a radical reimagining of our world—one that values all forms of life, sees the Earth as sacred, and understands liberation as collective and interlinked (Pal, 2021).

8 FPE is an analytical framework that explores the intersection of gender, power, and the environment, highlighting gender as a key factor in determining access to and control over resources. Building on political ecology, it incorporates feminist theory to foreground the experiences and viewpoints of women and other marginalised groups. FPE examines how environmental issues are deeply connected to social, economic, and political inequalities, with a particular focus on those rooted in gender (Benjaminsen & Svarstad, 2021).

9 Decolonial theory is a critical framework that seeks to dismantle the lasting effects of colonialism by challenging Eurocentric systems of knowledge and power. Rooted in the work of anti-colonial thinkers like Frantz Fanon and Aimé Césaire, and further developed by scholars such as Aníbal Quijano, Walter Mignolo, and María Lugones, it exposes how colonial domination persists through structures of power, race, gender, and economy (Mignolo & Walsh, 2021). In recent years, this framework has informed growing critiques within the aid and development sector. The concept of decolonial aid has gained significant traction, challenging the dominance of Western-led humanitarian and development models. Traditionally, these systems have privileged Eurocentric frameworks that marginalise or ignore the knowledge, leadership, and lived experiences of local communities. Decolonial aid seeks to dismantle these enduring colonial legacies by rejecting the presumed superiority of Western methodologies and instead centring local ownership, expertise, and self-determination (Peace Direct et al., 2021). These critiques extend beyond the field of aid and development and have shaped feminist thought as well. In 2010, María Lugones introduced the concept of decolonial feminism, highlighting how colonialism has deeply influenced dominant understandings of gender and power. She argued that colonial systems imposed hierarchies—such as human versus non-human and male versus female—in ways that dehumanised Indigenous peoples and racialised communities, casting them as inferior or outside of normative gender frameworks. Decolonial feminism challenges the universalising tendencies of mainstream (often white, Western) feminism and calls for engagement with diverse bodies of knowledge produced by marginalised women and gendered subjects around the world. This includes scholars, activists, and communities from Indigenous, Afro-descendant, mixed, migrant, and rural backgrounds (Lugones, 2010). Together, decolonial aid and decolonial feminism seek to reframe the terms of justice, centring relationality, resistance, and plurality in the pursuit of liberation.

Our work focuses on key areas such as **maternal and child health, menstrual health and hygiene management (MHHM), and the prevention of gender-based violence, early and forced marriage**, and **female genital mutilation**. Internationally, we run MHHM programmes in countries such as Kenya, Palestine, Mozambique, and Tanzania, promoting awareness and education around menstrual justice, including for men and boys. A key tool is the **Menstrual Diary,** designed to help girls better understand their bodies and experience menstruation free from stigma. Originally produced in Italian, it is now available in English, Swahili, Arabic, and Moldovan.

In Italy, we have implemented local and national initiatives for over a decade, including *Spazio Donna*—a network present in seven cities that offers listening spaces and empowerment paths for women. Through advocacy actions like the #StopTheTamponTax campaign and the publication of *"enCYCLEpedia. The Things You Should Know About Menstrual Justice"*, **Italy's first national report on menstrual poverty, we have pushed for a national menstrual justice agenda**. This includes the #SixStepsFor manifesto and the *Menstrual Activist Kit* to support grassroots advocacy.

Our commitment to gender equality and sexual and reproductive health and rights (SRHR) is closely linked to our climate action. We work in areas facing increasing climate-related challenges such as droughts, floods, and sea level rise. Our approach integrates **water, sanitation and hygiene (WASH), climate resilience, and disaster risk reduction (DRR),** fostering inclusive, community-led development. In Kenya, Mozambique, and Nicaragua, we implement nature-based solutions such as agroecology, rainwater harvesting, and climate-resilient agriculture; in Palestine, we focus on water reuse and safe sanitation; in Libya, we have led environmental awareness campaigns to protect ecosystems. The link between the climate crisis and SRH is increasingly evident: inequalities are worsening and risks for women and girls are rising. That's why WeWorld adopts an integrated and transformative approach. One example is the *Wonder Women* series, which highlights stories of grassroots changemakers like Sereti Nabaala, a Maasai activist in Kenya addressing climate and menstrual health together. In Europe, we promote youth engagement and awareness-raising on climate justice, migration, and gender equality, helping younger generations shape a fairer, more sustainable future.

1.2. A Decolonial, Rights-Based, and Community-Driven Approach and Methodology

This study adopts a **participatory, community-driven approach**, consistent with WeWorld's commitment to **decoloniality**, **gender justice**, and **eco-resilience**[10]. Rooted in a **human rights-based framework**, it challenges extractive research paradigms by treating communities not as objects of inquiry, but as **active political subjects** and **co-creators of knowledge** (Smith, 2018). In contexts of intersecting environmental and social injustices, especially those faced by **Indigenous peoples, rural populations, and women,** it is crucial to centre **local voices**, lived experiences, and knowledge systems (Saigal & Shrivastava, 2025).

Using a **mixed-methods approach**, combining both **quantitative and qualitative data**, the research is grounded in the intersection of several complementary theoretical frameworks. These include the **Theory of Planned Behaviour** (Ajzen, 1991, 2011) and the **KAP model** (Knowledge, Attitudes, and Practices), which are widely used to understand how individual behaviours are shaped by beliefs, perceptions, and social expectations, particularly in the fields of public health and gender research (Launiala, 2009; UNICEF, 2021). These models provide a behavioural lens for examining how SRHR are influenced in contexts affected by environmental and social stressors.

To situate these behavioural insights within broader structures of power and inequality, the study also draws on **Feminist Political Ecology (FPE)** (Harcourt et al., 2021), **ecofeminist theory** (Shiva, 1988; Plumwood, 1993), and **decolonial thought** (Lenette, 2022; Udah, 2024). These frameworks offer critical tools to examine how gender, environment, and colonial legacies intersect, shaping access to resources, knowledge systems, and decision-making processes in climate-vulnerable settings. In particular, they help highlight how systemic and structural inequalities influence both environmental risks and SRHR outcomes.

In terms of methodology, the research is informed by principles of **Participatory Action Research (PAR)** and **community-based approaches** (Lloyd-Evans, 2023), which prioritise local knowledge, collective inquiry, and active engagement with affected communities.

10 Eco-resilience refers to the capacity of ecological and social systems to absorb shocks, adapt to change, and transform in response to environmental stresses—such as those related to climate change—while maintaining or enhancing biodiversity, livelihoods, and wellbeing. It acknowledges the interdependence between human and non-human systems and places emphasis on equity, sustainability, and the agency of communities, particularly those historically marginalised (IPCC, 2022).

Rather than treating participants as passive subjects, this approach recognises them as co-producers of knowledge and agents of change[11]. It is especially well-suited for exploring the social and gender dimensions of SRHR under climate stress, where community dynamics, social norms, and lived experiences are central.

By combining behavioural theories with feminist and decolonial approaches, and embedding them within participatory research practice, this study seeks not only to understand individual and collective behaviour, but also to identify possibilities for transformative change grounded in local realities and knowledge systems.

A PARTICIPATORY RESEARCH GROUNDED IN FEMINIST POLITICAL ECOLOGY

Conducting research in Indigenous and rural communities, especially with women and girls, requires an approach that is both participatory and grounded in feminist political ecology. This means **actively involving communities not just as subjects of study, but as equal partners in knowledge creation, recognising their expertise and lived experiences**. A feminist-ecological lens emphasises the interconnectedness of social inequalities, gender dynamics, and environmental factors, highlighting how structural barriers affect bodily autonomy and wellbeing. By centring these principles, the study moves beyond traditional research to foster empowerment, co-creation, and transformative action that respects local realities and supports systemic change (Ardil, 2013; Godden et al., 2020; Gonda et al., 2021; Staffa et al., 2021; Erikainen, 2022).

In practice, **this meant direct engagement with communities at every stage of the research process, fostering ongoing ethical reflexivity and critical awareness of power dynamics throughout the study.** This continuous dialogue ensured that the research remained accountable, respectful, and responsive to the voices and priorities of those involved.

A MIXED-METHODS APPROACH

The complex relationship between climate change and SRHR requires a methodological approach that integrates diverse types of knowledge. To address this, the study employs a mixed-methods strategy, combining quantitative, qualitative, and participatory tools in a cohesive and mutually reinforcing framework.

Central to the study is **a Knowledge, Attitudes, and Practices (KAP) survey, administered to a diverse sample of adolescents and adults.** The survey identifies perceived climate impacts and SRHR challenges, explores awareness and access to services, and investigates attitudes and gender norms influencing reproductive choices in environmentally stressed contexts. The KAP model provides a structured yet flexible framework to understand how climate-related challenges intersect with community knowledge systems and prevailing social expectations.

Complementing the survey, **qualitative methods, including key informant and in-depth biographical interviews,** provide a deeper understanding of cultural, social, and institutional factors affecting SRHR amid climate pressures. Participants range from health workers and traditional leaders to women and girls from various backgrounds, capturing both broad societal impacts and individual lived experiences. These methods highlight strategies people use to cope, protect wellbeing, and resist marginalisation. Participatory focus groups further enrich the study by enabling collective knowledge sharing and surfacing issues often overlooked, especially among marginalised groups (Bonetti & Natali, 2024).

Rather than treating methods separately, the study dynamically integrates them: qualitative insights inform survey design and focus group topics, while survey findings are explored and contextualised through lived experiences and group discussions.

The strength of this mixed-methods approach lies not only in methodological diversity but in triangulation[12]; the deliberate cross-validation of data from different sources, methods, and perspectives. This triangulation occurs on three levels:

1. **ACROSS METHODOLOGIES:** Quantitative findings are interpreted alongside qualitative and participatory data, revealing convergences and contradictions that single-method studies might miss.

2. **ACROSS RESPONDENT GROUPS:** The study incorporates a wide range of voices—community members of varying ages and genders, frontline workers, institutional actors, and traditional leaders—recognising that SRHR is shaped by complex systems of influence and power.

3. **ACROSS CONTEXTS:** By working in three distinct national and ecological settings (Brazil, Kenya, Tanzania), the study offers a comparative perspective that highlights both common patterns and context-specific phenomena.

11 It is grounded in the awareness that Indigenous women often face a specific form of epistemic injustice—not only through the silencing of their voices, but through the appropriation and misinterpretation of their intra-group resistance by dominant systems, especially state institutions. When the hermeneutic resources that Indigenous women use to express violence, identity, and belonging do not circulate within or are not legible to the state's judicial and social frameworks, their narratives risk being co-opted, depoliticised, or "whitened." This leads to a re-colonisation of their experiences, where recognition is granted only through frameworks alien to their worldview. A truly decolonial and community-driven methodology must therefore work to create spaces where these epistemologies are not only heard but respected on their own terms—resisting translation into dominant categories and making room for plural forms of justice and knowledge (Porciello et al., 2025).

12 Triangulation means using different ways to collect and check information to make sure the results are reliable and trustworthy. By looking at the same topic from different angles—such as talking to different people, using different methods, or checking different sources—researchers can identify consistencies and discrepancies, which helps build a more comprehensive and accurate understanding of the phenomenon being studied. This reduces bias and strengthens the overall findings by ensuring they are not reliant on a single method or source alone.

Far from seeking to standardise findings across countries, **this triangulated approach builds a rich, contextually grounded, and structurally informed evidence base.** It enables the study to move beyond description, towards in-depth analysis, and ultimately, transformative change.

DATA COLLECTION TOOLS AND SAMPLING STRATEGY

Given the participatory and comparative nature of the study, the specific combination of tools, respondent groups, and fieldwork strategies was tailored through distinct, locally adapted assessment protocols for each territory. **This flexible approach, grounded in feminist methodology, ensures contextual relevance, alignment with local priorities, and adherence to ethical standards** (Godden et al., 2020)**. By combining quantitative and qualitative methods, the study balances broad, generalisable data with in-depth exploration of lived experiences, meanings and voices, advancing epistemic justice by centring women's and marginalised groups' perspectives and recognising the vital role of speech and narrative** (Nancy, 2018; Reid & Gilberg, 2014). In this sense, in-depth interviews and focus groups serve not only for data collection but as collective spaces for meaning-making and knowledge co-production, honouring community agency and offering more nuanced insights into the links between climate change and sexual and reproductive health and rights (Kook et al., 2019).

Table 1.
DATA COLLECTION TOOLS

Tool type	Description	Scope	Number of participants
KAP Survey	Structured questionnaire on Knowledge, Attitudes, Practices and Norms	Kenya and Tanzania	Kenya: 150 Tanzania: 120
Key Informant Interviews (KII)	Semi-structured interviews with stakeholders and service providers	All territories	Kenya: 5 Tanzania: 6 Brazil: 9
Focus Group Discussions (FGD)	Thematic group discussions to explore perceptions and community narratives	Kenya and Brazil	Kenya: 36-40 Brazil: 36-40
In-depth biographical interviews	Personal narratives to explore lived experience of intersectional vulnerability and resilience	Brazil Tanzania	Brazil: 24 Tanzania: 5

The study adopted a purposive and stratified sampling strategy[13], adjusted to reflect local demographics, accessibility, and ethical considerations. The KAP survey targeted a diverse sample across gender, age, and rural-urban contexts, prioritising adolescents, women of reproductive age, older women (including menopausal), displaced persons, and Indigenous communities. Sample sizes balanced representativeness and feasibility, while interviewers were matched to participants by gender and language to ensure ethical sensitivity and comfort. All tools and protocols were rigorously validated locally before fieldwork began (UN Women, 2023).

DEFINING, DESIGNING, AND DELIVERING CONTEXTUALISED RESEARCH: A NINE-MONTH PARTICIPATORY PROCESS

The research process lasted approximately nine months, beginning in January 2025 and concluding in September 2025. It included several operational phases that enabled the implementation of a participatory, community-led, and feminist approach to research.

1. **DEFINITION OF KEY RESEARCH AREAS:** the specific contexts of Pemba in Tanzania; Kwale, Isiolo, and Narok in Kenya; and the Ceará State in Brazil were selected following numerous consultations with WeWorld's local teams. These teams have long-standing experience working in these areas and are themselves rooted within these communities, ensuring deep contextual understanding and sustained relationships.

2. **FORMULATION OF RESEARCH QUESTIONS:** research questions were developed through preliminary participatory dialogues with the local WeWorld team, key informants and community members, ensuring they reflected local priorities and knowledge. These initial sessions, organised as focus group discussions and led by the local WeWorld team, explored how climate change intersects with

13 A purposive and stratified sampling strategy means that participants were carefully chosen on purpose, based on specific characteristics relevant to the study, rather than being selected randomly. The group was also divided into different subgroups (strata) — such as age, gender, or location — to ensure that the sample included diverse perspectives and represented key segments of the population.

gender, age, ethnicity, and socio-economic status to shape differentiated vulnerabilities and violations related to SRHJ. Specifically, they led to the identification of **three priority issues in each context**—that is, three key ways in which climate change most strongly impacts SRHR. Rather than imposing externally defined problems, the study **prioritised local epistemologies** and community-identified concerns as the foundation for inquiry. Building on this, **three research questions**—one for each context—were identified collaboratively with the local teams.

3. **DESIGN OF RESEARCH TOOLS AND METHODOLOGIES**: the specific research tools were also **designed and validated locally**. This process ensured **cultural relevance, linguistic clarity**, and **ethical safety**, particularly when addressing sensitive topics such as menstrual health, early marriage, menopause, sexual violence, and reproductive autonomy. All instruments were translated into local languages by native speakers, with particular attention paid to **conceptual accuracy** rather than literal equivalence.

4. **FIELD-BASED DATA COLLECTION:** field research was carried out **directly by the local teams**, following dedicated training provided by researchers from WeWorld and ARCO. Throughout this phase, the two teams worked in **close collaboration**, ensuring **continuous support** not only in technical terms, but also in a **relational and emotional capacity**, given the often-sensitive nature of the issues addressed.

5. **ANALYSIS AND SHARING OF RESULTS:** the study also included a **robust plan for restitution and accountability**. Findings were returned to participating communities through **local multi-stakeholder restitution workshops**, designed not only to share the results, but also to **analyse them collectively** and to **co-develop actionable recommendations**.

The results were also disseminated in the form of **locally adapted versions of the final report**, ensuring accessibility and reinforcing the visibility of each community's contribution. These workshops and reports were conceived as **spaces for political dialogue**, strengthening **community ownership** of the process and **actively resisting the colonial legacy of one-way knowledge extraction**. By placing **human rights**, **gender equity**, and **climate justice** at the centre, this study aimed not only to document existing inequalities, but to contribute to **systemic transformation** driven by those most affected.

Table 2.
PHASES OF THE PARTICIPATORY AND COMMUNITY-LED RESEARCH

Phase	Description
Preliminary Meetings and Training	Initial coordination of meetings with WeWorld local staff in the three countries, including training sessions on focus group facilitation led by the WeWorld-ARCO research team.
Community-Based Focus Groups	Local staff conducted focus groups with key informants to define context-specific research questions. Activities took place in Pemba (Tanzania), Narok, Isiolo, and Kwale (Kenya), and in the State of Sertão (Brazil).
Validation and Reflection Meetings	Joint sessions with local staff to validate the research questions and reflect on the conceptual, cultural, and ethical foundations of the tools.
Tool Development and Validation	Design of research tools, followed by local validation exercises to ensure cultural and contextual relevance.
Field Research Training	Training sessions delivered to local teams on fieldwork methodology, ethical considerations, and the use of research tools.
Fieldwork Implementation	Local teams carried out field research in their respective contexts, with ongoing support from the WeWorld-ARCO team throughout the process.
Data Analysis	Data were analysed by the WeWorld-ARCO team, with continuous collaboration and feedback loops with the local researchers who conducted the fieldwork.
Multi-Stakeholder Dialogues	Three stakeholder roundtables—one per country—were held with key informants and institutional actors to discuss the findings and co-develop tailored recommendations.
Country-Specific Report Versions	Based on the final report, three country-specific versions were created to ensure that findings were returned to the communities involved, recognising and valuing their substantial contribution to the study.

ETHICAL CONSIDERATIONS

This study addresses profoundly sensitive topics, including menstrual health, early puberty, fertility, menopause, and gender-based violence. **To uphold the dignity, safety, and well-being of all participants, the research rigorously follows established international ethical frameworks[14].**

At the heart of the ethical approach lies a deep commitment to three fundamental principles:

- **Beneficence:** Ensuring the research delivers real benefits to participants and communities by informing impactful policies and programmes.
- **Non-maleficence:** Minimising risks of physical, emotional, or social harm, including stigma and retraumatisation.
- **Respect for autonomy:** Guaranteeing voluntary participation through clear, culturally sensitive informed consent. Participants are informed about the study's purpose, their rights to refuse questions, and to withdraw without consequences.

Recognising the cultural diversity and complex power dynamics within and between communities, the research design places great emphasis on respecting cultural sensitivities. Questions are crafted to be culturally appropriate, avoiding harm or discomfort. Interview and focus group **settings are thoughtfully chosen to guarantee privacy and emotional safety for participants, while also considering the well-being of data collectors.** This includes ensuring that spaces for dialogue are free from coercion or surveillance by authority figures, and that facilitators are trained to respond compassionately to distress or disclosures of violence.

Confidentiality is paramount: data are anonymised, securely stored and transferred in line with General Data Protection Regulation (GDPR) (EU Regulation 2016/679[15]) standards, and access to raw data is restricted. Personal identifiers are destroyed after data cleaning.

Moreover, **ethics in this study are understood as a situated, relational practice that requires ongoing reflexivity and attentiveness to power imbalances**—not only between researchers and participants but also within communities themselves (Goedecke, 2024). **Building trustful, respectful relationships throughout the research process is essential to fostering genuine dialogue and co-production of knowledge.** Finally, the wellbeing of research teams is prioritised through ethical and trauma-informed training, ongoing support, and strategies to navigate sensitive research challenges (Pittaway et al., 2010).

14 Such as: the CIOMS International Ethical Guidelines for Health-related Research Involving Humans (2016), the WHO Standards and Operational Guidance for Ethics Review of Health-Related Research with Human Participants (2011), the WHO Ethical and Safety Recommendations for Researching, Documenting and Monitoring Sexual Violence in Emergencies (2007), and the UNICEF Procedure for Ethical Standards in Research, Evaluation, Data Collection and Analysis (2021).

15 The General Data Protection Regulation (GDPR) (EU Regulation 2016/679) is a European Union regulation that governs the processing of personal data and privacy. Adopted on 27 April 2016, its primary aim is to protect the fundamental rights and freedoms of individuals regarding their personal data, while also facilitating the free flow of such data within the EU. Chapter 3 of the GDPR (Articles 12–22) outlines key rights afforded to any individual whose data is processed (the "data subject"). These rights include:

- Right to transparent information (Art. 12): Individuals must receive clear and accessible information enabling them to fully understand and exercise their rights.
- Right to be informed (Arts. 13 & 14): Individuals have the right to be informed about the collection and use of their personal data, including the purpose and retention period.
- Right of access (Art. 15): Individuals can request access to their personal data being processed.
- Right to rectification (Art. 16): Individuals may request correction of inaccurate or incomplete data.
- Right to erasure ("right to be forgotten") (Art. 17) and right to restrict processing (Art. 18), with the data controller required to notify any recipients of the rectification or erasure (Art. 19).
- Right to data portability (Art. 20): Individuals can receive their personal data in a structured, commonly used format and transmit it to another data controller.
- Right to object (Art. 21): Individuals may object to their data being processed at any time.
- Right not to be subject to automated decision-making (Art. 22): Individuals are protected against decisions based solely on automated processing that significantly affect them.

CHAPTER 2.
Country Factsheets

Photo: Mirko Cecchi/WeWorld

Photo: WeWorld

Brazil

How Environmental Stress Affects Intra-Household
Power Dynamics and Gender Relations Among Indigenous Communities in Ceará

The photo was taken as part of the Cunhã Crodí Project.

Highlights

LIVING THROUGH CHANGE: CLIMATE IMPACTS ON LIVELIHOOD

- Climate change is destabilising family farming and severing historical ties to land, knowledge, and seasonal cycles.
- Water scarcity and contamination undermine health, daily care, and food security.
- Land insecurity and extractive activities threaten ecosystems, Indigenous sovereignty, and community stability.

FROM THE LAND TO THE BODY: HOW ENVIRONMENTAL STRESS SHAPES HEALTH, CARE, AND SAFETY

- Environmental degradation, food insecurity, and poor water quality, combined with climate change, directly impact the health of Indigenous peoples, especially women and children, causing an increase in respiratory, skin, gastrointestinal, and chronic diseases.
- Climate-related disruptions affect daily life and access to healthcare, with extreme weather, flooded or damaged roads. Isolation during rainy seasons limits urgent medical care, especially prenatal and specialised services.

GENDERED FAMILY LIFE IN A TIME OF CLIMATE CHANGE

- In many Indigenous communities, generational changes in gender relations are emerging, with women increasingly involved in family decisions thanks to greater access to education, income, and public policies, leading to a broader sharing of power.
- However, contradictions persist: in many cases, male control remains strong, especially regarding contraception and reproductive health.
- Women are burdened with a triple workload, balancing domestic duties, agricultural or paid labour, and community or political commitments, taking a clear toll on their mental and emotional well-being.

SEXUAL AND REPRODUCTIVE AUTONOMY: SOCIAL BARRIERS AND EMERGING AGENCY

- Access to contraceptives (pills, condoms, injectables, IUDs) has improved in Indigenous communities but in some cases remains limited by logistical challenges and cultural stigma.
- Sexuality is often framed by silence, obligation, and male entitlement; female pleasure and consent are rarely discussed.
- However, a generational shift is emerging, with increased openness about menstruation, contraception, and pregnancy, driven by education, internet access, and female leadership.
- Climate change impacts reproductive choices: women limit childbirth due to environmental stresses like water scarcity, food insecurity, and agricultural decline.

ADOLESCENCE, EARLY PREGNANCY, AND INTERGENERATIONAL TENSIONS

- Girls are experiencing earlier menarche (sometimes as young as 9 or 10), linked to environmental and dietary changes, including exposure to hormones and agrochemicals in food.
- Despite better access to contraception and awareness, early pregnancies are common, driven by poverty and gendered domestic pressures.
- Early cohabitation with men - often of the same age, sometimes older - is common, often as a survival strategy for economic security or shelter, sometimes with parental consent.

GENDER-BASED VIOLENCE: BETWEEN SILENCE AND SOCIAL MOBILISATION

- Gender-based violence (GBV) is widespread but often hidden or normalised. Many domestic violence cases go unreported due to shame, fear, or lack of institutional support.
- Machismo, patriarchy, and cultural traditions underpin GBV. External stressors such as resource scarcity, environmental degradation, economic instability, and male migration (all worsened by climate change) increase tensions at home and can result in domestic violence.
- Informal support networks form among women who share experiences and try to find ways to help each other, though they remain fragile, especially in conservative settings.

INDIGENOUS MOVEMENT: WOMEN AS KEY AGENTS OF RESILIENCE AND RESISTANCE

- Indigenous women are emerging as central figures in climate resilience, leading both environmental and social responses in their communities.
- Through collective organising, women are creating spaces of care, solidarity, and political learning, challenging both violence and climate injustice.
- Speaking out remains risky for many, especially in conservative areas of society where silence around gender issues is still the norm.

1. Understanding the Context

CEARÁ'S DEMOGRAPHY, ECONOMY AND ENVIRONMENT

The northeastern Brazilian state of Ceará, the world's most populous semi-arid region[16], ranks eighth in population nationwide and twelfth in Human Development Index (HDI: 0.734) (de Sousa & Costa, 2023). The state suffers deep socioeconomic inequalities: in 2022, Ceará's per capita GDP reached R$ 24,296.00, approximately half the national average (Ipece/Governo do Estado, 2024)[17]. Family farming remains a cornerstone in rural Ceará's economy, particularly in the semi-arid interior. Approximately **80% of farms are family-run, producing milk, beef, pork, legumes, and vegetables for local markets, often without land titles** (Gomes, 2023). These communities depend on cisterns capturing scarce rainwater and practice communal grazing and small-plot farming adapted to the caatinga biome[18] (Sabourin, 2022). The semi-arid caatinga covers most of inland Ceará, characterised by shallow soils over crystalline rock, high clay and silt content, and vegetation adapted to extreme drought cycles. **A defining feature of Ceará's climate is the irregularity of its rainfall.** The region endures extended dry periods, particularly in the second half of the year, leading to prolonged droughts that heavily impact agriculture and water availability. Nonetheless, the rainy season—usually spanning from February to May—brings a rise in precipitation, offering temporary respite from the prevailing arid conditions (de Albuquerque et al., 2023).

CLIMATE CHANGE AND SOCIAL INEQUALITIES

Although the state of Ceará has long struggled with the structural limitations of its semi-arid climate, **the region now faces the compounded pressures of accelerating climate change,** which intensify existing vulnerabilities. Chronic droughts—now longer, more frequent, and severe—are disrupting precipitation patterns, undermining agricultural productivity, and exacerbating food insecurity and rural poverty (Gori Maia et al., 2018). Drought-driven shifts toward cattle and dairy farming have further reduced food resilience, while processes of soil degradation and desertification continue to erode the viability of traditional farming systems (ibid.). **These environmental disruptions intersect with long-standing social, economic, and gender-based inequalities, disproportionately impacting Indigenous peoples, Afro-descendent communities, rural women, and other historically marginalised groups.**

In this context, climate change acts not merely as an environmental challenge but as a **multiplier of structural vulnerability**, deepening injustices in communities already excluded from full access to rights, land, healthcare, and education. According to current estimates, **about 56,000 Indigenous people live in Ceará, belonging to at least 17 recognised ethnic groups**, including the Jenipapo-Kanindé, Tapeba, Potyguara, and Tremembé (ANAI, 2023). Although Indigenous organisations work with 22 municipalities, official data reveals the presence of people who self-identify as Indigenous in more than 100 municipalities.

INDIGENOUS PEOPLES: ENVIRONMENTAL EXPLOITATION, ECONOMY, AND HISTORICAL KNOWLEDGE

Several Indigenous peoples of Ceará have endured long histories of colonialism, territorial expropriation, cultural assimilation and racialisation[19]. These injustices have severely impacted many aspects of Indigenous peoples' lives, including their access to land. Indigenous lands in Brazil possess profound cultural and historical significance. These territories have been continuously inhabited for centuries, with Indigenous peoples developing ways of life strongly adapted to the forest ecosystem and its natural resources. It is important to emphasise that, for many of these communities, **the land represents not merely a means of subsistence but constitutes a core element of their identity and cosmology**[20] (Viveiros de Castro, 1992; Vizenor, 2008; Motta, 2014).

The process of European colonisation introduced a series of profound challenges to these communities, including signifi-

16 With a population of approximately 9.2 million in 2024 (GCMAIS, 2024).

17 The national average of R$ 42,247.52 places Ceará in 24th place among Brazilian states in terms of GDP per capita (Melo, 2023).

18 A biome is a large geographical area characterised by a specific set of climatic conditions, soil types, vegetation, and wildlife. In essence, it is a vast natural zone with a similar ecosystem.

19 For centuries, Indigenous peoples in Ceará were systematically silenced—initially through genocide and enslavement, and later via prohibitions on speaking their native languages and restrictions on official marriages, culminating in an 1863 decree that falsely declared the extinction of Indigenous populations in the state. This historical erasure set the stage for persistent struggles over land rights, which today manifest in ongoing conflicts with squatters, industrial interests, and state authorities.

20 Cosmology is a system of beliefs and knowledge that explains the origin, structure, and meaning of the world and the universe.

cant territorial dispossession and concerted efforts at forced cultural assimilation. Over time, Indigenous peoples have persistently resisted such pressures, striving to safeguard their cultural heritage and ways of life, particularly in the face of ongoing illegal occupation and encroachment upon their lands. In this sense, a critical turning point occurred in 2023 with the creation of the Secretariat for Indigenous Peoples of the State of Ceará (Sepince), which marked the first formal institutional acknowledgement of Indigenous issues at the state level[21]. The Ministry of Indigenous Peoples was also created during Lula da Silva's third term[22]. Yet, **land demarcation remains largely unresolved**; to date, only the Tremembé da Barra do Mundaú[23] has been fully ratified, while other claims remain in phases of identification or declaration, without legal security[24]. In 2025, three Indigenous lands were demarcated in Ceará: Pitaguary, Lagoa da Encanta, and Tremembé de Queimadas. This official recognition represents a significant step forward in protecting the rights of Indigenous peoples in the state, bringing the total to 16 Indigenous lands officially recognised under the current federal government administration. The demarcation process is part of an ongoing effort to ensure the ownership and use of lands traditionally occupied by these peoples (Ministério dos Povos Indígenas, 2025).

Despite recent institutional advancements such as the creation of Sepince and ongoing efforts by FUNAI[25], their work is hampered by chronic underfunding, limited staffing, and bureaucratic obstacles. Simultaneously, **Indigenous territories are under growing pressure from extractive industries such as agribusiness and mining, and large-scale renewable energy projects.** While these sectors may offer short-term employment, they also exacerbate long-standing issues of land loss, environmental degradation, and social marginalisation, contributing to pollution, water scarcity, and the disruption of cultural life (Vieira Cavalcante, 2020; Silva & D'Andrea, 2021)[26].

Climate change further compounds these challenges by destabilising traditional subsistence practices and eroding historical knowledge systems—once crucial for interpreting weather, soil, and water patterns[27].

1.1. Research Design and Methodology

Grounded in the specificities and richness of the local context, and developed through successive phases of dialogue with key informants and the local WeWorld team, now Avuar Social[28], the following research question was formulated:

"How do the effects of climate change (e.g. water scarcity, changing resource availability) reshape intra-household power dynamics, particularly in relation to sexual negotiation, family planning, early marriage, gender-based violence, access to care and information - and how are these dynamics mediated by generational shifts, taboos, and changes in women's autonomy and agency?"

The aim is to understand how climate-related transformations affect women's sexual and reproductive health, family dynamics, and intergenerational relationships. Particular attention is given to the ways in which gendered roles, norms, and power relations are being reshaped in contexts of increasing environmental precarity and social change. To address this question, a qualitative and participatory methodology has been adopted, grounded in an intersectional and decolonial feminist framework. It integrates three main tools: biographical interviews, focus group discussions, and key informant interviews. These tools enable the documentation of **lived experiences, collective perceptions**, and **institutional insights**, allowing for a comprehensive understanding of the evolving landscape of gender, health, and climate vulnerability.

21 Brazil is a federal state, composed of 26 states and one federal district. It has a multi-level system of government with powers shared between the federal, state, and municipal levels. There are currently no reserved seats for Indigenous peoples in the National Congress (Brazil's federal legislature), meaning Indigenous candidates must compete in general elections without guaranteed representation. In the 2022 general elections, 186 Indigenous candidates ran for office across all levels of government — an increase of 40% compared to 2018. Of these, seven were elected to federal positions, the highest number in Brazilian history. This included five members of the Chamber of Deputies (four women and one man) and two senators (Mendes, 2022).

22 The Ministry of Indigenous Peoples is a Brazilian Executive Branch agency, established during Lula's third term in response to historical demands from the Indigenous movement. The Ministry is responsible for ensuring Indigenous peoples have access to education and healthcare, demarcating Indigenous lands, and combatting the genocide of these peoples.

23 Covering approximately 3,511 hectares, out of a total of 14,634,830.

24 On April 28, 2023, President Luiz Inácio Lula da Silva signed the decree homologating the territory, which had been pending for over 20 years. This action was part of a broader initiative to recognise Indigenous lands across Brazil, marking the first such homologation since 2018 (Lima, 2023).

25 The Fundação Nacional dos Povos Indígenas, commonly known by its acronym FUNAI, was established in 1967 as a federal agency under the Ministry of Justice in Brazil. It was created to replace the former Indian Protection Service (SPI), which had been widely criticised for inefficiency and corruption. FUNAI's primary mission is to protect the rights, cultures, and territories of Indigenous peoples across Brazil.

26 At the same time, "Green" industrial projects such as wind farms, solar plants, data centres, and hydrogen hubs are expanding into Indigenous territories under the banner of sustainability. However, these initiatives often proceed without adequate consultation, consent, or compensation. They have significant environmental and social impacts, including high water consumption, disruption of pollinators like bees, noise pollution, deforestation, and habitat loss (Sousa dos Santos et al., 2025).

27 For generations, these communities have stewarded detailed ecological knowledge: weather patterns, soil cycles, vegetation, and hydrology. The intensification of unpredictable environmental fluctuations such as shifting rainfall and prolonged droughts are disrupting established ecological indicators, demanding novel approaches to resilience and recognition (Daiyan, 2023; Penteado et al., 2024). In this scenario Indigenous women remain central custodians and transmitters of ecological knowledge—expressed through planting rituals, seed guardianship, biodiversity stewardship, and spiritual practices—thus playing a pivotal role in community resilience strategies (Nirmabahen Vaksibhai & Thakar, 2025). Nonetheless, they face entrenched intersecting discriminations both within their communities and in broader institutional arenas. Frequently excluded from decision-making processes, their knowledge is undervalued and their autonomy restricted.

28 WeWorld has been active in Brazil since 2008, specifically in the state of Ceará. Over the years, we have initiated a process of localisation, which involves transferring leadership, decision-making, and operational responsibilities from the international organisation to local partners and communities. This approach aims to strengthen local capacities, ensure culturally appropriate interventions, and promote sustainability by empowering those directly affected. As a result of this localisation process, the current local partner organisation is Avuar Social, which now leads projects and initiatives on the ground.

BIOGRAPHICAL INTERVIEWS

Objective: To collect in-depth life histories that reveal how women's individual trajectories intersect with environmental and social transformations, particularly in relation to reproductive health, contraception, motherhood, water management, intra-household decision-making, and experiences of gender-based violence.

Sample: 24 women aged 18 and above, selected from diverse Indigenous communities across Ceará. The sample reflects heterogeneity in age, social roles, and territorial belonging, ensuring a broad representation of experiences and perspectives.

Marital status		Number of Children		Age Group	
Single	5	0	5	18–25	7
Married	14	1	7	26–35	2
In a stable union	2	2	4	36–45	5
Separated	2	3	3	46–55	3
n/a	1	4+	5	Over 56	4
				n/a	3

FOCUS GROUP DISCUSSIONS (FGD)

Objective: To explore collective perceptions and experiences of change within Indigenous communities, especially concerning family decision-making, access to healthcare, female autonomy, and shifting gender norms under the pressures of the climate crisis.

Each FGD followed one of three thematic guides:
1. Family decision-making and planning
2. Body and sexuality
3. SRH and gender-based violence

Sample: 6 focus groups were held in six Indigenous villages, involving a total of 59 women. Each group comprised 6–8 participants, selected to reflect diversity in age, reproductive experience, and social roles within the community.

Marital status		Number of Children		Age	
Single	20	0	5	18–25	8
Married	36	1	9	25–35	13
In a stable union	1	2	25	36–45	24
Divorced	1	3	10	46–55	6
n/a	1	4+	6	Over 56	8
		n/a	4		

KEY INFORMANT INTERVIEWS

Objective: To gather strategic insights from institutional, academic, and community leaders on the intersections between climate change, Indigenous women's rights, and local governance. These interviews offer contextual knowledge on public policies, community responses, and the role of Indigenous-led organisations and networks.

Sample: A total of 13 interviews were conducted with key informants, including representatives from Indigenous organisations, public officials working in Indigenous health and education, scholars specialising in gender and climate justice, grassroots and community activists, and traditional leaders (caciques) involved in local governance and advocacy.

2. Key Takeaways from the Findings

LIVING THROUGH CHANGE: CLIMATE IMPACTS ON LIVELIHOOD

According to key informants and interviewed women, **the primary consequence of climate change in the region is the destabilisation of subsistence agriculture**. Crops are failing not due to isolated droughts, but because of shifting seasonal rhythms that have rendered traditional calendars obsolete. Planting and harvesting times are no longer reliable, and the increased intensity of dry spells has led to decreased use of traditional seeds and, with them, the collective rituals that once marked agricultural cycles. As older women report, the *festa da colheita* (harvest festival)[29] has become a rare occasion, replaced by scarcity and growing dependence on government food aid or industrially processed products. **Younger generations are growing up without the embodied knowledge of farming, thereby losing not only practical skills but also cultural memory** — a relationship with the land that shapes identity and resilience. In this sense, focus groups revealed that the unpredictability of the climate has made traditional indicators, such as the lunar phases or the barra do sol on 25 December, once used by elders to forecast rainfall and planting times, unreliable[30]. The disappearance of native seeds, the decline of fruit trees, and the inability to anticipate seasonal cycles all represent a profound rupture in the relationship between the people and the land.

29 The Harvest Festival is a traditional celebration that takes place in various cultures around the world, symbolising gratitude for the harvest and the end of an agricultural cycle. This festival is marked by rituals that give thanks to nature and the gods for the abundance of food, reflecting the importance of agriculture in the lives of communities. In many places, the Harvest Festival is a time of unity, where families and friends gather to celebrate the blessings received throughout the year.

30 The *barra do sol* is a traditional method used by elders and farmers—especially in Brazil's Northeast—to predict the arrival of the rainy season by observing the light patterns at sunset, particularly on 25 December. The appearance, colour, and clarity of a horizontal light band (*barra*) on the horizon were interpreted as signs of whether the upcoming rains would be abundant or scarce. This ancestral ecological knowledge guided planting cycles and agricultural planning. Today, the unreliability of such indicators is seen as a clear sign of climate disruption and the erosion of historical environmental knowledge.

> The disappearance of native seeds, the decline of fruit trees, and the inability to anticipate seasonal cycles all represent a profound rupture in the relationship between the people and the land.

"There have always been two well-defined seasons: winter and summer. Flowers used to bloom in May, and in September and October you could see the leaves falling. It rained a lot at the beginning of the year, and it was very dry at the end of the year. But today, we no longer see this pattern." - woman interviewed.

"I grew up in a rural environment where the forest was full of medicinal plants and spaces to play, but today that nature is gone due to deforestation and fires. Winters are no longer predictable, and summers are unbearably hot. We have lost much of our traditional medicine, although there is still a shaman (pajé) here in the community who uses it and still practises it, but much less than before." - woman interviewed.

- **WATER SCARCITY AND CONTAMINATION:** **Water scarcity has become a chronic stressor,** affecting health, hygiene, food preparation, gender relations and everyday care routines. In Indigenous communities, where **women are typically responsible for collecting water, climate change has dramatically increased their workload.** Wells are drying up, and where cisterns exist, they are often insufficient. In some areas, saline intrusion into aquifers threatens the potability of existing water sources, a phenomenon attributed both to sea-level rise and the over-extraction of groundwater by large agribusiness and industrial projects. A critical issue reported by the Aldeia Lagoinha dos Potiguara (Novo Oriente) community is the contamination of water supplied by *pipa* trucks (water tankers) with mining waste, which has caused illness in livestock and raised concerns about contaminated milk. They also report that deep wells have become polluted by agrochemicals. Similarly, the Aldeia Realejo (Crateús) group reports that **the water they consume is of poor quality and causes health problems**. Interruptions to agricultural activities translate into growing food insecurity and loss of income for families. As agriculture weakens and traditional fishing yields decline, **families increasingly depend on processed and industrial food products, which are often high in sugar, fat, and preservatives.** Numerous narratives also indicate **a growing reliance on external aid, such as humanitarian organisations** (e.g., the Red Cross, Caritas), during periods of extreme drought or water crises.

"We had to make changes as a family. Without rain, we always had more hardship. When I was a child, life in the community was really good. We lived in harmony with nature – there were plenty of fruits, abundance. Now the community has changed a lot. Most people have left, the forest has shrunk, and the water has too." - woman interviewed.

"Here in the village, we do not have water every day. We are in the semi-arid region, so water scarcity has always been an issue, but it is getting worse because of climate change. We have to ration water for everything: washing the house, doing the laundry, and bathing." - woman interviewed.

- **LAND INSECURITY AND RESOURCE EXPLOITATION:** In this scenario, **land insecurity emerges as a major threat**. Testimonies highlight how **organised criminal groups are increasingly encroaching on Indigenous territories, often using force to impose control.** This has resulted in the youth being drawn into trafficking and militia networks, disruptions to cultural rituals, and threats or forced displacement of community leaders, with corrosive effects on social cohesion, leadership, and cultural continuity. **Women bear a disproportionate burden in this context, with some forced to "serve" armed factions and effectively becoming captives within their own communities.** The erosion of territorial control not only threatens livelihoods but also facilitates systemic violence, gender-based abuse, and the gradual disintegration of Indigenous sovereignty. Adding to these challenges, it is reported that the so-called "green" industrial projects—such as wind farms, solar plants, and hydrogen hubs—are reshaping land use under the banner of sustainability, often without adequate consultation or compensation. These initiatives consume large volumes of water, harm pollinator species like bees, cause noise pollution, and contribute to deforestation and habitat loss. For instance, in Potiguara territory, the establishment of a large regional landfill without proper environmental safeguards has exposed residents to contamination and health risks.

"Climate change is not something new; it has been happening since the external invasion, and deforestation did not start just now. The seasons have become unpredictable. I remember how interesting it used to be when I was little - I loved playing in the rain, making mud pools to play in, and bathing in the rain." - woman interviewed.

FROM THE LAND TO THE BODY: HOW ENVIRONMENTAL STRESS SHAPES HEALTH, CARE, AND SAFETY

Climate change is having a direct and visible impact on the health of Indigenous populations, particularly women and children. Across focus group discussions and key informant interviews, participants report increases in respiratory problems, skin conditions, gastrointestinal illnesses, and chronic diseases, all linked to environmental degradation, food insecurity, and contaminated water sources. Women of Aldeia Realejo (Crateús) connect the rise in cases of candidiasis, urinary tract infections, and kidney pain to increased heat and worsening water quality.

- **RISING CHRONIC HEALTH ISSUES IN INDIGENOUS WOMEN AND CHILDREN:** In some areas, concerns have also been raised about children being born with chronic health conditions, possibly due to deteriorating food and water quality. In Aldeia Olho D'água dos Canutos (Monsenhor Tabosa), participants noted an increase in cancer and thyroid problems among children and women. The shift away from ancestral food systems, driven by climate instability, has contributed to rising levels of malnutrition and an increase in chronic illnesses such as diabetes, obesity, and hypertension. Some key informants pointed out that, as agriculture becomes less viable, many families are turning to cheaper, ultra-processed foods, which are directly linked to chronic health conditions. Adding to these challenges is the contamination of water sources, which poses serious health risks. Some communities rely on water transported by tanker trucks, which is often polluted with mining residues, while agrochemicals have leached into deep wells, further undermining health security.

"The endemic diseases I deal with are getting worse due to improper water treatment; people suffer from a lot of diarrhoea, etc. The vectors for endemic diseases are increasing—more flies, mosquitoes, and so on. More people are getting sick, and this is also caused by climate change and a lack of education." - woman interviewed

- **GENDERED IMPACTS AND BARRIERS TO SEXUAL AND REPRODUCTIVE HEALTH:** Focus group discussions highlighted how climate change is increasingly shaping family dynamics and reproductive choices, though its effects vary between communities. While some women reported increased autonomy in personal and family decision-making, environmental stressors are adding complexity to care responsibilities and future planning. Gender-based violence remains a widespread and urgent concern, and access to quality maternal health services continues to face significant barriers, particularly in the most affected areas[31]. The impact of climate change on daily life also emerged strongly in the biographical interviews—not as an abstract concept, but as a set of concrete disruptions affecting where people live, how they move, and their ability to access health care and safety. One woman described how, during heavy rains, she had to travel by canoe to get her son to a health appointment. The flooding did not simply cause delays: it changed the entire rhythm and stress of everyday life, especially for a mother seeking urgent care for her child. Even in families where no explicit "climate decision" was made, **extreme weather, blocked roads, and the deterioration of public services nonetheless impacted access to care and general well-being.**

> The impact of climate change on daily life is a set of concrete disruptions affecting where people live, how they move, and their ability to access healthcare and safety.

"I have started feeling my body temperature rise a lot (many hot spells), impatience, and chills. I experienced palpitations and many headaches. The heat made my body feel even more agitated." - woman interviewed

Many challenges remain, especially in relation to access to specialised care, high-risk prenatal monitoring, and diagnostic services. These gaps are largely attributed to inadequate infrastructure at both municipal and state levels, the limited availability of culturally appropriate Indigenous health services, and logistical barriers such as distance, unpaved roads, and extreme weather. Communities in Aldeia Olho D'água dos Canutos (Monsenhor Tabosa) and Aldeia Viração (Tamboril) describe difficulties reaching the nearest town for medical treatment, both during the rainy season and times of drought, where floods and dust-choked potholes pose physical risks and delay urgent care. In Aldeia Mambira (Crateús), **entire communities become isolated during periods of heavy rainfall, preventing**

31 It is important to highlight that, for a population that until a few years ago largely lived without access to basic healthcare services, the presence of any form of healthcare provision in the territory represents a significant step forward. The population expresses strong appreciation for the assistance offered by the Indigenous health subsystem, recognising the progress made. However, significant challenges remain. One of the main issues is the low — and sometimes non-existent — institutional recognition of traditional Indigenous medicine, which encompasses not only the physical aspects of health but also spiritual, psychological, and cultural dimensions that are fundamental to these communities. With regard to maternal health, access cannot be considered fully satisfactory. Many women report a positive perception of the care currently provided, especially when compared to the near-total absence of services in the past. Nevertheless, rates of obstetric violence and maternal mortality remain high in the interior of Ceará, varying considerably according to region and municipality. Indigenous and Black women are particularly vulnerable, facing higher levels of discrimination and obstetric violence compared to white women. These data highlight the urgent need to strengthen public policies that promote equity, respect for cultural specificities, and the guarantee of reproductive rights.

women from attending prenatal check-ups or accessing specialised medical services.

"The condition of the roads and the distance were obstacles, as both rain and drought made it difficult to reach health clinics. During dry seasons, financial difficulties were always worse." - woman interviewed

GENDERED FAMILY LIFE IN A TIME OF CLIMATE CHANGE

In Ceará, family and gender relations are being reshaped by shifting norms and expectations; a process marked as much by continuity as by change and negotiation. **Traditional gender roles continue to be deeply rooted in many Indigenous communities**, especially among the older generations. Several key informants confirmed that, historically, important family decisions were made by men, while women were expected to remain subservient, taking care of the house and children while men worked outside. This logic still shapes relationships in many households, especially where machismo[32] is openly or silently upheld.

"We come from a culture where these decisions were made by men; business and sales were handled by men. Women took care of things inside the home, men outside." - woman interviewed.

However, multiple sources highlight significant, often generational, shifts occurring within family dynamics, frequently accelerated by women's increasing access to education, income, and state benefits. Focus group discussions across communities like Aldeia Realejo (Crateús), Aldeia Viração (Tamboril), and Aldeia Jucás (Monsenhor Tabosa) reflect similar changes, with **women reporting greater freedom in participating in family decisions, including on matters such as production, planning, and reproductive choices**. Interviewees describe a gradual but tangible transformation in gender roles and family power structures: **whereas male authority or a single maternal figure once dominated without question, current experiences often involve more shared decision-making and redefined responsibilities**[33]. These changes are largely driven by shared economic contributions and caregiving duties, with women's work being key to gaining autonomy in decisions about money, children, and the future.

"Couples decide together, but there are cases where they don't because machismo is present in all ethnic groups. The man is machista and doesn't want to use condoms, so the woman gets pregnant. And it's the woman who suffers-we can't romanticise pregnancy." - woman interviewed

"In my family today, decisions are made by me, my husband, and my eldest daughter. [...] In my family of origin, children were never allowed to take part in decisions. The father made all the decisions and didn't discuss them with us. This wasn't just in my home but in almost all homes." - woman interviewed

- **A TRIPLE WORKLOAD:** Nonetheless, progress is uneven and accompanied by contradictions. Some women report that **their husbands still dominate decisions, particularly around contraception and health information, reflecting persistent machismo**. In Aldeia Potiguara (Novo Oriente) and Aldeia Jucás (Monsenhor Tabosa), women acknowledge advances but also note ongoing male control that limits women's participation and access to information, especially in sexual and reproductive health and community governance. Furthermore, an imbalance emerges: **while some sources argue that women's public roles have expanded, the burden of domestic labour and authority still falls disproportionately on them, leading to overload and fatigue from balancing household responsibilities and external commitments**. On the one hand, women are becoming more present in formal advocacy spaces, particularly in denouncing the impacts of climate change and extractive industries. Many community leaders and participants emphasise that women are not only occupying leadership positions but are also reclaiming narrative power, challenging the historical dominance of male voices in representing their community's story. On the other, despite women gaining more space in the public sphere, **this expansion has not been matched by men entering domestic or caregiving roles.** Consequently, **women bear a "triple workload": paid or agricultural labour, domestic duties, and community or political involvement.**

32 Machismo derives from the Spanish term ***macho*** (male) and refers to an exaggerated pride in virility, seen as a form of power, often accompanied by a minimal sense of responsibility and disregard for consequences. Machismo involves a supreme valuation of traits culturally associated with masculinity, alongside the denigration of those linked to femininity. For centuries, it has been a powerful force in Latin American politics and society. ***Caudillos*** (military dictators), prominent figures in Latin American history, exemplify machismo through their bold, authoritarian governance and their readiness to use violence to achieve their aims.

33 Several participants note shifts in authority across generations. A young pregnant woman contrasts her shared decision-making with her mother to the more hierarchical control once held by her grandmother, a respected community leader. Similarly, another woman recalls how her mother, formerly the sole decision-maker, now involves her in family decisions, indicating a move towards more horizontal authority. Younger women, like a teacher living with her family, also share decision-making roles, supported by their education and employment. Older women often compare today's more equal partnerships to their upbringing under authoritarian fathers who ruled without question, sometimes with violence.

> While some sources argue that women's public roles have expanded, the burden of domestic labour and authority still falls disproportionately on them, leading to overload and fatigue from balancing household responsibilities and external commitments.

"One important aspect of how these women perceive their situation, and I believe it's a very insightful view, is the difficulty Indigenous women and communities have had in interpreting time and seasonal patterns. This has led to significant losses in Indigenous agricultural production, and it places a heavy burden on women's lives. They are the ones who need to have multiple skills: to grow food in their small home gardens, to raise chickens and find food for them, to feed all their children. They've had to walk longer distances to collect firewood (for those still using wood-burning stoves). This has increased the impact in terms of caring for the sick. We've observed that climate change has brought more illnesses, like prolonged flu symptoms and many children with respiratory problems, which adds to women's caregiving load" - key informant

- **WOMEN'S INCREASING RESPONSIBILITIES AMID CLIMATE CHALLENGES:** While the reproductive work has long been significant, it appears that two major factors are reshaping the distribution of power, care, and responsibilities within communities: first, the increasing visibility and leadership roles of Indigenous women[34], and, second, the fragmentation of traditional family structures, partly driven by hardships caused by climate change. This latter also directly impacts women's physical workload. Women must walk longer distances to fetch water and firewood, care for ill family members, and adapt agricultural production to increasingly unstable environmental conditions. Simultaneously, the decline of traditional agriculture—mainly due to a lack of land for planting, since the territory is often not demarcated, forcing them to work for squatters and share their produce, as well as irregular rainfall, soil degradation and general climate instability — still leads to the migration of men to cities in search of work[35]. Participants in focus groups across Crateús, Tamboril, and Novo Oriente report that many men leave their territories for extended periods to work in construction or informal sectors in southern Brazil. **This migration often results in family separation, diminished male involvement in household life, and heightened vulnerability for those left behind**—especially women and children.

"My childhood and adolescence didn't exist; I spent them taking care of my younger siblings. I was the oldest of ten, and my community was full of suffering and without opportunities. The water situation was terrible: we had to walk for hours with bundles of clothes on our heads to wash them, returning with aching necks. There was no running water, only brackish wells that turned our skin grey; we used cooking oil to moisturise ourselves." - woman interviewed

"When there are severe droughts, it affects everything, especially women's lives. When that happens, we go searching for basic food baskets, women would never let their families go hungry. Drought also increases women's unemployment, because people have less money to pay for services like house cleaning." - key informant

- **THE EMOTIONAL AND CULTURAL TOLL OF ENVIRONMENTAL STRESS:** The result is that **many women are "exhausted," showing clear signs of mental and physical burnout, including insomnia, anxiety, and depression**. A key informant notes that the relentless pressure leads some women to rely on prescribed medication simply to sleep or get through the day. **The environmental crisis is thus also taking a toll on emotional well-being, memory, and family relationships**. These concerns were echoed across focus groups. Women in Aldeia Olho D'água dos Canutos (Monsenhor Tabosa) described a pervasive emotional climate characterised by "many mental problems." In Crateús, food insecurity was explicitly linked to women's deteriorating mental health. In Aldeia Girita (Monsenhor Tabosa), the psychological impact of climate change was

34 This is related to the strengthening of women's organisations at the national level (ANMIGA), state level (AMICE), and local level (grassroots organisations).

35 It is important to highlight some key features of the current migratory phenomenon observed in the Sertão region. Decades ago, there were the well-known ***"retirantes da seca"*** (drought migrants): entire families who fled the Northeast Region in search of work and a new life in cities or on farms in the Southeast. Thanks to various public policies implemented over the past 20 years, this phenomenon has significantly decreased, as these populations have been able to remain and sustain themselves in the Sertão territory, even in the face of worsening climatic conditions. Today, although the phenomenon has changed and become less intense, many economic-climatic migrants still remain. Currently, most migrations are temporary and/or seasonal. Men, in particular, leave their communities for certain periods to work in the Southeast. However, unlike the past, they often do not take their families with them. Their families remain in their local communities, and the migrants return periodically. In the cases of internal migratory movements within the state of Ceará, men leave their villages to work in cities elsewhere in the state but return home on weekends or every two weeks.

described as a loss of motivation in everyday life. Across multiple communities, **the "rush of daily life" was cited as a constant source of stress and mental strain.** Furthermore, changes driven partly by urban encroachment and economic hardship have weakened women's social support networks, increasing their isolation and pressure. In several focus groups, women linked this overwhelming workload to decisions not to have more children, demonstrating the impact of climate change on family planning. Finally, **the gradual fragmentation of large, extended family households into smaller, isolated nuclear families is affecting the transmission of knowledge, values, and cultural identity.** Some key informants warn that this process risks producing a generation of children disconnected from the community's struggle, missing a vital phase of their lives.

"What I perceive is that women are very tired, more exhausted. There are very high levels of mental illness among Indigenous women. Many are on prescription medications, have trouble sleeping, and are overwhelmed by work. There's a significant overload of domestic work, and mental illness is becoming a ticking time bomb in these territories. There's no longer a space for women's social life. So, it's a life of increasing confinement, yet it is these same women who look for solutions... How do they do it? At the cost of physical and mental overload." - key informant

SEXUAL AND REPRODUCTIVE AUTONOMY: SOCIAL BARRIERS AND EMERGING AGENCY

Sexual and reproductive health is a critical area of concern, encompassing not only access to services but also the cultural and relational dynamics that shape Indigenous women's autonomy in Ceará.

- **BODILY AUTONOMY: CHALLENGES TO ACCESS, STIGMA, AND SOCIAL PRESSURES:** In recent years, **access to contraceptive methods has notably increased within Indigenous communities, with pills and condoms generally available free of charge** at local health centres, alongside improved availability of injectables and intrauterine devices (IUDs), even in some remote locations. However, key informants offer a more nuanced perspective. Some point out that, while modern contraceptives such as the pill, injectables, and IUDs, are technically available, **they remain "not so accessible" for many Indigenous women,** especially due to logistical challenges, particularly in reaching remote communities during floods or extreme weather. However, access alone does not guarantee autonomy. Deep-rooted cultural taboos continue to constrain women's reproductive rights. A major obstacle is **the strong stigma attached to condom use,** especially among the youth. A key informant highlights that condoms remain a taboo despite being widely promoted and available, resulting in a paradox where young people understand pregnancy prevention but often fail to consistently use contraception, contributing to high adolescent pregnancy rates. This contradiction extends beyond youth. Several key informants describe situations where **husbands restrict their wives' contraceptive use, pressuring or forcing them to have children.** In some families, men retain control over reproductive decisions, including access to health information and pregnancy planning. This issue is especially acute where having more children is perceived as a means to obtain government benefits: several focus groups reported that men sometimes insist on additional children not for emotional reasons but for strategic economic purposes, undermining women's agency and tying reproductive choices to financial insecurity rather than health or autonomy[36].

"I used to be afraid to use methods other than condoms because of fear of diseases. But some girls don't use them due to lack of money, although now the public health system (SUS) provides them. Another method I've used is the copper IUD because it doesn't affect health." - woman interviewed

"Once at school, the teacher said she would talk about condoms, but my mother didn't let me go that day because she believed it wasn't a topic to be discussed at school, and talking about it would only encourage "wrong behaviour." So, I had no information: everything was based on intuition, trying to guess what was right or wrong. Even today, there are things we cannot do, like ride a bike, run, or eat eggs, because it is said to be harmful during menstruation. The elders still believe in these things." - woman interviewed

- **NEGOTIATION, CONSENT, AND PLEASURE: BREAKING THE SILENCE AROUND FEMALE SEXUAL AUTONOMY:** Another sensitive and revealing aspect of sexual and reproductive autonomy is the space for negotiation, consent, and pleasure. Women described contexts where sexuality is rarely associated with choice or mutual desire, but often shaped by silence, obligation, and male entitlement. A key informant names the absence of female pleasure as a legitimate topic in many Indigenous communities, stating that it remains taboo and that marital rape is almost unspeakable, due both to cultural norms and internalised ideas that marriage grants men sexual rights. Women's refusal is frequently used as a social justification by men for seeking sex outside the relationship, reinforcing a gendered dynamic of expectation and fear rather than negotiation. These patterns are supported by focus group findings, where sex is described as an obligation, especially within marriage or cohabitation. In some cases, **women report feeling coerced by partners; while not widespread, such cases reveal a climate of normalised coercion and precarious bodily autonomy for women.** A key informant confirms that women remain reluctant to discuss pleasure, and machismo is strong, especially regarding desire and sexual orientation. However, biographical interviews revealed a generational shift: **topics such as the body, menstruation, contraception, and pregnancy are now discussed more openly, particularly in schools,** supported by formal education, internet access, and the efforts of female leaders and health professionals fostering these conversations. Yet prejudice and silence persist, especially in conservative or religious families where parents avoid these subjects, leaving children reliant on social media or peers for information.

> Sexuality is rarely associated with choice or mutual desire, but often shaped by silence, obligation, and male entitlement.

"In the community, many people influence others not to use contraceptives because pregnancy is seen as a divine conception. There is also the idea that women today want fewer children and should have more." - woman interviewed

"Many pre-adolescent girls get pregnant, and I believe it's due to the lack of conversation at home about prevention methods. It's the parents' duty to make their children aware. Women should make their own decisions and, if they want to share with their husband, that's fine." - woman interviewed

"I experienced my first period with great embarrassment; I didn't know much and felt very ashamed. Now my daughter's situation is different: for example, I have educated her, and she knew everything — how to use a pad, what the cycle is, the pain, and so on. I spoke with my husband, who also helped her. We need to break these taboos. Once it was thought that talking about sexuality was a woman's matter, but I believe it's a family matter; my husband talks openly with my daughter and explains things to her - it wasn't like this before." - woman interviewed

- **CLIMATE CHANGE AND FAMILY PLANNING: IMPACT ON REPRODUCTIVE CHOICES:** Within this complex framework, climate change adds an extra layer of influence on reproductive choices. For many women responsible for caregiving and household survival, deciding to have fewer or no more children is directly connected to climate-induced stressors: water scarcity, rising food prices, longer journeys to collect firewood, and continual pressure to adapt to increasingly unpredictable environments. Women in Novo Oriente especially highlighted **how heat, contamination, and agricultural decline increase pregnancy risks, influencing their choice to avoid further childbirth**[37]. This desire to limit children reflects agency but also growing reproductive vulnerability influenced by factors beyond women's control. Meanwhile, **men in some households continue to push for more children, often for economic benefits or to reinforce masculine roles, creating tension between women's climate-driven logic of limitation and men's socio-economic logic of expansion.** This conflict manifests sharply where water, food, time, and energy are scarce, narrowing the space for pleasure, choice, and negotiation. However, perceptions vary: some areas report minimal climate impact on family planning, while others consider it highly influential[38].

36 There is also a spiritual and emotional dimension. Some women fear "God's punishment" for not wanting more children, reflecting the enduring influence of religious beliefs. In other communities, cultural taboos link tubal ligation to marital breakdown, rendering surgical sterilisation controversial and morally charged.

37 At the same time, education also plays an important role. Some participants pointed out that, due to demanding daily routines, it is difficult to care for children and ensure they receive a good education. In other cases, the fear of having to move elsewhere in search of better living conditions was a significant factor. Some women reported that if they could no longer farm where they currently live and were forced to leave, it would be extremely difficult to do so with more children. As a result, some chose not to have children. In certain situations, this way of thinking was even reinforced or encouraged by their partners. Finally, the decision not to have children appears to be associated with several other factors: rising levels of violence; the strong presence of commanders linked to drug trafficking, increasingly involving young people and children; and the issue of the invasion of Indigenous lands by *posseiros*—individuals who claim ownership of Indigenous lands or intend to build on them. As land demarcation processes are still incomplete, this represents a real threat. Furthermore, there is the matter of investment in so-called "clean" energy sources, such as thermal power plants, mining, and green hydrogen fields, which pose another serious threat and a major problem for Indigenous communities. Lastly, women today are more active in the workforce, many are engaged in Indigenous movements, and they are far more informed than in the past about how to prevent unwanted pregnancies.

38 For instance, in Olho d'Água dos Canutos (Monsenhor Tabosa), pregnant women have become rare; in Crateús, similar trends are reported, amid rising high-risk pregnancies and maternal health concerns exacerbated by climate stress.

"I couldn't refuse to have children because it was a sin. Back then, everyone always had too many children. Today people are more aware." - woman interviewed

"In my opinion, now we have much more autonomy over our bodies, despite there still being a lot of machismo. It should continue this way; women must make the decisions about having children." - woman interviewed

ADOLESCENCE, EARLY PREGNANCY, AND INTERGENERATIONAL TENSIONS

In multiple communities across Ceará, women and adolescent girls report a marked shift in the timing and nature of female physical development.

- **ALL EARLIER: PHYSICAL AND SOCIAL TRANSFORMATION:** **Girls are experiencing menarche increasingly earlier**—sometimes as young as 9 or 10—compared to the previous norm of 12 to 14 years. **This shift is widely attributed to environmental and dietary changes, notably exposure to hormones and agrochemicals in food**. Focus groups in Aldeia Lagoinha dos Potiguara (Novo Oriente) explicitly connect early puberty to altered food systems, highlighting highly processed and chemically treated foods as key contributors. Girls in these communities are becoming **mothers at younger ages than previous generations, a development described as "not natural", implying a sense that childhood is being prematurely truncated**. While climate change may not directly cause early menarche, it exacerbates underlying conditions—food insecurity, social fragmentation, and psychological stress—intensifying the issue's significance. This transformation is not solely physiological but symbolises an accelerated transition into female roles. The gap between physical maturity and social readiness is widening, with teenage pregnancy remaining a pressing concern across several Indigenous communities. Despite better access to contraception and growing awareness, risky sexual behaviours have become normalised in some areas. Evidence such as used condoms found in school bathrooms and reports of sexual activity on school grounds reveals a complex reality: youth are informed, yet often unsupported. The causes of early pregnancy are multifaceted, with poverty and gendered domestic pressures playing pivotal roles. Girls may leave home to escape abuse or to lessen their mother's economic or emotional burden. While such decisions are not always forced, they are shaped by poverty and limited options.

"Many pre-adolescent girls become pregnant, and I believe this is due to the lack of conversations at home about prevention methods. It's the parents' responsibility to educate their children about this." - woman interviewed

"We know that teenagers like those school lessons, but they don't talk about them — they're shy. I don't know if they discuss it among themselves. Girls receive sanitary pads at school, but we have to hand them over in secret because they're embarrassed." - woman interviewed

- **THE INCREASE OF EARLY COHABITATION:** Early cohabitation often arises as a survival strategy. Girls may enter relationships with peers of the same age, as well as with significantly older men, motivated not by desire but by the need for economic security, shelter, or material support. A key informant emphasises that **climate change indirectly fuels this trend by worsening poverty and undermining rural economies, prompting some girls to seek urban refuge, though lack of education and opportunity are also considered major factors.** Several women acknowledged these unions as frequent in their communities, linking them to machismo and parental consent. One woman reported witnessing young girls living with adult men, describing it as a mixture of a desire for independence and material necessity, framing it not as coercion but part of a wider pattern often accepted by families. They also spoke of recent cases in which girls aged 12 or 13 were seen with much older men in exchange for money or gifts. **While the community condemns such behaviour, it is often tolerated as a response to poverty and unmet needs.**

"There are many young girls, underage, who date much older men — over 30. Often with their parents' approval, even living together. Parents today are afraid of making mistakes; they don't know how to say no." - woman interviewed.

GENDER-BASED VIOLENCE: BETWEEN SILENCE AND SOCIAL MOBILISATION

Gender-based violence is a pervasive and deeply rooted issue in many of the Indigenous communities assessed. Although often hidden, silenced, or normalised, various forms of violence—physical, psychological, sexual, and institutional[39]—are widely acknowledged by both focus group participants and key informants. A significant number of crimes committed against Indigenous people are linked to domestic violence, often under the provisions of the Maria da Penha law[40]. However, such cases are frequently obscured by shame, fear, or the absence of institutional follow-up.

- **DOMESTIC VIOLENCE:** Several key informants state that **all kinds of violence exist within the villages, with domestic and physical violence being particularly "strong."** Yet many women are afraid to speak out—or even to recognise what they are enduring. This silence is reinforced by cultural norms and community dynamics that discourage intervention. In several focus groups, women noted that **violence, especially within marriage, is treated as a private matter—even when it involves coercion, threats, or serious physical harm.** Others expressed deep concern over hidden cases of paedophilia and abuse, particularly involving adult men and young girls[41]. **Substance abuse among men, particularly alcohol and drugs, further exacerbates the problem.** Many participants directly linked substance use to violent outbursts, especially during periods of economic stress or family tension. In such situations, violence is not only normalised but rationalised, blamed on alcohol or dismissed as momentary anger rather than seen as structural abuse.

"There is a lot of psychological violence; physical violence is less visible. Women want to make their own decisions, and men don't allow it." - woman interviewed

- **CAUSES ROOTED IN MACHISMO, SCARCITY, AND MIGRATION:** While **the roots of gender-based violence are anchored in machismo, patriarchy, and cultural norms,** participants also identified **a series of external stressors that aggravate violent behaviour, especially during crises.** These include resource scarcity, environmental degradation, economic instability, and male migration—factors increasingly exacerbated by climate change. Across multiple focus groups, women drew **direct links between lack of food, water, and income, and a rise in domestic violence**. Some women noted that limited resources lead girls and women to tolerate or remain in abusive relationships—forms of survival born out of necessity. Several participants observed that financial stress often leads men to lash out—blaming women for not managing household resources, or simply venting frustration through aggression. **In households marked by machismo, scarcity becomes a spark, and women the inevitable target**. Another participant said that, during times of hardship, women endure violence without even recognising it as such. **This behaviour**, she emphasised, **is part of a long history of colonial and racialised violence that still shapes the everyday reality of many Indigenous women.**

"I think violence manifests in many ways, rooted in this long history of colonial violence. Many girls end up involved in drug trafficking and prostitution, where they are already exposed to violence due to the racism and prejudice we face as Indigenous people." - woman interviewed

- **CLIMATE CHANGE AS AN INTENSIFIER OF ABUSES:** In some communities in Novo Oriente, participants described how **climate-related disruptions to agriculture and local economies fuelled rising household tension.** When men struggle to provide, feelings of powerlessness and frustration often manifest as aggression, especially when other coping mechanisms are lacking.

- **COMMUNITY AND WOMEN'S RESPONSES TO GENDER-BASED VIOLENCE: SILENCE, SOLIDARITY, AND THE PUSH FOR CHANGE:** Community responses to violence vary widely. **In some cases, neighbours or relatives offer guidance and try to mediate. In others, silence prevails.** "No one says anything," one woman said, "even if they know." The most common reason for this inaction is relational proximity: "Everyone is related, so they stay in their own corner." Fear, shame, and the internalisation of submission—especially among older generations—were named as barriers to collective action.

"Violence is accepted by many people; some don't even understand that it is violence—it is something normal for many. Marriages used to last longer because there was a lot of submission from women." - woman interviewed

39 Institutional violence refers to harm or abuse inflicted by organisations or systems of authority—such as governments, law enforcement agencies, healthcare providers, or social institutions—through policies, practices, or neglect. It occurs when these institutions perpetuate discrimination, repression, or neglect that violate individuals' rights, safety, or dignity, often disproportionately affecting marginalised groups.

40 In May 1983, biopharmaceutical scientist Maria da Penha Fernandes was asleep when her husband shot her, leaving her paralysed from the waist down. Shortly after she returned home from the hospital, he attempted to kill her again by electrocution. Despite the severity of the case, it remained stalled in the courts for nearly twenty years, during which time her husband stayed free. Eventually, the Inter-American Court of Human Rights condemned the Brazilian government for failing to effectively prosecute and convict those responsible for domestic violence. In 2006, the Brazilian government has thus enacted a law under the symbolic name "Maria da Penha Law on Domestic and Family Violence. The Maria da Penha Act not only introduces special courts and harsher penalties for perpetrators of domestic violence but also implements additional measures for prevention and support. In cities with more than 60,000 inhabitants, the law mandates the establishment of dedicated police stations and shelters for women, providing crucial resources for protection and assistance.

41 This, as described in section "Adolescence, early pregnancy, and intergenerational tensions", is often linked to a lack of future opportunities amid economic hardship, where girls may engage with older men as a coping mechanism.

> *"I had to remain silent, because when it happens to a neighbor, we have opinions to help, but when it happens in our family, we are left helpless, not knowing what to do. I witnessed a beating of a teenage girl and sought help from the guardianship council, but I realised that the council is not prepared to help in this kind of situation."* - woman interviewed

Institutional responses to gender-based violence in Indigenous communities are often inadequate and discouraging. While support exists through health services—such as lectures, emotional assistance, and workshops—many professionals lack proper training or sensitivity. As a result, survivors often encounter indifference or discomfort when seeking help. **A gap persists between formal mechanisms and everyday realities. In response, informal support networks emerge: women confide in each other during daily routines, creating spaces of solidarity**. However, these spaces are fragile—especially in conservative communities, where patriarchal norms can lead to judgment or isolation of those who speak out.

> *"We can't reach the women directly to help or talk about the violence because we don't even know who is suffering violence. One way to get closer to helping is through women's groups, where we listen to each woman's experiences, and from there, we try to find ways, words, or maybe actions within our reach that can help us."* - woman interviewed

Still, there are signs of change: while domestic violence used to be an absolute taboo, it is now being discussed publicly by Indigenous women. Those who once whispered now speak openly—in workshops, assemblies, and councils—despite ongoing resistance. In some places, **women are organising not only to support victims, but also to help others recognise violence itself. Breaking the silence, an informant explains, requires patience, solidarity, and the courage to unlearn what many were taught since childhood.**

> Breaking the silence, requires patience, solidarity, and the courage to unlearn what many were taught since childhood.

INDIGENOUS MOVEMENT: WOMEN AS KEY AGENTS OF RESILIENCE AND RESISTANCE

In recent years, Indigenous activism in Brazil—particularly in the state of Ceará—has entered a new and critical phase. Long marginalised and rendered invisible in public discourse and official data, Indigenous peoples are now reclaiming space and voice within both state structures and civil society. At the forefront of this movement is a growing awareness that **climate change is not a distant threat but a present and multiplying force**, deepening existing injustices and exposing structural vulnerabilities.

In this context, **Indigenous women are emerging as key agents of resilience and resistance**. They are not only confronting domestic and community-level violence but also leading grassroots responses to environmental devastation. One example came from a woman who shared how, after floods caused waste to overflow from a city landfill, her community came together to reclaim the space. What began as a cleanup turned into a powerful collective project: both a form of environmental restoration and a symbol of community self-determination in the face of climate disruption.

Across Ceará and beyond, **women's groups are increasingly organising workshops, speaking out in public forums, and supporting each other in spaces of solidarity and care**. Their activism is often intersectional—defending land, culture, gender rights, and the environment at once. However, **these efforts often remain unsupported**—both institutionally and within their own communities. While many women are organising, guiding, and speaking out, they frequently **face resistance from within**, rooted in longstanding patriarchal norms and fears of social disruption. Speaking out publicly still carries social and personal risks, especially in more conservative settings where silence has long been the norm[42].

> *"The Indigenous movement is very important; it teaches women a lot. Now, thanks also to training sessions, we know that we can choose who to marry and that we don't have to tolerate a man we don't like forever. We are deconstructing these ideas."* - women interviewed

42 As several key informants have testified, women leaders often face threats, especially when their work challenges criminal networks or touches on land defense. In many regions, violence against women is wielded not only in private spaces but also as a political weapon—to silence, intimidate, and punish those who resist.

> *"Women need to have a voice. The Indigenous movement is full of women, leaders. Women have a lot of visibility here in the Indigenous movement, and we are revisiting the history that was told by men. We even have several women in party politics who make this visible, and more and more women who have studied - we have nutritionists, nurses, and so on."*- key informant

> *"Women are the ones who most often take part in events of the Indigenous movement, and men don't always accept these outings. We women enjoy and want to participate - for many of us, it's essential. It's very difficult being a leader in the Indigenous movement. I need support, because there's so much to handle. I'm overwhelmed. I support many people."*- key informant

3. Conclusions and Recommendations

The socio-cultural and environmental context of Indigenous communities in Ceará is profoundly intricate and multifaceted. **The findings reveal complex links between gender dynamics, climate change impacts, extractivist pressures, colonial legacies, and economic vulnerabilities, all intersecting to shape sexual and reproductive health outcomes**. Environmental degradation and climate variability are undermining traditional livelihoods and food systems, while patriarchal norms continue to limit sexual and reproductive autonomy, despite signs of generational shifts toward greater agency. Gender-based violence remains widespread yet underreported, exacerbated by socio-economic and climate-related stresses. Importantly, **Indigenous women emerge as key agents of resilience and political mobilisation, fostering community care networks and advocating for systemic change despite significant risks.**

To validate these insights and generate pathways forward, a final consultation was held with key informants[43], aimed not only at confirming the findings but also at developing a set of recommendations. These recommendations are intended not as exhaustive solutions but as starting points to inspire action and meaningful change.

FOR DONORS

- **Fund Community-Led, Non-Extractive Interventions:** In places like Ceará, historically affected by external control and extractive practices, donors must change not only what they fund but how they fund it. Projects should be co-designed and led by communities, respecting their knowledge, land rights, and political autonomy. Funding must prioritise participatory, locally driven processes that build community capacity to set priorities, rather than imposing pre-packaged solutions. This approach should be applied across sectors, from climate resilience to health and food security, with long-term commitments and mechanisms to ensure community accountability and transparency.

43 Participants included a researcher from Fiocruz and activist; the Secretary for Indigenous Peoples of the State of Ceará; a coordinator of a local NGO and activist; and the Chief of Staff to the Presidency of FUNAI, who is also a sociologist and indigenist.

- **Fund Long-Term, Community-Led Campaigns:** Donors should move beyond short-term, symbolic campaigns and invest in sustained, community-rooted awareness initiatives. Issues such as mental health, suicide prevention, family planning, and gender-based violence require ongoing engagement and culturally relevant communication strategies developed by local organisations. Flexible, sustained support is essential to strengthen local capacities rather than just delivering temporary outputs.

- **Support Indigenous and Women-Led Initiatives:** Women and Indigenous leaders are often the backbone of community resilience. Donors must prioritise funding for their networks and initiatives, recognising them as strategic actors rather than vulnerable recipients. Women's roles in food sovereignty, seed preservation, family care, and solidarity networks for GBV must be supported to strengthen and expand these critical community systems.

- **Prioritise GBV Prevention and Response as Both a Stand-Alone and Cross-Cutting Funding Objective:** Donors should prioritise funding for gender-based violence prevention and response as both a stand-alone focus area and as a cross-cutting component across all sectors — including health, education, and climate. Dedicated funding streams should be made available for community-based and culturally grounded initiatives, especially those led by Indigenous and women's organisations.

FOR POLICYMAKERS[44]

- **Ensure Water Governance, Quality, and Accountability:** Water must be treated as a critical public health and environmental justice issue, not just an infrastructure challenge. In Ceará, many water sources are contaminated by industrial, carceral, and urban waste, posing serious health risks. Policymakers must enforce laws prioritising water for human and animal use, enhance environmental monitoring, and hold polluters accountable. They should also recognise and support traditional ecological knowledge, including reforestation and agroforestry, as vital tools for restoring water systems and climate resilience.

- **Promote Holistic Climate Adaptation Strategies:** Investment should focus on resilient, community-centred water storage solutions, such as underground or decentralised cisterns, to combat worsening droughts. Ecological approaches like reforestation and agroecology should be integrated into public planning, with trees planted around schools and health centres to reduce heat, restore ecosystems, and improve wellbeing. Such nature-based solutions must be standard in climate and urban policies.

- **Strengthen Public Health System:** There must be better integration between environmental health—particularly water quality—and public healthcare systems, with a focus on Indigenous and remote areas where significant gaps remain. Although maternal and gynaecological care is generally accessible, it is essential to develop contingency plans to ensure these services continue uninterrupted during climate emergencies. Equally important is the expansion of culturally sensitive mental health services, addressing the specific impacts of domestic and gender-based violence. Only by adapting health services to the cultural realities and needs of communities can public health interventions be truly effective and equitable.

- **Ensure Cultural Rights and Land Recognition:** Policymakers must prioritise the implementation of public policies that actively preserve and promote Indigenous cultures, recognising them a living, evolving systems encompassing traditional food, practices, and education. Equally important is the formal recognition of Indigenous lands, ensuring these territories are supported with adequate infrastructure and resources. This is essential to guarantee that Indigenous peoples can live with dignity and access the services needed for a good quality of life, reinforcing both cultural identity and social wellbeing.

44 Such as Indigenous Leadership Councils, Municipal and State Government Officials in Ceará, Federal and State Departments of Education, Health, and Agriculture, Local Indigenous Authorities, Indigenous Health and Social Services Agencies, Secretariat for Indigenous Peoples of the State of Ceará (Sepince), The Ministry of Indigenous Peoples, FUNAI, State and Federal Public Health Agencies, and other relevant legislative and regulatory bodies at Indigenous, state, and national levels.

- **Reinforce GBV Policy Frameworks with Locally Responsive Measures:** Governments should reinforce existing national and sub-national frameworks for the prevention and response to gender-based violence by ensuring they are comprehensive, adequately funded, and inclusive of Indigenous and other underserved populations. It is equally important that these frameworks fully reflect the specificities of all regions and territories, recognising their distinct social and cultural contexts. Existing strategies — including femicide prevention plans[45] — must incorporate culturally appropriate approaches that are co-developed with Indigenous women and local communities. They should also establish clear mechanisms for intersectoral coordination and accountability across all levels of governance.

FOR CIVIL SOCIETY ORGANISATIONS (CSOs)

- **Strengthen Grassroots Networks and Leadership:** Support and train local women's groups and community leaders, especially in rural and Indigenous areas, where state presence is often limited. CSOs frequently act as the first and only responders in vulnerable communities, making their role critical in fostering resilient and empowered local networks

- **Raise Awareness and Support Advocacy:** Lead inclusive consciousness-raising campaigns on topics such as water safety, environmental health, sexual and reproductive health, and gender-based violence. Use accessible, data-driven approaches and actively engage both men and women to foster shared responsibility and challenge harmful gender norms that hinder reproductive autonomy and equality.

- **Expand Sexual and Affective Education and Early Pregnancy Prevention:** Enhance and sustain school curricula that cover gender-based violence, reproductive health, environmental stewardship, and climate awareness, ensuring programmes are locally relevant and engage young people in developing leadership skills and personal agency. These school-based efforts should be complemented by comprehensive, culturally sensitive sexual and affective education initiatives that reach adults and the broader community. Such community-wide programmes are essential to address persistent taboos, misinformation, and resistance, while empowering adolescents and adults alike to prevent early pregnancies and promote reproductive autonomy.

- **Ensure Gender-Based Violence Components Are Integrated in All Interventions and Advocacy Strategies:** Civil society organisations must systematically integrate GBV prevention and response into programme design, implementation, and advocacy. This includes ensuring services are accessible, culturally appropriate, and informed by the voices of survivors and local communities. CSOs should also support and strengthen existing women-led networks and grassroots movements, recognising their key role in survivor support, community mobilisation, and local accountability. Furthermore, CSOs should monitor government and donor commitments to GBV, advocate for inclusive and intersectional policies, and lead awareness and prevention efforts at the community level, particularly in marginalised and remote areas.

45 In 2024, Brazil's Ministry of Women launched the *Action Plan of the National Pact for the Prevention of Femicides*, aimed at preventing the deaths of women stemming from gender-based violence. The plan also seeks to ensure access to justice for all women affected by violence, as well as for their families. With an allocated budget of BRL 2.5 billion, the Action Plan outlines 73 measures organised under two key pillars: structuring and cross-sectional. The structuring pillar encompasses a three-tiered preventive approach: primary prevention focuses on shifting societal beliefs and behaviours to eliminate gender stereotypes and promote a culture of respect and zero tolerance for discrimination. Actions include the training of women community leaders and workshops that amplify women's testimonies. Secondary prevention involves early intervention strategies, such as the provision of financial support for temporary shelters to assist women at risk. Tertiary prevention aims to mitigate the effects of violence through the enforcement of fundamental rights, including access to health care, education, security, justice, and employment. The cross-sectional pillar supports the plan through improved data collection (including increased case reporting), the development of research and diagnostic tools, and the formulation of new regulatory frameworks.

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Kenya

Climate Challenges on Sexual and Reproductive Health: Insights from Isiolo, Kwale and Narok Counties

Highlights

ENVIRONMENTAL STRESS

- Across Narok, Isiolo, and Kwale, 85% of women reported noticeable changes in climate conditions. Key climate hazards include drought, floods, and extreme heat.
- Specific impacts vary by location: in Isiolo, nearly 80% reported reduced access to drinking water and related health issues; in Narok, 80% faced crop damage; in Kwale, around 70% experienced both crop losses and livestock illness.

INDIRECT IMPACTS OF CLIMATE CHANGE ON DAILY LIFE

- Climate change is disrupting food systems, with 64% of women reporting difficulty accessing nutritious food—linked to reduced agricultural yields (45%), rising food prices (38%), and lost income (35%). As a result, women shoulder a heavier burden of unpaid labour, including water collection, caregiving, and securing food.
- Displacement is an increasingly common response, especially in Isiolo (40%), eroding community ties.

CLIMATE DRIVEN MULTIPLE STRAINS ON WOMEN

- Women face disproportionate impacts, as climate-related stress heightens family responsibilities and increases exposure to gender-based violence. A vast majority reported reduced access to health services (91%), negative effects on pregnancy outcomes (89%), and worsened menstrual health management (83%).
- Despite limited access to family planning (75%), more than half of respondents (52%) still exercise reproductive autonomy, primarily through long-acting contraceptives like injectables and implants.
- Water scarcity is a central challenge, undermining food security, personal health, including menstrual, hygiene, and safety for women and girls.

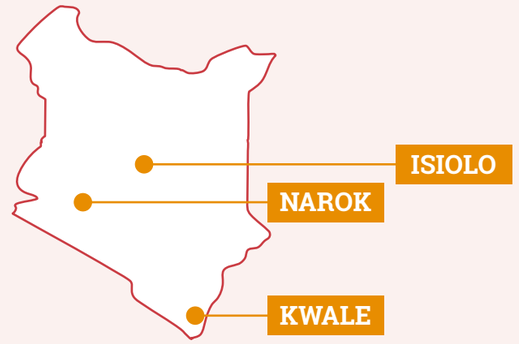
MATERNAL HEALTH UNDER CLIMATE STRESS: INTERSECTING VULNERABILITIES AND SYSTEMIC GAPS

- Access to healthcare is undermined by structural and climate-related barriers, including lack of transport (39%), damaged infrastructure (29%), and long distances to facilities (25%).
- About 80% of women experienced pregnancy-related difficulties, linked to stress from economic losses (46%), increased physical workload (39%), exposure to extreme heat (23%), and illness (21%).
- Women's healthcare autonomy remains limited—many require male permission to seek services, while economic and educational barriers further restrict their access and decision-making.

1. Understanding the Context

DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS OF THE THREE COUNTIES

Kenya is a country of great diversity—not only in its landscapes and climate zones, but also in the socio-economic profiles of its regions. This study was carried out in three Kenyan counties—Narok, Isiolo, and Kwale—selected for their social and ecological diversity (pastoralist, coastal, and semi-arid contexts), and the varying impacts of climate change.



- **Narok County**, located in the south-west, is home to over 1.13 million people (City Population, 2023), most of whom belong to the Maasai community. The county's economy is largely driven by livestock rearing, crop farming, and tourism—especially given its proximity to the Maasai Mara National Reserve. **Narok also has one of the higher per capita incomes among Kenyan counties,** indicating a relatively strong local economy (ibid.).

- **Isiolo County**, by contrast, has a much smaller population of around 283,000 people and is one of the more sparsely populated counties in Kenya (Kenya National Bureau of Statistics, 2023). It is **situated in the arid and semi-arid lands (ASALs) of the north, and its economy is primarily pastoralist**—around 80% of residents depend on livestock. The remaining population engages in small-scale farming, trade, or informal labour. Isiolo is also emerging as a potential hub for tourism and agri-business, owing to its strategic location and growing infrastructure.

- **Kwale County**, located along the southern coast, had a population of under 866,820 in the 2023 census (Citypopulation, 2024). It is predominantly agricultural, producing crops such as cassava, sugarcane, cashew nuts, and mangoes. Tourism is also significant, particularly around Diani Beach, one of Kenya's most popular coastal destinations. Fishing and artisanal mining add further diversity to the local economy. A recent report by the Kenya National Bureau of Statistics (KNBS) reveals that **Kwale has one of the highest poverty rates in Kenya, standing at 71.4%, significantly above the national average** (Kenya National Bureau of Statistics, 2022).

CHANGING CLIMATE: LOCAL REALITIES IN NAROK, ISIOLO, AND KWALE

Climate change has affected all three counties, though in different ways, due to their geographic and economic diversity.

- In **Narok**, recurring droughts and unpredictable rainfall have had serious effects on agriculture, tourism, and pastoralism (RLS, 2022). As a semi-arid area, the county is especially vulnerable to the reduction in water sources and degradation of grazing lands, which in turn affect livelihoods.

- **Isiolo**, located fully within Kenya's ASAL region, is among the hardest hit by climate change. The county faces frequent droughts, erratic rainfall, and water scarcity (Ministry of Devolution, 2025). These challenges severely undermine food security and public health, particularly among pastoralist communities. However, Isiolo has developed a climate adaptation plan focused on building water infrastructure, promoting disease surveillance for livestock, and supporting women and youth in climate resilience efforts[46].

- **Kwale** experiences a monsoonal climate, with two main rainy seasons. Rising temperatures, longer dry spells, and seasonal flooding have begun to disrupt farming activities, degrade soil quality, and endanger freshwater ecosystems. The coastline is also increasingly at risk from sea-level rise and coastal erosion (MoALF, 2016).

SOCIAL STRUCTURES, FAMILY ORGANISATION AND GENDER DYNAMICS

The social and cultural fabric of Narok, Isiolo, and Kwale reflects a mixture of historical values and contemporary influences, with significant implications for family life and gender relations.

- In **Narok**, society is heavily shaped by Maasai traditions. **Extended families and clan-based systems play a central role in community life**, and age-set structures still influence social roles. While Christianity is the dominant religion, the Maasai community has a rich cultural heritage that includes various mystical beliefs and practices, such

46 Available at: https://repository.kippra.or.ke/items/91127116-8eee-4b5b-849c-47d2c1480875

as divination, traditional healing, and ancestor veneration (Purko et al., 2024). Gender inequality remains a serious issue—particularly regarding education, inheritance rights, and bodily autonomy. Female genital mutilation (FGM) is still practised in some communities, despite legal prohibitions and ongoing awareness campaigns.

- **Isiolo** is one of Kenya's most **ethnically diverse counties**, home to groups such as the Borana, Somali, Turkana, Samburu, and Meru. Social life is structured around ethnic communities and religious affiliations, with both Islam and Christianity well represented (Boye & Kaarhus, 2011). Family units are often extended, and **community networks are critical for survival**, especially during crises. In this context, **women can play a pivotal role in resilience strategies**: among the Borana, for example, the concept of *marro*—a reciprocal food-sharing system centred around women—ensures that families support each other in times of need[47]. However, gender disparities are evident, with **women and girls often excluded from key decision-making spaces and facing limited access to education and reproductive healthcare**. Practices such as early marriage, teenage pregnancy, and female genital mutilation continue to pose serious health risks, contributing to high maternal and neonatal mortality. **Over 68% of residents live in remote settings with few, understaffed facilities**. Health services are limited, especially in rural areas where most of the population lives. Acute malnutrition is also a major ongoing public health concern in the county (Knowledge Hub, 2025).

- In **Kwale**, family structures are in transition. **While nuclear and extended families remain common, recent surveys show that around 20% of households are now headed by single parents** (NCPD, 2022). The county is predominantly Muslim, and religious values often guide social norms, including family roles. There is a rising trend of female participation in education and income-generating activities, although gender-based inequalities persist. For example, early marriage, gender-based violence, and limited economic opportunities for women continue to be major challenges. **Only 9% of women in Kwale own land, and even fewer occupy leadership roles** (Missiniam, 2024). Initiatives such as gender-responsive budgeting are being introduced at county level to address these disparities and promote the inclusion of women, youth, and persons with disabilities in local development planning.

47 Marro is a traditional women's social support network, practiced among the Borana in Kenya and Ethiopia. It functions as an informal deeply embedded mechanism for ensuring household food security, particularly during times of hardship. At its core, marro is a reciprocal, voluntary system of solidarity among women—encompassing friends, neighbours, and extended families—across all age groups, economic statuses, and livelihood backgrounds. While most women engage with the network on an as-needed basis, it serves as a daily survival mechanism for poorer and elderly women. Marro operates through both bonding (local) and bridging (long-distance) social networks, enabling the exchange of essential resources—such as food, labour, or small amounts of cash—grounded in trust, mutual aid, and community cohesion. Beyond addressing immediate material needs, the practice reinforces social ties and collective resilience, making it a cornerstone of women's adaptive strategies in climate-vulnerable pastoralist settings (Anbacha & Kjosavik, 2018).

1.2. Study Design and Methodology

This study was designed not only to generate evidence, but also to centre local voices, lived realities, and diverse knowledge systems. From the outset, **local teams from each of the three counties—Narok, Isiolo, and Kwale—played a leading role** in the study's design and implementation. Their proximity to the communities, understanding of local dynamics, and trust-based relationships were instrumental in shaping a process that was both grounded and responsive.

To ensure contextual relevance, the research question was defined through a bottom-up process during three focus group discussions—one in each county (Narok, Isiolo, and Kwale). Participants were asked to identify, within the broader umbrella of sexual and reproductive health, the dimension they considered most critical to address in the context of climate change. Maternal health emerged as the priority focus. Accordingly, the central question became:

How do climate change-related factors affect reproductive and maternal health in rural Kenyan communities, particularly through the pathways of poverty and infrastructural disruption?

To answer this question, focus group discussions, key informant interviews, and a structured quantitative questionnaire were conducted. Rather than applying a uniform framework, this work deliberately sought to **highlight both the common threads and the contextual specificities** that shape SRH across pastoralist, semi-arid, and coastal settings. This approach allowed for a more nuanced understanding of the realities faced by women and communities in these counties, while resisting generalisations. The use of a **mixed-methods design**, combining qualitative and quantitative tools, enabled the study team to explore both the mechanisms and the lived experiences behind climate-related health vulnerabilities.

FOCUS GROUP DISCUSSIONS (FGDs)

Objective: To explore knowledge, practices, and access to maternal and reproductive health services under climate stress.

Sample: Two focus groups per county (Narok, Kwale, Isiolo), one with women under 25 and one with women over 25, each composed by 6–10 women with diverse profiles, including pregnant women, mothers, teachers, nurses, farmers, Traditional Birth Attendants (TBAs), and community leaders.

KEY INFORMANT INTERVIEWS (KIIs)

Objective: To gain expert and community-based perspectives on how climate shocks impact maternal health and access to health services.

Sample: Experts on climate change and environmental risk (including WeWorld staff where applicable), maternal health professionals (midwives, nurses, sub-county health officials), traditional caregivers (TBAs, CHPs), and local health administrators.

STRUCTURED QUANTITATIVE QUESTIONNAIRE

Objective: To collect relevant data on maternal health outcomes, care-seeking behaviour, household conditions, and the perceived impact of climate events.

Sample: 50 women aged 18+ in each county, including women who gave birth in the past 36 months, covering both facility-based and home deliveries.

Tools	Description
Key Informant Interviews	Health Staff (n=1) Traditional Birth Attendant (n=1) Midwife (n=1) Climate Change Expert (n=1) Health Officer (n=1) Project Officer (n=1)
Focus Groups	3 Focus Groups with young mothers (<25 years): - Narok (n=8) - Kwale (n=8) - Isiolo (n=8) 3 Focus Groups with mothers (>25 years): - Narok (n=8) - Kwale (n=8) - Isiolo (n=8)
Quantitative Survey	Narok (n=55) Isiolo (n=50) Kwale (n=52)

A Closer Look at the Quantitative Sample

A total of **157 women participated in the survey**. In Kwale County, participants were drawn from two sub-counties: Matunga, with 24 respondents, and Msambweni, with 28 respondents. Isiolo County was represented solely by Isiolo Central, which accounted for 50 respondents. From Narok County, the sample was distributed across three sub-counties: Narok North (9 respondents), Narok South (24 respondents), and Narok Central (22 respondents), totaling 55 participants. Fig. 1 below describes age distribution.

- **FAMILY STRUCTURE: 80% of the sample is married**, 15% never married, 4% divorced, 1% widowed. All the respondents have children. The average number of children is 2.7, while the average number of household members is 6.7.

- **LEVEL OF EDUCATION AND OCCUPATION:** Most respondents reported having completed primary or lower secondary education, with **Grade 8 (23%) and Form 4 (20%)**[48] being the most common levels attained. Only a small proportion had pursued post-secondary or tertiary education. Approximately **half of the respondents identified as housewives**, while the remainder are engaged in informal occupations such as market vending, farming, or casual labour.

- **ASSETS:** Among the respondents, 74% have either a radio or a television, 31% own an electric stove, and only 25% have a refrigerator.

- **LIVELIHOODS: 46% of women live in households that operate land for agricultural purposes**. Among these, 71% sell their products on the market, while the remainder is used for subsistence. Additionally, 60% keep livestock or poultry, and among them, 80% earn income from livestock production. Only one respondent has economic activity in the field of fishing.

48 In Kenya, the education system traditionally followed the 8-4-4 structure, which included eight years of primary education, four years of secondary education, and four years of university. Under this system, Grade 8 represents the final year of primary school. Students in Grade 8 are typically around 13 or 14 years old and complete their primary education by sitting for the Kenya Certificate of Primary Education (KCPE) examination. On the other hand, Form 4 is the final year of secondary school. It is usually completed by students aged 17 to 18 and concludes with the Kenya Certificate of Secondary Education (KCSE) examination, which determines eligibility for university or other forms of higher education.

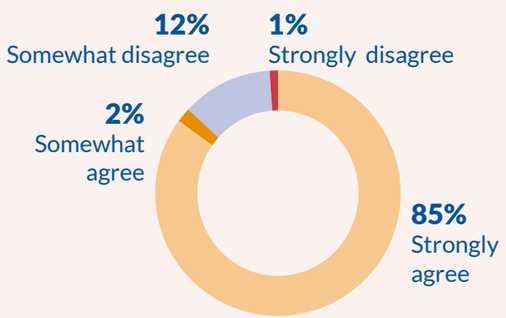
2. Key Takeaways from the Findings

ENVIRONMENTAL STRESS

Data from Narok, Isiolo, and Kwale reveal a strong community awareness of climate change and its impacts, particularly among younger generations. **85% of respondents strongly agree that climate conditions have noticeably changed in recent years** (Figure 1). This awareness is not merely theoretical but deeply rooted in lived experience: people encounter extreme heat, prolonged droughts, unpredictable rainfall, and flooding as part of their daily reality. For many, **climate variability is not an abstract scientific idea but a concrete, ongoing challenge that shapes their livelihoods, health, and survival strategies. Rather than being seen as unusual or temporary, these changes are understood as inevitable structural shifts in their environment.**

Qualitative data further show that, even when terms like "climate change" or "global warming" are not explicitly used, respondents frequently link worsening access to water, pasture, and food security directly to environmental changes. This reflects a grounded, experiential understanding of how a changing climate is impacting the natural resources they rely on.

Figure 1.
Percentage (%) of respondents who agree/disagree with the statement *"climate has changed in the last years"*



"Maybe they don't know the causes, but they say: the river is not as it was; this is climate change for them"
- Key informant interviewed

- **HOW CLIMATE CHANGE MANIFESTS:** Focus group discussions across the three counties consistently identified **drought, floods, and extreme heat as the primary climate-related hazards affecting local communities**, though their intensity and perceived impact vary by context (Figure 2). In Isiolo, drought is highly dominant, driving migration, food insecurity, and severe water shortages. Narok is also experiencing increasing drought conditions, which mainly result in livelihood losses and seasonal migration among pastoralist communities. **Kwale faces the most critical threat from drought, which not only depletes natural resources but also heightens conflicts over access to pasture and water, especially in the inland areas.** Alongside drought, heavy rains and floods further challenge these communities, albeit with varying intensity. Floods are a critical hazard in Kwale, frequently washing away bridges and disrupting essential health referral systems. In Isiolo, floods are considered a moderate threat but still cause significant damage to infrastructure and service delivery. **Narok experiences floods particularly after drought periods, where washed-out roads often cut off access and isolate communities. Extreme heat and wildfires add further stress, particularly in Isiolo, where extreme heat contributes to heat stress, physical exhaustion, and increased malaria risk; wildfires are also reported.** In Kwale, these hazards are present mainly in the inland zones, while coastal areas are less affected. Conversely, extreme heat is rarely emphasised as a concern in Narok, with wildfires only occasionally mentioned.

Table 1.
Climate Hazards in the Three Counties

Climate Hazard	Isiolo (arid and semi-arid)	Narok (semi-arid)	Kwale (coastal + inland)
Increased intensity and frequency of droughts	Highly dominant – leads to migration, food insecurity, and water scarcity	Increased– mostly linked to livelihood loss and migration	Most critical hazard. These conditions also reduce natural resources and increase the risk of conflicts over pasture and water.
Heavy rains & floods	Moderate hazard – floods wash away bridges, disrupt referral systems	Present– especially after droughts, cutting off access roads	Critical hazard – floods wash away bridges, disrupt referral systems
Extreme heat and wildfire	Extreme heat cited as additional stressors (heat stress, malaria risk, physical exhaustion). Wildfire mentioned.	Rarely emphasised	Present in inland zones; coastal areas less affected. Wildfire mentioned.

- **CLIMATE CHANGE EXPERIENCED IMPACTS:** In these counties, climate change has led to several significant consequences, including the loss of livelihoods, damage to infrastructure, and diminished access to water (Figure 3). These impacts disproportionately affect pastoralist and agricultural communities, who rely heavily on natural resources for their survival. The situation is particularly severe **in Isiolo, where nearly 80% of respondents reported reduced access to drinking water due to climate change, alongside related injuries and illnesses**. Additionally, over 60% of people indicated that their livestock had either died or fallen ill because of shifting climatic conditions. **In Narok, almost 80% of respondents experienced crop damage attributed to climate change, while in Kwale, close to 70% reported both crop losses and livestock illness.** Moreover, a notable number of respondents in both Kwale and Isiolo (60%) reported damage to their dwellings, highlighting the wider vulnerability of housing infrastructure to extreme weather events.

Table 2.
Climate Change Consequences [49]

Impact	Isiolo (%)	Kwale (%)	Narok (%)	Total % (out of 157)
Injury/Illness	82%	69%	11%	53%
Dwelling damaged	60%	60%	24%	47%
Crops damaged	44%	69%	76%	64%
Unusually high pest and diseases	4%	25%	13%	14%
Unusually high level of livestock disease	6%	6%	15%	9%
Livestock died or became sick due to extreme heat or lack of water	62%	4%	36%	34%
Poor fishing yields	0%	6%	0%	2%
Livestock lost or contracted illness	22%	8%	7%	12%
Drinking water source damaged or reduced	82%	17%	42%	47%
Loss of electricity or water supply	22%	38%	5%	22%
Other	4%	0%	4%	3%
I do not know	0%	4%	2%	2%

- **LIVELIHOOD LOSSES:** Pastoralist communities in Isiolo, Narok, and Kwale heavily **rely on livestock, but climate change is undermining this way of life**. In Isiolo, severe droughts are destroying pastures, forcing **men to migrate with herds and leaving behind women and children in largely abandoned villages.** With livestock markets collapsing, families lose their main economic support. Narok faces soil degradation due to overgrazing and erratic rainfall, disrupting agriculture and encouraging a shift to livestock, though cultural barriers to selling animals[50] hinder financial resilience. In Kwale, pasture scarcity is growing, especially inland, leading to seasonal migrations and environmentally harmful coping strategies like charcoal burning. Even coastal tourism, and associated revenues, is suffering due to climate variability.

- **REDUCED AGRICULTURAL PRODUCTION:** In Isiolo, agriculture is minimal due to the arid climate, but even the little subsistence farming that exists is entirely wiped-out during droughts, exacerbating food insecurity. In Narok, soil erosion and overgrazing have reduced productivity, leading to more reliance on livestock. Respondents noted **an increasing need for chemical inputs such as pesticides due to the emergence of new pests, creating new health risks for women, especially pregnant ones who are now spraying fields without protective clothing.** Kwale's inland areas are experiencing frequent crop failures from erratic rains, while coastal zones are beginning to feel the strain. Although saline intrusion is known to reduce land productivity (Raburu et al., 2025; Oiro & Comte, 2018), this issue did not emerge in the quantitative data, as the respondents from Kwale do not reside in the areas most affected by it.

- **INFRASTRUCTURE DESTRUCTION:** Extreme weather, particularly heavy rains, is undermining the already fragile infrastructure of these counties. Narok emerges as the most affected: **respondents report that bridges and roads are likely to be washed away during heavy rains, cutting off entire villages for weeks at a time. Schools and even small clinics have become inaccessible. Women in labour often cannot reach referral facilities, leading to an increased reliance on Traditional Birth Attendants and home deliveries.** In Isiolo, floods follow long drought periods, overwhelming dry soils and destroying bridges, pathways, and homes[51]. Inland Kwale experiences less dramatic but still significant impacts, where rural road networks deteriorate during rainy seasons, making basic services harder to reach.

49 When answering this question, respondents could select all options that applied.

50 The Maasai's reluctance to sell livestock during times of crisis stems from the fact that animals are considered a form of security against severe droughts, which typically occurred every 8–12 years in the past. Although Maasai herders are aware that selling animals early in a drought could reduce losses, the lack of a reliable early warning system makes it difficult to distinguish delayed rains from the onset of a true drought. Consequently, they tend to delay sales until drought conditions are certain, by which time markets are often overburdened and livestock prices have dropped sharply (Bekure et al., 1991). More recent studies confirm that this pattern persists, despite growing awareness of climate variability. Uncertainty in rainfall patterns and limited access to trusted forecasting tools continue to hinder early sales (Rodich et al., 2023), while institutional barriers, such as low uptake of insurance schemes, poor infrastructure, and gendered exclusion, further constrain adaptive responses (Bostedt et al., 2023).

51 One notable case reported involved the use of military helicopters to deliver food and medicine because all ground routes became impassable after flash floods.

- **RESTRICTED WATER ACCESS:** Water scarcity is a growing crisis in all three counties. In Isiolo, drought dries up water sources, **forcing women to travel long distances in unsafe conditions**. Narok households face similar seasonal shortages, with **women often sacrificing healthcare to prioritise water collection**. In inland Kwale, long treks expose women to exhaustion and violence. Though coastal areas are less affected, participants also highlighted the problem of **water contamination**, due, for example, to flooding, which can lead to infections and diseases that particularly affect women and children.

"Fetching water now takes hours, and women return exhausted or attacked." - Key informant interviewed

INDIRECT IMPACTS OF CLIMATE CHANGE ON DAILY LIFE

Climate change is not only transforming the physical environment but also **generating a cascade of indirect effects that extend deeply into family structures and community systems**. While the immediate impacts—such as droughts, floods, and extreme heat—are visible and acute, it is the more subtle and long-term consequences that gradually undermine the social and economic fabric of rural areas. The impingement on vital resources, indeed, leads to food insecurity and displacement. The latter, in turn, disrupts education and the working population, while declining work capacity reduces income, which in turn exacerbates food insecurity and health challenges. Each factor reinforces the others, trapping families in a feedback loop of vulnerability. Ultimately, **climate change operates not only as an environmental threat but also as a slow-burning social and economic crisis—gradually dismantling household stability and eroding the social systems that have long sustained rural communities.**

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FOOD INSECURITY AND ILLNESSES: Climate-related shocks such as droughts and floods are driving both food insecurity and a rising burden of disease. Droughts lead to crop failure and livestock loss, while floods often contaminate water sources, creating a dangerous cycle of malnutrition and illness. According to survey results, **64%** of respondents struggle to access nutritious food, with key causes including **declining agricultural output (45%), rising food prices (38%), climate-related income loss (35%), flood damage to crops and storage (26%)**, and the **disappearance of climate-sensitive crops (22%)** (Figure 4). As droughts reduce dietary diversity, floods trigger outbreaks of waterborne diseases, while damaged infrastructure cuts off access to health services—making treatable conditions potentially fatal. The cumulative effect of repeated climate shocks and prolonged illness weakens household resilience over time. Hygiene is further compromised by seasonal increases in houseflies during the rains, which contribute to food contamination and the spread of infections.

Table 3.
Barriers to Nutritious Food Access [52]

Difficulty	%
Droughts/irregular rainfall reduced food production	45 %
Food prices increased	39%
Income loss due to climate events made it harder to buy products	35%
Floods destroyed crops or food storage	26%
Certain fruits/vegetables no longer grow in the area	22%
Increased pests or plant disease	3%
Other	3%
Fish became less available	1%

- **INCOME EROSION AND INCREASED HOUSEHOLD LABOUR BURDEN:** Climate-related stressors are steadily eroding household income and threatening the sustainability of rural livelihoods. **As livestock perish and crops fail, families lose their main sources of income.** Even when some production persists, damaged roads and flooded infrastructure often block market access, forcing households to sell productive assets at low prices—an emergency strategy that weakens long-term resilience. Declining income limits families' ability to afford school fees, healthcare, or invest in adaptation. At the same time, **as basic resources like water and food become harder to access, household labour demands—especially for women and older children—grow significantly**. More time is spent collecting water, caring for the sick, and seeking food, leaving less time for education[53] or income generation. Even when work is available, overall productivity declines, especially when able-bodied household members migrate due to climate pressures.

- **DISPLACEMENT AND SOCIAL INSTABILITY:** Displacement has increasingly become a common coping strategy for families facing recurrent climate shocks: **in Isiolo**, in particular, **2 out of 5 (40%) respondents have migrated due to climate change, while in Narok, more than 1 in 4 (27%) have done so** (Figure 5). Forced to abandon their permanent homes, many move into temporary shelters or settle in unfamiliar areas where established social support networks are weak or entirely absent. Consequently, **numerous households live in a state of semi-permanent displacement—never fully settled, perpetually anticipating the next move.** This chronic instability undermines community cohesion and restricts access to essential services, severely limiting prospects for long-term adaptation. Indeed, long-standing support systems fracture as extended families become physically separated, weakening social bonds. In addition, as pasturelands and water points become scarcer, families are forced to seek resources elsewhere, leading to competition with nearby communities. Pastoralists clash with farmers, and even different ethnic groups engage in conflicts over shrinking grazing corridors. According to respondents, **tensions that were once occasional are becoming more frequent and intense, with livestock raids and retaliatory violence undermining traditional systems of cooperation**[54].

52 When answering this question, respondents could select all options that applied.

53 Indeed, education too is significantly affected as families adapt to the pressures of a changing climate. When households are forced to migrate in search of pasture or safer living conditions, children's education is often interrupted. Frequent transfers between schools become common, and many children—especially those old enough to contribute to household tasks—eventually drop out. The demands of daily survival frequently take precedence over schooling: children are kept at home to help fetch water, tend to livestock, or support household income-generating activities.

54 For example, a key informant in Kwale has stated the movement of pastoralist communities has triggered conflicts with residents, including incidents where grass was deliberately poisoned to prevent others from grazing their livestock in the same areas.

Table 4.
Respondents who migrated due to climate change

Response	Isiolo	Kwale[55]	Narok
Yes	40%	12%	27%
No	60%	85%	73%

CLIMATE-DRIVEN MULTIPLE STRAINS ON WOMEN

While climate change affects entire households, its impacts are often most acutely experienced by women, whose responsibilities within families typically expand during times of environmental stress. Together with the heightened burden of unpaid domestic work, it also influences multiple aspects of sexual and reproductive health: **9 out of 10 women reported that climate change has impacted access to health services** (91%) and **pregnancy outcomes** (89%), while **more than 4 in 5 (83%) also agreed that it affects menstrual health and hygiene management** (MHHM). At the same time, qualitative data **highlight an increased exposure to violence and a worsening of psychological well-being among women**.

9 out of 10 women reported that climate change **has impacted access to health services** (91%) and **pregnancy outcomes** (89%), while **more than 4 in 5** (83%) **also agreed that it affects menstrual health and hygiene management**

55 3% of the respondents answered "I don't know".

Table 5.
Percentage of respondents who agree/disagree with the statement: "climate change affects..." [56]

Statement	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
Access to health services	71%	20%	5%	4%
Pregnancy outcomes	74%	15%	8%	3%
Family planning	50%	25%	14%	11%
Menstrual hygiene and health	56%	27%	13%	4%
Access to sanitary products	46%	26%	15%	13%

- **INCREASED WORKLOAD:** One of the most immediate effects of climate stress is **the sharp rise in unpaid labour required to maintain household survival**. As water sources dry up or become unsafe, collecting water often takes an entire day. Fuelwood is also becoming harder to find due to deforestation and land degradation, pushing women to travel longer distances with heavier loads. **This burden falls disproportionately on women, who are often expected to continue with demanding domestic and farm work even during late pregnancy, increasing fatigue and health risks. The impact is not only physical: the constant strain reduces time for rest, self-care, and social participation.** Over time, this erosion of personal resilience undermines women's well-being and, by extension, the adaptive capacity of the entire household, given their central role in sustaining daily life and broader resilience.

"I've observed several critical areas where climate change is affecting women's reproductive well-being. One thing I see clearly is that women are now doing much heavier work, even during pregnancy. This is made worse by the patriarchal structure around land ownership - it's the men who decide how land is used, even for small kitchen gardens. So many women are forced to work in other people's fields just to earn some income." - Key informant interviewed

"Our workload has increased a lot, both at home and in our work. Many of us have had to take on new roles like raising chickens to try and bring in extra income." - Woman interviewed

- **HIGH LEVELS OF PSYCHOLOGICAL STRESS:** The emotional and psychological toll of climate change is particularly pronounced among women, especially mothers. Across numerous accounts, **women reported a persistent sense of exhaustion as they attempt to balance increasingly burdensome domestic responsibilities**—such as fetching water, sourcing food, and caring for children or the elderly—within a context of deepening scarcity and uncertainty. Unpredictable rainfall patterns, the fear of losing livestock or harvests, and the daily struggle to secure basic necessities generate chronic stress and anxiety. **This burden is especially acute for mothers, many of whom expressed psychological distress when unable to meet their children's nutritional needs.** In some cases, women associated mental strain with physical symptoms, such as diminished breast milk production following childbirth—an outcome they attributed to both stress and inadequate nutrition. **The ongoing effort to locate water was also frequently identified as a major contributor to mental fatigue, with few sustainable solutions available.** Additionally, climate-induced displacement—particularly during flood events—exacerbates psychological hardship. **The trauma of leaving one's home, uncertainty about the future, and the breakdown of social support networks all contribute to deteriorating mental health,** especially among women and children.

- **INCREASED RISK OF GENDER-BASED VIOLENCE:** Qualitative data indicates that **climate-induced scarcity and displacement significantly heighten insecurity, creating conditions that increase the risk of gender-based violence (GBV) both within and outside the household.** When drought necessitates migration or floods destroy homes, families are often forced to relocate to temporary shelters or informal settlements. These environments typically lack privacy, safety, and social cohesion, leaving women and girls particularly vulnerable to abuse and exploitation. Economic hardship, often resulting from livestock deaths or crop failure, can further exacerbate household tensions, with stress manifesting in increased incidences of intimate partner violence. In this context, **early marriage emerges as a harmful coping mechanism, with some families viewing it as a way to "reduce the burden" during periods of acute food insecurity.** Water scarcity also plays a role in fueling domestic conflict: women spend long hours queuing at distant water points, often leaving home before dawn. These prolonged absences can lead to suspicion or mistrust within the household, sometimes escalating into verbal abuse or even physical violence from partners or other family members.

"In some cases, men misinterpret women's absences while fetching water as signs of infidelity or idleness, leading to conflict, mistrust, and even gender-based violence" - Key informant interviewed

"Economic hardship and stress caused by climate hazards make women and girls more vulnerable to gender-based violence, including forced marriages, sexual violence, and partner violence. For example, discussions about how the father, as the breadwinner, can provide often escalate into violence because the economic situation is worsening." - Key informant interviewed

- **DIFFICULT ACCESS TO FAMILY PLANNING: Three out of four respondents (75%) report that climate change is also affecting access to family planning services**. These challenges do not occur in a vacuum; rather, climate stress amplifies **existing social and gender-based vulnerabilities**. In many communities, **family planning decisions remain under male control**, with women often needing permission from their husbands to seek contraception. Cultural and religious norms may further restrict women's autonomy, contributing to inconsistent or limited uptake of reproductive health services. At the same time, however, there are signs of **growing awareness and agency among women**. When asked about their use of family planning, **just over half (52%) of women reported currently using a method to delay or prevent pregnancy**. Among these, the vast majority rely on **long-acting methods: injectables (46%) and implants (46%)** are used at nearly equal rates. **Oral contraceptives (6%)** are less commonly reported, and **condom use remains very limited (2%)**, reflecting both social stigma and limited male involvement in contraceptive responsibility.

- **HOW CLIMATE CHANGE DEEPENS MENSTRUAL INJUSTICE:** Prolonged droughts are severely disrupting menstrual health and hygiene. When local water sources dry up, available water is prioritised for drinking and cooking, leaving little for personal hygiene. As a result, girls are often forced to walk long distances—sometimes several kilometres—to reach water points, increasing both physical strain and exposure to unsafe or threatening environments. The situation is worsened by the **limited availability of affordable menstrual products**. In some cases, families reported that adolescent girls engaged in **transactional sex** to obtain them—a dangerous coping strategy linked to higher risks of **unintended pregnancy**, **sexual violence**, and **sexually transmitted infections**, while also undermining girls' possibility to stay in school. Some women also reported that **extreme heat** appears to affect **hormonal balance**, leading to irregular menstrual cycles, while others noted that **menstrual pain worsens in high temperatures**, especially among adolescents and women of reproductive age.

"Girls miss school during their periods because there is no water to wash with. They feel ashamed because they smell or cannot clean their clothes." - Key informant interviewed

56 When answering this question, respondents could select all options that applied.

Water Scarcity as a Cross-Cutting Burden in Women's Lives

Driven by climate change, **the lack of reliable and safe access to water is one of the most disruptive factors affecting women's daily lives**—and, by extension, the well-being of entire families. **Only approximately 40% of respondents reported relying on safe water sources, such as protected wells, while 3% on piped water** (Figure 7). **The majority, however, depend on less secure sources, including streams or rivers (26%), unprotected wells (23%), and water ponds (7%), all of which pose significant risks to health and hygiene.**

Table 6. Water Source

Water Source	Isiolo	Kwale	Narok	Total (%)
Protected well	44%	63%	5%	37%
Stream/river	36%	29%	15%	26%
Unprotected well	14%	2%	51%	23%
Water ponds/ pan	4%	4%	13%	7%
Other	0%	2%	9%	4%
Piped water	2%	0%	7%	3%

In addition, **2 out of 3 women (61%) reported having difficulties accessing water for hygiene purposes**. Main barriers include water sources drying up (38%), longer distances to water sources (34%), and the unsafety of water sources (21%) (see Figure 8).

Table 7. Reasons for difficulty in accessing water for hygiene [57]

Main Reasons for Difficulty	%
Water source dried up	38%
Long distance to water source	34%
Water source was not safe	21%
Income loss due to climate change events making water unaffordable	15%
Other	8%
Restriction due to gender or cultural norms	1%

The testimonies gathered highlight how **fetching water becomes a physically demanding, time-consuming, and often hazardous responsibility**, with wide-ranging impacts on hygiene, maternal care, psychological well-being, and personal safety. During droughts, this activity can consume an entire day, leaving little or no time for income-generating activities, education, or adequate rest. When water is limited, families are forced to prioritise drinking and cooking needs, often at the expense of personal hygiene. This has immediate negative effects on women's health, especially during menstruation and the postpartum period. **Health facilities are also affected; clinics frequently run out of water during droughts, undermining hygiene standards and patient care.** In some cases, women are even instructed to bring their own water supplies to hospitals, which further discourages them from seeking necessary medical attention.

"Mothers prioritise fetching water and firewood, sometimes traveling all day with 20-liter jerricans. They cannot go for scheduled health services because all their time is spent just looking for water." - Key informant interviewed

"During the dry season, water collection can lead to abortion because of lifting heavy containers and walking long distances," - woman interviewed

"After childbirth, if there is no clean water, the mother and the baby are prone to infection. She cannot keep herself or the baby clean, and this is dangerous." - Key informant interviewed

Fetching water is not only physically demanding but also fraught with danger. Women and girls often must traverse bushy, wildlife-rich, or isolated areas, exposing them to risks such as wild animal attacks and sexual violence. Furthermore, **due to the gendered division of labour, while men rest after fieldwork, women must continue with household responsibilities—milking animals, preparing food, and caring for children—without a break.** The persistent scarcity of water is a constant source of anxiety and humiliation. **Women describe how the uncertainty of whether they will find water the next day causes significant mental distress, which in turn affects their physical health. When clean water sources are too distant, families sometimes resort to collecting contaminated water from rivers, leading to outbreaks of waterborne diseases.** This lack of access to safe water undermines every aspect of family health, exacerbating the risks of malnutrition, infection, and delayed recovery after illness or childbirth.

"When men return, they rest. Women must still fetch water, cook, and maintain the home. This overload worsens their physical and psychological stress." - Key informant interviewed

"You think the whole day and night about where you will get water. It affects your milk production after delivery because of the stress." - woman interviewed

"When the borehole is dry, we take river water, even if it is dirty. It leads to infections, but what choice do we have?" – woman interviewed

MATERNAL HEALTH UNDER CLIMATE STRESS: INTERSECTING VULNERABILITIES AND SYSTEMIC GAPS

In this climate-stressed context, women's sexual and reproductive health—particularly maternal health—faces mounting risks. The cumulative effects of environmental degradation, water scarcity, displacement, and food insecurity are not only reshaping livelihoods but also deeply affecting the conditions under which women conceive, give birth, and care for their children. **Maternal health is indeed embedded within a complex framework where gender dynamics, intersections with a healthcare system that often struggles to meet population needs, and the evolving roles of Traditional Birth Attendants—who themselves face economic pressures—interact with highly vulnerable infrastructure and inadequate access to reliable information.** Together, these factors create a multifaceted set of challenges that compromise maternal outcomes and the well-being of families.

50% of women reported **difficulties in attending antenatal and postnatal care visits.** The main barriers include **lack of transport** for nearly 2 in 5 respondents (39%), **climate-related factors** such as floods or heavy rains damaging roads or bridges for almost 1 in 3 (29%), **and the distance to health facilities**, which was too great for 1 in 4 (25%)

57 When answering this question, respondents could select all options that applied.

- **ACCESS TO HEALTH FACILITIES WORSENED BY CLIMATE CHANGE:** Families in these regions face multiple structural and social barriers that make access to essential health services highly unequal. For instance, **50% of women reported difficulties in attending antenatal and post-natal care visits. The main barriers include lack of transport for nearly 2 in 5 respondents (39%), climate-related factors such as floods or heavy rains damaging roads or bridges for almost 1 in 3 (29%), and the distance to health facilities, which was too great for 1 in 4 (25%)** (Figure 9). Therefore, maternal health services appear to be increasingly compromised by the effects of climate change, particularly in rural areas where access is already limited. Extreme weather further isolates families from health facilities: floods often destroy roads and bridges, isolating clinics for weeks, while droughts trigger migration, disconnecting pregnant women from stable care. Under these conditions, **some must walk 15–30 km to reach health centres, often malnourished and without support**. The physical remoteness of many rural communities compounds these challenges: **in some areas, families rely on motorbikes or must wait for ambulances to arrive from up to 70 kilometres away—delays that can have fatal consequences**[58]. Additionally, poor service quality—such as a lack of skilled staff, medicines, and hygiene—further discourages care-seeking. For many families, **skipping maternal care is not a choice, but a response to risk, cost, and low expectations of adequate treatment**. As climate pressures increase, women's ability to access safe maternal healthcare continues to decline, with serious consequences for both mothers and children.

Table 8.
Difficulty in attending antenatal and post-natal care visits [59]

Main Reasons for Difficulty	%
No transport available	39%
Floods or heavy rains damaged roads or bridges	29%
Health facility was too far	25%
Drought or heat made it physically difficult to travel	17%
I did not feel it was necessary	12%
I had no one to accompany me / childcare issues	8%
I was too sick or weak to travel	5%
My partner/family did not allow me to go	4%
Health facility was damaged due to extreme event	1%
Other	1%

58 For example, some women reported travelling to health centres on motorbikes in late pregnancy, exposing both themselves and their newborns to serious risks.

59 When answering this question, respondents could select all options that applied.

"Even if a mother reaches the clinic, sometimes there are no drugs, no midwife, and no ambulance for referrals. They just tell you to wait or send you to a bigger hospital, but that hospital is far away." - woman interviewed

"There are big delays in women accessing clinics. Ideally, they should come between 1 and 16 weeks of pregnancy, but many arrive much later. The distances to health facilities are huge. The nearest emergency centre, is about 30 kilometres away. For specialist care, we have to go to a hospital which is another 70 kilometres further. The road network is very poor, especially during the rainy season, which makes it even harder to reach services. There are no local taxis or transport options — so for emergencies, we have to rely on ambulances coming all the way from 70 kilometres away." - Key informant

- **INCREASED DIFFICULTIES DURING PREGNANCY:** Data show that **80% of women reported experiencing challenges during pregnancy**, with multiple, often interconnected, factors contributing to these difficulties. **Increased stress and anxiety linked to drought and reduced harvest income were cited by 46%, while 39% of women reported engaging in more physically demanding work**—particularly due to changes in farming activities and the need to travel longer distances to collect water. Additional stressors included **exposure to extreme heat (23%) and illnesses linked to climate (21%),** which further compromised maternal well-being. Focus group discussions reinforced these findings, offering insight into the lived experience behind the numbers. Women described **heat stress as a potential cause of intrauterine fetal death**, while **food insecurity was repeatedly cited for reducing breast milk production**, increasing infant malnutrition risks. Despite these pressures, pregnancy rarely leads to reduced workloads; **most women continue with physically demanding tasks, heightening the risk of fatigue and complications.** Concerns also emerge around women's **exposure to harmful substances in their work environments,** such as during pesticide use in agriculture, often without adequate protective equipment. These conditions further endanger maternal and reproductive health, compounding the physical toll of daily labour with potential long-term toxic exposures. Respondents also raised concerns about the health of young children, noting that **high climatic variability leads to frequent illness among children under five**, which in turn becomes a source of psychological stress for mothers.

Table 9.
Difficulty during pregnancy [60]

Main reasons for difficulty during pregnancy	%
Stress or anxiety about drought, harvests or income	46%
More physical work due to changes in farming or water collection	39%
Too much heat made me feel unwell	23%
Illnesses linked to climate	21%
Could not access medicines or care due to damaged infrastructure	9%
Other	3%

"The increased workload during pregnancy is especially tough. We have heard of many women having miscarriages because they are so physically exhausted from working long hours on the farms and walking long distances to fetch water. Poor nutrition also makes things worse, causing complications in pregnancy. Some women have even given birth prematurely because their bodies are so worn out. Common health problems we face during pregnancy include anemia, infections, and urinary tract infections." - woman interviewed

"The physical strain from this heavy workload - often hidden during pregnancy - along with having to ride motorbikes over rough terrain, are major reasons why we're seeing so many miscarriages. Men still expect women to keep up with housework and farming, regardless of whether they're pregnant or breastfeeding. It puts women at serious risk. Another serious issue connected to climate change is exposure to harmful chemicals. These days, women - including those who are pregnant - are involved in spraying pesticides on crops. That didn't happen in the past. Now, they often do it without any protective clothing, exposing themselves to infection and toxic substances." - Key informant interviewed

60 When answering this question, respondents could select all options that applied.

- **GENDER NORMS, ECONOMIC HARDSHIP AND LACK OF INFORMATION:** Barriers to reproductive and maternal healthcare are shaped not only by climate change but also by restrictive gender norms and economic hardship. Many women require **husbands' permission** to seek care, limiting their autonomy in making essential health decisions. Consequently, women frequently lack both the financial resources and decision-making power to arrange transport or access care independently. Cultural norms can also delay **antenatal care**, sometimes reinforced by **Traditional Birth Attendants (TBAs)**, who may see formal health services as a threat to their income or status[61]. The lack of **education and reliable information** exacerbates all these challenges. Many families are unaware of when and why preventive care is necessary or what services are available to them. **Misconceptions around family planning, antenatal visits, and immunisation** persist, particularly in remote communities with limited access to health education. Key informants also highlighted that **many women are unaware of basic nutritional needs during pregnancy** and lack the knowledge to make the most of locally available food resources.

"Patriarchy also plays a big role. Many women don't have the autonomy or financial means to organise transport or to make sure someone can accompany them during labour. I've personally witnessed mothers dying in childbirth, from severe bleeding. Those are moments I will never forget." - Key informant interviewed

"Sometimes you have the will to go to the hospital, but you have no fare, no food to carry, no money for the drugs they will ask you to buy" - woman interviewed

"Many mothers do not understand why they should start antenatal care early. Some think it is only for delivery. They also don't know about family planning or fear it will harm them." -woman interviewed

61 Indeed, services like antenatal care, family planning, and skilled deliveries are often seen as threats to their role. The core of the issue, however, is not solely cultural; it is also economic. For many TBAs, conducting deliveries is a primary source of income, which can influence their stance on when and how antenatal care is sought.

3. Conclusions and Recommendations

In Narok, Isiolo, and Kwale, **climate change is intensifying existing inequalities and putting mounting pressure on sexual and reproductive health**. Women across these counties report clear environmental changes—particularly drought, floods, and extreme heat—that are affecting water access, food security, livelihoods, and increasing their unpaid care and domestic labour. Despite the significant challenges posed by these environmental shifts, **women continue to demonstrate resilience and resourcefulness in managing their reproductive health and supporting their communities**. For example, many engage in informal economic exchanges that strengthen social networks and economic resilience, and exercise reproductive autonomy, primarily through long-acting contraceptive methods. While structural barriers such as damaged infrastructure, distance to health facilities, and cultural norms requiring male permission persist, **the agency of these women remains evident as they adapt and respond to secure resources and wellbeing for themselves and those around them.**

To respond to these intersecting and urgent challenges, and to build upon and amplify existing good practices, a final consultation was held with key informants[62] from all three counties, who shared their priorities and proposed a series of concrete, locally informed recommendations[63], which are presented in the following section.

FOR DONORS

- **Scaling Financial Support for Climate-Responsive SRHR:** Donors should provide dedicated funding mechanisms that explicitly link climate change adaptation with sexual and reproductive health and rights (SRHR), ensuring that investments reach marginalised and climate-vulnerable populations, particularly women and girls.

- **Mobilising Technical Assistance and Innovation:** Donors should offer financial and technical assistance for the design and implementation of climate-resilient health infrastructure and mobile SRHR services, especially in arid, semi-arid, and informal settlement areas.

- **Strengthening Public–Private Partnerships:** Donors should incentivise and support collaborations between governmental bodies and private actors to develop climate-adaptive infrastructure—such as solar-powered water systems and health clinics—that directly benefit women's wellbeing and access to services.

- **Investing in Research on Climate–SRHR Linkages:** Support should be channelled into interdisciplinary research to better understand the multi-dimensional impacts of climate change on SRHR, with data disaggregated by gender, age, geography, and vulnerability. The evidence generated can inform global and local adaptation strategies.

- **Protecting Education and Child Wellbeing:** Donors should ensure that climate adaptation funding includes provisions to safeguard children's access to education and psychosocial support during climate change induced crises, recognising the gendered impacts of school dropouts and early marriage.

FOR POLICYMAKERS[64]

- **Mainstreaming Climate–SRHR into Policy and Budgeting:** Governmental bodies should integrate SRHR into national and county-level climate policies, with dedicated budget lines for climate-resilient health services. SRHR must be recognised as a core component of climate adaptation strategies.

- **Inclusive and Context-Specific Curriculum Reform:** Education ministries, in collaboration with county governments, should incorporate climate and SRHR education into school curricula to raise awareness from an early age, challenge harmful gender norms, and equip young people with the tools to make informed decisions in a changing environment.

- **Supporting Women's Economic Resilience:** Governments should promote community-based financing schemes (e.g. table banking, savings groups) and natural resource management initiatives that strengthen women's economic agency in the face of climate shocks and stresses.

- **Ensuring SRHR in Emergency Response Plans:** SRHR services—including access to menstrual products, antenatal care, contraception, and maternal health—must be prioritised in emergency preparedness and response frameworks alongside food, water, and shelter.

- **Promoting Gender-Responsive Health Systems:** National health systems must be equipped and mandated to deliver SRHR services that address the specific needs of women, girls, and vulnerable groups through a rights-based and social justice lens.

FOR CIVIL SOCIETY ORGANISATIONS (CSOs)

- **Community Awareness and Behavioural Change Campaigns:** CSOs should lead locally tailored awareness campaigns that link climate change and SRHR, using accessible language and community media. These campaigns must focus on reaching marginalised groups such as adolescent girls, persons with disabilities, and people living in poverty.

- **Engaging Community and Religious Leaders:** CSOs should partner with men's associations, elders, and faith-based leaders to hold community dialogues and awareness sessions. These efforts can challenge harmful gender norms and promote the shared responsibility for care and health, especially in times of climate stress.

- **Mapping Vulnerabilities and Tailoring Services:** Organisations working at community level should conduct participatory mapping exercises to identify women's presence, needs, and mobility patterns, particularly in relation to water points, informal settlements, and disaster-prone zones. This data can guide targeted interventions.

- **Providing Safe and Accessible SRHR Facilities:** Together with humanitarian actors, CSOs should establish or support safe spaces and mobile health units that ensure continuity of essential SRHR services during climate-induced displacement, floods, or droughts.

- **Advocating for Integrated and Equitable Climate Policies:** CSOs should actively engage in national and regional policy dialogues to ensure climate and SRHR issues are addressed in an integrated manner. Advocacy should push for inclusive governance structures and accountability mechanisms that reflect the voices of women and youth.

62 The participants in the meeting were as follows: a Health Administrator, a County Government Officer, an expert in Public Administration and Leadership, a Communications Officer specialising in Women's Empowerment, Environment and Health Support, two representatives from the Northern Ministry of Health (MOH), and a Youth Representative involved with various international organisations.

63 Although the three counties differ in context, the challenges identified throughout the study reveal a series of recurring and interrelated patterns. Many of these challenges are structural, transcending local specificities and pointing to broader systemic issues that cut across geographical and administrative boundaries. In response, we have developed a consolidated set of recommendations designed to address these cross-cutting challenges through systemic interventions. At the same time, we acknowledge the need for contextual sensitivity, and thus these recommendations are intended to serve as a flexible framework—adaptable to the particular needs, capacities, and priorities of each county.

64 Such as National and County Government Officials, Education, Health and Agriculture Ministries, Local Authorities, Public Health Agencies, and other relevant legislative bodies.

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Photo: WeWorld

Tanzania

Exploring the Relationship Between Climate Change and Maternal Health on Pemba Island

Highlights

UNDERSTANDING CLIMATE CHANGE: EVIDENCE, CONSEQUENCES, AND COMMUNITY PERSPECTIVES

- Among the climate-related phenomena perceived by women, episodes of extreme heat and droughts are the most frequently experienced, cited by over 52% and 42% of respondents.
- The most common consequences included damage to homes (42%), livestock loss (41%), and reduced crop (22%) and fish yields (16%).
- Water access is severely affected, with 58% reporting difficulties and 81% needing to travel long distances for water.

MATERNAL HEALTH: NAVIGATING SYSTEMS OF CARE

- Almost all women (97%) gave birth in health facilities, though traditional birth attendants (TBAs) still play a crucial support role, particularly in early labour and postpartum care. There is an increasing blending of roles between TBAs and formal healthcare providers, reflecting a growing syncretism in maternal care.
- Postnatal care integrates cultural practices and rituals that contribute significantly to maternal recovery and wellbeing. Support from family members is crucial during this time, as they assist postpartum women in recovering and caring for their newborn.

CULTURAL NORMS, GENDER RELATIONS AND REPRODUCTIVE HEALTH

- Despite strong family and community support, women's autonomy remains constrained by gender norms. Male relatives often control decisions around childbirth location and contraceptive use.
- For many women, the heavy burden of unpaid domestic work—such as fetching water, cooking, and caregiving—rarely decreases during pregnancy, and many continue these tasks until the later stages, despite medical advice to the contrary.

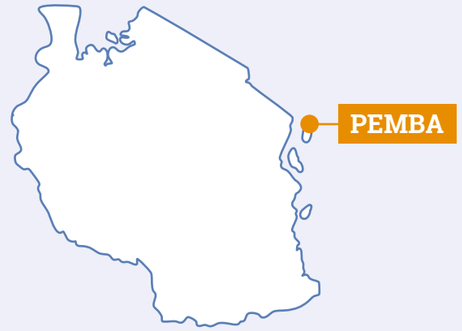
HOW ENVIRONMENTAL STRESS SHAPES REPRODUCTIVE AND MATERNAL WELLBEING

- Food insecurity, driven by rising prices (98%) and reduced fish availability (89%), is severely impacting nutrition and breastfeeding: over half (56%) face difficulties accessing nutritious food. The most common challenges include soaring food prices (98%) and reduced availability of fish (89%).
- Climate change heightens maternal health risks by increasing exposure to climate-sensitive illnesses such as malaria, respiratory infections, and urinary tract infections—conditions that pose dangers during pregnancy.
- Climate-related financial strain shapes reproductive choices: some families opt for fewer children, while others continue to have larger families, due to limited family planning access or cultural beliefs that associate children with economic security. Lastly, climate-induced migration often disrupts social support networks that are vital for maternal health.

1. Understanding the Context

PEMBA DEMOGRAPHY, ECONOMY AND ENVIRONMENT

Situated approximately 56 km off the coast of mainland Tanzania, Pemba Island is part of the Zanzibar Archipelago. **Historically known in Arab texts as al-Jazira al-Khadr, or "The Green Island", Pemba owes its name to its once-extensive primary forests and rich, fertile soils**. Over time, much of this natural forest cover has been cleared to make way for cultivation—most notably clove trees, the island's main cash crop. Despite these changes, pockets of dense tropical forest remain, the most significant being the Ngezi Forest, located in the north-western corner of the island (Pretelli et al., 2023).



The island's administrative centre is Chake-Chake, while Wete serves as the principal urban hub to the north. **Pemba's economy is firmly rooted in agriculture and fishing.** Its fertile land supports small-scale cultivation of staple crops such as cassava, rice, bananas, coconuts, onions, and tomatoes. However, the island is most renowned for its **clove production—Pemba is the world's largest exporter of cloves,** with an estimated 3.5 to 4 million clove trees, making a significant contribution to Tanzania's export revenues. The Pemba Channel, the deep-sea stretch separating the island from the mainland, supports a vibrant fishing industry—particularly game fishing—which forms a cornerstone of local livelihoods (ibid.).

CLIMATE CHANGE AND ENVIRONMENTAL STRESS

Pemba Island is experiencing noticeable and worsening environmental changes due to climate change (Seme, 2025). **Rising temperatures, irregular and decreased rainfall, along with more frequent droughts and storms, are altering the island's natural systems and affecting local communities.** In the agricultural sector, declining crop yields—particularly of staples such as cassava, rice, and bananas—combined with increasing soil erosion, are significantly undermining productivity and food security. Simultaneously, coastal and marine ecosystems are under pressure: saltwater intrusion is contaminating freshwater sources and farmland, while warming ocean temperatures contribute to coral reef degradation. These changes are disrupting traditional fishing practices, leading to reduced catches and growing vulnerability among small-scale fishers. **These environmental changes are significantly impacting agriculture and fishing, which are vital to the island's economy and food security (ibid.)**.

In this scenario, to tackle the complex challenges posed by climate change, various climate adaptation and mitigation projects have been implemented. These initiatives aim to enhance environmental resilience while supporting sustainable livelihoods and promoting social equity and women's empowerment[65].

SOCIETY AND GENDER RELATIONS

Pemba Island has a long history of human settlement and cultural exchange[66]. **Its population, estimated at over 540,000, is predominantly of Swahili and Arab descent. More than 90% of the inhabitants of Pemba are Muslims, especially Sunni Muslims.** The rest of the population consists of Christians, Hindus, Sikhs and some other religions (including Jainism and Bahai). Deeply rooted Islamic traditions continue to shape daily life, social structures, and gender roles across the island (Petrelli et al., 2023).

Social life on Pemba is traditionally organised around **extended patrilineal family structures,** with authority centred on the eldest male figure, or *mzee*. These extended households often include his wives, brothers and their spouses, and all related children. Women, upon marriage, typically relocate to their husband's family compound. However, they retain ties to their natal family, particularly in times of crisis such as illness, divorce, or bereavement, and often return home temporarily.

65 For example, the local NGO Community Forests Pemba, supported by the EU's Global Climate Change Alliance, has introduced activities such as kitchen gardens, improved cookstoves, beekeeping, and spice farming (vanilla, cinnamon, black pepper). These efforts offer valuable models for gender-sensitive climate adaptation in similarly vulnerable contexts.

66 Bantu-speaking peoples have inhabited Pemba since at least 600 AD. By the first millennium, local communities were living in wattle-and-daub villages as well as more complex stone towns, characterised by coral-rag mosques and multi-storey dwellings. Key crops cultivated at the time included rice, cotton, and coconuts. Even then, Pemba was part of a vast Indian Ocean trade network, linking the island to East Africa, the Arabian Peninsula, India, and beyond (Pretelli et al., 2023). In the late fifteenth century, the Portuguese crown took control of the island, only to lose it to the Omani Sultanate by the end of the seventeenth century. Although British influence increased in the following centuries, leading to the establishment of a protectorate in 1890, the Busaidi sultans formally remained in power over the Zanzibar Archipelago (including Pemba) until 1964. That year, a revolution overthrew the monarchy, paving the way for unification with mainland Tanganyika and the formation of modern-day Tanzania. This layered history has left a profound imprint on the island—evident in its languages, architecture, religious practices, and family structures—shaping the present-day cultural identity of the people of Pemba.

Notably, daughters maintain usufruct rights over coconut trees from their father's lineage, reflecting a form of economic continuity within the patrilineal system (Dillip et al., 2018).

Marriage is often influenced by economic considerations, especially in rural areas, and polygyny remains relatively common. **Public and formal decision-making remains the domain of men**, particularly the *mzee*, reinforcing a patriarchal governance structure. **Women traditionally bear the primary burden of domestic responsibilities**, including fetching firewood and water, caring for children, and preparing food. Access to education, reproductive healthcare, and participation in decision-making processes remain limited for many women due to entrenched cultural norms and material constraints, though there are signs of gradual transformation (the Citizen, 2024). Women are driving change and making a difference in their communities and nature across the country. From the management of marine environment and fisheries resources to tapping into tourism opportunities, they are transforming the fortunes of their communities. Notably, **there has been a significant transition in seaweed farming practices, where over 80% of the 600 farmers are women** (ibid.). These women are moving away from traditional methods towards more sustainable farming techniques, reflecting a broader shift towards environmental stewardship and community resilience.

Lastly, spiritual and health practices on the island reflect a pluralistic worldview[67]. Belief in witchcraft remains widespread, and traditional healers—once both revered and feared—continue to play an important role alongside biomedical practitioners. It is not uncommon for residents to consult both medical doctors and *waganga* (traditional healers) in parallel, particularly when confronting unexplained misfortune such as illness, theft, or death (Giles, 1987; Solera-Deuchar, 2020).

1.2. Study Design and Methodology

This study was carried out in Pemba, in 3 areas called "Shehia"[68] (Konde, Micheweni, Majenzi). At the outset of the study, a focus group discussion was held with key informants to ensure the contextual relevance of the work. Participants were asked to reflect on the broader spectrum of sexual and reproductive health, and to identify which specific dimension they considered most urgent to address in the context of climate change. **Maternal health emerged as the central concern, particularly in relation to the shifting living conditions and increasing pressures on health systems brought about by environmental changes**. Therefore, the following research question has been formulated:

How does climate change influence maternal health in Pemba, particularly through its effects on socioeconomic conditions?

The study, therefore, aims to explore the pathways through which climate change influences maternal health outcomes, with a particular focus on the socioeconomic conditions that mediate this relationship. **Rooted in a decolonial and participatory approach, the process prioritised cultural sensitivity and local knowledge, ensuring that both the questions and methods were adapted to the specific sociocultural context of Pemba**. A mixed methods design was therefore employed to gain a comprehensive understanding of the dynamics involved, combining three main tools: key informant interviews, biographical interviews, and a structured quantitative questionnaire[69]. Data collection took place between June and July 2025, conducted by trained WeWorld local staff.

67 Pemba Island is shaped by a profound spiritual and symbolic universe that reflects the interconnection between nature, community, and unseen forces. Local cosmologies include the presence of spiritual entities known as *shetani*—not merely "evil spirits", but complex manifestations of invisible powers that may influence both individual and collective wellbeing. Far from representing a rigid dichotomy of good and evil, these beliefs convey a relational and dynamic worldview in which health, social harmony, and the environment are deeply intertwined. Traditional healers, or *waganga*, play a vital role in maintaining spiritual balance. Through rituals, herbal knowledge, and divinatory practices, they act as mediators between the visible and invisible realms, offering forms of care that complement or integrate with biomedical approaches. These practices constitute a sophisticated system of situated knowledge, rooted in local understandings of the body, health, and illness. Pemba's cosmology also encompasses oral narratives about ancestors, totemic animals, natural forces, and heroic deeds, which continue to be passed down across generations. The ocean, in particular, is regarded as a living and powerful presence—central to myths that emphasise respect and reciprocity towards the marine environment. Although the island is predominantly Muslim, many Indigenous spiritual practices coexist and blend with Islam, giving rise to a rich and layered cultural and religious landscape (Giles, 1987; Solera-Deuchar, 2020).

68 *Shehia* are the smallest official administrative units within the local government structure of Zanzibar, including the islands of Unguja and Pemba. They are similar to neighbourhoods or villages and serve as key points of reference for community governance and the delivery of basic public services.

69 All interviews and the questionnaire were conducted in Swahili by local WeWorld staff.

KEY INFORMANT INTERVIEWS

Objective: To understand the main challenges women face regarding maternal health, two collective interviews were conducted, bringing together Hospital and Clinic Staff (nurses, midwives, doctors), and two individual interviews with Traditional Birth Attendants (TBAs). The objective was twofold: **gather institutional knowledge and clinical observations on how climate events** (e.g., heatwaves, floods, food insecurity) are impacting pregnancy, childbirth, and family planning, and understand how **traditional practices adapt to and/or resist the effects of climate change in maternal care.**

Sample:

Interview Type	Location	Participants
Collective Interviews	Micheweni	1 Nurse 1 Clinical officer 1 Doctor 1 Lab technician
	Konde	2 Midwifes 1 Doctor 1 Nurse
Additional Interviews	Micheweni and Konde	2 TBAs

BIOGRAPHICAL INTERVIEWS

Objective: To collect women's experiences related to pregnancy, childbirth, and motherhood in the face of environmental pressures.

Sample: 5 women, 3 from Konde, and 2 from Micheweni.

STRUCTURED QUANTITATIVE QUESTIONNAIRE

Objective: To generate data on women's experiences of pregnancy, health access, and the perceived links between climate change and reproductive well-being.

Sample: 100 women aged 18 and above across multiple villages in Pemba.

A Closer Look at the Quantitative Sample

The quantitative sample consists of 100 women from three locations: 38 from Micheweni, 20 from Majenzi, and 42 from Konde. Regarding age distribution, 27% are aged 18–24, 46% are between 25–34, and 27% are aged 35–48. The majority are married: 62% in monogamous marriages and 32% in polygamous unions. Additionally, 5% are divorced and 1% have never married.

- **FAMILY STRUCTURE: 39% of women have 1–2 children, 30% have 3–4, and 31% have 5 or more.** Household sizes typically range **from 4 to 9 members**, with 6 being the most common (17%), followed by 8 (15%) and 4 (14%). Smaller households (2–3 members) represent 13% of the sample, and larger ones (10 or more) account for 8%.

- **LEVEL OF EDUCATION AND OCCUPATION: 14% of respondents have no formal education, while 31% have completed primary school.** When asked about their main occupation, a majority of respondents—**56%—identified as housewives**, indicating limited involvement in formal or income-generating activities. The remaining women demonstrated economic diversity: **12% were professionals, 10% worked as farmers**, and **9% identified as artisans.** A smaller percentage reported multiple roles: **3% were both farmers and artisans, 2% combined farming with professional work**, and another **2% were both farmers and housewives**.

- **ASSETS:** The data on household assets sheds light on the respondents' living conditions and access to basic amenities. **Radio or TV ownership is high (79%)**, and **72% of women have access to a mobile phone**, suggesting widespread access to communication and media. However, ownership of more modern household appliances is limited: **only 31% own a refrigerator**, and **just 12% have a gas stove**, highlighting continued barriers to clean energy and food storage.

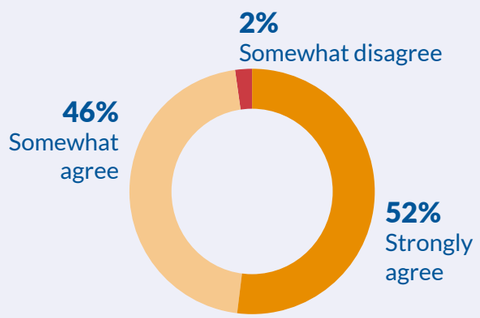
- **LIVELIHOODS:** Housing structures are generally stable, with most households living in **brick (53%)** or **cement (46%)** dwellings. In terms of income, **80% of respondents live in households engaged in agriculture**, with **nearly 96% selling their produce on the market**. **About 50%** keep livestock or poultry, and **two-thirds of these generate income** from it. Additionally, **40% participate in fishing-related activities**, and **85% of them sell their catch**, underscoring the importance of natural resource-based livelihoods.

2. Key Takeaways from the Findings

UNDERSTANDING CLIMATE CHANGE: EVIDENCE, CONSEQUENCES, AND COMMUNITY PERSPECTIVES

Recent evidence indicates that **Pemba Island is undergoing increasingly visible and intense environmental changes, which can be attributed to the impacts of climate change** (Seme, 2025). The progressive rise in average temperatures, the growing irregularity and reduction in rainfall, as well as the increased frequency and severity of extreme weather events, are profoundly altering local ecosystems and threatening the sustainability of the island's key economic activities. Reflecting this reality, almost all the women surveyed (98%) in the questionnaire perceive that the climate has changed in recent years (Figure 1).

Figure 1.
Percentage (%) of respondents who agree/disagree with the statement *"climate has changed in the last years"*



- **HOW CLIMATE CHANGE MANIFESTS:** Among the climate-related events perceived by the local population, **episodes of extreme heat are the most reported, with over 52% of respondents indicating direct experience** (Figure 2). These are followed by **droughts**, cited by **42%** of participants, reflecting an increasingly arid and unpredictable environmental context. **Windstorms** were mentioned by a smaller proportion (**17%**), while phenomena such as **saltwater intrusion** and **flooding** were only rarely reported (respectively, 2% and 2%). These perceptions align, at least partially, with observable material impacts—particularly in the agricultural and marine sectors. **Agriculture—an essential pillar of local food security and the island's economy—is experiencing significant losses, with declining yields in staple crops such as cassava, rice, and bananas, in response to extended drought periods and rising temperatures.** Concurrently, **soil erosion and land degradation** are further diminishing the productivity of arable land. Similarly, small-scale fishing—the second main livelihood for many households—is under threat due to ocean warming, which has triggered the **bleaching and degradation of coral reefs**, disrupted marine ecosystems and rendered traditional fishing grounds increasingly unreliable. **The resulting decline in fish catches compromises not only the local economy but also the nutritional intake of communities whose diets have historically depended on marine resources**. While saltwater intrusion is recognised in the scientific literature as a growing environmental threat to low-lying coastal areas zones (Idowu & Lasisi, 2020), it was **rarely reported by local respondents**. This suggests that the phenomenon, although environmentally significant, may be **less immediately visible or less readily associated with climate change** at the community level. It is also noteworthy that almost **a quarter of the population (23%)** reported not having experienced any climate-related events in the last year, while a small minority (**6%**) stated they did not know[70].

Table 1.
Climate change events experienced in the last 12 months [71]

Event	Percentage (%)
Extreme heat	52
Droughts	42
None	23
Windstorm	17
Do not know	6
Floods	2
Saline water intrusion	2

- **ITS IMPACTS:** When asked about the consequences of climate-related events (Figure 3), respondents most frequently cited **damage to dwellings** (42%), reflecting the tangible impact of severe weather—particularly heavy rains and strong winds—on housing structures. **Livestock losses** were also common, with 2 out of 5 (41%) reporting animal deaths or illness, often linked to **unusual disease outbreaks**. Agricultural and fishing livelihoods have likewise been affected, with **crop damage (22%) and declining yields** (16%) posing serious threats to food security. In contrast, fewer respondents mentioned impacts related to drinking water access (3%), electricity disruptions (6%), or personal illness (3%). Notably, **nearly half** of participants reported having experienced **temporary migration** as a result of these climate events.

70 This can also be linked to the fact that, although extreme weather events are acknowledged, the broader implications and adaptive strategies to mitigate these impacts receive little attention in public discourse. As a health worker pointed out, "You hear something on the radio—like a cyclone is coming—but there's no real education. People don't know how to protect themselves."

71 When answering this question, respondents could select all options that applied.

Table 2.
Climate change effects [72]

Event	Percentage (%)
Dwelling damaged	42
Livestock died or became sick due to extreme heat or lack of water	32
Crops damaged	22
Poor fishing yields	16
I do not know	12
Livestock lost or contracted illness	9
Unusually high pest and diseases	8
Unusually high level of livestock disease	6
Loss of electricity or water supply	6
Injury/Illness	3
Drinking water source damaged or reduced	3

"In recent years, the situation has changed a lot. During the dry season, the sun is extremely hot, and when it's the rainy season, the rain is very heavy, so much so that water enters houses and floods the farms, damaging the crops. Life becomes very difficult. If the crops fail because of the extreme heat, you have to find other ways to get money to buy food. There was a time when my husband planted rice, but the entire crop was washed away by the rain because there was too much rainfall. Life has always been difficult, but that time it became even harder." - woman interviewed

- **LIMITED WATER ACCESS: A CHALLENGE IN DAILY LIFE:** Interestingly, while **water scarcity** is not prominently perceived or explicitly mentioned—unlike in other contexts—quantitative data reveal its hidden significance. **58%** of respondents report **difficulties in accessing water** for personal use, and **81%** must **travel long distances** to reach a water source. This disparity suggests that water-related stress, though not strongly articulated, remains a **structural and persistent challenge** in everyday life.

- **LOCAL PERCEPTIONS AND CULTURAL INTERPRETATIONS:** However, although there is near-universal recognition that the climate has changed, qualitative data suggest that **understanding of its causes, manifestations and impacts remains nuanced and is deeply embedded within the cultural frameworks and social norms characteristic of the local context**. In many instances, interpretations of climate phenomena are inseparable from longstanding cosmological worldviews that are profoundly anchored in spirituality and religious beliefs. Within such epistemologies, **climate change is often perceived less as a scientific or anthropogenic process and more as a manifestation of divine will or moral judgement**. This reflects not only a different ontological understanding of nature and human-environment relationships but also the broader socio-cultural milieu in which these narratives are situated, where spiritual causality and environmental events are intimately intertwined. Additionally, there exists a prevalent perception that population growth constitutes the primary driver of environmental degradation. This view tends to eclipse recognition of more complex and systemic factors, including deforestation, extractive industries, and the multifaceted challenges associated with the governance and management of natural resources.

72 When answering this question, respondents could select all options that applied.

MATERNAL HEALTH: NAVIGATING SYSTEMS OF CARE

In Pemba, **pregnancy and childbirth are shaped by a dynamic and multifaceted landscape of cultural norms, social relations and care systems**. Biomedical healthcare services operate alongside deeply rooted traditional practices. These systems do not exist in isolation; rather, they coexist and interact with one another, often blending in complex ways. Additionally, the extended family and broader community networks play a vital role in providing support throughout the maternal journey. Data collected through key informant interviews and biographical narratives provide insight into how women manage childbirth, the support systems available to them, and the structural and environmental barriers they face in accessing maternal care.

- **ANTENATAL CARE AND ACCESS TO HEALTH FACILITIES:** According to questionnaire responses, women reported **an average of approximately four pregnancies each. Nearly all respondents (97%) gave birth in a health facility,** reflecting broad access to formal delivery care[73]. At Konde Health Centre, staff reported an average of about 70 deliveries per month, with home births remaining relatively rare. **When home births do occur, they are typically due to unforeseen labour onset or transportation difficulties, especially during the rainy season when roads become impassable and transport options** limited. Around 10% of women reported difficulties reaching health centres, with lack of transportation being the main barrier. Health workers have also noted cases of women giving birth at home because transport did not arrive in time. Economic challenges further compound these issues: **although maternal services are free, indirect costs such as transport, food,**

73 It should be noted that a main limitation of this study is that data were collected exclusively in health centres, meaning the sample includes only women who accessed institutional care. Consequently, the potential underrepresentation of women who do not utilise formal health services must be acknowledged. Nonetheless, findings from other studies indicate that both mothers and TBAs in Pemba perceive hospital deliveries as safer and more effective in managing potential complications during childbirth. At the samte time, there appears to be a high level of awareness within the community regarding the importance of institutional deliveries (Dhingra te al, 2014).

and medical supplies often discourage women from seeking care. Some women also lack essential delivery items and fear judgment or rejection at health facilities. **A substantial majority (90%) reported completing four antenatal care (ANC) visits, as recommended by the 2002 WHO guidelines**; however, health professionals advise that this may be insufficient and encourage more frequent check-ups throughout pregnancy. This reflects the updated WHO approach introduced in 2016, which recommends **at least eight contacts** during pregnancy[74]. Despite this, some women may not recognise the importance of regular ANC attendance. This may be partly attributed to persistent knowledge gaps: despite ongoing efforts by health workers and community volunteers, **many women—especially those less connected to the health system—remain inadequately informed about the benefits of early antenatal care, postnatal care, and contraceptive methods.**

"The costs are mainly for transportation. When you want to give birth, you can't walk-you have to hire a car, and that costs a bit of money. I take my child to the clinic, but I've never known if I'm supposed to go by myself, and actually, I've never gone. Also, there are many people at the hospital, and you have to wait a long time to get services. - woman interviewed

"The doctors want us to attend all nine visits-every month-even if you're not sick. Sometimes it's okay, but other times I don't like going because I don't have any health issues." - woman interviewed

- **THE ROLE OF TRADITIONAL BIRTH ATTENDANTS (TBAS):** TBAs continue to hold an important role within the community. While most women now give birth in health facilities, **TBAs frequently remain involved, particularly during the initial stages of labour and the postpartum period, offering both practical and emotional support.** One TBA from Konde described her role as involving "assisting mothers before they give birth, during delivery, and after delivery." Her responsibilities typically include assessing whether a woman is genuinely in labour and, if necessary, accompanying her to the health facility. After the birth, she continues to provide care at home, which involves practices such as massaging the mother with hot water, bathing the newborn, and ensuring that both mother and baby remain warm. **There is a growing syncretism between traditional birth attendants and formal healthcare providers.** A TBA from Micheweni noted that collaboration with medical professionals is becoming increasingly common. She described learning through hands-on experience and working alongside hospital staff during childbirth, highlighting the evolving partnership between traditional and formal healthcare systems. Similarly, another TBA from Micheweni emphasised that women frequently visit her to be "checked" before deciding whether to proceed to the hospital. When labour is confirmed, she accompanies the woman and offers continuous support throughout the delivery process. These accounts exemplify **the ongoing role of TBAs as vital intermediaries bridging the community and formal health services.**

"I am a traditional birth attendant. My work involves helping women with matters related to childbirth. For example, when someone is in pain and wants to give birth, I assess her, and if I feel that it's real labour, I advise her to go to the hospital. If it's not yet time, I tell her to continue with other activities. Midwifery work runs in my family: my aunt was a traditional birth attendant, and she's the one who taught me." - TBA

"My work involves assisting mothers with childbirth matters, sometimes even before they give birth and during delivery itself. For example, someone might come and say, 'Come check on my daughter, I think she's in labour,' and I go. Most times, I accompany her to the hospital, and we work together with the doctors until she delivers. I have been doing this work for about 6 years now. I never received formal training, but I developed a love for this work. Perhaps we can say it is a gift from God. However, I continue gaining more skills because I collaborate with doctors. When someone is about to give birth, I go with them to the hospital and assist them right there. Sometimes when the doctor is not present, I have to help; I can't just watch and do nothing." - TBA

74 In 2002, the World Health Organization (WHO) recommended a minimum of four antenatal visits for women with low-risk pregnancies, as part of the Focused Antenatal Care (FANC) model. This approach aimed to provide effective care while optimising resources, particularly in settings with limited healthcare capacity. Over the years, however, growing evidence showed that four visits were often insufficient to ensure optimal outcomes for mothers and babies. In response to this, WHO updated its guidance in 2016, recommending a minimum of eight contacts with health providers throughout pregnancy. Indeed, eight or more contacts for antenatal care can reduce perinatal deaths by up to 8 per 1,000 births when compared to four visits (WHO, 2016). It is important to note that these are global recommendations and should be adapted to the local context, as the appropriate number and timing of antenatal visits may vary depending on the individual risk factors of the pregnancy, the woman's personal needs and circumstances, and the structure and capacity of the local healthcare system. The 2002 recommendations are available at: WHO (2002), *Antenatal care randomized trial: manual for the implementation of the new model, https://iris.who.int/handle/10665/42513; the 2016 recommendations at: WHO (2016), WHO recommendations on antenatal care for a positive pregnancy experience*, https://www.who.int/publications/i/item/9789241549912

- **POSTNATAL CARE: Postnatal care** in Pemba Island **encompasses a variety of historical practices and rituals that play a significant role in maternal recovery and wellbeing**. In Micheweni, for example, women typically undergo a post-delivery massage with hot water for approximately seven days, complemented using charcoal placed beneath a rope bed to provide warmth. In Konde, this postpartum rest period, locally known as *pirika*, generally extends for 40 to 42 days, closely matching the timeframe recommended by the WHO guidelines (2022)[75]. According to health workers, women usually stay in the health facility for around 24 hours after delivery, then it is culturally expected—and viewed as essential—that they observe an extended period of rest at home. This practice highlights a meaningful convergence between long-standing cultural traditions and modern healthcare guidance, reflecting how deeply rooted local customs continue to influence postpartum recovery alongside contemporary medical advice. Nonetheless, **the actual duration of this rest can vary considerably, influenced by factors such as parity[76], socio-economic status, and the woman's overall health condition.** Furthermore, a TBA from Konde highlighted **the importance of social support during this period**, emphasising that postpartum women usually receive sustained assistance from other household members to facilitate their physical recuperation and to ensure both mother and newborn are cared for effectively.

"Some may start light chores as early as 7 days after delivery, while others may take about 2 weeks. But the recommended period of rest is 42 days." - Health worker

"In the postpartum period, your clothes should be washed for you, and you should be helped with all household chores because the body is still weak." - TBA

75 The updated WHO guidelines (2022) offer clear recommendations regarding postnatal care. The postnatal period, defined as beginning immediately after the birth of the baby and extending up to six weeks (42 days), is a crucial time for women, newborns, partners, parents, caregivers, and families. These guidelines reaffirm the significance of postnatal care within the first 24 hours after birth, irrespective of the birth setting. Specifically, they recommend a minimum 24-hour stay in a health facility following delivery, with continuous care and monitoring throughout this period. Before discharge, comprehensive assessments are carried out to identify and manage potential complications and to prepare the woman and her family for the transition to home care. Furthermore, the guidelines advise at least three additional postnatal contacts within the first six weeks after birth. These contacts should provide effective clinical interventions, timely and relevant information, as well as psychosocial and emotional support, delivered by caring, competent, and motivated health professionals working within a well-functioning health system. Therefore, the first six weeks postpartum (42 days) are recognised as a critical period requiring close attention and support to ensure the health and wellbeing of both mother and newborn.

76 Parity refers to the number of times a woman has given birth to a viable offspring. It is commonly used in maternal health to distinguish between first-time mothers (primiparous) and those who have given birth more than once (multiparous), as this can influence recovery needs and caregiving responsibilities during the postpartum period.

CULTURAL NORMS, GENDER RELATIONS AND REPRODUCTIVE HEALTH

The experiences gathered reveal how in Pemba **maternal health is deeply affected by the intertwined influences of cultural expectations, gender roles, and environmental challenges.** These narratives highlight the complex realities women face, demonstrating that pregnancy and childbirth are not only medical events, but also social processes shaped by multiple, overlapping factors.

- **LOCAL BELIEFS AND PRACTICES ON MATERNAL HEALTH: Cultural frameworks remain central in shaping maternal behaviours and practices in Pemba, influencing aspects such as rest, work, and diet.** Key informant interviews, for instance, highlighted specific dietary restrictions during pregnancy rooted in local explanations: porridge is often avoided due to the belief that it causes excessively large babies, while eggs are excluded because they are thought to inhibit fetal hair growth. Additionally, some women hesitate to take iron supplements, fearing they may cause excessive bleeding during delivery. Beyond diet, cultural taboos also restrict pregnant women's mobility and activities, with certain farms or locations avoided due to beliefs that visiting them could harm the fetus. Conversely, breastfeeding is strongly encouraged, typically initiated immediately after birth and continued until around two years of age. At times, **it is relatives who pressure women to follow traditional practices that may be harmful in certain medical conditions**—for example, sitting near a fire while anemic or recovering from surgery. Overall, childbirth is understood not only as a physiological event but also as a social process deeply embedded in care, ritual, and resilience. Women navigating pregnancy are supported by a complex network of actors, continually negotiating what it means to be safe, supported, and healthy. On the other hand, gender norms, power relations, and intra-household dynamics continue to shape—and often constrain—women's autonomy in seeking care.

- **HOW GENDER ROLES AND POWER DYNAMICS SHAPE PREGNANCY AND CHILDBIRTH:** Gendered expectations regarding women's roles within the household remain deeply entrenched. **Women are typically responsible for a wide range of unpaid tasks, including fetching water, preparing food, caring for children, and looking after the sick.** These responsibilities rarely lessen during pregnancy; in fact, **many women continue to carry out such duties until the very late stages of gestation,** even when medical advice suggests otherwise. While some women receive support from family members, many shoulder these burdens alone. Health professionals often advise pregnant women to avoid heavy labour or exposure to

heat, but adherence to this guidance largely depends on the woman's family circumstances and economic situation. **In low-income households, women frequently continue working long hours or carrying heavy loads late into pregnancy,** particularly when food is scarce or additional income is urgently needed. These challenges are further intensified by **patriarchal household dynamics**. As revealed through several key informant interviews, **decisions about women's health — including when to begin antenatal care, whether to deliver in a health facility, or whether to use contraception — are commonly under male control.** For example, some women delay attending antenatal appointments while waiting for their husband's permission. This delay can have serious consequences for the timely detection and management of pregnancy complications. While this is not a universal experience, it is sufficiently widespread to significantly **limit women's autonomy and hinder timely access to essential care.**

"Some women, when asked why they delayed coming to the clinic, say they had not yet received permission from their husband." - Health worker

- **FAMILY PLANNING AND CONTRACEPTION: In the case of contraception and family planning, decision-making often remains under male authority,** limiting women's autonomy in these matters. **Cultural and religious beliefs also strongly influence attitudes toward family planning.** For example, some women expressed concerns about potential health risks, such as cancer, which deter them from using contraceptive methods. Others framed family planning within a spiritual context, emphasising acceptance of divine will rather than personal choice. These perspectives reflect the deep entanglement of reproductive health decisions with local cultural and religious worldviews, as well as prevailing gender relations that can constrain women's decision-making autonomy. However, it is crucial to recognise that they are not passive recipients of these influences; instead, they actively engage in shaping the meanings and practices around maternal health and frequently act as agents of change within their communities. For instance, **some community actors—such as TBAs and women's groups—are playing an active role in challenging restrictive gender norms and promoting healthier maternal practices.** They are also beginning to engage more openly in conversations around nutrition, gender roles, and family planning. However, these efforts remain largely fragmented and under-resourced, limiting their broader impact.

"Yes, we do hear about family planning at the hospital, but many people say it can cause cancer" - woman interviewed

"I've never made that decision myself; it's all in God's plan. As for family planning, I've heard about it, but I don't like it" - woman interviewed

HOW ENVIRONMENTAL STRESS SHAPES REPRODUCTIVE AND MATERNAL WELLBEING

The effects of climate change in Pemba are not distant or abstract projections; they are tangible and closely connected to the everyday realities of pregnancy, childbirth, and parenting. Health workers, traditional birth attendants, and women themselves have described how changing weather patterns, temperature extremes, and increasing food insecurity are increasingly impacting maternal health outcomes. Figure 4 illustrates community perceptions of climate change's impact on five key aspects of sexual and reproductive health: access to sanitary products, menstrual hygiene, family planning, pregnancy outcomes, and health services. Across these domains, responses generally indicate acknowledgment that climate change influences these areas, though often in a nuanced or cautious manner. **The most common response in each category is "Somewhat agree," suggesting that while many recognise a link between climate change and reproductive health, there remains some uncertainty or lack of comprehensive understanding.** The relatively high levels of agreement—particularly regarding pregnancy outcomes and family planning—indicate that communities are starting to perceive climate-related stressors as having tangible effects on maternal health, birth outcomes, and decisions about contraception and fertility.

Table 3.
Percentage (%) *of respondents who agree/disagree with the statement "Climate change has affected..."*

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Do not know
Access to sanitary products	30%	52%	7%	3%	8%
Access to health services	41%	48%	3%	0	8%
Pregnancy outcomes	40%	50%	3%	0	7%
Family planning	32%	48%	8%	3%	9%
Menstrual Hygiene	32%	54%	4%	4%	6%

- **FOOD INSECURITY: Food insecurity emerged as one of the most cited consequences of climate change:** about **9 out of 10 women (89%) believe that climate change has impacted nutrition and breastfeeding.** When droughts destroy crops or floods damage farmland, **pregnant and breastfeeding women are often among the first to suffer, frequently experiencing undernutrition or anemia**. Several health workers noted that many women arrive at clinics with very low body weight. **This nutritional deficiency contributes to higher pregnancy complications; nurses and midwives explained that anemia reduces oxygen supply to the placenta, increasing miscarriage risk.** Additionally, rising concerns include high blood pressure, potentially linked to heat stress and psychosocial anxiety. These qualitative insights are supported by quantitative data showing that **56% of women face difficulties obtaining nutritious food**. Figure 5 highlights that **the most frequently reported food-related challenges are increased food prices (98%) and reduced availability of fish (89%).** These issues indicate significant strain on food access and affordability, particularly for households reliant on local markets and fishing. Other challenges include reduced food production due to droughts or irregular rainfall (19%) and, to a lesser extent, the disappearance of certain fruits and vegetables (11%). Flood-related losses are minimal (2%), likely reflecting their relative rarity or lesser impact in this setting.

Food insecurity emerged as one of the most cited consequences of climate change: about **9 out of 10 women** (89%) believe that climate change **has impacted nutrition and breastfeeding**.

Table 4.
Barriers in accessing nutritious food [77]

	Percentage (%)
Food prices increased	98
Fish became less available	89
Droughts/irregular rainfall reduced food production	19
Certain fruits/vegetables no longer grow in the area	11
Floods destroyed crops or food storage	2

77 When answering this question, respondents could select all options that applied.

"Even breadfruit, which many people eat, fell prematurely from the trees during the heat. Hunger increased." - Health worker

"During the dry season, the sun is very intense. Farming vegetables and fruits is difficult or almost impossible currently. As a result, mothers lack access to important nutrients found in fruits and vegetables, which weakens their health during pregnancy. Foods that help increase blood levels are scarce, so many mothers suffer from anemia" - Health worker

- **THE INTENSIFICATION OF REPRODUCTIVE LABOUR AND ECONOMIC STRAIN: The burden of reproductive labour intensifies significantly under the pressures of climate change, as women in Pemba face escalating physical, economic, and social challenges during pregnancy and motherhood.** Economic necessity often compels pregnant women to engage in strenuous labour, such as working in quarries or carrying heavy loads, even late into their pregnancies. **This continued physical exertion underlines the intersection of poverty and climate vulnerability, where food insecurity and scarce job opportunities force women to prioritise immediate survival over health and well-being**. Climate-related disruptions exacerbate these difficulties by contributing to poor harvests, fluctuating food prices, and reduced availability of essential resources like fish. **The cumulative effect of these stresses translates into a heavier workload for women, who must not only maintain household food security but also manage reproductive responsibilities.**

> The burden of reproductive labour intensifies significantly under the pressures of climate change, as women in Pemba face escalating physical, economic, and social challenges during pregnancy and motherhood.

"Women go to work in the quarries, even when they are pregnant... it's very hard work, but they need to eat." - Health worker

"Regarding work, pregnant women perform all types of tasks, both heavy and light. In the Micheweni community, women go to the farms to cultivate, cook, and fetch water. They are expected to do all of these activities, regardless of pregnancy. During the dry season, many women engage in heavy labour such as quarrying stones. The dry season offers good weather for construction work, and women take this opportunity to earn daily income for their needs. However, pregnant women who spend long hours doing such heavy work risk put their pregnancy at risk and increase the likelihood of miscarriage. Stone quarrying is very hard work and ideally should be done by men, but because women face economic hardships and need to provide for their families, they take on this tough labor despite the risks." - Health worker

- **MATERNAL HEALTH RISKS RELATED TO ENVIRONMENTAL CHANGE:** Heatwaves and extreme temperatures further aggravate these conditions, posing direct health risks to pregnant women engaged in physically demanding tasks. **Beyond the immediate physical burdens, climate change influences maternal health through an increase in climate-sensitive illnesses.** Periods of high heat and flooding correlate with rising incidences of respiratory infections, urinary tract infections, and malaria—all of which disproportionately impact pregnant women due to their heightened vulnerability. These health challenges add complexity to prenatal and postnatal care, often straining already limited health services. **Mental health concerns, including elevated stress levels, anxiety, and sleep disturbances, emerge as critical but often overlooked consequences of climate stress.** The psychological toll of coping with economic uncertainty, environmental degradation, and the physical demands of pregnancy in a changing climate shape maternal experience profoundly.

- **FAMILY CHOICES AND SOCIAL DISRUPTION:** Reproductive decision-making is also affected. **Financial strains driven by climate impacts lead some families to opt for fewer children, while others, constrained by limited access to family planning services or cultural norms that equate children with wealth and security, continue to have larger families.** This dichotomy underscores the nuanced ways climate change intersects with social and cultural dynamics. Moreover, **climate pressures drive migration patterns that disrupt traditional social support networks vital for maternal health**. Although entire families often migrate in search of better opportunities, **relocation often isolates pregnant women from family and community care, further complicating their access to emotional and practical support**. This absence of a reliable support system constitutes a significant source of psychosocial stress and contributes to increased tensions within the household—tensions which all too could culminate in episodes of domestic violence. In response to these challenges, **an increasing number of women are taking proactive steps to address the difficult circumstances they face**. Many are engaging in collective strategies to strengthen their socio-economic resilience, with community-based support mechanisms playing a central role in this process. Among the most prominent of these are the VIKOBA (Village Community Banks), a widely adopted model of community microfinance in Tanzania. These are self-managed savings and credit associations, composed predominantly of women, which serve not only as vehicles for economic inclusion but also as spaces for mutual support and social solidarity[78].

"Climate change has impacted my life and family responsibilities because the population has increased. Even if you want a farm for cultivation, you have to go far away as this place has now become a town. There are also many newcomers and migrants, each with their own behaviours. Families have grown larger, and there is more work and many responsibilities. You go to the farm, and when you come back, there's other work waiting-and often it happens that you have to do it even when you are pregnant." - woman interviewed

3. Conclusions and Recommendations

This study highlights several critical challenges faced by the communities of Pemba, particularly by women and pregnant women, deeply intertwined with the impacts of climate change on their sexual and reproductive health. **These impacts do not operate in isolation but rather exacerbate existing structural vulnerabilities**, including widespread food insecurity, limited access to healthcare systems, and entrenched gender inequalities.

Despite these significant challenges, **women and local communities in Pemba are actively finding both everyday and structural ways to survive, adapt, and improve their living and social conditions**. Pregnant women employ a range of strategies to cope with food insecurity: some rely on support from their husbands, others engage in small-scale business, farming, or seaweed cultivation, and many receive help from relatives

78 However, the repayment of loans—with interest rates that, while lower than those imposed by formal financial institutions, are nonetheless significant—could represent a source of social tension. This points to the complex dynamics embedded within informal financial systems such as VIKOBA and highlights the importance of a more nuanced understanding of both their potential and their limitations in contexts characterised by socio-economic precarity.

and neighbours to access food. **Awareness programmes on maternal health and nutrition have also been introduced**—for example, encouraging women to attend health facilities for education and counselling during pregnancy—though further efforts are still needed. Additionally, **the training and support of traditional birth attendants**, including remuneration for their work, have proven effective, **acknowledging their vital role in assisting mothers throughout pregnancy and childbirth.**

Based on the findings and current initiatives, two community validation meetings were held in Konde and Micheweni with various key informants[79] involved in the study, leading to the development of concrete recommendations to key actors—donors, policymakers, and civil society organisations- to address the combined challenges of climate change and maternal health in Pemba.

FOR DONORS

- **Invest in Climate-Resilient Livelihoods:** Donors should prioritise investments in climate-smart agriculture, sustainable fisheries, and related infrastructure. Supporting training for farmers and fishers, particularly women, in drought-resistant crops and effective irrigation techniques, will help build resilient food systems that improve health and nutrition outcomes.

- **Empower Marginalised Groups with Resources and Training:** Donors can provide essential support programmes targeting vulnerable populations—including women, the elderly, people with disabilities, and other marginalised groups—who are disproportionately affected by climate-related health impacts. Such support includes financial resources, technical assistance, and capacity building to facilitate access to credit, land, training, and climate-smart technologies.

- **Enhance Community Participation in Governance:** It is essential to ensure that communities are fully involved in government planning and decision-making processes. Donors should support mechanisms that facilitate genuine community engagement, such as community advisory committees, local governance structures (e.g., shehas and village councils), community scorecards and social accountability tools, mobile and digital platforms for feedback, capacity building for community representatives and collaboration with women-led organisations, ensuring that local needs and priorities are reflected in adaptation and health policies.

79 The participants in the meetings totalled 17, 12 in Micheweni and 5 in Konde, as follows: Two Doctors, Two General Nurses, One Lab Technician, Two Teachers, One Health Officer, Two Community Leaders, One Madrasa Teacher, One Islamic Leader, One Sheha, One Staff Nurse, One Clinical Officer, One Nursing Officer, and One Local Midwife.

FOR POLICYMAKERS[80]

- **Strengthen Climate-Resilient Agriculture and Fisheries:** There is a need to expand climate-resilient agriculture through targeted investments in infrastructure—such as reliable irrigation systems, water storage facilities, drainage canals, and feeder roads—which are essential for long-term sustainability. This can be achieved through project-based initiatives, such as the development of irrigation schemes with external loan support, as well as government-funded programmes aimed at establishing agricultural service centres and enhancing technical support for farmers. Such investments should be carried out in close collaboration with NGOs, donors, and community-led initiatives to ensure local ownership, sustainability, and relevance to the specific needs of rural populations.

- **Integrate Climate Change into Health and Nutrition Policies:** Policies should explicitly recognise the impacts of climate change on maternal health by integrating climate considerations into health, agriculture, and nutrition strategies. This includes promoting climate-resilient farming and fishing practices, strengthening social protection schemes for mothers, and ensuring affordable food prices to improve maternal nutrition.

- **Improve Access to Health Services in Rural Areas:** Rural populations should receive the same attention as urban areas through improved infrastructure, targeted outreach programmes, and expanded access to maternal health and nutrition services. Disaster preparedness and response strategies must be clearly defined and coordinated at both national and local levels.

- **Formalise and Support Traditional Birth Attendants (TBAs):** Collaboration between TBAs and formal health personnel should be strengthened. This includes providing regular training, clear role definitions, and fostering mutual respect between TBAs and health workers. TBAs should be formally recognised by policy frameworks and supported through motivation and remuneration from government and other actors.

80 Such as National and Local Government Officials, Education, Health and Agriculture Ministries, Local Authorities, Public Health Agencies, and other relevant legislative bodies.

FOR CIVIL SOCIETY ORGANISATIONS (CSOs)

- **Expand Education and Awareness Campaigns:** CSOs should lead efforts to increase education and awareness on nutrition, climate adaptation, maternal health, and environmental protection. These campaigns can be delivered through community meetings, schools, and religious gatherings using local languages and culturally appropriate examples. Involving cultural and religious leaders as trusted messengers can help bridge scientific knowledge with community values.

- **Promote Culturally Sensitive Education on Maternal Health and Safe Pregnancy Practices:** CSOs should take an active role in promoting culturally sensitive education on maternal health, bridging long-standing beliefs and biomedical practices to ensure that pregnant women receive timely and appropriate care. Awareness campaigns should aim to increase understanding of the importance of antenatal visits, not only as clinical check-ups but as key opportunities for counselling, nutritional guidance, and the early detection of complications. Moreover, education efforts should include practical information on safe pregnancy practices—such as guidance on physical labour, rest, hydration, and nutrition during pregnancy—ensuring that women and their families understand how to adapt daily routines to safeguard maternal and foetal health. These initiatives should be community-led, gender-sensitive, and designed to respect local knowledge systems while reinforcing evidence-based health recommendations.

- **Support Community Food Security Initiatives:** CSOs can play a key role in supporting local farming and fishing initiatives to improve the availability of nutritious foods. Initiatives could include establishing community food banks or savings groups, facilitating partnerships with local markets, and offering nutrition education programmes tailored to pregnant women and other at-risk groups.

- **Amplify Women's Voices and Leadership:** Women's autonomy and participation should be placed at the centre of adaptation and mitigation strategies. This involves supporting women leaders and representatives, creating safe spaces for dialogue, and forming institutions led by women to ensure their voices are heard and acted upon. Strengthening women's organisations to speak collectively will further amplify their influence in shaping responses to climate change.

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CHAPTER 3.
Conclusions and Recommendations

This report, published on the occasion of COP30 in Belém, Brazil, casts a crucial spotlight on the intertwined challenges of climate change, gender equity and social justice. Hosting this conference in Brazil—a country where women, particularly Indigenous women, play a central role in environmental stewardship, adaptation, and resilience—holds, indeed, profound political and symbolic significance, highlighting the crucial role these communities play in environmental stewardship, adaptation, and resilience.

In this spirit, **our study focused on how the climate crisis impacts sexual and reproductive health and rights, particularly for those already facing gender-based and social inequalities**. By centring the voices, perspectives, and lived experiences of people directly affected, we aimed to **highlight the urgent need for climate responses that are grounded in gender justice**. We adopted a feminist, decolonial, and participatory approach that positions local communities as active agents of change and recognises Indigenous and community knowledge and lived experiences as legitimate and crucial sources of insight.

Shared Challenges at the Intersection of Climate Change and Gender Inequality

The findings reveal unique yet shared and interconnected challenges across Brazil, Kenya, and Tanzania. While these must be situated within their distinct geographical, historical and cultural landscapes, several salient themes resonate across all three regions:

- **CLIMATE CHANGE EXACERBATES INEQUALITIES:** Climate change does not operate in a vacuum; rather, it intersects with existing social and material determinants, acting as a potent multiplier of pre-existing inequalities, thereby deepening social vulnerabilities and systemic marginalisation.

- **GENDER ACTS AS A CROSS-CUTTING FACTOR:** Gender emerges as a critical, cross-cutting lens through which climate change impacts are experienced and mediated. In the communities considered, traditional gender roles and power dynamics significantly influence access to resources, healthcare, and decision-making.

- **CLIMATE-INDUCED SCARCITY INTENSIFIES WOMEN'S WORKLOAD:** The persistent gendered division of labour compounds climate challenges: climate-induced resource scarcity and food insecurity intensifies women's workloads, as they shoulder not only caregiving responsibilities but also the demanding tasks of securing water, and sustaining livelihoods in rural settings.

- **CUMULATIVE BURDENS CAUSE PSYCHOLOGICAL AND HEALTH IMPACTS ON WOMEN:** This cumulative burden manifests in profound psychological strain—heightened stress, frustration, and mental health challenges—alongside adverse effects on sexual and reproductive health, with pregnant women facing increased health risks such as fatigue, physical complications, and other pregnancy-related hazards.

- **ECONOMIC STRAIN FUELS HOUSEHOLD STRESS AND GENDER-BASED VIOLENCE:** The compounded pressures from resource scarcity and intensified workloads exacerbate household stress and contribute to the persistence and escalation of gender-based violence, as well as coping mechanisms such as forced early marriage, while simultaneously curtailing women's opportunities for social participation, education, and economic empowerment.

- **INFRASTRUCTURE DAMAGE HINDERS ACCESS TO HEALTH SERVICES:** Climate-related damage to infrastructure, including roads and bridges, further impedes access to essential SRH services, intensifying hardships, such as delayed emergency obstetric care or lack of prenatal visits, and obstructing timely medical care.

- **RESOURCE DEPLETION DRIVES MIGRATION AND FRACTURES SOCIAL RELATIONS:** Migration represents another crucial dimension of climate vulnerability: resource depletion often compels men—and sometimes entire families—to migrate, leaving many women in socially isolated and precarious conditions. Those remaining frequently face the compounded challenge of maintaining household stability amidst dwindling resources and fractured social networks.

The evidence from all three cases highlights that **the analysis of gendered impacts of climate change, especially on sexual and reproductive health and rights, is central to climate justice**. Addressing these issues requires centring the experiences and knowledge of Indigenous, rural, and marginalised communities to develop rights-based and resilient solutions. Building on these findings, we have developed **a set of comprehensive recommendations** for diverse international and local actors — designed to inform policy and practice in ways that promote gender equity and sexual and reproductive health and justice, and ensure meaningful participation and long-term sustainability in the face of climate change.

FOR DONORS AND INTERNATIONAL FUNDERS

- **Channel resources directly to local feminist and women-led organisations, ensuring funding bypasses bottlenecks at international intermediaries and reaches grassroots actors.** These latter are not only best positioned to understand the specific climate and SRHRs needs of their communities, but they also bring decades of experience in advancing rights-based, locally grounded solutions. In addition, this approach shifts power towards those most affected by the climate crisis and ensures that funding supports context-specific strategies, rooted in lived realities and knowledge, recognising their leadership and legitimacy in driving transformative change.[81]

- **Provide long-term, flexible, core funding that allows local and international organisations to adapt to evolving climate–SRHR challenges beyond short-term project cycles.** These efforts help strengthen communities' adaptive capacity and respond to the specific vulnerabilities faced by women, girls, and marginalised groups. This type of funding must also extend to local scholars and community-based knowledge holders. Supporting them directly ensures that those most impacted by climate and SRH injustices are not simply consulted, but are actively shaping research agendas, methodologies, and outcomes. This includes adopting participatory and decolonial methods and ensuring findings are shared back with the communities involved.

- **Invest in interdisciplinary and intersectional research connecting climate, gender, SRHR, race, class, and geography, with priority for justice-oriented and participatory approaches.** Funding should support research that breaks down silos between climate, gender, health, and other social determinants, and centres justice as both a process and outcome. Advancing such integrated research is essential, as robust, context-specific evidence is critical to designing interventions that are both effective and equitable. However, significant gaps remain—particularly at the intersections of climate and sexual and reproductive health and rights (SRHR)—where empirical data is still limited, and structural analysis often absent. At the same time, communities should not be seen merely as subjects of research, but as co-producers of knowledge. Funding should support methodologies that redistribute power, such as community-based participatory research, feminist action research[82], and decolonial approaches.

- **Create dedicated funding windows for SRHR within climate portfolios, recognising reproductive health as essential to resilience and adaptation.** Despite**,** SRHR is a foundational aspect of climate justice, it remains largely excluded from climate finance strategies. Donors must rectify this by creating explicit, well-resourced SRHR components within climate funding frameworks. This includes ensuring access to contraception, maternal health services, comprehensive sexuality education, and gender-based violence prevention and response in climate change affected areas.

FOR POLICYMAKERS (National Governments, Cop30 Delegates, Multilateral Institutions)

- **Institutionalise women's leadership in climate governance by addressing structural barriers to participation and ensuring that Indigenous, young, and marginalised women have meaningful roles in decision-making.** This requires recognising and valuing long-standing knowledge systems and community-based leadership as essential components of climate governance. Women's participation must go beyond consultation, providing real influence over policy agendas, negotiations, and implementation. This can be achieved by establishing mechanisms such as permanent advisory councils with guaranteed seats for women from diverse backgrounds; participatory bodies at regional and local levels that feed directly into national climate policy processes; and peer-led governance boards that co-design climate strategies with government actors.[83]

- **Integrate SRHR into national climate adaptation and mitigation strategies, embedding sexual and reproductive healthcare and justice within broader resilience frameworks.** This approach strengthens communities' adaptive capacity by responding to the specific vulnerabilities faced by women, girls, and marginalised groups.[84]

- **Adopt rights-based, intersectional climate frameworks that explicitly recognise and address with targeted interventions the links between gender inequality, health disparities, environmental degradation, race, class, and origin.** These frameworks should be integrated at all levels of climate policymaking, ensuring that solutions do not reproduce existing inequalities but actively promote justice.

- **Establish transparent monitoring and accountability mechanisms, including gender-responsive budgeting and SRHR-sensitive indicators, to track whether gender justice commitments are fulfilled in both policy and practice.** These tools ensure that governments and multilateral institutions remain accountable to the populations they are mandated to represent.

FOR CIVIL SOCIETY ORGANISATIONS (CSOs)

- **Innovate localised adaptation solutions that centre women's and girls' reproductive health needs, while addressing broader structural issues such as food insecurity, water scarcity, and the increasing burden of unpaid care work.** CSOs can play a key role in, for instance, designing and testing models that connect access to contraception with climate-resilient livelihoods, or that integrate SRHR services into disaster preparedness and early warning systems. These models should be co-developed with affected communities and grounded in intersectional analysis and focused on mainstreaming gender and SRHR to ensure they are inclusive and contextually relevant.

- **Claim political space by demanding structured and ongoing participation in national delegations, COP processes, and climate financing mechanisms.** Civil society actors—particularly those representing marginalised groups—must be recognised not as observers or consultants, but as key decision-makers in climate governance. This includes securing formal roles in negotiation teams, technical working groups, and funding oversight bodies. To make this participation meaningful, CSOs must also have access to information, capacity-building opportunities, and resources that allow them to engage on equal footing. Advocacy efforts should target both the opening of institutional spaces and the transformation of power dynamics within them. This includes a critical revision of pricing structures for major climate conferences, which often remain financially inaccessible to CSOs.

- **Strengthen accountability mechanisms by tracking financial flows, monitoring the implementation of commitments, and mobilising affected communities to hold donors and governments to account.** CSOs have a critical role in bridging the gap between high-level pledges and on-the-ground realities. This includes producing independent monitoring reports, organising public accountability forums, and building community capacity to demand transparency in how climate and SRHR resources are allocated and spent. In this way, civil society can ensure that climate finance and policy commitments align with justice-based principles and deliver concrete results.

81 For instance, international women's fund **Mama Cash** directly provides feminist movements with fit-for-purpose and accessible resources. Since 1983, the fund has awarded more than €92 million to feminist activists and movements that promote environmental and gender justice. It engages in participatory grantmaking, which involves sharing power and recognising that feminist communities know their own struggles and movements best. Its approach consists in letting feminist activists manage their funds and including applicants and potential grantee-partners in decision-making for grants. For a comprehensive overview, please refer to the website: https://www.mamacash.org/what-we-do/grantmaking/ Another example is the **Global Fund for Women,** which also adopts a movement-led approach, putting money directly in the hands of grassroots leaders and allowing them to make key decisions. It incorporates short-term response, medium-term rebuilding, and long-term resilience through core, flexible grants to feminist groups and feminist funds on the frontlines. Its Gender Justice Data Hub helps identify which feminist movements are most in need of funding. The Fund provides general operating support grants, which are unrestricted funds to cover the costs of social justice work, and multi-year grants to allow groups to plan for the long term. Additional information is available at: https://www.globalfundforwomen.org/what-we-do/how-we-fund/

82 Feminist action research is a participatory research approach grounded in feminist theory and principles. It seeks to challenge power imbalances in knowledge production by actively involving participants—especially marginalised women and gender-diverse people—not only as sources of data but as co-researchers. This methodology prioritises lived experience, reflexivity, and collective action, aiming to generate knowledge that contributes to social transformation and gender justice.

83 For example, Cultural Survival advocates for Indigenous peoples' rights and supports Indigenous communities' self-determination, cultures, and political resilience. The organisation empowers Indigenous women to use their knowledge to develop sustainable solutions to forestry, food, and financial challenges. For instance, it has partnered with the Ixiles Q'imb'al Women's Association, which focuses on creating family gardens that promote food sovereignty and the protection and care of the land. Women practice a rights-based approach by asserting their participation in the decision-making processes of their Ixil community, promoting their rights to identity.

More information available at: https://www.culturalsurvival.org/

84 One example of this is Kenya's 2016 Climate Change Act, which establishes regulatory frameworks for climate action and low carbon development. It mandates both national and county governments to integrate climate change responses into their planning and decision-making processes. It emphasises public participation, access to information, and gender equity in climate responses. The National Environmental Management Monitoring Authority will monitor compliance and enforce greenhouse gas emission regulations.

See also: https://leap.unep.org/sites/default/files/legislation/KEN/kenya_ClimateChangeAct11of2016.pdf

- **Build transnational solidarity to amplify local struggles on global platforms, making visible the interconnectedness of reproductive and climate justice across different geographies.** Transnational alliances allow movements to share strategies, coordinate advocacy, and support each other in resisting common threats. Civil society must invest in building these relationships horizontally and ethically, ensuring that solidarity is not extractive but rooted in mutual respect and shared political goals. Whether through joint declarations, global days of action, or collective interventions at international forums, these alliances are essential for challenging systems of oppression that transcend borders.

- **Drive intersectional advocacy by forging coalitions across feminist, Indigenous, youth, health, and environmental movements to shift dominant narratives and influence global climate–SRHR agendas.** Such coalitions are key to building collective power and advancing integrated, justice-based solutions. By aligning struggles and strategies, these alliances can challenge fragmented policy responses and promote holistic approaches that centre rights, care, and community knowledge.[85]

- **Generate and legitimise alternative knowledge by amplifying community-based practices, Indigenous epistemologies, and feminist approaches to resilience.** These knowledge systems offer deeply contextual and historically grounded insights that challenge extractive, and top-down models of climate response, proving essential for effective and equitable climate action. Producing accessible knowledge outputs—visual reports, videos, testimonies, or multilingual briefs—also enables wider dissemination and supports advocacy. In doing so, civil society can actively reframe what counts as expertise in climate and SRHR policy debates.

85 For instance, the Women's Earth and Climate Action Network (WECAN) International engages women worldwide in policy advocacy, on-the-ground projects, trainings, and movement building for global climate justice. It strives to re-frame and re-direct the narrative on climate change to ensure that women's successful work in the fields, forests, streets, universities, and halls of power is made central to the climate discussion. Its strategies include organising and supporting on-the-ground community-led climate projects and programmes; frontline women's delegations; mobilisations; campaigns to stop extraction projects; educational events and trainings; media and storytelling efforts; publishing of policy briefs and reports; and strategic policy advocacy locally and internationally. More information at: https://www.wecaninternational.org/

Another example is the Huairou Commission, a women-led social movement of grassroots women's groups from poor urban, rural, and Indigenous communities. Together with its technical allies, it works towards transformative change that improves the living conditions, status, and quality of the life of women, their families, communities and municipalities. It has developed innovative, women-centred tools and knowledge base for community-led resilience building that put grassroots women at the centre of development policy and practice. These tools empower women, creating necessary conditions for good governance and inclusive, equitable development. Further details can be found on the official website: https://huairou.org/

VOICES FROM THE FIELD

This study emerged from a multi-stage, collaborative process involving WeWorld, ARCO, and crucially, local actors whose contributions were central throughout. From the outset, the study was conceived as a participatory endeavour rooted in the belief that knowledge must be situated, dialogical, and attentive to diverse epistemologies. This participatory ethos was sustained throughout, culminating in collective analysis and co-led dissemination strategies. In this way, local perspectives shaped not only the findings but also the framing of recommendations.

Crucially, local team members were later invited to reflect on their learnings, offer advice, and articulate both the strengths and challenges of the process. They were also asked whether the study could provide programmatic insights for WeWorld's work or inform public interventions at the local or national level. This was not a formal evaluation, but a dialogic space for mutual learning.

TAKEAWAYS

"For me, it was entering the homes of the interviewed women, seeing and feeling their daily lives – it was a very special experience. The interviews also contained very deep and intimate questions, and it was very beautiful and powerful to see how many women, initially reserved and shy, then opened up and shared a space of trust and sometimes almost of catharsis in bringing out certain issues. The exchange between women, the groups, the spaces for sharing are essential in this and many other contexts in order to bring out problems and possible solutions. Women need to be listened to and to listen to each other, and the creation of spaces suitable for this sharing is increasingly a necessity and a great resource" - local team member, Brazil

"On a personal level, I could strengthen my skills in coordination, communication, and adaptability, especially in managing logistics in often unpredictable field conditions. I also improved my research skills, learning how to effectively conduct FGDs and use tools like KOBO for data collection. Lastly, I gained a deeper appreciation for the importance of tailoring our approach to the specific needs and realities of the communities involved. Context-sensitive planning not only leads to better quality data but also ensures that the dignity and comfort of participants are fully respected throughout the research process." - local team member, Kenya

"One of the biggest takeaways from this exercise is the realisation that, despite the significant and visible effects of climate change, many people do not perceive these changes as drastic unless they are intentionally prompted to reflect on them. On a personal level, it reminded me how easily we can normalise changes around us and the critical role of research and dialogue in shaping informed perspectives." - local team member, Kenya

"My experience throughout the research process was deeply interactive and collaborative, especially given my involvement from the very beginning during the co-creation phase of the preliminary FGDs. I felt a strong sense of ownership and responsibility in shaping the research framework alongside community members and stakeholders. This early engagement allowed me to actively contribute to defining the focal points of inquiry, ensuring that the questions addressed the community's real concerns." - local team member Kenya

"I learned how to interact with different groups of people in a respectful and professional way. I also gained skills in asking sensitive questions and managing conversations with empathy. On a personal level, I take away greater patience, listening skills, and confidence in engaging with communities." - local team member Tanzania

"I noticed the importance of having interviews conducted by a local person: this helps to avoid embarrassment or the tendency of interviewees to give the "right answer" rather than an authentic one. I also understood how crucial it is to consider the local context: a public holiday, the closure of a hospital, or other public places can affect data collection. Another important lesson is that some questions only become unclear or unsuitable once you start asking them, and in those cases, it's necessary to adapt them on the fly. For this reason, I believe it's very useful to pilot the interviews before beginning the actual data collection. Finally, I realised that interviews always require time and energy—from both the interviewer and the respondent." - local team member Tanzania

CHALLENGES AND LESSONS FOR THE FUTURE

"A more in-depth observation and a longer contact with the women would have been interesting in order to better understand and interpret their reality. Furthermore, the language used to ask the questions was not always fully contextualised, and a certain degree of linguistic and cultural mediation was necessary to ensure the women fully understood the questions." - local team member Brazil

"Some questions, especially the more intimate ones, might have been better asked in a more indirect way, as many women are still not comfortable discussing such topics, particularly with strangers. To ease this, I reassured them they could respond only if they felt at ease, and I would try to introduce the subject more subtly during the conversation. This made me reflect on how, out of shame, many women miss the chance to learn about their bodies and remain trapped by taboos." - local team member Brazil

"One area that could be improved in future research projects is the number of interview respondents scheduled within a given timeframe. Reducing the number of interviews per day would allow for more in-depth conversations with each respondent, giving us ample time to build rapport and better capture the richness of their experiences. Ultimately, this would enhance the quality of the data collected and ensure that participants feel genuinely heard and valued." - local team member Kenya

"Sometimes participants were hesitant or shy to answer certain questions. I dealt with this by reassuring them about confidentiality and giving them time to respond without pressure. To help them feel more comfortable, I also shared some small examples from my own experiences, which encouraged them to open up and share their own stories. I think also that more time for training before going to the field would be helpful, especially on handling sensitive topics." - local team member Tanzania

"Given that the context of climate change is something that unfolds over time rather than immediately, it would be valuable to conduct research that continues to monitor its impact in the years to come, thereby allowing for a more precise tracking of its progression." - local team member Tanzania

ENCOUNTERS

"Sorority (sisterhood) was always present throughout the entire process. Aware of my 'lugar de fala' – my positionality or 'place of speech' as an interviewer, a white, heterosexual, European woman – it was very powerful to witness the openness, trust, and courage of these women, who shared many intimate aspects of their lives: fears, anger, a sense of injustice, but also dreams, hopes, and concrete actions to improve a reality that is often too harsh. I felt deeply honoured to be the keeper of their stories." - local team member Brazil

"One aspect of the interview that stood out to me was the deeply personal experiences shared by the respondents. This underscored the significant level of trust they placed in us as researchers—and with that trust comes the responsibility to use the information shared to drive meaningful and positive change." - local team member, Kenya

"One moment that struck me was when some participants opened up and shared deeply personal stories. It made me realise how important this research is for giving people a voice, and it also reminded me of the responsibility we carry in handling their stories with care." - local team member Tanzania

IMPLICATIONS FOR INTERVENTIONS

"Many useful ideas for local projects can emerge from this work, and we are already reflecting on them. We have some initial, still embryonic ideas, such as strengthening women's groups to carry out advocacy and lobbying in order to improve existing public policies and create new ones. Other possibilities include leadership training, political education, and training on the solidarity economy". - local team member Brazil

"The work highlights how climate change exacerbates vulnerabilities around SRH, especially for women, girls, and marginalised communities. These insights can inform WeWorld's programming by encouraging more integrated approaches - combining climate resilience with access to SRH services, education, and protection." - local team member Kenya

"The study highlights community needs and challenges that can guide future projects. For example, it shows the importance of awareness campaigns, community engagement, and support services at both local and national levels. It also provides a strong basis for understanding maternal and child health issues that are being affected by climate change." - local team member Tanzania

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WeWorld

WeWorld is an independent Italian organization engaged in development cooperation and humanitarian aid projects over the last 50 years, operating today in more than 20 countries.
Over the last year, WeWorld has carried out over 160 projects, reaching over 5.6 million people, in Afghanistan, Benin, Bolivia, Brazil, Burkina Faso, Burundi, Cambodia, Jordan, Italy, Kenya, Lebanon, Libya, Mali, Moldova, Mozambique, Nicaragua, Niger, Palestine, Peru, the Democratic Republic of Congo, Syria, Thailand, Tanzania, Tunisia, and Ukraine.
Children, women, and young people, agents of change in every community, are at the centre of WeWorld's projects and campaigns in the following areas of intervention: access to water hygiene, and sanitation; education; food security, livelihoods and local development; gender and protection; environment and climate.

Mission

We work alongside individuals on the geographic, economic or social margins to overcome inequalities together and build a fairer future which respects the dignity and diversity of people and the environment. We support people and communities with humanitarian assistance in crisis contexts and support pathways to self-determination and development, to contribute to structural change and generate opportunities for all people.

Vision

We strive for a better world in which everyone, especially children and women, have equal opportunities and rights, access to resources, to health, to education and to decent work.
A world in which the environment is a common good to be respected and preserved; in which war, violence and exploitation are banned. A world where no one is left behind.

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