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ADVANCING GENDER IN THE ENVIRONMENT:
EXPLORING THE TRIPLE NEXUS OF
GENDER INEQUALITY, STATE FRAGILITY,
AND CLIMATE VULNERABILITY

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ACRONYMS

AGENT	Advancing Gender in the Environment
ccGAPs	Climate Change and Gender Action Plans
CDCS	USAID Country Development Cooperation Strategy
CEESP	IUCN Commission for Environmental, Economic and Social Policy
CPR	Cardiopulmonary resuscitation
CVA	Climate vulnerability assessment
E3	Bureau for Economic Growth, Education and Environment
EGI	IUCN Environment and Gender Information platform
EM	Expectation-maximization algorithm
FAO	Food and Agriculture Organization of the United Nations
FCV	Fragility, conflict, and violence
GBV	Gender-based violence
GDP	Gross domestic product
GenDev	Office of Gender Equality and Women's Empowerment
HIV/AIDS	Human immunodeficiency virus infection and acquired immune deficiency syndrome
IDPs	Internally displaced persons
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IPV	Intimate partner violence
IUCN	International Union for Conservation of Nature
LGBT	Lesbian, gay, bisexual, and transgender individuals and community
ND-GAIN	Notre Dame Global Adaptation Initiative
NGO	Non-governmental organization
OECD	Organisation for Economic Cooperation and Development
PIO	Public International Organization
PTSD	Post-traumatic stress disorder
RDCS	USAID Regional Development Cooperation Strategy
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
SIGI	OECD Social Institutions and Gender Index
STEM	Science, technology, engineering, and mathematical fields and studies
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development
USD	United States Dollars

EXECUTIVE SUMMARY

Across countries, gender inequality, state fragility,¹ and climate vulnerability present challenges to the well-being of communities and the ecosystems upon which they depend. While much research exists connecting pairs of these issues—for example, the need for gender-responsive approaches to realize climate goals—little attention has been devoted to the intersection of the three issues, nor to how this ‘triple nexus’ could be taken into account toward more effective sustainable development decision-making and programming.

The International Union for Conservation of Nature (IUCN), together with the United States Agency for International Development (USAID), conducted this study under its 10-year partnership on Advancing Gender in the Environment (AGENT) to explore the links related to the triple-nexus topics. The research methodology included 1) a literature review on the three distinct issues and their overlaps, and 2) the construction, mapping, and analysis of an indicators framework through which to view the linkages as a triple nexus. The framework took into account 27 country level indicators—e.g. inheritance rights of widows and daughters (OECD), government effectiveness (World Bank), and low elevation population (CIESIN²-Columbia University)—to better understand how and where linkages among gender inequality, state fragility, and climate vulnerability are prevalent in 122 countries where USAID has a country or regional mission.

Key findings from this research include the following:

1. Aspects of gender inequality, state fragility, and climate vulnerability affect each country to varying degrees;
2. Analysis of framework results suggests that the indicators are positively correlated with one another. This means that countries with relatively higher values in one issue area tend to have relatively higher scores in the other issue areas;
3. The mapping analysis demonstrated that the triple nexus issues are particularly prevalent in sub-Saharan Africa and the Middle East and North Africa; and
4. There are significant data gaps for gender, environmental, and fragility indicators, especially in small island states. This suggests an urgent need for investment in sex-disaggregated and environmental data, as well as informing peace and resilience efforts.

The issues and underlying causes of gender inequality, state fragility and climate vulnerability are highly complex and context-specific. Country level indicators are one tool to identify the prevalence of triple nexus issues, but risk analysis should be coupled with grounded research to provide context-specific evidence of how these issues are impacting local communities. This study reinforces the need for integrated gender-responsive policy and program approaches that incorporate gender, climate change, and state fragility considerations, which IUCN, together with its members, peers and partners, can pursue through ongoing knowledge building, capacity building and technical support. In any such actions, women and girls should be supported and positioned as actors for peace and resilience.

1 “Fragility refers to the extent to which state-society relations fail to produce outcomes that are considered to be effective and legitimate” (USAID, 2014b, p. 2).

2 Center for International Earth Science Information Network



I INTRODUCTION

Gender inequality, state fragility, and climate vulnerability are global challenges that threaten the well-being of communities and nations, as well as future generations and the ecosystems upon which they depend. Gender equality and women’s empowerment are matters of fundamental human rights and social justice, which are integral to sustainable development, but there are still significant gaps in fully realizing these priorities.^{1,2} According to the World Bank, fragility, conflict, and violence significantly affect development outcomes, driving 80 percent of all humanitarian needs and reducing gross domestic product (GDP) growth by two percentage points per year, on average.³ Climate change and climate-related stressors (e.g. extreme weather events, including droughts and floods) are affecting natural and human ecosystems in unprecedented ways, resulting in shifting resource availability and changing human and species migration patterns.⁴

There are multiple factors, often overlapping or reinforcing, that hinder sustainable development and well-being, contributing to overall vulnerability: gender inequality, climate change, and state fragility are such factors. Considering vulnerability through the lens of these issues provides insight into the interdependent, complex systems impacting communities and ecosystems. Climate change, for example, is often considered to be a threat multiplier,^{5,6} as its impacts can enhance existing vulnerabilities, as well as affect new aspects of vulnerability. Women and men are impacted differently by, and have distinct capacities to cope with, limit, and respond to, climate stressors. Climate vulnerability can exacerbate existing gender inequalities. Climate stressors and weather shocks can also affect the security of a state by amplifying social stress and resource scarcity and competition. If these dynamics exceed the adaptive capacity of a country, it can create or aggravate instability. Fragility and gender inequality are also linked, with women experiencing reduced access to services and natural resources, including land, magnified vulnerability to rights violations, and, especially in conflict areas, increased instances of gender-based violence (GBV).

While there is a strong base of evidence supporting correlations between gender inequality and climate vulnerability, climate vulnerability and fragility, and fragility and gender inequality, few studies or programs examine these issues together. Looking at gender inequality, state fragility, and climate vulnerability together, this study offers a unique lens through which to view these factors and their interconnections. Exploring how the three issues are linked and influence one another may provide strategies for more integrated solutions, including those that identify and build upon women’s and men’s important roles toward achieving climate-resilient, sustainable peace.⁷ Moreover, considering the compound threats to the three issues in other sectors (e.g. education, health, food security, etc.) is important for successful interventions. Adopting a holistic approach to policies and programs can more effectively advance sustainable development, decrease existing gender inequities, and support the well-being of communities in nations across the world. Interventions should seize opportunities to produce results that are wide reaching and make progress on multiple goals.

1 IUCN (2018).

2 Robinson, M. (2015).

3 World Bank (n.d.a).

4 IPCC (2018).

5 Rüttinger et al. (2015).

6 World Bank (n.d.b).

7 GIWPS & Peace Research Institute Oslo (2017).

I.1 OBJECTIVES AND PURPOSE

The International Union for Conservation of Nature (IUCN) conducted this research as part of the project AGENT—Advancing Gender in the Environment (see box 1), a collaboration with the United States Agency for International Development (USAID), to explore the links and strengthen the knowledge base on the “triple nexus” of gender inequality, state fragility, and climate vulnerability (see Box 1). The study complements USAID’s and other partners’ ongoing work to understand and address state fragility and climate vulnerability and risks,⁸ thus contributing an analysis of gender inequality considerations as a third critical and cross-cutting component. Revealing literature gaps, the study explores linkages and overlapping drivers between triple nexus issues. It then shows where the triple nexus is most prevalent by analyzing and mapping quantitative data from across the 122 countries where USAID operates. The purpose of this analysis is to identify potential opportunities and recommendations for strengthening sustainable development approaches through understanding and addressing triple nexus concerns, not least in elevating attention to addressing gender inequality.

BOX 1: ADVANCING GENDER IN THE ENVIRONMENT (AGENT): FRAMING THE RESEARCH

This study is part of a series of research and knowledge products developed under AGENT, a 10-year Public International Organization (PIO) grant to IUCN that is managed by the USAID Bureau for Economic Growth, Education, and Environment (E3) Office of Gender Equality and Women’s Empowerment (GenDev). The purpose of AGENT is to increase the effectiveness of USAID’s environment programming through the robust integration of gender considerations, improving gender equality and women’s empowerment outcomes in a broad range of environmental sectors. AGENT envisions a world that approaches environmental work at all levels with gender-responsive policy and action. By recognizing women as agents of change and valuing the diverse knowledge, experiences, and capacities of women and men alike, AGENT drives transformation toward a more sustainable and equitable future for all.

Gender inequality, state fragility, and climate vulnerability are priority issues for USAID, with defined approaches to address these issues, particularly as exemplified through the Agency-wide guidance and mandates outlined in the following documents: *Gender Equality and Female Empowerment Policy* (USAID, 2012); *Strategy on Democracy, Human Rights, and Governance* (USAID, 2013); *Women, Peace, and Security Act of 2017* (Library of Congress, 2017); and *Climate-Resilient Framework* (USAID, 2014a). AGENT researchers applied the USAID definitions and approaches on these three priority areas to inform the framework for this research. While this research framework is influenced by USAID’s mandate, the findings are applicable across the AGENT sphere—from USAID and IUCN offices and programs, to wider networks of partners, including major multilateral and bilateral development actors, national governments, NGOs, academia, and donors.

I.2 RESEARCH METHODS AND REPORT STRUCTURE

A detailed literature review on each of the three priority issues comprised the foundation of the research methodology. It was followed by an examination of existing literature on interlinkages among them (i.e. gender inequality and climate vulnerability, climate vulnerability and state fragility, and state fragility and gender inequality). The review emphasized significant gaps in existing knowledge on the triple nexus and makes the case for why action, such as cross-sectoral, collaborative programming and research, on the triple nexus could potentially accelerate progress on how they are addressed.

8 See also Moran, A. et al. (2018)

The findings from the literature review, as well as reviews of relevant data sets and indices and consultations with USAID and other experts, were used to develop an indicators framework for analyzing the triple nexus of gender inequality, state fragility, and climate vulnerability. The triple nexus framework consists of 27 indicators, sourced from reputable, internationally recognized databases (OECD Social Institutions and Gender Index, UNDP Human Development Report, and World Bank Development Indicators), which were applied to determine the prevalence of triple nexus issues for 122 countries where USAID operates.⁹ Since the approaches taken in this research have certain advantages, disadvantages, and limitations, the indicators framework offered a conceptual model through which to view these issues.

To understand the complex relationships among the triple nexus of gender inequality, state fragility, and climate change vulnerability, it is first important to understand the key aspects of each of these factors on their own. The literature review in Section I shows why each of these topics is essential to consider when working towards strengthening communities' resilience to factors that contribute to overall vulnerability. A vast amount of literature is available on each individual topic, and much research has also been conducted connecting two topics, which reveal the overlapping drivers and impacts between these three issue areas. Despite these linkages, when it comes to the triple nexus, there is a marked lack of information, setting up the rationale for this research.

To help bridge these gaps in the knowledge base on the triple nexus, the research team developed a framework (see Section II, Figure I) through which to learn more about where and how gender inequality, climate change vulnerability, and state fragility impact countries. Section II first outlines the data chosen and the indicators used for developing the triple nexus framework. The results from the triple nexus analysis are presented next, including maps which provide visual representations of countries impacted by gender inequality, climate vulnerability, state fragility, and all three.

The conclusions, recommendations, and opportunities discussed in this paper are aimed toward donors, practitioners, and researchers working in the fields of sustainable development, human rights, conflict mitigation and peacebuilding, gender equality and women's empowerment, and environmental conservation, to enhance their work by recognizing the importance of each of these interlinked issues, and to consider incorporating them into their programming and policies.

⁹ The selection of the countries in the study was determined using the Country and Regional Missions listed in the USAID Mission Directory (March 2018). Due to a large number of unavailable values of the selected indicators, Kosovo was not included in this research.

A person wearing a purple long-sleeved shirt, blue jeans, and a colorful hat is walking away from the camera on a dirt path. The path is flanked by low stone walls. The landscape is rocky and hilly, with a clear blue sky in the background.

SECTION I

GENDER INEQUALITY, STATE FRAGILITY, AND CLIMATE VULNERABILITY: REVIEWING TRIPLE NEXUS ISSUES, CONNECTIONS, AND GAPS

KEY TAKEAWAYS

- Gender inequality, state fragility, and climate vulnerability are complex and intertwined issues—with some shared drivers and social implications that affect progress across issues.
- An entry point for addressing these three issues as a triple nexus is the connection between natural resource availability and conflict, which has particular gender dimensions.
- Women not only have distinct risks and vulnerabilities, but they also have adaptive capacities and potential to act as agents of change in climate change adaptation, mitigation, conflict resolution, and peacebuilding.

2 INTRODUCING THE ISSUES

This section presents an overview of each of the three triple nexus issues individually, setting the stage for enhanced discussion of links, overlap and reinforcing factors between pairs and the triple nexus issues, as discussed in the following part. The definitions and conceptual discussions presented here are based on existing literature on gender inequality, state fragility, and climate vulnerability, including from USAID and others.

2.1 GENDER INEQUALITY

USAID DEFINITION: GENDER EQUALITY

Gender equality is a state “in which both men and women have equal opportunity to benefit from and contribute to economic, social, cultural and political development; enjoy socially valued resources and rewards; and realize their human rights.” (USAID, n.d.a).

Despite global progress on closing gender gaps, pervasive gender inequality still severely limits the full potential of women and men, not least in low-income and least developed countries.¹⁰ The effects of gender inequality permeate beyond individual well-being with negative consequences that last generations, impacting community health, overall economic growth, sustainable development, and global progress on human rights. Although issues of gender inequality impact women and men differently, evidence shows many gender gaps that disadvantage women and girls in particular, including: access to education;¹¹ literacy;¹² health care; and economic opportunities; participation in decision-making spheres;¹³ legal rights and protections;¹⁴ and natural resource use and control.¹⁵

In primary education, gender gaps have narrowed significantly in the last several decades, but there are still wide disparities in some regions. For instance, worldwide, around 58 million children of primary school age do not attend school, more than half of whom are girls.¹⁶ Three-quarters of these children live in sub-Saharan Africa and South Asia,¹⁷ and in some countries, including Afghanistan, Central African Republic, and Chad, fewer than 70 girls per 100 boys are enrolled in primary school.¹⁸ In areas where primary education access has improved, literacy rates among girls and boys

10 Gender: Refers to culturally-based expectations of the roles and behaviors of women and men. The term distinguishes the socially-constructed from the biologically-determined aspects of being female and male. Unlike the biology of sex, gender roles, behaviors and the relations between women and men are dynamic. They can change over time and vary widely within and across a culture, even if aspects of these roles originated in the biological differences between the sexes (IFAD, 2017).

11 World Bank (n.d.c).

12 Ibid.

13 IPU (2019).

14 UN Environment & IUCN (2019).

15 Ibid.

16 UN (2015).

17 Ibid.

18 USAID (2012).

have followed suit, and the vast majority of young women and men have basic reading and writing skills.¹⁹ However, illiteracy rates are still high among older populations, with 781 million people over the age of 15—nearly two thirds of whom are women—considered illiterate, residing mostly in Northern Africa, sub-Saharan Africa, and South Asia.²⁰ Gender gaps in education and literacy negatively affect the resilience and self-reliance of a population and limit opportunities for higher paying jobs and participation in decision-making, especially for women and girls who face additional barriers, such as social expectations of gender roles or structural barriers to participation, in accessing opportunities.²¹ This impacts women and girls around the world; for example, research shows that women and girls face societal barriers which contribute to them being less likely than their male counterparts to study and work in science, technology, engineering, and mathematical (STEM) fields. A systemic review of literature on this gap in developed countries from over the last 40 years shows that these barriers can be grouped into five categories: i) individual background characteristics; ii) structural barriers in K-12 education; iii) psychological factors, values, and preferences; iv) family influences and expectations; and v) perceptions of STEM fields.²²

In general, women are increasingly participating in the labor force; however, this has not translated to equal employment opportunities and wages. On average, across all sectors and occupations, women are paid less than men for full-time employment—in most countries making about 70-90 percent of what their male counterparts earn²³—and are more likely to participate in low paying jobs with limited training and promotion opportunities in informal economies with little to no regulations and protections, and in unpaid labor, such as caregiver responsibilities, usually implying they have no access to monetary income.²⁴ Additionally, when paid and unpaid work—such as household chores and childcare—are taken into account, women work longer hours than men, resulting in women and girls having less time per day—on average one to four hours less—to devote to other productive or leisure activities.²⁵ Furthermore, it is worth noting that at times, unequal access to formal and equal economic opportunities can be attributed towards enabling male family members to hold control over women’s access to money and economic resources and activities, thereby increasing women’s dependencies on male family members, making women more vulnerable to domestic violence—a pervasive form of GBV.²⁶

In many ways, the gender gaps in educational and economic opportunities influence and are exacerbated by persistent legal barriers (codified and customary) that women face, including in securing land use and ownership rights, having decision-making power in the household, and seeking legal recourse against GBV. In a study of 189 economies by the World Bank, all had at least one gender difference in legal treatment, 68 had at least one law limiting women’s decision-making and freedom of movement, 75 restricted women’s rights to access and own property, and 133 had at least one restriction on women’s access to justice.²⁷ Even where laws are not necessarily

19 UN (2015).

20 Ibid.

21 Ibid.

22 Kanny et al. (2014).

23 UN (2015).

24 USAID (2012).

25 World Bank (2011a).

26 Fawole (2008).

27 World Bank (2018a).

gender-biased, they can effectively become gender-biased based how they are enforced and with respect to who has access to justice. Laws and restrictions such as these impede women’s ability—relative to men—to contribute to economies, undermine their dignity and security, reduce their ability to seek justice, and limit their access to education and resources, which reduces their overall resilience to climate change shocks and stressors.

Widespread incidence and varied expressions of GBV further reduce overall resilience. Used to uphold unequal gender power dynamics, GBV is “any harmful threat or act directed at an individual or group based on actual or perceived biological sex, gender identity and/or expression, sexual orientation, and/or lack of adherence to varying socially constructed norms around masculinity and femininity.”²⁸ This violence can be physical, sexual, psychological, and economic, as well as rooted in structural inequality and harmful cultural norms. GBV is among the most pervasive, systemic, and violent expressions of gender inequality, in every country and across communities, directly impacting one in three women around the globe.²⁹ GBV contributes to long-term physical, mental, and emotional health problems of victims and has high costs to societal well-being and economic growth. For example, the World Bank estimates that violence against women costs some countries upwards of 3.7 percent of their GDP.³⁰

When legal protections and victim services are inadequate or nonexistent, victims of gender-based physical, sexual, psychological, and economic violence are often reluctant to seek justice and protection, with risks of facing additional challenges if they do report such violence.³¹ Additionally, violence based on an individual’s gender or perceived adherence to norms around femininity and masculinity is largely overlooked and ignored by authorities and in legal protections against GBV.³² The reluctance or inability to report violence fosters impunity of perpetrators that can generate fear and insecurity in communities, as well as harmful beliefs among all members of a community justifying use of violence. For example, in a recent national survey from Tanzania, 40 percent of men and boys and 58 percent of women and girls ages 15-49 consider that a husband is justified in beating his wife if she burns his food, argues with him, goes out without telling him, neglects their children, or refuses to have sex with him.³³ Living without fear of violence is a fundamental human right for all, and preventing GBV before it happens or reoccurs reduces the social and economic costs of violence, as well as supports the dignity and well-being of women, girls, and all persons affected by GBV to fully participate in educational, economic, and civic ventures.³⁴

THE POSITIVE MULTIPLIER EFFECT OF GENDER EQUALITY

USAID envisions a world in which women and men have equally realized economic, social, cultural, environmental, civil, and political rights and are equally empowered to improve their lives and exercise their own voices, as well as equally able to access services, such as education and

28 USAID (2016a, p. 6).

29 UN (2015).

30 World Bank (2018b).

31 UN (2015).

32 Hagen (2016).

33 UNICEF (2018).

34 UN Women (2015).

health care.³⁵ Addressing gender gaps and promoting gender equality, including through gender equity-focused interventions that support steps toward equality, contributes to this vision and evidence from around the world and across all sectors highlight the multiple and widespread benefits of gender equality and women’s empowerment.

Improving education access, including through lifelong learning opportunities for adults, has numerous monetary and non-monetary benefits for individuals, communities, and economies. For instance, one study found that each additional year of schooling raises an individual’s earnings by 8-10 percent, with greater increases for women, and that improvement in women’s education leads to better health outcomes for their children and families.³⁶ When women have more access to income-generating opportunities and control over household income decisions, they tend to spend in ways that benefit their children, including improving health and education.³⁷ Unlocking women’s ability and opportunity to participate equally in paid labor through training and education programs, as well as protections against gender-based discrimination, has the potential to contribute significantly to the global economy. For example, one study finds that advancing women’s equality could add between \$12 and 28 trillion to global GDP by 2025.³⁸

Advancing toward and achieving gender equality concerns everyone, not solely women. Women and men are more than homogenous groups defined solely by gender. Every individual has multiple and intersecting social identities—including their socio-economic status, ethnicity, race, disability, indigeneity, age, sexual and gender minorities and citizenship status—that impact them in many ways and interact with social power dynamics and laws, affecting their ability to access opportunities and resources.³⁹ Additionally, long-held beliefs around masculine and feminine roles and expressions can harm both men and women. For instance, in emergencies, including related to natural disasters, men are often expected to take on first-responder or ‘heroic’ roles, making them more susceptible to injuries and death.⁴⁰ On the other hand, depending on the context, women and girls may be more susceptible to disadvantage, injury or death due to their caregiving and other socio-cultural roles.⁴¹

Making progress toward gender equality, including by effectively integrating gender into development initiatives, requires understanding how socio-cultural norms and power structures define roles in any given community and influence the lives and opportunities of all people from diverse social groups. Dimensions of gender equality can be mutually reinforcing. Supporting women’s empowerment and gender equality can be a pathway for positive transformation across sectors.

35 USAID (2012).

36 World Bank (2018c).

37 OECD (2012).

38 McKinsey Global Institute (2015).

39 Colfer et al.

40 Eriksen et al.

41 Neumayer & Plümpert (2007).

BOX 2: TRANSGENDER AND NON-BINARY IDENTITIES

Currently and throughout all of human history, cultures and societies around the globe have recognized diverse gender identities and expressions outside the binary of woman and man, sometimes collectively referred to as “third gender,” although each culture has a specific designation, such as *māhū* in Hawaiian and Tahitian cultures and *quariwarmi* shamans in pre-colonial Andean culture (PBS, 2015). Despite traditional reverence, gender-diverse people—including, but not limited to, individuals categorized (either by themselves or by society) as third gender, transgender people, and those whose gender expression does not align with societal expectations for men and women (e.g., feminine men or masculine women)—often face legal criminalization, social discrimination, and violence in modern society. For example, in South Asia *hijras* had been a celebrated part of the culture for thousands of years before the 19th century when British colonists in India passed laws classifying them as criminals (Gettleman, 2018). While *hijra* is now legally recognized as a third gender designation in India, Nepal, Bangladesh, and Pakistan, the impact from this historical discrimination still affects members of the community who face social stigma and barriers accessing equal and safe employment opportunities (Khaleeli, 2014).

Lack of data disaggregated by sex and gender is an issue across sectors and hinders a full understanding of inequalities between women and men in accessing resources and opportunities. This issue is arguably more pronounced for transgender, non-binary, and diverse gender communities because of the legacy of marginalization and extreme social exclusion. Unfortunately, lack of quantitative and qualitative data and information on diverse gender communities means that this research and related research do not fully include the perspectives from and the specific issues facing these communities. It is an overarching recommendation to promote inclusive data collection and actively champion the participation of diverse gender communities as a part of efforts to further gender equality and close this knowledge gap. There have been some efforts to promote a more inclusive definition of gender at the international level. For example, the recent inclusion of an organization focused on issues facing lesbian, gay, bisexual, and transgender (LGBT) individuals, OutRight Action International, in the Women, Peace and Security Non-Governmental Organization (NGO) Working Group, which informs the UN Security Council on issues of GBV and peace and security processes (Park, 2018). Additionally, USAID outlines its commitment to LGBT-inclusive policies and development in *LGBT Vision for Action*, which recognizes and addresses the specific issues facing transgender and intersex persons in international development (USAID, 2014a).

2.2 STATE FRAGILITY

USAID DEFINITION: FRAGILITY

“Fragility refers to the extent to which state-society relations fail to produce outcomes that are considered to be effective and legitimate” (USAID, 2014b, p. 2).

Fragility describes the extent to which state-society relations fail to contribute to outcomes that are both effective and legitimate, furthering state instability and hindering the ability of a state to pursue long-term development.⁴² Fragile states are either unable or unwilling to provide security and basic services—such as educational opportunities and health facilities—to all portions of the population, contributing to widespread corruption, poverty, wealth inequality, weak institutional structures, increased crime, displacement, social unrest, violent conflict, and livelihood loss.^{43, 44} Several recent examples show that failing to address the underlying factors of fragility, such as ineffective and illegitimate governance, can have disastrous consequences for a population within a fragile state.⁴⁵ This can prove detrimental to the region and have negative global impacts, posing major national and international security risks and humanitarian challenges. Instability and fragility also impede global progress on meeting international development goals, such as ending poverty, food insecurity, and gender inequality.⁴⁶

Fragility is not a condition that is entirely present or absent; it affects instability of a state in gradations, meaning that fragility is a factor in all states, including those who are failing and vulnerable to crisis, failed and in crisis, recovering from crisis, and those who are considered relatively stable.⁴⁷ Guidance from USAID explains the difference between fragile states and those that are seen as stable as the ability for state-society relations to produce *effective and legitimate* outcomes, including in security, political, economic, and social domains (see Table I for examples).⁴⁸ According to the USAID *Fragile States Strategy* (2005):⁴⁹

Effectiveness refers to the capability of the government to work with society to assure the provision of order and public goods and services. **Legitimacy** refers to the perception by important segments of society that the government is exercising state power in ways that are reasonably fair and in the interests of the nation as a whole. Where both effectiveness and legitimacy are weak, conflict or state failure is likely to result.

42 Ibid.

43 USAID (2005a).

44 USAID (2014b).

45 Heldring (2014).

46 Ingram & Papoulidis (2017).

47 USAID (2005a).

48 USAID (2005b).

49 USAID (2005a, p. 3).

The *Fragile States Strategy* (2005) further elaborates on these points by explaining effectiveness and legitimacy in terms of security, political, economic, and social factors, as shown in Table I.

TABLE I: ANALYZING GOVERNANCE IN FRAGILE STATES USING USAID FRAGILITY FRAMEWORK		
	EFFECTIVE	LEGITIMATE
Security	Provision of military and police services that secure borders and limit crime	Military and police services that are provided equitably and without violation of civil rights
Political	Well-functioning political institutions and processes that ensure accountability and timely allocation of resources to address citizen needs	Political institutions and processes that are transparent, respect societal values, and do not favor particular groups
Economic	Economic institutions that provide for economic growth (including jobs), shield the economy from external shocks, and ensure adaptability to economic change	Equitable distribution of the benefits and costs of economic growth and change
Social	Provision of legal protections and social services, in particular to meeting the special needs of vulnerable and minority groups	Tolerance for diversity, including opportunities for groups to practice customs, cultures, and beliefs

Source: USAID (2005).

The USAID framework is useful for understanding the conditions that make up ineffective and illegitimate governance structures, such as poverty, food insecurity, economic instability, and social group inequality, including gender inequality, among others, which undermine the willingness and ability of citizens to engage with the government, and vice versa.⁵⁰ The framework also helps to understand the potential causes of these conditions, including violent conflict, government corruption, and economic shocks, which can trigger or exacerbate fragile conditions.⁵¹ Defining fragility in terms of its conditions and causes can be a proactive strategy toward preventing crises and actively addressing potential triggers.⁵²

Conflict is more likely to occur when segments of society question the transparency, accountability, and inclusiveness of a governing body and its decisions.⁵³ For instance, governments may fail to provide adequate resources and fair opportunities to all segments of the population—such as between different socio-economic levels, religious groups, ethnic groups, or between women and men. In some cases, this may incite civil unrest, armed conflict, or external intervention.

50 USAID (2005a).

51 Albertson & Moran (2017).

52 Ibid.

53 USAID (2014b).

Economic and social disenfranchisements are key drivers of conflict, which in turn shifts financial and societal priorities, exacerbating disenfranchisement.

Violent conflict is only one part of state fragility: not all fragile states do or will experience violent conflict, and violent conflict is not unique to only fragile states.⁵⁴ However, violence from conflict can drive other aspects of state fragility, as it undermines livelihood security, threatens personal safety, destroys assets, and diverts public resources—further contributing to stunted economic growth and worsened social conditions.⁵⁵

It takes an average of 14 years for a country that has gone through civil war to recover to pre-war economic growth.⁵⁶ Violent conflict may be indicative of larger institutional and societal issues, and fragile states that experience violent conflict because of, or in combination with, persistent ineffective and illegitimate governance structures are highly susceptible to state failure.

State failure comes in many forms, but is commonly a result of democratic collapse, high levels of state sponsored corruption, violent ethnic conflict or genocide, economic collapse and/or hyperinflation, rebellion, and succession or reform crisis.⁵⁷ Failed states may fall into a ‘fragility trap,’ where they are unable to recover fully due to low capacity and can risk additional or repeated failure.⁵⁸ These state failures have long-term consequences on the failed state itself and those surrounding it. Addressing underlying sources of fragility that contribute to deteriorating state-society relations is important to furthering sustainable development and avoiding situations of state failure, ensuring that failed states do not get trapped in a repeated cycle of failure and attempts to recover from failure.

2.3 CLIMATE VULNERABILITY

USAID DEFINITION: CLIMATE VULNERABILITY

“[Climate] vulnerability is the degree to which something or someone can be harmed by or cope with a [climate] stressor” (USAID, 2014b, p. 15).

The expressions of climate variability and change vary depending on numerous contextualized factors, not least physical and socio-political geography. Some regions are or will be affected by severe droughts and shorter growing seasons; others will face increased storms and floods. Low-lying coastal areas and islands will suffer from rising sea levels, in addition to different combinations of weather-related impacts. Some of these changes will manifest as sudden shocks,

54 Ibid.

55 Ibid.

56 World Bank (2011b).

57 USAID (2005a).

58 Rüttinger (2017).

such as tropical storms, flash flooding and heat waves, whereas others are slow-onset hazards, including increasing temperatures, extended periods of drought, desertification, salinization, ocean acidification, melting glaciers, and increasing sea levels and warming seas. For instance, from the current drought crisis in Cape Town, South Africa, to the projected loss of the Maldives and other small island states due to rising sea levels, shifting and intensifying climatic conditions are severely altering landscapes, livelihoods and cultures and presenting unique challenges in local, national, and regional development efforts. These challenges are particularly daunting for states whose adaptation and resilience measures are underdeveloped to protect against climate stressors.⁵⁹ Without measures in place, the direct impacts from climate stressors can result in compounding indirect impacts on populations across all sectors, exacerbating vulnerability to climate stressors, undermining the long-term success and effectiveness of development initiatives, and deterring advances in economic growth, natural ecosystem conservation, and social well-being (see Table 2).

TABLE 2: EXAMPLES OF DIRECT AND INDIRECT IMPACTS OF CLIMATE CHANGE STRESSORS

DIRECT IMPACT	INDIRECT IMPACTS
Reduction in agricultural yields due to shifting weather patterns, droughts, floods, and/or extreme temperatures	<ul style="list-style-type: none"> • Food insecurity • Under-nutrition • Reduced incomes for agricultural workers
Changes in vegetation coverage, species suitability, and soil viability due to drought	<ul style="list-style-type: none"> • Expanded agricultural activities, including agricultural land use encroaching into surrounding forests or natural areas, and increasing fertilizer use • Increased desertification • Increased species loss and migration, including from competing human-animal land use
Changes in inputs to water storage and water availability due to shifting rainfall patterns and droughts	<ul style="list-style-type: none"> • Reduced agricultural yields • Increased conflict risk from water stress • Increased work and time burden to collect water (especially for women)
Damage to housing, transportation, energy, water, health, communications, and waste management systems from extreme climate events	<ul style="list-style-type: none"> • Reduced access to adequate and safe basic resources • Increased costs for repair and operations and shorter lifespans of infrastructure • Compromised health infrastructure and sanitation leading to increased morbidity and mortality • Increased conflict risk
Risk of death, injury, or displacement during extreme climate events	<ul style="list-style-type: none"> • Diminished economic growth • Increased human population migration • Increased stress on housing, health and emergency facilities, water, energy, and other basic resources

Source: USAID (2014).

59 USAID (2014a).

This definition and framework for climate vulnerability, often referred to as a climate vulnerability assessment (CVA), is common and well utilized in research and studies on measuring vulnerability to climate stressors and change, including the Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index.⁶⁰ Using a CVA approach is useful to understand how vulnerability to factors varies over time, depending on social context, geography, and resource availability, among others, rather than purely exposure to a stressor without regard to coping capacity (see USAID guidance⁶¹ for more information on CVA approach). This is the approach used for the triple nexus to understand vulnerability and highlight the linkages among the other issue areas of gender inequality and state fragility (see Section II for more information on indicator selection).

The vulnerability of a system—such as a country, population, sector, or ecosystem—to climate stressors is typically addressed by analyzing a combination of three interacting factors—*exposure*, *sensitivity*, and *adaptive capacity*—following the basic formula that vulnerability is equal to exposure plus sensitivity, minus adaptive capacity.

USAID DEFINITIONS: EXPOSURE, SENSITIVITY, AND ADAPTIVE CAPACITY

- **Exposure:** the extent to which a system is directly exposed to a climate stressor; in other words, if that system is in the same place at the same time as a stressor;
- **Sensitivity:** the characteristics of a system that determine how it will be positively or negatively affected if exposed to a stressor; and
- **Adaptive capacity:** the ability of a system to deal with the resulting effects of a stressor, including actions to reduce impacts, moderate harm, or exploit beneficial opportunities (USAID, 2016b).

60 Chen et al. (2015).

61 USAID (2016b).

BOX 3: CLIMATE VULNERABILITY IN URBAN AND RURAL CONTEXTS AND RURAL-URBAN INTERACTIONS

Urban and rural areas face distinct challenges in adapting to climate stressors and shocks, but there are also important rural-urban interactions that warrant recognition in understanding climate vulnerability and identifying adaptation opportunities (Morton et al., 2014).

Urban: Cities are now home to over half of the world's population (UN, 2016), and as they continue to grow, there is increasing concern about the exposure of lives, livelihoods, and economic and social infrastructure to natural disasters. Climate-related disasters and stressors magnify the risks that cities are already struggling to cope with, especially as related to urban poverty, including lack of basic services in sprawling urban settlements, unstable and aging infrastructure, and unsafe housing in hazard prone areas (Shaw, 2014). Additionally, densely populated urban areas face unique climate risks, including higher temperatures (urban heat island) and increased rainwater surface runoff (Doherty et al., 2016). These concerns and risks make urban populations highly sensitive to climate stressors and complicate adaptation and resilience initiatives.

Rural: Rural communities, particularly in developing countries, are highly dependent on agriculture and natural resources, which are highly sensitive to climate variability, climate stressors, and extreme weather events (Dasgupta et al., 2014). Increasingly frequent, unpredictable, and extreme weather events and climatic shifts can aggravate land and agricultural degradation and decrease agricultural yields, contributing to rural poverty and reduced rural livelihood opportunities (FAO, 2017a). This uncertainty in agricultural production exacerbates rural poverty and vulnerability, especially in areas likely to be affected by climate stressors (Hansen et al., 2018).

Rural-urban interactions: Rural and urban areas are interconnected in many ways and events in one area can have unintended consequences in another. Additionally, in recent decades, the boundaries between rural and urban areas have become less defined with new types of land use and economic activities occurring in these interface areas, sometimes referred to as "peri-urban areas" (Simon, 2008; Wandl & Magoni, 2017) that have specific implications for climate vulnerability and adaptation. The Fifth Assessment Report from the Intergovernmental Panel on Climate Change (IPCC) refers to three critical implications for understanding climate vulnerability and adaptation opportunities of rural-urban interactions (Morton et al., 2014):

- *Climate extremes in rural areas resulting in urban impacts.* Climate events in rural areas that disrupt resource yields or supply chains not only threaten rural livelihoods, but also have resounding downstream impacts on urban populations dependent on rural areas for food, water, and energy. Rural-urban and urban-rural migration patterns are also shifted or exacerbated as a result of climate events (FAO, 2017a).
- *Events specific to peri-urban areas.* The integrated nature of the rural-urban interface means there is a need to manage both urban and rural land use demands that can cause a combination of rural and urban vulnerabilities, including, for instance, decreased agricultural production due to competing land use priorities (Morton et al., 2014).
- *Integrated infrastructure and service disruption.* During times of climate stress or weather extremes, rural areas interconnected with urban areas are at higher risk of vulnerability because demands from the more populated urban areas often take precedence in order to sustain resources to social, political, and economic services (Morton et al., 2014).

No system is invulnerable to climate stressors; failing to address current and potential climate vulnerability runs the risk of halting or reversing progress on social, economic, and sustainable development. To reduce and manage negative impacts of exposure to climate stressors, decision makers and practitioners need to prioritize climate-resilient development.⁶² Climate-resilient development ensures that people, communities, businesses, organizations, and ecosystems can cope with current and future climate variability, and have measures in place to adapt to future climate changes, protecting development progress and future well-being.⁶³ Flexible and robust climate-resilient development is important across sectors.

Climate vulnerability is context-specific, as climate stressors will have differentiated impacts across regions, sectors, and social groups,⁶⁴ but generally, sensitivity to climate extremes and variability is high in societies that directly depend on natural resources or ecosystems.⁶⁵ Marginalized or disenfranchised groups—such as women, poor communities, indigenous peoples, LGBT individuals and ethnic minorities—are especially vulnerable to climate extremes and variability due to legal and social discriminations that limit their access to economic, educational, and livelihood opportunities and resources.^{66, 67} Assessing climate vulnerability allows practitioners to identify sensitive regions, social groups, and sectors that face the most risk from climate variability and change, resulting in more targeted adaptation and resilience-building options for more effective and equitable development initiatives (see Box 2).

62 USAID (2014a)

63 Ibid.

64 Kalisch (2014).

65 Rüttinger (2017).

66 Denton (2002).

67 Kalisch. (2014).

3 INTERLINKAGES BETWEEN ISSUES

The following sub-sections outline the main linkages discussed in the literature between two of the three issues at a time. Considering these connections provides information necessary to recognize and identify triple-nexus entry points.

3.1 GENDER INEQUALITY AND CLIMATE VULNERABILITY

Changing climatic conditions and weather extremes are complex global challenges that affect the lives and livelihoods of everyone. However, effects vary across individuals and populations, with dramatically differentiated impacts based on a person's geographic, economic, and socio-cultural conditions, including their gender.⁶⁸ Social and legal inequalities and inequities between women and men result in a power imbalance, often tipping in favor of men and resulting in women's unequal access to and control over resources and services, such as land, credit, education, and decision-making opportunities. These inequalities, coupled with gendered roles and responsibilities in managing resources, lead to women and men experiencing natural resource degradation and climate stressors differently, and the effects generally result in greater overall climate vulnerability for women.⁶⁹ This can potentially transfer to or negatively impact children and families.

Climate vulnerability cannot be effectively addressed without understanding the specific effects of climate stressors and change on women and men, as well as the social, economic, ecological, and political contexts and barriers that contribute to those vulnerabilities (see Box 3). Additionally, women and men are more than their vulnerabilities and barriers; women and men have distinct and valuable knowledge on and skills to adapt and combat the negative impacts of climate stressors and change. Examples show that women who are on the frontlines of experiencing extreme weather events and climatic changes have developed unique capacities and effective coping mechanisms to adapt to hazards,⁷⁰ and these experiences play an integral part in reducing climate vulnerabilities. Moreover, developing gender-responsive actions to adapt to climate stressors and change provides an opportunity to challenge the unequal power dynamics between women and men, and reframe responses to center the lived realities of both women and men, for more effective, long-term, and equitable adaptation solutions.⁷¹

68 Aguilar et al. (2015).

69 Ibid.

70 Mitchell et al. (2007).

71 Skinner (2011).

BOX 4: THE IMPORTANCE OF INTERSECTIONALITY

Numerous identity factors intersect with gendered power dynamics and can produce differing experiences of climate vulnerability among diverse groups of people. It is not that these groups are *inherently* more vulnerable in disaster situations, but that the economic, cultural, and political systems often discriminate against them, placing them in vulnerable situations with additional barriers that impede efforts to build adaptive capacity (Sharma, 2016).

For example, in Haiti, a 7.0 magnitude earthquake in January 2010 led to over 222,500 deaths and left over 1.5 million people without shelter (UN Security Council, 2010). While the recovery and relief efforts received international response, limited attention and financial resources were allocated to address the issues and needs of Haiti's marginalized communities most affected by the earthquake, including those living in poverty, and women and men living with HIV/AIDS, and individuals part of the LGBT community (IGLHRC & SEROVIE, 2010). This affected the ability of civil society organizations and health facilities to serve communities, leaving thousands of women without access to reproductive health care, limiting resources available to address increased instances of GBV against women and LGBT people in overcrowded camps for internally displaced persons (IDPs), and delaying restoration of HIV/AIDS clinics to continue antiretroviral treatments (IGLHRC & SEROVIE, 2010). Gender analyses need to be contextualized in the complex social structures that influence and often compound gender-related vulnerability. For instance, the experiences of women in rural areas versus urban areas will be different based on factors that intersect with their gender and impact access to resources and infrastructure (Colfer et al., (2018). Actively considering, communicating, and addressing intersectional factors which affect the specific and varied barriers and needs of social groups when addressing climate vulnerability can help to avoid interventions that inadvertently contribute to further marginalization of certain communities or sub-groups within a community.

While men in most societies benefit from certain privileges associated with gender, they can also experience indignity because of social and economic oppressions and expectations,⁷² such as societal pressures to conform to roles and responsibilities associated with being masculine. In India, for example, the context of climate stressors and change, rising temperatures, and drought conditions have lowered crop yields and increased debts of farmers, with many, especially male farmers, abandoning their land, and resorting to self-harm practices, domestic violence against their partners, or suicide due to a sense of shame and failure.⁷³ It is important to acknowledge and communicate the specific issues, burdens, needs, and priorities of both women and men—with respect to their various identities, backgrounds, and capacities—when climate vulnerability is addressed.

The following sections expand on some of the main gender gaps and issues associated with climate stressors and change.⁷⁴ Gender considerations vary by sector, country context, and specific social dynamics, which need to be taken into consideration when assessing and addressing climate vulnerability.

3.1.1 DIFFERENTIATED LIVELIHOODS STRATEGIES AND ACCESS TO RESOURCES

It is widely recognized that those living in economic poverty and who are politically and socially marginalized carry a disproportionate burden of the negative effects associated with climate

72 Demetriades & Esplen (2008).

73 Schilling (2018).

74 For a more thorough look into the gender-environment nexus, particularly in relation to climate vulnerability, see Aguilar et al. (2018).

stressors and changes,⁷⁵ such as food and water insecurity, displacement, and livelihood loss. The disproportionality is not only about the burden of impact, but also related to the contribution to, or responsibility for, the drivers of climate stressors and change. Such is the case in both developed and developing nations, as these groups often live in areas that are highly exposed to climatic factors, such as floodplains and steep slopes, and may have limited access to resilience building infrastructure and resources. Women and girls living in poverty face specific and differentiated barriers compared to men and boys in accessing material and financial resources, stemming from deeply rooted social, cultural, and political inequalities between women and men.⁷⁶ These inequalities, in turn, exacerbate poverty-inducing conditions, intensify gendered experiences of poverty, and increase vulnerability to climate stressors and change, particularly for those living in post-conflict, conflict-affected, or developing economies.⁷⁷

In many countries, women are often dependent on climate-sensitive natural resources to supplement unpaid or underpaid work and to meet their livelihood needs, such as subsistence agriculture, water collection, and non-timber forest product collection.⁷⁸ This makes them especially vulnerable to income and livelihood loss when climate stressors or extreme weather events affect these natural resources. The economic, cultural, and legal barriers women face lead to gender inequalities in distribution of assets and opportunities to seek alternative livelihood sources or adapt to climate stressors and shocks.⁷⁹ Women also tend to have insecure access to and control over land. Tenuous rights to land increase women's susceptibility to land grabbing and loss—e.g. women farmers who do not have their names on land titles may have difficulty securing financial loans to improve agricultural practices and production or access sustainable agriculture inputs and technologies. Additionally, women tend to engage in a higher rate of unpaid care work compared to men, such as childcare and domestic responsibilities, which limits the amount of time they can allocate to paid activities (or education and leisure), reducing their capacity to accumulate savings to cope with climate or economic stressors and shocks.⁸⁰

A common part of women's unpaid labor in poor households is the collection of fuel and water for household use. When clean water is not readily accessible or affordable, the responsibility of collecting water disproportionately falls on women and children who often make several long trips per day.^{81, 82} For instance, in Malawi, the UN found that women spend an average of 54 minutes per day collecting water, compared to an average of six minutes for men.⁸³ Similarly, women are often responsible for collecting firewood, which many families in low-income economies rely on to meet household cooking and heating needs. In India, rural women spend an average of 374 hours, or a little over two weeks, per year collecting firewood for household use.⁸⁴ The time, labor, and energy spent completing these daily tasks affect the amount of time women can invest in income generating, leisure,

75 Demetriades & Esplen (2008).

76 Aguilar et al. (2015).

77 Alam et al. (2015).

78 Skinner (2011).

79 Ibid.

80 Demetriades & Esplen. (2008).

81 UN Women (2014a).

82 Sorenson et al. (2011).

83 UN News Centre (2016).

84 Bloomfield (2015).

and other productive activities, and limits their ability to pursue education, access health care, and participate in community decision-making. Climatic changes, such as droughts, extreme temperatures, and wildfires, can make certain water and firewood sources less reliable, increasing the time women and girls spend collecting these. Furthermore, it gives them limited time to take on other tasks and exposes them to potential risks of sexual violence or other harms when travelling further distances, especially when traveling alone. This is particularly an issue for displaced populations affected by conflict or natural disasters and living in areas of high resource stress. For instance, a United Nations High Commissioner for Refugees (UNHCR) survey in 2014 found that 5 percent of refugee households in Chad and 4 percent of refugee households in Uganda reported incidents of rape during firewood collection over a six-month period.⁸⁵ This means there was an average of seven incidents of rape per day, which is a conservative estimate given the social stigma against reporting sexual assault.⁸⁶

3.1.2 DIFFERENTIATED IMPACTS OF AND ABILITY TO RESPOND TO NATURAL DISASTERS

Populations living in poverty are often impacted the hardest by disasters—such as floods, droughts, tropical storms, and extreme temperatures.^{87, 88} This is not only because people living in poverty tend to live in areas more exposed to stressors with climate-sensitive infrastructure, but also because they have the fewest resources and receive less support from family, communities, financial systems, and social safety nets to prepare for, adapt to, cope with, and recover from disasters.^{89, 90, 91} In short, they are made more vulnerable because of their high exposure and sensitivity to hazards, paired with low adaptive capacity.

In relation to socio-economic status and unique challenges associated with traditional gender roles and responsibilities, women in particular face specific risks to their survival and well-being in coping with and recovering after disasters.⁹² For example, in slow-onset disasters, such as drought, if food supply is low women often reduce their nutritional intake to ensure enough food is available for their families, which has long-lasting impacts on their physical health.⁹³ In rapid onset disasters, such as floods and storms, women and girls who are primary caregivers for children, the elderly, and people with disabilities, face a complex and difficult choice in terms of making the lifesaving decision of evacuation.⁹⁴ Lack of access to early warning information systems makes disasters all the more dangerous for women, as these systems may target communication channels accessed by men, such as by radio or in town centers, and may not be communicated to women and families. Additionally, cultural constraints on women's mobility and the differences in socialization of girls and boys—such as boys being taught to swim and climb trees during leisure time—can drastically affect women and girls' ability to respond to and survive disasters.⁹⁵

85 Global Alliance for Clean Cookstoves (2016).

86 Ibid.

87 Vidili (2018).

88 Habtezion (2013).

89 Hallegatte et al. (2016).

90 Donner & Rodriguez (2011).

91 Hallegatte et al. (2016).

92 Demetriades & Esplen (2008).

93 Hallegatte et al. (2016).

94 Vidili (2018).

95 Oxfam (2005).

Neumayer and Plümper, in their 2007 study, analyzed the effect of disaster strength and its interaction with the socio-economic status of women on the change in the gender gap in life expectancy in a sample of 141 countries from 1981 to 2002.⁹⁶ The three main findings were: first, that natural disasters lower the life expectancy of women more than that of men; second, the stronger the disaster, the stronger its effect on the gender gap in life expectancy; and third, the higher women’s socio-economic status, the weaker its effect on the gender gap in life expectancy. They stated that: “Taken together our results show that it is the socially constructed gender-specific vulnerability of females built into everyday socio-economic patterns that lead to the relatively higher female disaster mortality rates compared to men.”⁹⁷

Research highlights another devastating gender-related issue in the aftermath of disasters, particularly those that lead to displacement and economic loss, and increased instances of domestic and sexual violence.⁹⁸ Social stress due to loss of resources, unemployment, and livelihoods in a post-disaster context can strain household power dynamics and increase instances of intimate partner violence (IPV).⁹⁹ Women and girls, members of the LGBT community, and people who do not conform with societal gender norms report increased instances of sexual violence and GBV in post-disaster contexts in emergency shelters that are overcrowded, unsafe, unfamiliar, and lack privacy.^{100, 101} Additionally, when aid workers who are not sensitized to gender issues, or where emergency shelters do not provide adequate resources, there is a risk of exacerbating gender inequalities, as evidenced by instances where LGBT people were turned away or arrested for trying to access emergency shelters in disaster situations.¹⁰²

Despite facing legal and societal barriers, women have a wide range of capacities, reflecting their existing skills and responsibilities, which contribute to building their adaptive capacity and that of the broader community. Disaster risk reduction initiatives that strengthen and champion these capacities and women’s roles as community leaders have proven to be successful in mitigating the harms associated with climate-related disasters. For instance, in Viet Nam, the Women’s Union partnered with UN Women to provide disaster risk reduction training to women, which included planning and facilitating evacuations, how to administer CPR, and swimming lessons to be prepared for flood waters, resulting in zero lives lost to flooding in the subsequent rainy season.¹⁰³ Additionally, through national lobbying efforts, the government of Viet Nam also released a decision to reserve space for Women’s Union representatives on the decision-making boards of committees for flood and storm control at all levels.

Post-disaster response is another area to integrate gender equality practices, as the jobs associated with emergency response are often male dominated and relief efforts can overlook the needs and capabilities of women and gender minorities. For example, in 2016 after an earthquake in Ecuador, volunteers from UN organized projects to increase women’s participation in governance

96 Neumayer & Plümper (2007).

97 Ibid., p. 551.

98 Demetriades & Esplen (2008).

99 IFRC (2015).

100 Demetriades & Esplen (2008).

101 IGLHRC & SEROVie (2010).

102 Gaillard et al. (2017).

103 UN Women (2014b).

of emergency relief camps and engage them in traditionally male-dominated activities, including the removal of debris.¹⁰⁴ These efforts empowered women to take on leadership roles and generate income to ease themselves and their communities back into normalcy, with the added benefit of changing community perceptions on the capabilities of women in post-disaster settings.

3.1.3 DIFFERENTIATED LEVELS OF PARTICIPATION IN DECISION-MAKING

Women and girls are often among the first to feel the impacts of frequent and intense climate stressors, but are vastly underrepresented in climate-related decision-making at all levels.¹⁰⁵ In 2017, the worldwide average of women in national parliaments was 23.4 percent, up from 11.3 percent in 1995.¹⁰⁶ Although this is a shift in the right direction, most parliaments remain male-dominated and not necessarily representative of the whole society. The same is true for environmental decision-making: in 2015, IUCN, applying its Environment and Gender Information (EGI) methodology, found that of the 881 environment-sector ministries from the 193 UN Member States, only 12 percent of Ministers were women.¹⁰⁷ With diverse experiences and expertise, not least as farmers, fishers, household providers, entrepreneurs, educators and more, women's positions, needs, and priorities are vital in forming and implementing policies and programs to achieve sustainable livelihoods and sustainable development. As in the case for sex-disaggregated data across environmental sectors, widespread data measuring women's participation, representation, and roles in environmental- and climate-related decision-making is scarce. Improving sex-disaggregated data collection contributes to a deeper understanding of the ways in which women and men contribute to sustainable development outcomes and validates the importance of balanced and inclusive decision-making and governance at all levels.

The barriers women face accessing decision-making positions and voicing their needs, concerns, and priorities are numerous and combine discriminatory beliefs and policies at the national, institutional, community, and household levels. Women are disproportionately burdened, and disenfranchised by discriminatory norms, laws, and expectations that limit their participation in decision-making and access to resources and institutions. This can result in initiatives, policies, and programs that overlook or ignore their needs and priorities or exacerbate inequalities in areas critical to livelihoods—such as education, health, housing, security, and to environmental sustainability. Additionally, women, people with disabilities, members of indigenous and LGBT communities, and religious or ethnic minorities are disproportionately impacted by instances of political violence and intimidation, both as candidates and as voters, in public spaces and in their households.¹⁰⁸ This potentially discourages women from engaging in politics, endangers their lives, and diminishes their voice in political processes.

Increasing women's presence and influence in international and national decision-making helps to change laws, attitudes, behaviors, practices, and beliefs to be more gender-responsive and meet the needs of all—including toward supporting environmental sustainability outcomes. For instance, one study found that when women's representation in national parliaments is at levels of 25 percent or

104 UN Volunteers (2017).

105 Demetriades & Esplen (2008).

106 IPU (2018).

107 IUCN (2015).

108 Kozma (2016).

above, parliaments are more likely to change discriminatory property laws that disproportionately affect women's ability to use and own land.¹⁰⁹ Another study suggests that women leaders and voters express more concern for the environment, and that women decision makers are more likely to ratify international environmental treaties.¹¹⁰ However, while promoting gender parity in decision-making, including through legal quotas, does not necessarily result in, nor guarantee better decisions, it is an important initial step toward increasing the visibility of women in decision-making and challenging gender-related stereotypes. Women's presence must be accompanied by institutional changes to overcome deeply ingrained socio-cultural disparities for effective and equal participation in a policy arena where women are empowered to express interests and exert influence.¹¹¹

International and national level policies are important for integrating gender into climate- and environment-related strategies and frameworks, but translating these to local action is also imperative. In decision-making bodies at all levels, including in community governance of natural resources, it is crucial to include the voices of marginalized individuals and groups to ensure that policies and strategies focus on the practical realities of the women and men most affected by climate stressors and change.¹¹² Control and management of natural resources shape societal roles, hierarchies, and powers, meaning that women, landless individuals, and other marginalized communities are often left out of decision-making. Exclusionary governance and management of natural resources can lead to exploitation, limited community buy-in for initiatives, and misdistribution of benefits, favoring those with influence in decision-making.¹¹³ Evidence shows that conservation and sustainable outcomes are more effective and benefit all when women and other marginalized groups are included in making decisions about developing, implementing, and managing strategies and activities related to natural resources. For instance, one study on community forest management and conservation in Nepal and India found that management groups with higher proportions of women and all-women groups showed greater improvements in forest regeneration and canopy growth.¹¹⁴

3.2 CLIMATE VULNERABILITY AND STATE FRAGILITY

Shifting and intensifying climatic conditions can amplify existing pressures on natural resources and interact with other social, economic and environmental factors, leading to an increased risk of violent conflict in unstable states.¹¹⁵ In facing challenges—such as poverty, poor governance and a legacy of conflict and fragility, and climate stressors—additional pressure will be put on social and political systems,¹¹⁶ and states may be forced to redirect scarce resources to response efforts.¹¹⁷ Consequently, climate change has been referred to as a threat multiplier,^{118, 119} compounding risks associated with fragility and climate and aggravating political, social and economic tensions, and contributing to social upheaval and conflict.¹²⁰

109 Hallward-Driemeier et al. (2013).

110 UNDP (2011).

111 World Bank (2017).

112 Fisher & Shakya (2018).

113 Balint & Mashinya (2006).

114 Agarwal (2009).

115 Smith & Vivekananda (2007).

116 Ibid.

117 Moran et al. (2018).

118 Kenney (2017).

119 Rüttinger et al. (2015).

120 Moran et al. (2018).

The relationship between climate vulnerability and state fragility is complex and multidirectional. On one hand, climate vulnerability and exposure to extreme and changing weather patterns are known to adversely affect aspects of state fragility in various ways and across different sectors, including water, agriculture, energy and health, which in turn can intensify state fragility (Box 4). Often, extreme weather and climate events are linked to state fragility by increasing the risk of conflict. Water and food scarcity can compromise basic livelihoods and amplify social tensions, which in turn can result in increased instability and conflict. In addition, in situations of conflict, there is evidence that food and water scarcities have been used as opportunities by armed parties and violent groups to pressure people into recruitment, or as a way to exert power over civilian populations.¹²¹

BOX 5: SECTORS PRONE TO CLIMATE VULNERABILITY AND FRAGILITY

WATER

Water security is considered the “most pressing area of concern” at the intersection of climate vulnerability and fragility (Kenney, 2017); USAID referred to drought as “the most significant weather-related hazard contributing to conflict” (Stark et al., 2009). Consequently, water shortages and droughts have been linked to migration and conflict, such as in Syria (Kenney, 2017). It has been estimated that nearly a quarter of the world’s population live in countries affected by physical water scarcity, amounting to about 1.6 billion people (World Bank, 2016).

Gender considerations: Globally, women spend an estimated 150-200 million hours a day collecting water, and yet they are often left out of decisions regarding water resources and management. As water becomes scarcer, women will have to travel farther distances to collect water, which increases the labor and time strain on their days, as well as leaves them susceptible to assault and violence. Additionally, women who have access to land and are responsible for growing food may be unable to secure enough water for crop cultivation—severely limiting food security and income generation for entire communities (Anderson et al., 2015).

AGRICULTURE AND FOOD SECURITY

Changes in temperature and rainfall, such as prolonged droughts or floods, affect crop and livestock production, particularly for smallholder farmers in developing countries with limited ability to adapt to these changes. The globally available arable land is likely to decrease over the next decades, due to desertification such as in parts of the Sahel in Africa. Additionally, low-lying coastal areas, for instance in small-island states and parts of South Asia (as well as some cities such as Miami (Duvall & Gilligan, 2013; Goodell, 2013; 2018) and Venice) will be affected by saltwater intrusion or lost to sea-level rise. Falling crop yields will compromise food security and increase global hunger. Famines and food crises have been linked to displacement and local conflict over land for grazing and farming—a most notable example is Darfur (Smith & Vivekananda, 2007).

Gender considerations: Poverty and gender inequality underlie climate change-related food and nutrition insecurity. Many of the world’s poorest people are women in developing countries who rely on subsistence farming to feed their families. Women are involved throughout the entire food production value chain, from managing seed banks to preparing food for their families.

¹²¹ Kenney (2017).

BOX 5: SECTORS PRONE TO CLIMATE VULNERABILITY AND FRAGILITY (CONT.)

ENERGY

The effects of climate variability and change are likely to increase energy requirements in developing countries, as power is needed, for example, to pump water for irrigation during droughts and as heat waves and rising temperatures will call for refrigeration and cooling systems. Energy policies which promote reduced energy consumption without providing a smooth transition to renewable energy resources can reduce economic growth and threaten food security, risking political instability and conflict (Smith & Vivekananda, 2007).

Gender considerations: Women and girls are particularly reliant upon affordable, efficient, and clean household energy as women are often responsible for household consumption decisions, collecting resources, and cooking and cleaning. Inefficient cooking fuels and cookstoves contribute to indoor air pollution which impacts women and girls disproportionately. Many women entrepreneurs and businesswomen also work in the energy sector, providing clean technology to their communities and raising income for themselves and their families.

HEALTH

Falling crop yields and reduced food security can lead to health challenges caused by malnutrition. Changes in temperature and rainfall can compromise safe drinking water and sanitation, as well as increase the incidence of water-borne diseases, such as malaria, cholera and dengue, and flooding, which can result in higher incidences of diarrheal diseases (Stark et al., 2009). Moreover, extreme climatic events, such as storms and heat waves, will cause increased casualties (ATLAS, 2019). All of these negative impacts on health will put pressure on public health care services and medical resources, and could contribute to economic and social vulnerabilities within already fragile communities, often particularly affecting the most vulnerable groups (Smith & Vivekananda, 2007). In addition, the inability of a government to deliver urgently needed health care to its population can harm state legitimacy and consequently, increase fragility (Stark et al., 2009).

Gender considerations: The health and well-being of women, men, and children are intricately linked with climate change, as increasing climate-related disasters, spread of disease, reduced air quality, availability of clean water and sanitation services, and access to sufficient and nutritious foods and adequate shelter are major climate threats. Women (especially pregnant women), children, and the elderly are more vulnerable to negative climate change related health impacts. On the other hand, women have great potential as agents of change for the health sector.

3.2.1 CLIMATE CHANGE AS A DRIVER OF CONFLICT

USAID describes two ways in which climate change can lead to conflict: i) it can intensify environmental or resource problems that communities are facing already or ii) it can create new environmental problems that lead to instability. It must be noted that the first scenario is more likely, as climate change often acts as an aggravating factor placing additional stress on already scarce natural resources.¹²² Although environmental crises and climate stressors can play a significant role in contributing to fragility and conflict, no conflict ever has a single cause.¹²³ Shifts in climatic conditions and extreme weather events certainly play a role in resource conflicts and violence, yet there has been contention over claims that climate change leads to violence and conflict. Oftentimes, the impacts of climate change interact with a complex set of interacting factors that include poverty,

¹²² Stark et al. (2009).

¹²³ Fröhlich & Gioli (2015).

inequality, weak governance, political instability, and environmental degradation that together drive instability and conflict.¹²⁴ Highlighting the role of climate change can be a political move to attract attention and resources to curb carbon emissions and increase adaptation assistance,¹²⁵ yet claiming that climate change causes conflict might be an oversimplification of reality that ignores other drivers of conflict. Besides, it has been argued that framing climate change as a security threat comes with a risk of militarizing climate policy and development assistance.¹²⁶

Due to the complexities and multi-causalities of interacting factors, it is impossible to completely isolate the role of climate variability and change as a cause of conflict,¹²⁷ especially since the impacts of such changes depend not only on the occurrence of, and exposure to, climate hazards, but also on the sensitivity and adaptive capacity of communities and groups to respond. The evidence looking into the connections between climate variability and armed-conflict have found mixed results, some studies finding a weak or no relationship between the two,¹²⁸ even though a review of available literature on the topic concludes that in certain circumstances, climate variability does increase the risk of armed conflict, particularly when other risk factors are high.¹²⁹

3.2.2 CONFLICT CAN INCREASE CLIMATE VULNERABILITY

The relationship between climate vulnerability and state fragility is further complicated by the fact that, in addition to the effects of climatic changes on the risk of conflict and the capacity of a state to respond to stressors, there is also a reverse relationship, as conflict strongly influences vulnerability to the impacts of climate change.^{130, 131} Violent conflict and war can cause the following: destroy infrastructure; prompt migration, brain drain and capital flight; compromise livelihoods; deplete or destroy natural resources; and limit access to education and health care—all of which make communities more vulnerable to the effects of climate hazards.¹³² In particular, civil war has the ability to seriously damage the meteorological networks in fragile states, and the resulting lack of accurate weather data further constrains climate adaptation. For example, Liberia's network of meteorological monitoring and forecasting centers was completely destroyed during the years of civil war. As a result, adaptation of farming and forestry to climate change are constrained by lack of local weather information. The government's cross-sectoral Climate Change and Gender Action Plan (ccGAP), facilitated by IUCN, specifically includes actions to support capacity building for women so that they can run support local meteorological efforts, such as reporting on coastal weather conditions to local authorities.¹³³ Similarly, in Mozambique, the hydrometeorological network was seriously damaged during the civil war, thus its ccGAP included objectives and actions to establish an innovative meteorological data collection system led by women.¹³⁴ Oftentimes, fragile states lack the ability to adequately adapt to climate change. As the factors that weaken the adaptive capacity to

124 Hartmann (2010).

125 Ibid.

126 Ibid.

127 Ibid.

128 Theisen et al. (2013).

129 Adger et al.(2014).

130 Buhaug (2016).

131 Stapleton et al. (2017).

132 Ibid.

133 IUCN (2012).

134 IUCN (2014).

climate change, such as poverty, weak governance and political marginalization, are the same factors that contribute to conflict,¹³⁵ a lack of adaptive capacity can potentially exacerbate the risk of violent conflict, which in turn can further reduce a state's ability to effectively address climate vulnerability, creating a vicious cycle.¹³⁶

Research has confirmed a strong overlap between states that are projected to experience high vulnerability to climatic changes and areas of existing fragility. A global analysis of weak and fragile states potentially at risk of further destabilization from climatic stressors identified 34 countries at risk, most of which are found in Central Africa. The criteria used were based on being classed as 'critical' in at least two out of four leading crisis and governance indices.¹³⁷ Similar research identified 46 countries facing a high risk of armed conflict induced or exacerbated by climate change, based on three criteria: their listing in several international watch lists tracking fragility, conflict and low-income status; the presence of an operational UN peacekeeping force; and the prospect of, or engagement in, economic or political transition.¹³⁸ This list again included a cluster of countries in Central Africa, as well as West Africa, South and Southeast Asia, and Latin America. As a result, according to USAID, "climate change has the potential to be one of the greatest national security challenges that this or any other generation of policy makers is likely to confront."¹³⁹

3.2.3 CLIMATE-DRIVEN MIGRATION CAN INCREASE CONFLICT AND FRAGILITY

Changes in climatic conditions and extreme weather events can lead to large-scale human migration.^{140, 141} Thus, areas that are vulnerable to climatic change are also particularly vulnerable to migration. Migration can take place within or across borders; it can be sudden-onset or slow; temporary, seasonal or permanent; or considered voluntary, facilitated or forced. Changing temperatures, droughts, floods and sea-level rise often cause people to move away from affected areas directly as a result of un-inhabitability or natural disasters. It can also result in migration indirectly by triggering water and food scarcity, reduced land productivity, and urbanization when people seek better lives and livelihood opportunities. In 2016, there were 23.5 million displacements from climate and weather-related events, most of which were caused by storms.¹⁴² East Asia and the Pacific were most affected, with 16.4 million incidents associated with disasters, making up more than two thirds of all new displacements.¹⁴³ The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) predicts that, in addition to driving species extinctions, land degradation and climate change will force 50–700 million people to migrate by 2050, contributing to increased risk of conflict.¹⁴⁴ Although forced migration is a significant humanitarian challenge, migrants should not be reduced to passive victims.¹⁴⁵ However, not all migration is forced;

135 Brown et al. (2007).

136 Smith & Vivekananda (2007).

137 Schubert et al. (2008).

138 Smith & Vivekananda (2007).

139 USAID (2009, p. 17).

140 IOM (2014).

141 Rigaud et al. (2018).

142 IDMC (2017).

143 Ibid.

144 IPBES (2018).

145 Kolmannskog (2008).

it is a known coping strategy that humans have been using for centuries to deal with environmental change, making it an important way to adapt to climate variability and change.^{146,147}

Displacements from sudden-onset natural disasters outnumber new displacements caused by conflict and violence by more than three to one.¹⁴⁸ Moreover, migration driven by weather and climate events can contribute to the risk of violence and conflict, complicating the attribution of migration to one single cause. For that reason, the term “climate refugees” can be problematic, as it implies “a mono-causality that one rarely finds in human reality. No one factor, event or process, inevitably results in forced migration or conflict”.¹⁴⁹ In addition, the term “refugee” refers to an internationally negotiated status that involves certain types of displacement, crossing international borders and access to certain rights. As with conflict, migration often has myriad factors at its root, some related to personal characteristics of the affected individual, such as their age, gender and socio-economic status, and others are related to external conditions, such as the social, political and natural environments. Climate and weather-related events are not the only reason people move. It can also be the complex interplay between social, political, economic, cultural and environmental factors that determine people’s decision or ability to stay where they are or move away.¹⁵⁰ One exception may be human populations displaced from Small Island Developing States (SIDS) overwhelmed by sea-level rise.

While severe environmental problems, such as climate-related events alone, rarely cause migration and conflict, they can add to other push factors and contribute to migration, which in turn can affect conflict in areas receiving migrants.^{151, 152} This is particularly the case when migration is driven by extreme weather and other environmental problems and when the societies involved rely on the environment for their livelihoods, which is often the case in least developed countries.¹⁵³ Potential sources of conflict in areas receiving migrants (including migration pathways and areas of settlement) include competition over jobs, public services and natural resources, particularly when resources are already scarce and property rights are not clearly defined. In addition, migration can aggravate tension between migrants and residents when they belong to different identity-based groups (e.g. religion or ethnicity).¹⁵⁴ However, it is important to note that not all climate-related migration leads to violent conflict or crisis, and that problems can often be avoided if the process is managed well. Migration can even benefit host areas, for example by increasing diversity of cultures, knowledge systems and skills, which can contribute to climate change adaptation, capacity-building and innovation, as well as economic factors, like human resources and an increased tax-base.¹⁵⁵

Migration is often seen as an international issue and has the potential to put strain on relationships between neighboring states, as the perceived negative implications for countries receiving migrants have received high-profile attention over recent years. The dominant narratives around migration are largely fear-based and not research-based. For example, it has become increasingly clear that

146 Stapleton et al. (2017).

147 Adger et al. (2014).

148 IDMC (2017).

149 Kolmannskog (2008, p. 4).

150 Stapleton et al. (2017).

151 Reuveny (2007).

152 Stapleton et al. (2017).

153 Reuveny (2007).

154 Ibid.

155 Ibid.

internal migration surpasses cross-border migration. A recent study focused on Sub-Saharan Africa, South Asia and Latin America projects that slow-onset climatic events could force 143 million people to move within their own countries if concrete climate and development action is not taken in time.¹⁵⁶ Such internal migration will have major implications for climate-sensitive sectors and vulnerable groups who have the fewest opportunities to adapt to change locally or to move away from risk, and consequently, exacerbate political, social and economic tensions. Migration needs to be managed carefully, and policies and investments supporting internal migration should provide safeguards to those who are moving, to those being left behind, as well as those receiving migrants.¹⁵⁷

3.2.4 THE NEED FOR INTEGRATED POLICY RESPONSES

Due to the interlinkages between climate vulnerability and state fragility, and the geographical overlap between the two, literature on triple nexus issues suggests that interventions and policy responses would benefit from integrated approaches. IUCN's Commission for Environmental, Economic and Social Policy (CEESP) highlighted the links between environment, conflict and security and called for conflict-sensitive adaptation in a series of briefs published in 2014.¹⁵⁸ The expected cost of migration induced by climatic change and any resulting increases in conflict in receiving areas will rise, requiring action to reduce climate vulnerability through both adaptation and mitigation efforts.¹⁵⁹ Minimizing the risk of climate vulnerability reduces risks of state fragility, and the reverse is true, as well: "peace building is quite possibly the most effective climate resilience policy in unstable corners of the world."¹⁶⁰ In *A new climate for peace: Taking action on climate and fragility risks*,¹⁶¹ three key policy sectors for integrated action to reduce climate vulnerability and state fragility are identified:

- **Climate change adaptation** programs help countries anticipate the adverse effects of climate change and take action to prevent, minimize, and respond to its potential impacts;
- **Development and humanitarian aid** programs help states and populations build their economic, governance, and social capacities and improve their resilience to shocks;
- **Peacebuilding and conflict prevention** programs address the causes and effects of fragility and conflict by reducing tensions and creating an environment for sustainable peace.¹⁶²

Due to the compound nature of climate and fragility interactions, single-sector interventions are not sufficient in efficiently and effectively strengthening resilience and minimizing risk. A seminal research report examining the social and human consequences of the physical impacts of climate change, particularly the risks of conflict and instability, makes recommendations for addressing climate change in fragile states,¹⁶³ including: elevating the issue of conflict and climate change on the international policy agenda; researching the indirect local consequences of climate change; improving knowledge and generating policy through dialogue; developing good governance for climate change; preparing to manage migration; promoting regional cooperation on adaptation; and more.

156 Rigaud et al. (2018).

157 Ibid.

158 Bronkhorst (2014).

159 Reuveny (2007).

160 Buhaug (2016, p. 336).

161 Rüttinger et al. (2015).

162 Ibid.

163 Smith & Vivekananda (2007).

BOX 6: USAID REPORT: COMPOUND FRAGILITY-CLIMATE CHANGE RISKS

The USAID Office of Conflict Management and Mitigation recently commissioned a study and a series of knowledge products by the Robert Strauss Center for International Security and Law at the University of Texas at Austin on the intersection of global fragility and climate risks. The initial study, published in 2018, aimed to identify highly fragile states exposed to multiple climate hazards as “places with compound fragility-climate risks may be more vulnerable to humanitarian emergencies or instability [and] understanding the distinct fragility and climate challenges they face could present opportunities and focal points for intervention” (Moran et al., 2018, p. 1). The subsequent knowledge products include three country studies on Bangladesh, Colombia, and Nigeria that explore the country specific situations that shape compound fragility-climate risks.

For the full suite of reports, data, maps and publications, please see: <https://www.strausscenter.org/strauss-articles/state-fragility.html>

3.3 STATE FRAGILITY AND GENDER INEQUALITY

State fragility affects men and women in different ways, and gender inequality itself has been claimed to be a central feature of state fragility.¹⁶⁴ Exploring these connections provides insights into the interdisciplinary nature of these topics and the importance of addressing them in an integrated manner. A systematic study using data from 55 developing countries found a positive and significant association between socio-economic horizontal inequalities, which are systematic inequalities between groups with different ethnic, religious or geographical characteristics, and civil conflict, highlighting the relationship between exclusion and fragility.¹⁶⁵ In many fragile states, women and children are disproportionately affected, as fragility and conflict reduce livelihood opportunities and access to basic goods and services for vulnerable groups, thus reinforcing existing inequalities between men and women.

Gendered aspects of health and education, employment and income, and violence are some of the key issues to consider in conflict-affected areas and in areas experiencing post-conflict and peacebuilding.¹⁶⁶ In countries affected by conflict, girls compared with boys are more frequently taken out of school to help their mothers with household responsibilities or income-generating tasks. Health care facilities are under pressure during conflict; treating injured men might take priority over the needs of women, despite the fact that women are prone to suffer from increased health issues as well, such as those related to sexual violence, malnutrition and pregnancy, childbirth and post-natal care.¹⁶⁷ When conflict takes away the main breadwinner of the household—as men leave to fight in a war, die in combat or flee to avoid it—women face increased work burdens and are susceptible to higher levels of poverty. As the world experiences an intensification of violence and conflicts are becoming more deadly, women and girls in conflict-affected areas—from Syria, Iraq, Yemen and Libya, to the Central African Republic, the Democratic Republic of the Congo, Nigeria, South Sudan, Sudan and many others—are increasingly vulnerable.¹⁶⁸ Evidence has shown that when countries are not

¹⁶⁴ Baranyi & Powel (2005).

¹⁶⁵ Østby (2008).

¹⁶⁶ Koch (2008).

¹⁶⁷ Ibid.

¹⁶⁸ UNOCHA (2015).

involved in active conflict, “violence against women can be a primary indicator of a nation’s stability, security, and propensity toward internal or external conflict,”¹⁶⁹ and as such, increased discrimination and violence against women can be used as indicators of impending conflict, and thus state fragility.

In contrast to the general tendency of state fragility to increase gender inequality, there has been some suggestion of fragility and conflict actually contributing to reduced inequalities between men and women in certain situations. For example, in times of conflict, there have been reports of increased participation of women in the workforce when women take over jobs traditionally held by men,¹⁷⁰ resulting in improved income and a sense of empowerment for women. In some cases, gender disparities have been reported to decrease when men and boys become involved in conflict and they drop out of school and leave their jobs.¹⁷¹ However, men and boys leaving schools or jobs in conflict situations is not a positive step in reducing gender inequality, as it does not actually signify an improvement in the lives of women and girls along with those of men and boys. Moreover, this situation is often only temporary and when peace is restored, boys and men tend to return to school and their jobs. Furthermore, the shift in women’s roles and increased responsibilities as breadwinners can lead to increased domestic violence, for example in West Africa where husbands perceived it as threatening, thus worsening gender inequality.¹⁷²

Importantly, women play multiple roles in times of war and should not merely be labelled as victims and put in the category of vulnerable people.¹⁷³ Both men and women can be combatants, join army groups, and support war, and at the same time, be community leaders, caretakers, and active agents in peacebuilding processes. International organizations, governments, and donors typically classify women as a homogenous group of civilian victims, and it has been argued that this “reinforces the gap between powerless women and powerful men,” leading to the exclusion of women in key decision-making related to conflict and peacebuilding.¹⁷⁴

3.3.1 INCREASED RISKS OF GENDER-BASED VIOLENCE IN CONFLICT-AFFECTED AREAS

USAID DEFINITION: GENDER-BASED VIOLENCE (GBV)

GBV is “violence that is directed at an individual based on his or her biological sex, gender identity, or perceived adherence to socially defined norms of masculinity and femininity. It includes physical, sexual, and psychological abuse; threats; coercion; arbitrary deprivation of liberty; and economic deprivation, whether occurring in public or private life.” USAID (2016a, p. 53).

169 USAID (2011, p. 6).

170 Cooper (2015).

171 Koch (2008).

172 IRC (2012).

173 Puechguirbal (2012, p. 8).

174 Ibid.

Although not all fragile states experience violent conflict, most do,¹⁷⁵ and evidence has shown that violence impacts women and girls differently than men and boys.^{176, 177} Men are typically involved in conflict as soldiers, and as such, more prone to suffer the effects of direct violence, injuries, and mortality.¹⁷⁸ They can be subject to random arrests and forced recruitment into armies, and children who are drafted into the war and taken out of school experience reduced access to education, and consequently, potentially lower employment opportunities later in life, if they survive conflict.

Women and girls, on the other hand, are often confronted with different impacts of violent conflict. Among other reasons, women and girls often lack access to physical protection and arms to defend themselves, have limited option to flee, and are vulnerable to GBV. In conflict situations, due to breakdown of the law, trafficking of women increases, and more women engage in sex work, either forced or as a means of survival.¹⁷⁹ Sexual violence and systematic rape of women and girls are common weapons of war perpetrated by war criminals to dominate, control, punish, intimidate, and humiliate their opposition. In addition, when law enforcement is weakened and normal social safeguards are no longer in place, and women and girls are without protection from their husbands and fathers when they are off fighting in war, fragility and conflict can also increase the incidence of opportunistic violence. A study on GBV in conflict and displacement in Colombia found that opportunistic acts of violence, such as abduction, rape and trafficking by unknown individuals, were more commonly reported in displacement settings compared to perpetrated threats of violence by armed actors.¹⁸⁰ The same study also found that IPV, including sexual violence, was exacerbated by conflict and displacement.

A recent report found that political violence targeting women is increasing across the world.¹⁸¹ Data show that women face different forms of political violence, with the most prevalent being physical attacks (47 percent of all events targeting women), followed by sexual violence (34 percent), mob violence (9 percent) and abductions/forced disappearance (8 percent). Types of political violence vary significantly by region, with sexual violence being the most predominant way in which women are targeted in Africa (accounting for 42 percent of all violence targeting women), while physical attacks are most common in the Middle East (82 percent), Southeast Asia (58 percent) and South Asia (54 percent). Mob violence is most prevalent in South Asia, where it makes up a third of all violence targeting women. Similarly, the perpetrators of violence also vary across regions: in the Middle East, state forces are the main perpetrators (responsible for 43 percent of all violence targeting women in the region); militias account for most violence in Africa (33 percent); and mobs perpetrate most violence against women in South Asia (44 percent).¹⁸² These findings show that although violence against women is on the rise across the world, there are important regional differences in the type of violence and perpetrator, highlighting the fact that it is highly context-specific and occurs during, as well as beyond, times of conflict and election.

175 USAID (2014c).

176 Ibid.

177 Koch (2008).

178 Kangas et al. (2014).

179 Koch (2008).

180 Wirtz et al. (2014).

181 Kishi et al. (2019).

182 Ibid.

Although women and girls are disproportionately targeted, men and boys can also be exposed to sexual violence during conflict, less is known about this due to the stigma involved in reporting such crimes.¹⁸³ Reports from the Democratic Republic of the Congo show that the extent of conflict-related sexual violence ranges between 18 to 40 percent for women and girls, and between 4-24 percent among men and boys.¹⁸⁴ Moreover, while acts of GBV in times of peace are often crimes against an individual, during conflict and war, factors such as ethnicity, religion, and socio-economic status intersect with gender and help explain why certain groups of women are specifically targeted as victims of sexual violence. Therefore, intersectionality becomes an important tool in understanding and addressing sexual violence in fragile or conflict-affected states.¹⁸⁵

Militaries, government actors, and community members are not the only perpetrators of sexual violence against women in situations of fragility and conflict; in some cases, violence is also committed by the peacekeeping forces that are sent to protect and restore peace.¹⁸⁶ Even in supposedly safe locations, such as refugee camps, women and children are increasingly vulnerable to violence and experience rape, kidnapping and trafficking.¹⁸⁷ For example, reports surfaced in 2002 of widespread sexual exploitation of refugee children, mainly girls under 18, by workers locally employed by national and international NGOs and UN agencies in Guinea, Liberia, and Sierra Leone.¹⁸⁸

Some forms of GBV continue in post-conflict situations, where, research suggests, trauma of the war drives men to “reclaim their masculinity,” and rape, sex trafficking, and domestic-violence are known to increase.^{189, 190} However, the relationship between gender roles, GBV and war is multi-faceted and not uniformly positive or negative. A study on IPV in post-conflict Sierra Leone and Liberia found that in some cases, women’s economic independence decreased IPV and gave them the option to leave violent relationships, whereas other women reported an increased use of violence as it had become a normal way for men to respond to frustrations and challenges.¹⁹¹

Although there has been increasing international attention for the relationship between conflict and violence against women, GBV continues to be a significant problem. GBV in conflict and post-conflict states has serious and long-lasting consequences, including sexually transmitted diseases, such as HIV/AIDS, medical complications of rape, injury to reproductive organs, infertility, psychological consequences including post-traumatic stress disorder (PTSD), reintegration difficulties, and social stigmatization, and in some cases, death. Many of these impacts affect not only the victims but also their families and communities.¹⁹² However, to avoid reinforcing an image of women as “sexualized victims”, it needs to be emphasized that women’s experiences in conflict should not be reduced to just victims of GBV, and must be put in the context of structural issues of inequality.¹⁹³

183 Koch (2008).

184 UNICEF (2014, p. 68).

185 Beringola (2017).

186 Manjoo & McRaith (2011).

187 Ibid.

188 UNHCR (2002).

189 Puechguirbal (2012).

190 Koch (2008).

191 Horn et al. (2014).

192 Manjoo & McRaith (2011).

193 Cooper (2015).

3.3.2 THE NEED TO CONSIDER GENDER IN PEACEBUILDING

Women are and should be important parts of fragile-state solutions. While gender inequalities can worsen or be reinforced in fragile states, in some cases peace- or state-building presents an opportunity to renegotiate gender roles in existing institutions to forge new paths for inclusive development. Democratization and electoral reform processes provide opportunities for women to enhance their political participation in post-conflict countries.¹⁹⁴ For example, advancing gender equality was placed at the center of reconstruction efforts in Rwanda at the end of the genocide, and women now make up 61 percent of Rwanda's lower house (the highest in the world) and 39 percent of the upper house/Senate.¹⁹⁵ However, structural barriers, gender norms and opposition from predominately male or conservative elites have limited women's ability to influence state building processes in many cases.

Evidence has shown that when women are given a voice and are included as meaningful participants in peace negotiations and reconstruction efforts, they can act as champions of democratic participation and accountability¹⁹⁶ and better outcomes are achieved.¹⁹⁷ Examples of women's successful participation in peace negotiations include the peace processes in the Burundi, Guatemala, Liberia, Northern Ireland, Republic of El Salvador, Somalia, and South Africa.¹⁹⁸ For example, in the 1990s in Guatemala, women played a crucial role in the peace negotiations to end the civil war. Although only two women directly participated in the formal peace negotiations, women's organizations were included as an official part of the process through the coalition of the Women's Sector in the Assembly of Civil Society, which enabled the incorporation of specific commitments for women's equity in the peace accords.^{199, 200}

The international community has recognized the importance of mainstreaming gender and including women in conflict resolution. In 2000, the UN Security Council adopted the landmark Resolution 1325 and reaffirmed the important role of women in the prevention and resolution of conflicts and peacebuilding. The Resolution stressed "the importance of their equal participation and full involvement in all efforts for the maintenance and promotion of peace and security, and the need to increase their role in decision-making with regard to conflict prevention and resolution."²⁰¹ By recognizing the necessity of mainstreaming a gender perspective into peacekeeping operations, the Resolution calls on all parties of armed conflict to take special measures to protect women and girls from GBV. In its subsequent Resolution 1820, the UN Security Council added that "rape and other forms of sexual violence can constitute a war crime, a crime against humanity, or a constitutive act with respect to genocide and stresses the need for the exclusion of sexual violence crimes from amnesty provisions in the context of conflict resolution processes."²⁰²

194 Castillejo (2011).

195 IPU (2018).

196 Baranyi & Powell (2005).

197 USAID (2012).

198 UN Women (2012).

199 Page et al. (2009).

200 Inclusive Peace and Transition Initiative (2017).

201 UN (2000, p. 1).

202 UN (2008, p. 3).

UN Member States have made progress on addressing the principles in the Resolutions through peacebuilding processes; for example, a 2015 review of Resolution 1325 found that the percentage of signed peace agreements that include a reference to women increased from just 11 percent for the period 1990-2000 to 27 percent since the adoption of the Resolution.²⁰³ However, the review also outlined the obstacles and challenges to the implementation of the Resolution, such as the lack of prosecution against perpetrators of sexual violence and the limited funding for programs and processes addressing gender issues, noting that only 28 percent of aid to peace and security in fragile states and economies had a gender equality focus in 2012-2013. The review concluded that much stronger efforts are needed in this area and calls for further action, emphasizing the need to abandon gender-neutral assumptions and seize opportunities to renegotiate gender roles in order to create more inclusive and stable societies.²⁰⁴

BOX 7: WOMEN, PEACE, AND SECURITY – CONTRIBUTION OF THE UNITED STATES

In 2011, to support and accelerate implementation on UN Security Council Resolutions 1325 and 1820, the United States developed a National Action Plan on Women, Peace, and Security. The Plan describes the course the United States Government will take to “accelerate, institutionalize, and better coordinate efforts to advance women’s inclusion in peace negotiations, peacebuilding activities, and conflict prevention; to protect women from sexual and gender-based violence; and to ensure equal access to relief and recovery assistance, in areas of conflict and insecurity” (US White House, 2011, p. 1).

In a 2016 update, the United States reported on its progress on the objectives of the National Action Plan, following an extensive review of policy, programming, challenges, and lessons learned during the first years of implementation of the Plan and a consultation with civil society stakeholders. The review found that since the Plan was adopted, the United States has made significant progress on implementation, including advancing the participation of more than 60,000 women in peacebuilding processes and providing vital services to more than 4 million survivors of GBV in over 40 countries. The review also identified areas for new or renewed focus in the updated roadmap for action, including empowering women and girls to respond to and prevent challenges associated with violent extremism, and strengthening coordination on gender policy priorities across the United States Government (US White House, 2016).

Additionally, the 2019 United States Strategy for Women, Peace, and Security (US White House, 2019a, p. 2) responds to the Women, Peace, and Security Act of 2017—the first law of its kind globally—and “recognizes the diverse roles women play as agents of change in preventing and resolving conflict, countering terrorism and violent extremism, and building post conflict peace and stability.” Noting that conflict and disasters adversely and disproportionately impact women and girls, this strategy aims to increase women’s and girls’ involvement and leadership in conflict resolution and peacebuilding efforts. The United States “recognizes the linkage between women’s empowerment and global peace and security” (US White House, 2019a, p. 4).

The United States has also enacted strategies to support women’s economic empowerment around the world. One such strategy is the Women’s Global Development and Prosperity Initiative (W-GDP) (US White House, 2019b). Established in 2019, this initiative focuses on three pillars: i) women prospering in the workforce; ii) women succeeding as entrepreneurs; and iii) women enabled in the economy.

203 Coomaswamy (2015).

204 Dudwick & Kuehnast (2016).

There are different modalities through which women can participate in peace processes, ranging from individual women filling an official role and those participating on behalf of women as a social group. Women can, for example, act: as mediators or as members of mediation teams; as delegates of the negotiating parties; as negotiating parties representing a women's agenda; as signatories; as witnesses; as representatives of women's civil society with an observer role, including in a parallel forum or movement; as gender advisers to mediators, facilitators, or delegates; and/or as members of a technical committee, separate table or working group devoted to gender issues.²⁰⁵ Despite the resistance towards and exclusion of women in formal peace talks, many women and women's groups have found creative ways of expressing their concerns and influencing peace processes outside of formal negotiation processes. For example, women were crucial in bringing peace to Liberia in 2003 through public marches advocating for peace and security, attending peace talks and spearheading a Women of Liberia Mass Action for Peace Campaign to confront and involve rebel leaders in peace talks.²⁰⁶

The average number of women participating in peace negotiations in official roles remains low. Women have represented fewer than 3 percent of mediators, about 4 percent of signatories and witnesses, and 9 percent of negotiators for 31 major peace processes from 1992 to 2011.²⁰⁷ Since 2011, the proportion of peacekeeping and special political missions headed by women has fluctuated between 15 to 25 percent,²⁰⁸ signaling a significant increase in the number of women involved in peacebuilding over the past two decades since the passage of UN Security Council Resolution 1325. However, data collection could be strengthened, as information on the numbers of men and women participating in peace negotiation are not consistently collected by any authority, which causes a significant data gap.

205 UN Women (2012).

206 United States Institute of Peace (2007).

207 UN Women (2012).

208 UN Security Council (2015).

4 THE TRIPLE NEXUS

There is a strong base of literature and research connecting gender and climate vulnerability, climate vulnerability and fragility, and fragility and gender. The review of the relationships between the pairs of issues presented in the previous sub-section demonstrates that the impacts associated with both climate variability and change, as well as state fragility and conflict, severely affect all people around the world, but in a differentiated fashion and with specific and often disproportionate impacts on women and girls. Moreover, women's greater vulnerability to climatic events is exacerbated in settings that are also affected by political instability and conflict, and vice versa.²⁰⁹ Women not only have distinct risks and vulnerabilities, but they also have adaptive capacities and potential to act as agents of change in climate adaptation, mitigation, conflict resolution, and peacebuilding. However, there has been less research and in-depth discussion considering these three topics simultaneously, presenting an opportunity to explore the potential entry points for addressing all three concurrently for effective development interventions.^{210, 211}

An entry point for addressing these three issues as a triple nexus is the connection between natural resource availability and conflict, which has particular gender dimensions. Changing climate conditions and climate-related disasters alter the availability of natural resources, causing women to have to travel further and spend more time collecting water and firewood. This increases their exposure to harsh environmental conditions and their risk of GBV, as they venture farther away from their communities.²¹² Less secure access to these resources also increases conflict over water and fuel, and competing interests may overlook or ignore women's access and needs, affecting the health of families and entire communities.²¹³ Climate stressors, including droughts and floods, can interact with non-climate stressors, such as inadequate service delivery and, corrupt and mismanaged natural resource use, to exacerbate environmental degradation, water and food insecurity, social stress, and competition—in extreme cases, these can devolve into violent conflict.²¹⁴ In situations characterized by heightened civil unrest, natural resource competition and scarcity, and conflict, the time, labor, and risks associated with collecting natural resources to maintain households substantially increase for women.²¹⁵ As further explored in the example in Darfur, Sudan (Box 7), conflict and environmental degradation has led to massive internal population displacement.

A 2015 analysis of gender, conflict, and global environmental change emphasized that gender is an important lens through which to examine both violent conflict and the different vulnerabilities and adaptive capacities of women and men to environmental change.²¹⁶ The authors called for a holistic approach in translating these three issues in a comprehensive research framework and agenda for interventions, defining four challenges that undermine gender-sensitive research and interventions within this domain. First, the remarkable resilience of socially and structurally entrenched gender hierarchies can result in a return to discriminatory gender norms and patriarchy in post-conflict

209 Alam et al. (2015).

210 Demetriades & Esplen (2008).

211 Fröhlich & Gioli (2015).

212 Rewald (2017).

213 Stork et al. (2013).

214 Iceland (2017).

215 Stork et al. (2013).

216 Fröhlich & Gioli (2015).

countries, reversing any progress made towards gender equality during conflict and peacebuilding. Second, the gap between new laws and actual practice remains large, as it often takes a long time for new regulations aimed at eliminating gender inequality and discriminatory norms to translate into improved gender relations on the ground, especially when new laws differ from customary laws in practice. Third, weak states and formal institutions often have strong and lasting effects on conflict and vulnerabilities, making it important to include non-state actors, informal institutions and local stakeholders in gender-responsive approaches. Fourth, as gender issues are usually delegated to distinct ‘gender experts’, gendered power structures result in gender issues being easily overlooked or ignored in research and political decision-making.²¹⁷ Navigating these challenges and debunking prevalent gender myths are crucial to advancing integrated and gender-responsive climate action and conflict resolution.

Also in 2015, a report by the Georgetown Institute for Women, Peace and Security examined the intersection between gender and climate change and, by framing the latter as a universal human rights and security imperative, moved beyond considering it a mere environmental phenomenon.²¹⁸ The study paid specific attention to the peace and security implications of climate change, as the gendered impacts of climate change are more pronounced in countries that are also grappling with political instability, violent conflict or post-conflict recovery, and settings are known to exacerbate women’s vulnerability to the effects of climate change. The report provided a detailed overview of the gendered impacts of the various manifestations of climate change and concluded with a set of recommendations to reduce gender-based vulnerabilities, address climate change as an economic, human rights, and security issue, and to promote women’s empowerment for international organizations, national governments, the private sector, and NGOs.²¹⁹ Some of these recommendations included: addressing protection of environmental migrants, taking into account the specific needs of women; analyzing and understanding levels of vulnerability, resilience, and autonomy of men and women in different fragile situations; investing in socially and environmentally conscious value chains; and enabling women’s equal access to land and natural resource ownership needed for effective socio-economic participation.²²⁰

In another joint policy report published in 2013, the UN analyzed how addressing gender inequality related to natural resource management can contribute to effective and lasting peacebuilding.²²¹ The report emphasized the importance of women’s empowerment in natural resource management, and argued that failure to take advantage of the opportunities presented by women’s unique roles in managing natural resources can perpetuate inequality and ultimately undermines post-conflict recovery. The report concluded with four recommendations to national governments and the international community:

- Promote women’s participation in formal and informal decision-making structures and governance processes related to natural resource management in peacebuilding;

217 Ibid.

218 Alam et al. (2015).

219 Ibid.

220 Ibid.

221 UN (2013).

- Adopt proactive measures to protect women from resource-related physical violence and other security risks early in the peacebuilding period;
- Remove barriers and create enabling conditions to build women’s capacity for productive and sustainable use of natural resources; and
- Increase inter-agency cooperation within the United Nations to pursue women’s empowerment and sustainable natural resource management together in support of more effective peacebuilding.²²²

These studies demonstrate that some work has been done on the topics of gender inequality, state fragility, and climate vulnerability together. However, projects and research efforts often have slightly different focuses and conceptualizations of the three issue areas, such as focusing specifically on conflict rather than state fragility more broadly, or considering natural resources or global environmental change, which are both closely related to, but not the same as, climate vulnerability. The studies are useful for understanding some of the specific factors which affect the three issues focused on in this research project and provide some recommendations that are relevant for this work. However, existing work is often limited by issues of scope: it is important to recognize that the factors of gender inequality extend well beyond characterizing women as victims of violence, that state fragility goes beyond violent conflict, and that climate vulnerability is more than physical climatic changes.

Gender inequality, state fragility, and climate vulnerability are complex and intertwined issues—with some shared drivers and social implications that affect progress across issues. Gender inequality includes the social, legal, cultural, and economic factors that contribute to gender-based marginalization and violence, as well as the barriers that limit the full participation and consideration of women and men in leading and driving efforts to change socio-cultural perceptions that perpetrate gender inequality. State fragility is not synonymous with conflict and includes factors that contribute to the erosion of state-society relations that can sometimes but not always lead to violent conflict. Climate vulnerability is more than exposure to climate-related stressors, climatic changes, and weather shocks, but also accounts for the economic, social, and geographic situations that make certain groups or sectors more sensitive to the effects of those stressors, as well as the adaptive capacities of certain groups and sectors to adapt to and capitalize on climate stressors.

222 UN (2013).

BOX 8: DARFUR, SUDAN: A SNAPSHOT OF TRIPLE-NEXUS LINKS

For decades, the people of Darfur have been plagued by widespread and shattering violence, displacement, poverty, food insecurity, and catastrophic environmental degradation. The 2003 war stemmed from a complex set of interacting factors, including a long history of conflict and instability, weak governance, environmental degradation and persistent drought and flooding, which has crippled social and economic development in the area (World Bank, 2013). The violence that erupted in the early 2000s was preceded by decades of political instability and social breakdown, including the seizure of power by the Sudanese president in the 1970s, and the associated abolishment of the tribal-based Native Administration in Darfur that removed the mechanism for traditional dispute reconciliation for resource conflicts (Edwards, 2008). Other factors that contributed to political volatility included: the military coup by the National Islamic Front in 1989 and the resulting ethnic cleansing (Butler, 2007); the gross inequalities between urban elites and the rural poor; and government agricultural policies leading to political grievances, land degradation, and forced migration of farmers in the 1990s (Hartmann, 2010).

The Darfur conflict was one of the first cases in which the link between climate change and conflict was explicitly highlighted (Bodanac, 2016), with a 2007 UN Environment report stating that “climate change, land degradation, and the resulting competition over scarce natural resources are among the root causes” (UNEP, 2007, p. 20) of the conflict. For instance, declining rainfall and periods of drought in the decades preceding the war were associated with increased conflict, as farmers and pastoralists faced increased competition over disappearing pastures and water sources (UNEP, 2007). However, these climate stressors are only part of the story. While land degradation, desertification, and resource scarcity undoubtedly contributed to increased vulnerability and conflict in Darfur, critics argue that framing the war as resulting from conflict between agriculturalists and pastoralists is an oversimplification that ignores the diverse set of actors and complex interrelationships between contributing factors (Hartmann, 2010), maintaining that environmental causes alone cannot explain the violence (Butler, 2007). They caution against overstating the role of climate change (Butler, 2007), refuting claims that rainfall patterns correlate with conflict (Kevane & Gray, 2008), and emphasizing that conflict is the result of “environmental pressures combined with the breakdown of social structures to mitigate resource conflicts” (Edwards, 2008, p. 23).

Despite the debate over the relative importance of the various complex roots of the conflict, it is clear that the war has had devastating human and environmental impacts. Since its onset in 2003, the war in Darfur has claimed over 300,000 lives and displaced over 2 million people (Bodanac et al., (2016). Women and children make up the majority of those affected, with nearly four times as many female-headed households being severely food insecure compared to male-headed households and Darfur’s maternal mortality rate ranking among the highest in the world (World Bank, (2013). Internally displaced people (IDPs), most of whom are women and children, face a number of critical challenges such as exposure to violence and insecurity, reduced livelihood opportunities, lack of access to basic services, and deficient institutions enforcing rule of law (World Bank, 2013). Camps for displaced persons offer refuge for those escaping violence, but they come with their own challenges of governance and severe land degradation and deforestation in areas surrounding camps (UNEP, 2007), leaving marginalized communities especially vulnerable to violence and abuse.

Women and girls in particular are vulnerable to sexual violence and harassment; GBV, including physical and sexual violence; child, early and forced marriage; and domestic violence, is widespread among displaced communities, and is exacerbated by the extreme trauma associated with social stresses, violent conflict, and displacement. Sexual violence and rape have extreme, long-term mental and physical health impacts on victims, and those who witness such violent acts. Victims also bear the weight of the social stigmas associated with sexual violence in many communities and often lack access to adequate medical and psychosocial support to cope with the trauma. Moreover, Sudan’s laws create a culture of impunity for perpetrators of rape, and victims face social and legal backlash when their allegations are questioned and doubted and they are accused of committing a sexual act outside of marriage (World Bank, 2013).

BOX 8: DARFUR, SUDAN: A SNAPSHOT OF TRIPLE-NEXUS LINKS (CONT.)

Like in many societies around the world, women and girls in Darfur often spend several hours per day collecting firewood and other resources for preparing meals and earning income. In 2013, UN peacekeeping missions found that many of the women and girls displaced traveled up to six miles per trip to collect scarce resources and were subject to sexual and gender-based violence by local armed groups when leaving camps (Stork et al., 2013). Many travel at night to avoid the midday sun and travel in small groups to avoid competition, making them especially vulnerable to sexual and physical attacks (Patrick, 2007). The main perpetrators of the attacks included Janjaweed militia, local government and police forces, as well as other men, who operated under conditions of almost total impunity (Patrick, 2007). These perpetrators took advantage of the enabling conditions for assault resulting from environmental degradation, as deforestation and desertification force women to travel longer distances for firewood, further aggravating their vulnerability to assault (World Bank, 2013). Several initiatives were put in place to mitigate these attacks, including employing more female peacekeeping officers and conducting GBV awareness trainings (Stork et al., 2013). Mitigation efforts also included firewood patrols to accompany women and girls collecting firewood, as well as distributing technology, such as fuel-efficient stoves and rolling water containers, and yet these interventions were only been partially effective in protecting women and girls from sexual and physical violence in Darfur.

Decision-making processes, policies and programming, such as those focused on gender equality, natural resource management, or sustainable development, including food security and peacebuilding efforts, must each take into consideration the unique, compounding interlinked factors that limit resolution and sustainability. Specifically, climate-sensitive approaches to peacebuilding in IDP camps “must take account of gender-specific risks and generate options for alternative livelihoods” (Smith & Vivekananda, 2009, p. 17).

BOX 9: BANGLADESH: A SNAPSHOT OF TRIPLE-NEXUS LINKS

Bangladesh is experiencing the impacts of climate change both via extreme weather events and slow-onset events, such as drought and sea level rise. The Ganges-Brahmaputra Delta is the most populous river basin and one of the most densely populated regions in the world (Amoako Johnson et al., 2016). Two thirds of Bangladesh is less than five meters above sea level (Environmental Justice Foundation, 2017), and 16 percent of the population live in the low-lying coastal regions with elevation below 5 meters (World Bank, n.d.). Additionally, the country has a high population density, with 25-28 percent of the population living in coastal areas (Nett & Ruttinger, 2016; Environmental Justice Foundation, 2017). Because Bangladesh sits at the intersection of three major river basins in the Ganges-Brahmaputra Delta and is fairly flat with low elevation and populous coastal communities, it is extremely vulnerable to the impacts of climate change and environmental hazards, such as sea level rise, floods, droughts, storm surges, tropical cyclones, saltwater intrusion, erosion, and inundation (Nett & Ruttinger, 2016; Sovacool, 2018).

Bangladeshis are particularly vulnerable to climate disasters. In general, across the Hindu Kush-Himalayas region, more women than men die during and after disasters due to factors such as lack of information, mobility, decision-making, access to resources, and access to training (Nellemann et al., 2011). The women of Bangladesh are among the first to face the impacts of climate change, and their suffering is disproportionate. In the cyclone disaster of 1991, for example, five times as many women died as men, partly because warning information was communicated in male-dominated public spaces, where cultural norms dictated that women were not allowed to leave the house without a male relative, and many Bengali women were never taught how to swim (Röhr, 2006). Loss and damage from climate events like cyclones also impact human development and livelihoods (Nett & Ruttinger, 2016)—after Cyclone Aila in 2009 cyclone, unemployment in southwest Bangladesh jumped from 11 percent to 60 percent, and the poverty rate increased from 41 percent to 63 percent (Hallegatte et al., 2016). Families living in poverty also experienced the impacts of Cyclone Aila disproportionately, with 25 percent of poor households exposed to the cyclone while only 14 percent of non-poor households were exposed (Hallegatte et al., 2016).

Efforts have been taken in the following years to strengthen resilience to such climate disasters, in particular to cyclones and floods. A USAID case study on fragility and climate risks in Bangladesh notes that “Bangladesh’s response to more recent cyclones reflects progress in adaptive capacity and government capacity compared to earlier decades, when larger numbers of people died in the wake of comparable cyclones” (USAID, 2018, p. 5). However, it goes on to explain that even with strengthened state capacity to respond to climate hazards and improved social and economic conditions, “sustained political turmoil and increasing violence in the country threaten to undermine continued progress in these areas” (USAID, 2018, p. 1). Political uprisings, riots, and conflict between political parties greatly impact Bangladesh. Urban and rural regions both face challenges unique to their situations, such as mass migration to urban centers (with Bangladeshis migrating from coastal communities and Rohingya migrating from Myanmar), and communal violence in rural communities (USAID, 2018).

Poor state legitimacy, including poor political, economic, and security legitimacy, but with progress made in social legitimacy, is a main contributor for the state fragility challenges faced in Bangladesh (USAID, 2018). This aligns with the findings of the indicators framework in this study, which shows that Bangladesh has a total state fragility score of 0.48, made up of a state effectiveness score of 0.26 and a state legitimacy score of 0.70, where 1.0 is the most fragile. Over a 15-year period, the improvements in social legitimacy are due to “relatively high gender equality in the political sphere, increasingly high life expectancy, and low military spending as a percentage of GDP, which avoids the prioritization of military spending over social services provision” (USAID, 2018, p. 9). State effectiveness in Bangladesh is impacted by availability and delivery of public and social services. Overall, the country has seen improvements in state fragility related to reduction of poverty rate and increased child immunization rate, which is a valuable indication of the complex structures and cooperation required across government and society to enact positive change. As noted above, decreased state fragility has contributed to Bangladesh being better able to respond to climate disasters.

BOX 9: BANGLADESH: A SNAPSHOT OF TRIPLE-NEXUS LINKS (CONT.)

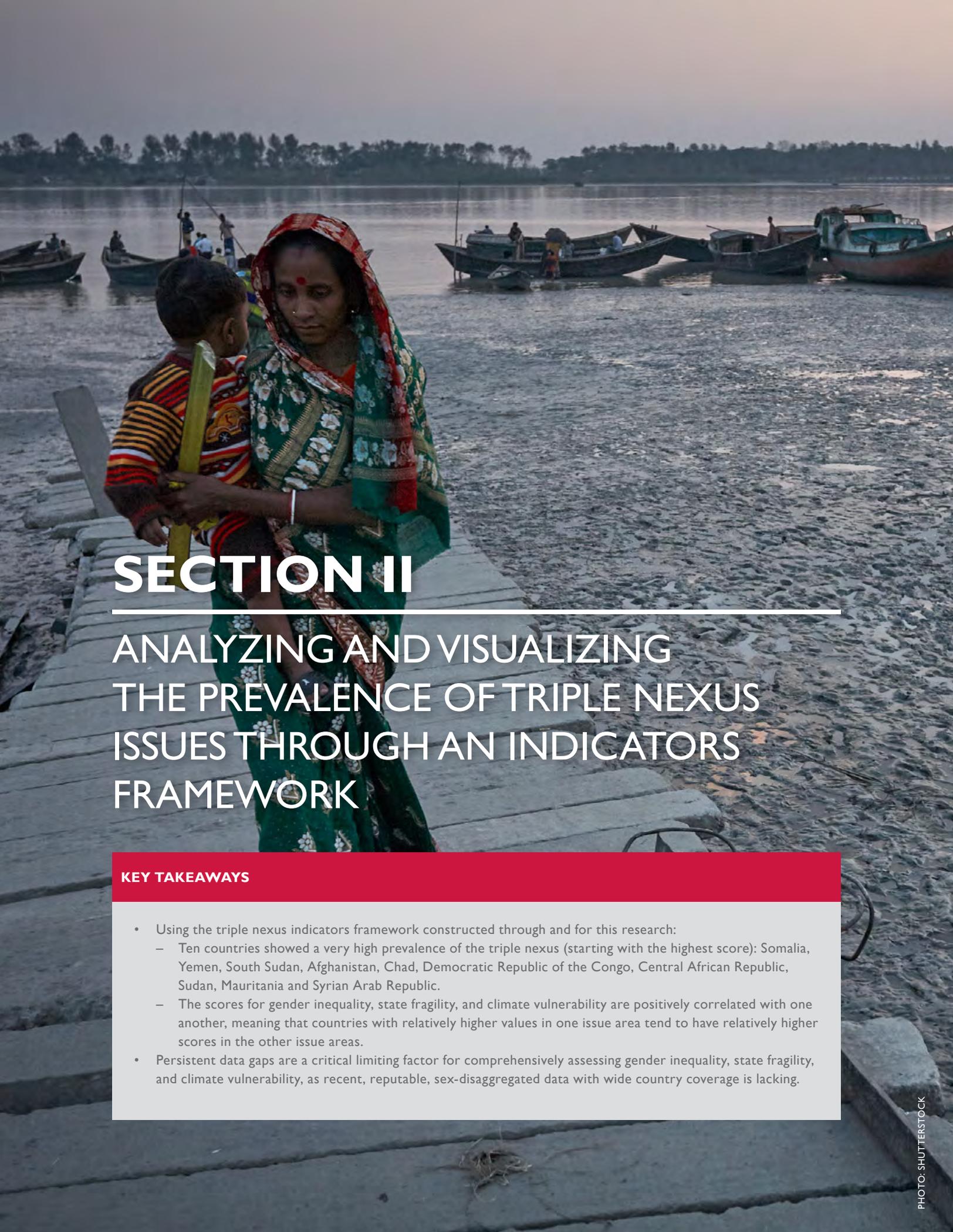
Trans-boundary rivers in this region can result in challenges when considering best use and management practices. For example, natural resource management decisions regarding the Brahmaputra River made by China impact the water resource availability of downstream India and Bangladesh, for example, where livelihood and sustenance are dependent upon this water source (Lone, 2015). These shared water sources, and the challenges of managing a shared natural resource in the light of a changing climate, “lie at the heart of the region’s most disparaging conflicts” (Lone, 2015).

Bangladesh is facing the dual concerns of sea level rise and riverbank erosion, causing migration and displacement to be major challenges facing communities in the country and the region. It is projected to lose 11 percent of its land to sea level rise by 2050 (Environmental Justice Foundation, 2017). Riverbank erosion and river flooding may already be responsible for 50 percent of displacement to urban areas, particularly urban slums (Environmental Justice Foundation, 2017). As flooding, seasonal drought, and saltwater intrusion limit the agricultural livelihood upon which many rural coastal communities rely, people are forced to leave their homes and communities (Ziaur Rahman, 2009; Lone, 2015). Much of this displacement remains internal within Bangladesh for the time being, with 1,000-2,000 people moving to the capital city of Dhaka every day, according to the Environment Justice Foundation. However, migration into India and Europe is also taking place (Environmental Justice Foundation, 2017; Lone, 2015). According to *Foreign Policy*,

With survival at stake, most Bangladeshis will have to make their way into other territories — Assam in northeast India being a traditional destination. The influx into the region has led to a greater scramble for its limited resources sparking frequent violence. This has led to recurrent communal tensions, which could be exploited by trans-national elements such as ISIS or al Qaeda with the latter citing widespread violence against Muslim Bengali migrants in 2014 as one of the causes (along with Kashmir) for establishing its local off-shoot, AQIS (al-Qaeda in the Indian Sub-continent) (Lone, 2015).

One particularly dangerous aspect of migration is that it provides opportunities for human trafficking and forced labor. As has been seen in Bangladesh, this is especially true in the aftermath of disasters, when vulnerable populations are at an even greater risk of being targeted (Nett & Ruttinger, 2016). In 2014, the New York Times published an article on the impacts of climate change in Bangladesh, telling the story of one woman, Jahanara Khatun, whose husband died in the aftermath of a 2009 storm; living in destitution, she sold her son and daughter into bonded servitude (Harris, 2014), which is considered by the UN as a form of trafficking-related exploitation (UNODC, n.d.). According to Nett and Ruttinger (2016), traffickers exploit vulnerable communities—families like Mrs. Khatun’s—with promises for their children of education, employment, or safety, which ultimately result in “exploitation for prostitution, forced labor, or illegal adoption” (Nett & Ruttinger, 2016, p. 43). Women and children living in poverty, and particularly in times of disasters and disaster recovery, face a high risk of becoming victims to human trafficking (Nett & Ruttinger, 2016); Environmental Justice Foundation, 2017), a heinous type of gender-based violence (Nellemann et al., 2011).

The literature review presented in this section has shown that various studies have examined interlinkages across triple nexus issues, especially in recent years, and focused on urgent situations such as in Sudan and Bangladesh. The next section discusses the prevalence of key issues across specific countries, applying an indicators framework to analyze the triple nexus concerns. Together, the literature review and triple nexus indicators framework suggests that more specific attention and context-specific research could inform more targeted, integrated, and positive approaches to reduce gender inequality, state fragility, and climate vulnerability.



SECTION II

ANALYZING AND VISUALIZING THE PREVALENCE OF TRIPLE NEXUS ISSUES THROUGH AN INDICATORS FRAMEWORK

KEY TAKEAWAYS

- Using the triple nexus indicators framework constructed through and for this research:
 - Ten countries showed a very high prevalence of the triple nexus (starting with the highest score): Somalia, Yemen, South Sudan, Afghanistan, Chad, Democratic Republic of the Congo, Central African Republic, Sudan, Mauritania and Syrian Arab Republic.
 - The scores for gender inequality, state fragility, and climate vulnerability are positively correlated with one another, meaning that countries with relatively higher values in one issue area tend to have relatively higher scores in the other issue areas.
- Persistent data gaps are a critical limiting factor for comprehensively assessing gender inequality, state fragility, and climate vulnerability, as recent, reputable, sex-disaggregated data with wide country coverage is lacking.

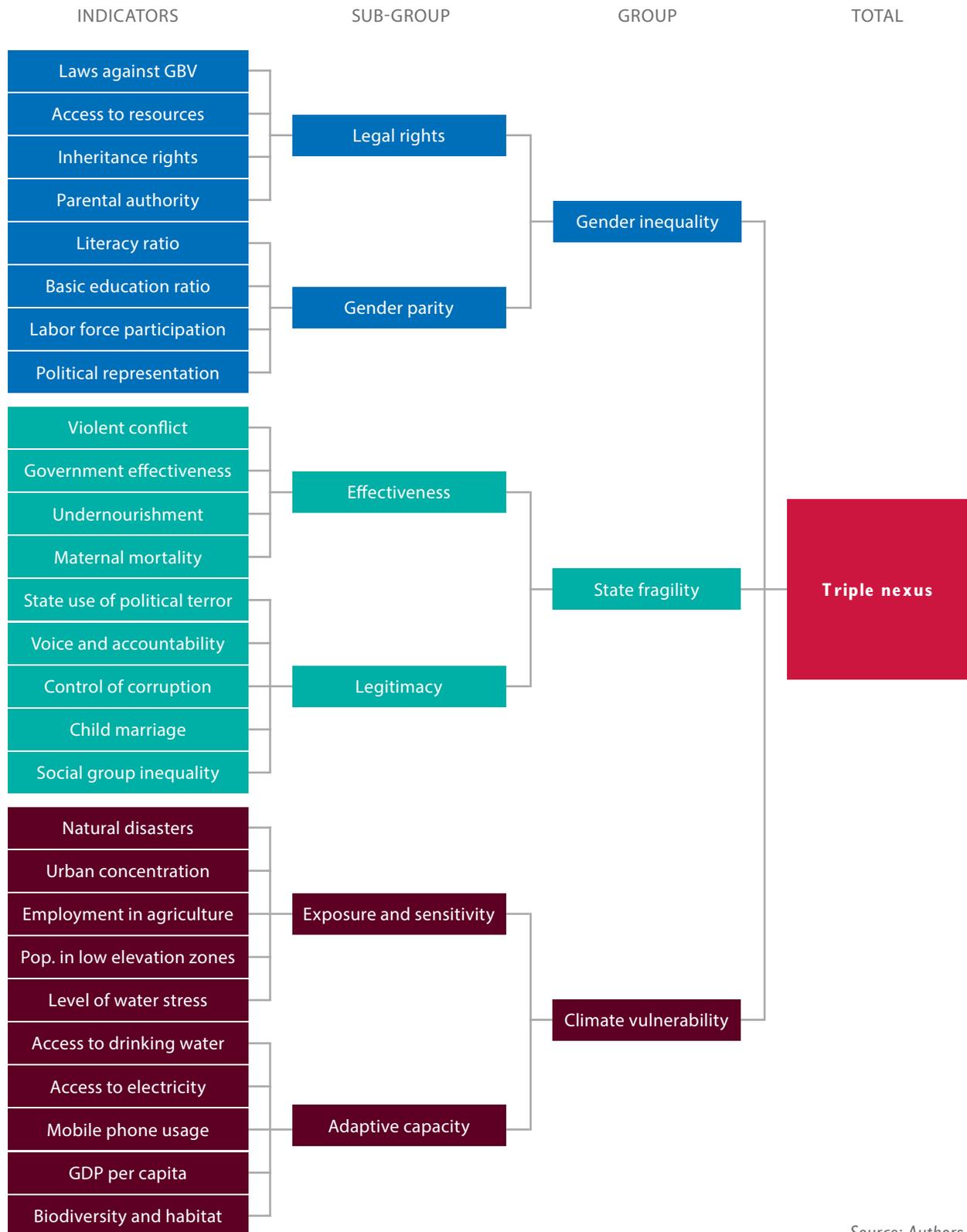
5 DATA

This sub-section outlines the methodological considerations and approaches used to construct an indicators framework to analyze and visualize the triple nexus prevalence of gender inequality, state fragility, and climate vulnerability. A detailed literature review into available statistics and indices, complemented by consultations with USAID and IUCN experts, as well as those from other peer organizations, helped to identify issues and measures for the three issue areas that together define the triple nexus framework.

The framework is based on a theoretically grounded approach to conceptualizing the prevalence of gender inequality, state fragility, and climate vulnerability using 27 quantitative country-level indicators, sourced from reputable, internationally recognized databases. These are divided into three main groups and six sub-groups (Figure 1). The process for selecting and constructing the indicators and sub-groups under each main group is discussed briefly, and more information on the rationale for, construction of, and specific variables covered in each indicator are further detailed in Annex 2 for gender inequality, Annex 3 for state fragility, and Annex 4 for climate vulnerability. This sub-section describes the various methods used to build and test the framework, followed by a description of the mapping methodology used to visualize the results, including through a color-coded world map and tables with individual country results to readily identify countries that may present opportunities for enhanced integrated approaches toward reducing the triple nexus issues. Further details about the methodology used, including the preparation and analysis of data and the construction of the maps, can be found in Annex 5.

The results of this analysis are presented in terms of *triple nexus prevalence* relative to the 122 countries included in the study, rather than the presence of issues under the triple nexus. This is because such analysis works on the assumption that issues of gender inequality, state fragility, and climate vulnerability are present in all contexts to a certain degree.

FIGURE I: THE TRIPLE NEXUS FRAMEWORK – GENDER INEQUALITY, STATE FRAGILITY, AND CLIMATE VULNERABILITY



Source: Authors.

5.1 GENDER INEQUALITY INDICATORS

The measures chosen for gender inequality provide a baseline indication of a country's abilities to ensure gender equality outcomes for its population. Since the focus of this research is inequality, the eight indicators in this group were chosen to measure the unequal treatment of women vs. men at the country level. These are assessed in terms of legal rights that influence protection against violence on the basis of gender, access to economic and financial resources, and rights to inheritance and parental authority, as well as measures of gendered ratio outcomes capturing disparities between men and women in education, labor force, and political participation. Four categorical indicators make up the legal rights sub-group, and four additional indicators that provide male to female ratios which make up the gender parity sub-group (see Table 3 and Annex 2 for more details on indicators and their sources).

Some indicators in the state fragility and climate vulnerability groups relate to gender inequality, and likewise, indicators in the gender inequality group are important for identifying state fragility and climate vulnerability, highlighting the crosscutting importance of these issues. For example, as all forms of GBV are indications of fragile or failing states, the indicator on laws against GBV, as well as all the legal rights sub-group indicators, highlights a state's commitment to exercising power fairly across all social groups through equal legal protections. Additionally, the human capital of knowledge and skills obtained through education and the financial resources available to populations are crucial elements of building a society's adaptive capacity to climate stressors and change.

Contending with gaps in the availability of sex-disaggregated data is one significant limitation in accurately capturing gender inequality. As gender-based discrimination can stem from both laws and policies (*de jure*) and practices (*de facto*), it is ideal that measures for gender inequality capture both forms of discrimination.²²³ However, data on the implementation and enforcement of laws against gender-based discrimination can be difficult to obtain, especially for a wide-range of countries. While the indicators in the gender parity sub-group capture some of the areas where women and girls have historically been discriminated against in practice, it would also be ideal, for example, to capture the experiences of women and girls in regards to GBV and land ownership to understand where better enforcement of protections and legal access is needed.

223 UNICEF (2017).

TABLE 3: GENDER INEQUALITY SUB-GROUPS AND INDICATORS

SUB-GROUP: LEGAL RIGHTS

INDICATOR	DESCRIPTION/RATIONALE
Laws against gender-based violence (GBV) OECD (2014)	Constructed using variables on laws regarding domestic violence, rape and sexual harassment and the prevalence of female genital mutilation. GBV undermines the health, dignity, security, and autonomy of its victims with serious impacts on economic and social development.
Access to natural and economic resources OECD (2014)	Constructed using variables on secure access to land, non-land assets, financial assets, and public space. Lack of access to resources reduces women's income-generating opportunities, decision-making power within the household and food security, making women and families more vulnerable to poverty.
Inheritance rights of widows and daughters OECD (2014)	Measures women's equal access to inheritance rights, which influences their decision-making power in their families and communities, affecting their ability to choose their own development pathways.
Parental authority of women in marriage and divorce OECD (2014)	Captures whether women have the same rights as men to act as the legal guardians of their children during marriage and in cases of divorce, which is a strong indicator of a mother's equal standing and influence in her family and community.

SUB-GROUP: GENDER PARITY

INDICATOR	DESCRIPTION/RATIONALE
Literacy ratio UNSD (Data year varies by country: 2000-2013)	Two-thirds of the world's 743 million illiterate adults are women, limiting their ability to participate in decision-making in households and communities.
Basic education ratio Barro-Lee dataset of Educational Attainment (2013)	Education empowers women economically by increasing earning capabilities and potential, and reduces vulnerability to disasters by increasing knowledge on life-saving skills and legal rights.
Labor force participation ratio UNDP (2017)	Measures the proportion of the population ages 15 and older that are economically active. Labor force participation is an important driver (and outcome) of growth and development, both for individuals and communities.
Political representation ratio World Bank Open Data, based on IPU database (10-year average: 2008-2017)	Women are vastly underrepresented in decision-making positions in government, making it difficult for them to influence policy and limiting their ability to meaningfully participate in decisions on climate change adaptation and mitigation.

5.2 STATE FRAGILITY INDICATORS

The chosen indicators for state fragility aim to capture state-society relations that maintain rule of law and security of a population while supporting individual rights and the health and well-being of its citizens. There are many complex and overlapping factors that contribute to the fragility of a state, and it is difficult to capture all of these in a framework. The research team based the framework for state fragility mainly on USAID guidance tools, including the 2005 document *Measuring Fragility*²²⁴ and the *Journey to Self-Reliance* metrics.²²⁵ The research team selected nine indicators across security, political, economic, and social domains that can indicate ineffective and illegitimate state-society relations, which are strong indications of fragile states. The two sub-groups under this group were used to distinguish between two criteria: i) factors that contribute to the government provision of order, goods, and services (effectiveness); and ii) the perception that the government is exercising its power fairly across social groups and in the best interest of the nation (legitimacy) (see Table 4 and Annex 3 for more details on indicators and their sources).

TABLE 4: STATE FRAGILITY SUB-GROUPS AND INDICATORS

SUB-GROUP: EFFECTIVENESS

INDICATOR	DESCRIPTION/RATIONALE
Violent conflict Center for Systemic Peace . Data from 2013-2017	Accounts for recent intrastate (civil) violent conflict. States that experience high magnitude conflict and fail to keep their populations safe can be considered 'failed' or 'failing'. Conflict strains resources and the populations directly affected by violence.
Government effectiveness World Bank (2016)	Captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
Undernourishment FAO (2014-2016)	Estimates the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life. Economic effectiveness can be indicated by the ability of a national government to keep people out of poverty. While not a perfect indication of poverty, undernourishment indicates if a person is able to consistently access and afford nutritious foods, which is linked to poverty and the ability for governments to provide services to end hunger and undernourishment.
Maternal mortality WHO (2015)	Maternal mortality is one of the best indicators of both the status of women, and the strength of the health system, including accessibility and capacity of services linked to the presence of basic infrastructure, such as roads and health facilities.

224 USAID (2005b).

225 USAID (n.d.b).

TABLE 4: STATE FRAGILITY SUB-GROUPS AND INDICATORS (CONT.)**SUB-GROUP: LEGITIMACY**

INDICATOR	DESCRIPTION/RATIONALE
State use of political terror The Political Terror Scale (2016)	Measures violence by the state based on reports from Amnesty International, the US State Department, and Human Rights Watch. State-sponsored political terror, by definition, targets groups opposed to the state with various forms of coercion.
Voice and accountability World Bank (2016)	Captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
Control of corruption World Bank (2016)	Captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption.
Child marriage UNICEF . Data year varies by country: 2003-2017	Child marriage does not cause fragile states, but it is a form of GBV and does reinforce poverty, limit girls' education, stymie economic progress, and contribute to regional instability.
Social group inequality V-Dem Institute (2017)	Scored based on answers from experts to the question: Do all social groups, as distinguished by language, ethnicity, religion, race, region, or caste, enjoy the same level of civil liberties, or are some groups generally in a more favorable position? Exclusion of certain social groups impedes the full realization of a fair and open democracy and leads to social unrest and marginalization in access to resources.

Similar to the crosscutting importance of gender inequality discussed above, indicators in the state fragility group also relate to and are important for addressing gender inequality and climate vulnerability, and vice versa. For instance, the maternal mortality indicator captures the strength, capacity, connectivity, and overall effectiveness of a state's health care system, but also provides insight to the status of women. Child marriage disproportionately affects young girls and is in part driven by lack of economic opportunities, weak institutions, and increased violence toward women, all of which are exacerbated in fragile situations.²²⁶ Additionally, as elaborated in Section I, violent conflict can be driven by natural resource scarcity, and/or strain the availability and equitable distribution of these resources.

State fragility is highly complex, and it is extremely difficult to capture all of the driving factors in available indicators. Many indices dedicated to identifying fragile and failed states include extensive consultations with expert panels that specialize in certain issue areas, regions, or countries.^{227, 228} This level of analysis is beyond the scope of the research at hand, but the nine indicators chosen for

226 CFR (2014).

227 IEP (2017).

228 Fund for Peace (2017).

this group are common quantitative measures for fragility among existing indices and frameworks. Another notoriously difficult aspect of measuring fragility is that data is constrained by a timestamp, meaning that recent or currently unfolding events are not necessarily captured in data used for analysis. Scale of measurement for indicators can also result in exclusion of certain events that are below the threshold defined by the dataset. This is the case for the violent conflict indicator, which does not include events in 2018, and only takes into account events with at least 500 directly related deaths over the course of the event.²²⁹

5.3 CLIMATE VULNERABILITY INDICATORS

The chosen indicators for climate vulnerability aim to measure a country’s vulnerability to climate stressors through three interlinked factors: exposure, sensitivity, and adaptive capacity. Exposure is the extent to which a system is directly subjected to a climate stressor. For this study, the research team identified stressors in terms of hydrometeorological disasters—droughts, extreme temperatures, floods, and heightened tropical storms—and then characterized exposure in terms of the country population affected by these natural disasters. Sensitivity is the extent to which a system—or in the case of this research, population—is positively or negatively affected when exposed to a stressor. Through the literature review and consultation process, the research team identified geographic, sectoral, and environmental factors that would result in negative impacts for populations when exposed to climate stressors. As exposure and sensitivity are closely related in that they are factors that heighten vulnerability to climate stressors, the five indicators under these two areas were grouped into one sub-group called, exposure and sensitivity, (see Table 6 and Annex 4 for more details on indicators and their sources).

Conversely, adaptive capacity describes a system’s ability to take action to reduce or moderate harm from or capitalize on the effects of climate stressors. In other words, it refers to the infrastructure (both built and natural, such as constructed sea walls or urban wetlands) in place to adapt to climate extremes and long-term climatic changes, including through access to information and resources. Identifying and collecting reliable and comparable data on adaptive capacity on a global scale is difficult as there are many context-specific issues to take into consideration. The adaptive capacity sub-group is made up of five indicators that, when lacking, can lead to greater vulnerability to climate stressors (see Table 5 and Annex 4 for more details).

229 Marshal (2017).

TABLE 5: CLIMATE VULNERABILITY SUB-GROUPS AND INDICATORS

SUB-GROUP: EXPOSURE AND SENSITIVITY

INDICATOR	DESCRIPTION/RATIONALE
<p>Natural disasters The International Disaster Database – CRED (1988-2018)</p>	<p>Captures instances of selected natural disasters (droughts, extreme temperatures, floods, and tropical storms) and associated total affected population. Exposure to natural disasters and climate stressors can affect life-supporting resources, such as agricultural systems, land, water sources, etc., which affect a population’s vulnerability to climate changes.</p>
<p>Urban concentration World Bank (2017) and UN Economic and Social Affairs (2016)</p>	<p>Constructed using two variables: (i) urban population (percent of total population), and (ii) proportion of urban population living in cities >1 million people (percent of total urban population). Highly urbanized areas are more sensitive to: high temperatures (urban heat island effect); wide-reaching displacement and livelihood loss from sea level rise (for those cities along the coast); rapid transmission of vector-borne diseases; and widespread human and infrastructure devastation from extreme weather events.</p>
<p>Employment in agriculture World Bank Open Data, based on ILOSTAT database (2017)</p>	<p>Because agriculture is highly sensitive to climate stressors, women and men whose economic livelihoods depend on the agriculture sector are acutely exposed to the risks associated with this sensitivity.</p>
<p>Population in low-elevation coastal zones World Bank Open Data, based on CIESIN/Columbia University database (2010)</p>	<p>Populations living in coastal areas are more sensitive to accidental injury, displacement, loss of livelihood, or death due to sea level rise, storm surges, and other similar climate effects from stressors.</p>
<p>Level of water stress FAO AQUASTAT (2014)</p>	<p>Defined as freshwater withdrawal as a proportion of available freshwater resources for all major sectors (agriculture, forestry and fishing, manufacturing, electricity industry, and services).²³⁰ Countries with high levels of water stress are sensitive to droughts, which poses challenges for livelihoods, economic development, and sustainability.</p>

SUB-GROUP: ADAPTIVE CAPACITY

INDICATOR	DESCRIPTION/RATIONALE
<p>Access to drinking water WHO/UNICEF JMP Data from 2015</p>	<p>Constructed using two variables at the national level: (i) at least basic access to drinking water, and (ii) access to piped drinking water. Having access to clean affordable water is essential to life; leads to improved economic, health and educational outcomes; and lessens the burden of unpaid water work that disproportionately affects women and girls.</p>

230 FAO (2017b)

TABLE 5: CLIMATE VULNERABILITY SUB-GROUPS AND INDICATORS (CONT.)

Access to electricity World Bank (2016)	Access to electricity facilitates access to basic services and economic opportunities to improve overall standard of living. Electricity is also critical in health care, disaster relief, food storage, education, and information communication technology (ICT) infrastructures, all of which are important in responding and building resilience to climate stressors.
Mobile phone usage International Telecommunication Union (2016)	ICT is increasingly recognized as essential to development, helping to reach a wide range of people with easy to use technology and relatively low rollout costs. Mobile phones are particularly important for poor rural communities to access information, including weather information and information about disasters to better prepare communities.
GDP per capita World Bank (2017)	GDP per capita is a proxy for the amount of financial resources a government can use for adaptive measures and respond to climate stressors.
Biodiversity and habitat Yale/CIESIN Environmental Performance Index (EPI) (2017)	Measure constructed using several variables: Marine Protected Areas, Biome Protection (national and global), Species Protection Index, Protected Area Representativeness Index, and Species Habitat Index. Habitat conservation is important not only for preserving key components of biological diversity, but for maintaining the associated ecosystem services which provide innumerable benefits and protections to humans, such as water provisioning, carbon sequestration, and flood prevention.

Indicators under the climate vulnerability group also have implications for gender inequality and state fragility, and vice versa. For example, the access to drinking water indicator has important implications for women and girls, who often hold primary responsibility over collecting water for the household. Low access to drinking water impacts the time and effort women and girls must dedicate to this activity. Additionally, GDP per capita provides insight to the available financial resources of a country to adapt to climate stressors, as well as other non-climate stressors, such as violent conflict and economic shocks.

A common limitation and debate in climate vulnerability indices and frameworks is the use of climate change models to show potential future exposure to climate change stressors. This level of analysis has certain drawbacks depending on the model used. It requires information on specific locations and characteristics of systems affected by potential stressors. The research team considered the advantages and disadvantages of utilizing climate change models, as well as the scale of analysis used for the other groups of indicators, and opted to use historical data for exposure to natural disasters²³¹ taken from the last 30 years of natural hazards (droughts, extreme temperatures, floods, and tropical storms) and the total population affected by those hazards. The research team notes, however, that while historical trends can provide useful insight into potential impacts over the short-term, they are not always a perfect predictor of vulnerability in the distant future, as specific conditions of climate sensitivity and exposure shift and change.

231 Weather and climate hazards—including hydrological (floods, landslides and wave action), meteorological (storm, extreme temperature and fog) and climatological (drought, glacial lake outburst and wildfire)—are not disasters in and of themselves, but turn disastrous “when human lives are lost and livelihoods damaged or destroyed” (UNDRR & CRED, 2015, p. 06).

BOX 10: USAID JOURNEY TO SELF-RELIANCE: HOW INDICATORS HAVE BEEN INCORPORATED INTO THE RESEARCH METHODOLOGY OF THE STUDY

Journey to Self-Reliance:

Gender inequality, state fragility, and climate vulnerability are all factors that pose challenges for development, particularly when considering priorities related to sustainable development. In its work with developing countries, USAID aims for its Missions to support Governments' increased capacity to plan, finance, and implement solutions to local development changes as a way toward self-reliance. It is committed to see these through, effectively, inclusively, and with accountability. As such, USAID is realigning and reorienting its policies, strategies, and program practices to improve how it supports each country on the Journey to Self-Reliance.

There are two mutually reinforcing factors that determine a country's self-reliance:

- **Commitment:** the degree to which a country's laws, policies, actions, and informal governance mechanisms—such as cultures and norms—support progress towards self-reliance; and
- **Capacity:** how far a country has come in its ability to manage its own development journey across the dimensions of political, social, and economic development, including the ability to work across these sectors.

Seven commitment metrics and 10 capacity metrics will be used to plot the overall journey, to inform strategic decisions, for use in development dialogue, and to signal when USAID might consider strategic transition. Metrics are not meant to be determinative, scorecards, or used alone. Two commitment metrics on inclusive development consider aspects of gender equality: social group equality and economic gender gap. Many other indicators are relevant to state fragility and climate vulnerability. For more information, visit: <https://selfreliance.usaid.gov>

Commitment metrics:

1. Liberal democracy
2. Open government
3. Social group equality
4. Economic gender gap
5. Business environment
6. Trade freedom
7. Biodiversity and habitat protections

Capacity metrics:

8. Government effectiveness
 9. Efficiency of tax administration
 10. Safety and security
 11. Civil society and media effectiveness
 12. Poverty rate
 13. Education quality
 14. Child health
 15. GDP per capita
 16. Information and communication technology use
 17. Export diversification
-

Metrics used in triple nexus indicators framework

The indicators for the gender inequality issue area in this research considered several angles for determining equitable economic factors between women and men outside of the economic gender gap used in the Journey to Self-Reliance metrics. The *social group equality* metric is one of the indicators under the state fragility issue area that takes into account social marginalization and discrimination against various groups, which is a contributing factor to fragility.

Given the overall approach of the Journey to Self-Reliance, which “prioritizes fostering stable, resilient, prosperous, and self-reliant countries,” (USAID, n.d.b) all of the metrics defined in its methodology contribute in some way to mitigating state fragility. The metrics included in the state fragility issue area of the indicators framework developed for this research include *government effectiveness* and *social group equality*.

The triple nexus indicators framework includes *biodiversity and habitat protections* and *GDP per capita* under the climate vulnerability issue area. Additionally, mobile phones were used as a proxy for *information and communications technology use*. While these arguably could have been included under state fragility, after consulting other relevant frameworks on climate vulnerability, the researchers included them as relevant indicators for climate vulnerability which further underscores the interrelated nature of these issues.

6 RESULTS

This sub-section outlines key results identified from the analysis of the 27 indicators included in the triple nexus framework and presents the maps used to visualize the triple nexus prevalence at the global scale. It focuses on the countries with the highest triple nexus prevalence relative to the countries included in this study, as well as some regional trends and results. The triple nexus prevalence scores for each of the 122 countries included in this study are available in full in Annex 7.

Aspects of gender inequality, state fragility, and climate vulnerability affect each country included in this study to some degree. The values for the groups and the triple nexus are *relative* to the group of the 122 countries covered by the research. It is important to note that a country with a relatively low score in any of three issue areas or in the triple nexus is not devoid of gender inequality, state fragility, or climate vulnerability. The research team cautions against interpreting the results of this study in this way.

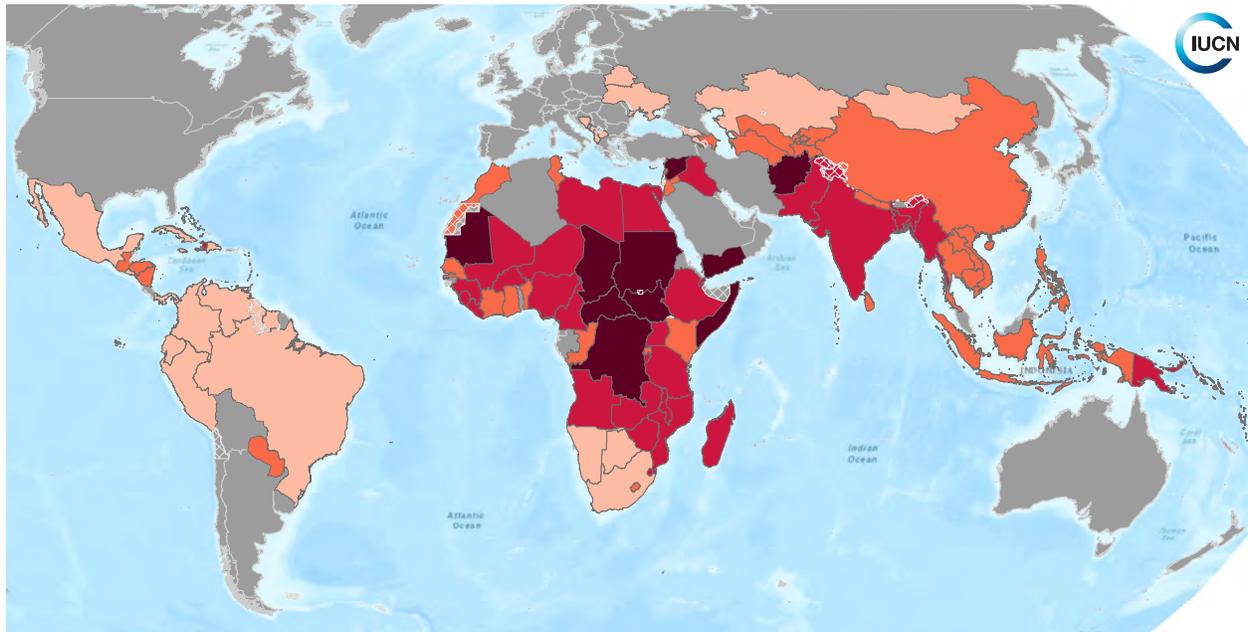
This research provides a triple nexus model as a tool for determining the prevalence of these issues in a particular country, region, or globally; however, there are advantages, disadvantages, and limitations to the approaches used. While some results may be in line with the actual situation in a country or region, other results may be surprising. This may be due to indicator limitations, time-bound data, or data gaps in issue areas and country coverage. It may also be due to issues brought to light through data and this analytical approach, potentially previously unknown, which can be further examined to inform country- and context-specific action. In the following section, some of these limiting factors are discussed in more detail, along with recommendations to build on the findings of this research and analysis.

6.1 TRIPLE NEXUS PREVALENCE

The triple nexus prevalence scores have a potential value from 0-3, indicating the lowest to highest prevalence of the compound issues of gender inequality, state fragility, and climate vulnerability relative to the 122 countries in this study (Annex 7). The map on the prevalence of the triple nexus (Figure 2) categorized these results according to very high, high, moderate, low, and very low prevalence based on the extent to which a country's score deviated from the entire group. The results of the categorical breakdown of triple nexus prevalence are as follows:

- 10 countries with *very high prevalence*
- 29 countries with *high prevalence*
- 42 countries with *moderate prevalence*
- 36 countries with *low prevalence*
- 5 countries with *very low prevalence*

FIGURE 2: RELATIVE PREVALENCE OF THE TRIPLE NEXUS OF GENDER – INEQUALITY, STATE FRAGILITY, AND CLIMATE VULNERABILITY



NEXUS

- Very low
- Low
- Moderate
- High
- Very high
- Not Assessed

Source: Authors

The majority of countries with the highest prevalence of the triple nexus are in sub-Saharan Africa (six), followed by the Middle East and North Africa (three) and Asia and the Pacific (one) (Table 6). Comparatively, countries in Latin America and the Caribbean have relatively lower vulnerability according to the results of the analysis.

TABLE 6: TOP 10 COUNTRIES WITH THE HIGHEST PREVALENCE OF TRIPLE NEXUS ISSUES

RANK (OF 122)	COUNTRY	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS SCORE
1	Somalia	0.69	0.95	0.96	2.60
2	Yemen	1.00	0.79	0.78	2.57
	South Sudan	0.69	1.00	0.88	2.57
4	Afghanistan	0.95	0.71	0.84	2.50
5	Chad	0.84	0.77	0.88	2.49
6	Democratic Republic of the Congo	0.70	0.79	0.94	2.43
7	Central African Republic	0.68	0.92	0.82	2.42
8	Sudan	0.81	0.79	0.80	2.40
9	Mauritania	0.84	0.47	0.84	2.15
10	Syrian Arab Republic	0.74	0.75	0.63	2.12

Regionally, countries in sub-Saharan Africa have the highest prevalence of the triple nexus (average score of 1.70), followed by the Middle East and North Africa (1.63), Asia and the Pacific (1.29), Eurasia (0.84), and Latin America and the Caribbean (0.73). The five countries in sub-Saharan Africa with the highest prevalence are all categorized as having relatively *very high prevalence* of the triple nexus, while four of the five countries in Latin America and the Caribbean have relatively *moderate prevalence*, with the exception of Haiti, which has relatively *high prevalence* (Table 7). For a full list of results by region, see Annex 8.

TABLE 7: TOP TRIPLE NEXUS PREVALENCE, BY REGION

RANK (OF 122)	COUNTRY	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS SCORE
ASIA AND THE PACIFIC					
4	Afghanistan	0.95	0.71	0.84	2.50
13	Pakistan	0.74	0.60	0.65	1.99
17	Myanmar	0.51	0.61	0.78	1.90
23	Bangladesh	0.62	0.49	0.69	1.80
31	India	0.53	0.48	0.65	1.66
EURASIA					
52	Uzbekistan	0.30	0.39	0.61	1.30
63	Turkmenistan	0.31	0.44	0.45	1.20
66	Tajikistan	0.26	0.39	0.49	1.14
69	Azerbaijan	0.16	0.27	0.67	1.10
78	Kyrgyz Republic	0.31	0.30	0.39	1.00
LATIN AMERICA AND THE CARIBBEAN					
21	Haiti	0.39	0.57	0.86	1.82
74	Paraguay (tied)	0.23	0.38	0.41	1.02
74	Guatemala (tied)	0.27	0.42	0.33	1.02
79	Honduras	0.20	0.42	0.35	0.97
79	Nicaragua	0.30	0.40	0.27	0.97
MIDDLE EAST AND NORTH AFRICA					
2	Yemen	1.00	0.79	0.78	2.57
9	Mauritania	0.84	0.47	0.84	2.15

TABLE 7: TOP TRIPLE NEXUS PREVALENCE, BY REGION (CONT.)

RANK (OF 122)	COUNTRY	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS SCORE
10	Syria	0.74	0.75	0.63	2.12
12	Iraq	0.74	0.66	0.67	2.07
15	Libya	0.64	0.61	0.71	1.96
SUB-SAHARAN AFRICA					
1	Somalia	0.69	0.95	0.96	2.60
2	South Sudan	0.69	1.00	0.88	2.57
5	Chad	0.84	0.77	0.88	2.49
6	Democratic Republic of the Congo	0.70	0.79	0.94	2.43
7	Central African Republic	0.68	0.92	0.82	2.42

The study finds that small island states have relatively lower triple nexus scores compared with the entire group of 122 countries, with only two out of the 29 countries (Haiti and Papua New Guinea) characterized as having *high prevalence* of triple nexus issues (Table 8). The lower prevalence of triple nexus issues may be due to the number of missing values in many of the small island states (15 each for Nauru and Saint Kitts and Nevis). In addition, some of the indicators chosen for the triple nexus framework may have a scale of evaluation that masks some factors in small island nations because of the smaller populations and land areas compared to larger countries.

TABLE 8: TRIPLE NEXUS PREVALENCE, BY SMALL ISLAND STATES

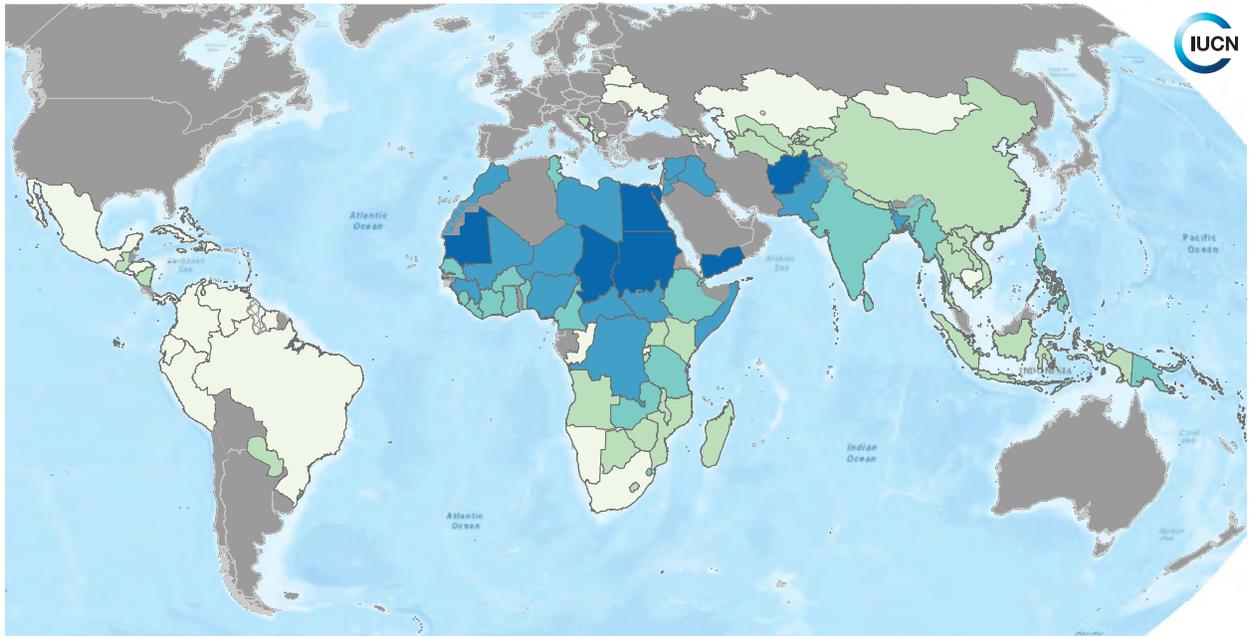
RANK (OF 122)	COUNTRY	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS SCORE
PACIFIC AND INDIAN OCEAN ISLANDS					
39	Papua New Guinea	0.45	0.27	0.82	1.54
40	Marshall Islands	0.38	0.32	0.80	1.50
45	Solomon Islands	0.41	0.21	0.78	1.40
53	Timor-Leste	0.41	0.32	0.55	1.28
58	Maldives	0.53	0.26	0.43	1.22
	Micronesia	0.38	0.08	0.76	1.22
	Nauru	0.46	0.29	0.47	1.22
64	Vanuatu	0.34	0.12	0.69	1.15
66	Kiribati	0.41	0.08	0.65	1.14
68	Tuvalu	0.42	0.16	0.53	1.11
76	Palau	0.42	0.16	0.43	1.01
87	Fiji	0.31	0.13	0.45	0.89
94	Tonga	0.47	0.10	0.22	0.79
97	Samoa	0.34	0.01	0.41	0.76
CARIBBEAN ISLANDS					
21	Haiti	0.39	0.57	0.86	1.82
86	Guyana	0.14	0.29	0.47	0.90
95	Suriname	0.16	0.19	0.43	0.78
101	Dominican Republic	0.05	0.39	0.29	0.73
103	Cuba	0.00	0.25	0.47	0.72

TABLE 8: TRIPLE NEXUS PREVALENCE, BY SMALL ISLAND STATES (CONT.)

RANK (OF 122)	COUNTRY	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS SCORE
104	Grenada	0.22	0.08	0.37	0.67
110	Antigua and Barbuda	0.18	0.18	0.18	0.54
	Dominica	0.15	0.04	0.35	0.54
112	Jamaica	0.12	0.16	0.24	0.52
	Saint Kitts and Nevis	0.26	0.04	0.22	0.52
114	Saint Lucia	0.15	0.09	0.27	0.51
117	Barbados	0.18	0.00	0.29	0.47
118	Saint Vincent and the Grenadines	0.22	0.01	0.16	0.39
119	Bahamas	0.14	0.03	0.18	0.35
121	Trinidad and Tobago	0.14	0.09	0.00	0.23

The Pearson correlation coefficient results between gender inequality, state fragility, and climate vulnerability as groups show that the groups are statistically significant and positively correlated with one another (see Annex 5). This means that the scores for gender inequality, state fragility, and climate vulnerability show a pattern that demonstrates the close, interrelated nature of these three issues: countries with relatively higher values in one issue area tend to have relatively higher scores in the other issue areas (see Figures 3, 4, and 5 for maps of prevalence per group).

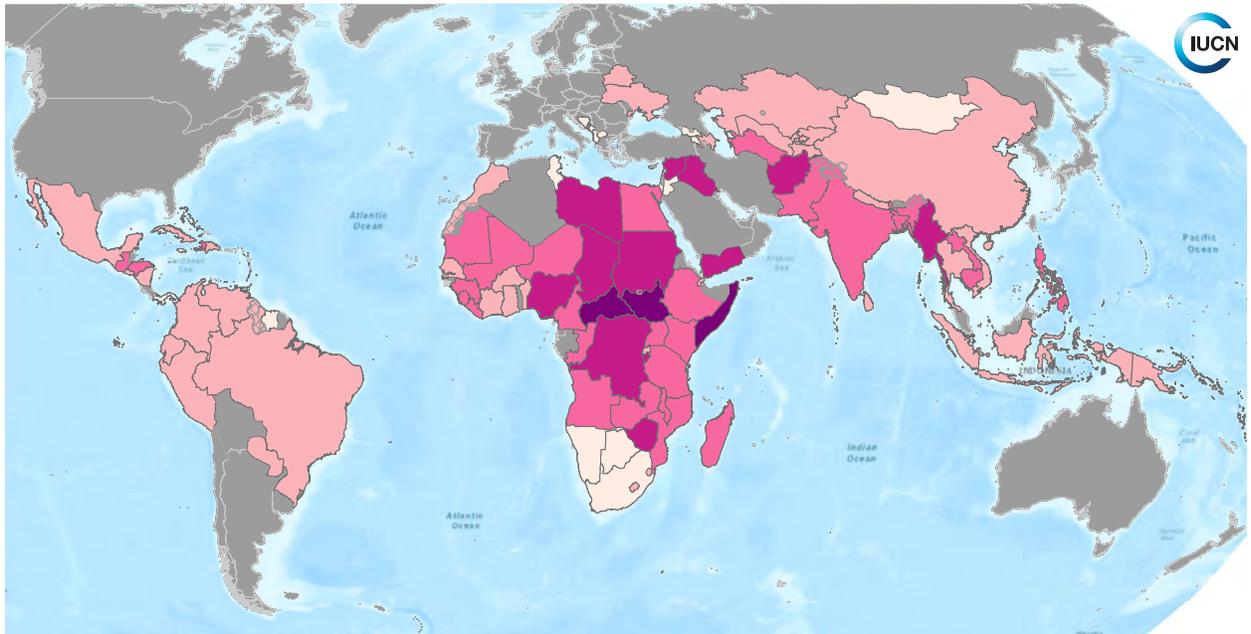
FIGURE 3: RELATIVE PREVALENCE OF GENDER INEQUALITY



NEXUS
 ○ Very low ● Low ● Moderate ● High ● Very high ● Not Assessed

Source: Authors

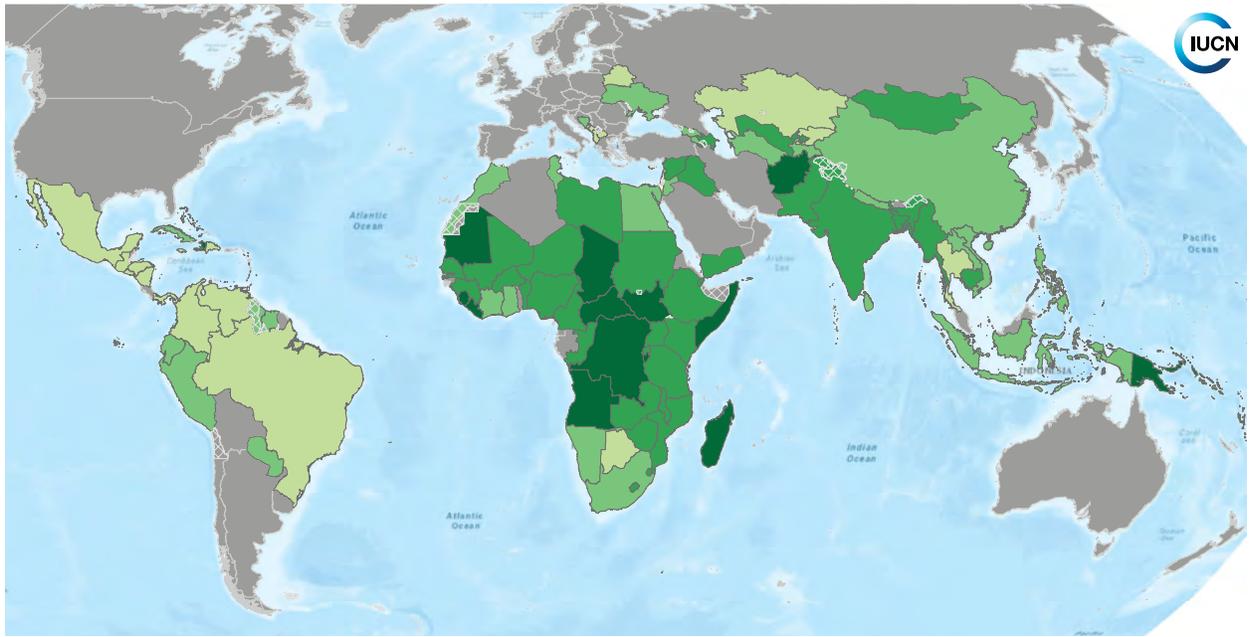
FIGURE 4: RELATIVE PREVALENCE OF STATE FRAGILITY



NEXUS
 ○ Very low ● Low ● Moderate ● High ● Very high ● Not Assessed

Source: Authors

FIGURE 5: RELATIVE PREVALENCE OF CLIMATE VULNERABILITY



NEXUS

Very low

Low

Moderate

High

Very high

Not Assessed

Source: Authors

7 LIMITATIONS OF THE STUDY

Choosing indicators to assess gender inequality, state fragility, and climate vulnerability can be challenging, given the complex nature of these issues and the limited availability of recent, comparative and reputable data sources. In developing the triple nexus framework, a large number of potential indicators were considered, but due to issues such as limited country coverages or data inaccuracies, these indicators were not included. For example, while experiences of GBV are important indications of gender inequality and state fragility in a society, data on the prevalence of GBV is currently only available for a small subset of countries.²³² In addition, even though poverty is a crosscutting indicator related to all three main components of the triple nexus framework, data on poverty is surprisingly limited since it is often collected via household-level surveys, which are costly and time-consuming to conduct and update.²³³

In some cases, given a strong rationale to do so, indicators were selected to act as proxies for issues where data was not available. This was the case in choosing the undernourishment indicator as a proxy for poverty. A list of potential indicators considered for inclusion and the reasoning for ultimately not including them in this research is available in Annex 9. Additionally, while the research team strived to select indicators with coverage for a majority of the 122 selected countries, some countries are missing data for several indicators, especially among small island states, and were estimated using the methods above.

For some gender inequality issues, persistent data gaps are a critical limiting factor for understanding the actual implementation of laws mandating equal rights for women and men. A prominent example of this is the lack of sex-disaggregated data available for land ownership between women and men. The Gender and Land Rights Database of the Food and Agriculture Organization of the United Nations (FAO) is attempting to close this gender data gap by collecting sex-disaggregated data on land ownership and land management. However, the database relies on national agricultural censuses and academic research, meaning there are large gaps in available data. While there are 104 countries with sex-disaggregated data on land management, only 17 countries have sex-disaggregated data available for land ownership.²³⁴

Since this research presents the prevalence of the triple nexus for country comparison, the analysis is limited to representing the issues at the country level. This may have an unintended consequence of masking differences in conditions at the sub-national level that contribute to gender inequality, state fragility, and climate vulnerability. This can be significant, especially for larger countries with widely varying landscapes and climatic conditions, or those with localized fragility or conflict. However, it is difficult to find reliable and relevant data at the sub-national level that is also available for a significant number of countries included in this research. As a result, this analysis provides insights as to which countries have the highest prevalence of these issues at the country level. Further analysis is needed to identify the specific contexts within a country that contribute to issues of gender inequality, state fragility, and climate vulnerability in order to better tailor and target integrated approaches for addressing these issues. This kind of analysis may not be data driven, but rather collected through

232 UN Women (n.d.).

233 World Bank (n.d.e).

234 FAO (n.d.).

expert and stakeholder consultations, case studies, and analysis of available literature at the sub-national level, among other methods not necessarily represented in international databases.

The scores for gender inequality, state fragility, and climate vulnerability used to calculate the triple nexus (Annex 7) are normalized from 0-1. However, a score of 0 in any of the groups does not mean an absence of the issue, but rather it indicates the lowest prevalence of this issue relative to the entire group of 122 countries in this analysis. In other words, a country with a very low prevalence of the triple nexus is not exempt from addressing these issues but may have different entry points and opportunities for intervention and strengthening crosscutting benefits than a country with *very high prevalence*.



SECTION III

DISCUSSION

8 CONCLUSIONS

The findings of this study indicate that the triple nexus issues are interlinked, in terms of their dynamics and prevalence. These interlinkages, in turn, suggest that solutions can be approached in an integrated way. This approach can improve the effectiveness of interventions addressing gender inequality, state fragility, and climate vulnerability, relevant to all countries included in this study. Understanding the context-specific drivers and impacts of climatic hazards, fragility and inequality help to develop targeted intervention strategies. Although no “one-size fits all” solutions exist, regional and international cross-learning and collaboration can be powerful strategies to address environmental, security, and human rights issues that exceed borders of single states.

The literature review in Section I of this report shows that gender inequality, state fragility, and climate vulnerability are closely interrelated in their drivers and impacts, but it also identified that there is a gap in the literature addressing all three of these issues together. Section II contributes to filling this gap through development, analysis, and mapping of the indicator framework, suggesting that gender inequality, state fragility, and climate vulnerability may have a statistically significant, positive correlation. The construction and application of an indicators framework further reveals the extent of widespread data gaps, as several preferred indicators could not be used and/or values needed to be estimated.

The mapping analysis demonstrated that the triple nexus issues are particularly prevalent in sub-Saharan Africa and the Middle East and North Africa. These results indicate priority areas where opportunities exist for an integrated approach to address these issues holistically for multiple and wide-reaching impact and benefits. Notably, the issues and underlying causes of gender inequality, state fragility and climate vulnerability are highly complex and context-specific, and as a result, two countries that end up with very similar triple nexus prevalence scores might have very distinct challenges and opportunities (e.g. Sudan and Bangladesh). Consequently, these unique challenges and opportunities require targeted, context-specific interventions.

Every country can make progress in some way to improve gender equality, stability and climate resilience. Extracting lessons learned on enabling conditions and successful interventions can and should inform efforts by USAID, national-level entities, bilateral and multilateral international organizations, and other stakeholders to help in the development of effective interventions to contribute to the structures, institutions and legal and policy frameworks.

Part of the preparation for this analysis was a review of existing, reputable indices and frameworks that address gender inequality, state fragility, or climate vulnerability. The findings of the study align with the ranking of some of the main existing indices looking at single issue areas, including the Global Gender Gap Index,²³⁵ the Fragile State Index,²³⁶ and the Global Adaptation Index,²³⁷ which show that the countries that have a high prevalence of the triple nexus come out similarly high in those indices.

235 WEF (2017).

236 Fund for Peace (2017).

237 Chen et al. (2015).

9 OPPORTUNITIES AND RECOMMENDATIONS

The outcomes of this research highlight opportunities and provide for evidence-based recommendations, particularly for donors, decision makers, and practitioners working in international sustainable development, including USAID Missions and Bureaus. The research finds that there is a significant relationship among gender inequality, state fragility, and climate vulnerability. Development interventions may therefore benefit from a strategic integrated approach focusing on the interconnected nature of these issues, particularly in the 10 countries with the highest relative prevalence of the triple nexus, but also in every country considered in this analysis and beyond.

Ensuring women's rights, needs, and agency is a moral obligation from a human-rights perspective. Empowering women and striving toward gender equality can also contribute to a more effective, equitable and sustainable way to support climate resilience, adaptive capacity, and effective, legitimate states.

9.1 KNOWLEDGE AND CAPACITY BUILDING

The literature review revealed critical research gaps in connecting gender inequality, state fragility and climate vulnerability. More research can target filling these knowledge gaps to better understand the complexity of the interlinkages among these topics and the entry points for addressing them together, especially for specific country contexts. Special attention can be devoted to expanding collection and dissemination of sex-disaggregated data, particularly within climate vulnerability²³⁸ and state fragility contexts. Important data gaps include information on the implementation of laws that provide equal rights for women and men, such as land tenure and protection against GBV.

Additional research would be invaluable to be able to target interventions at this triple nexus, especially considering country-specific research to support governments and their stakeholders, development and donor communities, including USAID Missions, and civil society organizations and academia. Further analysis could support the development of tools that can be used in developing programs and interventions that address gender inequality, state fragility, and climate vulnerability in a cross-sectoral, collaborative manner. This can help ensure effective and efficient interventions that can enact change across all three topics, improving the lives and livelihoods of women and communities. Based on the findings of the literature review and apparent research gaps, Table 9 sets out research questions that could be used to guide further research on the triple nexus.

238 UN Environment & IUCN (2019).

TABLE 9: TRIPLE NEXUS ISSUES – OPPORTUNITIES AND RECOMMENDATIONS FOR FUTURE RESEARCH

EXPLORING CONTEXT-SPECIFIC TRIPLE NEXUS ISSUES

- What are the local drivers and root causes of any conflict, migration, fragility, and climate vulnerability in a given state or region?
 - Data is often lacking for small island nations, although it is known that they are particularly vulnerable to impacts of climate change, such as sea level rise and warming, and increased natural hazards, and action is needed to protect and sustain their communities. What are the unique vulnerabilities and adaptive capacities of small island nations, and in what ways can women be (or are women being) agents of change to support enhanced adaptive capacity and state resiliency?
 - Country comparison study: take two countries with similar characteristics (in terms of geographic area, GDP, population, exposure to natural disasters, etc.) but have varied outcomes in terms of state fragility, climate vulnerability, and gender inequality. What are the factors that drive different results in these contexts? What lessons can be transferred to other countries with similar situations?
-

CONDUCTING THEORETICAL RESEARCH ON THE TRIPLE NEXUS

- What is the evidence for how reducing gender inequalities and including women's participation in conflict mitigation, peacebuilding and climate adaptation and mitigation activities have led to better outcomes?
 - In what ways do environmental factors, such as deforestation, desertification, natural hazards, and resource scarcity, act as drivers of migration, violence, fragility, and vulnerability? What is the relative contribution of environmental factors, compared to other drivers of migration, violence, fragility, and vulnerability?
 - How have humanitarian aid and disaster recovery efforts reached marginalized populations? How can this be improved?
 - There currently exists a knowledge and data gap in understanding the scope of GBV in areas of high climate and conflict vulnerability. What quantitative and qualitative data can be collected and analyzed to support closing this data gap?
 - Factors such as race, religion, age, and socioeconomic status intersect with gender and affect how different women and men are impacted by, and can adapt to, environmental and societal challenges. Though there has been an increasing awareness of the importance of intersectionality in gender research, more sustained effort is needed. How does intersectionality, and the recognition that women are not a homogenous group, impact understanding on gender-related roles and impacts in relation to climate vulnerability and state fragility?
-

REVIEWING POLICIES AND INTERVENTIONS ON THE TRIPLE NEXUS

- How have policies and narratives of climate change, migration and conflict affected international and national priorities and action to mitigate these challenges?
 - What can we learn from best practices and successful programmatic interventions that have addressed the triple nexus in a holistic way? Similarly, what can we learn from efforts that have been less successful? What were the barriers and what could be improved?
 - In what ways are relevant departments and ministries on climate, security, and gender in countries around the world addressing climate change in their policies and programming, and are they including gender considerations in relation to climate change adaptation and mitigation efforts?
-

Awareness-raising efforts can ensure that practitioners and donors in these fields recognize, understand, and value the inter-related nature of gender inequality, climate change vulnerability, and state fragility, particularly where there is a high prevalence of all three topics.

Knowledge products, capacity building materials, and training tools can support stakeholders across sectors and levels to understand and address triple nexus issues. For example, mission-specific technical resources, tools, and support could be tailored to high-triple nexus prevalence countries or regions. Capacity building efforts can bring people together to share knowledge and strengthen their networks, which can bridge the gap between knowledge generation and developing meaningful programs and policies.

9.2 PROGRAMMING

Further research can provide additional information for developing evidence-based programming. This may be particularly urgent in the 10 countries with the highest relative prevalence of the triple nexus, where there appear to be significant opportunities for integrated action and programming. For example, upon identifying the specific drivers within a country that contribute to issues of gender inequality, state fragility, and climate vulnerability, integrated approaches can be better tailored for and targeted to addressing these issues. For instance, UNDP, UN Environment, and UN Women conducted a joint project in Sudan to support women in exercising their agency in local decision-making processes pertaining to natural resources use and management, including strengthening women's capacities for conflict resolution through leadership opportunities in peacebuilding relating to natural resource conflicts.²³⁹ Conflict resolution and peacebuilding efforts can include focus on climate resiliency and gender-responsive actions, as this research shows the importance of climate-related adaptive capacity on state fragility, as well as the positive effect that women's involvement has during times of state- and peacebuilding efforts. Development agencies working on climate resilience and adaptation can incorporate gender-responsive actions and activities that support a stable and effective government to ensure the success of their projects. An integrated, gender-responsive approach in activity design, trainings, strategies, workshops, and other efforts can support sustainable development goals.

Developing gender analyses and action plans that take into account triple nexus issues can support an integrated, gender-responsive approach to climate vulnerability and state fragility programming. The triple nexus indicators identified in Section II of this report can be extremely useful tools and sources of information to inform integrated programming. In addition, social and environmental impact assessments can and should bear in mind triple nexus issues to strengthen context-specific awareness of a given development intervention.

A key aspect of developing integrated, gender-responsive programming is to increase and enhance collaboration and partnership across sectors. Gender and climate experts should be invited to participate in developing and validating state fragility programming, for example. Investing in convening actors working on each of these three issues, as well as data and statistics experts, could be a priority for developing and implementing effective policies to increase knowledge and enact positive change.

239 UN Environment et al. (2019).

It is also important to look for lessons learned and best practices from programs and interventions developed to address these topics together, whether at the nexus of two or three of these issues. This will help to identify enabling conditions for this work to share among USAID Missions, as well as other practitioners and donors, to highlight successes and provide positive examples of the differences that cross-sectoral work can make. Priority strategies, such as Country and Regional Development Cooperation Strategies (CDCS/RDCS) (see Box 10), could provide an opportunity to promote and report on such programming.

Gender-responsive interventions should address societal norms and power structures that are barriers to achieving gender equality. As it will take time to shift gender norms and structures, continuous action, investment and monitoring are needed to achieve women's empowerment and gender equality. Long-term programs and on-going monitoring can support long-term positive gains.

National governments and international agencies need to adequately anticipate and manage complex processes, such as climate adaptation, fragility, and migration, by prioritizing early action and response, rather than waiting until problems arise. Early warning systems are important to detect risks of climate hazards, conflict and instability early on, and there is an opportunity to develop innovative, gender-sensitive early warning indicators and recommendations for appropriate response actions.²⁴⁰

240 Demetriades & Esplen (2008).

BOX 11: COUNTRY/REGIONAL DEVELOPMENT COOPERATION STRATEGY (CDCS/RDCS)

To better understand USAID Mission priorities and inform strengthened future Development Cooperation Strategies, AGENT analyzed nine RCDS and 52 CDCS documents, using a keyword analysis of 179 gender-related terms complemented by a qualitative analysis on how strategies consider gender, the environment, and the intersection of the two issues.

Of the 10 countries with *very high prevalence* of triple nexus issues, only two have developed CDCS documents as of 2018: Yemen and Democratic Republic of the Congo. Both Yemen and DRC include the gender-environment nexus within their CDCS.

Eight out of the 10 countries with highest prevalence are in Africa, and are included within RDCS documents. The Africa, Central Africa, East Africa, and West Africa regional documents each include the gender-environment nexus.

Donor frameworks and development strategies can take steps to identify and implement action on triple nexus links.



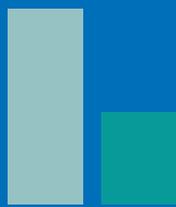
20%

of strategies specifically include the term “economic empowerment” in relation to gender equality or women’s empowerment



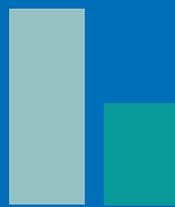
Women are regarded as vulnerable

98% 46%



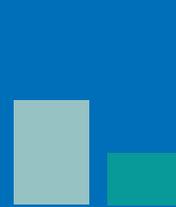
As beneficiaries

98% 51%



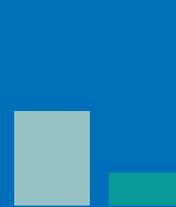
As stakeholders

52% 26%



As agents of change

47% 16%



Women



Women in relation to environment



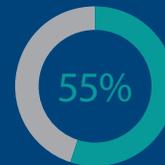
include a gender analysis



include sex-disaggregated data



of documents include activities specifically targeted to or for women



of documents include activities

9.3 POLICY AND PLANNING

Gender inequality, state fragility, and climate vulnerability are all matters of international importance and negatively affect sustainable development. It is imperative that the international policy agenda raises awareness and addresses these three issues and the interlinkages between them. This can support the goals of donor and development agencies and international institutions working on advancing progress on each or all of these areas, including as related to the interlinked Sustainable Development Goals (SDGs). There are many entry points across the topics that allow for cross-sectoral policies, particularly when considering the crosscutting nature of gender equality and women's empowerment, and adequate funding needs to be made available, including through policy mandates, for new and integrated initiatives.

Dialogue and awareness around the interlinkages between gender inequality, state fragility and climate vulnerability are important as opportunities to address the three issues in an integrated manner, including in policy development and implementation. For example, National Adaptation Plans need to be both conflict-sensitive and gender-responsive to achieve optimized effectiveness. Similarly, development, conflict resolution, and peacebuilding need to be climate-sensitive and gender-responsive. Gender-blind climate adaptation policies risk reinforcing existing inequalities, which can aggravate further breakdowns in social relations and the escalation of violence to which women and girls are subjected in contexts of instability.²⁴¹ Gender policies, strategies, and action plans need to specifically consider groups that are highly vulnerable to climate hazards, conflict, and GBV.

National borders do not confine environmental and social challenges, such as climate hazards and migration. Therefore, regional and international collaboration and coordination can expand upon and complement national efforts. Policies and strategies developed collaboratively by governments, donors, development agencies, and international institutions are key to addressing the global challenges of gender inequality, state fragility and climate vulnerability. Negotiations and conventions on these topics—both internationally and nationally—should include experts across the triple nexus issues to ensure better policy outcomes.

In any such actions, women and girls should not be merely classified as victims, whether of war, GBV, or the effects of climate variability and change. Rather, while recognizing their often acute and context-specific vulnerabilities, they should instead be included as stakeholders, leaders, and partners, as well as innovators and peacebuilders, recognized for their agency and potential for informing and leading change at different levels and across various sectors.

²⁴¹ Dube (2014).

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ANNEXES

ANNEX I: LIST OF COUNTRIES

ASIA AND THE PACIFIC (29)

Afghanistan	Marshall Islands	Samoa
Bangladesh	Micronesia	Solomon Islands
Cambodia	Mongolia	Sri Lanka
China	Myanmar	Thailand
Fiji	Nauru	Timor-Leste
India	Nepal	Tonga
Indonesia	Pakistan	Tuvalu
Kiribati	Palau	Vanuatu
Laos	Papua New Guinea	Viet Nam
Maldives	Philippines	

EURASIA (17)

Albania	Georgia	Serbia
Armenia	Kazakhstan	Tajikistan
Azerbaijan	Kyrgyz Republic	Turkmenistan
Belarus	Moldova	Ukraine
Bosnia and Herzegovina	Montenegro	Uzbekistan
Cyprus	North Macedonia	

LATIN AMERICA AND THE CARIBBEAN (27)

Antigua and Barbuda	El Salvador	Panama
Bahamas	Grenada	Paraguay
Barbados	Guatemala	Peru
Brazil	Guyana	Saint Kitts and Nevis
Colombia	Haiti	Saint Lucia
Cuba	Honduras	Saint Vincent and the Grenadines
Dominica	Jamaica	Suriname
Dominican Republic	Mexico	Trinidad and Tobago
Ecuador	Nicaragua	Venezuela

MIDDLE EAST AND NORTH AFRICA (12)

Egypt	Lebanon	Palestine
Iraq	Libya	Syria
Israel	Mauritania	Tunisia
Jordan	Morocco	Yemen

SUB-SAHARAN AFRICA (37)

Angola	Ghana	Rwanda
Benin	Guinea	Senegal
Botswana	Kenya	Sierra Leone
Burkina Faso	Lesotho	Somalia
Burundi	Liberia	South Africa
Cameroon	Madagascar	South Sudan
Central African Republic	Malawi	Sudan
Chad	Mali	Tanzania
Côte d'Ivoire	Mozambique	Uganda
Democratic Republic of the Congo	Namibia	Zambia
Djibouti	Niger	Zimbabwe
Eswatini	Nigeria	
Ethiopia	Republic of the Congo	

ANNEX 2: GENDER INEQUALITY INDICATOR DESCRIPTIONS

SUB-GROUP	LEGAL RIGHTS	GENDER PARITY
Indicators	<ol style="list-style-type: none"> 1. Laws against gender-based violence 2. Equal access to natural and economic resources 3. Inheritance rights of widows and daughters 4. Parental authority of women in marriage and divorce 	<ol style="list-style-type: none"> 5. Literacy ratio 6. Basic education ratio 7. Labor force participation ratio 8. Political representation ratio

SUB-GROUP: LEGAL RIGHTS

I. LAWS AGAINST GBV

Description: This indicator measures the ability of formal and informal laws, norms and practices to protect women’s physical integrity from violence and female genital mutilation. It is constructed using four separate variables:

- **Laws on domestic violence**
Measures whether the legal framework offers women legal protection from domestic violence. Five categorical scores are possible ranging from 0-1. A score of zero indicates that there is specific legislation in place to address domestic violence, the law is adequate overall, and there are no reported problems of implementation. A score of one indicates that there is no legislation in place to address domestic violence.
- **Laws on rape**
Measures whether the legal framework offers women legal protection from rape. Five categorical scores are possible ranging from 0-1. A score of zero indicates that there is specific legislation in place to address rape, marital rape is included, perpetrators cannot escape prosecution if they marry the victim and implementation is effectively enforced. A score of one indicates that there is no legislation in place to address rape.
- **Laws on sexual harassment**
Measures whether the legal framework offers women legal protection from sexual harassment. Five categorical scores are possible ranging from 0-1. A score of zero indicates that there is specific legislation in place to address sexual harassment, the law is adequate overall and there are no reported problems of implementation. A score of one indicates that there is no legislation in place to address sexual harassment.
- **Female genital mutilation**
Provides the percentage of women who have undergone any type of female genital mutilation.

Data year: 2014

Source: OECD Development Centre. Social Institutions and Gender Index (SIGI). Retrieved from <https://www.genderindex.org/>

Rationale: GBV undermines the health, dignity, security, and autonomy of its victims. Restricted physical integrity due to GBV and genital mutilation has serious impacts on health outcomes for women and their children and on economic and social development by increasing women's vulnerability to poverty.

Notes:

- This is a categorical indicator and did not require any correction method.
- The original dataset was missing 26 of the 122 countries in this research and missing values were estimated using regional averages.

2. EQUAL ACCESS TO NATURAL AND ECONOMIC RESOURCES

Description: This indicator captures discrimination in women's rights to access and make decisions over natural and economic resources. It is constructed using four variables:

- **Secure access to land**
Measures whether women and men have equal and secure access to land use, control and ownership. Three categorical scores are possible, ranging from 0-1. A score of zero indicates that the law guarantees the same rights to own, use, and control land to both women and men. A score of 0.5 indicates that the law guarantees the same rights to own, use, and control land to women and men, but there are some customary, traditional or religious practices that discriminate against women. A score of one indicates that law does not guarantee the same rights to own, use, and control land to women and men, or women have no legal rights to own, use, and control land.
- **Secure access to non-land assets**
Measures whether women and men have equal and secure access to non-land assets use, control, and ownership. Three categorical scores are possible, ranging from 0-1. A score of zero indicates that the law guarantees the same rights to own and administer property other than land to both women and men. A score of 0.5 indicates that the law guarantees the same rights to own and administer property other than land to both women and men, but there are some customary, traditional or religious practices that discriminate against women. A score of one indicates that the law does not guarantee the same rights to own and administer property other than land to women and men, or women have no legal rights to own and administer property other than land.
- **Access to financial assets**
Measures whether women and men have equal access to financial services. Three categorical scores are possible, ranging from 0-1. A score of zero indicates that the law guarantees the same rights to access formal financial services (e.g. credit, bank account, and bank loans) to both women and men. A score of 0.5 indicates that the law guarantees the same rights to access formal financial services to both women and men, but there are some customary, traditional or religious practices that discriminate against women. A score of one indicates that the law does not guarantee the same rights to access formal financial services to women and men, or women have no legal rights to access financial services.
- **Access to public space**
Measures whether women face restrictions on their freedom of movement and access to public space, such as restricted ability to choose their places of residence, visit their families and friends or to apply for a passport. Three categorical scores are possible, ranging from 0-1. A score of

zero indicates that the law guarantees the same rights to freely move to both women and men. A score of 0.5 indicates that the law guarantees the same rights to freely move to women and men, but there are some customary, traditional or religious practices that discriminate against women. A score of one indicates that the law does not guarantee the same rights to freely move to women and men, or women have no freedom of movement.

Data year: 2014

Source: OECD Development Centre. Social Institutions and Gender Index (SIGI). Retrieved from <https://www.genderindex.org/>

Rationale: Insecure or weak rights to land, non-land assets and financial services reduce income-generating opportunities for women, lower their decision-making power within the household, increase food insecurity in their families, and make women and families more vulnerable to poverty.

Notes:

- This is a categorical indicator and did not require any correction method.
- The original dataset was missing 25 of the 122 countries in this research and missing values were estimated using regional averages.

3. INHERITANCE RATES OF WIDOWS AND DAUGHTERS

Description: This indicator measures women’s equal access to inheritance rights. It is based on two separate variables:

- **Inheritance rights of widows**
Measures whether widows and widowers have equal inheritance rights. Three categorical scores are possible, ranging from 0-1. A score of zero indicates that the law guarantees the same inheritance rights to both widows and widowers. A score of 0.5 indicates that the law guarantees the same inheritance rights to both widows and widowers, but there are some customary, traditional or religious practices that discriminate against widows. A score of one indicates that the law does not guarantee the same inheritance rights to widows and widowers, or widows have no inheritance rights at all.
- **Inheritance rights of daughters**
Measures whether daughters have equal inheritance rights. Three categorical scores are possible, ranging from 0-1. A score of zero indicates that the law guarantees the same inheritance rights to both daughters and sons. A score of 0.5 indicates that the law guarantees the same inheritance rights to both daughters and sons, but there are some customary, traditional or religious practices that discriminate against daughters. A score of one indicates that the law does not guarantee the same inheritance rights to daughters and sons, or daughters have no inheritance rights at all.

Data year: 2014

Source: OECD Development Centre. Social Institutions and Gender Index (SIGI). Retrieved from <https://www.genderindex.org/>

Rationale: Women’s equal access to inheritance as widows and daughters influences their decision-making power and status in the family and community and affects their ability to choose their own development pathways and the well-being of their families.

Notes:

- This is a categorical indicator and did not require any correction method.
- The original dataset was missing 25 of the 122 countries in this research and missing values were estimated using regional averages.

4. PARENTAL AUTHORITY OF WOMEN IN MARRIAGE AND DIVORCE

Description: This composite indicator captures whether women have the same rights as men to act as the legal guardians of their children during marriage and in cases of divorce. It is constructed using two separate variables:

- **Parental authority in marriage**
Measures whether married women and men have the same rights to act as the legal guardians of their children. Three categorical scores are possible, ranging from 0-1. A score of zero indicates that the law guarantees the same parental authority to women and men during marriage. A score of 0.5 indicates that the law guarantees the same parental authority to women and men during marriage, but there are some customary, traditional or religious practices that discriminate against women. A score of one indicates that the law does not guarantee the same parental authority to women and men during marriage, or women have no rights to parental authority.
- **Parental authority in divorce**
Measures whether divorced women and men have the same rights to act as the legal guardians of their children. Three categorical scores are possible, ranging from 0-1. A score of zero indicates that the law guarantees the same parental authority to women and men after divorce. A score of 0.5 indicates that the law guarantees the same parental authority to women and men after divorce, but there are some customary, traditional or religious practices that discriminate against women. A score of one indicates that the law does not guarantee the same parental authority to women and men after divorce, or women have no rights to parental authority.

Data year: 2014

Source: OECD Development Centre. Social Institutions and Gender Index (SIGI). Retrieved from <https://www.genderindex.org/>

Rationale: Women’s legal and social equality as legal guardians of their children, both in marriage and in divorce, is a strong indicator of a mother’s equal standing and influence not only in her family but also in her community.

Notes:

- This is a categorical indicator and did not require any correction method.
- The original dataset was missing 25 of the 122 countries in this research and missing values were estimated using regional averages.

SUB-GROUP: GENDER PARITY

5. LITERACY RATIO

Description: Literacy rate, 15–24 years old, women and men (ratio)

Data year: Varies from 2000–2013 (exception is Solomon Islands data from 1999)

Source: United Nations Statistical Division (UNSD). Retrieved from <http://data.un.org/Data.aspx?q=literacy&d=GenderStat&f=inID%3a62>

Rationale: Two thirds of the world’s 743 million illiterate adults are women. Women need to be literate in order to be able to fully participate in decision-making regarding their livelihood, their family’s livelihood as well as their broader community’s livelihood.

Notes:

- This indicator is a percentage and was rescaled so that the highest value indicates lowest literacy ratio for women to men.
- The original dataset was missing 15 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

6. BASIC EDUCATION RATIO

Description: Population with at least secondary education, women and men (ratio)

Data year: 2013

Source: Barro, R. J. and Lee, J.W. (2013). “A New Data Set of Educational Attainment in the World, 1950-2010.” *Journal of Development Economics* 104: 184-198. Downloaded from UNDP Human Development Report: <http://hdr.undp.org/en/content/population-least-secondary-education-femalemale-ratio-ratio-female-male-rates>

Rationale: Access to education can mitigate women’s vulnerability to weather-related disasters by increasing their life-saving skills, such as risk assessment, and their ability to more effectively negotiate and advocate for their rights. Education also empowers women economically by increasing her earning capabilities.

Notes:

- This indicator is a percentage and was rescaled so that the highest value indicates lowest basic education ratio for women to men.
- The original dataset was missing 24 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

7. LABOR FORCE PARTICIPATION RATIO

Description: Female/male ratio measures the proportion of the population ages 15 and older that are economically active: all people who supply labor.

Data year: 2017

Source: UNDP. *Key indicators on the labor market*. Downloaded from UNDP Human Development Report: <http://hdr.undp.org/en/content/labour-force-participation-rate-female-male-ratio>

Rationale: Female labor force participation is an important driver (and outcome) of growth and development and can increase a woman's economic empowerment and decision-making power in the household.

Notes:

- This indicator is a percentage and was rescaled so that the highest value indicates lowest labor force participation ratio for women to men.
- The original dataset was missing 11 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

8. POLITICAL REPRESENTATION RATIO

Description: The proportion of seats held by women in national parliaments (in percentage) based on IPU's weighted aggregation.

Data year: 10-year average: 2008-2017

Source: World Bank Open Data, based on Inter-Parliamentary Union (IPU). Downloaded from the World Bank World Development Database: <https://data.worldbank.org/indicator/SG.GEN.PARL.ZS>
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Rationale: Women are vastly underrepresented in decision-making positions in government, although there is some evidence of recent improvement. Without representation at this level, it is difficult for women to influence policy. When women are not well represented in decision-making processes, it constrains their ability to meaningfully participate in decisions on climate change adaptation and mitigation.

Notes:

- This indicator is a percentage and was rescaled so that the highest value indicates lowest political representation ratio for women to men.
- The original dataset was missing 2 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

ANNEX 3: STATE FRAGILITY INDICATOR DESCRIPTIONS

SUB-GROUP	EFFECTIVENESS	LEGITIMACY
Indicators	<ol style="list-style-type: none">1. Violent conflict2. Government effectiveness3. Undernourishment4. Maternal mortality	<ol style="list-style-type: none">5. State use of political terror6. Voice and accountability7. Control of corruption8. Child marriage9. Social group equality

SUB-GROUP: EFFECTIVENESS

I. VIOLENT CONFLICT

Description: Total magnitude of recent intrastate (civil) violent conflict (2013-2017), weighted for recent years (Magnitude score is on a scale from 1-10 for each event).

Data year: 2013-2017 (data updated annually based on instances of political violence)

Source: Center for Systemic Peace. *Major Episodes of Political Violence* (MEPV) dataset. Downloaded from <http://www.systemicpeace.org/inscrdata.html>

Rationale: States that experience high magnitude conflict and fail to keep their populations safe can be considered 'failed' or 'failing'. Conflict puts strains on resources and the populations directly affected by violence.

Notes:

- This indicator did not require any correction method.
- The original dataset was missing 19 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

2. GOVERNMENT EFFECTIVENESS

Description: Estimate scores on a scale from -2.5 (weak) to 2.5 (strong). Government effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Data year: 2016

Source: World Bank. *Worldwide Governance Indicators*. Downloaded from <http://info.worldbank.org/governance/wgi/#home>

Rationale: The quality of public service provision is a good, directly observable outcome of effective governments.

Notes:

- This indicator was rescaled so the highest values indicate the lowest level of government effectiveness.
- The original dataset was missing 1 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

3. UNDERNOURISHMENT

Description: Prevalence of undernourishment (in percentage, 3-year average). Estimate of the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life.

Data year: 2014-2016

Source: United Nations Food and Agriculture Organization (FAO). Downloaded from <http://www.fao.org/faostat/en/#data/FS>

Rationale: Economic effectiveness should also be measured by the ability of the national government to keep people out of poverty. While not a perfect indication of poverty, undernourishment indicates if a person is able to consistently access and afford nutritious foods, which is tied to poverty and further tied to the ability for governments to provide services to end hunger and undernourishment.

Notes:

- This indicator did not require any correction method.
- The original dataset was missing 16 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

4. MATERNAL MORTALITY

Description: Maternal mortality ratio per 100,000 live births

Data year: 2015

Source: World Health Organization (WHO). Downloaded from <http://www.who.int/healthinfo/statistics/indmaternalmortality/en/>

Rationale: Maternal mortality is one of the best integrated indicators of both the status of women, and the strength of the health system, including accessibility and capacity of services linked to the presence and functionality of basic infrastructure, such as roads and health facilities.

Notes:

- This indicator did not require any correction method.
- The original dataset was missing 7 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

SUB-GROUP: LEGITIMACY**5. STATE USE OF POLITICAL TERROR**

Description: Political terror scale; measures violence by the state on a scale from 1-5 for three expert reports from Amnesty International, the US State Department, and Human Rights Watch.

Data year: 2016

Source: *The Political Terror Scale*. Downloaded from <http://www.politicalterrorscale.org/>

Rationale: State-sponsored political terror, by definition, targets groups opposed to the state with various forms of coercion. This indicator is focused on coercion directed at personal security, as opposed to economic, social, or political forms of force.

Notes:

- This indicator did not require any correction method.
- The original dataset was not missing scores for any of the 122 countries included in this research.

6. VOICE AND ACCOUNTABILITY

Description: Estimate scores on a scale from -2.5 (weak) to 2.5 (strong). Voice and accountability captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

Data year: 2016

Source: World Bank. *Worldwide Governance Indicators*. Downloaded from <http://info.worldbank.org/governance/wgi/#home>

Rationale: Governments that are open to participation in the political process and accountable to independent media outlets build political legitimacy with their constituents.

Notes:

- This indicator was rescaled so the highest values indicate the lowest level of voice and accountability.
- The original dataset was missing 1 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

7. CONTROL OF CORRUPTION

Description: Estimate scores on a scale from -2.5 (weak) to 2.5 (strong). Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption.

Data year: 2016

Source: World Bank. *Worldwide Governance Indicators*. Downloaded from <http://info.worldbank.org/governance/wgi/#home>

Rationale: From USAID Measuring Fragility: “The presence of corruption is often a manifestation of a lack of respect of both the corruptor (typically a private citizen or firm) and the corrupted (typically a public official or politician) for the rules which govern their interactions, and hence represents a failure of governance according to our definition.”²⁴²

Notes:

- This indicator was rescaled so the highest values indicate the lowest level of control of corruption.
- The original dataset was missing 1 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

8. CHILD MARRIAGE

Description: Percentage of women aged 20 to 24 years who were first married or in a union before age 18.

Data year: Most data from the period 2010-2017, but some are less recent (as far as 2003).

Source: UNICEF. Downloaded from <https://data.unicef.org/topic/child-protection/child-marriage/>

Rationale: Child marriage does not cause fragile states, but it does reinforce poverty, limit girls’ education, stymie economic progress, and contribute to regional instability. In such circumstances, early marriage becomes a more palatable option for parents and families looking to protect their girls.

Notes:

- This indicator did not require any correction method.
- The original dataset was missing 15 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

242 USAID (2005b, p. 25).

9. SOCIAL GROUP INEQUALITY

Description: Scored on a scale from 0-4 based on answers from experts to the following question: Do all social groups, as distinguished by language, ethnicity, religion, race, region or caste, enjoy the same level of civil liberties, or are some groups generally in a more favorable position?

Data year: 2017

Source: Varieties of Democracy (V-Dem) Institute. Downloaded from <https://www.v-dem.net/en/>

Rationale: Exclusion of certain social groups impedes the full realization of a fair and open democracy and leads to social unrest and marginalization in access to resources.

Notes:

- This indicator did not require any correction method.
- The original dataset was missing 14 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

ANNEX 4: CLIMATE VULNERABILITY INDICATOR DESCRIPTIONS

SUB-GROUP	EXPOSURE AND SENSITIVITY	ADAPTIVE CAPACITY
Indicators	<ol style="list-style-type: none"> 1. Natural disasters 2. Urban concentration 3. Agricultural employment 4. Low elevation population 5. Water stress 	<ol style="list-style-type: none"> 6. Drinking water 7. Electricity 8. Mobile phones 9. GDP per capita 10. Biodiversity and habitat

SUB-GROUP: EXPOSURE AND SENSITIVITY

I. NATURAL DISASTERS

Description: Instances of selected natural disasters (droughts, extreme temperatures, floods, and tropical storms) and associated total affected population (1988-2018).

Data year: 1988-2018 (until mid-2018)

Source: *The EM-DAT International Disaster Database – CRED*. Downloaded from <https://www.emdat.be/>

Rationale: Exposure to natural disasters and climate stressors are important to understand how often and to what extent a country’s population has to cope with one or more disasters. These disasters can also affect life-supporting resources, such as agricultural systems, land, water sources, etc., which affects a population’s vulnerability to climate changes.

Notes:

- This indicator did not require any correction method.
- The original dataset was missing 1 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

2. URBAN CONCENTRATION

Description: Urban concentration measures both concentration of a country's population within cities (i.e. the degree of urbanization in general) and concentration of the urban population within large population centers (cities of 1,000,000 inhabitants or more).

- a. Urban population (percentage of total population) (2017)
- b. Proportion of urban population living in cities >1 million people (percentage of total urban population) (2016)

Data year: 2017 and 2016

Sources: a) *World Bank World Development Indicators*. Downloaded from:

<https://data.worldbank.org/indicator/SP.URB.TOTL> License: CC BY-4.0;

b) UN Economic and Social Affairs. *The World's Cities in 2016 Data Booklet*. Downloaded from:

http://www.un.org/en/development/desa/population/publications/pdf/urbanization/the_worlds_cities_in_2016_data_booklet.pdf

Rationale: Highly urbanized areas are more sensitive to high temperatures (urban heat island effect); wide-reaching displacement and livelihood loss from sea level rise (for those cities along the coast); rapid transmission of vector-borne diseases; and widespread human and infrastructure devastation from extreme weather events.

Notes:

- This indicator did not require any correction method.
- The original dataset was missing 1 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

3. EMPLOYMENT IN AGRICULTURE

Description: Employment in agriculture, female and male (percentage of female employment; percentage of male employment)

Data year: 2017

Source: *World Bank Open Data*, based on ILOSTAT database, downloaded from World Bank Development Indicators <https://data.worldbank.org/indicator/SL.AGR.EMPL.FE.ZS> License: CC BY-4.0

Rationale: Because agriculture is highly sensitive to climate stressors, women and men whose economic livelihoods depend on the agriculture sector are acutely exposed to the risks associated with this sensitivity. Additionally, women make up a significant portion of the agricultural workforce and often have limited alternative livelihood options, meaning they face differentiated and disproportionate risks.

Notes:

- This indicator did not require any correction method.
- The original dataset was missing 10 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

4. POPULATION IN LOW-ELEVATION COASTAL ZONES

Description: Population living in coastal areas where elevation is below 5 meters (percentage of total population)

Data year: 2010

Source: *World Bank Open Data*, based on CIESIN/Columbia University database, downloaded from World Bank Development Indicators

<https://data.worldbank.org/indicator/EN.POP.EL5M.ZS?view=chart> License: CC BY-4.0

Rationale: Populations living in coastal areas are more sensitive to accidental injury, displacement, loss of livelihood, or death due to sea level rise, storm surges, and other similar climate effects from stressors.

Notes:

- This indicator did not require any correction method.
- The original dataset was not missing scores for any of the 122 countries included in this research.

5. LEVEL OF WATER STRESS

Description: Level of water stress: freshwater withdrawal as a proportion of available freshwater resources for all major sectors: agriculture; forestry and fishing; manufacturing; electricity industry; and services. This indicator is also known as “water withdrawal intensity”.

Data year: 2014

Source: FAO AQUASTAT, downloaded from World Bank Development Indicators

<https://data.worldbank.org/indicator/ER.H2O.FWST.ZS> License: CC BY-4.0

Rationale: Countries with high levels of freshwater withdrawal compared to available resources are sensitive to droughts which poses challenges for livelihoods, economic development, and sustainability.

Notes:

- This indicator did not require any correction method.
- The original dataset was missing 9 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

SUB-GROUP: ADAPTIVE CAPACITY

6. ACCESS TO DRINKING WATER

Description: Average of two separate indicators at the national level: 1) At least basic access to drinking water; and 2) Access to piped drinking water.

Data year: 2015 (Data from 2000 used for Bosnia and Herzegovina and Haiti)

Source: WHO/UNICEF JMP. Downloaded from <https://data.unicef.org/topic/water-and-sanitation/drinking-water>

Rationale: Having access to clean affordable water is essential to life; leads to improved economic, health and educational outcomes; and lessens the burden of unpaid water work that disproportionately affects women and girls.

Notes:

- This indicator was rescaled so the highest value indicated the lowest level of access to drinking water.
- The original dataset was missing 3 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

7. ACCESS TO ELECTRICITY

Description: Access to electricity (percentage of total population)

Data year: 2016

Source: World Bank Development Indicators. Downloaded from: <https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS> License: CC BY-4.0

Rationale: Access to electricity facilitates access to basic services and economic opportunities to improve overall standard of living. Electricity is also critical in health care, disaster relief, food storage, education, and ICT infrastructures, all of which are important in responding and building resilience to climate stressors.

Notes:

- This indicator was rescaled so the highest value indicated the lowest level of access to electricity.
- The original dataset was not missing scores for any of the 122 countries included in this research.

8. MOBILE PHONE USAGE

Description: Mobile cellular subscriptions (per 100 people)

Data year: 2016 (some data from 2015)

Source: *International Telecommunication Union database*, downloaded from World Bank Development Indicators <https://data.worldbank.org/indicator/IT.CEL.SETS.P2> License: CC BY-4.0

Rationale: Information Communication Technology (ICT) is increasingly recognized as essential to development, helping to reach a wide range of people with easy to use technology and relatively low rollout costs. Mobile phones are particularly important for poor rural communities to access information, including weather information and information about disasters to better prepare communities.

Notes:

- This indicator was rescaled so the highest value indicated the lowest level of mobile cellular subscriptions.
- The original dataset was not missing scores for any of the 122 countries included in this research.

9. GDP PER CAPITA

Description: GDP per capita, purchasing power parity (PPP) (current international \$)

Data year: 2017 (or latest available)

Source: World Bank Development Indicators. Downloaded from <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD> License: CC BY-4.0

Rationale: GDP per capita is a proxy for the amount of financial resources a government can use for adaptive measures and respond to climate stressors.

Notes:

- This indicator was rescaled so the highest value indicated the lowest GDP per capita.
- The original dataset was missing 2 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

10. BIODIVERSITY AND HABITAT

Description: The Biodiversity and Habitat (BDH) measure is on a scale from 0-100 (worst to best performance, respectively). The measure is a composite of several indicators:

- a. Marine Protected Areas
- b. Biome Protection (National)
- c. Biome Protection (Global)
- d. Species Protection Index
- e. Protected Area Representativeness Index
- f. Species Habitat Index

Data year: 2014 (d and f), 2016 (e), 2017 (a-c)

Source: Yale/CIESIN *Environmental Performance Index (EPI)*

<https://epi.envirocenter.yale.edu/2018-epi-report/biodiversity-habitat>

Rationale: Habitat conservation is important not only for preserving key components of biological diversity, but for maintaining the associated ecosystem services which provide innumerable benefits and protections to humans, such as water provisioning, carbon sequestration, and flood prevention.

Notes:

- This indicator was rescaled so the highest value indicated the lowest level of biodiversity and habitat conservation.
- The original dataset was missing 10 of the 122 countries in this research and missing values were estimated using the EM algorithm method.

ANNEX 5: METHODOLOGY

ESTIMATING MISSING VALUES AND TRUNCATING GENDER RATIOS

When working with a large number of countries and indicators, it is common that data will not be available for the total sample. This was the case for 23 out of the 27 indicators that made up the triple nexus framework. In total, 50 countries were missing at least one or more values (see Table 10 for number of missing values per indicator and Table 11 for a full list of missing values per country). The highest number of missing values for a single country (other than Kosovo) was 15 for both Nauru and Saint Kitts and Nevis. Many of the small island states in the sample, as well as Palestine, had several missing values, as many databases do not have data available for these countries, whether due to scale of analysis (population, land area, etc.) or national availability of data.

Two methods were used to calculate missing values for the 23 indicators that were missing data: the expectation-maximization (EM) algorithm²⁴³ was used to calculate missing values for 19 indicators, and regional averages were calculated for the four remaining indicators (see Table 10). Using the EM algorithm for imputing missing values is advantageous due to its iterative approach:²⁴⁴ the missing values are first predicted based on initial estimates of the model parameter values; the predictions are then used to update the parameter values and the process is repeated. There are some disadvantages to using the EM algorithm, including that it is “very sensitive to the setting of initial value, bad parameter initial values are easy to make the algorithm convergence value to reach some local optimization points [and] the convergence speed of EM algorithm is slow.”²⁴⁵

The triple nexus framework utilized pooled data based on five iterations of missing values that resulted in one estimated value. For the four remaining indicators with missing values, regional averages were used to estimate values. The four indicators, which make up the equal legal rights sub-group of the gender inequality group, were sourced from the Organisation for Economic Cooperation and Development (OECD)’s Social Institutions and Gender Index (SIGI).²⁴⁶

243 Do & Batzoglou (2008).

244 Pigott (2001)

245 Gao & Wang (2013, p. 2972).

246 OECD (2014).

TABLE 10: MISSING VALUES AND ESTIMATION METHOD USED FOR INDICATORS

GROUP	INDICATOR	MISSING VALUES	ESTIMATION METHOD
Gender inequality	Laws against GBV	26	Regional average
	Equal access to natural and economic resources	25	Regional average
	Inheritance rights of widows and daughters	25	Regional average
	Parental authority of women in marriage and divorce	25	Regional average
	Literacy ratio	15	EM algorithm
	Basic education ratio	24	EM algorithm
	Labor force participation ratio	11	EM algorithm
	Political representation ratio	2	EM algorithm
State fragility	Violent conflict	19	EM algorithm
	Government effectiveness	1	EM algorithm
	Undernourishment	16	EM algorithm
	Maternal mortality	7	EM algorithm
	State use of political terror	0	N/A
	Voice and accountability	1	EM algorithm
	Control of corruption	1	EM algorithm
	Child marriage	15	EM algorithm
	Social group inequality	14	EM algorithm

TABLE 10: MISSING VALUES AND ESTIMATION METHOD USED FOR INDICATORS (CONT.)

GROUP	INDICATOR	MISSING VALUES	ESTIMATION METHOD
Climate vulnerability	Exposure to natural disasters	1	EM algorithm
	Urban concentration	1	EM algorithm
	Employment in agriculture	10	EM algorithm
	Population in low elevation zones	0	N/A
	Level of water stress	9	EM algorithm
	Access to drinking water	3	EM algorithm
	Assess to electricity	0	N/A
	Mobile phone usage	0	N/A
	GDP per capita	2	EM algorithm
	Biodiversity and habitat	10	EM algorithm

TABLE II: MISSING VALUES PER COUNTRY

COUNTRY	MISSING VALUES	COUNTRY	MISSING VALUES	COUNTRY	MISSING VALUES	COUNTRY	MISSING VALUES
Afghanistan	0	El Salvador	0	Mali	0	Senegal	0
Albania	0	Eswatini	1	Marshall Islands	13	Serbia	0
Angola	1	Ethiopia	0	Mauritania	0	Sierra Leone	0
Antigua and Barbuda	12	Fiji	2	Mexico	0	Solomon Islands	5
Armenia	0	Georgia	1	Micronesia	13	Somalia	5
Azerbaijan	0	Ghana	0	Moldova	0	South Africa	0
Bahamas	8	Grenada	11	Mongolia	0	South Sudan	7
Bangladesh	0	Guatemala	0	Montenegro	5	Sri Lanka	0
Barbados	6	Guinea	1	Morocco	0	Sudan	0
Belarus	0	Guyana	4	Mozambique	1	Suriname	4
Benin	0	Haiti	0	Myanmar	0	Syria	3
Bosnia and Herzegovina	0	Honduras	0	Namibia	0	Tajikistan	0
Botswana	1	India	0	Nauru	15	Tanzania	0
Brazil	0	Indonesia	0	Nepal	0	Thailand	0
Burkina Faso	0	Iraq	0	Nicaragua	0	Timor-Leste	1
Burundi	1	Israel	1	Niger	0	Tonga	7
Cambodia	0	Jamaica	0	Nigeria	1	Trinidad and Tobago	0
Cameroon	0	Jordan	0	Pakistan	0	Tunisia	0

TABLE II: MISSING VALUES PER COUNTRY (CONT.)

COUNTRY	MISSING VALUES	COUNTRY	MISSING VALUES	COUNTRY	MISSING VALUES	COUNTRY	MISSING VALUES
Central African Republic	0	Kazakhstan	0	Palau	14	Turkmenistan	1
Chad	0	Kenya	0	Palestine	10	Tuvalu	14
China	1	Kiribati	11	Panama	0	Uganda	0
Colombia	0	Kyrgyz Republic	0	Papua New Guinea	1	Ukraine	0
Côte d'Ivoire	0	Laos	0	Paraguay	0	Uzbekistan	2
Cuba	1	Lebanon	0	Peru	0	Vanuatu	6
Cyprus	1	Lesotho	0	Philippines	0	Venezuela	1
Democratic Republic of the Congo	1	Liberia	0	Republic of the Congo	0	Viet Nam	0
Djibouti	6	Libya	2	Rwanda	0	Yemen	1
Dominica	11	Madagascar	1	Saint Kitts and Nevis	15	Zambia	0
Dominican Republic	0	Malawi	0	Saint Lucia	8	Zimbabwe	0
Ecuador	0	Maldives	5	Saint Vincent and the Grenadines	9		
Egypt	0	North Macedonia	4	Samoa	7		

In order to accurately capture gender inequality within a country context, the research team chose to focus on gender ratios in the sub-group of gender parity rather than using data solely reflecting the comparative experience of a country's female population. Gender equality is measured as 1:1 male/female ratio, i.e. where the outcomes for women are equal to those for men. Gender gaps are ratios less than 1:1. However, in some countries and for some cases, such as education and labor force participation, women outnumbered men. In these cases, countries were not rewarded or penalized for this result. Rather, the team truncated these results so that they are equal to a country where there is 1:1 gender equality.

CLEANING, NORMALIZING AND SCALING DATA

Following an initial selection, the chosen indicators were prepared for comparative analysis. The first step was to clean the raw datasets noting missing values and any data inaccuracies or inconsistencies. In some cases, existing data was combined to form a single indicator, such as to measure natural disasters, and for all the indicators in the gender legal rights sub-group. In other cases, where longitudinal data was available, such as measuring instances of violent conflict, single values were calculated based on longitudinal averages. Information on type of indicator and correction methods taken is provided in the indicator descriptions in previous Annexes 2-4.

The next step was to normalize the data for each indicator. The process of normalization rebases the raw indicator data to a common unit to allow for comparability and aggregation. Normalization also generates a more intuitive interpretation of the triple nexus results, as all indicator values were normalized to conform to a 0-1 range, with a value of 1 indicating higher levels of gender inequality, state fragility and climate vulnerability. The normalization process was based on the following formula:

$$x_{norm} = \frac{(x - x_{min})}{(x_{max} - x_{min})}$$

where x_{min} and x_{max} are, respectively, the lowest and highest values out of the 122 countries, and x is an individual country value, for any given indicator. However, a number of the selected indicators did not conform to the scale needed for the triple nexus model. For example, higher values for indicators, such as government effectiveness and access to electricity, mean high levels of effectiveness and access, rather than high ineffectiveness and lack of access. For these types of indicators, the normalization process included a rescaling calculation to convert the normalized values so that high values indicated less conducive conditions, while low values indicated more conducive conditions for the given group. In these cases, the normalization formula process took the form of:

$$x_{norm} = \frac{(x - x_{max})}{(x_{max} - x_{min})}$$

AGGREGATING

Once the indicators were normalized and rescaled to conform to a uniform scale, they were aggregated into the six sub-groups using a simple unweighted process. OECD's SIGI also uses this type of aggregation, and it implies full compensability, i.e. the poor performance in some indicators can be compensated for by sufficiently high values in other indicators in each group.²⁴⁷ The research team chose not to weight individual indicators in the triple nexus model. Weighting techniques can strongly influence the variability of each country's final score and is often used to indicate a sequential approach, for example, to identify which factors have the greatest impact or which factors form important preconditions that affect outcomes. For the triple nexus framework, unweighted results assume equal weights within each of the groups that form the result. By not weighting the indicators, the research team's approach facilitates both the modification and the addition of new data to the triple nexus framework.

An average was then taken of the two sub-groups under each main group to produce a value for gender inequality, state fragility, and climate vulnerability. These values (see Annex 6) allow for comparison between countries within an individual group, but not between groups. In order to calculate the triple nexus results, referred to as the "triple nexus prevalence", the total values for gender inequality, state fragility, and climate vulnerability were normalized to conform to a 0-1 range and these group scores were added together to produce the prevalence of the triple nexus in each country. Each group was normalized to ensure each of the three groups contributed to and are reflected equally in the triple nexus conceptual model. The triple nexus prevalence results, therefore, have a possible range from 0-3, with the highest relative total being equal to the highest compound prevalence, and the lowest relative total being equal to the lowest compound prevalence (see Annex 7).

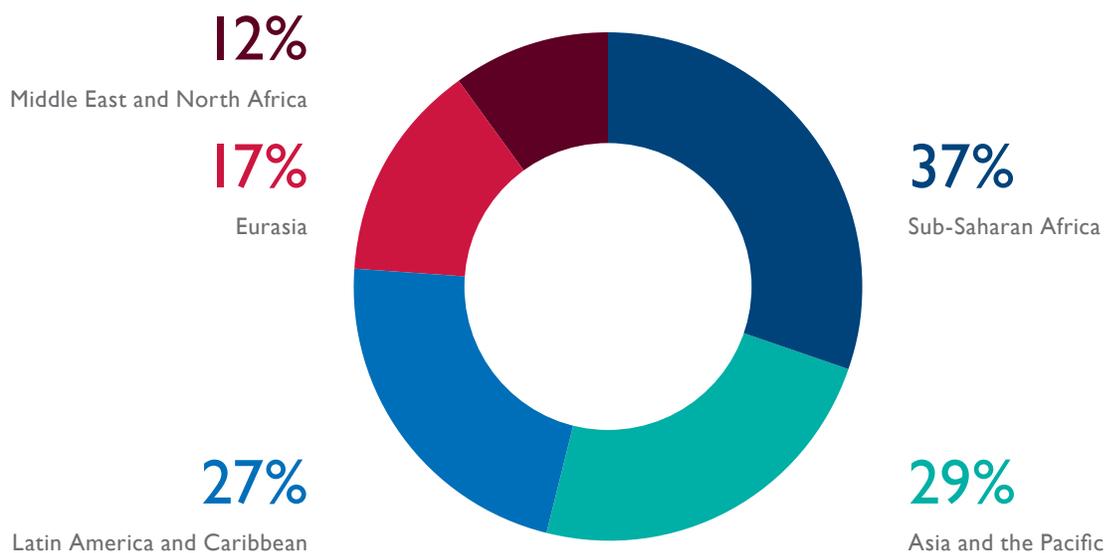
ASSESSING COUNTRY COVERAGE

An objective of the triple nexus framework was to provide comparative results for 123 countries where USAID operates: 99 countries with USAID Country Missions and 24 countries included in USAID Regional Missions.²⁴⁸ Ultimately, the ability to include a country in the indicators framework was dependent on the adequate availability of country-level data for the selected indicators. Even though the majority of the 123 countries were characterized by at least one or more missing data values, this did not interfere with calculating relatively accurate results, with the exception of Kosovo, which was removed from the country sample due to insufficient availability of data. In the case of Kosovo, 63 percent of the indicators were missing—in other words, data was available for only 10 out of the 27 indicators defined in the triple nexus framework. As a result, the final country sample consists of 122 countries: 98 countries with USAID missions and 24 countries represented by regional USAID missions. Figure 6 illustrates the regional breakdown of the 122 countries included in the research and Annex I provides the list of countries according to regional classifications.

247 OECD & JRC (2008).

248 Countries were determined using the Country and Regional Missions listed in the USAID Mission Directory (retrieved in March 2018).

FIGURE 6: REGIONAL BREAKDOWN OF COUNTRIES INCLUDED IN THE RESEARCH



ANALYZING THE CORRELATION BETWEEN INDICATORS AND GROUPS

The research team tested the indicators and groups using Pearson correlation coefficients to analyze the indicator relationships of the sub-groups and groups defined under the triple nexus framework. Correlations are useful for identifying the statistical relationships between indicators, but they do not measure the theoretical validity of the concept that is being measured. After assessing the correlation results, the research team revisited the framework to consider whether some indicators should be changed, focusing on including indicators that were theoretically informed by scientific literature to ensure the range of indicators represent the various aspects of each issue area as accurately as possible. The Pearson correlation coefficient determines the degree to which a relationship between two indicators is negatively or positively linear, expressed as a value between -1 and +1. The Pearson correlation coefficient cannot determine a cause-and-effect relationship, and it can only establish the strength of linear association between two variables.

Using the Pearson correlation coefficient in the gender inequality group, significant correlations were found for most of the eight indicators, with significant correlations between indicators for political participation and laws against GBV, as well as between indicators for labor force participation, parental authority, and inheritance. All nine indicators that make up the state fragility group showed moderate and significant correlations with one another, indicating that many of these indicators are correlated both within and between the legitimacy and effectiveness sub-groups.

In terms of the climate vulnerability group, significant correlations were found for the majority of the 10 indicators in this group, but some of the indicators that make up the exposure and sensitivity sub-group were not found to be correlated with the other indicators. However, given the importance of these indicators in measuring increased vulnerability to climate stressors, which were identified in the theoretically grounded approach used to develop the triple nexus model, they were retained in the triple nexus framework.

TABLE 12: PEARSON CORRELATION COEFFICIENTS AND RESULTS FOR TRIPLE NEXUS

		GENDER INEQUALITY	STATE FRAGILITY	CLIMATE VULNERABILITY
Gender inequality	Pearson Correlation	1	.602*	.553*
	Sig. (2-tailed)		.000	.000
	N	122	122	122
State fragility	Pearson Correlation	.602*	1	.669*
	Sig. (2-tailed)	.000		.000
	N	122	122	122
Climate vulnerability	Pearson Correlation	.553*	.669*	1
	Sig. (2-tailed)	.000	.000	
	N	122	122	122

* Correlation is significant at the 0.01 level (2-tailed).

MAP CONSTRUCTION

To create maps of the triple nexus, as well as the individual components (gender inequality, state fragility, and climate vulnerability), tabular data for each of the countries included were aligned with a global vector layer of countries sourced from Natural Earth.^{249, 250} Tabular country data were then joined to spatial data using the “spatial join” function in ArcGIS ArcMAP 10.3.1. This process then displayed 122 unique values between 0.13 and 2.60 from a potential range of 0-3.

Values for the triple nexus (see “triple nexus” column on the table in Annex 7) were then placed into five categories of triple nexus prevalence—very low, low, moderate, high, very high—based on their placement within standard deviation categories around the mean value of 1.2 (standard deviation of 0.57):

- Countries categorized as *very high prevalence*, representing more than 1.5 standard deviations from the mean;
- Countries categorized as *high prevalence*, representing 0.50 to 1.5 standard deviations from the mean;

249 The designation of geographical entities in these maps, and the presentation of the material, do not imply the expression of any opinion whatsoever on the part of IUCN or USAID concerning the legal status of any country, territory, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

250 Made with Natural Earth. Free vector and raster map data at: naturalearthdata.com

- Countries categorized as *moderate prevalence*, representing -.050 to 0.50 standard deviations from the mean;
- Countries categorized as *low prevalence*, representing -1.5 to -0.50 standard deviations from the mean; and
- Countries categorized as *very low prevalence*, representing less than -1.5 standard deviations from the mean.

In the component maps for gender inequality, state fragility, and climate vulnerability, thematic categories for the maps were created using equal intervals of 0.2 between 0-1, resulting in five categories for prevalence in each issue area: very low; low; moderate; high; and very high. Countries were assigned a thematic category based on values in the respective “gender inequality,” “state fragility,” and “climate vulnerability” columns in Annex 7. It should be noted that although the category names are the same for these nexus-component maps, the range of category values is different, as they are not based on standard deviations around a mean, but rather on equal intervals. This thematic categorization was chosen because it more accurately reflects the relative differences within each issue area among countries than a standard deviation approach.

ANNEX 6: GROUP AND SUB-GROUP SCORES

The following table shows sub-group scores for each country (normalized on a scale from 0-1) and associated group scores (the average of the sub-group scores). These values can be used to compare countries within sub-groups and groups but should not be used to compare scores between different groups.

COUNTRY	GENDER INEQUALITY			STATE FRAGILITY			CLIMATE VULNERABILITY		
	LEGAL RIGHTS	GENDER PARITY	AVERAGE	EFFECTIVENESS	LEGITIMACY	AVERAGE	EXPOSURE AND SENSITIVITY	ADAPTIVE CAPACITY	AVERAGE
Afghanistan	0.80	0.82	0.81	0.54	0.76	0.65	0.27	0.75	0.51
Albania	0.29	0.29	0.29	0.13	0.26	0.20	0.26	0.32	0.29
Angola	0.31	0.27	0.29	0.36	0.61	0.49	0.31	0.79	0.55
Antigua and Barbuda	0.15	0.32	0.24	0.28	0.20	0.24	0.24	0.13	0.19
Armenia	0.18	0.30	0.24	0.13	0.34	0.24	0.34	0.29	0.32
Azerbaijan	0.21	0.25	0.23	0.12	0.49	0.31	0.50	0.35	0.43
Bahamas	0.15	0.26	0.21	0.12	0.12	0.12	0.18	0.20	0.19
Bangladesh	0.72	0.41	0.57	0.26	0.70	0.48	0.29	0.59	0.44
Barbados	0.15	0.32	0.24	0.07	0.12	0.10	0.12	0.36	0.24
Belarus	0.11	0.21	0.16	0.13	0.42	0.28	0.23	0.28	0.26
Benin	0.33	0.62	0.48	0.29	0.30	0.30	0.21	0.63	0.42
Bosnia and Herzegovina	0.20	0.40	0.30	0.13	0.30	0.22	0.21	0.44	0.33
Botswana	0.47	0.29	0.38	0.21	0.21	0.21	0.17	0.30	0.24
Brazil	0.18	0.31	0.25	0.12	0.50	0.31	0.27	0.24	0.26
Burkina Faso	0.45	0.62	0.54	0.33	0.42	0.38	0.19	0.69	0.44
Burundi	0.39	0.28	0.34	0.54	0.61	0.58	0.20	0.83	0.52

COUNTRY	GENDER INEQUALITY			STATE FRAGILITY			CLIMATE VULNERABILITY		
	LEGAL RIGHTS	GENDER PARITY	AVERAGE	EFFECTIVENESS	LEGITIMACY	AVERAGE	EXPOSURE AND SENSITIVITY	ADAPTIVE CAPACITY	AVERAGE
Cambodia	0.09	0.40	0.25	0.26	0.60	0.43	0.27	0.55	0.41
Cameroon	0.47	0.39	0.43	0.38	0.56	0.47	0.33	0.65	0.49
Central African Republic	0.55	0.67	0.61	0.82	0.80	0.81	0.22	0.78	0.50
Chad	0.85	0.60	0.73	0.59	0.78	0.69	0.24	0.82	0.53
China	0.27	0.37	0.32	0.14	0.60	0.37	0.33	0.32	0.33
Colombia	0.04	0.29	0.17	0.24	0.49	0.37	0.15	0.27	0.21
Côte d'Ivoire	0.37	0.62	0.50	0.39	0.43	0.41	0.26	0.49	0.38
Cuba	0.02	0.20	0.11	0.11	0.46	0.29	0.21	0.45	0.33
Cyprus	0.04	0.28	0.16	0.05	0.14	0.10	0.12	0.13	0.13
Democratic Republic of the Congo	0.72	0.54	0.63	0.74	0.67	0.71	0.30	0.81	0.56
Djibouti	0.56	0.45	0.51	0.29	0.44	0.37	0.27	0.70	0.49
Dominica	0.15	0.29	0.22	0.12	0.14	0.13	0.22	0.31	0.27
Dominican Republic	0.04	0.26	0.15	0.20	0.59	0.40	0.17	0.31	0.24
Ecuador	0.05	0.21	0.13	0.20	0.41	0.31	0.28	0.33	0.31
Egypt	0.89	0.53	0.71	0.21	0.66	0.44	0.40	0.34	0.37
El Salvador	0.13	0.32	0.23	0.18	0.49	0.34	0.14	0.31	0.23
Eswatini	0.64	0.33	0.49	0.33	0.48	0.41	0.24	0.63	0.44
Ethiopia	0.38	0.47	0.43	0.41	0.70	0.56	0.18	0.71	0.45
Fiji	0.27	0.40	0.34	0.14	0.26	0.20	0.24	0.39	0.32
Georgia	0.36	0.37	0.37	0.10	0.23	0.17	0.33	0.32	0.33
Ghana	0.44	0.37	0.41	0.23	0.34	0.29	0.27	0.46	0.37

COUNTRY	GENDER INEQUALITY			STATE FRAGILITY			CLIMATE VULNERABILITY		
	LEGAL RIGHTS	GENDER PARITY	AVERAGE	EFFECTIVENESS	LEGITIMACY	AVERAGE	EXPOSURE AND SENSITIVITY	ADAPTIVE CAPACITY	AVERAGE
Grenada	0.15	0.38	0.27	0.23	0.09	0.16	0.21	0.35	0.28
Guatemala	0.22	0.39	0.31	0.24	0.60	0.42	0.13	0.39	0.26
Guinea	0.62	0.50	0.56	0.44	0.55	0.50	0.28	0.64	0.46
Guyana	0.15	0.26	0.21	0.22	0.41	0.32	0.17	0.49	0.33
Haiti	0.37	0.43	0.40	0.55	0.53	0.54	0.21	0.82	0.52
Honduras	0.23	0.28	0.26	0.25	0.59	0.42	0.14	0.39	0.27
India	0.39	0.61	0.50	0.46	0.47	0.47	0.29	0.54	0.42
Indonesia	0.41	0.36	0.39	0.17	0.37	0.27	0.27	0.39	0.33
Iraq	0.80	0.52	0.66	0.49	0.72	0.61	0.40	0.45	0.43
Israel	0.04	0.23	0.14	0.08	0.31	0.20	0.21	0.16	0.19
Jamaica	0.11	0.28	0.20	0.14	0.30	0.22	0.11	0.32	0.22
Jordan	0.75	0.46	0.61	0.12	0.36	0.24	0.18	0.46	0.32
Kazakhstan	0.22	0.22	0.22	0.10	0.45	0.28	0.25	0.33	0.29
Kenya	0.47	0.31	0.39	0.35	0.54	0.45	0.25	0.61	0.43
Kiribati	0.36	0.46	0.41	0.17	0.15	0.16	0.26	0.57	0.42
Kyrgyz Republic	0.39	0.28	0.34	0.21	0.44	0.33	0.23	0.35	0.29
Laos	0.32	0.34	0.33	0.26	0.61	0.44	0.27	0.51	0.39
Lebanon	0.63	0.43	0.53	0.16	0.41	0.29	0.22	0.45	0.34
Lesotho	0.33	0.22	0.28	0.34	0.33	0.34	0.08	0.72	0.40
Liberia	0.48	0.61	0.55	0.58	0.37	0.48	0.33	0.85	0.59
Libya	0.76	0.39	0.58	0.39	0.75	0.57	0.45	0.45	0.45
Madagascar	0.28	0.37	0.33	0.46	0.51	0.49	0.25	0.84	0.55
Malawi	0.34	0.40	0.37	0.43	0.46	0.45	0.21	0.74	0.48

COUNTRY	GENDER INEQUALITY			STATE FRAGILITY			CLIMATE VULNERABILITY		
	LEGAL RIGHTS	GENDER PARITY	AVERAGE	EFFECTIVENESS	LEGITIMACY	AVERAGE	EXPOSURE AND SENSITIVITY	ADAPTIVE CAPACITY	AVERAGE
Maldives	0.56	0.43	0.50	0.18	0.42	0.30	0.25	0.37	0.31
Mali	0.71	0.59	0.65	0.38	0.50	0.44	0.27	0.63	0.45
Marshall Islands	0.36	0.41	0.39	0.48	0.21	0.35	0.33	0.65	0.49
Mauritania	0.84	0.62	0.73	0.35	0.56	0.46	0.31	0.70	0.51
Mexico	0.22	0.27	0.25	0.25	0.54	0.40	0.23	0.30	0.27
Micronesia	0.36	0.41	0.39	0.23	0.08	0.16	0.26	0.67	0.47
Moldova	0.23	0.23	0.23	0.18	0.36	0.27	0.19	0.52	0.36
Mongolia	0.11	0.28	0.20	0.21	0.28	0.25	0.35	0.45	0.40
Montenegro	0.14	0.30	0.22	0.09	0.25	0.17	0.24	0.22	0.23
Morocco	0.57	0.58	0.58	0.15	0.40	0.28	0.32	0.33	0.33
Mozambique	0.32	0.44	0.38	0.41	0.50	0.46	0.25	0.72	0.49
Myanmar	0.64	0.34	0.49	0.45	0.69	0.57	0.29	0.66	0.48
Namibia	0.27	0.18	0.23	0.29	0.21	0.25	0.24	0.43	0.34
Nauru	0.36	0.54	0.45	0.33	0.30	0.32	0.27	0.38	0.33
Nepal	0.22	0.38	0.30	0.27	0.47	0.37	0.22	0.46	0.34
Nicaragua	0.33	0.32	0.33	0.27	0.54	0.41	0.07	0.38	0.23
Niger	0.73	0.56	0.65	0.34	0.56	0.45	0.21	0.76	0.49
Nigeria	0.70	0.47	0.59	0.57	0.62	0.60	0.21	0.62	0.42
North Macedonia	0.14	0.31	0.23	0.11	0.31	0.21	0.21	0.33	0.27
Pakistan	0.70	0.62	0.66	0.50	0.62	0.56	0.31	0.52	0.42
Palau	0.36	0.48	0.42	0.23	0.21	0.22	0.22	0.39	0.31
Palestine	0.82	0.28	0.55	0.17	0.41	0.29	0.25	0.46	0.36
Panama	0.00	0.31	0.16	0.15	0.27	0.21	0.25	0.21	0.23

COUNTRY	GENDER INEQUALITY			STATE FRAGILITY			CLIMATE VULNERABILITY		
	LEGAL RIGHTS	GENDER PARITY	AVERAGE	EFFECTIVENESS	LEGITIMACY	AVERAGE	EXPOSURE AND SENSITIVITY	ADAPTIVE CAPACITY	AVERAGE
Papua New Guinea	0.44	0.43	0.44	0.23	0.38	0.31	0.13	0.87	0.50
Paraguay	0.22	0.33	0.28	0.25	0.52	0.39	0.25	0.35	0.30
Peru	0.26	0.26	0.26	0.16	0.39	0.28	0.31	0.31	0.31
Philippines	0.57	0.26	0.42	0.33	0.51	0.42	0.20	0.42	0.31
Republic of the Congo	0.34	0.15	0.25	0.42	0.67	0.55	0.35	0.49	0.42
Rwanda	0.33	0.05	0.19	0.35	0.38	0.37	0.25	0.71	0.48
Saint Kitts and Nevis	0.15	0.45	0.30	0.16	0.09	0.13	0.20	0.22	0.21
Saint Lucia	0.15	0.28	0.22	0.19	0.15	0.17	0.13	0.33	0.23
Saint Vincent and the Grenadines	0.15	0.38	0.27	0.12	0.09	0.11	0.07	0.29	0.18
Samoa	0.36	0.35	0.36	0.09	0.12	0.11	0.14	0.45	0.30
Senegal	0.51	0.47	0.49	0.27	0.28	0.28	0.34	0.47	0.41
Serbia	0.12	0.28	0.20	0.12	0.27	0.20	0.22	0.33	0.28
Sierra Leone	0.42	0.50	0.46	0.56	0.48	0.52	0.27	0.72	0.50
Solomon Islands	0.36	0.45	0.41	0.26	0.26	0.26	0.22	0.74	0.48
Somalia	0.74	0.49	0.62	0.81	0.85	0.83	0.31	0.83	0.57
South Africa	0.13	0.17	0.15	0.13	0.32	0.23	0.27	0.33	0.30
South Sudan	0.96	0.28	0.62	0.83	0.90	0.87	0.20	0.86	0.53
Sri Lanka	0.56	0.39	0.48	0.21	0.49	0.35	0.22	0.37	0.30
Sudan	0.96	0.45	0.71	0.61	0.81	0.71	0.24	0.73	0.49
Suriname	0.15	0.30	0.23	0.20	0.29	0.25	0.29	0.33	0.31
Syria	0.79	0.52	0.66	0.54	0.81	0.68	0.38	0.43	0.41

COUNTRY	GENDER INEQUALITY			STATE FRAGILITY			CLIMATE VULNERABILITY		
	LEGAL RIGHTS	GENDER PARITY	AVERAGE	EFFECTIVENESS	LEGITIMACY	AVERAGE	EXPOSURE AND SENSITIVITY	ADAPTIVE CAPACITY	AVERAGE
Tajikistan	0.29	0.31	0.30	0.31	0.48	0.40	0.23	0.45	0.34
Tanzania	0.60	0.29	0.45	0.39	0.44	0.42	0.26	0.64	0.45
Thailand	0.35	0.32	0.34	0.15	0.59	0.37	0.30	0.23	0.27
Timor-Leste	0.48	0.34	0.41	0.35	0.34	0.35	0.22	0.51	0.37
Tonga	0.36	0.55	0.46	0.17	0.18	0.18	0.06	0.36	0.21
Trinidad and Tobago	0.18	0.23	0.21	0.12	0.22	0.17	0.08	0.11	0.10
Tunisia	0.65	0.42	0.54	0.15	0.25	0.20	0.33	0.36	0.35
Turkmenistan	0.32	0.36	0.34	0.20	0.68	0.44	0.25	0.39	0.32
Tuvalu	0.36	0.47	0.42	0.30	0.14	0.22	0.33	0.39	0.36
Uganda	0.43	0.28	0.36	0.39	0.57	0.48	0.22	0.73	0.48
Ukraine	0.07	0.31	0.19	0.21	0.50	0.36	0.24	0.39	0.32
Uzbekistan	0.33	0.33	0.33	0.18	0.62	0.40	0.26	0.53	0.40
Vanuatu	0.36	0.36	0.36	0.20	0.17	0.19	0.22	0.66	0.44
Venezuela	0.04	0.29	0.17	0.26	0.52	0.39	0.21	0.26	0.24
Viet Nam	0.29	0.26	0.28	0.16	0.44	0.30	0.39	0.39	0.39
Yemen	0.89	0.80	0.85	0.58	0.84	0.71	0.31	0.64	0.48
Zambia	0.66	0.44	0.55	0.41	0.42	0.42	0.27	0.63	0.45
Zimbabwe	0.40	0.27	0.34	0.55	0.59	0.57	0.30	0.61	0.46

ANNEX 7: TRIPLE NEXUS SCORES, BY COUNTRY

The following table shows the prevalence of the triple nexus in each of the 122 countries included in this research. Scores for gender inequality, state fragility, and climate vulnerability are normalized on a scale from 0-1. The total triple nexus score is a sum of the three group scores. This table can be used to see the prevalence of triple nexus issues in each country as compared to the other countries in the sample.

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS
4	Afghanistan	0.95	0.71	0.84	2.50
97	Albania	0.24	0.13	0.39	0.76
30	Angola	0.24	0.51	0.92	1.67
110	Antigua and Barbuda	0.18	0.18	0.18	0.54
91	Armenia	0.18	0.18	0.45	0.81
69	Azerbaijan	0.16	0.27	0.67	1.10
119	Bahamas	0.14	0.03	0.18	0.35
22	Bangladesh	0.62	0.49	0.69	1.80
117	Barbados	0.18	0.00	0.29	0.47
107	Belarus	0.07	0.23	0.33	0.63
44	Benin	0.50	0.26	0.65	1.41
87	Bosnia and Herzegovina	0.26	0.16	0.47	0.89
92	Botswana	0.36	0.14	0.29	0.79
92	Brazil	0.19	0.27	0.33	0.79
33	Burkina Faso	0.58	0.36	0.69	1.63
24	Burundi	0.31	0.62	0.86	1.79
55	Cambodia	0.19	0.43	0.63	1.25
28	Cameroon	0.43	0.48	0.80	1.71

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS
7	Central African Republic	0.68	0.92	0.82	2.42
5	Chad	0.84	0.77	0.88	2.49
69	China	0.28	0.35	0.47	1.10
105	Colombia	0.08	0.35	0.22	0.65
40	Côte d'Ivoire	0.53	0.40	0.57	1.50
103	Cuba	0.00	0.25	0.47	0.72
122	Cyprus	0.07	0.00	0.06	0.13
6	Democratic Republic of the Congo	0.70	0.79	0.94	2.43
29	Djibouti	0.54	0.35	0.80	1.69
110	Dominica	0.15	0.04	0.35	0.54
101	Dominican Republic	0.05	0.39	0.29	0.73
101	Ecuador	0.03	0.27	0.43	0.73
22	Egypt	0.81	0.44	0.55	1.80
100	El Salvador	0.16	0.31	0.27	0.74
36	Eswatini	0.51	0.40	0.69	1.60
25	Ethiopia	0.43	0.60	0.71	1.74
87	Fiji	0.31	0.13	0.45	0.89
83	Georgia	0.35	0.09	0.47	0.91
62	Ghana	0.41	0.25	0.55	1.21
104	Grenada	0.22	0.08	0.37	0.67
74	Guatemala	0.27	0.42	0.33	1.02
19	Guinea	0.61	0.52	0.73	1.86

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS
85	Guyana	0.14	0.29	0.47	0.90
21	Haiti	0.39	0.57	0.86	1.82
79	Honduras	0.20	0.42	0.35	0.97
31	India	0.53	0.48	0.65	1.66
73	Indonesia	0.38	0.22	0.47	1.07
12	Iraq	0.74	0.66	0.67	2.07
119	Israel	0.04	0.13	0.18	0.35
112	Jamaica	0.12	0.16	0.24	0.52
50	Jordan	0.68	0.18	0.45	1.31
96	Kazakhstan	0.15	0.23	0.39	0.77
40	Kenya	0.38	0.45	0.67	1.50
66	Kiribati	0.41	0.08	0.65	1.14
78	Kyrgyz Republic	0.31	0.30	0.39	1.00
49	Laos	0.30	0.44	0.59	1.33
50	Lebanon	0.57	0.25	0.49	1.31
64	Lesotho	0.23	0.31	0.61	1.15
11	Liberia	0.59	0.49	1.00	2.08
15	Libya	0.64	0.61	0.71	1.96
26	Madagascar	0.30	0.51	0.92	1.73
38	Malawi	0.35	0.45	0.78	1.58
58	Maldives	0.53	0.26	0.43	1.22
18	Mali	0.73	0.44	0.71	1.88

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS
40	Marshall Islands	0.38	0.32	0.80	1.50
9	Mauritania	0.84	0.47	0.84	2.15
81	Mexico	0.19	0.39	0.35	0.93
58	Micronesia	0.38	0.08	0.76	1.22
83	Moldova	0.16	0.22	0.53	0.91
82	Mongolia	0.12	0.19	0.61	0.92
114	Montenegro	0.15	0.09	0.27	0.51
48	Morocco	0.64	0.23	0.47	1.34
33	Mozambique	0.36	0.47	0.80	1.63
17	Myanmar	0.51	0.61	0.78	1.90
90	Namibia	0.16	0.19	0.49	0.84
58	Nauru	0.46	0.29	0.47	1.22
69	Nepal	0.26	0.35	0.49	1.10
79	Nicaragua	0.30	0.40	0.27	0.97
14	Niger	0.73	0.45	0.80	1.98
16	Nigeria	0.65	0.65	0.65	1.95
105	North Macedonia	0.16	0.14	0.35	0.65
13	Pakistan	0.74	0.60	0.65	1.99
76	Palau	0.42	0.16	0.43	1.01
46	Palestine	0.59	0.25	0.53	1.37
116	Panama	0.07	0.14	0.27	0.48
39	Papua New Guinea	0.45	0.27	0.82	1.54

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS
74	Paraguay	0.23	0.38	0.41	1.02
89	Peru	0.20	0.23	0.43	0.86
54	Philippines	0.42	0.42	0.43	1.27
43	Republic of the Congo	0.19	0.58	0.65	1.42
56	Rwanda	0.11	0.35	0.78	1.24
112	Saint Kitts and Nevis	0.26	0.04	0.22	0.52
114	Saint Lucia	0.15	0.09	0.27	0.51
118	Saint Vincent and the Grenadines	0.22	0.01	0.16	0.39
97	Samoa	0.34	0.01	0.41	0.76
46	Senegal	0.51	0.23	0.63	1.37
109	Serbia	0.12	0.13	0.37	0.62
20	Sierra Leone	0.47	0.55	0.82	1.84
45	Solomon Islands	0.41	0.21	0.78	1.40
1	Somalia	0.69	0.95	0.96	2.60
107	South Africa	0.05	0.17	0.41	0.63
2	South Sudan	0.69	1.00	0.88	2.57
57	Sri Lanka	0.50	0.32	0.41	1.23
8	Sudan	0.81	0.79	0.80	2.40
95	Suriname	0.16	0.19	0.43	0.78
10	Syria	0.74	0.75	0.63	2.12
66	Tajikistan	0.26	0.39	0.49	1.14
37	Tanzania	0.46	0.42	0.71	1.59

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TRIPLE NEXUS
76	Thailand	0.31	0.35	0.35	1.01
53	Timor-Leste	0.41	0.32	0.55	1.28
92	Tonga	0.47	0.10	0.22	0.79
121	Trinidad and Tobago	0.14	0.09	0.00	0.23
58	Tunisia	0.58	0.13	0.51	1.22
63	Turkmenistan	0.31	0.44	0.45	1.20
68	Tuvalu	0.42	0.16	0.53	1.11
35	Uganda	0.34	0.49	0.78	1.61
85	Ukraine	0.11	0.34	0.45	0.90
52	Uzbekistan	0.30	0.39	0.61	1.30
64	Vanuatu	0.34	0.12	0.69	1.15
99	Venezuela	0.08	0.38	0.29	0.75
72	Viet Nam	0.23	0.26	0.59	1.08
2	Yemen	1.00	0.79	0.78	2.57
27	Zambia	0.59	0.42	0.71	1.72
32	Zimbabwe	0.31	0.61	0.73	1.65

ANNEX 8: TRIPLE NEXUS SCORES, BY REGION

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TOTAL
ASIA AND THE PACIFIC					
4	Afghanistan	0.95	0.71	0.84	2.50
13	Pakistan	0.74	0.60	0.65	1.99
17	Myanmar	0.51	0.61	0.78	1.90
23	Bangladesh	0.62	0.49	0.69	1.80
31	India	0.53	0.48	0.65	1.66
39	Papua New Guinea	0.45	0.27	0.82	1.54
40	Marshall Islands	0.38	0.32	0.80	1.50
45	Solomon Islands	0.41	0.21	0.78	1.40
49	Laos	0.30	0.44	0.59	1.33
53	Timor-Leste	0.41	0.32	0.55	1.28
54	Philippines	0.42	0.42	0.43	1.27
55	Cambodia	0.19	0.43	0.63	1.25
57	Sri Lanka	0.50	0.32	0.41	1.23
58	Micronesia	0.38	0.08	0.76	1.22
58	Nauru	0.46	0.29	0.47	1.22
58	Maldives	0.53	0.26	0.43	1.22
64	Vanuatu	0.34	0.12	0.69	1.15
66	Kiribati	0.41	0.08	0.65	1.14
68	Tuvalu	0.42	0.16	0.53	1.11
69	Nepal	0.26	0.35	0.49	1.10

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TOTAL
69	China	0.28	0.35	0.47	1.10
72	Viet Nam	0.23	0.26	0.59	1.08
73	Indonesia	0.38	0.22	0.47	1.07
76	Palau	0.42	0.16	0.43	1.01
77	Thailand	0.31	0.35	0.35	1.01
82	Mongolia	0.12	0.19	0.61	0.92
87	Fiji	0.31	0.13	0.45	0.89
94	Tonga	0.47	0.10	0.22	0.79
97	Samoa	0.34	0.01	0.41	0.76
EURASIA					
52	Uzbekistan	0.30	0.39	0.61	1.30
63	Turkmenistan	0.31	0.44	0.45	1.20
66	Tajikistan	0.26	0.39	0.49	1.14
69	Azerbaijan	0.16	0.27	0.67	1.10
78	Kyrgyz Republic	0.31	0.30	0.39	1.00
83	Moldova	0.16	0.22	0.53	0.91
84	Georgia	0.35	0.09	0.47	0.91
85	Ukraine	0.11	0.34	0.45	0.90
87	Bosnia and Herzegovina	0.26	0.16	0.47	0.89
91	Armenia	0.18	0.18	0.45	0.81
96	Kazakhstan	0.15	0.23	0.39	0.77
97	Albania	0.24	0.13	0.39	0.76

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TOTAL
105	North Macedonia	0.16	0.14	0.35	0.65
107	Belarus	0.07	0.23	0.33	0.63
109	Serbia	0.12	0.13	0.37	0.62
114	Montenegro	0.15	0.09	0.27	0.51
122	Cyprus	0.07	0.00	0.06	0.13
LATIN AMERICA AND THE CARIBBEAN					
21	Haiti	0.39	0.57	0.86	1.82
74	Paraguay	0.23	0.38	0.41	1.02
74	Guatemala	0.27	0.42	0.33	1.02
79	Honduras	0.20	0.42	0.35	0.97
79	Nicaragua	0.30	0.40	0.27	0.97
81	Mexico	0.19	0.39	0.35	0.93
86	Guyana	0.14	0.29	0.47	0.90
89	Peru	0.20	0.23	0.43	0.86
92	Brazil	0.19	0.27	0.33	0.79
95	Suriname	0.16	0.19	0.43	0.78
99	Venezuela	0.08	0.38	0.29	0.75
100	El Salvador	0.16	0.31	0.27	0.74
101	Ecuador	0.03	0.27	0.43	0.73
101	Dominican Republic	0.05	0.39	0.29	0.73
103	Cuba	0.00	0.25	0.47	0.72
104	Grenada	0.22	0.08	0.37	0.67

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TOTAL
105	Colombia	0.08	0.35	0.22	0.65
110	Dominica	0.15	0.04	0.35	0.54
110	Antigua and Barbuda	0.18	0.18	0.18	0.54
112	Jamaica	0.12	0.16	0.24	0.52
112	Saint Kitts and Nevis	0.26	0.04	0.22	0.52
114	Saint Lucia	0.15	0.09	0.27	0.51
116	Panama	0.07	0.14	0.27	0.48
117	Barbados	0.18	0.00	0.29	0.47
118	Saint Vincent and the Grenadines	0.22	0.01	0.16	0.39
119	Bahamas	0.14	0.03	0.18	0.35
121	Trinidad and Tobago	0.14	0.09	0.00	0.23
MIDDLE EAST AND NORTH AFRICA					
2	Yemen	1.00	0.79	0.78	2.57
9	Mauritania	0.84	0.47	0.84	2.15
10	Syria	0.74	0.75	0.63	2.12
12	Iraq	0.74	0.66	0.67	2.07
15	Libya	0.64	0.61	0.71	1.96
22	Egypt	0.81	0.44	0.55	1.80
46	Palestine	0.59	0.25	0.53	1.37
48	Morocco	0.64	0.23	0.47	1.34
50	Lebanon	0.57	0.25	0.49	1.31
50	Jordan	0.68	0.18	0.45	1.31

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TOTAL
58	Tunisia	0.58	0.13	0.51	1.22
119	Israel	0.04	0.13	0.18	0.35
SUB-SAHARAN AFRICA					
1	Somalia	0.69	0.95	0.96	2.60
3	South Sudan	0.69	1.00	0.88	2.57
5	Chad	0.84	0.77	0.88	2.49
6	Democratic Republic of the Congo	0.70	0.79	0.94	2.43
7	Central African Republic	0.68	0.92	0.82	2.42
8	Sudan	0.81	0.79	0.80	2.40
11	Liberia	0.59	0.49	1.00	2.08
14	Niger	0.73	0.45	0.80	1.98
16	Nigeria	0.65	0.65	0.65	1.95
18	Mali	0.73	0.44	0.71	1.88
19	Guinea	0.61	0.52	0.73	1.86
20	Sierra Leone	0.47	0.55	0.82	1.84
24	Burundi	0.31	0.62	0.86	1.79
25	Ethiopia	0.43	0.60	0.71	1.74
26	Madagascar	0.30	0.51	0.92	1.73
27	Zambia	0.59	0.42	0.71	1.72
28	Cameroon	0.43	0.48	0.80	1.71
29	Djibouti	0.54	0.35	0.80	1.69
30	Angola	0.24	0.51	0.92	1.67

RANK (OF 122)	COUNTRY NAME	GENDER INEQUALITY (0-1)	STATE FRAGILITY (0-1)	CLIMATE VULNERABILITY (0-1)	TOTAL
32	Zimbabwe	0.31	0.61	0.73	1.65
33	Mozambique	0.36	0.47	0.80	1.63
33	Burkina Faso	0.58	0.36	0.69	1.63
35	Uganda	0.34	0.49	0.78	1.61
36	Eswatini	0.51	0.40	0.69	1.60
37	Tanzania	0.46	0.42	0.71	1.59
38	Malawi	0.35	0.45	0.78	1.58
40	Kenya	0.38	0.45	0.67	1.50
40	Côte d'Ivoire	0.53	0.40	0.57	1.50
43	Republic of the Congo	0.19	0.58	0.65	1.42
44	Benin	0.50	0.26	0.65	1.41
46	Senegal	0.51	0.23	0.63	1.37
56	Rwanda	0.11	0.35	0.78	1.24
62	Ghana	0.41	0.25	0.55	1.21
64	Lesotho	0.23	0.31	0.61	1.15
90	Namibia	0.16	0.19	0.49	0.84
92	Botswana	0.36	0.14	0.29	0.79
108	South Africa	0.05	0.17	0.41	0.63

ANNEX 9: INDICATORS CONSIDERED BUT NOT USED IN THE TRIPLE NEXUS FRAMEWORK

INDICATOR	SOURCE	REASONING
Land ownership, disaggregated by sex	FAO Gender and Land Rights Database	Extremely limited country coverage
Health care access, disaggregated by sex	N/A	The research team explored using communicable & non-communicable diseases, as well as access to antiretroviral drugs, as proxies for access to health care. However, there are too many extenuating circumstances to these diseases, such as genetics, and does not clearly represent access to health care facilities, which is what the research was initially trying to capture. Ultimately, the team could not find a broad indicator measure for health care access with adequate country coverage.
Anemia	WHO	Only focuses on women and cannot be converted to male/female ratios, which were used in the gender inequality group.
Attitudes towards and prevalence of GBV	OECD SIGI database	Limited country coverage
Liberal Democracy Index	V-Dem database	The indicators that make up this index overlap with other measures already included, such as the indicators in the legal rights sub-group of gender inequality.
Digital Accountability Index	V-Dem database	The indicators that make up this index overlap with other measures already included, such as the indicators in the legal rights sub-group of gender inequality.
Open Government	World Justice Project	Very limited country coverage for countries included in this research
Poverty headcount	World Bank	Limited country coverage and outdated values. Available data often comes from national surveys, which are not always updated on a regular basis. In practice, this means that while some countries have the latest data available, other countries only provide outdated data with some points as old as 1992.
Migration data	N/A	Migration may be caused by increasing climate stressors; however other factors may also be influencing migration activities. Since the precise cause for migration is not known, an indicator for migration was not included in the climate vulnerability group
Slum populations	UN Habitat	Very limited country coverage
ICT usage	World Economic Forum's Global Information Technology Report	Inadequate country coverage for the 122 countries included in this research. Mobile phone usage is used as a proxy for this, but more data on broader ICT coverage would be ideal.



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