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CLIMATE CHANGE, GENDER INEQUALITY AND MIGRATION IN EAST AFRICA

Medhanit A. Abebe*

ABSTRACT: East Africa, one of the most volatile regions in Africa, has been suffering from enormous problems caused by population growth, weak governance, war, and famine. Recently, the advent of climate change has exacerbated these pre-existing problems. These impacts are not felt equally across populations, and, according to various studies, disproportionately affect women. Despite reforms, rural East African women still struggle to access resources or participate in decision-making processes. As a result, they have a weaker ability to adapt to climate change than men. This weaker adaptive capacity influences migration patterns between the genders, and creates its own set of problems. Indeed, migration influenced by climate change forces women to take greater roles at home and confront increased violence. While not fully understood, there is growing evidence of the connection between climate change, migration, and gender disparities. Addressing these issues in isolation cannot bring a sustainable solution, but this article will explore the legal and policy measures needed to solve the complex societal and ecological problems facing the region. Through international collaboration, East Africa can take action to improve the lives of women, limit violence, and fight back against the rapidly changing climate.

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I. INTRODUCTION

Climate change, with its vast impacts and threats, has

become an issue both at local and international levels. According to the Intergovernmental Panel on Climate Change (IPCC), the global average surface temperature has increased by 0.6 °C during the 20th century, primarily due to an increase in the concentration of greenhouse gases.¹ The IPCC has also anticipated an increase in the global mean surface air temperature from 1.4°C to 5.8°C from 2001-2100.² Research on the impacts of climate change show that agricultural and livestock productions have been affected by changing rainfall patterns, increasing temperatures, and extreme weather events such as drought and flooding.³

Threats and impacts of climate change vary among different places, gender, age, and class.⁴ Africa, despite its small contribution to the factors causing global climate change, is likely to be the most vulnerable continent to its impacts.⁵ This is due to its intense poverty, high dependence on rain-fed agriculture, deforestation, weak governance systems, technological and infrastructural in advancement, population growth, environmental degradation, persistent conflicts and weak adaptive capacities.⁶ East Africa⁷ is one of the most volatile regions in the continent with a total population of 327 million (which is about 5.16 percent of global population).⁸ The

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1. See Robert J. Nichols & Poh Puh Wong, *Coastal Systems and Low Lying Areas*, in CLIMATE CHANGE 2007: IMPACTS, ADAPTATION, AND VULNERABILITY 315, 320 (Martin Parry et al. eds., 2007).

2. Stephen Schneider & Jose Sarukhan, *Overview of Impacts, Adaptation, and Vulnerability to Climate Change*, in CLIMATE CHANGE 2001: IMPACTS, ADAPTATION AND VULNERABILITY 75, 83 (James J. McCarthy et al. eds., 2001).

3. See Phillip Thornton et al., *Mapping Climate Vulnerability and Poverty in Africa* 134-35 (ILRI, Report to the Dept. for Int'l Dev., 2006).

4. U.N. Dev. Programme, *Occupied Palestinian Territory — Investing in Human Security for a Future State*, Human Development Report (2008/2009).

5. See Kevin A. Baumert, Tim Herzog, Jonathan Pershing, *Navigating the Numbers: Greenhouse Gas Data and International Climate Policy*, 11-15 (2005), World Resource Institute, available at http://pdf.wri.org/navigating_numbers.pdf

6. See Michel Boko et al., *Africa*, in CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY 433, 435 (Martin Parry et al. eds., 2007).

7. East Africa is defined for the purposes of this article as generally including Djibouti, Somalia, Burundi, Malawi, Zambia, Zimbabwe, Rwanda, Ethiopia, Kenya, Uganda, Tanzania, Eritrea, South Sudan, and Sudan.

8. U.N. Population Fund, *State of the World Population 2010* 105 (2010), available at http://www.unfpa.org/swp/2010/web/en/pdf/EN_SOWP10.pdf.

region has the world's highest population growth with an annual rate of 2.6 percent.⁹ It is estimated that the population will more than double by 2050.¹⁰

The political, economic, social, and cultural histories of countries in East Africa are similar in many ways. While countries in the region have already been experiencing various political, socio-economic and environmental problems, climate changes have exacerbated them. For instance, according to IPCC reports, climate change would likely affect agricultural production and food security in many African countries.¹¹ According to a study conducted in four East African countries (Uganda, Ethiopia, Kenya and Tanzania), agriculture still accounts for about seventy-five percent of the labor force.¹² It also contributes to forty-three percent of their GDP annually.¹³ Due to its dependence on availability of rainfall and its high population growth, the agricultural system is highly vulnerable to climate change and variability.¹⁴ The region's arable areas are under severe pressure to increase their productivity to feed a rapidly increasing population.¹⁵ Between 1988 and 2008, the populations in nine of ten countries in East Africa (excluding the Democratic Republic of the Congo, or the DRC) increased by a staggering seventy-four percent, signifying an annual growth rate of 3.7 percent.¹⁶ Thus, for East Africa, climate change is an additional constraint to pre-existing socio-economic, political and cultural problems.

The complexity and heterogeneity of the impacts of climate

9. *Id.*

10. *Id.*

11. See Boko et al., *supra* note 6, at 435.

12. See Adeleke Salami et al., *Smallholder Agriculture in East Africa: Trends, Constraints and Opportunities* 11 (African Dev. Bank Grp., Working Paper no. 105, 2010), available at <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/WORKING%20105%20%20PDF%20d.pdf>

13. See S,W, Omamo, et al., *Strategic Priorities for Agricultural Development in Eastern and Central Africa*. (IFPRI Report 150. Washington, DC: International Food Policy Research Institute 2006), available at <http://ifpri.org/pubs/ABSTRACT/rr150.asp#dl>.

14. See Michael Waithaka et al., *Overview, in EAST AFRICAN AGRICULTURE AND CLIMATE CHANGE: A COMPREHENSIVE ANALYSIS* 33 (Michael Waithaka et al. eds., 2013).

15. *Id.* at 2.

16. *Id.* at 4.

change are not limited to state and ecological concerns, but between men and women too.¹⁷ There is a common recognition that the poor and marginalized will experience the impacts of climate change most acutely and that they have the least capacity to adapt.¹⁸ Rural women in Africa are highly dependent on natural resources such as forests, rivers, and land for their daily livelihood. They cook, take care of children, collect water and firewood, farm, and herd livestock.¹⁹ However, because of the deeply rooted patriarchal values and beliefs, women and girls do not have equal rights to access, use, and control crucial resources. They are often excluded from important decision and policy-making forums and institutions that govern them. Inequitable cultural and social norms, when coupled with skewed power relations, make women in East Africa more vulnerable to the impacts of disasters.²⁰

When threats and impacts of climate change happen, migration rates increase.²¹ According to the IPCC, wetter coasts, drier midcontinent areas, and sea-level rise may cause the gravest effects of climate change by forcing sudden human migration. Shoreline erosion, river and coastal flooding, or severe drought has displaced millions of people.²² As an adaptation strategy, men and women migrate either to other rural or urban areas. However, migration of women is linked to the situation and status of women in society.²³ The decisions

17. MEDHANIT A. ABEBE, CLIMATE CHANGE, GENDER INEQUALITY & MIGRATION: AN ETHIOPIAN CASE STUDY 1-5 (2012).

18. *Id.*

19. See Food & Agric. Org. of the U.N., *Adaptation to Climate Change in Agriculture, Forestry and Fisheries: Perspective, Framework and Priorities* 18 (2007), available at <ftp://ftp.fao.org/docrep/fao/009/j9271e/j9271e.pdf>.

20. U.N. Env't Programme, *Women at the Frontline of Climate Change: Gender Risks and Hopes, a Rapid Response Assessment* 5-6 (2011).

21. See Clark Gray & Valerie Mueller, *Drought and Population Mobility in Rural Ethiopia*, 40 *WORLD DEV.* 134, 134 (2012).

22. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 1996, Working Group II, Section 12.4.2, available at <http://www.ipcc.ch/ipccreports/sres/regional/275.htm>.

23. See Jenny Jungehülsing, *Women Who Go, Women Who Stay: Reactions to Climate Change: A Case Study on Migration and Gender in Chiapas* 19 (2011), available at <http://www.upb.edu.ph/ktrc2/attachments/article/131/Women%20Who%20Go%20Women%20Who%20Stay.pdf>.

concerning who migrates, when, and to where are usually not made by women.²⁴ Migration of either sex has an impact on women, revealing their vulnerability in different contexts and spaces.²⁵

The purpose of this paper is to investigate the relationship between effects from climate change and migration from a gender perspective. It will also analyze the possible differences between women and men in coping with migration as a consequence of confronting climate change. This article tries to answer the following six questions: (1) How is climate change intensifying gender inequality? (2) How does gender influence vulnerability to climate change? (3) How does climate change affect men and women differently? (4) Are there economic, socio-cultural, religious and political factors for the different experiences of climate change? (5) How are climate migration and gender connected? (6) How can the capacity of women be improved to adapt to climate impacts and variability?

II. CLIMATE CHANGE IN EAST AFRICA

East Africa (which includes the Horn of Africa) is suffering from enormous problems caused by and related to poverty, population growth, weak governance, natural environment degradation, war, population displacement and famine. For instance, an estimated 17.4 million people in the region do not have adequate access to food, despite improvements in food security following favorable long rains in countries such as Ethiopia and the Sudan.²⁶ Adverse weather patterns also caused severe flooding and landslides in early 2010. As a result, approximately 48,000 people in Uganda and 55,000 in Kenya, Namibia, Rwanda and Zambia were temporarily displaced.²⁷ Armed conflict in southern Somalia threatens children and women and impedes delivery of essential services.

24. Abebe, *supra* note 17, at 3.

25. See Clionadh Raleigh et al., *Assessing the Impact of Climate Change on Migration and Conflict* 37 (World Bank Grp., Working Paper, 2008), available at http://siteresources.worldbank.org/extsocialdevelopment/Resources/SDCCWorkingPaper_MigrationandConflict.pdf.

26. U.N. Children's Fund, *Eastern and Southern Africa: Humanitarian Action for Children* 1 (2011), available at http://www.unicef.org/hac2011/files/HAC2011_4pager_ESARO_rev1.pdf.

27. *Id.*

In countries such as Zimbabwe, political instability, deteriorating physical infrastructure, and the public sector's inability to deliver basic social services have led to further decline in the overall health and well-being of the population.²⁸ Millions of children remain out of school across the region, the vast majority in countries affected by chronic crises.²⁹

Climate change has become a new threat worsening the already existing political, socio-economic and environmental problems. The region is experiencing unexpected long and dry hot seasons, change in rainfall levels and patterns, and change in expected cloud cover. These changes have resulted in the death of livestock and the failure or complete devastation of crops.³⁰ Notably, rainfall has become less predictable and the rainfall margin has narrowed down.³¹ According to the IPCC, the Horn of Africa will experience a ten percent decline in rainfall by 2050, which has the potential to cause mass migration and violence.³² Additionally, by 2050, temperatures in East Africa are also expected to increase between 1.3 degrees and 2.1 degrees Celsius. This temperature increase will cause other parts of the region to become drier, with considerable reduction in the length of the growing season.³³

In most East African countries agriculture is the dominant economic sector. Smallholder farming accounts for about seventy-five percent of agricultural production and over seventy-five percent of employment.³⁴ In areas with high population densities, small-scale farmers generally use less than one hectare of land to cultivate crops.³⁵ According to a recent study³⁶ on impacts of climate change on agriculture in eleven East and Central African countries, climate change will

28. *Id.*

29. *Id.*

30. See Waithaka et al, *supra* note 14, at 2, 18–24, 33–36.

31. *Id.* at 20.

32. Sarah Cechvala, *Rainfall & Migration: Somali-Kenyan Conflict* (Jan.10, 2014) <http://www1.american.edu/ted/ICE/somalia-rainfall.html>.

33. See Waithaka et al., *supra* note 14, at 24.

34. See Adeleke Salami et al., *supra* note 12.

35. John Dixon et al., *Context and Framework for Approaches to Assessing the Impact of Globalization on Smallholders*, in APPROACHES TO ASSESSING THE IMPACT OF GLOBALIZATION ON AFRICAN SMALLHOLDERS: HOUSEHOLD AND VILLAGE ECONOMY MODELING 1, 2 (John Dixon et al. eds., 2003).

36. See generally Waithaka et al., *supra* note 14.

have far reaching consequences on agricultural production due to declining soil fertility, decreasing rainfall, and increasing incidence of droughts in East Africa. Predictions illustrate that the region may lose up to twenty percent of the growing period of key crops by the end of the century.³⁷ This is particularly worrisome for countries such as Ethiopia, Kenya and Somalia, as they are extremely dependent upon rain-fed agriculture. According to the same study, between 1960 and 2006, the mean annual temperature has increased by at least 1°C in Kenya and 1.3°C in Ethiopia.³⁸ In the DRC, during periods of heavy rains and flooding, frequency of vector and water-borne diseases has increased.³⁹ The IPCC's report suggests that in some countries the duration of the growing season will be reduced as much as fifty percent by 2020.⁴⁰ Furthermore, the rising temperature is likely to result in reduced harvest of main crops such as wheat, soybeans, sorghum and irrigated rice.⁴¹

East Africa has a long history of drought, and it is estimated that forty-two droughts have occurred since 1980.⁴² By 2080, it is estimated that the proportion of arid and semi-arid lands in Africa will increase from three percent to eight percent.⁴³ The projected changes are likely to affect human land use and livelihoods, making these populations more susceptible.

The periods of drought are becoming longer and more frequent due to increasing regional temperatures and the decrease in rainfall. On average, the frequency of recurring droughts is increasing from one in eight years to one in every two or three years.⁴⁴

37. See Oxfam International, *Briefing on the Horn of Africa Drought: Climate Change and Future Impacts on Food Security* 1 (2011), available at <http://www.oxfam.org/sites/www.oxfam.org/files/briefing-hornofafrica-drought-climatechange-foodsecurity-020811.pdf>.

38. *Id.* at 2.

39. See Blandine Nsnombo et al., *Democratic Republic of Congo*, in *EAST AFRICAN AGRICULTURE AND CLIMATE CHANGE: A COMPREHENSIVE ANALYSIS* 89, 94 (Michael Waithaka et al. eds., 2013).

40. See Boko et al., *supra* note 6, at 435.

41. See *Id.* at 448.

42. See *Fast Facts about the Drought. Humanitarian News and Analysis*, IRIN (January 13, 2014) <http://www.irinnews.org/report/93426/horn-of-africa-fast-facts-about-the-drought>.

43. Boko, *supra* note 6, at 435.

44. See Roba W. Adano & Fatuma Daudi, *Links between Climate Change, Conflict*

Drought has affected land fertility and soil moisture, causing soil erosion. Reduced soil moisture and evaporation are likely to increase land degradation and desertification.⁴⁵ The warming climate has put substantial pressure on the carrying capacity of the land, intensifying preexisting food insecurity.⁴⁶

Kenya, Ethiopia, Djibouti and Somalia have faced prolonged drought, which has caused a severe food crisis affecting around ten million of farmers and pastoralists.⁴⁷ According to Oxfam's report, drought-related shocks used to occur every ten years in Kenya. However, they now occur every five years or less.⁴⁸ In Borana areas of Ethiopia, droughts used to occur every six to eight years. Now, they occur every one to two years.⁴⁹ Furthermore, the report states that Ethiopia, Kenya and Somalia are currently facing the worst food crisis of the twenty-first century. Twelve million people are in calamitous need of clean water, food, and sanitation.⁵⁰ In Ethiopia, drought and flood are the main catastrophes threatening the agricultural and livestock production and human life.⁵¹ Individual effects of climate change, such as rainfall prolongation, can seriously affect crop and livestock production.⁵² Consequently, despite some gains in grain production since the mid-1990s, food aid has been a major share of total food supplies in the country.⁵³

and Governance in Africa 1 (Inst. for Security Stud., Paper No. 234, 2012).

45. See Food & Agric. Org. of the U.N., *Climate Change, Water, and Food Security* 26-27 (2011).

46. See *id.*

47. See *Millions of people are on the brink of starvation in the Horn of Africa*, FAO NEWSROOM (Jan. 6, 2006), <http://www.fao.org/NEWSROOM/EN/news/2006/1000206/index.html>.

48. Oxfam, *supra* note 37, at 2.

49. *Id.*

50. *Id.* at 1.

51. See National Meteorological Administration, Ministry of Water Res., Fed. Democratic Republic of Eth., *Climate Change National Adaptation Program of Action (NAPA) of Ethiopia* 25-26 (2007).

52. U.N. Env't Programme, *Climate Change and Variability in the Sahel Region: Impacts and Adaptation Strategies in the Agricultural Sector* 11 (2006), available at <http://www.unep.org/Themes/Freshwater/Documents/pdf/ClimateChangeSahelCombine.pdf>.

53. See Carlo del Ninno et al., *Food Aid and Food Security in the Short and Long Run: Country Experience from Asia and sub-Saharan Africa* 51-53 (World Bank Inst., Discussion Paper No. 0538, 2005), available at

In 2011, more than thirty percent of children suffered from acute malnutrition because of famine caused by droughts in Bakool and Lower Shabelle of southern Somalia.⁵⁴ According to a United Nations report, out of every 10,000 people, two adults or four children die of hunger every day.⁵⁵ By 2030, crop yields of rice, maize, and wheat are expected to drop by as much as ten percent in Somalia.⁵⁶ Furthermore, lack of stable and accountable government has aggravated the situation in the country. Clan warlords and militants control most of the country, and most vulnerable people are not getting the assistance they need.⁵⁷ This, in turn, has intensified the instability and conditions of hunger and acute poverty.⁵⁸ As previously mentioned, loss of livelihood have been forcing farmers and pastoralists to migrate from rural to urban areas or cross international borders. In 2011, it was estimated that approximately 1,300 farmers and pastoralists were migrating to Kenya per day.⁵⁹ On the other hand, emigration of unskilled laborers from rural to urban areas has exacerbated security threats in more populated centers.⁶⁰

According to United Nations Environment Program, environmental stresses in Sudan are connected to other political and socio-economic matters, including competition over scarce resources and displacement.⁶¹ Decreased precipitation because of regional climate change was thought to have been one of the reasons for the Darfur conflict.⁶² The Center for Naval Analyses argues that, “Darfur provides a case study of how existing marginal situations can be exacerbated

<http://siteresources.worldbank.org/socialprotection/Resources/SP-Discussion-papers/Safety-Nets-DP/0538.pdf>.

54. Haele Fuller, *Spotlight: Climate Change and Famine in Somalia*, STIMSON CTR. (Aug. 9, 2011) <http://www.stimson.org/spotlight/climate-change-and-famine-in-somalia/>.

55. Inter action: A United Voice for Global Change, “UN Declares Famine In Two Regions Of Somalia” <http://www.interaction.org/article/un-declares-famine-two-regions-somalia>.

56. See Fuller, *supra*, note 54.

57. See Cechvala, *supra* note 32 at 10.

58. See *id.* at 8.

59. See *id.* at 3.

60. See *id.* at 2.

61. See U.N. Env’t Programme, *Sudan Post-Conflict Environmental Assessment* 8-9 (2007).

62. See *id.*

beyond the tipping point by climate-related factors. It also shows how lack of essential resources threatens not only individuals and their communities but also the region and the international community at large.”⁶³

As a result of the increasing population and the subsequent demand, water has become an important political issue.⁶⁴ For example, the Nile Basin represents the socioeconomic and geopolitical implication of climate change.⁶⁵ The conflicts between downstream and upstream states have not been settled to the satisfaction of all parties concerned, and past agreements on water division are continuously being challenged.⁶⁶ The regional tensions in the Nile basin countries “are of great concern to the international community due to the region’s volatility and proximity to the Middle East”.⁶⁷

Moreover, there is fear that these tensions and conflicts could spread to nearby regions, leading to increased uncertainties of political, social, and economic stability.⁶⁸ The impacts of climate change on the Nile water could be felt, most obviously, in distorted patterns of rainfall and increasing temperature. Changes in the distribution and amount of rainfall have the potential to affect the volume and quality of the Nile.

III. RURAL WOMEN AND CLIMATE CHANGE IN EAST AFRICA

Reports show that seventy percent of the world’s poor are women due to unequal access to resources, established gender roles, and lack of participation in decision making processes.⁶⁹

63. See The CNA Corporation, *National Security and the Threat of Climate Change*, 15 (2007), <http://www.cna.org/sites/default/files/National%20Security%20and%20the%20Threat%20of%20Climate%20Change%20%20Print.pdf>

64. See, e.g., Rahman A. Majeed, *The Geopolitics of water in the Nile River Basin*. Global Research. CENTER FOR RESEARCH ON GLOBALIZATION. (July 24, 2011), available at <http://www.globalresearch.ca/the-geopolitics-of-water-in-the-nile-river-basin/25746>.

65. See *id.*

66. See *id.*

67. Kimberly E. Foulds, *The Nile Basin Initiative: Challenges to Implementation* (Presented at 2002 Managing Shared Water Conference) (2002), available at <http://nilebasin.com/documents/kim1.htm>.

68. See *id.*

69. See Org. for Econ. Cooperation and Dev., *Gender and Sustainable Development*:

Despite various legal and policy measures, customary values and practices determine who can access and use crucial resources such as land and credit services.⁷⁰ In Sub-Saharan Africa, women are responsible for eighty percent of crop production but own less than one percent of land.⁷¹ Women in rural Africa contribute up to thirty percent of labor in plowing, fifty percent of labor in planting, sixty percent of labor in weeding, and eighty-five percent in processing and preserving food.⁷² Simultaneously, they perform up to ninety-five percent of all domestic tasks.⁷³ Indeed, throughout rural Africa, women's labor input is estimated to be three times that of men.⁷⁴

In most East African countries, gender gaps remain a challenge. In Ethiopia, rural women experience a subordinate and marginal status because dominant patriarchal values and beliefs play a great role in dictating gender relations, responsibilities, roles and opportunities.⁷⁵ They have unequal status in the educational, political, economic, social, cultural and legal spheres.⁷⁶ Although statistics are difficult to find, maternal mortality, rape, female genital mutilation, and child marriage rates are extremely high in Somalia, while violence against women and girls is common.⁷⁷ Customary and religious values play a great role in determining who uses and controls

Maximizing the Economic, Social and Environmental Role of Women 17-18 (2008), available at <http://www.oecd.org/dataoecd/58/1/40881538.pdf>.

70. Food and Agricultural Organization of the United Nations, *Gender*, available at, FAO Corporate Document Repository <http://www.fao.org/docrep/005/y3872e/y3872e0a.htm>

71. *Women's Rights*, ACCORD INTERNATIONAL (last visited Jan. 10, 2014), <http://www.acordinternational.org/our-work/a/gender/>.

72. Labintan Adeniyi, *Women Farmer's and Agriculture Growth: Challenge and Perspective for Africa Face the Economic Crisis* 11, (Presented at the joint 2010 third African Association of Agricultural Economists (AAAE) and forty-eighth Agricultural Economists Association of South Africa (AEASA) Conference) (January 8, 2014), available at <http://ageconsearch.umn.edu/bitstream/97062/2/92.%20Women%20labor%20and%20agriculture%20growth.pdf>.

73. *Id.*

74. *Id.*

75. Abebe, *supra* note 17, at 23.

76. *Id.*

77. U.N. Dev. Programme, *Gender in Somalia* 2 (2013), available at http://www.undp.org/content/dam/rbas/doc/Women's%20Empowerment/Gender_Somalia.pdf.

vital resources such as land and livestock. Women do not enjoy equality in the use of and access to resources.⁷⁸ Men are considered to be the head of households and decide relevant economic and socio-cultural matters.⁷⁹ Gender-based discrimination has hindered benefits women would get from accessing resources, which in turn has affected the effective enforcement of social, economic and political rights of women.⁸⁰

The impacts of climate change differ between men and women.⁸¹ The gender roles and responsibilities women retain are parallel with their lack of access and control over resources. This aggravates the disproportionate effect climate change has on them.⁸² Indeed, women are assigned with responsibilities that make them more vulnerable to impacts of climate change impacts.⁸³ Due to their work responsibilities, women rely heavily on resources such as forests, rivers, livestock and small scale agriculture.⁸⁴ The susceptibility these resources have to the changes in the climate, when combined with other factors such as poverty, weak governmental policies, and population growth, aggravates the disproportionate impact of climate change on women.

According to the IPCC, vulnerability is “the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes.”⁸⁵ As per this definition, “[v]ulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.”⁸⁶ Hence, vulnerability depends on the degree to which a population is exposed to

78. *Id.* at 3.

79. *Id.* at 3–4.

80. *Id.*

81. See Jungehülsing, *supra* note 23, at 18.

82. See *id.* at 43.

83. Babugura, Agnes, *Gender and Climate Change: South Africa case study* at 15-17 (2010), available at <http://www.upb.edu.ph/ktrc2/attachments/article/131/Gender%20and%20Climate%20Change%20South%20Africa%20Case%20Study.pdf>

84. *Id.*

85. Intergovernmental Panel on Climate Change, *Summary for Policymakers*, in CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY 7, 20 (Martin Parry et al. eds., 2007).

86. *Id.*

climate change impacts, on its sensitivity to impacts and on its capacity for adapting to them. Individuals or groups that are socioeconomically or politically marginalized are more vulnerable to climate change because of their inability “to cope with and adapt to any external stress placed on their livelihoods and well-being.”⁸⁷ For this reason, contextualization of vulnerability in terms of physical vulnerability and social vulnerability, including factors such as age, gender, class, wealth, and power, is very important.⁸⁸

As a result of gender roles historically and socially assigned to women and men, including the gendered division of labor, female vulnerabilities to climate change are different.⁸⁹ Vulnerability of rural women in East Africa is highly related to biophysical, socio-economic and political factors. Difference in levels of education, wealth, reliance on natural resources, health status, access to credit, access to information, capital, as well as access to and participation in decision making have the potential to determine variation and the intensity of vulnerability.⁹⁰ Studies indicate that women in drier areas are more vulnerable because they have to travel long distances to collect water, firewood and food.⁹¹ During dry seasons, female workload increases because they have to walk even longer distances to collect water.⁹² As a result, women and girls have less time for other activities, such as education and earning an income. The longer walks can also increase the risk of harassment or sexual assault.⁹³ The heavier burden added as a

87. Neil Adger & P. Mick Kelly, *Social Vulnerability to Climate Change and the Architecture of Entitlements*, 3 MITIGATION & ADAPTATIONS STRATEGIES FOR GLOBAL CHANGE 253, 254 (1999).

88. See CSPR Briefing No 9: *Assessment of Social Vulnerability A Literature Review of Vulnerability Related to Climate Change and Natural Hazards* (2012), available at <http://www.cspr.se/briefings/1.358869/CSPRBriefing9.pdf>

89. See Jungehülsing, *supra* note 23, at 18–19.

90. See Etienne Piguet et al., *Migration and Climate Change: An Overview* 10 (Ctr. on Migration Pol’y & Soc’y, Working Paper No. 79, 2010).

91. Abebe, *supra* note 17, at 63.

92. See Christine Haigh & Bernadette Vallely, *Gender and the Climate Change Agenda: The Impacts of Climate Change on Women and Public Policy* 15-16 (2010), available at <http://www.wen.org.uk/wp-content/uploads/Gender-and-the-climate-change-agenda-21.pdf>.

93. Bond for Int’l Dev., *Briefing from the Development & Environment Group: Managing Water in a Changing Climate* 2 (2011), available at http://www.progressio.org.uk/sites/default/files/DEG_water_briefing.pdf.

result of the changing climate often forces girls to drop out of school and engage in household duties.⁹⁴ This demonstrates that climate change, coupled with socially set gender roles and relations, intensify female inequality and exposure.⁹⁵

Because of the feminization of poverty, women are most likely to experience the utmost negative impacts of changing weather patterns, resulting in further deprivation.⁹⁶ The situation of pastoral women in Ethiopia is evidence of the close link between poverty and climate change, where one has the potential to cause and exacerbate the effect of the other.⁹⁷ Non-climatic factors which pre-exist climate impacts also affect the adaptive capacity of pastoral women. For instance, pastoral women and girls cannot gain access to real property other than through their male kin.⁹⁸ Although they are primary and secondary users of land through their role as livestock managers, women do not have equal rights with men. Therefore, these women are forced to face a combination of a changing climate, poverty, hunger and a patriarchal culture that inhibits their access to resources such as credit, fertilizers, improved seeds, and agricultural extension programs.⁹⁹

In sum, we can infer that the susceptibility of women to the impacts of climate change is intensified by climatic and non-climatic factors such as poverty, the division of labor, lack of voice in climate and development debates, allocation of property based on gender, weak enforcement of rights, and other socio-cultural factors. Gender roles and responsibilities

94. *See id.*

95. *See* Manuku Mukoni, *Rethinking Women Empowerment at the Crossroads of Climate Change and Sustainable Development*, 2 INT'L J. OF DEV. & SUSTAINABILITY 1334, 1337 (2013).

96. Susan Tuana, *Gendering Climate Knowledge for Justice: Catalyzing a New Research Agenda*, in RESEARCH, ACTION AND POLICY: ADDRESSING THE GENDERED IMPACTS OF CLIMATE CHANGE 17, 27 (Margaret Alston & Kerri Whittenbury eds., 2013).

97. Fiona Flintan et. al, *Study on Women's Property Rights in Afar and Oromyia Regions, Ethiopia* 60 (U.S. Agency for Int'l Dev., Final Report, 2008), available at http://www.elmt-relpa.org/aesito/hoapn?id_ems_doc=58&download_file=on&get_file=127.

98. *See* Fiona Flintan et. al, *Pastoral Women's Thoughts on Change: Voices from Ethiopia* 3 (Presented at the 2011 International Conference on the Future of Pastoralism) (2011).

99. *See id.*

have the tendency to expose women more to the impacts of climate change. The differential impact of climate change reveals the complexity of social, economic, religious, technological, governance and ecological factors that play central role in determining women's vulnerability to disasters.

IV. MIGRATION & CLIMATE CHANGE

Migration of people as a result of change in the environment is not a new incident.¹⁰⁰ However, the international community has begun to gradually understand the huge implications that climate change has on human migration and displacement. In 1990, IPCC stated that the greatest impact of climate change could be on human migration, with millions of people displaced by coastal flooding, shoreline erosion and agricultural disruption.¹⁰¹ It was reported that up to twenty-five million people had been forced from their places of origin by a range of serious environmental pressures such as overpopulation, land degradation, natural disasters, and drought.¹⁰² In 2005, it was estimated that the number of environmental refugees could increase to fifty million by 2010.¹⁰³ According to environmentalist Norman Myers, “[W]hen global warming takes hold, there could be as many as 200 million people overtaken by disruption of monsoon systems and other rainfall regimes, by droughts of unprecedented severity and duration, and by sea-level rise and coastal flooding.”¹⁰⁴ In 2007, the IPCC further reported that climate change will affect human settlements due to its impacts on human health, food security and decrease in the viability of natural resource-based economic activity.¹⁰⁵

100. IOM, *MIGRATION, ENVIRONMENT AND CLIMATE CHANGE: ASSESSING THE EVIDENCE* 13 (2009).

101. Intergovernmental Panel on Climate Change (IPCC) Impacts Assessment, *Climate Change*, Report prepared for IPCC by Working Group II (1990), available at http://www.ipcc.ch/ipccreports/far/wg_II/ipcc_far_wg_II_full_report.pdf.

102. IOM, *supra* note 100, at 11.

103. United Nations University, “As Ranks of ‘Environmental Refugees’ Swell Worldwide, Calls Grow for Better Definition, Recognition, Support”, UN Day for Disaster Reduction, 12 Oct. 2005.

104. Norman Myers, *Environmental Refugees: An emergent security issue*, Presentation at Org. for Sec. and Cooperation in Europe 13th Economic Forum (May 25, 2005).

105. *See generally* Intergovernmental Panel on Climate Change, *CLIMATE CHANGE*

The IPCC's most recent report in March of 2014 projects a continued increase in displacement of people. However, the report cautions "there is low confidence in quantitative projections of changes in mobility, due to its complex, multi-causal nature."¹⁰⁶ Since gradual and sudden environmental changes adversely affect the lives or living conditions of people, they willingly or unwillingly leave their places of origins, either temporarily or permanently, within or outside their country.¹⁰⁷ Accordingly, changes in migration patterns can be responses to both extreme weather events and longer-term climate variability where migration can be an effective adaptation strategy.¹⁰⁸ In the case of 'climate processes,'¹⁰⁹ the effect of climate change may not be manifested easily, but, where 'sudden climate events'¹¹⁰ happen, people are forced to leave their areas quickly.¹¹¹

Although the linkages are complex and context specific, "the more people rely on natural resources for livelihood, the more they tend to migrate when changes occur."¹¹² Factors such as poverty, diminished ecosystems, weak governance, scarcity of resources, and population growth are all linked to migration.¹¹³ In some regions, climate warming has the potential to reduce agricultural productivity, water quality and availability, and soil fertility. In turn, this forces people to migrate in search of income and resources such as food, water, and land. In East Africa, drought—the loss of arable land due to desertification

2007: IMPACTS, ADAPTATION AND VULNERABILITY (Martin Parry et al. eds., 2007).

106. See Intergovernmental Panel on Climate Change, *The Physical Science Basis*, in CLIMATE CHANGE 2013 (Thomas F. Stocker and Dahe Qin, eds. 2013).

107. Vladan Bozanovic, *Impact of Environment to Migration*, MIGRATION CITIZENSHIP EDUCATION (2008) <http://migrationeducation.de/56.1.html?&rid=219&cHash=a21915e38b6857b98d81aefd584fb3f2>.

108. *What Has the IPCC Actually Said About Migration and Climate Change?*, UK CLIMATE CHANGE COALITION NEWS (March 31, 2014), available at, <http://climatemigration.org.uk/what-has-the-ipcc-actually-said-about-migration-and-climate-change/>.

109. Climate Processes refers to slow-on set changes such as sea-level rise, agricultural land degradation, desertification, food insecurity and water scarcity.

110. Sudden climate events refer to sudden and dramatic hazards such as monsoon floods, storms, and hurricanes.

111. *Id.*

112. Abebe, *supra* note 17, at 16.

113. IOM, *supra* note 100, at 16–19.

and soil erosion—is reducing agricultural yields, causing crop failure, loss of livestock and endangering livelihoods of farmers and pastoralists.¹¹⁴ This has resulted in a considerable increase in multifaceted, multi-directional migration flows, where people move within and across international borders.¹¹⁵ Examples include the rural-urban migration in Ethiopia¹¹⁶ and Somalia¹¹⁷, and migration of pastoralists in Sudan, Kenya, Ethiopia, Tanzania and Uganda. In addition, increased migration of displaced people has been observed from drought and flood affected areas of Somalia towards Mogadishu, Djibouti, Kenya, Ethiopia and the Gulf States.¹¹⁸ As a result, an additional 50,000 people migrated to Ethiopia and Kenya in June 2011 alone.¹¹⁹

According to a report by United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the nature of migration in East Africa and the Horn of Africa is complex, with countries in the region simultaneously hosting and assisting internally displaced persons, refugees, returnees, victims of trafficking and labor migrants.¹²⁰ The report states that the region had the largest increase of refugees globally in 2012, when there were more than nine million refugees and internally displaced persons.¹²¹ Armed conflicts, political, economic and food crises, climate change, and environmental degradation are the major factors that force people leave their localities.¹²² The impacts are more visible in weak states such as Darfur and Somalia where the populations live in fragile

114. Waithaka et al., *supra* note 14, at 2–3.

115. *See generally*, Nancy A. Omolo, *Gender and climate change-induced conflict in pastoral communities: Case study of Turkana in north-western Kenya*, 10 AFR. J. ON CONFLICT RESOLUTION 81, 81–102 (2010).

116. Abebe *supra* note 17, at 18–20.

117. Cechvala, *supra* note 32, at 10.

118. Press Release, IOM, *The Horn Affairs: East African Drought Causing Complex, Multi-Directional Migration* (Jul. 20, 2011), *available at*, <http://danielberhane.com/2011/07/20/east-african-drought-causing-complex-multi-directional-migration-iom-press-release/>.

119. *Id.*

120. U. N. OCHA, *Eastern Africa to Host Over 9 Million Displaced People*, 14 (Sept. 2012–Mar. 2013), *available at* <http://reliefweb.int/report/democratic-republic-congo/eastern-africa-displaced-populations-report-issue-14-30-september>.

121. *Id.*

122. *Id.*

and unstable conditions.¹²³ Governments with little stability result in a more vulnerable society, prone to impacts of climate change and violent conflicts.¹²⁴ Therefore, exploring a cause-and-effect relationship between climate change and migrations needs a critical examination of other non-climate variables.¹²⁵

The question of whether climate change causes conflict or merely exacerbates it remains unresolved, but there is growing evidence of the interconnectedness of climate change, migration, and conflict.¹²⁶ Climate change over the twenty-first century is projected to increase displacement of people.¹²⁷ According to the IPCC's March 2014 assessment report, "[C]limate change can indirectly increase risks of violent conflicts in the form of civil war and inter-group violence by amplifying well-documented drivers of these conflicts such as poverty and economic shocks."¹²⁸ The impacts of climate change on the vital infrastructure and territorial integrity of many states are expected to influence national security policies.¹²⁹

Furthermore, the report states that some trans-boundary impacts of climate change, such as shared water resources, have the potential to increase rivalry among states.¹³⁰ In East Africa, competition over scarce resources such as agricultural land, grazing land and water resources have been exacerbating and triggering violent conflicts among pastoral and agricultural communities. Clashes between pastoralists and

123. Pew Center on Global Climate Change, *International Climate Assistance*, 1(2011), available at <http://www.c2es.org/docUploads/pew-center-brief-international-climate-assistance.pdf>

124. Warlo R. Adano & Fatuma Daudi., *Links between climate change, conflict and governance in Africa.*, Institute for Peace Studies Paper No. 234, (May 2012), available at http://www.issafrica.org/uploads/Paper_234.pdf

125. James Morrissey, *Rural Urban Migration in Ethiopia*, FORCED MIGRATION REV., Nov. 2008, at 28, 29, available at <http://www.fmreview.org/FMRpdfs/FMR31/FMR31.pdf>.

126. Idean Salehyan & Kristian Gleditsch, *Refugees and the Spread of Civil War*, 60 INT'L ORG. FOUND. 335, 335–66 (2006), available at <http://www.saramitchell.org/salehyangleditsch.pdf>.

127. Intergovernmental Panel on Climate Change, WGII AR5 Summary for Policymakers, *Climate Change 2014: Impacts, Adaptation, and Vulnerability*, 20 (2014), available at https://ipccwg2.gov/AR5/images/uploads/IPCC_WG2AR5_SPM_Approved.pdf

128. *Id.*

129. *Id.*

130. *Id.*

farmers in the Oromia, Afar, and Somali regions of Ethiopia¹³¹ and increased fighting during drought periods between Toposa pastoralists of Sudan and the Turkana people of Kenya both show a link between climate change, migration, and violent conflict.¹³²

There are several pastoral groups in East Africa.¹³³ These communities often occupy arid and semi-arid lands with low and erratic rainfall, and rely primarily upon their livestock for their income.¹³⁴ Pastoralists occupy over seventy percent of the region's dry lands, varying from ninety-five percent in Somalia and Djibouti, to about eighty percent in Kenya and around sixty percent in Uganda and Ethiopia.¹³⁵ Mobility, or seasonal migration, is a critical element of pastoral livelihood, and is flexible and adaptive in the context of a changing and uncertain environment.¹³⁶ However, when they migrate, sometimes only a section of the family moves with livestock herds. Often, this means women and children remain settled or are left behind.¹³⁷

Pastoralists are currently facing many challenges including climate change, increasing competition over scarce resources, severe underdevelopment, and a lack of appropriate laws and policies.¹³⁸ These all threaten the mobile lifestyle they employ as a coping and adaptation strategy to the changing climate.¹³⁹

131. Gemtesa et al, *Livelihood Diversification in Borana Pastoral Communities of Ethiopia- Prospects and Challenges*, 11, available at <http://www.ilri.org/Link/Publications/Publications/Theme%201/Pastoral%20conference/Papers/Gemtesa%20Livelihood%20Diversification%20of%20the%20Pastoral%20Communities%20of%20Borena.pdf>.

132. See Omolo, *supra* note 115, at 88 .

133. Bevan, James., et al., *Between a rock and hard place: Armed Violence in African Pastoral Communities*, 2(2007), available at <http://www.genevadeclaration.org/fileadmin/docs/regional-publications/Armed-Violence-in-African-Pastoral-Communities.pdf>

134. OXFAM, *Survival of the fittest: Pastoralism and Climate Change in East Africa*, at 2-3, OXFAM Briefing Paper (August 2008), available at http://www.oxfam.org.hk/content/98/content_3534tc.pdf.

135. World Conservation Union (IUCN), *Pastoralism as Conservation in the Horn of Africa*. WISP POLY BRIEF No. 3. (Jun. 2007), available at http://data.iucn.org/wisp/documents_english/WISP%20PN3_conservation.pdf.

136. U. N. Office at Nairobi (UNON), *CLIMATE CHANGE IN THE AFRICAN DRYLANDS: OPTIONS AND OPPORTUNITIES FOR ADAPTION AND MITIGATION* at 22-25 (2009).

137. *Id.*

138. See generally OXFAM, *supra* note 134

139. *Id.*, *supra* note 132, at 2-4.

In response, East African countries have developed policies and legislation to settle pastoral communities and individualize communal lands they use for grazing.¹⁴⁰ Pastoral grazing lands are expropriated by the state and leased to private investor under the guise of large-scale commercial farming.¹⁴¹ Furthermore, as a result the growing pastoralists' resettlement programs, irrigation schemes, and changes in land use, human and livestock movement has been constrained.¹⁴² This, in turn, has affected the productivity of the land and livestock.¹⁴³ The accessibility of pasture and water resources has also been constrained, forcing pastoralists to walk long distances to access water sources.¹⁴⁴

It is crucial to emphasize that pastoral communities often coexist peacefully with other pastoral and sedentary communities.¹⁴⁵ Through their customary institutions, pastoralists have developed reciprocal grazing agreement in order to share pasture at times of crises.¹⁴⁶ However, because of new weather patterns, prolonged drought and shrinking grazing lands, pastoralists have to compete over pastures and water resources.¹⁴⁷ In turn, the competition over scarce resources has created tensions and perpetual conflicts among communities.¹⁴⁸ Violent conflicts are disturbing the social settings of the pastoral communities and increasing the number of maternally led households.¹⁴⁹ Due to the presence of pastoral and agro-pastoral communities in Sudan, Ethiopia,

140. *Id.* at 3–16 and 18–34.

141. Bekele Hundie & Martina Padmanabhan, *The Transformation of the Commons: Coercive and Non-Coercive ways*, in COLLECTIVE AND PROPERTY RIGHTS FOR PERTY REDUCTION: LESSONS FROM A GLOBAL RESEARCH, IFPRI (E. Mwangi, , et al. eds., 2008), available at http://www.capri.cgiar.org/pdf/Resources_Rights_Cooperation_E-04.pdf.

142. *Id.*

143. Interview of pastoralists in Borena, Afar and Somali in Ethiopia (Sept.-Dec., 2013).

144. *Id.*

145. Bevan et al., *supra* note 133, at 4.

146. Interview of pastoralists in Borena, Afar and Somali in Ethiopia (Sept.-Dec., 2013).

147. *Id.*

148. Boko, *supra* note 6, at 433–67.

149. Interview of pastoral women in Liben Woreda of Boreda Zone (Dec. 23, 2013) (three out of seven women lost their husbands during conflicts with Isa (Somali clan) over water points).

Somalia, Kenya and Uganda, there has always been cross-boundary migration among these countries.¹⁵⁰ However, climate change and environmental degradation have contributed to increased incidence of migration, variation from traditional migration routes and increased distance of migration.¹⁵¹ This has also contributed to resource-based conflicts between and among pastoralist communities.¹⁵² Thus, the cause-and-effect nexus between climate change, conflict and migrations requires a critical assessment of other non-climate variables.¹⁵³

In most cases, separating impacts of climate change on migration from other economic and social factors is difficult.¹⁵⁴ Most migrants move for reasons beyond environmental factors, such as economic, political, demographic, and other social factors.¹⁵⁵ Studies show that there is complex and unpredictable nexus between climate change and migration.¹⁵⁶ In 2009, the International Organization for Migration (IOM) reported that climate change does not cause human migration on its own, but it produces environmental effects and worsens existing vulnerabilities that make it difficult for people to survive where they are.¹⁵⁷ According to Dr. James Morrissey, “[F]actors other than environmental change will be important in mediating migration and that the majority of these factors will be located in social structures which regulate access to

150. M. Gilbert Khadiagala, and Jacob M. Mati, *Migration and Global Environmental Change: PD11: Conflict management mechanisms in resource-constrained African communities*, University of the Witwatersrand.

Johannesburg, South Africa. 7 (2011), available at, <http://www.dti.gov.uk/assets/foresight/docs/migration/policy-development/11-1146-pd11-conflict-management-in-african-communities.pdf>

151. U.N. OCHA, *supra* note 120.

152. *Id.*

153. Benoît Mayer et al., *Governing Environmentally Related Migration in Bangladesh: Responsibilities, Security and the Causality Problem*, 22 ASIAN AND PAC. MIGRATION J. 184 (2013).

154. Steve Lonergan. *The Role of Environmental Degradation on Population Displacement*. Project Report, Issue 4: 7–8 (1998).

155. Dana E. Hunnes, *Understanding Rural-to-Urban Migration in Ethiopia: Driving Factors, Analytical Frameworks, and Recommendations*, J. OF GLOBAL HEALTH PERSPECTIVE, Aug. 1, 2012, available at <http://jglobalhealth.org/article/understanding-rural-to-urban-migration-in-ethiopia-driving-factors-analytical-frameworks-and-recommendations-2/>.

156. IOM, *supra* note 100, at 12.

157. *Id.*

those resources perceived to increase the chance of improving livelihood security post-migration.”¹⁵⁸ For example, there are instances where lack of employment, land, or other opportunities can trigger the emigration of people to areas with greater employment opportunities.¹⁵⁹

V. CLIMATE CHANGE, GENDER INEQUALITY AND MIGRATION

As discussed in the previous sections, rural women in Africa generally are the most vulnerable populations because of weak adaptive capacity to respond to climate change impacts and dependence on natural resources for livelihood.¹⁶⁰ The prevailing patriarchal settings and standards legitimize the subordination and marginalization of women in every aspect of life. Rural women and girls often do not have the equal right to access decision-making processes and to use, access, and manage resources that can help them cope with the changing climate.¹⁶¹ Hence, while climate change does not solely impact women through environmental changes, it makes women more susceptible because of its interaction with other economic and socio-cultural factors.¹⁶² Therefore, women and girls are disproportionately impacted by the vicious circle of gender inequality, vulnerability and climate change.¹⁶³

On the other hand, the complex nature of migration requires acknowledging other factors that mediate between climate change and migration.¹⁶⁴ It is believed that the effects of climate change on population movements are likely to enormously affect the underprivileged and vulnerable groups, especially children, the elderly, and women.¹⁶⁵ Gender, in

158. Morrissey, *supra* note 125, at 29.

159. Dana E. Hunnes, *supra* note 155, at 17–18.

160. Abebe, *supra* note 17, at 7.

161. Justina Demetriades & Emily Esplen, *The gender dimensions of poverty and climate change adaptation*, in *SOCIAL DIMENSIONS OF CLIMATE CHANGE: EQUITY AND VULNERABILITY IN A WARMING WORLD* 133–44 (R. Mearns and A. Norton eds., 2010).

162. Namrata Chindarkar, *Gender and Climate-Change Induced Migration: Proposing a Framework for Analysis* 7 *Environmental Research Letters* 2, 4 (2012).

163. Abebe, *supra* note 17, at 3.

164. Pigué, et al., *supra* note 90, at 9.

165. Lori Hunter and Emmanuel David, *Climate Change and Migration: Considering the Gender Dimensions* (Univ. of Colo. Inst. of Behavioral Sci. Working Paper No. POP2009-13, 2009).

addition to other variables such as poverty and government policies, is among the various factors that influence migration decisions and patterns.¹⁶⁶ Migration as a coping strategy is gendered because it requires not only physical mobility, but also economic and physical capacities that are not equally available to women.¹⁶⁷

In most cases, because of issues related to opportunities, capabilities and security, women are left behind with children and elders.¹⁶⁸ Thus, in spite of the general assumption that migration is an adaptive response by the most vulnerable, those are not always the ones who migrate.¹⁶⁹ The length of time, course, and place of migration are all connected to the personal circumstances of each migrant, along with their social ties and access to information.¹⁷⁰ The poorest women living in rural areas often lack the required resources to migrate, such as social networks, property ownership, assets or even information.¹⁷¹ In some instances, despite the existence of adequate resources, families and societies challenge women's migration. Stringent cultural values and beliefs can determine that migration of women and girls is unethical.¹⁷² In addition, caring for children and reproductive responsibilities of women are physical barriers to their mobility.¹⁷³ Therefore, a comprehensive analysis of women's migration patterns is needed to better understand the effect climate change has on women.

Although there is little research done on how women are affected during the actual process of climate change-induced migration in East Africa, it is important to consider existing studies in the area. In Ethiopia, for instance, eighty-three percent of the population relies on subsistence agriculture on

166. IOM, *supra* note 100 at 19-20.

167. U. N. Pop. Fund (UNFPA), STATE OF WORLD POPULATION 2009—FACING A CHANGING WORLD: WOMEN, POPULATION, AND CLIMATE 35 (Robert Engelman, ed., 2009).

168. Abebe, *supra* note 17, at 29.

169. IOM, *supra* note 100, at 9.

170. Dana E. Hunnes, *supra* note 155, at 17.

171. See generally BRIDGE, INST. OF DEV. STUDIES, GENDER & MIGRATION (2005), available at www.bridge.ids.ac.uk/reports/CEP-Mig-OR.pdf.

172. *Id.*

173. *Id.*

plots of land ranging from 0.25 hectares to 2.0 hectares.¹⁷⁴ Frequent drought, coupled with a growing population, is affecting the productivity of land. This, in turn affects the subsistence agriculture, income, assets, health and nutritional status of the rural population. Studies show that both non-economic and economic factors such as land ownership and decreases in crop yields influence migration decisions.¹⁷⁵ Seventy percent of rural-urban migrants are illiterate, including fifty-eight percent of males and eighty-one percent of females.¹⁷⁶ In drought prone areas of Ethiopia, age and sex of the individual, relationship to the head of household, level of education of the head of household, housing quality, and a given community's food crisis the most important determinants of rural out-migration.¹⁷⁷ In addition, the young age of many migrants makes the transition even more difficult.¹⁷⁸

VI. ADVANTAGES AND DISADVANTAGES OF MIGRATION

Even though most people migrate to escape poverty, unemployment, violence, exploitation and other disasters, the consequences of migration can be positive or negative.¹⁷⁹ This implies that migration outcomes are not uniform across men and women.¹⁸⁰ Migration outcome vary depending on the degree of vulnerability. The differences between temporary and permanent migration also affect the value of the migration.¹⁸¹

174. Tassew Woldehanna, Addis Ababa Univ., *The Experiences of Measuring and Monitoring Poverty in Ethiopia*, Presentation at the Inaugural Meeting of the Poverty Analysis and Data Initiative (PADI) (May 6-8 2004), at 4, available at <http://www.heart-intl.net/HEART/110105/TheExperiencesofMeasuring.pdf>.

175. *Id.*

176. *Id.*

177. Markos Ezra & Gebre-Egziabher Kiros, *Rural Out-Migration in the Drought Prone Areas of Ethiopia: A Multilevel Approach*, 35 INT'L MIGRATION REV. 749, 763 (2001).

178. Betemarian Berhanu & Michael White, *War, Famine, and Female Migration in Ethiopia 1960-1989*, 49 ECON. DEV. & CULTURAL CHANGE 110 (2000).

179. Rafael Reuveny, *Climate Change-Induced Migration and Violent Conflict*, 26 POL. GEOGRAPHY 656, 657 (2007).

180. *Id.*

181. Abebe, *supra* note 17, at 15.

In its March 2014 report, the IPCC stated that expanding opportunities for mobility can reduce vulnerability for such populations.¹⁸² Migration of women and girls has various positive impacts, as it brings greater economic and social autonomy, prosperity and opportunities.¹⁸³ In some instances, migration may offer girls and women new educational and career opportunities that may not easily be accessed at their places of origins.¹⁸⁴ New social connections and presence of many migrants in urban areas motivate women to look for different and better opportunities.¹⁸⁵ In such circumstances, women resort to either international or local migration (such as moving locally from city to city). Although an international migration has its own drawbacks, there is a chance that migrants can benefit from exposure to diverse cultures, skills and knowledge. This in turn enhances their opportunities for greater independence and self-confidence.¹⁸⁶

Migration can provide a crucial source of income for migrant women and their families, which builds greater confidence, self-confidence and social status.¹⁸⁷ Evidence shows that remittances lead to investment and an increase in production and productivity.¹⁸⁸ In some instances, remittances from migrants may serve as insurance against adverse shocks during natural disasters.¹⁸⁹ Hence, it can help families survive hunger or spend the money to improve crop farming and

182. Intergovernmental Panel on Climate Change, *supra* note 127, at 20.

183. See generally MIRIAM TEMIN, ET AL., POPULATION COUNCIL, GIRLS ON THE MOVE: ADOLESCENT GIRLS & MIGRATION IN THE DEVELOPING WORLD (2013).

184. *Id.*

185. Luca Marchiori, et al., The Impact of Climate Variations on Migration in Sub-Saharan Africa, Presentation at Conference for the Inst. for Int'l Econ. Pol'y's Signature Initiative: Economics of Adaptation to Climate Change in Developing Countries (May 18, 2011) (transcript available at http://www.gwu.edu/~iiep/adaptation/docs/presentations/Maystadt_weather_migration.pdf).

186. See generally U. N. POPULATION FUND (UNFPA), STATE OF WORLD POPULATION 2011 (Richard Kollodge, ed., 2011), available at <http://www.unfpa.org/webdav/site/global/shared/documents/publications/2011/EN-SWOP2011-FINAL.pdf>.

187. Abebe, *supra* note 17, at 30.

188. INT'L FUND FOR AGRIC. DEV. (IFAD), ROUND TABLE PROCEEDINGS: MIGRATION AND RURAL EMPLOYMENT 7-8 (Feb. 2007), available at <http://www.ifad.org/events/gc/30/roundtable/migration/proceedings.pdf>.

189. *Id.*

livestock production.¹⁹⁰ Migration can raise households' ability to access important services such as food, health and hygiene related services.¹⁹¹ In case of male emigration, women become de facto heads of households with increased autonomy and decision-making power.¹⁹² They manage every aspect of the household, including distribution and allocation of remittances sent by the migrant household members.¹⁹³ In most East African countries, because of outdated farming methods, farming activities are labor intensive. Women who run households will often need physical labor for farming. Remittances sent by the husband may help hire labor, or be invested on other goods like farming tools, seeds, fertilizers or livestock.¹⁹⁴

Some say that migration has the tendency to take away the energetic, innovative, and educated young generation while leaving behind "the very young, the apathetic, the retired and the tired, the illiterate and the infirm."¹⁹⁵ This can worsen rural poverty, discouraging social viability.¹⁹⁶ Men's migration increases the workload of women, as many of them have to care for their families in addition to working on the farm.¹⁹⁷ In the husband's absence, the woman assumes management of household budget, issues concerning children, farming and livestock, firewood and water needs, community meetings, and small-scale marketing. Some researchers have linked male emigration with the "feminization of agriculture" to signify the farming and household tasks women perform.¹⁹⁸

190. Abebe, *supra* note 17, at 31.

191. IFAD, *supra* note 188, at 9

192. Sylvia Chant, *Households, gender and Rural-Urban Migration: Reflections on linkages and considerations for policy*, 10 ENV'T & URBANIZATION 5, 18-20 (1998), available at <http://eau.sagepub.com/content/10/1/5.full.pdf>.

193. *Id.*, at 20.

194. Abebe, *supra* note 17, at 31.

195. Blessing Mberu, *Who Moves and Who Stays? Rural Out Migration in Nigeria*, 22 J. OF POPULATION RES. 141, 142 (2005).

196. Abebe, *supra* note 17, at 61–62.

197. Chindarkar, *supra* note 162, at 5.

198. Yiching Song et al., *Feminization of Agriculture in Rapid Changing Rural China: Policy Implication and Alternatives for an Equitable Growth and Sustainable Development*, paper presentation at the *FAO-IFAD-ILO Workshop on Gaps, Trends and Current Research in Gender Dimensions of Agriculture and Rural Employment: Differentiated Pathways out of Poverty*, (Mar. 31-Apr. 1, 2009), available at http://www.faoilo.org/fileadmin/user_upload/fao_ilo/pdf/Papers/24_March/Song_et_al._

In some cases, female household management seems to be insignificant. For instance, in pastoral areas of Ethiopia and Somalia, when the husband migrates, it is the eldest son or male relative who makes decisions regarding land, livestock, cash and food crop production, and sales.¹⁹⁹ A field study on climate change and migration in the Afar and Somalia areas of Ethiopia found that pastoral men migrate to other rural or urban areas in search of water or grazing land or work due to severe drought conditions.²⁰⁰ Consequently, women who are left behind face increased risks of expulsion from their families and communities, as well as sexual violence.²⁰¹

It is now well acknowledged that migration of either of the parents can have negative and positive effects on children left behind.²⁰² The gendered impacts of male migration can be manifested in terms of its negative effect on the girls' education.²⁰³ In the absence of men, girls are expected to support their mothers in household and farming activities.²⁰⁴ As a result of extra workloads girls assume, they are forced to miss out on schooling.²⁰⁵ Migration increases vulnerability to human immunodeficiency virus infection for both migrants and the spouses they leave behind.²⁰⁶ Migrant men are believed to acquire HIV infection in destination areas and transmit the virus to their spouses up on returning to their places of origin.²⁰⁷

Similar to men's migration, women's migration also has its own negative impacts. In some instances, climate change causes mass-migration of people (both intra and international)

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199. Interview of pastoralists in Borena, Afar and Somali in Ethiopia (Sept.-Dec., 2013).

200. *Id.*

201. *Id.*

202. Francisca Antman, *The Impact of Migration on Family Left Behind* 7 (Inst. for the Study of Labor, Discussion Paper No. 6374, 2012), available at http://www.iza.org/MigrationHandbook/16_Antman_The%20Impact%20of%20Migration%20on%20Family%20Left%20Behind.pdf.

203. *Id.*

204. Abebe, *supra* note 17, at 87.

205. IOM, *supra* note 100, at 20.

206. See generally Niran Saggurti, et al., *Male-Out Migration: A Factor for the Spread of HIV Infection Among Married Men and Women in Rural India*, 7 PLOS ONE E43222, 1-7 (2012).

207. *Id.* at 1-7.

where they end up in urban slums or camps.²⁰⁸ The main challenges of displaced people are related to security and safety.²⁰⁹ Women and children encounter greater risk of sexual and gender based violence and become targets of human trafficking.²¹⁰ Young girls and men are recruited and trafficked using deception and coercion.²¹¹ They often find themselves in a variety of forced work, engaging in domestic servitude and other labor demanding jobs.²¹² They live in terrible conditions of slavery, and experience abuse and sexual and gender-based violence, often without due remuneration, freedom of movement, or options to report to authorities or escape from such exploitative conditions.²¹³ Thus, while migration, whether local or international, may seem to be empowering women, it may actually aggravate their socio-economic vulnerability.

One study found that young girls and women from rural areas of Eastern Ethiopia, who migrate to cities such as Dire Dawa or Harar, are often forced into long hours and low-paying jobs such as domestic servants and prostitutes due to their lack of education and skills.²¹⁴ Female migrants from rural areas, where their access to education is inhibited by culture, religion, and unavailability of schools, lack the skills or necessary knowledge required to get a job in the urban sector.²¹⁵ Therefore, they do not have many options other than working in informal sectors. Thus, in some cases, men tend to be in a better position, as the cultural norms and practices do not hinder them from attending schools.

208. Stephen Castles., *Environmental change and forced migration: making sense of the debate*, NEW ISSUES IN REFUGEE RESEARCH, Working Paper No. 70., Refugees Studies Centre, University of Oxford, 2(2002), available at http://www3.hants.gov.uk/forced_migration.pdf.

209. Chindarkar *supra* note 162 at 3.

210. U. N. Env't Programme (UNEP), *Women at the Frontline of Climate Change: Gender Risks and Hopes, A Rapid Response Assessment*, 47 (Christian Nelleman, et al., eds., 2012).

211. *Id.* at 49-50.

212. *Id.*

213. *Id.*

214. Abebe, *supra* note 17 at 74-75.

215. *Id.* at 33.

VII. SUSTAINABLE HUMAN SECURITY & SUSTAINABLE DEVELOPMENT

From the above discussions, it can be understood that climate change has the tendency to threaten human security because it increases the risk of violent conflict and undermines the capacity of states to act in ways that promote rule of law, sustainable development, human security and peace. Therefore, it is important to inspect the security and development issues involved in order to take effective measures. The very notion of security implies existence of a threat or the probability for break out of new threats. The traditional notion of human security used to be state-centric and narrow, concerning only “military defense of state interests and territory.”²¹⁶ Having experienced new forms of threats in the last two decades, the world community started to understand the evolution of new forms of security threats. Then, in the 1990s, the term “human security” was introduced as a response to new problem that could affect everyone.²¹⁷ It was defined as both safety from such chronic threats as hunger, disease and repression, along with protection from sudden and hurtful disruptions in the patterns of daily life.²¹⁸

As a result, the whole human security paradigm changed from a traditional notion to one that focuses on individual security, protection and empowerment.²¹⁹ In a 1994 report, the United Nations Development Program listed unchecked population growth, disparities in economic opportunities, excessive international migration, environmental degradation, drug production and trafficking, and international terrorism, as the main security threats facing the developing world.²²⁰ The basic questions asked in terms of human security are: (1) Whose security is at stake, when and where and at what cost? (2) Who feels secure in a given country? (3) Who does not? And (4) what needs to be done to achieve longer lasting security in

216. Roland Paris, *Human Security: Paradigm Shift or Hot Air?*, 26 INT'L SEC. 87 (2001).

217. U. N. Dev. Programme (UNDP), *Chapter II: New Dimensions of Human Security*, in HUMAN DEVELOPMENT REPORT 1994 22–44 (1994).

218. *Id.* at 23.

219. U. N. Dev. Programme (UNDP), *Foreward*, in HUMAN DEVELOPMENT REPORT: OCCUPIED PALESTINIAN TERRITORY 2009/10 (Vanessa Farr, et al., eds., 2010).

220. *Id.* at 34.

the contemporary world? E. Dorothy Estrada-Tanck, writing for the European University Institute argued:

Long-established concepts of national or military security, focusing on the territorial State, are unfit to analyze many factors of risk, threat or sudden change in the daily lives of persons caused by other insecurities such as poverty, environmental hazards, global epidemic diseases, natural disasters, and gender-based violence. All these elements of menace that affect people's rights and dignity, have usually not been considered as risks which can be related to security which the State has an obligation to prevent or ameliorate. Such threats often become invisible in the public debate that generally centers its concerns on national security of the State, or in some cases on public security related only to combating crime or exposed violent conflict.²²¹

Still, discussions about human security lack credibility unless the nexus between human security and sustainable development is understood. Sustainable development is a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."²²² This definition suggests that sustainable development has three main pillars: economic development, environment, and social equity development within the present and future time span.²²³ Therefore, what needs to be sustained and what needs to be developed are interconnected. For instance, poverty affects individuals' capacity to adapt to changing climate. That is why it is believed that critical measures and responses taken towards poverty alleviation have the tendency to address and respond to threats of climate change.²²⁴

221. E. Dorothy Estrada-Tanck, *Human Security and Human Rights under International Law: Crossroads and Possibilities*, EUROPEAN UNIV. INST. 1, (2010), available at http://www.operationspaix.net/DATA/DOCUMENT/4553~v~Human_Security_and_Human_Rights_under_International_Law__Crossroads_and_Possibilities.pdf.

222. World Comm'n on Environment and Dev. (WCED), *Report to U. N. Gen. Assembly: Our Common Future*, U. N. G. A. Annex to Doc. A/42/427 (1987).

223. Jayant Sathaye, et al., *Climate change, sustainable development and India: Global and national concerns*, 90 CURRENT SCI. 314, 321 (2006).

224. INT'L POLY NETWORK, *Climate change and sustainable development: A Blueprint From a Sustainable Development Network 3* (2004).

The notion of sustainable human security takes into account the impacts of environmental changes ranging from human health, economic insecurity, social fragmentation, and political instability.²²⁵ There is much human security can offer to sustainable development and vice versa. One of the areas where human security offers sustainable development is by improving the focus of the latter “from a primarily needs-based focus to a rights-based focus in the quest of improving opportunities and capabilities.”²²⁶ In sum, sustainable human security has the potential to adopt a new framework in integrating ‘rights’ and ‘risks’ in different perspectives.

Moreover, the inquiry regarding the subject of whose security is at stake lets us comprehend security from women and men’s points of view along various socioeconomic, political, cultural, and environmental factors. As a result of the gendered social structures, practices and symbols existing in a societies, “all forms of human (in)security are gendered, even though their manifestations, patterns and degree of intensity may be specific and context dependent”²²⁷ It seems that dialogues on the gendered aspects of human security fail to critically address gender inequality in terms of access to both resources, and decision making mechanisms.

VIII. CONCLUSION

East Africa is one of Africa’s most explosive regions, and has been suffering from enormous problems caused by poverty, population growth, weak governance, natural environment degradation, war, population displacement and famine. Climate change has become a new threat that exacerbates already existing problems. Coupled with other factors, it is posing threats to regional and national security and development agendas. For instance, in Ethiopia, Eritrea, Burundi and Somalia, drought has been the major challenge

225. Sanjeev Khagram, et al., *From the Environment and Human Security to Sustainable Security and Development*, 4 J. HUMAN DEV. (2003).

226. *Id.* at 289.

227. Susan McKay, *Women, Human Security and Peace-Building: A Feminist Analysis*, in CONFLICT AND HUMAN SECURITY: A SEARCH FOR NEW APPROACHES OF PEACE-BUILDING 153, IPSHU English Research Report Series, No.19, (2004), available at <http://home.hiroshima-u.ac.jp/heiwa/Pub/E19/chap7.pdf>.

affecting agricultural production and food security.

Population growth, political instability, and scarcity of resources are additional factors exacerbating the impacts of climate change and hindering survival from hazards. Rural farmers hold small plots of land that do not allow them to earn enough income and feed their family. Furthermore, scarcity of grazing lands and water resources has been causing perpetual conflict amongst pastoral and non-pastoral communities in the region. It is important to emphasize that, in East Africa, all the ecological, cultural, social, economic and human problems are intensified by poverty. Rural communities of the region have limited access to basic infrastructure such as health and education facilities, communication services, markets, and credit and capital services. In sum, impacts of climate change, when coupled with other factors, have become a new threat to the security and well being of rural communities in the region.

In order to survive the changing climate, governments and people have adopted their own coping mechanisms. Migration is one of the mechanisms local residents have used. For example, pastoralists in the region migrate to highland places where they can get adequate pasture and water for their livestock. Highlanders have adopted their own coping strategies such as changing planting seasons, irrigation, and the introduction of drought resistant crops. On the other hand, governments have endorsed various policies and strategies that are meant to address climate change and, at the same time, enhance sustainable development. For instance, Kenya adopted a National Climate Change Response Strategy which aims at mainstreaming climate change issues through all economic sectors and ensuring coordinated implementation of climate change mitigation and adaptation activities.²²⁸ It also acknowledges the significance of efficient communication, education, and public awareness programs in improving the resilience of communities and productive sectors for adaptation to climate change.²²⁹

In East Africa, despite the existence of various progressive policies, legislation, and strategies on gender equity, women

228. See generally The Republic of Kenya, *National Climate Change Action Plan 2013 -2017 Vision 2030*, available at <http://cdkn.org/wp-content/uploads/2013/03/Kenya-National-Climate-Change-Action-Plan.pdf>.

229. *Id.*

can hardly access, use, or manage resources and participate in decision making processes. Rural women in East Africa have weaker adaptive capacity compared to men due to different social, cultural, economic, religious and political factors. In counties such as Somalia, Ethiopia and Sudan (both North and South), religion plays the central role dictating the roles and responsibilities of women.

The differentiated impacts of climate change on women are manifested in socially built gender roles and relation. Rural women and girls are assigned with responsibilities that make them more vulnerable to impacts of climate change. During dry seasons women have to walk for long hours to collect water and food. This increases their workload and affects their health as they are exposed to sexual and physical violence. From the point of view of education, girls have higher rates of dropout from schools as a result of their responsibilities.

Moreover, understanding gender is critical in climate-migration context. Religion, society and culture compel women to be good wives and mothers and not to abandon their children at times of hazards. Women with children do not resort to migration straight away. In most cases, it is men and young girls who migrate at times of crisis. Migration of men has resulted in a certain switch of gender roles. In the absence of men, women have to perform men's responsibilities in addition to theirs. Women migrating from rural areas often lack the necessary material and intellectual resources. As a result, they often join the informal sector where they become more vulnerable for physical, sexual and emotional abuse.

When we look at the human security approach, state-centered measures and disaster managements can no longer address problems caused and intensified by climate change. For instance, the traditional notion of human security is not compatible with the current needs and priorities of women in the region. Furthermore, although the causal link between climate change, migration, and conflict is still unproven, it seems that addressing these issues in isolation cannot bring a sustainable solution. This leads to the necessity of endorsing legal and policy measures that can bring together and reconnect the usually distinct fields of defense, diplomacy and development. Therefore, apart from the moral obligations raised in relation to climate change, claims for climate justice can be given legal ground through the eyes of human rights.

Thus, dialogues on climate justice from the point of view of

human security means responsive legal and policy measures that takes into consideration the security and development of present and future generations. Protecting human rights and addressing climate change are compatible interests. Human rights approaches facilitate consultation, participation of all stakeholders, and transparency of policy making and enforcement. In this regard, the focus will be more on governments as duty bearers and individuals as right holders, irrespective of their social, cultural, political and economic status.

In this context, governments' responsibility begins by consulting with affected people, and listening to local communities that are facing climate impacts. It should also be noted that the universal nature of human rights and impacts of climate change as global issues underlines the necessity of international mutual aid. Although individual states are immediately responsible to their own citizens, the universality nature of human security and rights obliges all to intervene and take action. Through international collaborations, regions such as East Africa, with weak adaptive and mitigation capacity, can take actions to revert threats and impacts of climate change, migration and conflict.

IX. RECOMMENDATIONS

In a broader sense, to deal with climate change, gender inequality and migration in East Africa, various adaptation and mitigation strategies are essential at local and regional level. These and other issues such as population growth, perpetual conflicts and poverty are redefining many of the problems policy makers are trying to address at national and regional level. All these challenges have roots that expand beyond national boundaries, implying the necessity of broader perspectives and regional actions. They all require networking at local, regional and international levels. Establishment of strong and efficient institutions is mandatory to facilitate harmonization and coordination to respond to threats of climate change, gender issues, migration and conflicts at local and regional levels. This requires coordination and collaboration among government, civil society, and academic institutions.

Another critical issue is the weak participation and under-representation of women in policy and decision-making institutions. The participation of women in discussion of

climate adaptation, governance of natural resources, and other important livelihood dimensions is insignificant. Women are not equally represented in organizations dealing with climate change or security. Despite all the burning issues women are facing, their voices are not heard and considered when policies are made. Integrating gender issues and increasing women's participation in climate change consultations and processes is very crucial. It is imperative to ensure participation of women professionals and gender experts to provide substantive inputs. This helps to ensure the integration of gender concepts in all phases and aspects of policies, strategies and programs on climate change, security and development.

Climate-sensitive development and security strategies are also needed in order to bring lasting solutions to East Africa. Currently, there are a number of research projects and programs focused on climate change, security and sustainable development. Still, intensive research and development projects in different disciplines are very few. From a gender point of view, a close look at the differential impact of climate change shows the complexity of social, economic, political, cultural, and ecological factors that play central role in determining women's vulnerability to disasters. Therefore, conducting intensive research on gendered impacts of climate variability, conflict, and migration is imperative. Research projects employing feminist methodologies need to be conducted to give voice to East African rural women who are at the frontline of climate change.

In East Africa, there are various climate and development policies, although some are not well enforced. This requires building capacity and harmonization of policies and institutional frameworks. Building human, institutional, infrastructural, and financial capacity is essential in order to ensure effective implementation of policies directed at climate change, security, and development.

East African states need public policies to ensure that small farmers have opportunities to boost their production and income. It is important to ensure that investments by national, regional, and global institutions focus on improving productivity of smallholders through improved market accesses, infrastructure, financial, and extension services. Governments and institutions should strongly promote new agricultural technologies suitable for smallholders through increased investment in crop breeding and livestock research.

Although the linkages between climate change and land tenure are complex, providing tenure security for all is crucial. Because insecure land right, fragmentation, and scattered parcels of land contribute to land degradation, it is important to provide equitable land tenure by ensuring long periods of use rights. There needs to be strong national and regional adaptation mechanisms that integrate essential land and tenure dimensions. Secure tenure can create sense of ownership and increase the desire to invest in labor, talent and finance on the land. This empowers local communities and enhances their equality, participation in decision-making and their ability to fight climate change.

Adaptation and mitigation efforts need to address the full range of challenges and opportunities related to gender inequities. It is important to adopt gender sensitive climate strategies through increased access and ownership of land, credit services, secure water resources, markets, education, and farming. As previously stated, it is young girls and men who migrate within and across international borders. Providing support in forms of credit and capital services can halt migration patterns by creating employment opportunities. In this regard, policies and programs need to take in to account the sexual, physical, economic, and social vulnerabilities women face in places of destination.

The traditional coping mechanisms adopted by the communities need to be taken into consideration in adaptation and development policies. Since coping mechanisms adopted by local communities are meant to serve for short periods of time, long-term solutions need to be sought to bring far-reaching solutions and strengthen the adaptive capacity of societies. Gender awareness and advancement of gender issues and equity is needed from all disciplines, institutions, organizations and contexts. When policies and strategies are drafted and issued, it is important to acknowledge the differences that exist among women. Differences in class, age, and status have the potential to determine their vulnerabilities, risks and coping strategies.

In sum, to lessen the susceptibility of women, and increase the capacity of society as a whole to adapt to a changing climate, women need to actively participate if sustainable adaptation strategies are to be implemented. Women and girls needs to be at the center of climate strategies and programs since they are a particularly vulnerable group. They should be

at the center of climate efforts because of the significant roles they play in agriculture, food security, household livelihoods and labor productivity.