IMPACTS OF CLIMATE CHANGE ON YOUTH, PEACE AND SECURITY

AN OFFICIAL THEMATIC PAPER TO SUPPORT THE PROGRESS STUDY ON YOUTH, PEACE & SECURITY MANDATED BY THE UN SECURITY COUNCIL RESOLUTION 2250
In collaboration with:

SDSN Youth wrote this report based on an analysis of primary and secondary sources. Launched in 2015, SDSN Youth is the global youth division of the Sustainable Development Solutions Network (SDSN). Through education and global cooperation, SDSN Youth provides a platform to advocate for change and offer solutions for achieving the Sustainable Development Goals (SDGs).

AUTHORS

Julian Payne
Project Leader
julian.payne@sdsnyouth.org

Antoine Warembourg
Project Officer
antoine.warembourg@sdsnyouth.org

Jalal Awan
Project Officer
jalal.awan@sdsnyouth.org
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Members include:

**Wiebke Koenig**  
*Head - Global Leadership Academy*  
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

**Katrina Lee-Koo**  
*Deputy Director of Monash Gender, Peace & Security*  
Monash University

**Joshua Castellino**  
*Professor of Law & Dean of the School of Law*  
Middlesex University

**Eve de la Mothe Karoubi**  
*Manager*  
Sustainable Development Solutions Network

**Erika Weinthal**  
*Lee Hill Snowdon Professor of Environmental Policy*  
Duke University

**Alex Heikens**  
*Senior Advisor, Climate and Environment*  
United Nations Children's Fund (UNICEF)

**Halvard Buhaug**  
*Research Professor*  
Peace Research Institute Oslo (PRIO)

**Nina Von Uexkull**  
*Assistant Professor*  
Uppsala University

**Lama Ranjous**  
*National Coordinator*  
Arab Youth Climate Movement – Syria

**Siamak Loni**  
*Global Coordinator*  
United Nations Sustainable Development Solutions Network – Youth (SDSN-Y)

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Executive Summary

This thematic paper investigates the impact of climate change and environmental degradation on youth, peace and security. The paper aims to support the Progress Study on Youth, Peace and Security to be submitted to the UN Security Council and General Assembly by Secretary-General António Guterres at the end of 2017.

Youth are uniquely affected by humanitarian crises and conflict. Indeed, many young people live in fragile and conflict-affected countries but are seldom called upon to initiate solutions to development challenges. It is only recently, through the adoption of UN Security Council Resolution 2250 (2015), that both the importance and positive role of young women and men in the promotion and maintenance of international peace and security has been recognised.

Food insecurity, water stress, forced migration and economic recessions are some of the impacts associated with climate change, which has been termed a ‘threat multiplier’. However, the ways in which climate change uniquely impacts the security and development prospects of youth populations remains as of yet unstudied. An analysis of the impact of climatic events on youth, peace and security is critical for understanding the underlying mechanisms for how forced migration, conflict and security challenges apply specifically to young people. It is further important to help inform young people and youth leaders on how to solve development challenges.

The thematic paper outlined in this document will provide answers to these questions, as well as propose policies and programmes on how to better engage youth on environmental issues and support peacebuilding. The thematic paper is structured around one overarching research question and three sub-questions:

What are the evidenced and potential impacts of climate change on young people’s opportunities for peace and security?

• What potential security challenges might climate change pose to young people?

• In what ways might these challenges be addressed through policies and programming?

• How may youth be empowered to address the causes and adapt to the impact of climate change in ways that ensure the security of themselves and their communities?

In answering these questions, this paper focuses specifically on the interaction between youth and climate change in the Middle East and Africa. These regions have seen a high number of armed conflicts in recent years, are projected to face severe challenges related to climate change and are regions with a young population. They are therefore particularly relevant for this study. Presented below are the main chapters of the thematic paper:

Youth Demographics and Regional Trends

In line with Security Council Resolution 2250, ‘youth’ is defined as the age group encompassing 18-29 year olds. However, depending on the availability and relevance of data, other age brackets generally defined as ‘adolescents’ or ‘children’ are also presented in some sections. In this chapter, the concept of youth bulges is explored and regional figures on youth demographics in the Middle East and Africa are discussed.
Introduction to Climate Change

In this chapter, an overview of climate change is presented. Moreover, risks and vulnerabilities posed by climatic events such as floods, droughts, irregular rain patterns, extreme weather events and temperature variations in subject regions are explored.

Climate Change and Security Challenges

This chapter explores how climate change hinders the ability of governments to provide basic services like health and education thereby threatening the safety and security of society, especially for the most vulnerable members. Climate change is thus commonly understood as a threat-multiplier in regions where security challenges already exist. Variables that increase security risk are discussed in detail.

Youth, Climate Change and Security

This section establishes the link between youth, climate change and security. Discussed in the context of the regions under study are the following 5 topics: Economic recessions and impacts; forced migration and displacement; famine and water shortages; disruption to education; and diseases and global health.

Policies & Programmes

The report concludes with policy recommendations in line with the 5 pillars of Security Council Resolution 2250: participation, protection, prevention, partnerships and disengagement and re-integration. Various policy and programme proposals leveraging the demographic dividend and the unique potential of an ever-increasing youth demographic in the regions under study are explored.

The recommendations developed in the concluding chapter are expansive and may apply to a range of actors, including, amongst others, international organisations, businesses and non-profits. Against each of the 5 pillars of the resolution we have provided a tangible example of initiatives working at the intersection of youth, the environment and peacebuilding in the main body of the report. The pillars of the resolution and the recommendations are presented below:

Participation - Resolution 2250 asks governments to increase the participation of young people in decision-making at levels in local, national, regional and international institutions and in mechanisms for the prevention and resolution of conflict. It also stresses the need for young people’s needs to be considered during the missions of the Security Council.

I. Support the building of stable inclusive institutions. Unstable governance impairs economic performance and limits the capacity to implement adaptation and mitigation measures, which in turn increases the vulnerability to climate impacts.

II. Include the voices and opinions of young people in climate change agreements and debates at local, national and international levels. Youth have a greater stake in the impacts of climate change and will be instrumental in developing solutions in the future.

Protection - Resolution 2250 asks governments to ensure the protection of civilians, specifically youth, at times of armed conflict and post-conflict, including protection from sexual and gender-based violence. It also demands countries to end impunity by bringing to justice those who commit genocide, crimes against humanity and war crimes against youth civilians.

I. Cut greenhouse gas emissions in line with the recommendations of climate scientists to limit global temperature increase to a maximum of 2C, and ideally 1.5C. This will also reduce the impacts of climate change...
on young people’s livelihoods. Adaptation measures will also be critical in protecting young people. This will need to be achieved through Low Emissions Development Strategies and Plans (LEDS) for example, as well as scenario planning, implementation and performance review more broadly.

II. Promote awareness on the impact of climate change on global health and diseases, especially regarding how youth as a distinct demographic constituency are impacted. This includes collaborating to strengthen the evidence base for climate effects and health, as well as incorporating technical strategies into global health programs.

III. Prioritise the needs of youth and other vulnerable actors in climate change adaptation as these have contributed the least to climate change and are uniquely and potentially disproportionately impacted.

IV. Reduce inequality between youth as well as between youth and adults to build resilience to and capacity to adapt to climate change and reduce disaster risk. Poor communities lack the financial and social resources to deal with the impacts of climate change and require greater support.

Prevention - Resolution 2250 calls on governments to support youth’s engagement by creating spaces in which young people are recognised and provided with adequate support to implement violence prevention activities. The document also stresses the need to create policies for youth that positively contribute to peacebuilding efforts, including for their social and economic development.

I. Provide youth with education, including the provision of tools and skills to understand the risks posed by climate change. Youth need to increase the capacity of their communities to adapt to climate change and should be aware of the link to displacement and conflict among others. Climate change education needs to be included in primary, secondary, tertiary and vocational learning opportunities. As well as top-down approaches, this could also include peer-educations-models as examples. Of the 118,000 people polled on whether education is important to support young people to tackle climate change as part of the U-Report, 71% indicated yes (1) on a scale of 1 to 5.

II. Scale-up innovation support and youth entrepreneurship, especially for ventures working on sustainable development and the risks on climate change on youth, peace and security.

Partnerships - Resolution 2250 urges governments to establish and strengthen partnerships with relevant actors by: increasing political, financial, technical, and logistical support to UN bodies engaged in promoting peace, development and equality; considering the Peacebuilding Commission’s advice and recommendations on how to engage young people during and after conflict when developing peacebuilding strategies; engaging community actors and empowering local people in countering violent extremism and promoting social cohesion and inclusion.

I. Partnerships of young people working on climate change, as well as partnerships between existing youth-focused organisations should be encouraged. These should focus on the development of young people, climate change adaptation and disaster risk reduction. Laws, treaties and charters play an important role in fostering such partnerships, as well as sharing technology and accessing finance.
II. Partnerships with NGOs, including faith-based organisations are a powerful mechanism for educating and raising awareness on climate change and its impacts. Faith-based organisations are among the oldest organisations in the world and have a large following globally, meaning they can play a powerful role in the development process.

Disengagement & Reintegration – Disarmament, demobilisation and reintegration (DDR) are strategies used in the aftermath of armed conflict as a way to achieve sustainable peace. Resolution 2250 encourages all actors engaged in DDR to consider the impact of these processes on youth as well as the needs of young people affected by armed conflict. Aspects to be considered include: opportunities and policies in the fields of education, employment and training in preventing the marginalisation of youth and promoting a culture of peace.

I. Young people need to be provided with education and employment opportunities, especially in the sustainability sector. A lack of employment increases the risks of youths leading a life of poverty, which deprives young people of the opportunity to acquire skills to prepare for climate change effects.

II. Youth need to be protected from the impacts of climate induced migration, displacement and conflict. Trends indicate that climate events may cause large-scale population movements, leading to refugees and internally displaced persons (IDPs), in the coming decades. Youth need to be provided with measures to tackle related challenges, such as radicalisation. Though radicalisation is not necessarily a consequence of migration, participants in insurgencies tend to be young people, especially young men (Humphreys & Weinstein 2008). It is thus important to prevent radicalisation as well as to integrate and protect young migrants.

As the former UN Secretary-General Ban Ki Moon said ahead of the World Humanitarian Summit in May 2016, “matters of war and peace, of human suffering and development cannot be left only to diplomats”. Security Council Resolution 2250 is a compelling call to action defining a new vision for the role of young people in solving sustainable development challenges to achieve the Sustainable Development Goals (SDGs). This thematic paper shows that supporting this vision will require the mobilisation of stakeholders and research around the interplay between climate change and youth empowerment.

This research paper was informed by an in-depth literature review, a series of 30+ interviews with topic experts, including many young people in local geographies, and a survey conducted in collaboration with the U-Report team at UNICEF’s Global Innovation Centre. A detailed breakdown of the methodology employed is presented in the appendix.

This is a report on young people written by young people.
A. Youth Demographics & Regional Trends

In line with Security Council Resolution 2250, ‘youth’ is defined as the age group encompassing 18-29 year olds. In this chapter, the concept of youth bulges is explored and regional figures on youth demographics in the Middle East and Africa are discussed.
Youth Demographics & Regional Trends

There are no universally accepted definitions of adolescence and youth. The United Nations takes adolescents to include persons aged 10 to 19 years and youth as those between 15 to 24 years for statistical purposes without prejudice to other definitions by Member States (Patton et al. 2009). Article 1 of the UN Convention on the rights of the Child (1989) defines a child as a person below the age of 18 and the Committee on the Rights of the Child, the monitoring body for the Convention, has encouraged States to review the age of majority if it is set below 18 and to increase the level of protection for all children under 18.

Security Council Resolution 2250 on Youth, Peace and Security, which represents the focus of this report, defines youth as encompassing all ages from 18 to 29 years of age. This categorisation will be the definition in use in this report, though data availability may entail the use of slightly different age brackets throughout.

At present, there are over 1.8 bn young people aged 10 to 24 on the planet, 90% of whom live in developing countries, where they tend to constitute a large proportion of the population.

<table>
<thead>
<tr>
<th>World Population (Medium Variant)</th>
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<tbody>
<tr>
<td>Age Group</td>
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<tr>
<td>-----------</td>
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<tr>
<td>10-14</td>
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<td>15-19</td>
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<td>20-24</td>
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<tr>
<td>Total</td>
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Table 1 - *World population projections by age group*  
(Source: UN DESA 2010)

By 2050, the world’s population is projected to reach 9.6bn, up from 7.5 bn currently. Nearly all population growth will occur in less-developed countries and African countries in particular will continue to have very large youth cohorts. The proportion of the world’s young people aged 12 to 24 living in Africa is expected to rise from 18% in 2012 to 28% by 2040, while the shares of all other regions will decline.
Youth Bulges

Technically a population bulge describes an age group that is larger than the groups both younger and older than it, thus forming a bulge. Youth bulges are most prevalent in Africa, with pockets in the Middle East, Central America and parts of Asia (IISS 2014).

Most of the increase in the world’s population of 0 to 14 year olds is in sub-Saharan Africa, which will drive world population growth and African youth bulges this century. While the Middle East and North Africa (MENA) youth cohort is very large, fertility is expected to decline in the region with the youth population peaking by 2035. For the purposes of this study, we use ‘youth bulge’ to refer to youthful population age structures, with a high percentage of 18-29 year olds as a portion of the total population.

Kenya is a pertinent example of this demographic transition. As shown in the population pyramid below, in 2000, Kenya’s population had a high concentration of children and youth, reflecting the expansionary stage of demographic development (high birth-rates and low infant mortality). By 2025, a decrease in the birth rate will reduce the percentage of children in the population and expand the youth bulge with highest projected populations of 15-19 year olds. Populations in which youth constitute more than 20% of the total population are classified as ‘youth bulge countries.’
The MENA experienced the highest rate of population growth of any region in the world over the past century. The MENA’s annual population growth reached a peak of 3% around 1980, while the growth rate for the world as a whole reached its peak of 2% annually more than a decade earlier (UN DESA, 2010). Africa has more people aged under 20 than anywhere in the world and the continent’s population is set to double to 2 bn by 2050. Researchers have rival opinions on the pros and cons of such massive youthful populations in the region. Citing examples of sophisticated counterfeiting schemes aimed at defrauding innocent people originating from West Africa, researcher Andrews Atta-Asamoah believes youth bulges pose a major challenge unless properly managed.

![Figure 3 - Africa's Young Population (% of population under 15 years old)](source: Population Reference Bureau, 2012)

Unemployment and lack of opportunity drives these youth towards entrepreneurial criminality; or in the worst case to the ranks of terrorist organisations like Somalia’s Al-Shabbab and Nigeria’s Boko Haram.
Conversely, some researchers believe that the decline of fertility rates following a period of rapid growth presents huge economic opportunities and has started to launch Africa on a very long-term growth pattern. Fuelled by the energy of a youthful population, this demographic dividend allows domestic markets to be created, demand to emerge and local firms to develop in an economic environment that is more business-friendly than 20 or 30 years ago.

The MENA has the world’s highest youth unemployment rate, standing at 27.2% in the Middle East and 29% in North Africa (ILO, 2014). However, the region is endowed with a young, growing and increasingly well-educated population that can significantly enhance the region’s future growth trajectory. The region’s population is projected to increase by more than a quarter by 2030, and a significant proportion of that population will be of prime working-age as shown in demographic trends in Figure 5.
The potential of this large workforce to contribute to economic growth and social dynamism is tremendous, provided that the region’s labour markets are prepared. Socio-economic trends, income levels, technology penetration and growth opportunities for youth in the region vary widely. The countries of the GCC (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE), for example, are at varying stages of their demographic transitions and are experiencing diverging fertility and population growth rates. The youth bulge – the percentage of the population under the age of 25 – ranges from 25% in Qatar to 50% in Oman. In the UAE it stands at 34%, while it is 35% in Bahrain, 40% in Kuwait and 46% in Saudi Arabia.

The general demographics of the region and status of youth using available data on the MENA is discussed in the subsequent section. However, for some countries there are gaps in the data, while for others the available data is somewhat outdated. Additional surveys and data collection along with the regular publication of existing data by government agencies in the region will be invaluable for researchers seeking to examine these regions to devise knowledge-based policy and program solutions.

Figure 6 - Percentage of 10 to 24 year olds in 1980 and 2015
(Source: World Population Monitoring- Adolescents and Youth, UN DESA (2015))
Youth Demographics in the Middle East

The Middle East describes a region of countries located in West Asia and to an extent into Africa and is composed of 17 different countries. Salient features of the Middle Eastern youth population include:

- The population of the GCC (comprising Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates) has doubled over the past 20 years to 51 m in 2015 (World Bank Data).

- The region is young, with over 40% of people under 25. Youth unemployment in MENA is among the highest in the world at 28%. (World Bank Data)

- From 1950 to 2000, the Middle East experienced explosive population growth. The region’s population grew from 92 m to 349 m, a 3.8 fold increase, or 2.7% a year.

Although the population has grown rapidly in all countries in the region, the rate of expansion has been most dramatic in the GCC states, where the number of residents has increased nearly seven-fold since 1960 (UN 2007). Looking forward, overall population growth rates in the Middle East compared to the world show a declining trend compared to previous decades. However, population growth rates in the Middle East continue to be significantly higher than the rest of the world primarily due to high fertility rates, low infant mortality due to improved health-care and early marriage trends.

For most countries, the youth proportion of the population will begin to decline in the next ten years. An estimated 29% of Egypt’s population is between the ages of 15 and 29 today, but by 2020 that will drop to 25%. Jordan’s youth population is 30% of the total population today, but in ten years it will be only 27%. Morocco will drop from 29% (2010) to 24% (2020), while Iran’s youth share of the population will fall from 34% today to only 22% in 2020. However, there are still countries in the region where the youth share of the total population will remain level or continue to grow: Iraq (28% in 2010 to 29% in 2020) and West Bank and Gaza (27% in 2010 to 29% in 2020). In absolute numbers,
the 15- to 29-year-old population in the region will continue to increase.

**Youth Demographics in Africa**

Africa is the world’s youngest continent. The proportion of youth among the region’s total population is higher than in any other continent. Youth (aged 15 to 24) constitute slightly more than 20% of Africa’s population. In 2010, 70% of the region’s population was under the age of 30, and slightly more than 20% were young people between the ages of 15 to 24. The socioeconomic conditions of young Africans have improved in recent years but not considerably. There has been an increase in school enrolment over the past 20 years and the gender gap in education has narrowed. However, young Africans continue to face major difficulties in the realms of higher education, employment, health, and participation in decision-making processes.

Sub-Saharan Africa is a rapidly developing region of great ecological, climatic and cultural diversity (NASAC 2015). By 2050, its population is projected to approach 2 bn people—a figure which rises to nearly 4 bn by 2100 (UN DESA 2013). GDP growth increased from 3.7 % in 2012 to 4.7 % in 2013 although recent conflicts in the Central African Republic and South Sudan have led to interruptions to economic activity (World Bank 2013). National poverty rates have been declining in most Sub-Saharan African countries, with the exception of Mozambique, Cote d’Ivoire and Guinea, although the region still has the largest proportion of people living below the poverty line of all world regions (World Bank 2015b). Levels of stunting among children under 5 years of age as a result of chronic hunger are slowly declining but remain high at 39.6 % in 2011 (UNICEF, WHO & World Bank 2012). Around one in four people in Sub-Saharan Africa is undernourished, amounting to a quarter of the world’s undernourished people (FAO, IFAD and WFP 2014).

In 2009, the youth unemployment rate was at 11.9 % in Sub Saharan Africa and 23.7 % in North Africa; particularly affecting young females (World Bank 2009). Literacy rates in the region have generally improved. Over the last two decades, literacy rates for young females rose from 58 % to 66.6 %, compared to 72 % to 78.4 % for young men.

As per the UN World Urbanisation Prospects, by 2050, Africa will have the largest population in the world (5.3 bn):

![Population by millions](image)

*Figure 8 - World population projections by 2050 (Source - UN World Urbanisation Prospects)*
Niger is Africa’s and the world’s youngest country with a median age of just 14.8 - exactly half the global figure of 29.6 years. Countries that have managed to reduce both mortality and fertility rates increasingly find that the bulk of their population now consists of working age people and young adults. Still, Niger, Uganda and Chad all have populations with median ages below 16 years. Of the world’s top ten countries with the youngest populations, eight are in sub-Saharan Africa. By 2050, the region will be home to all 10.

Unemployment, underemployment, decent work and integration into the mainstream of development remain priority concerns for young Africans.

Figure 9 - World’s 10 youngest country populations 2015
(Source - UN, DESA)
B. Introduction to Climate Change

In this chapter, an overview of climate change is presented. Moreover, risks and vulnerabilities posed by climatic events such as floods, droughts, irregular rain patterns, extreme weather events and temperature variations in subject regions are explored.
Introduction to Climate Change

Over the past 10,000 years, the Earth’s climate has experienced an unusually stable period. Humans have taken advantage of this period to grow crops, build cities, and develop the global economy (King et al. 2015). This period of stability is now at risk. As greenhouse gas emissions from human activities rise, they build up in the atmosphere and warm the climate. To date, of all the environmental issues that have emerged in the past decades, global climate change is undoubtedly the most serious and the most difficult to manage (Steffen 2011).

Many agree that “the stakes [of climate change] are massive, the economics controversial, the science besieged, the politics bitter and complicated, the psychology puzzling, […] and the interactions with other environmental and non-environmental issues running in many directions” (Dryzek et al. 2011). The impacts of climate change are multiple, ranging from a rise in sea levels and loss of ice sheets, to an increase in the frequency and intensity of extreme weather events as well as the loss of biodiversity. These impacts are expected to have adverse effects on agriculture, food supply, human health, water stress and mass migration (Meinert 2013).

Surface temperature is projected to rise over the 21st century under all assessed emission scenarios. It is very likely that heat waves will occur more often and last longer, and that extreme precipitation events will become more intense and frequent in many regions. The ocean will continue to warm and acidify and the global mean sea level will rise (IPCC 2014). If humanity’s greenhouse gas emissions continue to increase, the average temperature of the Earth’s lower atmosphere could rise more than 4 °C (7.2 °F) by the end of the 21st century.

Such a change in climate bears considerable risks, including a loss of ecosystems, impacts on global food supply, and large-scale disturbances of the climate system (PBL 2009). According to the Intergovernmental Panel on Climate Change (IPCC), a scientific intergovernmental body under the auspices of the United Nations, key risks that span sectors and regions include the following (IPCC 2014):

I. Risk of severe ill-health and disrupted livelihoods resulting from storm surges, sea level rise and coastal flooding; inland flooding in some urban regions; and periods of extreme heat;

II. Systemic risks due to extreme weather events leading to a breakdown of infrastructure networks and critical services;
III. Risk of flood and water insecurity and loss of rural livelihoods and income, particularly for poorer populations; and

IV. Risk of loss of ecosystems, biodiversity and ecosystem goods, functions and services.

A global understanding of the link between human-induced emissions of greenhouse gases and climate change spurred the formation of a negotiating committee on climate change by the United Nations General Assembly, the United Nations Framework Convention on Climate Change (UNFCCC) (Kameyama et al. 2008). The ultimate objective of the UNFCCC is “to achieve [...] stabilisation of greenhouse concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”

Policymakers and other stakeholders have expressed interest in a goal to avoid an increase in global mean temperatures of more than 2 °C above the pre-industrial average as a means for operationalising the ambition of the UNFCCC to avoid dangerous anthropogenic climate change. Indeed, in 2015 representatives of UN member states adopted the Paris Agreement at the 21st Conference of Parties to the UNFCCC to achieve this goal, and to pursue efforts to limit the temperature increase to 1.5 °C.

Solutions to climate change come in many forms. For example, solutions to scientific problems may include improved understanding, knowledge and predictability of natural systems. Solutions to problems of societal cooperation may come in the form of policy instruments or international treaties such as the Paris Agreement, while solutions to technical problems will require the commitment of resources and innovation from both the public and private sectors.

Africa and the Middle East emerge as one of the hot spots for worsening extreme heat, drought and aridity conditions under climate change (Waha et al. 2017). Thousands of people, including women, youth and children, experience the effects on a regular basis, including: Dying crops due to excessive, limited, or non-existent rainfall; longer travel times to collect water; increases in dengue or other diseases that impact human health and income to name but a few. Their situation and vulnerability is compounded by the interaction of multiple additional stressors, including for example socio-economic challenges related to governance, low adaptive capacity to the effects of climate change or political stability. Violent conflict also increases vulnerability to climate change. For instance, as the Thomson Reuters Foundation highlights, Syria, Libya and Yemen are among the countries whose ability to withstand climate change shocks and stresses has deteriorated most in the past five years, suggesting conflict makes people more vulnerable to climate impacts, researchers said.

Though the effects of climate change will affect countries globally, this thematic paper focuses on Africa and the Middle East as case studies. As such the conclusions are intended to be illustrative of a broader phenomenon that will also impact humans and youth across the world.

**Climate Change Risk and Vulnerability in Africa**

There is a strong likelihood that mean annual temperatures have increased over the past century over most of the African continent, with the exception of interior areas where data coverage has been insufficient to draw definitive conclusions (IPCC 2014). Across most of Africa, near surface temperatures have increased by 0.5°C or more over the last 50 to 100 years and there is evidence indicating that Africa is warming faster than
the global average particularly in arid regions (Collier et al. 2008).

Precipitation projections are more uncertain than those on temperature and exhibit higher spatial and seasonal dependence (IPCC 2014). However, a reduction in precipitation is likely in North Africa and the southwestern parts of South Africa by the end of the 21st century. Projected rainfall change over Sub-Saharan Africa in the mid- and late 21st century is uncertain. Broadly, Africa is set to experience (Have 2008):

- Significant increases in temperature, particularly in the Sahel and parts of southern Africa;
- Dramatic decreases in precipitation, declining by more than 20% compared to levels 20 years ago; and
- More frequent and intense tropical storms –parts of the continent will see a 20% increase in cyclone activity.

The projected impacts for human security include (Have 2008):

- Between 75-250 m people exposed to water stress in the next 10 years, and as many as 1.8 bn by the end of this century;
- Agriculture fed by rain could drop 50% in some African countries by 2020. The IPCC report predicts that wheat may disappear from Africa by 2080, and that maize—a staple—will fall significantly in southern Africa;
- Arid and semi-arid lands are likely to increase by up to 8%, with severe ramifications for livelihoods, poverty eradication and meeting and maintaining the Millennium Development Goals.

Deterioration in trade, inadequate policies, high population growth rates and a lack of significant infrastructure investment – coupled with a highly variable climate – have made it difficult for several countries to develop livelihoods that reduce the pressure on natural resource bases. If access to adequate financing is not provided, Africa is the continent most vulnerable to the impacts of projected climate change as widespread poverty limits adaptation capacities (IPCC 2014).

The African continent is particularly vulnerable to the impacts of climate change due to a number of factors including poverty, recurrent droughts, inequitable land distribution and an over-dependence on rain-fed agriculture. Although adaptation options are theoretically available, in practice the human, infrastructural and economic capacity to implement timely responses is likely beyond the means of some countries (Watson et al. 1997). Below are the main conclusions drawn by the IPCC in its report Climate Change 2014 - Impacts, Adaptation and Vulnerability: Regional Aspects (2014):

- **Ecosystems:** African ecosystems are already being affected by climate change, and future impacts are expected to be substantial. There is emerging evidence on shifting ranges of some species and ecosystems due to elevated carbon dioxide and climate change, beyond the effects of land use change and other non-climate stressors. Ocean ecosystems, in particular coral reefs, will be affected by ocean acidification and warming as well as changes in ocean upwelling, thus negatively affecting economic sectors such as fisheries. Fish resources provide
livelihoods and contribute to food security. Fisheries provide employment for up to 10 million people in Africa, often in labour-intensive, small-scale fisheries that include both subsistence and commercial activities for people involved in harvesting, selling, and processing of fish products. In Senegal, for example, the sector provides employment for some 17% of the active workforce. In Mauritania or Guinea-Bissau, the marine fisheries sector contributes 25 to 30% of government budgetary receipts. In terms of food security, fish provide up to 70% of the daily animal protein intake in some coastal countries in Africa (Boisrobert & Virdin 2008).

- **Hydrology and Water Resources**: Climate change will amplify existing stress on water availability in Africa. Water resources are subject to high-climatic variability over space and time, and are a key constraint on the continent’s continued economic development. The impacts of climate change will be superimposed onto already water-stressed catchments with complex land uses, engineered water systems, and a strong historical socio-political and economic footprint. Strategies that integrate land and water management, and disaster risk reduction, within a framework of emerging climate change risks would bolster resilient development in the face of the projected impacts of climate change. As the Economic Commission for Africa notes, inadequate water resources can become a constraint to improved agricultural development and food security. Yet only 12 m or 6% of the cultivated area in Africa is under irrigation (UN Water/Africa 2004).

- **Food Production**: Climate change will interact with non-climate drivers and stressors to exacerbate vulnerability of agricultural systems, particularly in semi-arid areas. Increasing temperatures and changes in precipitation are very likely to reduce cereal crop productivity. This will have strong adverse effects on food security. As an example, as global average temperatures increase 1.5°C to 2°C by 2040, drought and aridity would contribute to African farmers’ losing 40% to 80% of their croplands used to grow maize, millet and sorghum (World Bank 2013). New evidence is also emerging that high-value perennial crops could also be adversely affected by temperature rise.

- **Human Health**: Climate change may increase the burden of a range of climate-relevant health outcomes. Climate change is a multiplier of existing health vulnerabilities, including insufficient access to safe water and improved sanitation, food insecurity, and limited access to health care and education. Evidence is growing that highland areas, especially in East Africa, could experience increased malaria epidemics due to climate change. Climate change is also projected to increase the burden of malnutrition, with the highest toll expected in children.

As noted by the IPCC, in all regions of the continent, national governments are initiating governance systems for adaptation and responding to climate change, but evolving institutional frameworks cannot yet effectively coordinate the range of adaptation initiatives being implemented. Progress on national and subnational policies and strategies has initiated the implementation of climate change adaptation into sectoral planning. However, incomplete, under-resourced, and fragmented institutional frameworks and overall low levels of adaptive capacity, especially competency at local government levels, to manage complex socio-ecological change translates into a largely ad hoc and project-level approach, which is often donor driven.

Overall adaptive capacity is considered to be low. Disaster risk reduction, social protection,
technological and infrastructural adaptation, ecosystem-based approaches and livelihood diversification are reducing vulnerability, but largely in isolated initiatives (IPCC 2014).

Climate Change Risk and Vulnerability in the Middle East

The Middle East is expected to be strongly affected by climate warming, enhancing the already hot and dry environmental conditions. Assessments of past climate trends in the region often suffered from restricted availability of meteorological data sets and hence are associated with low confidence.

Based on the available data, significant upward temperature trends since the 1970s have been identified for parts of the Middle East, accompanied by an increasing number of warm days and high temperature extremes (Lelieveld et al. 2016). Climate models project that temperatures in the region will increase by 1-2°C by 2030-2050. Precipitation is projected to increase slightly in the winter throughout the region; while in the summer it is projected to remain the same in the northeast and increase in the southwest. These precipitation projections vary from model to model and are unlikely to be significant. Higher evaporation is expected because of projected increases in temperatures. As such, soil moisture is projected to decrease in most parts of the region, which may lead to increased areas of soil degradation (IPCC 2014).

In arid regions, water is an important limiting factor for ecosystems, food and fibre production, settlements and human health. The Middle East has the lowest per capita water resources in the world and is below the water scarcity threshold of 500 m$^3$/year per capita (Ward & Ruckstuhl 2017). Climate change is anticipated to alter the hydrological cycle and complicate the limitations placed by water scarcity on the region.

Case study: The Jordan River Basin

The Jordan River Basin is under great hydric stress. Besides being located in a politically unstable region, the waters of the Jordan River Basin are intensively exploited which is affecting the salinisation and deterioration of the water resources (Rosenthal & Sabel 2009). The Jordan River is one of the most endangered rivers in the world (Abdelrahman & Jägerskog 2013) and is highly dependent on water flow from upstream in the basin. There are five neighbouring states dependent on the waters of in the basin - Syria, Lebanon, Israel, Palestine and Jordan. Although the water is shared, there are no multilateral management structures managing the basin due to political tensions between the neighbours. Despite the political tensions, Jordan, Israel and Palestine have been able to maintain “a basic level of cooperation over their shared waters” (Jägerskog 2009). Still, there is a risk that the Jordan River will dry out in the near future due to increasing demand for water, limited management, and lacking mechanisms to secure the recharge of water.

Below are a number of overarching impacts likely to affect the region:

- **Ecosystems**: On a global scale, the Middle East is the only transition zone between three major biogeographic units, the Palaeartic, Afrotropical and Oriental realms, resulting in a unique biological diversity. The biosphere is reacting to climate change and the effects will be highly complex, affecting speciation and extinction rates, geographic distribution of species, composition and functioning of ecosystems, ecophenotypic adaptation,
and biogeochemical cycles (Krupp et al. 2009).

- **Hydrology and Water Resources**: The most pressing climate challenge for the Middle East is the region's dwindling water resources (Global Risk Advisors 2014). The rapidly growing non-agricultural water needs of many countries in the area can generally not be met by further exploitation of water resources except through either the development of expensive desalination facilities or the reallocation of water resources from agriculture. This could bring major social and political change and risk exacerbating existing inequalities and regional tensions (Chenoweth et al. 2011). The combination of rapid population growth and urbanisation will put increased pressure on already scarce natural water resources. With rainfall projected to decline by 20 to 40% in a 2°C hotter world, and up to 60% in a 4°C world, the region’s capacity to provide water to its people and economies will be contested. A recent 7-year study showed that the rate of freshwater reserve losses in the region was almost equal to the volume of the entire Dead Sea, making it the fastest loss of liquid freshwater on the planet during that time (Al-Otaibi 2015). By the end of this century, the average temperature across the Middle East could rise by as much as 3°C. Additionally, climate scientists project that rainfall levels could fall by up to 50% in the northern Middle East. Together, these two changes could drive an additional 8 to 100m people into water stress.

- **Human Health**: Human health is variable and reflects the economies of the different countries in the region. In countries where poverty is prevalent, infant mortality rates are high and life expectancy is low. The population of the region is increasing by c. 2.7% per year, which may also affect human health. The impacts of climate change are likely to be detrimental to the health of the population, mainly through heat stress and increases in vector- and water-borne diseases. Decreases in water availability and food production would indirectly affect the health of the population in the Middle East (IPCC 2014).

- **Food Production**: With 70% of the region’s agricultural production being rain-fed, the sector is highly vulnerable to fluctuations in temperature and precipitation as a result of climate change. Impacts will vary, but it will be poor and rural communities that are hit hardest by lost crops and livestock. As temperatures continue to rise beyond 2030, yields will be more seriously affected. If temperatures rise by 1.5 – 2°C by 2030, yields of some crops could decline by up to 30% in certain areas if producers do not adapt (Schellnhuber et al. 2014). Temperature increases of up to 3°C by mid-century could see barley yields in Jordan decline 22% - 51%, and Syrian wheat yields decline 23% - 57% (Al-Bakri et al. 2011; Verner & Breisinger 2013).
C. Climate Change & Security Challenges

This chapter explores how climate change hinders the ability of governments to provide basic services like health and education thereby threatening the safety and security of society, especially for the most vulnerable members. Climate change is thus commonly understood as a threat-multiplier in regions where security challenges already exist. Variables that increase security risk are discussed in detail.
Climate Change & Security Challenges

Definition and Scope of Human Security and Peace

Human security in the context of climate change is defined as a condition that exists when “the vital core of human lives are protected, and when people have the freedom and capacity to live with dignity”. The vital core of human livelihood includes the universal and culturally specific - material and non-material - elements necessary for people to act on behalf of their interests (IPCC 2014).

While peace and security are often used interchangeably in many contexts, they reflect a basic distinction (Tavares 2007).

In Webster’s Third New International Dictionary, peace is defined as “freedom from civil clamor and confusion”; “a tranquil state of freedom from outside disturbances and harassment”; “a state of mutual concord between governments: absence of hostilities or war” (Webster’s Third New International Dictionary 1993). Johan Galtung, a founder of peace studies and peace research, has proposed the distinction between ‘positive’ and ‘negative’ peace. Negative peace has historically denoted the absence of war and other forms of large-scale violent human conflict. Positive peace requires the amelioration of all structural and systemic obstacles to peace, and thus the creation of true peace (Galtung 1981).

Security is not an entirely independent concept and is related to individual or societal value systems (Brauch 2002). Security cannot be achieved at the expense of others but only through combined efforts (Booth 1999). In this view, security means that a certain degree of trust between actors is present originating from a certain level of predictability and sharing of commitments. The ‘common security’ approach reflects this view: “International security must rest on a commitment to joint survival rather than on the threat of mutual destruction” (Palme 1982).

By conceptualising human security in the political context of the United Nations, three pillars of human security have been identified (Annan 2000; Owen 2004):

- Freedom from fear—protecting the physical integrity of human beings.
- Freedom from want—providing access to the goods and services needed to satisfy material and non-material needs.

In addressing the need for justice, equity, democracy and an end to structural violence, positive peace takes concern beyond the end of war and physical violence (as indicated by Figure 12).

Figure 12 - Negative and positive peace
(Source: Hicks, 1988)
Freedom of future generations to inherit a healthy environment—environmental protection

It is worth noting that there is an interdependence between development, peace and security. Security is an important aspect of sustainable development and plays a critical role in reducing poverty and addressing human rights in post-conflict and fragile states. As Heiner Janus and Gerrit Kurtz highlight, two thirds of the poorest people in the world and 60% of the malnourished live in regions affected by conflict. Current trends also indicate that extreme poverty will be increasingly concentrated in fragile states (Janus & Kurtz 2014). There is a growing consensus that longer-term development cannot be achieved in the absence of security, and that short-term security operations will not bring about sustainable benefits if they are not coordinated with long-term development efforts (African Development Bank 2013).

Youth are uniquely vulnerable in war-torn societies. As the United Network of Young Peacebuilders indicates, the collapse of the state and the social fabric can have damaging effects on youth as it often takes away the most basic services, such as health care and the educational system. Youth suffer from other consequences of conflict such as poverty, unemployment, poor governance and the disintegration of families and communities. The consequences thereof can stretch way beyond the duration of the conflict. The structural exclusion and lack of opportunities faced by young people effectively block or prolong their transition to adulthood (United Network of Young Peacebuilders 2013).

Climate Change as a Threat Multiplier

Climate change is often described as a ‘threat multiplier’, aggravating already fragile situations and contributing to social upheaval and violent conflict. Climate change is understood as a threat to human security in that it disrupts individual’s and communities capacity to adapt to changing conditions, usually by multiplying existing or creating new strains on human livelihoods.

Climate change threatens human security because it undermines livelihoods, compromises culture and individual identity, and because it can undermine the ability of states to provide the conditions necessary for human security. Changes in climate may influence some or all of the factors at the same time. Situations of acute insecurity, such as famine, conflict, and socio-political instability, almost always emerge from the interaction of multiple factors. For many populations that are already socially marginalised, resource dependent, and have limited capital assets, human security will be progressively undermined as the climate changes (IPCC 2014).

Both governmental views and relevant research on the security implications of climate change approach the question from a perspective of interdependence between human vulnerability and national security. They identify five channels through which climate change could affect security (UN General Assembly 2009):

a. **Vulnerability:** Climate change threatens food security and human health, and increases human exposure to extreme events;

b. **Development:** If climate change results in slowing down or reversing the development process, this will exacerbate
vulnerability and could undermine the capacity of States to maintain stability;

c. **Coping and security**: Migration, competition over natural resources and other coping responses of households and communities faced with climate-related threats could increase the risk of domestic conflict as well as have international repercussions;

d. **Statelessness**: There are implications for rights, security, and sovereignty of the loss of statehood because of the disappearance of territory;

e. **International conflict**: There may be implications for international cooperation from climate change’s impact on shared or undemarcated international resources.

An independent report for the G7 members lists seven compound climate-fragility risks that emerge when climate change interacts with other social, economic and environmental pressures: local resources competition; livelihood insecurity and migration; extreme weather events and disasters; volatile food prices and provision; transboundary water management; sea-level rise and coastal degradation; and unintended effects of climate policies. These compound risks are not isolated from each other but rather interact in complex ways (FOI).

“The impact of climate change on human well-being, peace and security is going to worsen, especially for the poorest. Many of the people most affected live in fragile states. Such communities are suffering not only from persistent poverty, poor infrastructure, weak natural resource governance or unsustainable resource management, and lack of access to the world market, but also from other types of societal insecurity such as the fragility of state institutions, political instability, and the effects of recent armed conflict or the threat of approaching violence” (IPCC 2014).

Beyond the effects of climate change described above, three variables that increase conflict risk are described below (Shilling 2011):

- **Economic Causes of Conflict**: Among the most consistent findings to emerge from the study of civil conflict is that both a low level of GDP and low economic growth rates are significant predictors of conflict risk. One common argument to explain this finding is that low levels of GDP and/or slow economic growth indicate a lack of opportunity for legitimate employment, prompting people to take up arms (Miguel et al. 2004; Collier and Hoeffler 1998; Collier, 2006). This finding has been remarkably consistent in both cross-national empirical studies and in country-specific analysis. The lack of economic opportunity becomes especially dangerous, according to some research, when coupled with natural resource wealth.

- **Causes of Conflict related to Governance**: The role of good governance in determining conflict risk appears evident. However, measuring good governance, or even defining governance in a way that can be operationalised is much less clear. Typically, there are three aspects of governance that are examined in the conflict literature: government’s repressive capacity; its ability to address the concerns and needs of its citizens; and whether or not it provides an enabling environment for economic growth (Hendrix 2010).

- **The Role of Migration in Conflict**: The role of migration in civil conflict onset has not typically been a specific area of research in quantitative political science or economic
analyses of civil war, yet migration plays an important role in the debate around climate and conflict. Most of the research on migrants in relation to civil war has been related to refugees who are fleeing civil wars, and how they may contribute to conflict contagion (Salehyan & Gleditsch 2006; Stedman and Tanner (Eds.) 2003), and on how diaspora populations influence the opportunity structures for conflict (Collier 2004).

In the global U-Report survey conducted as part of this report, on average 80% of the respondents believe climate change is a threat to wellbeing and security. Interestingly, there is a positive relationship between the age of respondents and the belief that climate change is a threat to security, which indicates the important role that education may play in raising awareness.

Figure 13 - Global U-Report poll
(Source: U-Report 2017)

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Table 2 - Global U-Report poll Q1
(Source: U-Report 2017)

Furthermore, as part of the global U-Report survey, 79% of the respondents believe that climate change is a threat in their country as depicted in Figure 14:

Figure 14 - Global U-Report poll
(Source: U-Report 2017)
Climate Change and Security in Africa

Africa is changing in a variety of profound ways, not just in terms of its climate: “Its population is growing and moving, its economy is evolving, and the health of its environmental resources is declining” (Mangala 2010). The scale of resource use and environmental stress in Africa will be sharply accentuated by population growth. Africa’s population is predicted to double by the middle of the century from 987 m people, or 15% of the global population, to just under 2 b, or 22% of the global total, by 2050 (UNFPA 2008). Meanwhile, an increasing number of Africans are moving to urban areas—at a rate of c. 3% per annum. Though currently still predominantly rural, 50% of Africans will live in urban areas by 2030, doubling Africa’s urban population from 373 m to 759 m. By 2050 there will be more than 1.2 bn African city dwellers (UN-HABITAT 2008).

Africa is likely to experience a continuing trend of land degradation. Already approximately 3,500 square km of Nigerian land turns to desert each year, forcing both farms and herds to abandon their lands (Campbell et al. 2007). The UN estimates that over 70% of Africa’s agricultural dry lands are degraded as a result of over-cultivation, mismanagement of irrigated croplands, overgrazing and deforestation (Mangala 2010).

Even before the emergence of climate change as a public concern, African countries have been grappling with a range of security challenges that now interact with climate change. Challenges such as food and water stress, contests over state power, and conflict in certain regions have characterised Africa’s geopolitical landscape for several decades (GMACCC 2014). Together with climate change these trends will affect the availability of and demand for water, food and agricultural land. These challenges will interact with external factors such as the health of the international economy and the level of aid flows and internal factors such as the quality of governance to shape Africa’s prospects (Mangala 2010). Three pressing issues commonly identified as being particularly relevant include:

- **Increasing Water Scarcity:** The twin pressures of water demand growth and climate change may put existing international management mechanisms, such as those governing the Nile, under severe strain. The UN has identified nine river basins in Africa that are at risk for the onset of tensions or conflict, among them the Kunene, Okvanago, Zambezi, Limpopo, Orange and the Nile (ISDR 2004).

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Table 3 - Global U-Report poll Q4
(Source: U-Report 2017)
• **Decreasing Food Security:** Widespread destruction of farms and homes in recent record flooding in Burkina Faso and the prolonged drought in Ethiopia, demonstrate the extent of the threat posed by Africa's changing climate. Drops in food production could trigger regional food crises and further undermine the economic performance of weak and unstable states. The agriculture sector is likely to experience periods of prolonged droughts and/or floods during El-Nino events. Agriculture losses of between 2-7% of GDP is expected by 2100 in parts of the Sahara, 2-4% & 0.4-1.3% in Western and Central Africa and Northern and Southern Africa respectively (FAO 2009). If climate change leads to drops in agricultural production on a wide scale, prices of many agricultural commodities may rise, leaving individuals and countries financially stretched.

• **Increases in Climate-Induced Migration:** Large population movements are already recognised by the UN Security Council as constituting a potential threat to international peace and security, particularly if there are existing social and ethnic tensions (Mangala 2010). Barnett and Adger (2005) argue that the climate-induced influx of migrants into new areas has been a significant factor in many environmental conflicts. Sub-Saharan Africa is expected to be particularly affected by migration associated with climate change-related drivers, including sea-level rise and declining or disrupted availability of resources due to shifts in climatic conditions or extreme weather events (Gemenne 2011). Temperature and rainfall variations caused a total displacement of 2.35 m people in net terms over the period 1960-2000 in sub-Saharan Africa, and climate variations, based on IPCC scenarios, will lead to an additional annual displacement of 1.4 m people (Marchiori et al. 2011).

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**Climate Change and Security in the Middle East**

The evolving impacts of climate change will shape the progress and prospects of the Middle East in a similar manner to Africa. Given the overarching political landscape, which continues to be characterised by distrust, hostility and a lack of cooperation, climate change is more likely to become an obstacle to peace and could indeed aggravate tensions in a number of ways. Some of the mechanisms by which climate change may potentially increase existing security challenges are listed below (IISD 2014):

• **Increase competition for scarce water resources:** Wars over water have been predicted in the region for decades (Kramer et al. 2009). Like oil, across the Middle East, “water is a strategic commodity with a surplus in some countries and a deficit in others (Raphaeli 2007). As an example, the division of waters of the Euphrates River between Turkey, Syria and Iraq is already contentious, and could become more so with climate change. Climate change may also hinder the negotiation of future peace agreements. As the IISD notes, there is currently no peace treaty or water sharing agreement between Israel and Lebanon or Israel and Syria. Meanwhile, the division of the waters of the Euphrates River between Turkey, Syria and Iraq has long been a bone of contention. A shrinking quantity of water to allocate between parties will almost inevitably complicate relations between countries, making it increasingly hard to negotiate new peace agreements (IISD 2014).

• **Intensify food insecurity:** Food insecurity is already a core political concern in many...
countries in the region. A severe drought across the region in 2007/8 provided a taste of what could happen in future. In Syria, the wheat harvest was less than half that of previous years, and the production of chickpeas and barley fell by a third on average and more than 75 % in rain-fed areas (IRIN News 2009).

- **Hinder economic growth, thereby worsening poverty and social instability:** Climate-dependent sectors of the economy such as agriculture and tourism are important. Tourism is a particularly important source of revenue and employment in Jordan, Israel and Lebanon. Meanwhile, agriculture plays a big role across the region: 23 % of Syria’s economic output and 30 % of its workforce are employed in the sector (World Bank 2007).

- **Destabilise forced migration and increased tensions over existing refugee populations:** The 2007/8 drought caused significant hardship in rural areas of Syria. In the northeast of the country, a reported 160 villages have been entirely abandoned and the inhabitants have had to move to urban areas. In addition, there may be pressure from migrants escaping the impacts of climate change elsewhere. It is estimated, for example, that between two and four million people could be displaced from the Nile delta as a result of a sea level rise of just 50 centimetres (Freimuth et al. 2007).
D. Youth, Climate Change & Security

Climate change hinders the ability of governments to provide basic services, such as health and education, thereby threatening the safety and security of society, especially for its most vulnerable members. Climate change is thus best understood as a threat-multiplier in regions where security threats already exist. This section establishes the link between youth, climate change and security. Economic recessions & impacts, forced migration & displacement, famine & water shortages, disruption to education and diseases are discussed in the context of the regions under study.
Economic Recessions & Impact

Although the effects of the global financial crisis of 2007 and 2008 have been uneven, very few countries in the Middle East and Africa have gone by unscathed by the immediate and knock-on effects in the aftermath of these crises. The effects of these on employment, public sector revenues and services have been compounded by sharp rises in food and fuel prices, severely impacting the most vulnerable and poor segments of society and pushing many millions more into poverty.

Harnessing the productive energies of youth can make for an important contribution to development. At least a third of the growth of the Tiger economies of Southeast Asia from the late 1960s is attributed to a combination of good quality secondary education and productive employment opportunities for youth. Failing to capitalise on this, by for example, allowing large-scale youth unemployment, can be a critical missed opportunity and contribute to social unrest. This is a particular worry for countries with a youth bulge as is and will be the case in many African countries.

With a youth population that is expected to double to over 830 m by 2050 in the whole continent, the incidence of unemployment among youth in Northern Africa already remains elevated at 29.3 % in 2016, according to ILO’s World Economic and Social Outlook. Many young people are working in sectors that are particularly vulnerable to economic downturns, such as export-oriented manufacturing and informal sector businesses that are linked to manufacturing, whether as suppliers or as providers of services. Young people have often been disproportionately vulnerable to lay-offs and the already extensive barriers to first employment that young people face risk being exacerbated as a result of an economic recession.

Economic Recession and Impacts in Africa

Africa has been identified as part of the world’s most vulnerable regions based on potential impacts of climate change (IPCC 2014; Niang et al. 2014). The repercussions will be felt in various ways throughout both natural and human systems. Climate change projections for this region indicate a warming trend, particularly in the inland subtropics. Warming will lead to frequent occurrences of extreme heat events, increasing aridity and changes in rainfall, with a particularly pronounced decline in southern Africa. The agriculture sector employs 65 % of Africa’s labour force and the sector’s output has increased since 2000, mainly due to an expansion of agricultural area (World Bank 2013). Agricultural production in Sub-Saharan Africa is particularly vulnerable to the effects of climate change, with rain-fed agriculture accounting for approximately 96 % of overall crop production (World Bank 2015a).

In the Sub-Saharan African region, the populations of Mozambique and Nigeria are projected to be most affected by sea-level rise in terms of the absolute number of people flooded annually (Hinkel et al. 2011). In terms of the proportion of the total national population affected by annual flooding, Guinea-Bissau, Mozambique and Gambia are most severely impacted (Hinkel et al. 2011). Sub-Saharan Africa, with a steadily increasing percentage of working poor as a share of total employment (ILO, 2016), is amongst the most prone regions to an economic downturn. The research in subject ILO reports discloses that the youth unemployment rate in sub-Saharan Africa is expected to continue on its downward trajectory, which began in 2012, reaching 10.9 % in 2016. However, the unemployment...
outlook for youth in major countries of the region remains quite mixed. In South Africa, more than half of all active youth are expected to remain unemployed in 2016, representing the highest youth unemployment rate in the region.

Figure 15 - Working Poor as a share of total population 2000-2020
(Source :Afrobarometer, Inclusive Growth in Sub-Saharan Africa 2013)

Energy security is key to economic development. It is the lifeblood of developing economies. The energy sector constitutes a relatively modest share of GDP in most countries, except for those in which oil and gas income loom large. However, the energy sector’s impact on the economy is greater than the sum of its parts. Most importantly, energy is an input to nearly every good and service in the economy. In many African countries, hydro power is the main source of electricity generation - 70% of Kenya’s installed capacity of 885 MW comes from hydro, 58% of Tanzania’s 655 MW, 93% of Zambia’s 1,786 MW, and 65% of Uganda’s 580 MW (African Energy Commission 2008). The recent recurrence of drought has reduced water inflows in rivers, severely affecting power production and leading to drastic effects such as massive load-shedding programs which in turn result in massive losses in the region’s economies. Two examples of extreme weather patterns exacerbating the existing energy shortage in Africa are listed below:

- In Uganda between 2004 and 2006, water levels at Lake Victoria dropped to 10.4 metres, far below the average of 11.5 metres; over the same period hydro-electric generation fell by over 100 MW (Baa-nabe 2008). The loss of generation resulting from this load-shedding contributed to a fall in the GDP growth rate to 4.9 % from the projected 6.2 % in 2005/2006 (MEMD 2006).

- In Ghana in 2007, the water level at the Akosombo dam fell below the minimum level of 240 ft. This caused a reduction in hydro generation that left the authorities with no alternative but to resort to load-shedding of electricity in the whole country (AFRE-PREN 2009).

Relying on traditional hydro-power sources in the face of imminent water shortages in Africa is a policy that is fraught with risks. According to the 2015 African Progress Panel Report, supporting the development of renewable energy solutions, particularly solar, could turn out to be a game-changer for the region. Sub-Saharan Africa has some of the world’s most abundant renewable energy sources, especially solar power. As of February 2017, IRENA estimates that up to 60 m Africans already may be using off-grid renewable electricity of some kind. Africa is also home to the world’s fastest-growing population and there are already 500 m mobile phones in Africa, with 850 m expected by 2015 (Building the workforce, Africa-Australia Conference 2015).

Technological and financing advances – such as pay-as-you-go solar, with payments made by mobile phone - could provide millions more with the first step on the energy ladder, while creating new markets dedicated to providing energy services.
Economic Recession and Impacts in the Middle East

Recent developments in the Middle East including the formation of new alliances, the rise of extremism and continued political instability has hampered economic development in the region. Climate change and its consequent trans-boundary effects pose an additional threat to the already volatile situation in the Middle East and threatens disproportionate consequences both geographically and demographically.

Climate impacts affect all sectors in the economy through important indirect effects on the rest of the economy, not only through the relocation of labour and capital but on a macroeconomic scale as well due to shifting global energy trends. The region is already suffering the impacts of climate change, and models predict it will only get worse. Temperatures will continue to rise and rainfall decline, while droughts will be longer, deeper, and more frequent. Countries are aware of the dangers and have begun taking action - for example, safe disposal of municipal waste and clean and healthy environment for Gaza citizens are being addressed through the US$10 m grant for the Gaza Solid Waste Management Project (World Bank, April 2014 initiative).

While the world is moving towards global decarbonisation, the Middle East still remains largely dependent on oil and gas for exports and taxes. 95% of energy needs in the Middle East are met from oil and gas reserves; the remaining 5% is met using coal and hydropower. Two-thirds of the Organisation of Petroleum Exporting Countries (OPEC) are located in the MENA region, which has 57% of the world’s proven oil reserves and 41% of proven natural gas resources. These reserves generated an estimated USD 785 bn in revenues in 2011 (Fattouh and El-Katiri 2012).

Rapidly developing low-carbon technologies driven by the threat of climate change have major implications for the world’s main oil and gas producing regions, whose macroeconomic features make them vulnerable to a shifting global energy market. Coherent energy policies are critical for the economies of much of the region, given the sector’s revenue windfall, but de-politicisation
of these policies is even more crucial to advancing stability in the region.

The OECD has been using economic models and quantitative assessments since the late 1980s to inform policy makers of the costs, benefits and potential tradeoffs of environmental policies and climate change mitigation scenarios. One such model predicts the non-linear consequences of climate change from 2010-2016 on the basis of scientifically backed assumptions.

As part of an economic impacts study, detailed assessments of sector specific impacts fed into the OECD’s global computable general equilibrium (CGE) model ENV-Linkages to simulate the implications for different economic activities until 2060. The model uses projected economic impacts of climate change by sector, focusing on the following:

<table>
<thead>
<tr>
<th>Climate Change Impact by Sector</th>
<th>Economic Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Changes in crop yields (incl. land productivity and water stress)</td>
</tr>
<tr>
<td></td>
<td>Livestock mortality and morbidity from heat and cold exposure</td>
</tr>
<tr>
<td></td>
<td>Changes in pasture- and rangeland productivity</td>
</tr>
<tr>
<td></td>
<td>Changes in aquaculture productivity</td>
</tr>
<tr>
<td></td>
<td>Changes in fisheries catches</td>
</tr>
<tr>
<td>Coastal Zones</td>
<td>Loss of land and capital from sea level rise</td>
</tr>
<tr>
<td></td>
<td>Non-market impacts in coastal zones</td>
</tr>
<tr>
<td>Extreme Events</td>
<td>Mortality, land and capital impacts from hurricanes</td>
</tr>
<tr>
<td></td>
<td>Mortality, land and capital impacts from floods</td>
</tr>
<tr>
<td>Energy Demand</td>
<td>Changes in energy demand for cooling and heating</td>
</tr>
<tr>
<td>Water Stress</td>
<td>Changes in availability of drinking water to end users (incl. households)</td>
</tr>
<tr>
<td></td>
<td>Changes in energy supply (hydroelectric generation)</td>
</tr>
<tr>
<td>Tourism Demand</td>
<td>Changes in tourism flows and services</td>
</tr>
</tbody>
</table>

In almost all regions in the Middle East, market consequences from climate change are projected to be negative and there are significant non-market impacts and downside risks of tipping points. The macroeconomic costs from selected market impacts alone amount to 1.0 to 3.3% of annual Gross Domestic Product (GDP) by 2060 and 2 to 10% by the end of the century in the absence of new initiatives. This is driven by a continued build-up of greenhouse gas concentrations, which are projected to lead to a global average temperature increase of 1.6-2.6°C by 2060 and 2.5-5.5°C by the end of the century in absence of new policies.

Table 4 - Economic impact by climate change sector
(Source: SDSN Youth analysis)
The ENV-Linkages model simulations clearly suggest that negative consequences on GDP are projected to gradually increase over time and rise faster than global economic activity, particularly for the MENA region. Historically, a short term focus on political and security concerns has stood in the way of the structural reforms needed for growth and stability. Ongoing regional tensions, together with a challenging external environment, have hit the economies of the Middle East and North Africa (MENA) region hard. The mismanagement of petroleum resources heightens the urgency for economic diversification in oil exporters in order to address long-term financial and economic stability in Iran, Yemen and Libya. The role of government and the private sector must be reconfigured. Governments still control most of the energy sector as a means to manage their economies, but tend to do so in rather inefficient and opaque ways. Allowing the private sector to maximise the energy industry’s performance will provide governments more wealth to invest in essential public service entities and projects.

**Forced Migration & Displacement**

Migration is likely to be an important way of adapting to the impacts of climate change. However, experience indicates that migration can also increase the likelihood of conflict in transit and target regions (WBGU 2007). Barnett and Adger (2005) argue that the influx of migrants into new areas has been a significant factor in many ‘environmental conflicts’.

Large population movements are already recognised by the UN Security Council as constituting a potential threat to international peace and security, particularly if there are existing social and ethnic tensions (Sindico 2005). Large-scale population displacement will redraw the ethnic map of many countries,
bringing previously separate groups into close proximity with each other and in competition for the same resources. In the context of poor governance, poverty and easy access to small arms these situations may turn violent (Brown 2008).

Destabilisation and Forced Migration in Africa

In the 1970s and 1980s hundreds of thousands of Malians and Burkinabe travelled to Côte d’Ivoire to find work and food and to escape the threat of desertification caused by severe drought. Although originally welcoming, government policy changed in the 1990s when a policy of ‘Ivorité’ was established. The resulting tension between the indigenes and the migrants contributed to the civil war that broke out in 2002 (Mabey 2008).

Nyong (2007) notes that over the course of the twentieth century decreasing rainfall in the Sahel has pushed northern pastoralists southwards into land occupied by sedentary farmers, leading to conflicts and widespread destruction of farmland and cattle. Meanwhile, to meet the growing needs for food, farmers are expanding into marginal lands traditionally used by pastoralists, heightening competition between livestock and agricultural production. However, Nyong warns that we need to understand such conflicts in their socio-economic context. In addition to marking a transition from pastoral to agricultural production, the Sahel is a zone of cultural and linguistic transition, where the Islamic culture from the north mingles with the traditional cultures of the south. The region’s large number of different ethnic groups—as well as in-migration from several new ones—creates the potential for conflict, as these groups have different interests in the resource base, possess different skills, and claim rights over different resources and areas (Nyong 2007).

Case study: Flooding and migration in Ghana

In August 2007, Ghana experienced unprecedented flooding that devastated the nation’s crops and infrastructure and led to the displacement of over 330,000 people, as well as the death of 56 (Inter-Ministerial Disaster Relief Committee and United Nations Country Team Ghana 2007). The damage occurred primarily in the three northern regions of the country, where a substantial portion of the nation’s crops are grown. Estimated losses from cereals and food items amounted to nearly 260,000 metric tons and with a number of irrigation dams and wells destroyed, many farmers were forced to migrate to other farming regions or seek new economic opportunities (Rain et al. 2011). Leaving their crops untended, those who returned several months later found their lands barren and in need of new cultivation. These devastating floods and resulting economic losses further aggravated food insecurity in a region already plagued with chronic malnutrition and famine (UNEP 2011).

According to figures from UNHCR (2008), at the end of 2007 around 67 m people were forcibly displaced as a result of conflict, persecution and natural disasters. The number of internally displaced persons was estimated at 51 m worldwide; some 26 m were displaced as a result of armed conflict and another 25 m were displaced by natural disasters. Already more than 30% of the world’s refugees and internally displaced people are living in African countries (Garcia 2008). North Africa is already a migration destination, and is a transit area for people from sub-Saharan Africa and Asia attempting to reach Europe.
Destabilisation of Forced Migration in the Middle East

Shifting rainfall patterns, spreading desertification and falling agricultural productivity are likely to undermine rural livelihoods, worsen job prospects in rural areas and accelerate migration to urban areas. This could strain services in cities and lead to increased resentment of existing refugee populations (IISD 2009).

A relatively high proportion of the population in the Middle East already lives in urban areas and many cities in the region are growing rapidly. Higher rates of urbanisation have the potential to offset some problems related to climate change by providing health and education services. However, if unplanned and unregulated, such urbanisation may leave more prone to natural disasters such as landslides and add to urban poverty, the fragmentation of urban areas and an increased risk of social breakdown, crime and extremism.

Dwindling resources and increasing migrant or refugee populations could increase resentment over existing refugee populations - an issue that is already highly sensitive. The region already hosts millions of Palestinian from the 1948 and 1967 wars and, more recently, millions of Iraqi refugees from the Gulf Wars. There are serious tensions between the 350,000-400,000 Palestinian refugees in Lebanon and the rest of the Lebanese population where, according to the International Crisis Group, “the refugee question lies at the heart of politics, a recurrent source of passionate debate and occasional trigger of violence”.

In an influential report produced by a group of retired U.S. generals and admirals released before a UN Security Council debate on climate change in April 2007, General Anthony Zinni argued that migration, extreme natural events and the economic impact of climate change could help set the stage for social instability and radicalism: “If the government is not able to cope with the effects, and if other institutions are unable to cope, then you can be faced with a collapsing state. And these end as breeding grounds for instability, for insurgencies, for warlords. You start to see real extremisms. These places act like Petri dishes for extremism and for terrorist networks.”

A Perspective on Youth Populations

The United Nations estimates that the number of international migrants worldwide reached 244 m in 2015. The median age of international migrants worldwide was 39 years in the same year. Most of those migrants worldwide (around 157 m in 2015) originate from middle-income countries. In 2013, according to UN DESA young migrants between 15 and 24 comprised 12% of the total migrant population (28.2 m people).

Around 27 m young people leave their countries of origin to seek employment abroad as international migrants, according to the ILO. Key drivers for youth mobility also include education, marriage, but most commonly: escape from poverty, violence, conflict and environmental change. It is hard to definite whether mobility is motivated for one of these reasons in particular or because of a combination of all of them (Cortina et al. 2014). In the global U-Report survey conducted as part of this report, on average 9% of the respondents identified ‘more migration’ as the most worrying impacts of climate change. However, these results varied across a number of the in-country polls conducted. Please see the methodology for more detail on the U-Report poll.
Particular areas of concern related to youth include protection needs (unaccompanied minors, separated families, young people migrating alone) and the options available to youth. Protection and assistance to affected mobile populations, reducing vulnerabilities, and long-term management of risks - along with efforts to minimise forced migration - all directly concern youth populations affected by environmental change (see below).

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage that answered “more migration”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zimbabwe (n=1,410)</td>
<td>12%</td>
</tr>
<tr>
<td>Cameroon (n=1,337)</td>
<td>10%</td>
</tr>
<tr>
<td>CAR (n=981)</td>
<td>12%</td>
</tr>
<tr>
<td>Burundi (n=9,555)</td>
<td>3%</td>
</tr>
<tr>
<td>Uganda (n=12,909)</td>
<td>4%</td>
</tr>
<tr>
<td>Nigeria (n=67,730)</td>
<td>9%</td>
</tr>
</tbody>
</table>

Table 5 - Country U-Report polls Q3
(Source: U-Report 2017)

Relationship between Youth, Migration and Environmental Change

- In the context of environmental change, migration can either aggravate young people’s challenges (enhanced vulnerability on the migration route, moving to unsustainable locations, drop out of school, family separation etc.) or increase their opportunities (escape the effects of a natural disasters, diversify livelihoods, improve access to education, health and work opportunities).

- The rights and protection needs of adolescents and youth migrating due to environmental change require attention.

Shared responsibility and respect for human rights are central to managing migration, including environmental migration. Human rights-based strategies and multi-pronged legal approaches offer a way forward in protecting and assisting environmental migrants.

- Environmental change can impact other important push and pull factors influencing youth migration (employment, access to education and health services etc.).

- As environmental change often aggravates poverty, it can erode young people’s capacities to migrate, thereby limiting their personal development opportunities.

- Young people need resources (information, education, networks etc.) to address the challenges posed by environmental change, and should have access to different options, which will shape their motivation and strategies. Migration can also be part of the alternatives offered to young people affected by environmental change, and thus can be part of adaptation strategies.

- Youth involvement is part of the response to environmental change. Raising awareness, involving and empowering young people is at the heart of the response to environmental change. It is also a significant component of the management of migration in the context of environmental change.

Source: Cortina et. Al. 2014

Focusing on the inter-linkages between environmental change, migration and youth also calls attention to post-natural disaster
circumstances, such as recovery and reconstruction. Both protecting and building sustainable livelihoods for young people are of importance at this stage, especially in relation to return or resettlement. Environmental change is a process that exacerbates some of the most pressing human rights issues, whether adolescents and youth are migrating as independents, dependants, or being left behind. Specific protection issues apply to separated children, young migrants and marginalised young male and female migrants.

**Relationship between Youth, Migration and Environmental Change**

Women are more vulnerable to the effects of climate change than men—primarily as they constitute the majority of the world’s poor and are more dependent for their livelihood on natural resources that are threatened by climate change. Girls and young women often find themselves facing particular risks when migration is compelled by environmental change or disasters.

Adolescent girls escaping either the ravages of sudden disasters or the permanent disappearance of their home environment from climate change consequences face risks due both to their youth and to the dominant power relations and predatory sexual behaviour of males in many cultures. As happens in other emergency situations, such as flight from conflict, they suffer danger of sexual abuse and gender-based violence; have little or no access to education or to preventive and responsive health measures that are critical and unique to them, especially as adolescents. The lack of organisation and protection in many IDP and refugee camps pose particular dangers and difficulty for girls. A 2009 IOM study of families fleeing flooding of the Mekong Delta confirmed the particular vulnerability of youth “especially girls” to human trafficking.

Girls and boys as well as adolescents displaced by environmental factors face exclusion or marginalisation from meaningful participation in policy and practical decisions over their own lives. Those displaced by slow-onset climate change rendering their home environments permanently uninhabitable are likely to have few options to return whereas those temporarily fleeing storm-induced flooding or destruction may be able to go home again. Relief and development responses to either case require participatory inclusion of adolescents and youth - equally for girls and boys in the decision-making on policy as well as practical measures. The responses also need to include specific measures to provide young females with appropriate preventative and responsive health care and to prevent sexual harassment and abuse.

Source: UNFPA, 2010; Leighton et al. 2011; IOM, “Migration, Environment and Climate Change”

**Famine & Water Shortages**

**Water Shortages in Africa and the Middle East**

Water is a major factor in socio-economic recovery and development in Africa. Yet the sustainability of water resources is threatened by natural phenomena and human factors. These threats pose challenges to the management of water resources on the continent and to the satisfaction of competing demands for basic water supply and sanitation, food security, economic development, and the environment.

Access to basic water supply and sanitation services is lacking in Africa. In rural Africa,
about 65% of the population do not have access to an adequate supply of water and 73% are without access to adequate sanitation. In urban areas, 25% and 43% do not have access to adequate water and sanitation respectively (UN-Water/Africa). Sub-Saharan Africa is among the regions with the greatest drinking water spending needs, with the greatest investment needs in rural areas. 319 m people in Sub-Saharan Africa are without access to improved reliable drinking water sources (WHO 2015). 695 m of a global 2.4 billion people living without improved sanitation facilities live in Sub-Saharan Africa. Furthermore, of Sub-Saharan healthcare facilities, 42% lack an improved water source within 500 meters (WHO/UNICEF 2015).

There is widespread agreement that climate change and variability are likely to impose additional pressures on water availability and accessibility in Africa (IPCC 2007). Using a range of scenarios the IPCC estimates that by 2020 an additional 75 to 250 m people in Africa are likely to be at risk of increased water stress. By 2050 this population is projected to be between 350 and 600 m.

Table 6 - Natural and human threats to water in Africa
(Source: UN-Water/Africa 2004)

<table>
<thead>
<tr>
<th>Overview of natural and human threats to water in Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Natural threats</strong></td>
</tr>
<tr>
<td>- The multiplicity of trans-boundary water basins;</td>
</tr>
<tr>
<td>- Extreme spatial and temporal variability of climate and rainfall, coupled with climate change;</td>
</tr>
<tr>
<td>- Depletion of water resources through pollution, environmental degradation, and deforestation;</td>
</tr>
<tr>
<td><strong>Human threats</strong></td>
</tr>
<tr>
<td>- Inappropriate governance and institutional arrangements in managing national and transactional water basins;</td>
</tr>
<tr>
<td>- Failure to invest adequately in resource assessment, protection and development;</td>
</tr>
<tr>
<td>- Unsustainable financing of investments in water supply and sanitation.</td>
</tr>
</tbody>
</table>

Water systems in the Middle East are already under intense stress. As the European Council highlights, roughly two-thirds of the Arab world depends on sources outside their borders for water. The Jordan and Yarmuk rivers are expected to see considerable reduction in their flows affecting Israel, the Palestinian territories and Jordan (Council of the European Union 2008). Existing tensions over access to water are almost certain to intensify in this region leading to further political instability. Water supply in Israel might fall by 60% over this century. Consequently, a significant drop in crop yields is projected for an area that is already largely arid or semi-arid. Significant decreases are expected to hit Turkey, Iraq, Syria and Saudi Arabia (European Commission to the European Council 2008).

In the 1990s the late King Hussein of Jordan warned “Water is the one issue that could drive the nations of this region to war” (National Environmental Trust 2005), a warning that has been echoed several times since then. Nonetheless, water can be both a cause of conflict and a reason for cooperation: it is a bargaining chip in international negotiations; an instrument of control and patronage; and the wide disparities in the availability and use are a symbol of division and a proxy for the power
relationships in the region. As Aaron Wolf notes, there is room for optimism notably in the global community’s record of resolving water-related disputes along international waterways. For example, the record of acute conflict over international water resources is overwhelmed by the record of cooperation. Wolf adds, “Despite the tensions inherent in the international setting, riparians have shown tremendous creativity in approaching regional development, often through preventive diplomacy, and the creation of “baskets of benefits,” which allow for positive-sum, integrative allocations of joint gains” (Wolf 2001).

The division of water has been a central element of nearly every peace negotiation in the region. However, climate change may hinder the negotiation of future peace agreements. There is currently no peace treaty or water sharing agreements between Israel and Lebanon or Israel and Syria. Meanwhile, the division of the waters of the Euphrates River between Turkey, Syria and Iraq has long been a bone of contention. A shrinking quantity of water to allocate between parties will almost inevitably complicate relations between countries, making it increasingly hard to negotiate new peace agreements. Though, as Wolf highlights, ‘violence over water does not seem strategically rational, hydrographically effective, or economically viable. Shared interests along a waterway seem to consistently outweigh water’s conflict-inducing characteristics (Wolf 2001).

Water is rarely an isolated problem; it can be highly politically sensitive and is closely connected with other socio-economic and foreign policy issues. The twin pressures of demand growth and climate change may put existing international management mechanisms, such as those governing the Nile, under severe strain. The UN has identified nine river basins in Africa that are at risk for the onset of tensions or conflict, among them the Kunene, Okvanago, Zambezi, Limpopo, Orange and the Nile (UN/ISDR Africa 2004).

Other research points to water being a source of conflict at a community level - particularly in cases where no formal rules or agreements on the use of the water resources has been agreed (WBGU 2007). Focusing on community-level conflict, Raleigh and Urdal (2007) found an empirical link between reduced freshwater resources and an increased likelihood of conflict. There is also tension when water resources are diverted from agricultural areas to cities and the industries located there. Likewise, Nyong and Fiki (2005) argue that recurrent droughts interacting with other social and economic factors have resulted in conflicts among rural populations in the West African Sahel. These conflicts, they argue, have increased in their frequency, intensity and the magnitude of the destruction caused by them.

Climate change is contributing to a growing water crisis and putting the lives of millions of children and youth at risk. “By 2040, 1 in 4 children - 600 m children - will live in areas of extremely high water stress,” Anthony Lake, Executive Director of U.N. children’s agency UNICEF says in a report, ‘Thirsting for a Future’. If action is not taken to plan for water stress, and to safeguard access to safe water and sanitation, many of these children will face a higher risk of death, disease, and malnutrition.

In the global U-Report survey conducted as part of this report, 23% of the respondents identified ‘water shortage’ as the most worrying among the impacts of climate change. However, these results were both higher and lower for a number of African countries as indicated in the in-country polls presented in Table 7:
Famine in Africa and the Middle East

Food insecurity is a function of poverty, poor governance and inequity within countries. Within the last decade food shortages have affected 25 African countries and placed as many as 200 m people on ‘the verge of calamity’ (CNA 2007). Since 2001 consecutive droughts in southern Africa have led to serious food shortages. According to the UN- OCHA, the 2003 to 2002 drought alone left an estimated 14 m people in need of food aid.

Famines used to be commonplace, but the last five decades have seen these generally be concentrated to Africa, particularly to East Africa. For instance, temperatures have already risen in already arid parts of the continent, by 1°C in Kenya and 1.3°C in Ethiopia between 1960 and 2006. As Nadifa Mohamed notes, communities across the region report droughts occurring every one to two years rather than the previous six to eight years. This climatic transformation is also seen in West Africa and when combined with conflict, food price spikes, and political and economic marginalisation the result can be famine, even in countries as wealthy as Nigeria (Mohamed 2017). Given Africa’s high dependence on rain-fed agriculture, food production on the continent is intimately tied to rainfall. According to a study quoted in WBGU (2007) climate change will result in an increase in dry lands and areas under water stress by 2080. As a result of climate change this arid and semi-arid area could expand by 5 to 8 %, equalling a loss of productivity in another 50 to 90 m hectares of arable land.

Africa’s success in achieving food and nutrition goals depends on several key national and regional drivers: effectiveness of political leadership and governance, the quality of policies and strategies in the food and agricultural sector, the soundness of the macro-economic development, the inclusiveness of economic growth and the degree of economic integration or interconnectedness, among others (FAO 2015).

The IPCC suggests that unabated climate change could, by 2080, mean an additional 30-170 m people suffer from malnutrition or under-nutrition, of whom three-quarters will live in sub-Saharan Africa. The German Advisory Council on Global Change argues that drops in food production could trigger regional food crises and further undermine the economic performance of weak and unstable states. Nyong and Fiki (2005) argue that conflict in sub-Saharan African countries has been associated with per capita annual declines in food production of over 12%.

Millions of people in East and Central Africa are facing severe food crisis, namely Ethiopia, Kenya, Nigeria, Somalia, South Sudan and Uganda. The situation is expected to intensify in the coming years as the current drought continues, and rising prices, insecurity, and restricted humanitarian access compound the crisis. At no other time in recent history has

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage that answered “water shortage”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burkina Faso</td>
<td>39%</td>
</tr>
<tr>
<td>CAR</td>
<td>26%</td>
</tr>
<tr>
<td>Guinea</td>
<td>25%</td>
</tr>
<tr>
<td>Cameroon</td>
<td>24%</td>
</tr>
<tr>
<td>Chad</td>
<td>24%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>22%</td>
</tr>
<tr>
<td>Uganda</td>
<td>16%</td>
</tr>
</tbody>
</table>

Table 7 - Country U-Report polls Q3
(Source: U-Report 2017)
severe hunger and starvation loomed so large (McVeigh 2017).

In East Africa alone – South Sudan, Kenya, Ethiopia, and Somalia – 25m people need food assistance. More than 3.5 m children in the region are suffering from severe malnutrition, well above globally acceptable rates for hunger (Huber 2017):

- Kenya’s government expects 4 m people will need help by July 2017; about 700,000 Kenyan children younger than 5 are facing starvation.

- Ethiopian communities have been plagued with disease outbreaks amid worsening food insecurity.

- Crop and livestock losses and water shortages in neighbouring Somalia have caused more than 440,000 people to leave their homes since November.

- Severe drought and widespread food insecurity are also ravaging entire communities in Niger, Chad, Nigeria, Cameroon, parts of the Southern Africa region, and Yemen, according to the Famine Early Warning Systems Network.

Like mothers and children, youth are likely to experience poor physical and mental health outcomes, poorer quality diets, worse self-reported health, and lower levels of school attendance as a result to food insecurity. For these reasons, food insecurity is a critical factor for youth, who are experiencing a range of social, biological and mental transitions as they shift into adult roles (Hadley et al. 2009). In this regard, in Senegal, U.N. Deputy Secretary-General Amina J. Mohammed explained why helping the victims - particularly the younger victims - of climate change-induced famine is not just a matter of charity, but security.

“As the spectre of famine looms over several countries in Africa and the Middle East - with many millions of people suffering severe food insecurity and increasing numbers facing starvation – alarm bells are warning of a humanitarian mega-crisis unprecedented in recent history. While the situations in the four countries primarily affected – South Sudan, Somalia, Nigeria and Yemen - are all distinct, the overall scale of acute humanitarian needs in different places at the same time is immense” (Daccord 2017)

The effects of climate change - and drought in particular - are already affecting 1.4 m children who face imminent risk of death from severe acute malnutrition as the famine spreads. In Ethiopia alone, a UNICEF report says, “we anticipate that more than 9 m people will be without safe drinking water in 2017.”

In the global U-Report survey conducted as part of this report, 39% of the respondents identified ‘more poverty and famine’ as the most worrying about the impacts of climate change. However, these results are much higher for many African countries as indicated by the in-country polls presented in Table 8.
Disruption to Education

The absence of a clear policy guideline on infrastructure design in terms of school facilities in addressing issues such as climate change should be of significant worry to policy makers and regulators, particularly those in the developing world. Currently, there is weak collaboration between the education systems and government, lack of a clear emergency prevention and response plan as well as the failure to reinforce good environmental and sanitation practices.

Climate change will affect the education sector directly through the increased frequency and/or severity of extreme weather events resulting in damage to educational infrastructure. It will also impact the sector significantly through range of socio-economic impacts. In September 2007, torrential rains in the upper East region in Ghana, for example, resulted in floods that destroyed about 4,500 homes and displaced over 10,000 people (IRIN, 2007). In 2007, the Northern region reported of a number of collapsed school buildings due to the floods. 210 schools were affected by the flood with 199 classrooms reported to have collapsed (source: NAD-MO report). With lands in coastal areas eroding due to rising sea levels, it is significant to rethink the location of these facilities and architecture design.

According to the World Bank report Turn Down the Heat: Why a 4°C Warmer World Must be Avoided (WB, 2012), the Middle East and North Africa is steadily getting hotter and drier. Of the 19 countries that set new national temperature highs in 2010, the warmest year globally since records were first kept in the 1800s, five were Arab states. Of the 13.7 m children currently out of school in the region, 2.7 m are Syrian, 3 m Iraqi, 2 m Libyan, 3.1 m Sudanese and 2.9 m Yemeni.

### An example of the consequences of food insecurity on youth

Although the consequences of food insecurity on the physical health and nutritional status of youth have been reported, its effect on their mental health remains less investigated in developing countries. The aim of the study quoted below was to examine the pathways through which food insecurity is associated with poor mental health status among youth living in Ethiopia. As an example, food insecurity is directly associated with common mental disorders among youth in Ethiopia. Interventions that aim to improve mental health status of youth should consider strategies to improve access to sufficient, safe and nutritious food (Jebena et al. 2016).

### What do you find most worrying about the impact of climate change?

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage that answered “more poverty and famine”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda (n=12,909)</td>
<td>76%</td>
</tr>
<tr>
<td>Zimbabwe (n=1,410)</td>
<td>55%</td>
</tr>
<tr>
<td>Dote D’Ivoire (n=4,439)</td>
<td>57%</td>
</tr>
<tr>
<td>Burundi (n=9,555)</td>
<td>52%</td>
</tr>
<tr>
<td>Chad (n=855)</td>
<td>50%</td>
</tr>
<tr>
<td>Nigeria (n=67,730)</td>
<td>52%</td>
</tr>
<tr>
<td>Burkina Faso (n=5,744)</td>
<td>40%</td>
</tr>
<tr>
<td>Guinea (n=3,271)</td>
<td>43%</td>
</tr>
<tr>
<td>Cameroon (n=1,337)</td>
<td>45%</td>
</tr>
</tbody>
</table>

Table 8 - Country U-Report polls Q3
(Source:U-Report 2017)
The large gaps in access to education for the most disadvantaged children and youth contribute to youth unemployment in MENA. Even though secondary and tertiary education (diploma, graduate/post-graduate education) has seen an overall upward trend, climate change related vulnerabilities not only contribute to the disruption of education but also threaten to negatively impact these positive trends in education in the Middle East and Africa. Nearly 9,000 schools in Syria, Iraq, Yemen and Libya can no longer offer classes, some because they have been damaged or destroyed, others because they are being used to house displaced civilians or have been commandeered by warring parties. Since large-scale displacements due to climate change are an imminent threat in the MENA region, this will exacerbate the threat to already weak infrastructure in the region.

Climate-related natural disasters will act as ‘threat-multipliers’ for already affected war-torn countries like Syria and South Sudan and threaten to disrupt basic facilities like health and education. More than 700,000 refugee children in Jordan, Lebanon and Turkey cannot go to school in their host countries because the national education infrastructure simply cannot cope with the increased student population. The ongoing violence in Libya, meanwhile, has left more than 434,000 people internally displaced and disrupted basic services including education. In the eastern city of Benghazi, enrolment rates have halved and only 65 of the city’s 239 schools are functioning. Moreover, UNICEF has repeatedly warned that Syrian children risk becoming a ‘lost generation’ who will be denied the education and opportunities needed to help them rebuild the country if and when the fighting ends.

Climate Change poses the greatest risk to the most vulnerable members of the society. In Africa and the Middle East, although school enrolment of females has seen an upward trend, females are particularly vulnerable to dropping out of school due to climate related risks. It has been observed that:

- Girls are taken out of school, rather than boys, during extreme weather events, so that they can contribute to household income and help with domestic responsibilities. Many then do not return to complete their education.

- Girls report that they are often forced into taking work as domestic workers or agricultural labourers when their families are hit by crisis.

Figure 19 - Secondary school enrolment (gross %) MENA region
(Source - World Bank)
Girls report that they face a noticeable increase in early or forced marriages after floods and droughts, due to their families’ inability to support daughters financially during these crisis periods.

As evidenced in USAID report, Out-of-School Youth in developing countries, published in 2010, most youth in Sub-Saharan Africa are out-of-school. For many countries, the percentage of out-of-school youth is extremely high. Niger and Burkina Faso have the highest rates of out-of-school youth rates, well over 80%. Other countries, such as Mali, Senegal, Madagascar, and Zimbabwe experience high rates of out-of-school youth, at 70% or higher.

A major statistical finding is that many out-of-school SSA youth have no education at all. As Figure 20 shows, more than 40% of out-of-school youth have no education whatsoever; Benin, Burkina Faso, Chad, Mali, Niger, and Senegal have high percentages of youth in this situation. Damage to infrastructure, energy access, transportation options and general disruption of basic services threatens to exacerbate the already dwindling numbers of youth enrolled in schools and higher education institutions in Africa. Exacerbating this situation, demographic projections reveal that the MENA youth population (up to 24 years old) will grow steadily by about 2 million up to 2015, then surge by about 10 million between 2015 and 2030. This sudden growth in the youth population will create increased demand for educational services at all levels and will place immense pressure on existing educational institutions.

According to a May 2017 WEF report (The Future of Jobs and Skills in the Middle East and North Africa), education and work in the Middle East and North Africa region will determine the livelihoods of over 300 million people and drive growth and development for generations to come. As one of the youngest populations in the world, it is imperative that the region make adequate investments in education and learning that hold value in the labour market and prepare citizens for the world of tomorrow. In addition, as the global transformation of work unfolds in the region, policymakers, business leaders and workers must be prepared to proactively manage this period of transition.
low motivation and poor cognitive function. (CREATE 2008)

As depicted in the pie-chart in Figure 21 from the global U-Report survey, an overwhelming majority (71%) identified education as being a key instrument for youth to tackle the challenges of climate change, whereas only 6% answered in the negative.

Do you think education is important to support young people to tackle climate change? (1= yes, 5= no) (n=5047)

![Pie chart]

Figure 21 - Global U-Report poll
(Source: U-Report 2017)

A similar, recent u-report poll (The G20 poll) involving respondents from Chad, Cote d’Ivoire, Liberia, Nigeria, Syria and Swaziland asked whether the respondents ‘had ever been forced to leave their home, village or country?’. On average 36 % answered in the positive, 36 % cited ‘war’ as reason for movement/migration and an overwhelming 52 % respondents faced ‘disruption to education’ due to migration.

Education as Part of the Solution
According to a recent Pew study, seven out of ten Americans classified as political independents were not very concerned that climate change would hurt them. Yale University researchers recently found that 40% of adults worldwide have never even heard of climate change. The Yale study concluded that, “educational attainment tends to be the single strongest predictor of public awareness of climate change.” While building up the resilience of education systems, it will be critical to focus on the role education itself plays in adapting to climate change. Indeed, Article 6 of the United Nations Framework Convention on Climate Change, called the New Delhi work program (2002-2012), proposes that education, training and public awareness are integral to climate change responses. For the moment, climate change -- if it is taught in schools in the region at all -- is usually only a part of science classes in middle and high schools. There is currently a rich and evolving debate about what role education should actually play to encourage sustainable development and combat climate change. The question in this context is whether the aim of educational programs should be to teach people to adopt appropriate behaviours, like recycling, conserving energy, or reducing one’s carbon footprint, or to encourage them to develop the skills to confront and overcome rapid change and uncertainty, through critical thinking and problem-solving.

A similar, recent u-report poll (The G20 poll) involving respondents from Chad, Cote d’Ivoire, Liberia, Nigeria, Syria and Swaziland asked whether the respondents ‘had ever been forced to leave their home, village or country?’. On average 36 % answered in the positive, 36 % cited ‘war’ as reason for movement/migration and an overwhelming 52 % respondents faced ‘disruption to education’ due to migration.

Education is one of the best investments in all sectors in MENA can make. Any forward-looking plans devised at the World Economic Forum or similar global fora for MENA must include providing access to quality education for all children and young people. Education can restore hope to the millions of young people whose lives have been turned upside down by conflict, and can bring about greater equality and opportunities for the young men and women who aspire to a better future.
Climate change is an emerging threat to global public health and the spread of diseases. The anticipated types and global distribution of health impacts of climate change will present the greatest risk to the poorest populations and countries (Campbell-Lendrum & Corvalan 2007), including youths living in those countries. Rapid economic development and growing urbanisation in these countries will mean that affected populations will be both most vulnerable to the health impacts of climate change and an increasing contributor to the problem.

At present the most severe health burdens are inversely correlated with the distribution of greenhouse gas emissions. Accumulated emissions for the large part originate from prosperous, industrialised countries that have comparatively temperate climates and established health infrastructures.

The risk factors for death and illness differ between developed and developing countries and this will be especially relevant for the health implications of climate change. Indeed, the leading health risks in the poorest countries, such as undernutrition, inadequate and unsafe water supply, as well as the burning of low-quality fuels for household use, exhibit significant climate sensitivity compared to the leading risk factors in industrialised countries (St. Louis & Hess 2008).

As indicated in Figure 22, estimated deaths attributed to climate change in 2000 were most concentrated in Africa, the Middle East and South Asia. Further, health outcomes, as a measure of life expectancy at birth in 2015, are significantly worse in the Africa Region at 60.0 years vs. 76.8 years in Europe (WHO, 2017). If climate change continues as is projected across the Representative Concentration Pathway (RCP) scenarios of the IPCC, the negative health impacts of climate change will likely continue to be concentrated in these geographies.

Figure 22 - Estimate deaths attributed to climate change in 2000, by sub region. The change is compared to baseline 1961-1990 climate
(Source: St. Louis & Hess, 2008)
Health impacts will be compounded in those geographies where relevant environmental conditions, lacking social infrastructure and insufficient public health capabilities align - as indicated in Figure 23. For example, it has been argued that the Sahel region of Africa may be especially vulnerable to climate change as it suffers a number of existing stressors, including population pressure, chronic drought and government instability (Diffenbaugh & Giorgi 2012).

There are a number of factors outside of existing geographic and environmental conditions that will impact the health vulnerability of populations to climate change, including socioeconomic status and public health infrastructure. Here it is also worth noting that young people, children and the elderly are at an increased risk of death and illness related to climate change compared to the rest of the population (Perera 2008). These adverse effect are related in particular to physiological susceptibility and a weaker immune system. For example, Malaria is especially threatening for children under the age of 5, which represent over two thirds of global malaria deaths - over 800 children under the age of 5 perish daily due to malaria (UNICEF, 2015).

The health impacts of climate change may occur either (i) directly, for example through changes in precipitation and the occurrence of heat waves, floods and droughts etc., (ii) or indirectly, where health may be damaged by ecological disruptions facilitated by climate change, such as crop failures or shifting patterns of disease vectors - living organisms, such as insects, that transmit diseases between humans or from animals to humans –, or social responses to climate change, such climate-induced migration (Smith, et al., 2014). According to the World Health Organisation (WHO 2017):

- The direct damage from costs to health from climate change (i.e. excluding costs in health-determining sectors such as agriculture and water and sanitation), is estimated to be between $2-4 bn per year by 2030
- Between 2030 and 2050, climate change is expected to cause approximately
250,000 additional deaths per year from malnutrition, malaria, diarrhoea and heat stress

Many of the climate change effects outlined above, such as malnutrition and water shortages, have already been covered in detail in preceding sections. Aside from these impacts, the spread of infectious and vector-borne diseases are particularly sensitive to a changing climate. The extent to which temperature, humidity and rainfall are likely to affect the future vector-borne disease burden, for example of Malaria, is a topic of hot debate and experts agree that climate is one of multiple variables to impact the onset of diseases, as indicated in Figure 23. Nonetheless, there is agreement that climate change will increase populations at risk of vector-borne diseases, especially in higher altitudes and colder climates as temperatures rise.

While other vector-borne diseases, such as dengue, leishmaniosis and hantavirus also exhibit climate sensitivity, their prevalence and disease burden is lower than for malaria and there is less confidence regarding how climate change will impact these (St. Louis & Hess 2008). Diarrheal disease is already a major cause of child mortality globally, accounting for one in nine child deaths worldwide for children under the age of five (CDC, 2015). It is expected that climate change, through multiple mechanisms, such as water scarcity, flooding and changes in the hydrological cycle, will increase disease transmission and diarrhoea.

Incidents of disease outbreak will be dependent on public health interventions and infrastructure, as well as other factor such as land use change and drug resistance (UNICEF 2015). Finding mechanisms to break the link between climate change and the spread of diseases will be critical to ensure both the security of young people and facilitate the transition of children into adulthood.

Critically, increasing the number of people in locations that are already resource poor and affected by climate risk such as Africa, which is due to experience the bulk of the world’s population growth by 2050, will magnify negative impacts. Much of the projected population growth will occur in hot and urban settings in which a high share of workforce is deployed outdoors and sensitive to heatwaves (Smith et al. 2014). Further, currently c. 150 m people live in cities affected by chronic water shortages and unless rapid improvements in urban environments occurs, this number may rise to almost 1 bn in 2050 (McDonald et al. 2011).

Extreme climatic events have negative impacts on youth and the population at large even if they only occur rarely. However, experiencing multiple shocks, such as those related to education, the economy, water shortages, disease outbreaks and forced migration will make it increasingly challenging for young people to recover. Future trends in social and economic development will be critical in helping young people adapt to climate change vulnerability. For example, countries with a higher Human Development Index (HDI)–a measure of life expectancy, education, literacy, and gross domestic product (GDP) per capita–are less affected by the floods, droughts, and cyclones (Patt, et al. 2010). Thus policies and programmes, such as those presented in the subsequent section, which boost education, health and economic development should also reduce vulnerability to climate change (Smith, et al. 2014).
E. Policies and Programmes

The report concludes with policy recommendations in line with the 5 pillars of Resolution 2250: participation, protection, prevention, partnerships and disengagement and re-integration. Various policy and programme proposals leveraging the demographic dividend and the unique potential of an ever-increasing youth demographic in the regions under study are explored.
Security Council Resolution 2250 on Youth, Peace & Security urges Member States to give youth a greater voice in decision-making at the local, national, regional and international levels in order to play a positive role in the maintenance and promotion of international peace and security. However, an assessment of international peace and security, especially as it pertains to young people, is incomplete without an assessment of the potential impacts of climate change.

The threats posed by climate change will range from rising temperatures, droughts and desertification to water scarcity and vector-borne diseases, and will affect young people in all aspects of their lives. As more young people than ever before live in the world and this number is growing, entrusting and involving young people in the response on climate change will be critical. Policymaking will need to set up mechanisms that enable young people to participate meaningfully in development, security and peace making processes. Such policymaking will also need to be conscious of three factors in particular:

I. Poverty: Regions of the world, such as Sub-Saharan Africa, where the effects of climate change are projected to be most severe are also often inhabited by poorer people. Poorer people have less access to infrastructure, health and other services (including finance and insurance), meaning that a disruption to such services will have a proportionally heavier impact. As such, poverty is linked to the capacity to adapt to climate change and mitigate its impacts.

II. Gender: Women account for two-thirds of the poor people in the world and roughly 70% of the world's farmers (The Global Humanitarian Forum 2009). This means that women will face the lion's share of climate change challenges in rural areas in particular and are disproportionately vulnerable to projected climate change impacts. Different lifestyles and cultural responsibilities also lead to different types of vulnerabilities (UNICEF 2008).

III. Urbanisation: Climate change is coinciding with a global trend of urbanisation that will affect urban and rural settlements in different ways. In urban areas, poor communities often live in more hazardous and polluting environments and are more likely to experience challenges related to urban land surfaces and drainage systems. Conversely, rural household represent a large majority of the population in sub-Saharan Africa (80% in Kenya) and are dependent on local resources that are more likely to be impacted by desertification and other climate-related impacts, e.g. overgrazing and cutting trees for firewood (UNICEF 2008).

It is crucial to realise that the risks that large youth populations and climate change can pose to security environments reinforce and intersect one another. Areas where youth bulges will present in the coming decades also tend to manifest a low resilience to the impacts of climate change (IISS 2015). Where rapid population growth outpaces economic development, countries will have a tougher time investing in the human capital required to secure the well-being of young people to stimulate further economic growth (UNFPA 2014).

This issue is especially relevant for least developed countries, many of which are projected to encounter a doubling or even tripling of their populations by 2050. This will impact the provision of services, including health and education for example, which in turn are associated with the governance and
economic conditions that restrict climate resilience. Unless young people are equipped with relevant services and tools, their involvement and contributions to peace processes will be less successful.

However, focusing solely on the risks that young people pose and how climate change is likely to put pressure on livelihoods is one-sided. Youth populations are not only passive victims but are also best situated to contribute to innovation and boost economic growth. Unlocking these benefits will require targeted environmental, economic and social policymaking that takes into consideration the potential risks posed by climate change and the growth in large youth populations, while recognising the ways in which youth can uniquely shape positive outcomes.

Human Rights, Treaties & Instruments

Protecting the human rights of young people within programme and policy decisions requires an understanding of the link between protecting the environment and protecting human rights. A number of treaties and instruments relating to climate change and youth are briefly presented below:

▪ **1972 UN Conference on the Human Environment Declaration**: Also called the Stockholm Declaration and adopted in June 1972, this document is the first in international environmental law to recognise the right to a healthy environment. The document makes 7 proclamations related to the nature of environmental problems and states that extensive collaboration will be required to resolve these, as well as lists 26 principles to guide nations through their responsibilities. Principle 19 explicitly mentions the importance of education for younger generations to protect and improve the environment (United Nations 1972).

▪ **1990 Convention on the Rights to Children**: This human rights treaty came into force in 1990 and sets out socio-economic, health and cultural rights for children. It provides strong guidance on a number of areas, including rights to health, risks of pollution and the support of education to develop respect for the natural environment. Though focusing primarily on populations under 18 years of age, the convention also set a precedent for the right of children and young people to participate in public life.

▪ **1992 Rio Declaration on Environment and Development**: Agenda 21 and the Rio Declaration on Environment and Development were adopted in 1992. The later consists of 27 principles intended to guide countries through future sustainable development and has played an important role in connecting environmental agendas and human rights. Three international treaties were also established by the declaration: the UN Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (UNCBD), and the Convention to Combat Desertification (UNCCCD) (United Nations 1992).

▪ **1995 World Programme of Action for Youth**: The General Assembly adopted an international strategy, the World Programme of Action for Youth, in 1995 to provide a policy framework and guidelines for action to improve the situation of young people globally. The strategy covers 15 priority areas, each containing proposals for action. These emphasise that the deterioration of the natural environment is one of the principal concerns of young people, as well as recognise the importance of youth.
participation in decision-making and the life of society (United Nations 2010). The Secretary-General reports against implementation of the priority areas in the Resolution on Policies and Programmes involving Youth.

- **2001 Aarhus Convention**: The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters entered into force in October 2001. All of the ratifying states are in Europe and Central Asia. The convention explicitly links human and environmental rights and establishes that sustainable development can only be achieved by engaging all stakeholders. Beyond being an environmental agreement, the convention entitles the public to participation in decision-making, access to justice and information (UNICEF 2008).

- **2008 UN Joint Framework Initiative on Children, Youth and Climate Change**: Since 2008, the UNFCCC secretariat has been working together with UN entities and youth organisation to empower young people and children to take action on climate change through the UN Joint Framework Initiative on Children, Youth and Climate Change. The main areas of focus are (i) to coordinate activities and share information among participating entities and (ii) to empower children and young people to take action on climate change. The initiative draws guidance from many of the policy instruments listed above and below.

- **2012 Doha Work Programme on Article 6 of the UNFCCC Convention**: Article 6 of the UNFCCC stipulates the commitment of parties to (i) promote education, (ii) training, (iii) public awareness, (iv) access to information, (v) public participation and (vi) international cooperation on climate change. In 2012, parties adopted the Doha work programme on Article 6 of the Convention to promote the implantation of these thematic areas out to 2020. The programme explicitly mentions targeting youth in education and training programmes on climate change (UNFCCC 2012).

- **2015 Sustainable Development Goals**: In September 2015, UN member states adopted a set of 17 goals to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. Known as the 2030 Agenda, it acts as a successor to the Millennium Development Goals and sets goals and targets that countries will be expected to achieve by 2030. Goal 4 on quality education, goal 8 on decent work and economic growth, goal 13 on climate action and goal 16 on peace, justice and strong institutions all emphasise the importance of youth in sustainable development (ECOSOC 2015).

The duty of the international community to take the rights of youth into account is well established and has been linked to climate change impacts and risk. Further, the instruments and treaties listed above state that young people have the right to participate in public life and decision-making, as well as stipulate that parties have a responsibility to support this participation and take the views of young people into account when discussing issues that affect their lives.

However, the strong institutional basis for the inclusion of youth voices in the international climate regime and development process has yet to align with discrete mechanisms for championing youth voices in decision-making on climate change. For example, many climate action plans, such as Nationally Adaptation Programmes of Action (NAPA), fail to reference the unique vulnerabilities of
young people or how they could contribute to mitigating climate change.

**Recommendations on Policies and Programmes**

Providing for the education, health and development of young people and protecting the environment needs to be viewed as mutually inclusive goals. Many actions taken to support the quality of our environment also help meet the basic needs of youth. It is therefore important that tackling climate change is not viewed as a separate set of activities. Rather considerations on climate risk need to be linked to managing other risks, including those related to natural hazards, and integrated in development programmes and policies (UNICEF 2008). Further, policymaking must not just be conscious of youth vulnerability, but must also find ways of addressing the barriers to youth participations.

The objective of Security Council Resolution 2250 is to acknowledge and engage young women and men in peacebuilding and countering violent extremism. Based on current climate projections, the future shifts in weather patterns are expected to disrupt the security and development prospects of young people and the population globally. As such, an effective approach to peacebuilding and conflict-prevention needs to be informed by the opportunities and threats posed by climate change.

Typically, efforts to mitigate and adapt to climate change have mainly focused on institutional measures and overlooked the capacity of young people in particular to contribute. Youth represent a unique role as agents of change given both their potential to contribute to development processes and the time-sensitive nature of climate change. The actions of governments, the private sector and civil society will determine how well youth are equipped to contribute to peacebuilding and development, as well as adapt to the risks of climate change.

Based on the 5 main pillars of Resolution 2250, this section will propose a set of recommendations on how to better engage youth on environmental issues and support peacebuilding to inform future actions. These recommendations are expansive and may apply to a range of actors, including international organisations, businesses and non-profits among others. Against each of the 5 pillars of the resolution we have provided a tangible example of initiatives working at the intersection of youth, the environment and peacebuilding.

**Participation**

Resolution 2250 asks governments to increase the participation of young people in decision-making at all levels in local, national, regional and international institutions and in mechanisms for the prevention and resolution of conflict. It also stresses the need for young people’s needs to be considered during the missions of the Security Council.

I. Support the building of stable inclusive institutions. Unstable governance impairs economic performance and limits the capacity to implement adaptation and mitigation measures, which in turn increases the vulnerability to climate impacts.

II. Include the voices and opinions of young people in climate change agreements and debates at local, national and international levels. Youth have a greater stake in the impacts of climate change and will be instrumental in developing solutions in the future.
Protection

Resolution 2250 asks governments to ensure the protection of civilians, specifically youth, at times of armed conflict and post-conflict, including protection from sexual and gender-based violence. It also demands countries to end impunity by bringing to justice those who commit genocide, crimes against humanity and war crimes against youth civilians.

I. Cut greenhouse gas emissions in line with the recommendations of climate scientists to limit global temperature increase to a maximum of 2°C, and ideally 1.5°C. This will also reduce the impacts of climate change on young people’s livelihoods. Adaptation measures will also be critical in protecting young people. This will need to be achieved through Low Emissions Development Strategies and Plans (LEDS) for example, as well as scenario planning, implementation and review more broadly.

II. Promote awareness on the impact of climate change on global health and diseases, especially regarding how youth as a distinct demographic constituency are impacted. This includes collaborating to strengthen the evidence base for climate effects and health, as well as incorporating technical strategies into global health programs.

III. Prioritise the needs of youth and other vulnerable actors in climate change adaptation as these have contributed the least to climate change and are uniquely and potentially disproportionately impacted.

IV. Reduce inequality between youth and between youth and adults to build resilience to and capacity to adapt to climate change and reduce disaster risk. Poor communities lack the financial and social resources to deal with the impacts of climate change and require greater support.

Prevention

Resolution 2250 calls on governments to support youth’s engagement by creating spaces in which young people are recognised and provided with adequate support to implement violence prevention activities. The document also stresses the
need to create policies for youth that positively contribute to peacebuilding efforts, including for their social and economic development.

I. Provide youth with education, including the provision of tools and skills to understand the risks posed by climate change. Youth need to increase the capacity of their communities to adapt to climate change and should be aware of the link to displacement and conflict among others. Climate change education needs to be included in primary, secondary, tertiary and vocational learning opportunities. As well top-down approaches, this could also include peer-educations-models for examples. Of the 118,000 people polled on whether education is important to support young people to tackle climate change as part of the U-Report, 71% indicated yes (1) on a scale of 1 to 5.

II. Scale-up innovation support and youth entrepreneurship, especially for ventures working on sustainable development and the risks on climate change on youth, peace and security.

Prevention Example – The SDG Academy
The SDG Academy is a virtual platform developed by the Sustainable Development Solutions Network (SDSN) that provides mass online education in the field of development of sustainable development. The platform brings together world experts on sustainable development - including climate change, health, education, agriculture and food systems, sustainable investment, and other related fields - to offer a core curriculum, equipping the next generation of sustainable development practitioners to take on complex challenges facing the planet. All course materials are available free of cost to everyone.

Partnerships
Resolution 2250 urges governments to establish and strengthen partnerships with relevant actors by: increasing political, financial, technical, and logistical support to UN bodies engaged in promoting peace, development and equality; considering the Peacebuilding Commission’s advice and recommendations on how to engage young people during and after conflict when developing peacebuilding strategies; engaging community actors and empowering local people in countering violent extremism and promoting social cohesion and inclusion.

I. Partnerships of young people working on climate change, as well as partnerships between existing youth-focused organisations should be encouraged. These should focus on the development of young people, climate change adaptation and disaster risk reduction. Laws, treaties and charters play an important role in fostering such partnerships, as well as sharing technology and accessing finance.

II. Partnerships with NGOs, including faith-based organisations are a powerful mechanism for educating and raising awareness on climate change and its impacts. Faith-based organisations are among the oldest organisations in the world and have a large following globally, meaning they can play a powerful role in the development process.

Partnerships Example – International Youth Climate Movement (IYCM)
The IYCM is an international network of youth organisation formed in 2005 that collectively aims to inspire, empower and mobilise a generational movement of young people to take positive action on climate change. The IYCM is made up of young people to take positive action on
Disengagement & Reintegration

Disarmament, demobilisation and reintegration (DDR) are strategies used in the aftermath of armed conflict as a way to achieve sustainable peace. Resolution 2250 encourages all actors engaged in DDR to consider the impact of these processes on youth as well as the needs of young people affected by armed conflict. Aspects to be considered include: opportunities and policies in the fields of education, employment and training in preventing the marginalisation of youth and promoting a culture of peace.

I. Young people need to be provided with education and employment opportunities, especially in the sustainability sector. A lack of employment increases the risks of youths leading a life of poverty, which deprives young people of the opportunity to acquire skills to prepare for climate change effects.

II. Youth need to be protected from the impacts of climate induced migration, displacement and conflict. Trends indicate that climate events may cause large-scale population movements, leading to refugees and internally displaced persons (IDPs), in the coming decades and youth need to be provided with measures to tackle related challenges, such as radicalisation. Though radicalisation is not necessarily a consequence of migration, participants in insurgencies tend to be young people, especially young men (Humphreys & Weinstein, 2008). It is thus important to prevent radicalisation and integrate and protect young migrants.

Disintegration & Reintegration Example - Bright Generation Community Foundation

The Bright Generation Community Foundation is a community-level organisation with a directed effort toward promoting human dignity, social development and creating a thriving environment for nurturing human potential through education. The Foundation is committed to serving underprivileged children, youth and women mostly in rural areas of Change through intensive and sustainable projects. Project examples include Generations for Peace, a global non-profit that empowers youth leaders to promote active tolerance and responsible citizenship in communities experiencing different forms of conflict and violence.

As the past UN Secretary-General Ban Ki Moon said ahead of the World Humanitarian Summit in May 2016, “matters of war and peace, of human suffering and development cannot be left only to diplomats”. Security Council Resolution 2250 is a compelling call to action articulating a vision for the role of young people in solving sustainable development challenges to achieve the Sustainable Development Goals (SDGs). This thematic paper shows that supporting this vision will require a comprehensive understanding of the interplay between climate change and youth empowerment.
Methodology

Photo credit: mira66, Flickr
Methodology

In collaboration with the Inter-Agency Working Group on Youth and Peacebuilding, the initial regional and thematic scope of the paper were set over a 3 month interactive process. Subsequently, the arguments and recommendations contained in this thematic paper were developed over the course of 6 months by way of three interlinked methodological steps:

I. **Literature Review:** In collaboration with the Academic Advisory Committee (AAC) listed at the outset of the report, the research team covered relevant academic literature and reports related to (i) the impact of climate change on security, (ii) the impact of security challenges on youth populations, as well as relation between the two. Databases, such as those made available by the World Bank or the UN Population Fund (UNFPA), were also explored. The full bibliography is available below.

II. **Expert Consultations:** To support the conclusions emerging from the literature review, the research team interviewed 30+ experts on youth, climate change and security. Particular emphasis was placed on interviewing young people globally to ensure that their opinions are represented in the report.

III. **U-Report Poll:** In collaboration with the U-Report team at the UN Children’s Fund (UNICEF), the research team developed a survey that was disseminated both globally and across 19 countries – 12 of which were in the area under study. U-Report is a social messaging tool allowing anyone from any community registered through the platform to respond to polls. Members called ‘U-Reporters’ can sign up to become a U-Report via SMS, Facebook Messenger, Twitter or Viber. Once registered responses to polls are collected in real-time and mapped on the website.

The research team collected data on (i) participants’ understanding of the effects of climate change on their local community, (ii) their appreciation for the relationship between climate change and risks to security, and (iii) whether youth can be empowered to address the causes and adapt to the impacts of climate change in ways that ensure the security of themselves and their communities. Across the countries polled, as many as 157,456 people responded to a single question. The questions polled, as well as the results are presented below:

1. **Globally, do you think climate change is a threat to the wellbeing and security of humans?**
   - Yes / Somewhat / No

2. **Who do you think the impacts of climate change affects the most?**
   - Children (0-17) / Young people (18-29) / Adults (30+) / Everyone

3. **What do you find most worrying about the impact of climate change?**
   - Sea Level Rise / Water Shortages / More Migration / Move Poverty & Famine

4. **Do you think climate change is a threat in YOUR country?**
   - Yes / Somewhat / No

5. **Do you think education is important to support young people to tackle climate change?**
   - Rate your answer from: 1 (yes) to 5 (no)
Appendix

Appendix Table 1

<table>
<thead>
<tr>
<th>Continent</th>
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Appendix Table 3

Q3 - What do you find most worrying about the impact of climate change?

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<td>Ukraine</td>
<td>5,012</td>
<td>39%</td>
<td>22%</td>
<td>23%</td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td>South America</td>
<td>Chile</td>
<td>748</td>
<td>79%</td>
<td>6%</td>
<td>3%</td>
<td>3%</td>
<td>9%</td>
</tr>
<tr>
<td>Africa</td>
<td>Senegal</td>
<td>7,634</td>
<td>87%</td>
<td>3%</td>
<td>2%</td>
<td>1%</td>
<td>7%</td>
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</tbody>
</table>


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Launched in 2015, SDSN Youth is the global youth division of the Sustainable Development Solutions Network (SDSN), a new initiative to amplify and educate a global movement of young people on sustainable development and support them in creating innovative and sustainable solutions to global development challenges. SDSN Youth works alongside policymakers and receives assistance from field experts.

The global reach of the SDSN, with its strong links to universities from around the world, provides a unique opportunity to effectively involve youth in the post-2015 agenda. SDSN Youth has 5 overarching aims and objectives:

(I) **Monitor** constituencies of young people with capacity to mobilise to achieve the SDGs

(II) **Educate** young people about the SDGs and encourage them to prioritise their implementation

(III) **Integrate** concerns and views of young people into the pathways for achieving the SDGs

(IV) Provide a platform for young people from different communities to **connect** and share ideas and experiences that address the challenges of sustainable development

(V) **Support and celebrate** projects that are aimed towards achieving the SDGs

For more, visit [www.sdsnyouth.org](http://www.sdsnyouth.org)

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