Climate change, violence and young people

Report for Unicef UK

FOR EVERY CHILD IN DANGER

unicef UNITED KINGDOM

IISS
The International Institute for Strategic Studies

Contents

Summary

Both climate change and youthful population age structures can affect factors that shape the security environment and influence the risk of violence. Without adequate planning and preparation, the combined challenges of growing youth populations[1] and climate impacts could multiply security risks in regions already vulnerable to poor governance and social and political instability.

The risks that climate change and large youth populations can pose to the security environment intersect and reinforce each other. Areas where youth bulges will be present in the coming decades tend to have low resilience to climate-change impacts. The governance and economic conditions that limit climate resilience are associated with poor provision of basic services, including health and education, which contributes to high fertility rates and large youth populations. Large youth cohorts can boost economic growth under the right conditions. However, they can also agitate, sometimes violently, for political change when their economic needs are not met, and climate impacts are likely to complicate economic growth and increase pressure on livelihoods. Unstable political environments also impair economic performance and limit the capacity to implement climate-adaptation measures, further increasing vulnerability to climate impacts.

These combined and interlinking challenges call for economic, social and environmental policymaking that is cognisant of the potential risks posed to some countries in the coming decades by large youth populations, if their needs go unmet, and climate impacts that may well exceed adaptive capacities. Strengthening democratic institutions and providing equitable, climate-resilient economic growth can promote stability by improving livelihoods and political inclusion for young people. Tackling disaster risk in a manner that is sensitive to the political context, especially specific dynamics of conflict or fragility, provides opportunities to reduce long-term disruption to youth education, livelihoods and well-being that can follow from disasters and potentially increase the risk of conflict.

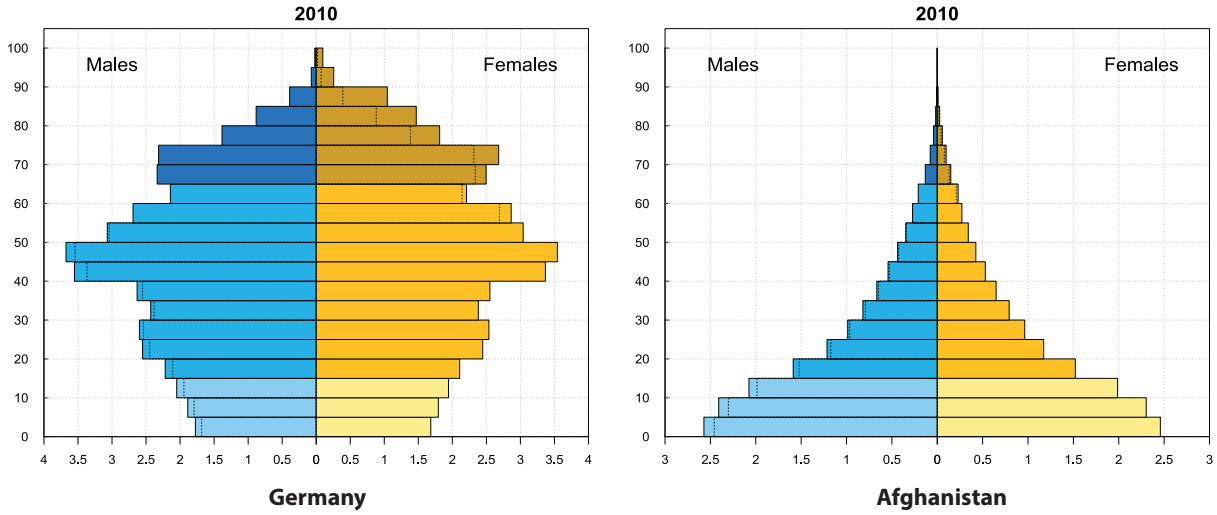
Climate and demographic models provide projections with reasonably high levels of confidence for mid-century. Both dynamics have an inevitable degree of momentum that will require measures to anticipate and minimise risk. In the context of violence and conflict, climate change is widely understood as a risk multiplier, interacting with drivers of conflict that already exist, and putting additional strain on already stressed governments and social systems. Exploring the links between population, resources, economy and governance and how the interactions between these factors can positively or negatively reinforce security trends should be a primary concern of governments. This is particularly true in countries which face the combined challenges of youth bulges and limited resilience to climate impacts.

This report is comprised of two sections interspersed with four case studies. The first section outlines the links between climate change, environmental stress and violence, looking at the

crucial role of state capacities, poverty and unemployment. The second section gives an overview of the conditions under which large youth populations can pose a risk of violence, particularly in relation to economic opportunities, political structures and urbanisation. These dynamics are examined through case studies in Egypt, Kenya, Indonesia and Guatemala. These countries face multiple challenges including weak governance, low resilience to climate impacts, significant youth bulges and fragile underlying security conditions. The time frame for this study looks out to 2050, when climate impacts and demographic growth will be more pronounced.

What defines a youth bulge?

Technically the term 'youth bulge' describes an age group that is larger than the groups both younger and older than it (forming a 'bulge'). However, for the purposes of this study, we use 'youth bulge' to refer to youthful population age structures, with a high percentage of 0–14 and 15–24 year olds as a portion of the total population.



Source: United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision* (UN WPP), United Nations, New York, 2013

A country's median age also indicates its demographic profile, with half of its population older and half younger than this number. A median age of 25 or younger indicates a youthful population structure; Afghanistan's median age is 16, for example, while Germany's is 44. See Annex 1 for a table of countries with the lowest median ages in 2010 and 2050.

Introduction

By 2050, global population is set to increase by 2.4 billion people.[2] In many contexts, particularly in developing countries, demographic projections indicate a predominantly youthful population structure, which will push consumption and demands on basic services such as health and education upwards through increased pressure on maternal and youth health facilities, and higher numbers of children requiring school places. Large youth populations will also create the need for appropriate and viable livelihoods and further strain available natural resources. Variables like climate change, weak governance and political instability will exacerbate that strain and complicate efforts to bolster peaceful and sustainable development.

The post-2015 Development Agenda underscores the urgency for exploring the population, climate change, natural resource and security nexus. 2015 is a catalyst year for development and will determine the new architecture for how climate change, resource management and development are approached. 2015 is expected to bring a new climate agreement, new Sustainable Development Goals and a successor to the Hyogo Framework for Action. Demographic trends towards youth bulges in many vulnerable contexts interact with all of the variables which underpin sustainable development and stability. This study aims to understand the ways climate change will interact with security dynamics in areas with youth bulges, in order to inform appropriate responses which can capitalise on the opportunities and minimise the risks presented.

Youth and vulnerability

In certain contexts, youth can be more vulnerable than other segments of the population to climate change and security dynamics, and youth bulges will increase the absolute number of people vulnerable to climate impacts. Vulnerability is usually divided into the three elements of exposure, sensitivity and adaptation.[3] Exposure refers to the rate and magnitude of change (for example, temperature increase) that an area is experiencing. Sensitivity to risk is determined by the availability of a resource (for example, water) prior to the climate-change impact and its importance for the life and livelihoods in the affected area. Adaptive capacity refers to the options available to a given individual or community.[4] For example, an unskilled subsistence farmer cultivating rainfed crops in arid northern Kenya is more sensitive and has lower adaptive capacity to a reduction in rainfall than a university student in Nairobi. This example illustrates that vulnerability is dependent not only on exposure to a given risk, but also on sensitivity and adaptive capacity. As Figure 1 indicates, adaptive capacity, and thus vulnerability, is

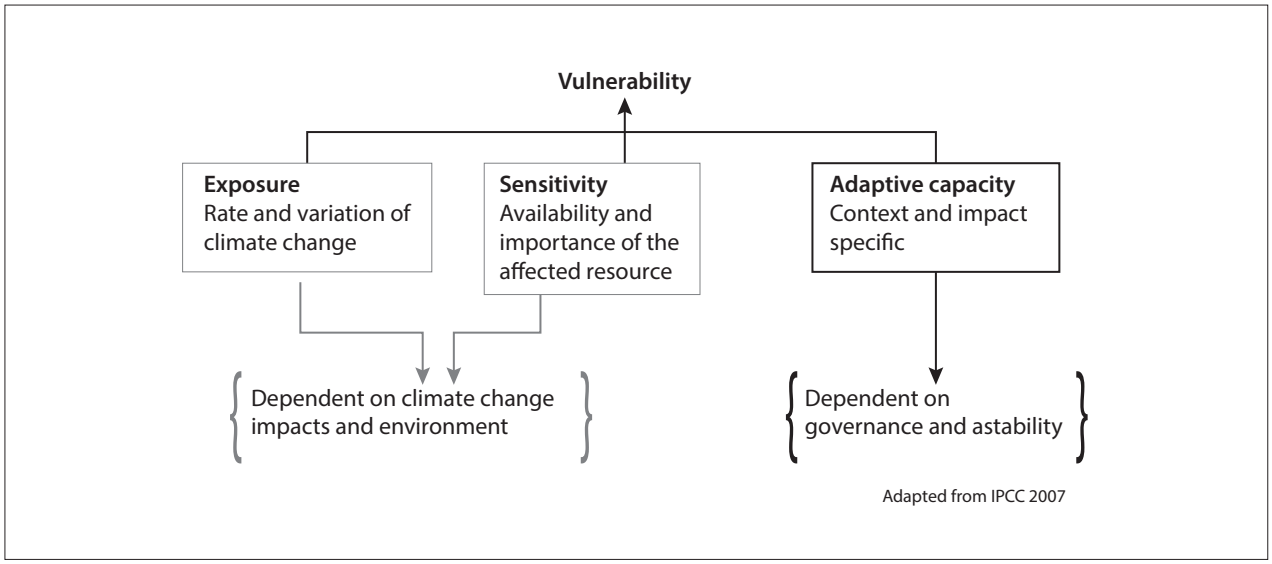


Figure 1: **Elements of Vulnerability**

predicated not only on climate change but also on broader contextual factors such as governance and stability.[5] As such, the interaction of these factors needs to be understood if efforts to reduce vulnerability are to be effective.

The specific vulnerabilities that youth face to climate impacts include increased incidence of climate-related health risks such as heat waves, flooding and changing patterns of infectious diseases such as malaria and dengue, to which young people are highly susceptible. They also include competition over jobs for youth who rely on climate-sensitive, natural-resource-dependent jobs such as fishing and farming.

Section 1:

Climate change, environmental stress and violence

Climate change as a risk multiplier

In the context of violence[6] and conflict, climate change is widely understood as a risk multiplier, interacting with drivers of conflict that already exist, and putting additional strain on already stressed governments and social systems. Many of the countries predicted to be most affected by climate change face pre-existing challenges of poor governance and social and political instability. In such contexts, as climate change interacts with other features of the socio-demographic, economic and political landscape, there is a high risk of political instability and violent conflict.

Climate-related stressors have already played a role, for example, in the ongoing conflict in Darfur, where drought has compounded competition between pastoralists and agriculturalists for water and land.[7] These stressors have had an impact on conflict related to food insecurity across the Sahel, where desertification continues to undermine agricultural and pastoral livelihoods. Climate change has also been identified as a risk multiplier in the Arab Spring. In Syria, a combination of poor resource management,[8] cancellation of subsidies and severe drought linked to climate change[9] made farming unviable and contributed to high food prices and internal displacement. This took place against a backdrop of sectarianism, marginalisation and political repression that eroded the social contract between citizen and government, setting the stage for the uprising.[10] In both cases, the interaction between climatic and environmental conditions and social and political dynamics impacted the security context.

Risk is highly differentiated by socio-demographic factors

The Intergovernmental Panel on Climate Change's (IPCC's) Fifth Assessment Report affirms that the impact of climate change on human well-being, peace and security will worsen, especially for the poorest members of society.[11] Many of the most affected live in states with high youth populations and where poverty is intractable. However, there is broad consensus amongst conflict experts that whilst environmental and climate change can be contributing factors to conflict, the underlying contextual factors play a more prominent role.

What determines whether or how climate change will increase the risk of conflict lies in the intermediary factors that affect the relationship between climate and conflict. The likelihood of conflict depends on the broader context, encompassing poverty, demographic pressures, effectiveness of governance and institutions, adaptive capacity, political inclusion and financial management. Climate change can aggravate problems associated with growing populations, inadequate supplies of fresh water, strained agricultural resources, poor health services,

economic decline or weak political institutions and increase the risk of conflict. These factors affect the capacity of individuals and institutions to adapt to climate change and manage conflict in a peaceful manner.

Among the socio-demographic factors, population density and the dominance of youth in population distribution are identified as playing a role in increasing the risk of violence.[12] Increased population density, when it is not matched by increased infrastructure and governance support, creates increased pressure on already stretched resources such as transport and critical energy infrastructure. When these resources are also affected by climate shocks such as floods and storms, the ability of a state to meet the basic needs of a community is further stressed, increasing potential for grievances from unmet expectations to escalate. Physical proximity in a densely populated urban area also makes inequitable access to climate-stressed natural resources such as fresh water or land more visible. It also makes it easier to engage in violence. The security implications of large youth cohorts are outlined in more depth in Section 2: Youth bulges and violence.

Case study: Egypt

Egypt's population is over 83 million, making it the most populous country in the Arab world and the third largest in Africa.[13] Given that the country is almost entirely desert, 96% of the population is concentrated within the confines of 4% of the land along the Nile River valley and delta.[14] Cairo is the most populous city on the African continent and one of the most densely populated cities in the world. Rapid urbanisation and urban encroachment around the peripheries of large cities such as Cairo and Alexandria have allegedly pushed the figure for inhabited land up to 6–7%. This exerts a profound pressure on the natural resources of land and water as well as on available agricultural land and on infrastructure and services. The population is projected to grow to approximately 140m by 2050.[15]

As a region, the Middle East has one of the youngest populations in the world, with over 33% under 15. Egypt's demographic make-up presents particular challenges, given that over 54% are under 24[16] and 20m Egyptians are aged between 15 and 29, the bracket understood as 'fighting age' within the demographic security field.[17]

Youth populations experiencing a combination of lack of economic opportunities (especially when combined with educational attainment, and concomitant expectations), lack of political voice and a sense of relative deprivation present a higher risk to political stability. This is especially the case where political power is centralised. Unemployment in 2010 was 9.7% and it is presently estimated at 13%.[18] Egypt offers free higher education. As a result of relatively good access to education but limited livelihood opportunities, unemployment amongst Egyptian college graduates is ten times higher than amongst non-graduates. The figures are even higher when disaggregated by gender. Unemployment amongst young women is 50% compared to 21.6% amongst young men, and the inverse correlation between levels of education and employment is even more pronounced amongst young women.[19] As a result, 60% of girls drop out of school between primary and secondary school.

Security

The security situation in Egypt is shaped by its recent history of revolution and unrest. Egypt's demographic make-up is seen as a contributing factor. The demonstrations in 2010–11 in Tahrir Square brought Egypt's economy to a halt and pressured then-President Hosni Mubarak to resign. The reason Tahrir Square functioned as the heart of the revolution in 2011 was, in part, because many of the demographic stress factors were exacerbated in the overcrowded and underserviced Cairo metropolitan area.[20] The majority of participants in the demonstrations were young, unemployed or underemployed and disaffected.[21] Other factors contributing to the situation included an unfair parliamentary election, underlying socio-economic inequities and the wave of political unrest in Tunisia.[22]

Climate projections

The IPCC listed the Nile Delta as amongst the areas globally most vulnerable to climate change.[23] Climate change will principally affect Egypt in three ways: temperature rise, sea-level rise and water availability.[24] These impacts will have an adverse effect on existing environmental and natural-resource stresses faced by Egypt, namely pressures on irrigable land for food production and for human habitation along the Nile Delta.

Egypt is classified as a hyper-arid country, and its agricultural production is almost entirely dependent on irrigation.[25] Lacking significant rainfall, freshwater resource needs are met by the Nile River (95–98%) and groundwater stored in aquifers.[26] Due to depleting groundwater and the diminishing flow of Nile water, Egypt is presently below the 700m^3 international water-poverty limit.[27] Rainfall variability has already increased in the Upper Nile basin, meaning that the already highly variable annual amount of water flowing into the Nile will become even less predictable. Under some climate projections, increased greenhouse-gas emissions could reduce the Nile's flow by up to three-quarters, increasing the risk of drought.[28] This will present significant challenges to the food security, livelihood and well-being of those directly and indirectly dependent on the Nile.

Future-Risk Scenarios

Economic growth in Egypt threatens the quality and quantity of water resources, increasing the existing challenge of contamination and contributing to water insecurity. The problem is as much one of poor distribution and management as lack of supply. Heavy government subsidies lead to inefficiencies and unequal distribution of water heightens water insecurity. However, plans to construct new dams on the Nile upstream in Uganda and Ethiopia also present a serious risk to supply, which will be compounded by the existing infrastructure and management-related losses.

Feeding Egypt's growing population presents a major challenge, especially given the pressure on arable land. The loss of agricultural land due to urban expansion is a serious issue. Whilst the government has been trying to promote agricultural expansion in desert areas, the amount of agricultural land per person continues to fall. Egypt thus increasingly relies on food imports, mainly of cereals. Whilst self-sufficiency is not a feasible aspiration given the population and water pressures the country faces, reliance on external sources to meet food requirement leaves Egypt highly vulnerable to food-price shocks. In 2008, the increase in food prices in general by 24% and rice by 83% affected the most vulnerable parts of the population most and contributed to food-price riots.[29]

Improving water use and reducing losses is essential for mitigating future-risk scenarios. Focusing on comparative advantage in export crops would also help balance the cost of food imports. Most pressing of all, however, are steps to curb rapid population growth within the next cohort of youth through education and sexual and reproductive health (SRH) measures.

Climate change and insecurity linkages – State capacities

Good governance, greater social equity and effective institutions (formal and informal) mediate the risks of violent conflict from changes to climate and environmental stress. The main determinant is the extent to which institutions are able to provide equitable access to and management of basic services such as clean water, education, health and security in the face of climate change. An inability to address climate risks can conversely erode the social contract in already fragile contexts. The severity of impact from climate or environmental stress in any particular context is thus highly dependent on governance capacity.

A strong social contract whereby citizens adhere to the law and pay taxes in return for the state providing for their basic needs, such as security and infrastructure, is a prerequisite of stability. As the risks faced by citizens from

climate change grow more complex, the demands on governments increase and it becomes more likely that they will fail in their basic functions. Where the state cannot guarantee core functions such as law and public order, welfare, participation and basic public services (e.g. infrastructure, health and education), or maintain the monopoly on the use of force, the additional challenge of climate change compounds these shortcomings and can increase the risk of instability or conflict. When the state is perceived to be failing to fulfil its duties, the social contract is eroded and the risk of civil unrest increases.

Unstable institutions and rapid population growth can combine with factors like livelihood insecurity and resource scarcity to erode basic service provision. These factors are made more acute by climate change. Weak governance means that there is little or no social safety net to ease the effects of failing to adapt to climate change. This can contribute to a negative feedback loop of poverty, state fragility, vulnerability to climate change and risk of violent conflict, with each factor reinforcing the others. States which are already fragile or conflict-affected are particularly vulnerable to these risks.

Pakistan and Syria offer examples of failures in governance where the state has been perceived to inadequately deal with climate-change shocks occurring alongside other problems such as growing populations and political cleavages. In Pakistan, the perceived inadequacy of state responses to the 2010 floods in Sindh province deepened existing grievances related to marginalisation from flood-affected communities towards the national government and contributed to social unrest which disrupted relief efforts.[30] In Syria, the drought which impoverished and displaced a significant segment of the population, youth unemployment rates four times that of over-30s and long-standing sectarian inequalities all heightened conflict risk; however, it was the regime's unresponsiveness to these needs and repression of dissent that ultimately sparked the uprising.

Poverty and unemployment

It is well established that there is a greater risk of violent conflict in poor countries or those where there is high inequality. In countries also highly vulnerable to climate change, poverty and changes to the availability or equality of economic opportunities thus present a risk to peace.

As well as poverty, high levels of unemployment, particularly amongst young men, and labour migration to urban areas which have neither sufficient jobs nor infrastructure, are widely agreed to be specific conflict drivers. Climate change will increase unemployment and labour migration in regions where a significant proportion of jobs are dependent on labour-intensive and climate-sensitive crops, such as aquaculture, coffee in Central America or pastoralism such as in Kenya.

Key to understanding the implications of climate change on violence and conflict is the perceived and actual distribution of income and economic opportunities across the population. Studies have shown that inequality itself does not present a significant risk of conflict.[31] However, horizontal inequality – that is, inequality between different socio-economic, ethnic or demographic groups (including age) – generates a sense of relative group deprivation that poses a greater risk to stability. Inequality can be actual or perceived. Horizontal inequality between different regions and ethnic groups played a significant role in the separatist and ethnic conflicts in Indonesia[32] and Sri Lanka, for example.

Climate change can compound such grievances, as the impacts of climate change can affect some groups disproportionately. For example, already poor and marginalised communities may lack formal land rights and be forced to live in areas more exposed and sensitive to climate risks, such as informal settlements on flood plains.

Case study: Guatemala

Within Latin America, Guatemala has the highest fertility rate, highest population growth rate and

youngest population, with a median age of 19. With a large reproductive-age population and high birth rate, the population is expected to double by 2050, from 16.3m to 31.4m.[33] Guatemala also has the largest population of the Central American countries, roughly split between indigenous groups and *ladinos* with mixed European ancestry. The birth rate amongst Guatemala's rural, indigenous groups is much higher than amongst the rest of the population, ranging from around six births per woman in the broader indigenous population to eight in the northern Petén region.[34] This fertility rate will create a majority indigenous population this century.[35]

High fertility groups tend to experience the most extreme poverty and lack of health care, nutrition and education.[36] As well, they tend to be located in the most remote rural areas, some of which are protected ecological zones; most communities are agrarian and depend on the forest for felling in order to open agricultural fields and for fuel wood.[37] Health and family-planning measures have been implemented alongside environmental-conservation programmes in these areas.[38]

According to UN figures, net migration is expected to remain stable until 2050 at –15,000 per year.[39] Migration patterns in the past have included out-migration during the civil war and economic migration into Mexico as well as to the US and Canada. However, stronger controls at the US and Mexico's southern borders may increase net in-migration of Central American migrants in Guatemala, if their movement north is impeded.

In 2014, the number of unaccompanied minors crossing the US border increased 77% on the previous year to 69,000.[40] These children were coming primarily from the Northern Triangle countries of Guatemala, Honduras and El Salvador, where economic opportunities are limited and levels of gang and narco-trafficking violence are high.

Security

In 1996 Guatemala emerged from a 36-year civil war that resulted in around 200,000 fatalities, the majority of whom were non-combatants. Many of the former armed groups and combatants have gradually turned to drug trafficking and other criminal activities. The end of the conflict brought a sharp increase in other forms of violence; Guatemala has the fifth-highest homicide rate in the world and the third-highest femicide rate at 9.7 per 100,000 women.[41][42] A weak justice system results in few prosecutions for these crimes, despite initiatives to combat impunity.

Guatemala's security forces, along with those of its neighbours to the north and south, are engaged in a stand-off with transnational drug cartels trying to control territory to use as transportation routes for drug trafficking. The drugs, mostly cocaine, are produced in South America and smuggled through northern Central America to Mexico, the main supplier of illegal substances to the United States. The trade is managed by powerful Mexican cartels, especially the Sinaloa and Los Zetas, using local gangs as support and muscle. Guatemala is also increasingly becoming a drug-producing and processing site, particularly in rural ungoverned spaces where public institutions have little or no presence. Both local gangs and Mexican cartels benefit from the region's weak institutional capacity, dysfunctional judicial system, inadequate police and insufficient coastal and border patrols.[43]

Many of the issues which lay at the root of Guatemala's civil war were not resolved by the peace process or in the intervening years. Concentration of land ownership, where the largest 2.5% of farms occupy nearly two-thirds of agricultural land and 90% of the farms are on only one-sixth of the agricultural land,[44] reinforces inequalities between indigenous and rural peasants and the *ladino* elite. Guatemala has a weak state with high levels of corruption and tax evasion, poor labour relations and low earning capacities, and limited regulation of extractive industries which leave few profits in the country. This creates an unfavourable economic and environmental context to provide sustainable economic growth and opportunities for Guatemala's population.

Climate projections

Central America is experiencing rising temperatures, decreasing annual rainfall and increases in climate variability and extreme hydro-meteorological events consistent with climate-model projections for the region. Changes in rainfall patterns and temperatures have impacted yields for both staple and export crops, particularly affecting the portion of the population dependent on rain-fed agriculture for income and food. Guatemala is highly reliant on agriculture for its economy and food security; increases in the prevalence and intensity of climate-related agricultural losses could have profound social and economic effects at the local and national level. The impact of climate change on coffee is of particular concern in Guatemala as exports account for a substantial portion of GDP. A state of agricultural emergency was declared in 2013 after the climate-sensitive fungus Coffee Rust affected some 70% of the country's coffee crop.[45] Climate-related health impacts include increasing prevalence of malaria and dengue and reduced immune capacity due to malnutrition. Currently, Guatemala is the most food-insecure country by percentage of the population (30.4%), which has been increasing in recent years.[46]

By 2050, the region will experience more severe impacts attributable to climate change. Extreme hydro-meteorological events including storms, floods and droughts will affect regional agricultural productivity and food security, reducing the amount of land suitable for growing staple crops without irrigation and affecting export-crop yields. The simultaneous trends of population growth and less stable domestic food production will increase reliance on food imports and increase the current rate of chronic malnutrition. Climate impacts will exacerbate ongoing environmental degradation and biodiversity loss from unsustainable land-use practices, which have been compounded by population pressures. Rising ocean temperatures and acidity will accelerate coral bleaching, reducing fish stocks and impacting the food security and economies of coastal communities; it is possible that the Mesoamerican coral reef will collapse by mid-century (between 2050 and 2070), causing major economic and environmental losses. Sea-level rise will intensify the effects of extreme weather events on coastal infrastructure and communities.[47]

Future-risk scenarios

The Guatemalan government's ability to provide basic security, poverty reduction, sustainable and equitable economic growth, as well as adequate disaster response and climate-resilience measures already faces significant challenges. The fiscal demands of disaster response, rebuilding infrastructure and providing aid when crops fail may place further strain on the ability of the state to perform core functions. In combination with a large youth population which may be struggling economically, the risk of some forms of social unrest or anti-state political violence increases. Regional security architecture is challenged at present to counter serious organised crime; without adequate economic options for youth, they may have few alternatives to either joining criminal organisations or migrating.

Instability reinforces vulnerability

People living in places affected by violent conflict are particularly vulnerable to climate change.[48] Countries experiencing conflict or governance challenges are less likely to be able to deal with vulnerability to climate impacts, or to be able to adapt to climate change. In part this is because evidence shows that large-scale violent conflict harms infrastructure, institutions, natural capital, social capital and livelihood opportunities, undermining societal resilience to conflict. Since these assets facilitate adaptation to climate change, there are strong grounds to infer that conflict strongly influences vulnerability to climate-change impacts.[49]

The 20 countries most at risk of combined high levels of fragility, disaster risk, poverty and climate-change vulnerability (in order of most at risk first) are: Somalia, Afghanistan, Niger, Guinea-Bissau, Burundi, Chad, Sudan, Democratic

Republic of the Congo, Guinea, Haiti, Zimbabwe, Ethiopia, Central African Republic, Bangladesh, Liberia, Sierra Leone, Timor-Leste, Burkina Faso, Myanmar/Burma, Rwanda.[50] All of these countries also face the socio-demographic challenges of a high youth population; Annexes 1 and 2 show their median ages and youth population size.

Climate-related disasters and conflict

Climate-related disasters can increase vulnerability and compound pre-existing grievances, particularly amongst youth. From 2005–09, more than 50% of people affected by natural disasters lived in fragile and conflict-affected contexts.[51] Because the definition of natural disasters is linked to the human capacity to respond, it logically follows that contexts where state structures and social systems are already weakened by conflicts are less able to respond to disaster risks, increasing the likelihood that an environmental shock will become a natural disaster.

Disasters and extreme weather events can exacerbate the challenges youth may already face by adding additional pressures to their health, food security, well-being, livelihoods, physical safety and ability to access natural resources and basic social services. By increasing the acuteness of people's vulnerabilities and grievances, natural disasters can provide motives for violent action.[52] Effective disaster management and response can mitigate these challenges, helping to build trust between the government and conflict-affected populations. It can also give legitimacy to newly established political entities, as was the case with the Free Aceh Movement (GAM) in Aceh following the 2004 tsunami.[53] Failure of disaster-risk reduction or responses that promote inequality can undermine state–citizen relations and push people to seek alternative governance options – in the form of opposition parties, or even criminality. For example, failure to maintain drainage systems in a flood-prone context like Sindh, Pakistan led to grievances and unrest after the floods in 2010.

Even in the absence of increased disaster risk from climate change, there is the potential for post-disaster violence stemming from the relationship between large youth populations and disaster risk. This is driven by environmental degradation, unplanned urbanisation and other factors that increase the exposure of the most vulnerable people, including youth, to hazards. The impacts of climate change will exacerbate this risk.

Climate change, migration and population growth

Migration, along with fertility and mortality rates, influences population distribution. Climate change may influence the factors that drive migration, affecting both migration patterns and the volume of people likely to move. There is, however, no conclusive evidence linking climate change and migration with conflict. The IPCC's Fourth Assessment Report describes the estimates of numbers of environmental migrants as 'at best, guesswork', because of a host of intervening factors that influence both climate-change impacts and migration patterns.[54] Based on a comprehensive exploration of the interactions between climate change and migration, the report finds that 'environmental change is equally likely to make migration less possible as more probable'.

The potential impact of future demographic and climate change on migration patterns in developing countries suggests migration itself can have both positive and negative effects. Ongoing conflict will in some contexts mean that populations are trapped in environmentally vulnerable situations; however, migration can also be an adaptive strategy. There is growing evidence to suggest that mobility, together with income diversification, is important in reducing vulnerability to both environmental and non-environmental risks. Where youth bulges are concerned, the ability to migrate can reduce conflict propensity by acting as a pressure release valve. For developing countries in particular, substantially restricting migration opportunities can increase the pressure from youth bulges and the risk of political disturbance and violence.[55]

Population and environmental degradation

Population dynamics impact environmental degradation, but the relationship is complex. There is a tendency to emphasise the effect of population size over other factors, including consumption patterns and the role technology and institutions play in mediating the environmental impact of human activities. However, there is agreement that population and consumption drive impact; population will increase, and while consumption depends on economic factors that are difficult to forecast, there is no indication that it will change significantly from current trends.[56]

As with the interactions between climate impacts and security, mediating factors play a crucial role in shaping how population can affect natural resources such as forests, arable land, fresh water and fisheries. Unsustainable use of resources to meet short-term livelihood needs, for example deforestation for subsistence agriculture in countries with highly inequitable land distribution, is driven by demographic factors in consort with political and economic forces that may exacerbate poverty and inequality, both within the country and between it and the developed world.[57] Market forces, political and institutional factors and cultural preferences shape land use and land-cover change; for example, urban and international demand for forest and agricultural products, government investments in roads, subsidies to the agricultural sector or land-tenure policy, and cultural factors such as the desire for cattle as a status symbol among Central American frontier farmers, can play an important role.[58]

Demand for agricultural outputs and freshwater abstraction for agricultural, domestic and industrial uses will increase with population size and changing consumption patterns. The effect of population on arable land can be both positive and negative; it can increase pressure on limited arable land, or increase productive output by implementing technologies and supplying a labour force. However, rapid population growth in poor rural areas with fragile environments can challenge efforts for sustainability. Population growth reduces per capita water availability; the Middle East and Northern and Southern Africa are already suffering absolute scarcity (defined as less than 500m^3 per person), with many countries in the rest of Africa projected to become water scarce by 2050.[59]

Population distribution and composition, as well as size, influence the impact that demographic factors can have on the environment. Greater urban concentrations can reduce the pressure on rural land, but urban growth that outpaces infrastructure provision such as for sanitation can also degrade the environment and have consequences for human health and development. Age structure can also be a factor, as young adults have the highest propensity to migrate; in developing countries with large youth populations, this could drive urbanisation patterns and related environmental concerns. Fertility rates in most developing countries are highest in the most rural and ecologically fragile areas, where the rate of land use and land-cover change from forests to agriculture is highest; positive correlations between fertility and deforestation have been found in studies in Central and South America. Environmental degradation increases the vulnerability of people whose livelihoods are directly dependent on agriculture, fishing and forestry.

Section 2:
Youth bulges and violence

Youth bulges and future demographic trends

Youth bulges are most prevalent in Africa, with pockets in the Middle East, Central America and parts of Asia (see Annexes 1 and 2). Most of the increase in the world's population of 0–14 year olds is in sub-Saharan Africa (SSA), 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.[60] Asia's youth cohort is also relatively large at present but will begin to decline later in the century.

There is a degree of momentum that is inevitable in population growth, determined by the number of females reaching childbearing age. Factors that may affect this momentum include the degree of sexual and reproductive health (SRH) measures, economic opportunities and levels of education available to females. This population momentum will level off in Asia, while continuing to grow in parts of MENA and particularly in SSA, where the decline in fertility rates has slowed or, in some countries, stalled.[61]

By 2050, global population is projected to reach 9.6bn, up from 7.2bn currently.[62] Nearly all population growth will take place in less-developed countries, and African countries in particular will continue to have very large youth cohorts. Much of the growth will take place in states that are fragile under some indices; by 2040 half the global population will be living in states with high fragility.[63]

Demographic opportunities: the demographic dividend

There are economic opportunities associated with youth bulges. Countries which have high youth populations but taper off their fertility create a larger economically productive population relative to the number of children and elderly. This 'demographic dividend' can provide a boost to growth, innovation and state revenues, which in turn can raise output and savings per capita, and lead to improvements in human capital and economic growth.[64] East Asian countries such as Taiwan and South Korea created the economic conditions for large youth populations to contribute to the accelerated development of their economies in the 1980s.

Capitalising on the economic benefit that a large youth population can provide requires forward-looking education, health and economic policies to foster inclusive growth. However, fragile states tend to lack the governance capacities, stable macroeconomic conditions and investment environment required to promote equitable growth.[65] In the coming decades, virtually all of the labour force growth – including 1bn new potential workers expected by 2020 – will be

in states that are amongst the most vulnerable in terms of political and social instability.[66]

Youth bulges and violence

While youth have the potential to boost their countries' economies, under certain conditions there is also a correlation between large youth cohorts and violence. This relationship is nuanced, and age structure is not itself a determinant of violence. Many areas with youth bulges do not experience unrest, and conflicts have come to an end in countries with youth bulges. The majority of youth do not engage in anti-state political violence, even under economic and political conditions that limit their livelihood prospects and enfranchisement.[67]

However, there is a robust correlation between demographic profile and conflict risk. A one percentage point increase in youth cohorts (measured as the number of 15-24-year-olds relative to the size of the total adult population) increases the likelihood of conflict by 7%.[68] In the decade after the end of the Cold War, youth bulges increased the risk that a country would experience domestic armed conflict 2.5 times.[69] From 1970–99, 80% of civil conflicts occurred in countries with youthful age structures.[70] In countries where youth make up over 35% of total adult population, the risk of conflict triples compared to having a youth population size of developed countries (about 17%).[71] Other forms of violence including spontaneous and low-intensity unrest, non-violent protest and rioting, anti-state political violence and terrorism are also associated with large youth cohorts.[72]

Demographic factors can affect how conflicts are shaped, how adversaries conduct them and how governments respond, but demographics alone do not usually explain why and when conflicts are triggered.[73] For example, where there is fighting amongst populations with young age structures, young combatants are easily replaceable. Large youth bulges increase the risks of civil violence occurring, for example by mobilising large numbers of people for political protest, but they are only likely to trigger significant rebellions or conflict when other factors conducive to political upheaval are present.

Economic and political factors are addressed below, but cultural factors can also influence how large youth populations affect the risk of violence. In cultures where adulthood and marriage are conditional on achieving economic independence, if young people experience difficulty entering the labour market it may fuel a sense of frustration, social humiliation or exclusion. In some cultures, falling back into poverty negates one's attainment of adulthood, reversing access to resources and political decision-making. Frustration and despair can threaten the credibility of states and foment instability.[74]

Youth and violence linkages – Political structures

There is a strong correlation between regime type and population age structure, and between regime type, youth populations and the risk of violence. As countries' populations become older, the likelihood of their being democratic increases. The 'democratic transition' from authoritarian to more representative government is closely correlated with the 'demographic transition' from younger to older population age structure. The improved governance that this transition generally entails provides better services, which raise aspirations, reduce fertility and provide for stronger economic growth. In this way the trends reinforce each other.

There is also a clear relationship between youth cohort size, regime type and the risk of violence. The presence of large youth populations increases the risk of violence most in semi-democratic or intermediate/transitional regimes moving between dictatorship and democracy. In the absence of institutional arrangements to voice discontent non-violently, or capacity on the regime's part to effectively suppress dissent, the risk of violence is highest.[75] In countries moving toward democracy, where electoral processes are at risk of corruption or manipulation, the probability of armed conflict is highest.

As highlighted in Section 1, governance is the most significant determinant of conflict risk; environmental and demographic factors can influence this risk by affecting political and economic circumstances.

Case study: Indonesia

Indonesia is the world's third most populous democracy. It is the world's largest archipelagic state, made up of over 17,000 islands and over 250 ethnic groups. The country has experienced recent regional rebellions, secessionist movements and authoritarian rule.[76] The fall of the Suharto regime in 1998 after 40 years of authoritarian rule re-ignited long-simmering land-ownership disputes which continue today.

Home to the second-largest area of rainforest in the world, forest land plays an important role in the political economy of the country and the lives and livelihoods of its inhabitants. Historically, land and forests have played a critical role in conflicts in Indonesia, and resources such as timber have been integral to financing war.[77] New national laws on forestry developed following the democratic transition did not take account of customary forestry rights, instead giving all control of forest lands to the government. There has consequently been a sharp increase in the number of conflicts stemming from this inequitable distribution of forest benefits in the past decade.[78] At the local level, forests have been the source of many small-scale disputes between communities, government and companies.[79]

Indonesia's demographic structure means it is now entering a period in which a 'youth bulge' will occur.[80] Population pressure, the projected youth bulge and inequality present a combined challenge to Indonesia's social and economic development. 43.3% of the current population is below 24, and 30% is aged between 19 and 24 years.[81] Youth unemployment in Indonesia is six times higher than the world average of 2.5.[82] Many workers are working under conditions of impoverishment, with 53% employed in the informal sector. With 38.9% of the labour force engaged in the highly climate-sensitive agricultural sector,[83] climate change presents a key risk to livelihood security amongst youth.

Security

Indonesia's ethnic heterogeneity presents a range of differing security issues. Certain islands such as Java are highly ethnically homogenous and as such, the main security risks are routine violence such as theft and inter-neighbourhood violence, linked to vertical inequality.[84] In other heterogeneous contexts, particularly the outer islands, violence is ethnically highly polarised and is more closely linked to horizontal inequality issues such as a sense of relative group deprivation. These conflicts tend to be ethno-communal and more commonly have a political aim.[85]

Insecure and unclear land tenure is a frequent driver of conflict in Indonesia. Land tenure is currently marked by inadequate regulations, conflicting claims of ownership, power struggles within the government, expanding resource concessions and corruption.[86] Conflict primarily occurs over boundary disputes, timber theft, forest encroachment, land clearing and environmental degradation. Underlying tensions, however, stem from the restriction of communities from forest benefits.[87]

In 2005, Indonesia reached a historic peace agreement with armed separatists in Aceh, which led to democratic elections in Aceh in December 2006. Indonesia continues to face low-intensity armed resistance in Papua by the separatist Free Papua Movement.

Climate projections

Indonesia is both highly vulnerable to climate change and also the third-largest emitter of greenhouse gases, when taking deforestation into consideration. Climate-change impacts already experienced include droughts, heat waves and floods. These impacts have a direct impact on renewable and non-renewable resources, from oil palm and timber to minerals and land, which have been at the heart of Indonesia's numerous secessionist and inter-communal conflicts.

Climate projections identify an increase in the number and severity of disasters, specifically of more

intense typhoons, droughts, forest fires and floods as a result of climate change.[88] These impacts will significantly affect Indonesia's agricultural productivity and the safety and well-being of the inhabitants of the coastal lowlands. Cognisant of these risks, the government has become a major player in the international community's efforts to address climate change.

Future-Risk Scenarios

Indonesia's growing population and insufficient environmental management pose problems for both Indonesia's environment and its economy. Locked into a youth bulge in the near future, major efforts are required to manage demographic pressures without increasing the risk of violence or conflict. If education and appropriate jobs are available for this youth bulge, there could be economic dividends for Indonesia. However, without adequate management, this potential dividend could instead become a strain on the country's already stressed resources, such as forests and livelihoods. Studies show a positive correlation between population growth and deforestation,[89] and between youth unemployment and increased routine violence.[90] As the world's largest Muslim-majority nation, which also faces ongoing challenges of poverty and inequality, current security concerns include managing radicalisation and preventing terrorism. Priorities for the peaceful management of the linked challenges of population growth, the impending youth bulge and the impacts of climate change are alleviating poverty, improving education, implementing economic and financial reforms, stemming corruption and addressing climate change.

Youth and violence linkages – Economic opportunities

Economics are more significant than regime type in influencing the conflict propensity of large youth cohorts.[91] In many labour markets, a shortage of quality jobs drives underemployment and encourages work in the informal sector, leading to economic and social exclusion. Youth are disproportionately affected by economic downturns, suffering from a higher unemployment rate, greater wage inequality and more precarious and vulnerable employment, particularly for females.[92] Econometric analysis has found that unemployment, a decline in disposable income and increase in international food prices are particularly associated with the risk of social unrest.[93] The ratio of young people within the country's total labour force has a significant and large effect on the potential for violence, indicating that frustration from the rising generation attempting to move toward independence is a primary impetus for conflict.[94]

In conflict-affected countries, high levels of poverty and unemployment can create competition in the labour market that suppresses wages. This lowers the opportunity cost for joining and earning an income in rebel movements.[95] However, high youth numbers on their own are not sufficient to drive this dynamic; the easy availability of drugs and small arms can also play a role in youth recruitment to gangs and militias.[96]

Climate impacts and mitigation efforts will affect the economic sectors important to countries with large youth cohorts, including agriculture, fisheries and oil and gas. In order to absorb youth into the labour market, education systems will need to evolve alongside economic policies and labour-market strategies to prepare for larger numbers of graduates, and to transition to economic sectors that are resilient in a climate-changed future.

Education

Both too much and too little secondary education can impact the risk of violence, depending on employment, exclusion and the broader structural economic context. When levels of secondary education are mismatched with job opportunities, 'educational bubbles' of highly qualified graduates can contribute to instability.[97] In MENA, education systems have historically prepared students for employment in the region's large public sector, which has been less able to absorb the current generation of young people; MENA's youth unemployment rate is higher than SSA's,

at 26%.[98] Likewise in some SSA countries, for example Tanzania, unemployment is higher amongst those who have secondary education than those who do not, due to the small size of the country's formal sector.[99] However, lower levels of secondary education can also be a risk factor. Large, young male population bulges are more likely to increase the risk of conflict in societies where male secondary education is low.[100] This effect is particularly strong in low- and middle-income countries. Looking ahead, SSA will have the youngest age structure and lowest educational attainment relative to other regions.[101]

Youth and violence linkages – Urbanisation

As of 2008, the majority of the world's population lives in cities, which are expected to hold 70% of the world's population by 2050. Most of the expected global population growth will be concentrated in the urban areas of less-developed regions, whose population is projected to increase to 5.2bn by 2050.[102] While this can improve access to economic opportunities and services, and may reduce rural environmental degradation by decreasing the pressure on rural land, urban population growth at this scale will increase the strain on infrastructure for housing, sanitation, energy, health and education if it cannot keep pace with cities' expansion. Urban concentration can also increase exposure to natural hazards and disasters, as vulnerable populations tend to occupy more marginal settlements.

The connections between growth in urban populations and the risks of instability or unrest are less pronounced than connections with economy and regime type. Some research suggests that high population density is a consistently strong predictor of armed conflict, as it provides opportunities to organise and finance conflict, as well as a density of strategic targets.[103] However, not all dense areas with youthful populations experience conflict, and some conflicts that have affected countries with particularly youthful populations have been started and fought primarily in rural areas.[104] Factors associated with higher levels of youth *exclusion* – the absence of democratic institutions, low economic growth, low levels of secondary educational attainment – rather than absolute youth *numbers* are significantly and robustly associated with increasing levels of urban social disturbance.[105]

Case study: Kenya

Despite being the biggest economy in East Africa and having a peacefully elected government, Kenya's rapidly growing population, low resilience to climate change, ethnic and inter-religious tensions and unresolved historical grievances present significant obstacles to a peaceful future.

Kenya's population of 41m is projected to more than double to 97m by 2050.[106] Trends show that Kenya is facing a youth bulge.[107] The large proportion of young people presents social, environmental and economic challenges as well as opportunities. 42% of the population is under 15 and young people represent 64% of the country's unemployed.[108] Youth with no formal education have some of the highest unemployment rates. However, the most pressing youth-unemployment challenge is amongst people with primary and secondary education.[109] Whilst the economy is growing, growth does not match job creation to meet the employment demands of the growing youth population. Climate change will put additional pressure on job creation as it is already affecting the viability of agricultural and pastoralist livelihoods in certain regions, especially in the north.[110]

Kenya is also experiencing rapid urbanisation due to high rural–urban migration. Urbanisation, though a good indicator of socio-economic progress, also presents developmental and security challenges in Kenya. 55% of urban-dwelling Kenyans, the majority of whom are youth, live in 'informal settlements' such as slums and shantytowns. Residents of informal settlements are particularly vulnerable to climate change, as they have limited access to housing, livelihoods, food, energy and sanitation.[111]

Security

Recent events such as the post-election violence in late 2007 and early 2008 and the bombing of Westgate Mall in Nairobi in September 2013 reveal undercurrents that threaten peace and stability. Urban youth were major actors in the looting, rioting and violence across the political unrest in 2007/08. Further risks include violent conflict between pastoralist tribes and frequent public protests over corruption and other issues, often met by harsh policing. These events unfold against a background that includes high unemployment, widespread poverty, a slowdown in economic growth relative to the rest of the East African region and the detrimental impact of climate change, which is harming food production and livelihoods.

Unemployment also presents a significant security risk in Kenya. Current research supports the theory that if young people are employed, then they will be less likely to join violent movements for economic gain.[112] Having a full- or part-time job that provides cash and the ability to satisfy basic needs decreases young people's propensity to engage in political violence.[113]

Climate projections

Most Kenyans are dependent on natural resources and are therefore vulnerable to climate-change effects. Kenya is already affected by rising temperatures and prolonged droughts. These impacts are felt across the country, most severely in the northern region of the country, which is predominantly arid and semi-arid land (ASAL) where most livelihoods are dependent on pastoralism. This is already leading to increased resource competition and migration in search of pasture and water.[114] Agriculture contributes 29% of Kenya's GDP and employs over 75% of the workforce, so any decrease in agricultural productivity will have a major impact on the unemployment rate, which is already high at approximately 40%.[115] Given that youth unemployment is understood to be one of the key challenges to Kenya's peace and stability, these climate impacts on agricultural livelihoods will have a pronounced effect on youth. Changes in climate have also reduced hydroelectric power generation, escalated water shortages and deforestation and displaced many people.[116]

Whilst future climate projections for Kenya vary, there is consensus on increased variability of annual rainfall.[117] This will have an impact of degrading ecosystems and limiting the potential for farming and pastoralism, particularly in ASAL regions (which constitute about 80% of the country's total area).[118]

Future-Risk Scenarios

The combined effects of rapid population growth and climate change are increasing food insecurity, environmental degradation and poverty levels in Kenya, and present a number a future risks and opportunities.

Kenya's rapid population growth has led to fragmentation of smallholder land holdings and over-exploitation of land and other natural resources. These effects will be compounded as the population continues to grow.[119] Urbanisation presents a significant future risk for the current youth population. Unemployment rates in urban areas range between 35% and 60% for youth aged 15–25 years, compared with rural areas where rates range between 20% and 25%.[120] Further, as urban populations grow and urban developments reach their physical limits, residential land in cities will become expensive and limit development of low-income housing and employment opportunities. This is likely to result in more livelihood-insecure young people living in informal settlements and other marginalised areas that are highly vulnerable to climate change. If not adequately planned for, urbanisation could result in increased unemployment, poverty and conflict in urban areas.

Key areas for building positive and sustainable peace in Kenya cluster around increasing equitable access to natural resources, enhanced livelihood opportunities – especially for young men – and bolstering the resilience of employment in Kenya's agriculture and infrastructure sectors against climate change. Specific youth labour-market challenges that require interventions include training and education, matching skills with jobs and promoting trust between young people and government.

Conclusion

Climate change and large youth cohorts can affect factors that shape the security environment, including state capacities, economic growth and inequality. Without adequate planning and preparation, the combined challenges of large youth populations and climate impacts could multiply security risks in regions already vulnerable to poor governance and social and political instability.

The regions where large youth bulges will be present in the coming decades generally have low resilience to climate-change impacts. These include many countries in sub-Saharan Africa, parts of the Middle East and North Africa, the Northern Triangle in Central America, and parts of South Asia and the Asia-Pacific. Additionally, areas with low resilience to climate impacts may already experience the conditions that can bring about large youth cohorts, such as weak governance, weak basic services provision and inequitable economic growth, and may experience higher risks for youth-driven violence as a consequence.

Neither youthful demographic profiles nor climate impacts guarantee that violence will occur. However, for regions that will be experiencing both dynamics, the conditions in which youth bulges impact the security environment can be exacerbated by low resilience to climate impacts. Climate-related disaster risks present a specific challenge to such contexts due to the intensity and immediacy of the impact and the abrupt demands they can place upon already stretched institutions to respond. Tackling disaster risk in a manner that is sensitive to the political context, especially specific dynamics of conflict or fragility, provides opportunities to reduce long-term disruption to youth education, livelihoods and well-being that can follow from disasters and potentially increase the risk of conflict.

Forward-looking policies that invest in education, secure employment opportunities and representation in governance can avoid further marginalising youth, and instead harness their potential to boost growth and development. Creating sustainable and inclusive economic growth that provides opportunities for young people and is resilient to future climate impacts may prove a challenge in the coming decades, particularly for states with already weak governance capacities. Building economic and social capital to promote peace and stability will be particularly relevant in countries that face concurrent demographic and climate risks.

Both climate and demographic models provide projections with reasonably high levels of confidence for mid-century. The timing of climate impacts and changes in governance and economy that could interact with large youth populations to impact stability cannot be given

with certainty, but it is highly likely that multiple stressors will impact economy and governance. Exploring the links between population, resources, economy, governance and how the interactions between these factors can positively or negatively reinforce security trends should be a primary concern of governments. This is particularly true in countries which face the combined challenge of youth bulges and limited resilience to climate impacts.

Annex 1:
Median ages 2010 and 2050

This table ranks countries whose median age is below 25 by the youthfulness of their populations. Countries in bold text are among the 20 identified as most at risk from combined high levels of fragility, disaster risk, poverty and climate-change vulnerability.[121]

Median age of the total population			**Projected median age of the total population (medium-fertility variant)**	
Country	**2010**		**Country**	**2050**
Niger	15.1		**Niger**	17.5
Uganda	15.5		Mali	19.7
Chad	15.5		Zambia	20.1
Afghanistan	15.6		**Somalia**	21.3
Angola	16.0		Nigeria	21.4
Timor-Leste	16.1		**Burundi**	22.0
Somalia	16.1		Uganda	22.0
Zambia	16.5		**Chad**	22.0
Mali	16.5		Gambia	22.1
Burkina Faso	16.8		United Republic of Tanzania	22.3
Malawi	16.9		Malawi	22.3
Gambia	16.9		Mozambique	22.5
Democratic Republic of the Congo	17.1		Angola	22.6
Mozambique	17.2		Congo	23.1
Mayotte	17.3		**Timor-Leste**	23.1
United Republic of Tanzania	17.4		**Democratic Republic of the Congo**	23.2
Ethiopia	17.5		**Burkina Faso**	23.2
Burundi	17.7		Côte d'Ivoire	23.9
Rwanda	17.8		Senegal	24.0
Senegal	17.9		Madagascar	24.4
Nigeria	17.9		Comoros	24.6
Cameroon	18.0		**Guinea-Bissau**	24.7
Madagascar	18.0		Cameroon	24.8
Benin	18.1		**Liberia**	24.9
Yemen	18.2		Togo	25.1
State of Palestine	18.2		Benin	25.3
Eritrea	18.3		**Guinea**	25.4
South Sudan	18.3		South Sudan	25.5
Liberia	18.3		Kenya	25.5
Guinea	18.3		Mauritania	25.7
Kenya	18.5		**Sierra Leone**	25.8
Zimbabwe	18.5		**Sudan**	26.2
Togo	18.7		Eritrea	26.7
Sudan	18.7		Sao Tome and Principe	26.9
Guinea-Bissau	18.8		**Rwanda**	27.1
Sierra Leone	18.8		Equatorial Guinea	27.3
Guatemala	18.8		Gabon	27.5
Côte d'Ivoire	18.8		Solomon Islands	27.6

Median age of the total population	
Country	**2010**
Congo	18.9
Sao Tome and Principe	19.0
Comoros	19.1
Iraq	19.1
Central African Republic	19.3
Swaziland	19.3
Solomon Islands	19.5
Mauritania	19.5
Lesotho	20.1
Ghana	20.2
Micronesia (Fed. States of)	20.2
Equatorial Guinea	20.2
Namibia	20.3
Lao People's Democratic Republic	20.3
Papua New Guinea	20.4
Gabon	20.5
Samoa	20.8
Honduras	20.9
Vanuatu	21.2
Tajikistan	21.2
Tonga	21.3
Nepal	21.3
Haiti	21.5
Pakistan	21.6
Bolivia (Plurinational State of)	21.7
Syrian Arab Republic	21.9
Guyana	21.9
Botswana	22.0
Djibouti	22.0
Nicaragua	22.0
Belize	22.0
Philippines	22.3
Jordan	22.5
Kiribati	22.5
Cape Verde	22.7
Paraguay	23.1
El Salvador	23.1
Cambodia	23.5
Maldives	23.6
Kyrgyzstan	23.8
Bangladesh	24.0
Uzbekistan	24.1
French Guiana	24.3
Bhutan	24.4
Egypt	24.4
Turkmenistan	24.5

Projected median age of the total population (medium-fertility variant)	
Country	**2050**
Central African Republic	27.6
Swaziland	27.7
Iraq	27.8
Tajikistan	28.3
Papua New Guinea	28.3
Ghana	28.4
Tonga	28.6
Samoa	28.6
Guatemala	28.8
Lesotho	29.0
State of Palestine	29.0
Ethiopia	29.2
Zimbabwe	29.5
Afghanistan	30.3
Mayotte	30.3
Micronesia (Fed. States of)	30.8
Yemen	30.8
Vanuatu	30.8
Bolivia (Plurinational State of)	31.2
Philippines	31.5
Namibia	31.6
Kyrgyzstan	31.8
Haiti	32.4
Djibouti	32.4
Botswana	32.5
Kiribati	33.1
French Guiana	33.1
Paraguay	33.4
South Africa	33.7
Jordan	33.8
Pakistan	34.1
Honduras	34.1
Lao People's Democratic Republic	34.3
Egypt	34.6
Kazakhstan	34.9
Syrian Arab Republic	35.3
Kuwait	35.6
Fiji	35.6
Mongolia	35.7
Belize	35.7
Guyana	35.8
Israel	36.1
Cambodia	36.2
Algeria	36.3
Turkmenistan	36.5

Median age of the total population			Projected median age of the total population (medium-fertility variant)	
	2010			2050
Middle Africa	17.1		Western Africa	23.4
Eastern Africa	17.5		Middle Africa	24.5
Western Africa	18.0		Eastern Africa	28.9
Melanesia	21.3		Melanesia	33.2
Northern Africa	24.3		Southern Africa	33.6
Southern Africa	24.6		Northern Africa	34.6
Central America	24.8		Central Asia	35.1
Central Asia	24.8		Polynesia	36.3
South-Central Asia	24.8		Micronesia	36.6
Southern Asia	24.8		South-Central Asia	36.7

Source: United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision* (UN WPP), United Nations, New York, 2013

Annex 2:
Total population and 0–24 cohort size

This table ranks countries by the size of their 0–24-year-old populations in 2010 and 2050. It includes countries with the largest total 0–24-year-old populations, irrespective of their level of development or demographic profile. Countries in bold text are among the 20 identified as most at risk from combined high levels of fragility, disaster risk, poverty and climate-change vulnerability.[122]

Total population by age group, region and country (thousands)						
	2010				2050	
Country	Total	0–24		Country	Total	0–24
India	1 205 625	592 797		India	1 620 051	540 634
China	1 359 821	488 951		China	1 384 977	343 186
Indonesia	240 676	112 322		Nigeria	440 355	249 462
United States of America	312 247	105 897		United States of America	400 853	122 428
Nigeria	159 708	100 908		Indonesia	321 377	103 349
Pakistan	173 149	98 632		Pakistan	271 082	98 061
Brazil	195 210	83 408		**Democratic Republic of the Congo**	155 291	82 935
Bangladesh	151 125	78 555		**Ethiopia**	187 573	80 731
Mexico	117 886	57 134		United Republic of Tanzania	129 417	71 114
Ethiopia	87 095	56 265		Philippines	157 118	62 983
Philippines	93 444	51 500		Brazil	231 120	61 018
Russian Federation	143 618	42 735		**Bangladesh**	201 948	60 234
Democratic Republic of the Congo	62 191	40 542		Uganda	104 078	57 890
Egypt	78 076	40 011		Kenya	97 173	47 850
Vietnam	89 047	38 803		**Niger**	69 410	44 926
Iran (Islamic Republic of)	74 462	33 795		Mexico	156 102	44 789
Turkey	72 138	31 874		Egypt	121 798	44 180
Japan	127 353	29 771		**Sudan**	77 138	37 007
United Republic of Tanzania	44 973	29 048		Russian Federation	120 896	34 098
Kenya	40 909	25 834		Mozambique	59 929	32 810
South Africa	51 452	25 537		Iraq	71 336	32 440
Uganda	33 987	23 440		Angola	54 324	29 627
Myanmar	51 931	23 167		Madagascar	55 498	28 336
Thailand	66 402	22 342		Iran (Islamic Republic of)	100 598	28 013
Sudan	35 652	21 985		Mali	45 168	27 135
Colombia	46 445	21 859		Turkey	94 606	26 606
Germany	83 017	20 457		Zambia	44 206	26 048
France	63 231	19 481		Vietnam	103 697	25 697
Afghanistan	28 398	19 299		Cameroon	48 599	24 455
United Kingdom	62 066	18 938		**Afghanistan**	56 551	23 369
Iraq	30 962	18 910		South Africa	63 405	23 191
Algeria	37 063	17 747		Japan	108 329	23 073
Argentina	40 374	16 777		Malawi	41 203	22 683
Mozambique	23 967	15 504		Côte d'Ivoire	42 339	21 990
Nepal	26 846	15 211		**Burkina Faso**	40 932	21 787
Morocco	31 642	15 159		France	73 212	20 808
Yemen	22 763	14 812		Ghana	45 670	20 352

Total population by age group, region and country (thousands)					
	2010			2050	
Country	Total	0–24	Country	Total	0–24
Italy	60 509	14 573	United Kingdom	73 131	20 294
Republic of Korea	48 454	14 479	Colombia	62 942	19 334
Uzbekistan	27 769	14 424	**Chad**	33 516	18 649
Peru	29 263	14 372	Algeria	54 522	17 938
Ghana	24 263	14 367	**Myanmar**	58 645	17 338
Venezuela	29 043	13 978	Yemen	42 497	17 128
Malaysia	28 276	13 518	Senegal	32 933	17 068
Madagascar	21 080	13 356	Germany	72 566	15 815
Cameroon	20 624	13 220	Argentina	51 024	15 539
Angola	19 549	13 124	**Somalia**	27 076	15 439
Saudi Arabia	27 258	13 073	**Burundi**	26 691	14 758
Ukraine	46 050	12 992	Morocco	42 884	14 298
Syrian Arab Republic	21 533	12 157	Italy	60 015	14 040
Côte d'Ivoire	18 977	11 659	Guatemala	31 426	13 847
Spain	46 182	11 643	Venezuela	42 376	13 603
Poland	38 199	11 138	Thailand	61 740	13 103
Niger	15 894	10 667	Syrian Arab Republic	36 706	12 902
Burkina Faso	15 540	10 260	Peru	41 084	12 753
Canada	34 126	10 216	Malaysia	42 113	12 633
Malawi	15 014	9 935	Canada	45 228	12 572
Dem. People's Republic of Korea	24 501	9 470	South Sudan	24 760	12 193
Mali	13 986	9 241	**Guinea**	24 466	12 076
Guatemala	14 342	8 861	Nepal	36 479	11 826
Zambia	13 217	8 802	**Rwanda**	25 378	11 804
Zimbabwe	13 077	8 501	Uzbekistan	36 330	11 543
Sri Lanka	20 759	8 488	**Zimbabwe**	26 254	11 159
Senegal	12 951	8 310	Benin	22 137	10 942
Chad	11 721	8 042	Spain	48 224	10 932
Cambodia	14 365	7 580	Republic of Korea	51 034	10 744
Ecuador	15 001	7 440	Saudi Arabia	40 388	10 303
Australia	22 404	7 403	Australia	33 735	10 110
Rwanda	10 837	6 972	Ukraine	33 658	8 864

Region	Total	0–24	Region	Total	0–24
South-Central Asia	1 743 101	878 472	South-Central Asia	2 398 180	800 772
Southern Asia	1 681 407	847 320	Southern Asia	2 312 026	769 980
Eastern Asia	1 593 571	552 800	Western Africa	814 552	451 233
South-Eastern Asia	597 097	275 541	Eastern Africa	869 221	441 698
Eastern Africa	342 595	221 928	Eastern Asia	1 605 341	392 213
Western Africa	305 088	192 725	South-Eastern Asia	787 535	249 387
South America	394 021	175 842	Middle Africa	316 111	167 650
Western Asia	231 671	115 558	South America	505 086	147 711
Northern Africa	199 620	102 581	Western Asia	373 006	124 860
Eastern Europe	296 183	86 169	Northern Africa	318 729	119 615
Middle Africa	124 978	81 533	Central America	228 833	72 116
Central America	160 546	80 950	Eastern Europe	246 523	65 190

Source: United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision* (UN WPP), United Nations, New York, 2013

Bibliography

Brown, Oli. 'Campaigning Rhetoric or Bleak Reality?'. *Climate Change, Resources, Migration – Securing Africa in an Uncertain Climate* (2010): 38–47.

Collier, Paul, V.L. Elliott, Havard Hegre, Anke Hoeffler, Marta Reynal-Querol and Nicholas Sambanis. *Breaking the Conflict Trap: Civil War and Development Policy*. Oxford: Oxford University Press, 2003.

Collier, Paul, Anke Hoeffler and Dominic Rohner. 'Beyond Greed and Grievance: Feasibility and Civil War'. *Oxford Economic Papers* 61, no. 1 (1 January 2009): 1–27.

Cramer, Christopher. 'Does Inequality Cause Conflict?'. *Journal of International Development* 15, no. 4 (2003): 397–412.

Foresight. 'Migration and Global Environmental Change: Future Challenges and Opportunities'. In *Foresight Final Project Report*. London: Government Office for Science, 2011.

GSDRC, Governance – Social Development – Humanitarian – Conflict. 'Definitions and Typologies of Fragile States'. http://www.gsdrc.org/go/fragile-states/chapter-1--understanding-fragile-states/definitions-and-typologies-of-fragile-states.

IFAD. 'Analysis of Climate Change Impacts on Coffee, Cocoa and Basic Grains Value Chains in Northern Honduras'. 98, 2013.

IPCC. *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge and New York: Cambridge University Press, 2014.

Kaplan, Seth. 'Identity in Fragile States: Social Cohesion and State Building'. *Development* 52, no. 4 (2009): 466–72.

Kellet, J. and D. Sparks. 'Disaster Risk Reduction: Spending Where It Should Count'. In *Global Humanitarian Assistance*. Sommerset, UK: Development Initiatives, 2012.

Reeve, Richard. *Peace and Conflict Assessment of South Sudan*. London: International Alert, 2012.

Saha, Sujan. 'Security Implications of Climate Refugees in Urban Slums: A Case Study from Dhaka, Bangladesh'. In *Climate Change, Human Security and Violent Conflict – Challenges for Societal Stability*, edited by Jürgen Scheffran, Michael Brzoska, Hans Günter Brauch, Michael Link and Janpeter Schilling. Hexagon Series on Human and Environment Security and Peace, 595–611. Berlin: Springer, 2012.

Schilling, Janpeter. *On Rains, Raids and Relations: A Multimethod Approach to Climate Change, Vulnerability, Adaptation and Violent Conflict in Northern Africa and Kenya*. Hamburg: University of Hamburg, 2012.

Schilling, Janpeter, Francis Opiyo and Jürgen Scheffran. 'Raiding Pastoral Livelihoods: Motives and Effects of Violent Conflict in North-Western Kenya'. *Pastoralism* 2, no. 25 (2012): 1–16.

Smith, Dan. *Towards a Strategic Framework for Peacebuilding – Getting Their Act Together*. Oslo: Royal Norwegian Ministry of Foreign Affairs, 2004.

Smith, Dan and Janani Vivekananda. *Climate Change, Conflict and Fragility*. London: International Alert, 2009.

———. *A Climate of Conflict – The Links between Climate Change, Peace and War*. London: International Alert, 2007.

Stark, Jeffrey, Christine Mataya and Kelley Lubovich. *Climate Change, Adaptation, and Conflict – A Preliminary Review of the Issues*. Washington: USAID, 2009.

Tacoli, C. 'Crisis or Adaptation? Migration and Climate Change in a Context of High Mobility'. In London, 24–25 June, prepared for Expert Group Meeting: Population Dynamics and Climate Change, UNFPA and IIED, 2009.

Vivekananda, Janani, Janpeter Schilling, Shreya Mitra and Nisha Pandey. 'On Shrimp, Salt and Security: Livelihood Risks and Responses in South Bangladesh and East India'. *Environment, Development and Sustainability.* Online first (2014): 1–21.

Werrell, Caitlin E. and Francesco Femia, eds. *The Arab Spring and Climate Change.*

Danzhen You, Lucia Hug and David Anthony, 'Generation 2030: Africa', Division of Data, Research and Policy, UNICEF, August 2014

Notes

1 This paper uses the UN definition for youth as 15–24 year olds. The 0–14 age bracket is included in some of the analysis relating to demographic profile and future demographic trends.

2 Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2012 Revision*, 2012, available at http://esa.un.org/unpd/wpp/index.htm (accessed on 12 September 2014). Population projections include low, medium and high scenarios; this analysis presumes the medium-variant projection according to UN figures.

3 IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge and New York: Cambridge University Press, 2014).

4 *Ibid*.

5 Janani Vivekananda et al., 'Climate Resilience in Fragile and Conflict-Affected Societies: Concepts and Approaches', *Development in Practice,* vol. 24, no. 4, 2014.

6 This study uses a broad definition of violence which encompasses civil conflicts, anti-state political violence and civil unrest, as well as types of violence not typically categorised alongside these such as criminality and breakdown of the rule of law. While these types of violence are significant for the stability, economic growth and well-being of the populations in question, limiting our definition of violence to these types does exclude forms of violence that disproportionately affect females.

7 Richard Reeve, *Peace and Conflict Assessment of South Sudan* (London: International Alert, 2012).

8 Francesca de Châtel, 'The Role of Drought and Climate Change in the Syrian Uprising: Untangling the Triggers of the Revolution', *Middle Eastern Studies*, online publication, 27 January 2014.

9 Martin Hoerling et al., 'On the Increased Frequency of Mediterranean Drought', *Journal of Climate*, vol. 25, no. 6, March 2012, pp. 2146–61; Colin Kelley, 'Climate Change: Spark of the Syrian Civil War?', American Geophysical Union Annual Conference, San Francisco, 9 December 2013.

10 Shiloh Fetzek and Jeffrey Mazo, 'Climate, Scarcity and Conflict', *Survival*, vol. 56, no. 5, October–November 2014.

11 IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*.

12 Beth Njeri Njiru, 'Climate Change, Resource Competition, and Conflict amongst Pastoral Communities in Kenya', in Schefran et al. (eds): *Climate Change, Human Security and Violent Conflict, Hexagon Series on Human and Environmental Security and Peace*, vol. 24 (Berlin and Heidelberg: Springer, 2012), pp. 513–27.

13 Central Agency for Public Mobilization and Statistics (CAPMAS 2013), 'Population', *Egypt Statistical Yearbook, 2013*, 4, http://www.capmas.gov.eg (accessed 2 September 2014). 'World Population Prospects: 2010 Revision', *United Nations Population Division,* available at https://esa.un.org/wpp.

14 A. El-Sadek, 'Virtual Water Trade as a Solution for Water Scarcity in Egypt', *Water Resource Management*, no. 24, pp. 2437–48.

15 UNFPA, 2014, available at http://egypt.unfpa.org/english/Staticpage/54790f72-6e8b-4f77-99e2-4c5b78c20d5c/indicators.aspx (accessed on 6 September 2014).

16 Daniel LaGraffe, 'The Youth Bulge in Egypt: An Intersection of Demographics, Security, and the Arab Spring', *Journal of Strategic Security*, vol. 5, no. 2 (2012), pp. 65–80.

17 Anton Minkov, *The Impact of Demographics on Regime Stability and Security in the Middle East* (Tech. Defence R&D Canada: Center for Operational Research and Analysis, 2009), pp. 4–5.

18 UNFPA, 2014.

19 Central Agency for Public Mobilization and Statistics (CAPMAS 2013), 'Population'.

20 LaGraffe, 'The Youth Bulge in Egypt: An Intersection of Demographics, Security, and the Arab Spring'.

21 Miriam Fendius Elman, 'The Arab Spring and the Future of Democracy in the Middle East: Rethinking Middle Eastern Studies', *Palestine-Israel Journal*, vol. 18, no. 1, 2012.

22 D. Brumberg and H. Sallam, 'The Politics of Security Sector Reform in Egypt', USIP, 2012, available at http://www.usip.org/publications/the-politics-security-sector-reform-in-egypt (accessed on 3 September 2014).

23 IPCC, 2007: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

24 Climate Change Central Department and Egyptian Environmental Affairs Agency, Ministry of State for Environmental Affairs, 'Egypt National Environmental, Economic and Development Study (NEEDS) for Climate Change Under the UNFCCC', 2010, available at https://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/egypt_final_report_needs.pdf (accessed 2 September 2014).

25 El-Sadek, 'Virtual Water Trade as a Solution for Water Scarcity in Egypt'.

26 B. Gersfelt, *Allocating Irrigation Water in Egypt*, Case Study 8-4 of the Program: Food Policy in Developing Countries: The Role of Government in the Global Food System (Ithaca, NY: Cornell University, 2007).

27 FAO 2007, cited in Doaa E. El-Agha et al., 2010, 'Performance Assessment of Irrigation Water Management in Old Lands of the Nile Delta of Egypt', *Irrigation and Drainage Systems*, vol. 25 (2010), pp. 215–36.

28 Hassan R. El-Ramady et al., 2013, 'Sustainable Agriculture and Climate Change in Egypt', *Sustainable Agriculture Reviews,* vol. 12 (2013), p. 76.

29 P. Weber and J. Harris, 'Egypt and Food Security', *Al-Ahram Weekly Online*, 23 October 2008, available at http://weekly.ahram.org.eg/2008/919/sc6.htm (accessed 2 September 2014).

30 Janpeter Schilling et al., 'Vulnerability to Environmental Risks and Effects on Community Resilience in Mid-West Nepal and South-East Pakistan', *Environment and Natural Resources Research*, vol. 3, no. 4 (2013).

31 Christopher Cramer, 'Does Inequality Cause Conflict?', *Journal of International Development*, vol. 15, no. 4 (2003), pp. 397–412.

32 Tadjoeddin et al., 'Routine Violence in Java, Indonesia: Neo-Malthusian and Social Justice Perspectives'.

33 Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2012 Revision*.

34 K. Grace, S.H. Sweeney and D.L. Carr, 'A Spatial and Temporal Analysis of Fertility in Guatemala', Papers of the 2008 Population Association of America Annual Conference, 2008.

35 *The World Factbook* 2013-14. Washington, DC: Central Intelligence Agency, 2013.

36 Grace, Sweeney and Carr, 'A Spatial and Temporal Analysis of Fertility in Guatemala.'

37 *Ibid.*

38 Liza Grandia, 'Appreciating the Complexity and Dignity of Peoples' Lives: Integrating Population-Health-Environment Research in Petén, Guatemala', Woodrow Wilson International Center for Scholars, Environmental Change and Security Program, Focus on Population, Environment and Security, issue 10, November 2005.

39 Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2012 Revision*.

40 US Customs and Border Protection, 'Southwest Border Unaccompanied Alien Children', available at http://www.cbp.gov/newsroom/stats/southwest-border-unaccompanied-children (accessed 2 September 2014).

41 Small Arms Survey Research Notes, 'Femicide: A Global Problem', no. 14, February 2012.

42 United Nations Office on Drugs and Crime Homicide Statistics 2012.

43 International Institute for Strategic Studies, Armed Conflict Database, available at http://acd.iiss.org/en/conflicts/central-america--northern-triangle-7a52 (accessed 2 September 2014).

44 USAID Country Profile: Property Rights and Resource Governance, Guatemala, available at http://usaidlandtenure.net/sites/default/files/country-profiles/full-reports/USAID_Land_Tenure_Guatemala_Profile_0.pdf (accessed 2 September 2014).

45 Peter Läderach, Jeremy Haggar, Charlotte Lau, Anton Eitzinger, Oriana Ovalle, Maria Baca, Andy Jarvis, and Mark Lundy, 'Mesoamerican Coffee: Building a Climate Change Adaptation Strategy. CIAT policy brief No 2. CIAT, Cali, Colombia, 2013.

46 FAO, WFP and IFAD, 'The State of Food Insecurity in the World 2012. Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition', Rome, 2012.

47 Shiloh Fetzek, 'Climate-related Impacts on National Security in Mexico and Central America', Royal United Services Institute, October 2009; G.O. Magrin, J.A. Marengo, J.-P. Boulanger, M.S. Buckeridge, E. Castellanos, G. Poveda, F.R. Scarano and S. Vicuña, 'Central and South America', in IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge and New York: Cambridge University Press, 2014), pp. 1499–1566.

48 IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*.

49 *Ibid.*

50 K. Harris, D. Keen and T. Mitchell, 'When Disasters and Conflicts Collide: Improving Links between Resilience and Conflict Prevention' (London: Overseas Development Institute, 2013).

51 J. Kellet and D. Sparks, 'Disaster Risk Reduction: Spending Where it Should Count', in *Global Humanitarian Assistance* (Sommerset, UK: Development Initiatives, 2012).

52 Harris, Keen and Mitchell, 'When Disasters and Conflicts Collide: Improving Links between Resilience and Conflict Prevention'.

53 Simon Levine, Katie Peters and Lilianne Fan, 'Conflict, Climate Change and Politics: Why a Techno-Centric Approach Fails the Resilience Challenge' (London: Overseas Development Institute, 2014).

54 IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*.

55 Henrik Urdal, 'The Devil in the Demographics: The Effect of Youth Bulges on Domestic Armed Conflict, 1950–2000', Social Development Papers, Conflict Prevention & Reconstruction, The World Bank, 2004.

56 Alex de Sherbinin, David Carr, Susan Cassels and Leiwen Jiang, 'Population and Environment', *Annual Review of Environment and Resources*, vol. 32, November 2007, pp. 345–73, available at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2792934/ (accessed 9 September 2014).

57 Leslie C. Gray and William G. Moaeley, 'A Geographical Perspective on Poverty–Environment Interactions', *Geographical Journal*, vol. 171, no. 1, March 2005, pp. 9–23.

58 De Sherbinin et al., 'Population and Environment'.

59 Robert Engleman and Tom Gardner-Outlaw, 'Sustaining Water: Population and the Future of Renewable Water Supplies', Population Action International, 1998, available at http://www.populationaction.org/wp-content/uploads/2012/01/Sustaining_Water_Easing_Scarcity_-_Full_Report.pdf (accessed 9 September 2014).

60 Ragui Assaad and Farzaneh Roudi-Fahimi, 'Youth in the Middle East and North Africa: Demographic Opportunity or Challenge?', Population Reference Bureau, 2007.

61 Patrick Gerland, Adrian E. Raftery, Hana Ševčíková, Nan Li, Danan Gu, Thomas Spoorenberg, Leontine Alkema, Bailey K. Fosdick, Jennifer Chunn, Nevena Lalic, Guiomar Bay, Thomas Buettner, Gerhard K. Heilig and John Wilmoth, 'World Population Stabilization Unlikely This Century', *Science,* 18 September 2014, DOI: 10.1126/science.1257469.

62 Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2012 Revision*.

63 Jack A. Goldstone, Mongy G. Marshall and Hilton Root, 'Demographic Growth in Dangerous Places: Concentrating Conflict Risks', *International Area Studies Review*, vol. 17, no. 2, June 2014, pp. 120–33.

64 Thokozile Ruzvidzo, 'Creating and Capitalizing on the Demographic Dividend for Africa', United Nations Economic Commission for Africa (ECA) and African Union Commission (AUC), 2013, available at http://www.gatesinstitute.org/sites/default/files/Issues%20Paper%20-%20Creating%20and%20Capitalizing%20on%20the%20Demographic%20Dividend%20for%20Africa_En.pdf (accessed 16 July 2014).

65 Goldstone, Marshall and Root, 'Demographic Growth in Dangerous Places: Concentrating Conflict Risks'.

66 Isabel Ortiz and Matthew Cummins, 'When the Global Crisis and Youth Bulge Collide, Double the Jobs Trouble for Youth', Social and Economic Policy Working Paper, UNICEF Policy and Practice, February 2012.

67 Marc Sommers, 'Governance, Security and Culture: Assessing Africa's Youth Bulge', *International Journal of Conflict and Violence*, vol. 5, no. 2, 2011.

68 Urdal, 'The Devil in the Demographics: The Effect of Youth Bulges on Domestic Armed Conflict, 1950–2000'.

69 Richard Cincotta, Robert Engelman & Daniele Anastasion, 'The security demographic: Population and civil conflict after the Cold War', Population Action International, 2003.

70 Conflicts defined as causing at least 25 civilian deaths. Elizabeth Leahy, 'The Shape of Things to Come: Why Age Structure Matters to a Safer, More Equitable World', Population Action International, 2012, available at http://www.populationaction.org/wp-content/uploads/2012/01/SOTC.pdf (accessed 11 July 2014).

71 Urdal, 'The Devil in the Demographics: The Effect of Youth Bulges on Domestic Armed Conflict, 1950–2000'.

72 Henrik Urdal, 'A Clash of Generations? Youth Bulges and Political Violence', United Nations Expert Group Meeting on Adolescents, Youth and Development, Population Division, Department of Economic and Social Affairs, 22 July 2011, available at http://www.un.org/esa/population/meetings/egm-adolescents/p10_urdal.pdf (accessed 15 July 2014).

73 Gerhard K. Heilig, 'Strategic Implications of Demographic Change in Asia', presentation at the US Naval War College, 25 May 2012, available at http://esa.un.org/unpd/wpp/ppt/Naval-War-College/WPP_2010_Naval-War-College_4.pdf (accessed 15 July 2014).

74 Sommers, 'Governance, Security and Culture: Assessing Africa's Youth Bulge'.

75 Henrik Urdal and Kristian Hoelscher, 'Urban Youth Bulges and Social Disorder, an Empirical Study of Asian and Sub-Saharan African Cities', Policy Research Working Paper, The World Bank Africa Region Post Conflict & Social Development Unit, November 2009.

76 G.B. Indrarto et al., 'The Context of REDD+ in Indonesia: Drivers, Agents and Institution', CIFOR Working Paper 92, 2012, available at http://www.cifor.org/publications/pdf_files/WPapers/WP92Resosudarmo.pdf (accessed on 5 September 2014).

77 Julian Caldecott et al., 'Indonesia–Norway REDD+ Partnership: First Evaluation of Deliverables – Final Report', Gaia Consulting, Jakarta, Indonesia, 2011.

78 C. Barr et al., 'Financial Governance and Indonesia's Reforestation Fund during the Soeharto and Post-Soeharto Periods, 1989–2009: A Political Economic Analysis of Lessons for REDD+', 2010, available at http://www.cifor.org/publications/pdf_files/OccPapers/OP-52.pdf (accessed on 7 December 2014).

79 Indrarto et al., 'The Context of REDD+ in Indonesia: Drivers, Agents and Institution'.

80 UNFPA, 2014, available at http://indonesia.unfpa.org/.

81 *Ibid.*

82 M. Measey, 'Indonesia: A Vulnerable Country in the Face of Climate Change', *Global Majority E-Journal*, vol. 1, no. 1, June 2010, pp. 31–45, available at https://www.american.edu/cas/economics/ejournal/upload/global_majority_e_journal_1-1_measey.pdf (accessed on 5 September 2014).

83 CIA World Factbook: Indonesia, available at https://www.cia.gov/library/publications/the-world-factbook/geos/id.html (accessed on 5 September 2014).

84 Tadjoeddin et al., 'Routine Violence in Java, Indonesia: Neo-Malthusian and Social Justice Perspectives'.

85 *Ibid.*

86 Indrarto et al., 'The Context of REDD+ in Indonesia: Drivers, Agents and Institution'.

87 World Bank, *Sustaining Indonesia's Forests: Strategy for the World Bank, 2006–2009*, 2006, available at http://siteresources.worldbank.org/INTINDONESIA/Resources/Publication/280016-115287963030/IDForestStratgey.pdf (accessed on 5 September 2014).

88 IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. See http://unfccc.int/meetings/cop_13/items/4049txt.php for further details and reports.

89 Measey, 'Indonesia: A Vulnerable Country in the Face of Climate Change'.

90 Tadjoeddin et al., 'Routine Violence in Java, Indonesia: Neo-Malthusian and Social Justice Perspectives'.

91 Urdal, 'The Devil in the Demographics: The Effect of Youth Bulges on Domestic Armed Conflict, 1950–2000'.

92 Ortiz and Cummins, 'When the Global Crisis and Youth Bulge Collide, Double the Jobs Trouble for Youth'.

93 International Labour Organization, 'World of Work Report 2011, Making Markets Work for Jobs', available at http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_166021.pdf (accessed 30 September 2014).

94 Noah Q. Bricker and Mark C. Foley, 'The Effect of Youth Demographics on Violence: The Importance of the Labor Market', *International Journal of Conflict and Violence*, vol. 7, issue 1, 2013.

95 Urdal, 'A Clash of Generations? Youth Bulges and Political Violence'.

96 Sommers, 'Governance, Security and Culture: Assessing Africa's Youth Bulge'.

97 Goldstone, Marshall and Root, 'Demographic Growth in Dangerous Places: Concentrating Conflict Risks'.

98 International Labour Organization, 'Global Employment Trends for Youth 2013: A Generation at Risk', available at http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_212423.pdf (accessed 18 August 2014).

99 Tighisti Amare, 'Africa's High Youth Unemployment: Is Population to Blame?', *Guardian,* 11 July 2014, available at http://www.theguardian.com/global-development-professionals-network/2014/jul/11/africa-youth-unemployment-population-growth (accessed 2 August 2014).

100 Bilal Barakat and Henrik Urdal, 'Breaking the Waves? Does Education Mediate the Relationship between Youth Bulges and Political Violence?', World Bank Policy Research Working Papers, November 2009.

101 *Ibid.*

102 Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2012 Revision*, 2012.

103 Clionadh Raleigh and Henrik Urdal, 'Climate Change, Demography, Environmental Degradation and Armed Conflict', New Directions in Demographic Security, Environmental Change and Security Program Report, The Wilson Center, issue 13, 2008–09.

104 Sommers, 'Governance, Security and Culture: Assessing Africa's Youth Bulge'.

105 Urdal and Hoelscher, 'Urban Youth Bulges and Social Disorder, an Empirical Study of Asian and Sub-Saharan African Cities'.

106 Population Reference Bureau (PRB), *World Population Data Sheet* (Washington DC: PRB, 2012).

107 Central Bureau of Statistics (CBS), *Report of 1998/99 Labour Force Survey* (Nairobi: Government Printer, 2003).

108 Population Reference Bureau (PRB), *World Population Data Sheet*.

109 B. Munga and E. Onsomu, 'State of Youth Unemployment in Kenya', Brookings, Washington DC, 2014, available at http://www.brookings.edu/blogs/africa-in-focus/posts/2014/08/21-state-of-youth-unemployment-kenya-munga (accessed on 9 September 2014).

110 Margaret N. Mwangi and Paul V. Desanker, 'Changing Climate, Disrupted Livelihoods: The Case of Vulnerability of Nomadic Maasai Pastoralism to Recurrent Droughts in Kajiado District, Kenya', paper for the American Geophysical Union Fall Meeting, San Francisco, CA, 10–14 December, 2007.

111 AFIDEP and PAI, 'Population, Climate Change, and Sustainable Development in Kenya', African Institute for Development Policy (AFIDEP) and Population Action

International (PAI), Nairobi and Washington DC, 2012.

112 Mercycorps, 'Understanding Political Violence Among Youth: Evidence from Kenya on the Links between Youth, Economic Independence, Social Integration, and Stability', 2011, available at http://www.mercycorps.org.uk/sites/default/files/research_brief_-_kenya_youth_and_conflict_study_0.pdf (accessed on 9 September 2014).

113 *Ibid.*

114 Beth Njeri Njiru, 'Climate Change, Resource Competition, and Conflict amongst Pastoral Communities in Kenya', in Schefran et al. (eds): *Climate Change, Human Security and Violent Conflict, Hexagon Series on Human and Environmental Security and Peace*, vol. 24 (Berlin and Heidelberg: Springer, 2012), pp. 513–27.

115 CIA World Factbook: Kenya, available at https://www.cia.gov/library/publications/the-world-factbook/geos/ke.html (accessed on 2 October 2014).

116 P. Patel, B. Imo and G. Mbagaya, 'Impact of Climate Change on Food and Nutrition Security in Kenya', *International Journal of Current Research*, vol. 4, no. 1, 2012, pp. 242–48.

117 IPCC (Intergovernmental Panel on Climate Change) [Stephen H. Schneider, Serguei Semenov and Anand Patwardhan], 'Assessing Key Vulnerabilities and the Risk from Climate Change', in IPCC (ed.), *Climate Change: Impacts, Adaptation and Vulnerability* (Cambridge: Cambridge University Press, 2007), pp. 779–810.

118 Beth Njeri Njiru, 'Climate Change, Resource Competition, and Conflict amongst Pastoral Communities in Kenya', in Schefran et al. (eds): *Climate Change, Human Security and Violent Conflict, Hexagon Series on Human and Environmental Security and Peace*, vol. 24 (Berlin and Heidelberg: Springer, 2012), pp. 513–27.

119 Food and Agricultural Organization of the United Nations, 'Country Profile: Kenya', Rome, 2010.

120 AFIDEP and PAI, 'Population, Climate Change, and Sustainable Development in Kenya'.

121 Harris, Keen and Mitchell, 'When Disasters and Conflicts Collide: Improving Links between Resilience and Conflict Prevention'.

122 *Ibid.*

Shiloh Fetzek
Consulting Research Associate for Climate Change and Security, International Institute for Strategic Studies

Janani Vivekananda
Head of Environment, Climate Change and Security, International Alert

The International Institute for Strategic Studies
Arundel House, 13–15 Arundel Street,
Temple Place, London WC2R 3DX, UK
Tel: +44 (0) 20 7379 7676
Fax: +44 (0) 20 7836 3108
Email: iiss@iiss.org
www.iiss.org