

Executive Summary

"Competition between communities and countries for scarce resources, especially water, is increasing, exacerbating old security dilemmas and creating new ones, while environmental refugees are reshaping the human geography of the planet, a trend that will only increase as deserts advance, forests are felled and sea levels rise." By formulating such a strong statement during the July 2011 debate on climate change and security in the UN Security Council, UN Secretary-General Ban Ki-moon underscored the urgent need to assess the implications of climate change for conflicts and environmentally induced migration.

Dubbed "ground zero" for climate change due to its extreme climatic conditions and highly vulnerable population, the Sahel has faced massive population growth, pervasive poverty, food insecurity, and chronic instability for decades. With a majority of the population directly dependent on natural resources for its livelihood, the predicted impacts of climate change for resource availability and food security in the region could be dramatic.

A mission undertaken to the Sahel in June 2008 by Jan Egeland, then Special Advisor to the UN Secretary-General for Conflict Prevention and Resolution, highlighted three main risks: (i) the threat posed by the potential impacts of climate change for livelihoods, in particular for livelihoods that are dependent on natural resources, such as farming, fishing and herding; (ii) increasing migration pressures due to disasters, conflicts and the associated loss of livelihoods; and (iii) escalating tension and potential conflicts over increasingly scarce natural resources, coupled with the availability of small arms and light weapons.

These findings called for further research and analysis on historical climate trends in the Sahel, in order to understand more about how livelihoods were being affected, what coping mechanisms were emerging, and how these changes related to behavioural responses such as conflict and migration. This report, which was authored by the UN Environment Programme (UNEP) in cooperation with the International Organization for Migration (IOM), the

Office for the Coordination of Humanitarian Affairs (OCHA) and the United Nations University (UNU), as well as the Permanent Interstate Committee for Drought Control in the Sahel (CILSS), provides an initial response to this call.

Aimed at supporting policy and decision-makers in the Member States of the region, adaptation and peacebuilding practitioners worldwide, as well as ongoing international climate change negotiations, this study has two complementary objectives: (i) to analyze the historical climate trends in the region, identify hotspots, and determine the potential implications for natural resource-dependent livelihoods; and (ii) to provide recommendations for improving conflict and migration sensitivity in adaptation planning, investments and policies across the region.

The report presents the findings of a unique mapping process analyzing climate trends over a 24 to 36-year period in 17 countries, from the Atlantic coast to Chad. The nine countries represented by CILSS – Burkina Faso, Cape Verde, Chad, the Gambia, Guinea-Bissau, Mali, Mauritania, Niger and Senegal – determined the core geographical scope of the study. However, given the transboundary nature of climate change, as well as migratory patterns and economic trade in these countries, eight neighbouring members of the Economic Commission of West African States (ECOWAS) – Benin, Côte d'Ivoire, Ghana, Guinea, Liberia, Nigeria, Sierra Leone and Togo – are also included in the analysis.

The maps, which were produced through a technical cooperation with the University of Salzburg's Centre for Geoinformatics, focus on four climate indicators based on the best available data: precipitation (1970-2006), temperature (1970-2006), occurrence of drought (1982-2009), and occurrence of flooding (1985-2009). The potential impact of projected sea-level rise in the region is also mapped. The data is then combined to identify potential "hotspots," including areas where the most extreme changes in the four individual climate indicators have taken place, as well as areas where the most cumulative change in these four climate indicators has occurred. Each map includes two

additional layers showing population trends and conflict occurrence during the same time periods.

On the basis of the research described above, this study examines the relationship between climate change, migration, and conflict, highlighting areas of particular interest or where further research is needed. In no way does it argue that climate change acts as a single and isolated factor in migration or conflict, nor does it attempt to show a direct causal link between these three issues. Climate change, migration and conflict, rather, are interlinked through complex influencing factors that include economic, social and political issues.

On the strength of the findings of the mapping process and information gathered from existing literature, case studies and field observation, as well as an overview of existing adaptation plans in the countries of concern, this report reaches five main conclusions. As a result, seven principal recommendations are presented to national, regional and international policy and decision-makers, as well as adaptation practitioners in the region. The UN system can also address many of the issues highlighted in the recommendations through its specialized agencies and programmes. The conclusions and recommendations are summarized below.

Conclusions

Significant changes in regional climate trends detected

1) **The regional climate trends observed over the last 40 years in the Sahel show that overall temperatures have risen, droughts have been recurrent and severe, rainfall has generally increased, and floods have occurred more frequently and with more intensity:** There has been a general increase in mean temperature in the region since 1970, with half the population in the CILSS countries experiencing an increase of between 0.5-1°C, and 15 per cent an increase of more than 1°C. Precipitation has also increased in some parts of the region since the early 1970s, although the mean seasonal rainfall is still below the long-term average from 1900 to 2009. Flooding has increased in frequency and severity, affecting large numbers of people in the region: 54 per cent of the CILSS

population has faced five or more floods since 1985. The area has experienced recurrent and severe drought since the 1970s, which has had a very significant impact on livelihoods. Finally, it is estimated that sea-level rise of up to one metre would directly affect over three million people in the region.

- 2) **Changes in the regional climate are impacting issues linked to the availability of natural resources essential to livelihoods in the region, as well as food insecurity. Along with important social, economic and political factors, this can lead to migration, conflict or a combination of the two:** Changes in climate most impact livelihoods that are directly dependent on natural resources, for example through a decrease in agricultural yields, the gradual unsuitability of traditional grazing grounds, or the drying of important water bodies. Livelihood vulnerability, however, is also linked to many non-climate factors, such as unequal land distribution, insecure land tenure, poorly developed markets, existing trade barriers and inadequate infrastructure. Underlying all of these factors is the role of governance in planning and regulating development, ensuring access to land, providing infrastructure support to mitigate risks from sudden-onset disasters, and promoting livelihood diversification.
- 3) **The migration and movement of people and livestock are an integral part of ancestral livelihood strategies in the region. However, migration also occurs as a result of traditional and non-traditional livelihoods no longer being viable, due to changes in the environment:** Seasonal and circular migration can be considered as traditional adaptation strategies to climate variability in the region, offering opportunities for trade and the exchange of ideas. However, these traditional migration patterns are increasingly being replaced by a more permanent southward shift. In addition, the increased frequency and severity of climate-related disasters – such as floods and drought – could lead to more permanent migration over time. Urbanization, partly due to rural-urban migratory flows, is also a defining trend in the region.
- 4) **The impacts of changing climatic conditions on the availability of natural resources, coupled**



Livelihoods that depend on natural resources, such as this herder in the grasslands of Mali, are particularly vulnerable to changes in the climate

with factors such as population growth, weak governance and land tenure challenges, have led to increased competition over scarce natural resources – most notably fertile land and water – and resulted in tensions and conflicts between communities and livelihood groups: Northern pastoralists, for example, have pushed further southwards into regions used by sedentary farmers, while increasing demand for food has meant that farmers have expanded cultivation into lands used primarily by pastoralists. Livelihood diversification, a key response to environmental changes that have affected the viability of traditional livelihoods, has also placed different groups in direct competition with each

other over land and water, leading to local-level tension and conflict. Finally, changes in climatic conditions affect food security by impacting local food production and the availability of staples. In combination with rising commodity prices, food insecurity in turn increases the risk of social unrest and conflict.

- 5) A number of adaptation policies in the region recognize the linkages between changing climatic conditions and behavioural responses such as migration and conflict, but few so far have included provisions addressing these risks. Systematically considering these issues in adaptation planning can reduce conflict and

migration risk, help prioritize adaptation investments and strengthen climate change adaptation capacity: Neglecting the factors that can trigger conflict and migration can result in adaptation policies that compound the risks posed by the climatic conditions they aim to mitigate and threaten development gains. Conversely, adaptation policies that reduce livelihood vulnerability, promote alternatives, improve the quality and quantity of natural resources, and decrease resource competition can reduce migratory pressures and minimize the threat of conflict. Incorporating conflict and migration sensitivities into adaptation policies can also help prioritize the most vulnerable areas for targeted adaptation programming and investment of adaptation funding. Finally, building on existing capacity for conflict and migration management, such as regional structures with conflict prevention, migration management or disaster risk reduction mandates, can strengthen adaptation capacity and improve efficiency, which is important in light of the capacity constraints of many countries in the region.

Recommendations

Major investments in climate change adaptation should be used to reduce the risk of conflict and forced migration

- 1) **Conduct follow-up field assessments in the hotspots identified in this study, using a livelihoods approach:** Livelihoods provide a clear stepping stone between climate change and conflict risk, as well as between climate change and migration. A livelihoods approach is therefore well suited for follow-up field assessments that should determine how resource availability is changing; how livelihoods and food security are being affected; what coping strategies or adaptation measures are being adopted; whether competition between livelihood groups over scarce resources is increasing, and whether this a contributing factor in local-level conflicts or migration decisions; and what specific technical and financial support are needed to increase livelihood resilience to changing climatic conditions in the region, thereby reducing conflict risk and forced migration.
- 2) **Adopt climate change adaptation policies that are migration and conflict-sensitive:** Adaptation policies and programmes that aim to reduce livelihood vulnerability, promote alternatives, and improve the availability and access to natural resources can mitigate the drivers of migration and conflict and help secure development gains. A comprehensive conflict analysis engaging local communities should be conducted before designing and implementing climate change adaptation strategies, in order to fully understand and integrate local and regional conflict dynamics. In addition, the positive role of migration should also be considered, particularly for communities facing less advanced stages of environmental degradation. Finally, the benefits of climate change adaptation policies should be carefully considered across social groups so that they do not reinforce inequalities, for example with regard to ethnicity or gender.
- 3) **Root national adaptation strategies in the “green economy” and promote the creation of “green jobs”:** A green economy aims to improve human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. Employment opportunities and enhanced food security resulting from improved agricultural productivity based on sustainable practices, for example, could increase resilience to climate stressors and reduce local tensions and forced displacement. Adaptation policies should therefore consider “green farming” practices, including “climate proofing” agriculture and integrating traditional farming methods with resource-efficient techniques. It is furthermore important to prioritize investments that benefit the local environment and improve ecosystem services, as it is these services on which the poorest people rely on for their livelihoods. New employment opportunities should also focus on increasing the use of local labour, thus diversifying options for income and reducing vulnerability to changes in natural resource availability.
- 4) **Promote regional environmental cooperation in addressing climate change, migration and conflict:** Issues of climate change and migration are regional in nature, and as such should not only be managed at the national level, as is most commonly the case today. Likewise many

cases of conflict in the region are transboundary, as competition for scarce natural resources pushes various groups beyond national borders in search of improved livelihood conditions. These issues should therefore increasingly be addressed through regional cooperation, including through regional institutions like CILSS and ECOWAS, as well as the African Union. UN organizations should also strengthen their cooperation with these regional structures. In addition, it is important that national laws and policies on natural resources and environmental issues be harmonized across the region, in order to avoid inconsistencies or discrepancies between neighbouring countries that could lead to increased pressure on natural resources in areas with weaker legislation.

- 5) **Strengthen preventive action, resource rights and dispute resolution:** Early action on the environmental drivers of crises can help prevent and defuse both imminent threats and broader instability. Dispute resolution should be promoted by building local, national and international capacity to conduct mediation between conflicting parties where tensions are linked to natural resources. Traditional conflict mediation practices should also be adapted to the new realities on the ground as a result of changes taking place in the climate and local environment. Furthermore, clarifying resource rights and land tenure is a prerequisite for effective national and local-level governance. When doing so, national or regional authorities need to consider potential conflicts between national and local/traditional governance structures and, where possible, build on existing and accepted dispute resolution mechanisms. Follow-up to this study should focus specifically on identifying the most vulnerable and conflict-prone communities and livelihoods. As a first step, the hotspots identified in the mapping process presented in this report can be used to inform and prioritize adaptation planning in the region.
- 6) **Prioritize systematic data collection and early warning systems:** Systematic collection of climate data should be established and improved throughout the region, notably through weather stations set up within the various microclimates. Indicators should further be identified and mechanisms established to systematically col-

lect data on small-scale and localized conflicts in the region, capturing the various causes and triggers. Surveys should also be conducted directly with migrants in order to better understand reasons behind the decision to migrate. The collection of the different datasets should preferably be mandated under one specific regional organization, building on existing structures within CILSS or ECOWAS, for example, and supported by national institutions and the international community. Finally, early warning systems can help defuse livelihood insecurities by providing the information required to mitigate disaster risk, food insecurity and related conflict and migration outcomes. Environmental and natural resource issues should thus be included in international and regional conflict early warning systems in order to support preventive action and encourage environmental cooperation.

- 7) **Use conflict and/or migration risk to prioritize investments and build donor commitment to long-term engagement in the Sahel:** Addressing climate change impacts on livelihoods in the Sahel requires long-term financial commitment and improved coordination of investments. Identified conflict and migration risks from climate change impacts on livelihoods and food security can help prioritize programming and funding in the region. Existing climate change adaptation funding sources – such as the UNFCCC’s Green Fund, the Reducing Emissions from Deforestation and Forest Degradation (REDD and REDD+), and the Clean Development Mechanism (CDM) – should be used to address the emerging issues highlighted in this report. The total estimated cost of the immediate next steps recommended in this study is approximately USD 12 million. This includes capacity-building for national and regional authorities in integrating migration and conflict sensitivities into adaptation planning; establishing and maintaining stand-by mediation capacity; establishing a grid of weather stations; conducting ten follow-up assessments in the hotspots identified by this study to quantify conflict and migration pressures from changing natural resources; and initial resources to collect migration and conflict data systematically and down to the local level.