



REPORT ON THE IMPACT OF CLIMATE CHANGE ON MIGRATION

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A REPORT BY

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I. INTRODUCTION

The climate crisis is reshaping our world, as the Earth’s climate is now changing faster than at any point in the history of modern civilization.¹ Defined by changes in average weather conditions that persist over multiple decades or longer, climate change includes changes in temperature, precipitation patterns, the frequency and severity of certain weather events, and other features of the climate system.² When combined with physical, social, economic, and/or environmental vulnerabilities, climate change can undermine food, water, and economic security. Secondary effects of climate change can include displacement, loss of livelihoods, weakened governments, and in some cases political instability and conflict.

In recognition of this, on February 9, 2021, President Biden signed Executive Order (E.O.) 14013, “Rebuilding and Enhancing Programs to Resettle Refugees and Planning for the Impact of Climate Change on Migration,” in which he directed the National Security Advisor to prepare a report on climate change and its impact on migration. This report marks the first time the U.S. Government is officially reporting on the link between climate change and migration.

The United Nations High Commissioner for Refugees (UNHCR) reports that an average of 21.5 million people were forcibly displaced each year by sudden onset weather-related hazards between 2008 and 2016, and thousands more from slow-onset hazards linked to climate change impacts.³ Policy and programming efforts made today and in coming years will impact estimates of people moving due to climate related factors. Tens of millions of people, however, are likely to be displaced over the next two to three decades due in large measure to climate change impacts.

Migration in response to climate impacts may range from mobility as a proactive adaptation strategy to forced displacement in the face of life-threatening risks. This mobility may occur within or across international borders. Specifically, one model forecasts that climate change may lead to nearly three percent of the population (totaling more than 143 million people) in three regions – Sub-Saharan Africa, South Asia, and Latin America – to move within their country of origin by 2050.⁴ To date, this mobility has been mostly internal and increasingly an urban phenomenon, with many of those displaced and migrating moving to urban areas. Although most people displaced or migrating as a result of climate impacts are staying within their countries of origin, the accelerating trend of global displacement related to climate impacts is increasing cross-border movements, too, particularly where climate change interacts with conflict and violence.⁵

As the effects of climate change intensify, it is important to understand the underlying factors that may mitigate or exacerbate migration, and develop strategies to both proactively and humanely manage these impacts and be considered in the context of any geographic or environmental factors that would contribute disproportionately to the destabilization of economically or politically important regions.

¹ Jay, A., D.R. Reidmiller, C.W. Avery, D. Barrie, B.J. DeAngelo, A. Dave, M. Dzaugis, M. Kolian, K.L.M. Lewis, K. Reeves, and D. Winner, 2018: Overview. In “Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II” [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 33–71. doi: 10.7930/NCA4.2018.CH1

² Ibid

³ UNHCR, “Frequently asked questions on climate change and disaster displacement,” (<https://www.unhcr.org/en-us/news/latest/2016/11/581f52dc4/frequently-asked-questions-climate-change-disaster-displacement.html>).

⁴ Rigaud KK, De Sherbinin A, Jones B, Bergmann J, Clement V, Ober K et al (2018) “Groundswell: Preparing for internal climate migration.” The World Bank, Washington, D.C., (<https://doi.org/10.7916/D8Z33FNS>).

⁵ See UNHCR’s Global Trends Report 2020, page 26, which cites IDMC and the Notre Dame Global Adaptation Index, and states that “95 per cent of all conflict displacements in 2020 occurred in countries vulnerable or highly vulnerable to climate change. Disasters can also strike populations already uprooted by conflict, forcing them to flee multiple times, as was the case with IDPs in Yemen, Syria and Somalia and refugees in Bangladesh,” (<https://www.unhcr.org/60b638e37/unhcr-global-trends-2020>).

Climate migration or climate displacement are terms that describe a multitude of climate change related migration scenarios.⁶ Each, however, has a more specific meaning, and both are distinct from planned relocation. Migration may be temporary, seasonal, circular, or permanent and may be forced by increasingly severe conditions or occur as a proactive strategy in the face of climate impacts to livelihoods and wellbeing. Planned relocation is, generally, a relocation of an entire community made by relevant governments and, ideally, in partnership with affected communities.

Climate change related-migration, as used in this report, is an umbrella term describing the spectrum of climate change's relationship with human mobility—including the circumstances of “trapped populations” for whom migration is not an option despite exposure to climate-related threats. Even in the United States, one extreme event can result in a relatively high degree of permanent relocation of low-income populations exposed to chronic and worsening conditions over time.⁷

From those forced to move to those left behind, U.S. policy can aid in supporting human security by, among other things, building on existing foreign assistance to a reconsideration and development of legal mechanisms to support those who migrate. While this report focuses on international climate change-related migration, domestic climate-change related displacement is also a current and future security risk as sea-level rise, permafrost thaw, drought, and wildfires threaten U.S. populations.⁸

The use of U.S. foreign assistance is one lever to respond to climate change related migration. The foreign assistance infrastructure brings together a powerful combination of tools, including development and humanitarian assistance funding, convening power, technical expertise, capacity building, and partnerships to address many elements of the complex issues of climate change and migration. However, current funding levels, structure, and coordination of U.S. foreign assistance is inadequate to meet the challenge of comprehensively addressing climate-related migration and displacement. Looking forward, it is vital for the United States Government (USG) to focus on the complex interplay between climate change and migration, rather than approaching these as separate issue sets.

It is also critical to support people who desire to stay as long and as safely as possible in their home areas through investments in disaster risk reduction (DRR) measures and local adaptation, including capacity building to assist countries with managing environmental risks and land use. When migration presents as the preferable form of adaptation, or in situations when people are forced to flee the impacts of climate change, the United States has a compelling national interest in strengthening global protection for these displaced individuals and groups. Those protections are rooted in humanitarian objectives and inextricably linked to U.S. interests in safe, orderly, and humane migration management, regional stability, and sustainable economic growth and development.

Often, the individuals most at risk are the least able to relocate. Resilience and adaptation plans must consider accessibility, child protection, disability rights, gender equity, Indigenous rights, and protection needs for populations in vulnerable situations. To assure equity and inclusion, consultations with individuals and communities vulnerable to climate change should inform the United States' responses and plans to address the climate change impacts on migration. Any planned relocations must respect and maintain household, community, social cohesion, and kinship ties and avoid separating families.

⁶ In the media and popular discourse, “climate refugees” is a commonly used term. As discussed below, the term “refugee” has a specific legal definition, with the rights and duties of migrants and relevant governments, respectively, stipulated. While there are some climate change related migration scenarios that are consistent with the refugee definition, most scenarios are not currently recognized under most domestic, regional or international refugee and asylum laws. Scenarios in which the 1951 Refugee Convention and its 1967 Protocol might protect the climate migrant as discussed below. There are a multitude of scenarios that might be unique to climate-related migration, spurred by slow- or sudden-onset events or violence or conflict due to resource insecurity that triggers movement. Walter Kälin and Nina Schrepfer, “Protecting People Crossing Borders in the Context of Climate Change: Normative Gaps and Possible Approaches,” Legal and Protection Policy Research Series, UNHCR, Division of International Protection, Feb. 2012, PPLA/2012/.

⁷ Fussell, E. (2018) “Routledge Handbook of Environmental Displacement and Migration, Population displacements and migration patterns in response to Hurricane Katrina,” (<https://www.taylorfrancis.com/chapters/edit/10.4324/9781315638843-22/population-displacements-migration-patterns-response-hurricane-katrina-elizabeth-fussell>).

⁸ Burkett, M; Bavishi, J; Shew, E. 2017. “Climate Displacement, Migration, and Relocation: And the United States,” *Climate Law* 7 (4) 227-231, (<https://heinonline.org/HOL/Page?handle=hein.journals/climatla7&id=237&collection=journals&index=>).

Existing legal instruments to protect displaced individuals are limited in scope and do not readily lend themselves to protect those individuals displaced by the impacts of climate change, especially those that address migration across borders. Given the growing trend in displacement related to climate change, expanding access to protection will be vital. The United States will need to strengthen the application of existing protection frameworks, adjust U.S. protection mechanisms to better accommodate people fleeing the impacts of climate change, and evaluate the need for additional legal protections for those who have no alternative but to migrate.

The United States is in a unique position to build on and integrate longstanding local, regional, and international multilateral mechanisms and initiatives to strengthen global commitment and cooperation to more effectively address migration impacted by climate change. While multilateral engagement on this issue is not new, too often these multilateral mechanisms and initiatives lack consistency, coherence, synergies, and complementarity in addressing climate change related migration.

Effectively addressing migration impacted by climate change will require action from all stakeholders, including ensuring people most affected can make informed decisions in response to the effects of climate change. There are valuable upcoming opportunities through which the United States can assert a bold leadership role, innovatively and smartly shaping multilateral outcomes affecting our national security and global stability. U.S. leadership can improve multilateral coordination and bolster contributions not just from governments and international organizations, but all stakeholders including the private sector and civil society actors representing affected communities that traditionally face barriers in shaping multilateral mechanisms. The United States can also contribute to the ability of other nations to predict and adapt to various forms of climate change so that migrations may be planned, or in some cases, avoided altogether.

The amount of investment needed to respond to and minimize climate drivers of migration and displacement goes far beyond the resources of the United States alone. It will require the full convening and leveraging power of the U.S. Government. Partnerships should also include those with local actors and civil society on defining durable solutions, and the private sector for innovation, scaling and sustainability of adaptation approaches. Climate financing is a key component supporting vulnerable communities to respond to, prepare for, and adapt to climate and migration risks. The United States needs to leverage its leadership role with international financial institutions to ensure vulnerable migrants, refugees, and internally displaced persons (IDPs) are adequately included. U.S. foreign assistance, if leveraged, resourced, and targeted appropriately, could have a much larger influence that leads to better climate and migration-related outcomes. Additionally, engaging the U.S. and international science agencies and institutions responsible for covering and understanding climate drivers and climate change impacts will be essential to developing competent and responsible detection, prevention, preparedness, and mitigation programming pertaining to climate-related migration. As an example, space-based technologies, and space-derived information play a key role in climate knowledge, science, monitoring and early warning. Space-based information can contribute to assessments of the vulnerability of communities to climate change and can help monitor the effectiveness of adaptation strategies.

This report provides an overview of climate change and its impact on migration that informs a proposal for how U.S. foreign assistance can better address the effects of climate change impacts on displacement and migration. It goes further to outline options for protection and resettlement of individuals displaced directly or indirectly from climate change and identifies opportunities for the United States to work with other stakeholders, including through multilateral engagement, to address migration resulting directly or indirectly from climate change. The report concludes with a primary recommendation and a list of considerations for further evaluation that may guide the United States' approach to climate migration, if funding and policy priorities allow. Most notably, this report recommends the establishment of a standing interagency policy process on Climate Change and Migration to coordinate U.S. Government efforts to mitigate and respond to migration resulting from the impacts of climate change that brings together representatives across the scientific, development, humanitarian, and peace and security elements of the U.S. Government.

II. GEOPOLITICAL IMPLICATIONS: THE GLOBAL POLITICAL, ECONOMIC, AND SECURITY DYNAMICS OF CLIMATE-RELATED MIGRATION

Climate-related migration has potentially significant implications for international security, instability, conflict, and geopolitics. Disaggregating climate change from the many other factors influencing individuals' decisions to migrate is difficult, as is the ability to understand indirect links between climate change and other drivers. To frame the discussion, the focus of this section is on the direct and indirect geopolitical security implications of *climate-related migration* and not the consequences of migration more generally or the non-migration implications of climate change.

The Relationship between Climate Change, Migration, and Conflict

Extreme weather events⁹ and conflict are the top two drivers of forced displacement globally, together responsible for the annual movement of nearly 30 million people from their homes.¹⁰ There is a strong correlation between countries and regions most vulnerable to climate change and those that are fragile and/or experiencing conflict or violence. Climate-related impacts may further stress vulnerable communities, increasing the risk of conflict and displacement in the absence of effective prevention efforts, and vice versa. Climate-related impacts also pose an increased risk to marginalized communities displaced by conflict related to the impacts of climate change. This risk is more acute in regions with weak governance and dispute resolution infrastructure, and in growing peri-urban areas where many migrants are heading.

Climate change can cause or exacerbate resource scarcity, which may drive conflict directly as well as induce migration of populations in vulnerable situations attempting to secure safety or livelihoods elsewhere.¹¹ Moreover, changes to biodiversity have strong intersections with climate change that also can affect migration, and threaten food and economic security.¹² The subsequent movement of large numbers of people, by force or by choice, brings new groups into contact with one another, potentially shifting power balances, causing further resource scarcity, or igniting tensions between previously separated groups.¹³ Where climate-related migrations occur within or near population centers, or in locations important for political or economic stability, such as within many nations' coastal zones, the destabilizing forces associated with climate change may result in outsized affects overall.¹⁴

⁹ An *extreme event* is a time and place in which weather, climate, or environmental conditions—such as temperature, precipitation, drought, or flooding—rank above a threshold value near the upper or lower ends of the range of historical measurements. Though the threshold is subjective, some scientists define extreme events as those that occur in the highest or lowest 5% or 10% of historical measurements. Other times they describe events by how far they are from the mean, or by their recurrence interval or probability. NOAA (2020), “What is an “extreme event”? Is there evidence that global warming has caused or contributed to any particular extreme event?”, (<https://www.climate.gov/news-features/climate-qa/what-extreme-event-there-evidence-global-warming-has-caused-or-contributed>).

¹⁰ Gaudry Haynie, J., Balagna, J., Clark-Ginsberg, A. (2021) “Climate Change Migration: Developing a Security Strategy for All,” (<https://www.rand.org/blog/2021/03/climate-change-migration-developing-a-security-strategy.html>).

¹¹ Michael Brzoska & Christiane Fröhlich (2016) “Climate change, migration and violent conflict: vulnerabilities, pathways and adaptation strategies,” *Migration and Development*, 5:2, 190-210, (<https://www.tandfonline.com/doi/abs/10.1080/21632324.2015.1022973>) frame the potential conflict as being over *interests* and/or *identity*

¹² Schoonover, R. et al. (2021). *The Security Threat That Binds Us: The Unraveling of Ecological and Natural Security and What the United States Can Do About It.* (<https://councilonstrategicrisks.org/the-security-threat-that-binds-us/>); Intergovernmental Panel on Climate Change. (2020). *Special Report on Climate Change and Land: Chapter 5: Food Security*, (<https://www.ipcc.ch/srccl/chapter/chapter-5/>).

¹³ John Campbell (2019). “What’s Behind South Africa’s Recent Violence?” (<https://www.cfr.org/in-brief/whats-behind-south-africas-recent-violence>).

¹⁴ United Nations, Department of Economic and Social Affairs, Population Division (2018a). *World Urbanization Prospects 2018*.

While conflict is a well-understood driver of displacement, empirical studies examining the climate-migration-conflict nexus have failed to produce consistent evidence for a causal connection linking migration to subsequent conflict.¹⁵

Instead, it is widely agreed that specific context – geographic, demographic, environmental, economic, political, and cultural – determines the existence, strength, and direction of these relationships. For instance, longstanding tensions have existed between seasonally migratory pastoralists and sedentary farming communities in the Sahel,¹⁶ but until recently only occasionally led to violence,¹⁷ suggesting that the proximate cause of violence is not migration, but rather a failure to prevent tensions from escalating.¹⁸

Impacts of Climate Change-Related Migration on Political Instability

Climate-related migration may induce political instability in several ways. Large migration flows are frequently framed as a threat to both domestic and international stability and social cohesion.¹⁹ Inadequate policy frameworks to manage large migration flows may exacerbate resource inequalities, stress public budgets, and contribute to xenophobia that increases political tensions. Anti-immigration political actors may seize on both real and perceived challenges of uncontrolled or large migration flows to improve political standing, inflaming existing tensions and undermining efforts to appropriately respond to acute migration or refugee crises, such as those caused by the Syrian civil war²⁰ or extreme weather and violence in Central America.²¹ These risks highlight the importance of considering not only those who move following a climatic shock, but communities receiving higher rates of in-migration.

Surging irregular migration flows to the United States have increased domestic attention on the politics of immigration, and climate change has the potential to compound related political and social challenges by causing additional displacement. The lack of bipartisan agreement on humane border procedures and immigration policies complicates U.S. efforts to mobilize global support for protecting refugees, asylum seekers, and other vulnerable migrants. The current migration situation extending from the U.S.-Mexico border into Central America presents an opportunity for the United States to model good practice and discuss openly managing migration humanely, highlight the role of climate change in migration, and collaborate with other governments to address these challenges.

Policy responses in the developed world will have a direct impact on political stability elsewhere. As forced migration increases and countries struggle to manage migration flows within and across borders, the cost of migration to migrants and sending communities, already exceedingly high for many conflict-affected countries, is likely to increase. As costs of migrating increase and high income countries implement increasingly restrictive policies to deter migration, middle-income countries with fewer resources will become relatively more attractive alternative destinations. This has implications for political instability in a larger set of countries that may already be struggling to provide services to their citizens.

¹⁵ Abel et al. (2019) Climate, conflict and forced migration, *Science Direct, Volume 54*, pp. 239-249, (<https://www.sciencedirect.com/science/article/pii/S0959378018301596>).

¹⁶ Kennedy Mkutu (2018) Pastoralism and Conflict in the Horn of Africa and the Sahel, *Population and Development Review, Volume 44, Issue 4*, pp.857-860, (<https://onlinelibrary.wiley.com/doi/abs/10.1111/padr.12211>).

¹⁷ Brottem, L., McDonnell, A. (2020) Pastoralism and Conflict in the Sudano-Sahel: A Review of the Literature, page 4, (https://csf-sudan.org/wp-content/uploads/2021/03/pastoralism_and_conflict_in_the_sudano-sahel_jul_20201.pdf).

¹⁸ Additional considerations here: (1) outdated or otherwise insufficient institutions for both resource governance and dispute resolution—climate, insofar as it increases variability and unpredictability, is contributing to mismatches between timing of seasonal migration and the parameters of existing institutions; (2) the proliferation of small arms makes disputes more lethal (therefore contributing to lethal reprisals/cycles).

¹⁹ Braithwaite A, Salehyan I, Savun B. (2019) Refugees, forced migration, and conflict: Introduction to the special issue, *Journal of Peace Research, Volume 56, Issue 1*, pp. 5-11 (<https://journals.sagepub.com/doi/full/10.1177/0022343318814128>).

²⁰ Riegert, B. (June 19, 2018) World Refugee Day: Migration problems help populists prosper in Europe, *DW*, (<https://p.dw.com/p/2zi20>).

²¹ Kitroeff, N. (December 4, 2020) 2 Hurricanes Devastated Central America. Will the Ruin Spur a Migration Wave?, *The New York Times*, (<https://www.nytimes.com/2020/12/04/world/americas/guatemala-hurricanes-mudslide-migration.html>).

Non-State Armed Actors and Climate Change-Related Migration

Non-state actors, including violent extremist organizations (VEOs), transnational criminal organizations (TCOs), and other “hybrid and non-state armed groups” (H/NSAGs), exploit existing gaps or corruption in governance, perceived or actual marginalization of local populations, and intercommunal tension to embed themselves in communities and develop sources of income. These groups can exacerbate the effects of climate change on migration, by exploiting climate-related migration to further political, social, and economic objectives. H/NSAGs may respond to resource scarcity driven by acute environmental shocks (e.g., floods and droughts) by forcibly gaining access to resources such as cropland to maintain food security, exacerbating drivers of migration.²²

TCOs, VEOs, and other H/NSAGs²³ are involved in human trafficking, illegal mining, and resource extraction, and other economic activities directly related to migration. These groups can capitalize on climate-related migration of populations in vulnerable situations as both a source of income and recruitment.²⁴ In the face of increased climate related migration, if destination countries do not have reception capacity or limit legal migration pathways, migrants will likely seek to move irregularly in increasing numbers. Human smuggling organizations will financially gain as they facilitate growing smuggling operations. These smuggling operations will likely lead to a net increase in state corruption in countries of origin, transit, and destination while correspondingly contributing to the erosion of state stability.

Compounding these risks is the expectation that climate change will exacerbate existing patterns of political and economic marginalization and shift the distribution of valuable resources, including water and arable land. H/NSAGs may also hamper interventions designed to mitigate the impact of climate disasters and prevent acute migration events, especially those groups that see value in targeting aid workers and key infrastructure.

Predicting how specific non-state groups will respond to the impacts of climate change, including their ability to exploit climate impacts, requires a comprehensive examination of their motivations and strategies, existing activities and areas of control, tactical capabilities, supporting communities and networks, and connections and competition among non-state groups and with local elites and international actors. In addition, there is a need for a detailed and competent understanding of the primary climate change risks in a particular area in which non-state groups operate.

Malign State Actors and Climate Related Migration

Climate change driven migration will likely cause migrants to desire to emigrate to the nearest stable democracies that adhere to international asylum conventions and have strong economies. Many of these countries are U.S. allies/partners and many have experienced waves of migration. Many countries that adjoin destination countries have experienced domestic instability as migrant populations increase along destination country borders (Greece/Turkey, UK/France, Spain/Morocco, Italy/Libya, Syria/Jordan/Lebanon, and U.S./Mexico). Climate change related migration could cause greater instability among U.S. allies/partners and thereby cause a relative strengthening in adversary states. In addition, adversaries could incite or aid irregular migration to destabilize U.S. allies/partners.

Absent a robust strategy from the United States and Europe to address climate-related migration, the People’s Republic of China (PRC), Russia, and other states could seek to gain influence by providing direct

²² Norqvist, P., Krampe, F. (2018) Climate Change and Violent Conflict: Sparse Evidence from South Asia and South East Asia, *SIPRI Insights on Peace and Security*, No. 2018/4, (<https://www.sipri.org/sites/default/files/2018-09/sipriinsight1804.pdf>).

²³ Viriyapah, M. (Mar 27, 2020) *Mapping the Nexus between Human Trafficking and Terrorism in Libya*, American Security Project, (<https://www.americansecurityproject.org/mapping-the-nexus-between-human-trafficking-and-terrorism-in-libya/>). Reuters. (Apr. 19, 2020) *First drugs, then oil, now Mexican cartels turn to human trafficking*, NBC News, (<https://www.nbcnews.com/news/latino/first-drugs-then-oil-now-mexican-cartels-turn-human-trafficking-n1195551>).

²⁴ For instance, Boko Haram has exploited drought and resource scarcity in their efforts to recruit from affected pastoralist communities in Nigeria.

Darby, M. (Apr. 20, 2017) *Boko Haram terrorists thriving on climate crisis: report*, Climate Home News, (<https://www.climatechangenews.com/2017/04/20/boko-haram-terrorists-thriving-climate-crisis-report/>).

support to impacted countries grappling with political unrest related to migration.²⁵ Security assistance from these actors may increase conflict risks by aggravating human rights abuses and promoting authoritarian trends, e.g. by providing irresponsible advisors and mercenaries or invasive surveillance technology. The PRC's pursuit of minerals important to the green economy may produce its own form of climate-related migration to fragile states through immigration of Chinese labor and managers for mines owned by Chinese firms. This can create resentment among local populations, as can displacement of local populations to clear mining areas, poor labor conditions if locals are hired, or poor standards leading to environmental damage (which can also drive migration of local populations).

Russia also sees some benefits in the destabilizing effects of large-scale migration to the EU, particularly as it relates to the rise of xenophobia and political parties skeptical of the European project and the broader liberal order.²⁶ Despite likely challenges around the effects of weather extremes, including Arctic warming, flooding and increased forest fires, Russia may on balance benefit from climate change via the expansion of areas available for cultivation, resource extraction, and previously inaccessible maritime routes. Russia may also seek to bolster its global image by accepting certain refugees and migrants, even as this potential influx of climate refugees would likely exacerbate existing tensions around labor migration in the country.²⁷

Looking Forward: Risks and Opportunities

Migration is an important form of adaptation to the impacts of climate change and in some cases, an essential response to climate threats to livelihoods and wellbeing; therefore it requires careful management to ensure it is safe, orderly, and humane. It is critical to mitigate risks to the human security of migrants and receiving communities, such as risks to food and water security, access to necessary resources, and conflict at both the local and intercommunal levels. Large-scale migrations in response to destabilizing climate events within areas of particular economic or political importance can result in a disproportionate impact to a nation's condition overall. This will likely be the case for the world's coastal populations where sea level rise is predicted to displace a disproportionate number of people.²⁸ Enhancing a nation's ability to predict sea level rise at the local scale is one mechanism to address potentially large-scale climate migrations before they occur and may influence a nation's climate policy writ large.²⁹ Addressing the climatic stressors and resultant second-order impacts that influence populations to move, permanently or seasonally, is important for preventing displacement in the first place, as well as supporting relocation when necessary.

The geopolitical implications inherent to the necessary shifts towards a low-carbon economy may create new, easily overlooked vulnerabilities that could also affect migration patterns. These vulnerabilities are likely to be acute in places with high volumes of critical minerals and limited or weak governance structures, as well as economies that include significant fossil fuel extraction or refining sectors.³⁰ Identifying these patterns and proactively addressing these vulnerabilities is likely to decrease the likelihood of negative adaptation outcomes, increase economic stability, lower intergroup tensions, decrease political marginalization, and bolster resilience in geographies prone to conflict or violent extremist recruitment, and support partner governments in their transition.

The movement of populations more broadly into coastal areas, along with accelerated rates of climate

²⁵ For instance, the PRC engaged the Government of Burkina Faso to export its "CVE" approach, which is in the midst of an internal displacement crisis driven by violent extremism.

²⁶ Shinkman, P. (Nov. 8, 2019) *Russia Positioning Itself in Libya to Unleash Migrant Crisis into Europe*, U.S. News and World Report, (<https://www.usnews.com/news/world-report/articles/2019-11-08/russia-positioning-itself-in-libya-to-unleash-migrant-crisis-into-europe>).

²⁷ Lustgarten, A. (Dec. 16, 2020) *How Russia Wins the Climate Crisis*, The New York Times, (<https://www.nytimes.com/interactive/2020/12/16/magazine/russia-climate-migration-crisis.html>).

²⁸ Hauer, M.E., Fussell, E., Mueller, V. et al. (2020), Sea-level rise and human migration, *Nat Rev Earth Environ* 1, pp. 28–39, (<https://www.nature.com/articles/s43017-019-0002-9>).

²⁹ Wrathall, D.J., Mueller, V., Clark, P.U. et al. (2019), Meeting the looming policy challenge of sea-level change and human migration, *Nat. Clim. Chang.* 9, pp. 898–901, (<https://www.nature.com/articles/s41558-019-0640-4>).

³⁰ Blaine, T. (Apr. 19, 2021) *A 'green economy' risks new conflicts-but that's avoidable*, United States Institute of Peace (<https://www.usip.org/publications/2021/04/green-economy-risks-new-conflicts-thats-avoidable>).

change and subsequent impacts along coasts worldwide is an emerging issue of concern.³¹ In addition, the flow of migration to urban and peri-urban areas in developing countries, which are seeing massive population increases, is overwhelming already strained essential services. Globally, for example, it is thought that two-thirds of IDPs reside in urban and peri-urban areas.³² These urban centers often lack local preparedness and accompanying national-level or foreign assistance to prioritize migration-related support services and infrastructure. In particular, a 2019 assessment found that the U.S. Agency for International Development (USAID) has limited and constrained institutional structures, dedicated funding and internal capacity building efforts supporting the implementation of its Urban Policy³³ and urban programming more broadly.³⁴

Early-Warning Systems

U.S. Customs and Border Protection recognizes the value in early-warning systems to monitor climate change impacts and adds that the utility of said systems for identifying and addressing climate change related migration may be compounded by integrating early warning systems with migratory movement systems such as U.S. Immigration and Customs Enforcement's Biometric Identification Transnational Migration Alert Program (BITMAP) as well as foreign counterpart migratory movement systems. This in turn could inform host and receiving nation humanitarian resource

Existing development and humanitarian assistance programs help address underlying causes of forced migration and displacement in the face of insecurity. Some examples include drawing upon predictive analytics to address food security, such as the Famine Early Warning System Network,³⁵ to providing education and job training to diversify livelihoods, to supporting governance capacity and the political inclusion and participation of marginalized and displaced populations, in regions facing severe impacts of climate change. Likewise, the U.S. Government can increase individual-level human security by supporting partner governments in areas receiving migrants to ensure they have access to social services such as health, education, remittance assistance, job training, and educating receiving communities to combat xenophobia and racism.

Addressing individuals' human security through these sorts of efforts can decrease the likelihood of migration and the second-order implications for international security. It is critical to approach these efforts in a way that acknowledges that in almost all cases climate change is not the sole driver of migration.

³¹ 2009 Population Dynamics and Climate Change by the UNFPA (the United Nations Population Fund) and IIED (International Institute for Environment and Development). IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, 2019.

³² UNHCR Global Trends 2019, <https://www.unhcr.org/statistics/unhcrstats/5ee200e37/unhcr-global-trends-2019.html>

³³ USAID Policy. (Oct. 2013). *Sustainable Service Delivery in an Increasingly Urbanized World*.

(<https://usaid.gov/policy/sustainable-urban-services>).

³⁴ Lawrence, R. et. Al. (June 2019). *Assessment of the Implementation of USAID's Urban Policy*. USAID. (<https://urban-links.org/resource/assessment-of-the-implementation-of-usaids-urban-policy/>).

³⁵ <https://fews.net/>

III. U.S. FOREIGN ASSISTANCE

Multiple U.S. Government agencies, including the Department of State, the Department of Defense (DOD), the Department of Agriculture, and USAID address climate-related migration through a mix of development and humanitarian assistance programs. Development assistance strengthens adaptation and resilience capacities that increase food and water security; provides livelihood opportunities; protects human rights, including of those marginalized and displaced by climate change; and advances democracy and governance and contributes to durable solutions to displacement. Humanitarian assistance supports preparedness, early warning, and immediate response and recovery when climate-related events and displacement overwhelm local systems and capacities.

Existing Programs with Potential to Reduce the Risk of Forced Migration and Displacement

Assistance to Build Local and National Capacity for Using Climate Information in Decision Making

The U.S. Government works with host governments and communities to enhance observations, models, and forecasts that enable monitoring and warnings for floods, droughts, cyclones, and extreme temperatures, as well as food insecurity, conflict, and humanitarian hotspots. Information about climate change impacts, combined with non-climate information such as crop conditions, together with early warning systems and adaptation options, have the potential to empower governments and communities to take timely and appropriate actions to avert and prepare for forced displacement and migration. These actions can save lives, protect assets and livelihoods, as well as promote safe return and early recovery. This information can also reduce pressures to migrate by minimizing losses from climate-related events through risk-informed decision making in essential services such as agriculture and food security, water resource management, transportation, and health.

U.S.-led adaptation, resilience, disaster risk reduction, and nature-based solutions programs help communities and countries prepare for, and manage climate change impacts and protect critical economic and development gains. These programs have the potential to avert or minimize pressures to forcibly migrate and serve as instruments to support migration with dignity.

Programs that Support Adaptation to the Impacts of Climate Change

U.S. Government adaptation assistance supports people, institutions, policy development and investment mobilization to address climate risks. USAID partners with over 30 countries on adaptation and resilience initiatives that support global food and water security, bring actionable climate information to decision makers, prevent the spread of vector-borne disease, and reduce conflict over resources. Programs also integrate climate adaptation and ensure equitable outcomes in governance, planning and budgeting processes, in accordance with countries' national priorities.

More broadly, U.S. resilience programming explicitly recognizes shocks and stresses as perennial features (not anomalies). These programs seek to strengthen the capacity of individuals, communities, and systems to absorb, adapt to, and recover from shocks and stresses, using layered, sequenced, and integrated development and humanitarian assistance. The associated disaster risk reduction programs emphasize early warning, preparedness and prevention, as well as supporting diversified, resilient livelihood strategies. Activities include building local community and government capacity to develop risk assessments and manage disaster response, as well as supporting national and local disaster risk reduction plans, policies and strategies, and private sector partnerships. Overarching U.S. Government efforts, such as the 2019 Global Fragility Act, recognize the link between climate change, migration and stability; and include a strong focus on assessing, anticipating, and mitigating climate-driven instability.

USAID, in partnership with NASA and NOAA, supports nature-based solutions for managing floods and cyclones, such as restoring mangroves and tree cover, which also maintains key livelihood activities. In addition, U.S. foreign assistance includes robust investments in land protection and resource management, supporting ecosystem services and livelihood sources critical for human well-being. Other development assistance programs involve environmental and social impact analysis to ascertain potential risks of investments and development infrastructure. These programs are critical as

environmental and ecosystem degradation can be underlying and contributing factors to disaster risks, conflict, and potential displacement. Protecting, sustainably managing, and restoring natural or modified ecosystems through partnerships with national governments and local communities can reduce exposure and vulnerability. Capacity building programs by U.S. science organizations can support the training of climate scientists in vulnerable countries to help them better assess potential for short-term and longer-term climate change and cascading impacts that would influence migration.

DOD supports civilian U.S. Government agencies' humanitarian assistance, disaster relief, and disaster risk reduction programs. When requested by State or USAID, DOD supports humanitarian assistance efforts by utilizing applicable authorities that are funded by the Overseas Humanitarian, Disaster, and Civic Aid (OHDACA) fund. DOD also uses those authorities to support humanitarian assistance in collaboration with partner nation civilian agencies. DOD periodically conducts joint training exercises with allies and partners to enhance interoperability and effectiveness of humanitarian assistance and disaster relief operations. In addition, DOD has developed the Defense Climate Assessment Tool (DCAT), which uses data from past weather events together with projections of future climate changes to provide high-level assessments of exposure to climate change at locations of interest to the military. DOD is committed to sharing the DCAT with allies and partners in order to assist with building resilience to climate change.

Assistance to Support Migrants, Displaced People, and their Host Communities

U.S. humanitarian assistance supports people forcibly displaced by conflict and violence, persecution, and climate events, as well as those unable to flee. In Fiscal Year 2020, the U.S. Government provided nearly \$10.5 billion in life-saving humanitarian assistance and protection, supporting IDPs, conflict victims, refugees, stateless persons, and migrants in vulnerable situations, many of whom climate change disproportionately impacts. Recognizing that migration can be an important adaptation strategy, U.S. Government programming has supported safer migration that is more likely to benefit migrants and their families.

Humanitarian assistance programming also supports resilience and adaptation programming for IDPs, conflict victims, refugees, and migrants in vulnerable situations. For example, with funding from the U.S. Government, UNHCR, the International Organization for Migration (IOM), and the United Nations (UN) World Food Program (WFP) have worked together to make site improvements so that refugee settlements in Cox's Bazaar, Bangladesh, are more resilient to the risks of landslides and flooding during monsoon season. In parallel, USAID supported reforestation to reduce risks of landslides and flooding, promote resilience, and improve governance to address disaster risks in the host community.

U.S. development assistance has long experience (although limited funding) to support programs that strengthen urban resilience, municipal systems, and public service provisions for migrants, particularly in terms of health and education and livelihood support. Further investments address governance and human rights issues that are often a key factor in driving migration and migrants' success in destination communities. These investments support democratic governance and human rights as critical components of sustainable development and lasting peace, including access to justice, accountable and transparent governance, and an independent and politically active civil society.

State administers targeted, regional humanitarian assistance, primarily through IOM, to build the capacity of countries to manage their international immigration systems and prepare for emergencies that displace people. Going forward, these projects will incorporate activities that include climate change impacts and responses, including programs to help take into account the linkages between climate change and migration into countries' national migration strategies and policies. State's approach will support development of an online course in migration and climate change, which will be accessible as an integral part of training curriculums of governmental and academic institutions and workshops and will highlight climate change as a migration driver.

U.S. foreign assistance provides funding to key partners for critical institutional support and data analysis related to displacement including support to:

- UNHCR, the UN Office for the Coordination of Humanitarian Assistance (UNOCHA), IOM, International Federation of Red Cross and Red Crescent Societies (IFRC), and the International

Committee of the Red Cross (ICRC) to bolster their humanitarian assistance interventions, as well as develop global strategies and international legal and policy frameworks that mitigate the humanitarian impacts of climate change;

- The Internal Displacement Monitoring Center (IDMC) for development of an annual global report, and the Joint IDP Profiling Service (JIPS) to gather in-depth, individual- or household-level information on the demographics and needs of internally displaced populations;
- UNHCR for its statistical information on refugees, asylum seekers, stateless persons, and other persons of concern, as well as the World Bank-UNHCR Joint Data Center on Forced Displacement. This information aids in the planning and provision of assistance, and improves policymaking, development planning and advocacy outcomes;
- IOM's Displacement Tracking Matrix (DTM), which captures, processes, and shares information in order to better understand the movements and evolving needs of displaced populations.

Regional Considerations

Africa: Climate impacts, such as shifting precipitation patterns and drought, are already driving mobility in Africa. In response, U.S. foreign assistance focuses on addressing climate risk on the continent by managing droughts; promoting resilience to shocks and stresses; increasing water and food security; diversifying livelihoods; and improving access to affordable, quality health services through universal health care. In the Sahel, USAID programming aims to enhance the benefits of local migration for rural populations by building the capacity of youth to obtain better paying jobs and send funds back to their villages, as well as improving remittance fund transfers. Additionally, State programming focuses on supporting governments to anticipate, prepare for and respond to climate change-related migration movements through community programming and durable solutions for rural communities.

Asia: Frequent typhoons, floods, droughts, landslides, and storm surges across Asia can result in displacement, loss of lives, homes, infrastructure, and livelihoods. USAID provides funding and technical assistance for DRR programs and capacity building for disaster management agencies in the Mekong Sub-Region, including Vietnam. In Mongolia, USAID supports disaster preparedness and mitigation for herder families and other rural and urban communities, while in the Philippines, USAID funds DRR programs that build the capacity of the national government, local communities, and NGOs. To understand regional migration related to climate change more broadly, a State funded program will study the mobility impacts of climate change-induced extreme weather in the Greater Mekong Sub-Region, and will draw out specific, operational recommendations that could guide future programming interventions, as well as potential relocation plans for affected communities.

Central America: In Central America, particularly El Salvador, Guatemala, and Honduras, climate change disproportionately affects populations in vulnerable situations and can contribute to the decision to migrate. Accordingly, USAID is working to address the contribution of climate change impacts to the root causes of irregular migration by investing in nature-based climate solutions that support populations in vulnerable situations and conserve biodiversity and forests in key landscapes. Other work includes expanding the generation and application of climate information, and promoting climate-smart agricultural practices. Throughout the Western Hemisphere, State partners with IOM to build capacity and implement international guidelines³⁶ with respect to climate change as a migration driver.

On July 29, 2021, the Administration released the *U.S. Strategy for Addressing the Root Causes of Migration in Central America*³⁷ that includes a dedicated line of effort focused on building resilience to address climate change and food insecurity. On the same date, the Administration released the *Collaborative Migration Management Strategy*, which includes a line of effort to provide and mobilize assistance to address the increased humanitarian needs in the region, including those stemming from the impacts of climate

³⁶ Migration in Countries in Crisis and the Migration Crisis (MICIC) Operational Framework

³⁷ National Security Council. (July 2021). *U.S. Strategy for Addressing the Root Causes of Migration in Central America*. (<https://www.whitehouse.gov/wp-content/uploads/2021/07/Root-Causes-Strategy.pdf>).

change. These efforts will also include galvanizing additional international support and coordinating assistance activities.

Middle East and North Africa (MENA): The MENA region is already the most water-scarce region in the world. MENA includes twelve of the seventeen most water stressed countries³⁸ globally, with 60 percent of the region’s population exposed to high water stress. U.S. foreign assistance supports countries to manage vital resources in the region through environmental activities that focus on climate adaptation, food and water security, and natural resource management. U.S. Government programming in this region, as in other areas of Africa, also focuses on supporting governments to anticipate, prepare for, and respond to climate change-related migration movements.

Small Island States: Small Island States are particularly vulnerable to the adverse effects of climate change and disproportionately exposed to extreme weather such as floods and tropical storms. In order to mitigate the adverse effects of natural disasters, USAID supports capacity building and DRR interventions in the Pacific so that partner countries can lessen the impacts of disasters and respond more effectively when they strike. Programs in the Pacific increase countries’ abilities to access and effectively manage financing from international funds, promote regional coordination and the adoption of adaptation policies, build capacity to manage broad adaptation programs, and build multi-sectoral approaches to climate resilience. USAID also supports disaster preparedness, relief and reconstruction in the Federated States of Micronesia and the Republic of Marshall Islands. In addition, the Department of the Interior provides financial and technical assistance to the Freely Associated States of the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau to mitigate the impacts of natural disasters and climate change including sea level rise, flooding, and storm surge.

In the Maldives, USAID focuses on adaptation actions for the critical tourism sector faced with an existential threat by rising sea levels.

State coordinates the U.S.–Caribbean Resilience Partnership, which provides support to Caribbean islands to strengthen their disaster resilience and enhance their adaptive capacity from the impacts of climate change. USAID’s DRR interventions are strengthening the ability of Caribbean countries to respond to emergencies while also helping communities adapt to the impacts of hurricanes, earthquakes and droughts in the long term. USAID partners with Inter-American Foundation to strengthen community-led disaster preparedness by channeling direct, flexible funding to grassroots organizations and mobilizing matching local resources. USAID also builds energy sector resilience across the region by helping island energy sectors bounce back more quickly from both environmental and market shocks.

Cross-Cutting Issues

Cross-cutting issues such as inclusivity of marginalized groups, justice and equity, gender equality and a commitment to work closely with local communities are salient across all types of U.S. foreign assistance. Indigenous peoples, women and girls, youth, persons with disabilities, and other marginalized populations face the brunt of the climate crisis and potential displacement, yet have limited access to or influence over decision-making. These individuals and groups often experience disproportionate effects on their stability, health, and livelihoods.

State and USAID have extensive technical expertise in integrating the unique needs of individuals with marginalized identities into foreign assistance, as well as guidance on how to consider inclusivity broadly across all programs. USAID also has a robust history of engaging in locally-led development, exemplified by projects designed in close collaboration and partnership with local actors, including Indigenous communities who hold critical knowledge gained through long-standing stewardship of natural resources. State’s expertise in refugee protection, including the resettlement of more than three million vulnerable individuals since 1975 through the U.S. Refugee Admissions Program (USRAP) will help focus much needed attention on those made more vulnerable by climate change impacts.

Analysis of Additional Needs

Significant additional development and humanitarian resources are needed to address the root causes of

³⁸ The most water-stressed countries are—in order of their ranking— Qatar, Israel, Lebanon, Iran, Jordan, Libya, Kuwait, Saudi Arabia, Eritrea, UAE, San Marino, Bahrain, India, Pakistan, Turkmenistan, Oman, and Botswana. (<https://wri.org/aqueduct>)

migration, support climate adaptation, build capacity at local, national, and regional levels, and harness the potential positive development impact of migration. Migration can be a warranted adaptation strategy, yet little assistance is dedicated for planned and voluntary migration. Current assistance focuses on fixed locations, missing opportunities to invest in human capacity, assets and safety nets that are mobile and can support people when they migrate. Supporting migration and investing in mobile social protection and cash options are relatively nascent areas of work and the USG can become a technical leader by investing in pilot projects, research, and ultimately moving to scale.

U.S. foreign assistance currently brings together a powerful combination of tools, including convening power, technical expertise, capacity building, and partnerships to address many elements of the complex interplay between climate change and migration. However, the current structure and coordination of U.S. foreign assistance is inadequate to meet the challenge of comprehensively addressing climate-related migration and displacement. The U.S. Government lacks a coordinating structure bringing together the relevant interagency stakeholders that work on the nexus of climate change and migration, limiting its ability to maximize the impact of U.S. foreign assistance in this area. Pro-active coordination, coherent policy, and effective programming across the humanitarian-development-peace nexus in the face of unprecedented ethical dilemmas and fast-moving situations is essential to address migration and displacement issues in the continuum from response to adaptation.

Given the current and rapidly rising level of humanitarian need related to displacement and the importance of U.S. leadership in this space, maintaining robust humanitarian assistance funding is essential. Further, greater investment in adaptation, risk reduction, and resilience will reduce the burden on humanitarian assistance when disasters strike. To prevent loss of lives and save resources, the U.S. would need to increase support to the current range of impactful assistance and capacity-building programs such as early warning and DRR, adaptation and resilience, and government partnerships to integrate climate and migration in policies, practices and legislation. The United States should also help bring about durable solutions to climate-related displacement by systematically including at risk IDPs and refugees in USAID and International Development Finance Corporation (DFC) development programming. Further, USAID's forthcoming climate strategy will guide the Agency's mitigation and adaptation efforts, and further integrate climate change considerations into international development and humanitarian assistance programs across all sectors. A 2019 Government Accountability Office (GAO) report flagged that funding for USAID's climate change adaptation activities decreased under the prior administration, highlighting the constraints posed by funding realities even as the need is projected to grow.³⁹

³⁹ U.S. Government Accountability Office. (Jan. 2019) *Climate Change Activities of Selected Agencies to Address Potential Impact on Global Migration*. (<https://www.gao.gov/assets/700/696513.pdf>).

IV. PROTECTION AND RESETTLEMENT OF AFFECTED INDIVIDUALS

The United States has a compelling national interest in strengthening global protection for individuals and groups displaced by the impacts of climate change. This is rooted in U.S. foreign policy objectives, and inextricably linked to U.S. interests in safe, orderly, and humane migration management, regional stability, and sustainable economic growth and development. The United States seeks to avert and respond to displacement through alternative safe, regular migration pathways, and strengthen access to assistance and protection for people displaced by the impacts of climate change both across borders and within their countries of origin. The United States should identify ways to apply existing protection frameworks in the context of climate change-related displacement and to identify gaps where the United States should forge new legal pathways to protection.

The United States is particularly concerned about the impacts of climate change and displacement on people already in vulnerable situations. Climate change has disproportionate impacts on marginalized communities, compounding situations of vulnerability and increasing risks of displacement. At the same time, displacement often creates new situations of vulnerability through family separation, disrupted community support structures, loss of documentation, exclusion from public services, and other challenges. U.S. efforts to strengthen protection should prioritize those facing a nexus of vulnerabilities related to climate change and displacement to promote equity in support and access.

Analysis of Protection Frameworks

The use of existing legal instruments to protect individuals displaced across borders by the impacts of climate change is limited in scope, and the United States should endeavor to maximize their application, as appropriate, to such individuals. Although displacement as a result of climate change is not itself a basis for a claim for protection under the 1951 Convention relating to the Status of Refugees and its 1967 Protocol, people fleeing in the context of the adverse effects of climate change and disasters may, in limited instances, have valid claims for refugee status. To qualify as a refugee under U.S. law, an individual must generally be outside his or her country of nationality (or if the individual is stateless, outside his country of last habitual residence), and be unable or unwilling to return to that country because of persecution or a well-founded fear of persecution on account of a protected characteristic including race, religion, nationality, membership of a particular social group, or political opinion.

There is an interplay between climate change and various aspects of eligibility for refugee status. As UNHCR has recognized,⁴⁰ “where the effects of climate change and disaster interact with violence, conflict, or persecution leading to displacement, individuals may be refugees under the 1951 Refugee Convention.” For example, if a government withholds or denies relief from the impacts of climate change to specific individuals who share a protected characteristic in a manner and to a degree amounting to persecution, such individuals may be eligible for refugee status. Similarly, adverse impacts of climate change may affect whether an individual has a viable relocation alternative within their country or territory. Climate activists, or environmental defenders, persecuted for speaking out against government inaction on climate change may also have a plausible claim to refugee status.

Global displacement trends already show that displacement due to conflict and violence is occurring alongside the increasing impacts of climate change resulting in an increase in valid refugee claims. In January 2020, UNHCR appointed a Special Advisor on Climate Action whose role is to drive UNHCR’s engagement on the climate emergency, serve as a global advocate, and is responsible for providing oversight and expertise to shape UNHCR’s climate action agenda, which has three main areas of focus: (1) law and policy; (2) operations; and (3) UNHCR’s environmental footprint. U.S. efforts to promote accessions and strengthen foreign governments’ adherence to their obligations under the Refugee

⁴⁰ UNHCR. *Strategic Framework for Climate Action*, p. 8. (<https://www.unhcr.org/604a26d84/strategic-framework-for-climate-action>).

Convention and Protocol must be part of further efforts to strengthen international protection for people displaced across borders by the impacts of climate change.

Strengthening applications of regional instruments in Africa⁴¹ and Latin America⁴² may provide broader protection for people fleeing the impacts of climate change across borders. These regional instruments include in their refugee definition people fleeing their country of origin because of events or circumstances seriously disturbing public order. It is not clear the extent to which climate-related impacts fall within such “events or circumstances.”

These instruments remain limited and – particularly outside the African and Latin American contexts – do not apply to the majority of people displaced by the impacts of climate change. A number of non-binding global policy frameworks address the issue of climate-related displacement and merit enhanced U.S. engagement. The Global Compact on Refugees (2018) recognizes that “climate, environmental degradation and natural disasters increasingly interact with the drivers of refugee movements,” though they are “not in themselves causes of refugee movements.”⁴³ The Global Compact for Safe, Orderly and Regular Migration similarly recognizes the adverse effects of climate change as drivers of displacement, and suggests taking measures to better understand and address such movements while ensuring “respect, protection, and fulfillment of the human rights of all migrants.”⁴⁴

The success of these voluntary frameworks and processes depends heavily on good faith, deliberate participation, and cooperative implementation by individual states. In this respect, there are two modes of state action that serve to strengthen protection for people displaced across borders by the impacts of climate change without affirmatively providing protection on the basis of climate impacts.

First, regional cooperation by some states has resulted in free movement agreements or guidelines for protection in disaster contexts in various regions including the Horn of Africa⁴⁵, Caribbean,⁴⁶ Pacific Islands,⁴⁷ and Central⁴⁸ and South America.⁴⁹ These regional mechanisms and tools offer potential models for consideration in other regions and for implementation through standard operating procedures.

Second, there is increasing recognition in law and in practice, including in the United States, that individuals may need protection from removal to countries where the impacts of climate change render the return of such individuals unsafe. The United States may designate nationals of a foreign state (or part of such foreign state) for Temporary Protected Status (TPS) in the United States due to conditions in the country that temporarily prevent the country's nationals from returning safely, which may include climate-related factors. These conditions must satisfy at least one of the three statutory bases required for a TPS designation: (1) ongoing armed conflict; (2) environmental disaster; or (3) extraordinary and temporary conditions.

Following designation of a country for TPS, eligible nationals who are already in the United States when the designation goes into effect and apply for the status may be granted TPS, and as a result, temporary protection from removal. Although the TPS criteria may accommodate the provision of protection to foreign nationals facing the impacts of climate change-related events in their country of origin, this

⁴¹ 1969 Organization of African Unity (OAU) Refugee Convention

⁴² Non-binding 1984 Cartagena Declaration endorsed by several countries across Latin America

⁴³ U.N. High Commissioner for Refugees. (Sept. 13, 2018). *Part II Global compacy on refugees*. D.8. (https://www.unhcr.org/gcr/GCR_English.pdf).

⁴⁴ U.N. General Assembly. (Jan. 11, 2019). *Global Compac for Safe, Orderly and Regular Migration*. Preamble/11. (https://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/73/195).

⁴⁵ The Intergovernmental Authority on Development’s (IGAD) Protocol on Free Movement of Persons agreed in the Horn of Africa region in 2020

⁴⁶ Caribbean Migration Consultations

⁴⁷ The “Pacific Access” employment visa regime offered by Australia and New Zealand to citizens of certain Pacific island nations.

⁴⁸ In 2016, the Regional Conference on Migration (RCM) in Central and North America (of which the United States is a member) adopted guidelines on “Protection for Persons Moving Across Borders in the Context of Disasters.” The Guidelines provide information on the use of humanitarian protection measures that RCM Member Countries, depending on their domestic laws, may apply on a temporary basis in response to the needs of disaster-affected foreigners.

⁴⁹ In 2018, the South American Conference on Migration adopted a non-binding regional instrument on the protection of people displaced across borders and on migrants in countries affected by disasters linked to natural hazards.

protection is limited. More specifically, TPS does not protect individuals who arrive after the date of designation, making it likely to exclude many of those forced to flee because of the disaster or event that is the basis for a TPS designation. The TPS statute also requires that a foreign government officially request TPS designation in cases of environmental disaster, which limits its application for nationals of countries without sufficient government will or capacity to request TPS. Furthermore, as a temporary status, the intent of TPS is not to provide a permanent solution for individuals unable to return home because of the long-term impacts of climate change.

The United States also holds certain discretionary authorities to provide accommodations to individuals affected by natural catastrophes and other extreme situations caused by climate change on a case-by-case basis. For example, Special Student Relief is the suspension of certain regulatory requirements by the United States for individuals on nonimmigrant academic student (F-1) status from parts of the world that are experiencing emergent circumstances, such as natural catastrophe or armed conflict. These accommodations are limited in that their intent is to address individuals already in the United States unable to return to impacted countries due to climate change.

UN Human Rights Committee Case Study

In January 2020, the UN Human Rights Committee noted in its views adopted in the case of Ioane Teitiota, who sought protection in New Zealand from return to Kiribati due to the impacts of climate change there, that “States must refrain from deporting an individual when there are substantial grounds for believing there is a real risk of irreparable harm such as that contemplated by Article 6 (right to life) and Article 7 (prohibition of torture or cruel, inhuman or degrading treatment or punishment) of the International Covenant on Civil and Political Rights.”⁵⁰ While the Committee found that New Zealand did not violate Teitiota’s right to life when they deported him, the Committee observed that “without robust national and international efforts, the effects of climate change in receiving States may expose individuals to a violation of their rights under articles 6 or 7 of the Covenant, thereby triggering the non-refoulement obligations of sending States.” The European Court of Human Rights has also developed a body of case law prohibiting *refoulement* under Articles 2 (right to life), or 3 (prohibition of inhuman and degrading treatment) of the European Convention on Human Rights (ECHR).

The United States interprets its *non-refoulement* obligations strictly according to the relevant 1951 Refugee Convention (and its 1967 Protocol) and Convention Against Torture (CAT) provisions. It does not accept that the International Covenant on Civil and Political Rights (ICCPR), to which the United States is party, includes obligations prohibiting *refoulement*, nor does it interpret the Article 6 prohibition on the arbitrary deprivation of life to encompass a positive duty to protect life in the face of all possible external threats.

The United States does not consider its international human rights obligations to require extending international protection to individuals fleeing the impacts of climate change. However, as a matter of policy, the United States does have a national interest in creating a new legal pathway for individualized humanitarian protection in the United States for individuals who establish that they are fleeing serious, credible threats to their life or physical integrity, including as a result of the direct or indirect impacts of climate change. This new legal pathway should be additive to and in no way infringe upon or detract from existing protection pathways to the United States, including asylum and refugee resettlement.

⁵⁰ U.N. International Covenant on Civil and Political Rights, Human Rights Committee. (Sept. 23, 2020). *Views adopted by the Committee under article 5 (4) of the Optional Protocol, concerning communication No. 2728/2016*. (https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/Download.aspx?symbolno=CCPR/C/127/D/2728/2016&Lang=en).

Internal Displacement

Although the vast majority of climate-related displacement occurs within countries' own borders, substantial gaps remain in international frameworks, domestic implementation, and multilateral operations to protect IDPs. The UN Guiding Principles on Internal Displacement provide a widely accepted definition of IDPs that includes people forced to flee elsewhere within a state as a result of, or in order to avoid the effects of "armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters." All effects related to climate change in certain contexts. These Guiding Principles identify rights and guarantees relevant to the protection of persons from forced displacement and to their protection and assistance during displacement, as well as during return or resettlement and reintegration, but they are non-binding and implementation remains weak. The United States continues to support the adoption and implementation of national action plans and national legislation to protect and assist IDPs in line with the UN Guiding Principles.

The Kampala Convention,⁵¹ adopted in 2009, is the only binding international legal instrument specific to IDPs and explicitly states, "Parties shall take measures to protect and assist persons who have been internally displaced due to natural or human made disasters, including climate change."⁵² The United States continues to encourage accession to the Kampala Convention and implementation through national legislation, particularly in countries acutely affected by climate-related internal displacement, such as the Democratic Republic of the Congo, Ethiopia, Libya, and Sudan, among others.

Protection-mandated agencies, including UNHCR, the UN Children's Fund (UNICEF), the OHCHR, and ICRC, each have made significant efforts to advance policies for protection of people displaced by the impacts of climate change, particularly where climate change fuels conflict and disproportionately impacts marginalized communities. OHCHR's Special Rapporteur on the Human Rights of IDPs and its coordination with IOM have been important for understanding the human rights of IDPs and migrants, including in the context of climate change.

This multilateral protection system has demonstrated agility in its emergency response to sudden-onset disasters and conflict related to climate change. However, operational coordination in response to protection needs arising from slow-onset climate impacts is less well established.

Statelessness

A stateless person is one not considered a citizen or national under the operation of the laws of any country. Forced displacement, especially when it is long lasting or permanent, carries inherent risks of statelessness, particularly for the children of those forcibly displaced and subsequent generations.⁵³

The risk factors that can lead to statelessness when people move across borders include:

- Loss of identity documentation;
- Challenges accessing consular assistance to replace lost or expired documentation;
- Loss of ties to the country of origin over time, without acquisition of a new nationality;
- Challenges obtaining birth registration and/or proof of nationality for children;
- State succession;
- Gender discrimination in nationality laws; and
- Conflicts of laws leading to some children being born without entitlement to any nationality.

For these reasons, it is important to consider the risks of statelessness associated with cross-border, permanent displacement due to the impacts of climate change, and the likelihood that such circumstances will lead to uncertain rights and legal status for affected communities, potentially over generations. To address and mitigate these risks, governments should put in place statelessness determination procedures (with a path to citizenship for stateless persons) as well as legal safeguards

⁵¹ African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa

⁵² Ibid, Article 5.4

⁵³ Legal definition per the 1954 Convention relating to the Status of Stateless Persons.

and policies to prevent statelessness at birth. UNHCR, as the UN Agency with the mandate for statelessness, has the technical capacity to assist and advise States in this regard.

Refugee Resettlement Considerations

USRAP admits tens of thousands of refugees to the United States each year according to a target established by the President following Cabinet-level consultations with the Congress.

State works closely with UNHCR to identify refugees of humanitarian concern to the United States at both the individual and population level. While UNHCR recognizes that climate change and environmental harm frequently interact with other drivers of displacement that fit into the established refugee definition, the organization does not explicitly incorporate climate considerations into referral criteria.

The Department of Homeland Security's U.S. Citizenship and Immigration Service (USCIS) adjudicates asylum and refugee applications for individuals seeking protection. Applicants must meet the refugee definition under INA Section 101(a)(42).

As noted earlier, the United States does not have well-established alternative pathways to complement refugee resettlement through which the United States can admit individuals facing serious threats to their life because of climate change as a permanent solution to their need for protection. While granting parole on a case-by-case basis for urgent humanitarian reasons or a significant public benefit is possible, it is *ad hoc*, temporary, and not designed to be a long-term solution. Using parole to provide a legal, safe, and structured system for individuals, who otherwise lack a basis to enter the United States, to enter the United States for a temporary time due to an emergency is an option. Designed to address temporary situations on a case-by-case basis, parole is not in itself a viable alternative pathway to complement refugee resettlement at scale.

Examples of alternative or complementary pathways employed by other countries include humanitarian visas, labor mobility schemes, and education programs that are accessible to refugees and other forcibly displaced persons and provide a path to permanent residency. The United States is developing a private sponsorship program for refugees, which may include university sponsorship. Some countries, such as Canada and the United Kingdom, use private and/or community sponsorship programs to increase opportunities for local communities to support refugee resettlement. The U.S. program will require privately sponsored refugees to meet all the criteria for refugee resettlement and will count against the annual refugee target set by the President. These considerations reinforce the report's recommendation for the Executive Branch to work with Congress to create a new legal pathway for individualized humanitarian protection in the United States for individuals facing serious threats to their life because of climate change.

In July 2021, the United States along with UNHCR, assumed the co-chair of the Annual Tripartite Consultations on Resettlement (ATCR), which will culminate in a meeting in Geneva in June 2022 with resettlement stakeholders from thirty or more countries. As the chair, the U.S. Government intends to use the position to advocate for increased resettlement slots worldwide and work with UNHCR and Refugee Council USA (RCUSA) to incorporate discussions on climate-related implications for third country resettlement into the ATCR as well as the related Working Group on Resettlement envisioned taking place in the United States in February 2022.

Equity and Inclusion of People in Situations of Vulnerability

Assuring equity and inclusion in preparation and response to climate change impacts on migration is essential to effective program and policy development.⁵⁴ Resilience and adaptation plans must consider concerns such as accessibility, child protection, disability rights, gender equity, Indigenous rights, and protection needs for other populations in vulnerable situations, including situations of forced displacement or migration. These factors point to the need for tailored protective services, which include psychosocial support, gender-based violence (GBV) prevention and response, and child protection.

⁵⁴ Supports the President's January 20 Executive Order 13985 on Advancing Racial Equity and Support for Underserved Communities through the Federal Government.

Inclusive climate action focuses on the human rights of migrants and displaced persons and recognizes that individuals are vulnerable in unique ways determined by the intersectionality of the various factors contributing to their mobility, independence, and access to basic needs.⁵⁵

The adverse effects of climate change, such as sea level rise, forest fires, extreme temperatures, hurricanes, droughts, and floods, can seriously impact the enjoyment of human rights for all those affected, and populations with heightened vulnerabilities are disproportionately affected.⁵⁶ Existing vulnerabilities related to age, gender, sexuality, disability, race, ethnicity, religious affiliation, poverty, family unit, and indigenous community membership, provide fewer options making it more difficult for individuals to adjust to both slow and rapid onset climate events. Xenophobia, prejudice, and stigmatization toward people in vulnerable situations further aggravates their ability to respond to climate change pressures.

The intersection of multiple factors compounds the risk of harmful climate impacts. A study conducted by OHCHR on climate change and persons with disabilities determined that poverty exacerbated the exposure of persons with disabilities to adverse impacts of climate change.⁵⁷ Persons with disabilities are often among those most adversely affected in a crisis and are among those least able to access emergency support.⁵⁸ They are also often less mobile and more dependent on assistance devices or other individuals, leaving them at risk of exclusion or abandonment before or during migration.

Gender is also a major factor to consider, especially in the context of GBV. For context, women and girls are typically left behind during slow-onset events as men seek livelihoods elsewhere, making displacement a situation of last resort for them. Women, girls, and gender diverse persons are disproportionately impacted and face heightened GBV risks as they are on the move and in new and unfamiliar environments.⁵⁹

Planning and policy decisions for climate change impacts on migration should include engagement with marginalized populations to ensure that U.S. responses consider and address their needs. The process should include opportunities to empower individuals to advocate for specific responses that account for their skills, culture, traditions, and goals. This will require analysis of the various contextual factors discussed in this section, as well as other variables like conflict and insecurity and their combined effects on the resilience of individuals and communities in the context of climate-related migration.

Relocation and Evacuation, including from Small Island States

When there exists an anticipated or actual displacement of communities due to disasters or environmental degradation that render areas permanently or temporarily unsafe, planned relocation or evacuation may be necessary to safeguard people from foreseeable harm, including loss of life. While planned relocation refers to a long process of moving households or communities in safe, alternative places of permanent residence, evacuation refers to short-term emergency measures undertaken in response to an acute and usually fast-developing threat to life and safety. A number of international schema⁶⁰ acknowledge that planned relocation for communities residing in areas assessed to be already or increasingly unsafe for habitation, can be a necessary and effective means of adaptation, disaster risk reduction, and increasing vulnerable persons or groups' resilience to the adverse impacts of climate change.

⁵⁵ Mayors Migration Council. *US Local Governments Call for Equitable and Inclusive Action on Climate Migration*. (Accessed Sept. 23, 2021.) (<https://www.mayorsmigrationcouncil.org/biden-climate-co>).

⁵⁶ UN Human Rights Council. (Dec. 22, 2020). *Panel discussion on promoting and protecting the rights of persons with disabilities in the context of climate change*. (<https://undocs.org/A/HRC/47/46>).

⁵⁷ Ibid

⁵⁸ UN Human Rights Office of the High Commissioner. *The impact of climate change on the rights of persons with disabilities*. (Accessed Sept. 23, 2021). (<https://www.ohchr.org/EN/Issues/HRAndClimateChange/Pages/PersonsWithDisabilities.aspx>).

⁵⁹ UN Human Rights Council. (Jul. 5, 2019). *Negative impact of unilateral coercive measures on the enjoyment of human rights*. (<https://undocs.org/A/HRC/42/46>).

⁶⁰ The Sendai Framework for Disaster Risk Reduction, the Global Compact for Safe, Orderly, and Regular Migration (GCM), the Executive Committee of the Warsaw International Mechanism for Loss and Damage's Task Force on Displacement recommendations, and the Nansen Initiative's Protection Agenda

However, planned relocation and evacuation may also entail significant risks for people and communities in vulnerable situations who have to move and should be undertaken only when necessary. To avoid negative consequences in the near to long term and to ensure the inclusion and protection of people with specific vulnerabilities and concerns, such as women, children, older people, people with disabilities and Indigenous communities, such measures should be prepared for and implemented with respect for human rights. This includes the meaningful participation of communities at risk of becoming displaced, as well as those in receiving areas, in emergency preparedness measures and long-term planning decisions, with due attention to supporting socio-economic prosperity and cultural practices.

The Sydney Declaration of Principles on the Protection of Persons Displaced in the Context of Sea Level Rise recommends that evacuations be undertaken by States only if provided for by law and necessary to protect life and health, and that all evacuations must be carried out with full respect for life, dignity, liberty, and security of evacuees. There is existing guidance concerning planned relocation and evacuations in the context of climate change and disasters that involves population movements *internal* to the home country of affected communities. While experiences of international cooperation in the management of *cross-border* evacuations in disaster contexts are relatively few, some new practice and guidance is developing in this area, including through initiatives of the Platform on Disaster Displacement.⁶¹ There is a need to identify examples of cross-border planned relocations related to climate change impacts and develop guidance explicitly to address such measures.

Permanent planned relocation should be a measure of last resort. It is important to support people to stay as long and as safely possible in their current home areas through investing in measures to reduce disaster risk and enable local adaptation. Such measures may include facilitating migration as an adaptive strategy and evacuation preparedness. UNHCR and other partners recommend identifying a “risk threshold” beyond which it is no longer considered safe for people to remain in place. Determining if the threshold is reached should be accomplished by combining the local knowledge and perspectives of concerned communities with robust economic analysis and scientific evidence.

Advanced planning by countries of origin, where there is potential for displacement by disaster and a lack of domestic solutions to displacement may facilitate individuals’ access to protection, assistance and solutions elsewhere. These plans also help ensure that people are able to move out of harm’s way, receive protection, and have their rights and dignity respected. Bolstering migration pathways that include labor, family reunion, and education provides mechanisms for people to move both proactively and reactively. States in the Americas have demonstrated the good practice of expanding labor mobility channels, using “ordinary” and “exceptional” migration categories to accommodate migration challenges linked to environmental factors and have expedited visa or permanent residency applications for people from affected States.

To mitigate against further displacement within and from urban areas, states can conduct forward-looking urban planning to assess the need for preparedness in support of local integration, and the reduction of disaster risk and strengthening of climate resilience. States should seek to ensure a sound legal basis and institutional frameworks and responsibilities for evacuation and relocation. Planning with thresholds, evidence, and due consideration to human rights protection, avoids the risk of forcibly evicting people without their participation in an informed consent process.

A number of countries have taken a community-centered approach that involves multiple stakeholders including those taking part in planned relocation, host communities, and others likely to be affected; this ensures they are informed, consulted, and enabled to participate in decision-making. Vanuatu, New Zealand, São Tomé & Príncipe and other countries have implemented participatory decision making by including communities at every step of the planned relocation process.

States should seek to ensure needs and standards of living are met while people are on the move, including safe shelter, suitable livelihoods, and basic infrastructure and services, including education and health. Where relationships with land are complex, pay special attention to land rights during the move. Planned relocation should respect and maintain household, community, social cohesion, and kinship ties and should avoid separating families. Colombia and Brazil have exemplified good practices related to fulfilling social service needs. The Colombia Health Secretariat provided day courses to relocated

⁶¹ Platform on Disaster Displacement. (<https://disasterdisplacement.org/resources>).

populations on environmental sanitation, food security, safe drinking water practices, and urban agriculture. In Brazil, an internal resettlement advisory council composed of experts from Brazil's secretariats of housing, education, health, environment, and culture, along with community representatives, was established to assess health care and social service needs of relocated and host communities.

Ensuring accountability by undertaking monitoring and evaluation is essential in planned relocations. Monitoring and evaluation can be used to determine if relocated persons have restored or improved living standards, if host communities have maintained or increased living standards, or if they are experiencing xenophobia or violence once the relocation is complete.

Compacts of Free Association

The U.S. has a historical relationship with its former Pacific Ocean territories, now known as the Freely Associated States (FAS), including the Republic of the Marshall Islands, Palau, and Federated States of Micronesia. Climate impacts are one factor that may contribute to a decision to relocate by citizens in the FAS, typically from the smaller and less-populated islands and atolls to more densely populated ones, such as Majuro Atoll and Ebeye Island (Kwajalein Atoll) in the Marshall Islands and Pohnpei in Micronesia. Eligible citizens from the Federated States of Micronesia, the Marshall Islands, and Palau (combined 2021 population: approximately 182,000) may travel to the United States to live, work, and study without a visa. Climate impacts may be one factor that contributes to decisions made by citizens of these three countries to travel or relocate to the United States in addition to education and/or employment opportunities. The hazards posed by climate change, including sea-level rise, coastal flooding, and temperature and precipitation change are likely to increase. There are deep impacts to infrastructure, freshwater supplies, agriculture, and habitats for threatened and endangered species on U.S. and U.S.-affiliated atoll islands.⁶² Therefore, bilateral and multilateral agreements may provide a pathway for migration.

⁶² U.S. Geological Survey. *The Impact of Sea-Level Rise and Climate Change on Pacific Ocean Atolls*. (https://www.usgs.gov/centers/pcmsc/science/impact-sea-level-rise-and-climate-change-pacific-ocean-atolls?qt-science_center_objects=0#qt-science_center_objects).

V. MULTILATERAL ENGAGEMENT

The multi-faceted challenges of migration and the global effects of climate change are increasingly the focus of international discussions and processes. The below sections analyze the role of key multilateral engagement initiatives, mechanisms, events, and stakeholders to identify opportunities for U.S. engagement.

Multilateral Initiatives and Mechanisms

Multilateral initiatives and mechanisms drive global engagements that elevate the issues and forge solutions around migration and climate change. The Nansen Initiative, launched by Switzerland and Norway, was created as a government-led, bottom-up consultative process intended to build consensus on the development of a protection agenda addressing the needs and legal rights of people displaced across international borders in the context of disasters and the effects of climate change. At the conclusion of the three-year (2012–2015) Nansen Initiative, the Platform on Disaster Displacement (PDD) followed the recommendations of the Nansen Agenda to build partnerships between policymakers, practitioners, and national engagement. The PDD is a group of states working together to forge durable solutions for displaced persons in the context of disasters and climate change. The PDD also leverages close partnership between governments, civil society groups, universities, and other key stakeholders, such as IOM, UNHCR, and the UN Environment Program (UNEP), by providing governments with a toolbox to address these challenges and build consensus, through knowledge sharing and consultations.

The 2030 Agenda for Sustainable Development, adopted by all UN Member States in 2015, recognized forcibly displaced people, including IDPs, as a vulnerable group in need of particular attention and calls for full respect of human rights. The Sustainable Development Goals (SDGs) recognize the positive contribution of migration to sustainable development, and the SDG's motto to "leave no one behind" is a clear call for sustainable development to be inclusive of the furthest left behind, including migrants and the forcibly displaced. Since then, the mechanisms used to provide opportunities for stakeholders to work together, including meetings, initiatives, working groups, and other facets, have been amplified to address the interconnection of climate change and migration, providing adaptation assistance, and supporting people on the move.

The UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS) has 95 Member States and helps raise awareness of specific matters that are relevant to the broader international space community. "Space and Climate Change" is a standing agenda item at UNCOPUOS and allows Member States to share information highlighting the unique vantage point space provides to provide critical data to decision makers to mitigate climate change.

The Paris Agreement creates an unprecedented framework for global action to avoid potentially catastrophic planetary warming and for building global resilience to the climate impacts we are already experiencing. The decision adopting the Paris Agreement established a task force on displacement, under the Warsaw International Mechanism for Loss and Damage (WIM), to provide recommendations on integrated approaches to avert, minimize, and address displacement related to the adverse impacts of climate change. The task force issued its first set of recommendations in 2018.⁶³

The international community also works to address adaptation and reduce the risk to communities through a variety of different initiatives. For instance, the Sendai Framework on Disaster Risk Reduction aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods, and health and in the economic, physical, social, cultural, and environmental assets of persons, businesses, communities and countries by 2030.

The international community also developed the non-legally binding Global Compact for Safe, Orderly and Regular Migration (GCM), which aims through its 23 objectives, to promote better management of migration at local, national, regional and global levels, including migration resulting from climate risks. Through Objective 5, the GCM supports the enhancement of pathways for regular migration, including cooperation to identify solutions for migrants compelled to leave their countries of origin due to the

⁶³ [Report of the Conference of the Parties on its twenty-fourth session, held in Katowice from 3 to 14 December 2018. Addendum. \(unfccc.int\)](#), page 43.

adverse effects of climate change, such as planned relocation and visa options. It also aims to mitigate the adverse drivers and structural factors that hinder people from building and maintaining sustainable livelihoods in their countries of origin. To support GCM implementation, the UN Network on Migration established the Migration Multi-Partner Trust Fund (MPTF) in May 2019 as the first pooled funding instrument focusing on migration, strengthening multilateral commitment and international cooperation. One of the fund's objectives specifically calls for States to support programs to address the adverse effects of climate change while ensuring respect and protection for the human rights of migrants.⁶⁴

Role of UN Resolutions

UN bodies such as the Security Council and General Assembly have increasingly debated climate risks and impacts. Increased U.S. diplomatic engagement of like-minded as well as other governments, especially those most impacted by climate change and displacement, can help generate more attention and resources to implement key agreements and resolutions that aim to address climate change and migration. Going forward the United States will engage in key UN resolutions with the following approaches:

- Enable a whole-of-government multilateral approach to foster greater diplomatic coherence and unity of messaging across U.S. agencies.
- Ensure greater consistency, coherence, synergies, and complementarity in framing climate change-related migration across various UN resolutions addressing climate change, migration, humanitarian response, refugee protection, human rights, development, peace and security, stabilization, and disaster risk reduction.
- Approach key UN resolutions as strategic opportunities to foster greater urgency for governments to act on climate and migration issues, establish standards and greater shared understanding of challenges, and deepen international collaboration, coordination, and partnerships toward durable solutions and burden-sharing.
- Seek to collaborate more frequently with like-minded governments, civil society groups, academia, the private sector, and other stakeholders to engage on shared interests and best practices sharing with Group of 77 (G-77) countries, whose security, stability, and development so often depend on improving approaches to climate change and migration. Many good opportunities exist, including UN resolutions and platforms on disaster risk reduction and humanitarian assistance, as these can bring into focus more narrowly defined security-related and other impacts, as well as preventive approaches fostering economic development.
- Leverage appropriate resolutions to more effectively call on, incentivize, and otherwise convince UN Member States to implement key agreements to which they are parties, such as the Paris Agreement, and mainstream efforts to strengthen resilience and reduce risks of displacement in the context of disasters, environmental degradation, and climate change into national planning processes.

Government Efforts on Climate and Migration

Significant action to address migration affected by climate change needs the buy-in and leadership from governments and other national stakeholders working together across borders.

Government-Led Initiatives and Working Groups

Many ongoing efforts are achieving progress in bringing environmental migration and disaster displacement to the center of government and multilateral attention because of joint efforts and active collaboration between UN entities, NGOs, academia, governments, the private sector, and other stakeholders.

The Migrants in Countries in Crisis (MICIC) Initiative is a government-led effort co-chaired by the United States and the Philippines, aimed at improving the protection of migrants when the countries in which they live, work, study, transit, or travel experience a conflict or natural disaster.

The intergovernmental Group on Earth Observations (GEO) aims to improve access to, synergies between, and the use of data and other information about Earth's physical, chemical, and biological systems. GEO monitors and assesses the status of and changes in our environment with the goal of fostering collaboration toward a more sustainable planet. GEO is constructing a Global Earth Observation System of Systems that will link together the many thousands of scientific observation instruments that have until now been operating in isolation. GEO aims to promote open, coordinated, and sustained data sharing and infrastructure for better research, forecasting, strategies, policy-making, investment decisions, and actions across many disciplines.

Regional Engagement

Governments are also working together regionally to address the impacts of climate change on migration. Regional engagements, through conferences, consultations, working groups, and other facets, allow governments to collaborate and find solutions in their unique situations.

The Regional Conference on Migration (RCM or Puebla Process) is a regional consultative process that is voluntary, non-binding, and operates by consensus with 11 permanent members (including the United States) in North and Central America. This multilateral forum works to foster regional efforts to strengthen migration governance, protect the human rights of migrants, promote appropriate linkages between migration and sustainable development, and other priorities that strengthen, modernize, and manage borders. In 2016, the United States demonstrated leadership on climate displacement by endorsing the RCM guide, which provides best practices for protection of people moving in the context of disasters.⁶⁵ The RCM guide supports the exercise of discretion on humanitarian grounds as provided for under immigration law and is based on existing best practices.

The Pacific Resilience Partnership and its Technical Working Group (TWG) on Human Mobility brings together regional organizations, governments, development partners and civil society organizations to engage on the topic of human mobility. It was used to prepare a dialogue with the High-Level Panel on Internal Displacement,⁶⁶ and plans to draft a regional framework to address climate related mobility. The TWG is part of the Pacific Islands Forum's resilience partnership and chaired by IOM.

In East Africa, including the Horn of Africa, member states under the Intergovernmental Authority on Development (IGAD) and the East African Community (EAC) engage to launch regional initiatives and address migration and climate change in the East Africa context. In 2020, IGAD and its member states established the Protocol on Free Movement of Persons (FMP) to ensure regional integration through free movement of persons, fostering socio-economic development, facilitating trade and investment, while affording equal protection under the law.⁶⁷ The EAC Secretariat is developing a Climate Change Policy and strategies to address the adverse impacts of climate change in the region and guide partner states and other stakeholders on the preparation and implementation of collective measures to address in the region.⁶⁸

Civil Society Engagement

Many of the driving initiatives and mechanisms above would not be possible without the local expertise of civil society organizations, NGOs, and local governments. The section below analyses the role civil

⁶⁵ The Nansen Initiative for the Regional Conference on Migration Member Countries (2016). (<https://disasterdisplacement.org/wp-content/uploads/2016/11/PROTECTION-FOR-PERSONS-MOVING-IN-THE-CONTEXT-OF-DISASTERS.pdf>).

⁶⁶ Lennartz, T. (2021). Generating Political Commitment to Address Human Mobility in the Context of Climate Change on the Regional and National Level. *Internal Displacement Monitoring Center*. (https://www.internal-displacement.org/global-report/grid2021/downloads/background_papers/background_paper-policies.pdf).

⁶⁷ Protocol to the Treaty Establishing the African Economic Community Relating to Free Movement of Persons, Right of Residence and Right of Establishment. (https://au.int/sites/default/files/treaties/36403-treaty-protocol_on_free_movement_of_persons_in_africa_e.pdf).

⁶⁸ East African Community. *EAC Climate Change Policy Framework*. (<https://www.eac.int/environment/climate-change/eac-climate-change-policy-framework>).

society plays in the multilateral engagement and identifies opportunities for the United States to strengthen its coordination.

The Role Civil Society Should Play in Climate Change and Migration

Civil society provides in-depth, specialized knowledge of the communities and locations that the multilateral engagements seek to support, including:

- Civil society, NGOs, and local leaders have the advantage of understanding the context and intricacies of communities impacted by climate change, while also having engagement in global processes with the UN, INGOs, governments, and others.
- Civil society organizations are often the first to respond when a disaster strikes and play a pivotal role to responding and understanding displacement by climate change.
- They also provide a gate to accessing further civil societies, local governments, and community networks to ensure success in response. For example, the Climate Action Network unites 1,500 civil society organizations across 130 countries to undertake collective action to address climate crisis and social and racial justice.
- The civil science agencies and institutions in the U.S. Government and academia maintain robust predictive analytic models, tools, and capabilities related to understanding climate impacts to human systems that could precipitate migration.
- Civil science agencies can support adaptive capacity (including in the development of forecasting tools and assessment generation) in multilateral engagement.
- Most civil science agencies have as their primary mission a focus internal to the United States, and so additional authorization and funding mechanisms that would allow them to expand their examination of climate change and climate change impacts as a global problem and in a global perspective may be helpful.

Opportunities for and Barriers to Civil Society Engagement

By being closest to the people most affected by climate change, civil society provides a range of opportunities for addressing climate-related migration, but also faces many barriers. These opportunities and barriers become prevalent in legal, organizational, political, security, and economic spaces.

Civil society organizations provide crucial input in addressing migration and climate change in their communities. Responder engagement with civil society facilitates access to timely, reliable data and evidence of a direct voice that allows for a more accurate and targeted response. Civil society organizations also often engage with the commercial and private sector in the location and ensure that communities have access to the information they need to make informed decisions regarding migration. Civil society organizations can bring innovative thinking to the table to address issues within their communities. For example, NRC and local partners engaged national authorities to develop DRR and other DRR-relevant policy instruments to address disaster displacement with the goal to support governments in developing or revising their DRR strategy using the UNDRR and NRC Words into Action on disaster displacement guide. In South Africa, the National Disaster Management Centre asked for NRC's support to develop specific guidelines on internal disaster displacement as part of a broader effort to enhance its work and the implementation of the National Disaster Management Framework so a national-level task team to develop these guidelines on internal disaster displacement was set up with technical support from the NGO.

However, being in the same location as slow-onset or sudden-onset climate events means civil society is susceptible to the same disasters. Civil society groups and local NGOs face greater localized barriers as they are reliant on local infrastructure, economies, and resources. Although civil society organizations may have more in-depth knowledge of the effects climate change is having on a specific population or region, they can also struggle to be heard within larger fora that include national and international actors. Since civil society and NGOs possess fewer legal flexibilities and the security resources often provided to larger international actors, they may struggle to access and attend multilateral engagements, especially in highly politicized settings.

Certain UN member states also work to obstruct NGO access to these fora. NGOs undertaking efforts to address displacement spurred by conflicts affected by climate change, including through droughts and increased competition for precious resources, are too often subject to violent attacks and intimidation by state and non-state parties to conflicts, as well as legal risks related to operating in areas controlled by terrorist groups. To overcome these barriers and ensure that global responses to migrant and refugee issues both reflect and address realities on the ground for migrants and the communities, civil society engages governments and multilateral bodies, such as UNGA and the UN Human Rights Council, on support for local actors, protection of NGO workers and other civilians, and respect for international law. Civil society also creates networks and councils, such as the Mayors Migration Council (MMC), to empower and enable civil society with access, capacity, knowledge, and connections to engage in migration diplomacy and policymaking at the international, regional, and national level.⁶⁹

In addition, civil society faces significant legal, policy, and organizational hurdles for multilateral engagement. Engaging across these sectors, though important and vital for a holistic and whole-of-government and whole-of-society response to migration, often experiences differences in priorities and organizational cultures. One example includes the security and classification rules, guidelines, and policies that limit law enforcement and national security experts from engaging with non-security partners, including those in the Federal science agencies, foreign policy community, academia, commercial industry, and non-governmental organizations, despite these organizations often having the most direct experience and knowledge pertaining to climate-related migration. Additionally, many of the tools, models, and capabilities within organizations like academia and the U.S. civil science agencies (i.e., USGS, NOAA, and NASA) are primarily focused on domestic U.S. mission areas and problem-sets, though they have the methodological capability – through downscale country and regional modeling – to be applied internationally.

Civil society organizations and local communities continue to play a pivotal role in global multilateral engagement effectively addressing climate change-related migration. Raising the voices of local actors and front-line stakeholders will continue to be a priority of United States multilateral diplomacy as we address climate change and migration.

⁶⁹ Mayors Migration Council. (<https://www.mayorsmigrationcouncil.org/>)

VI. RECOMMENDATION⁷⁰

Establish a Standing Interagency Policy Process on Climate Change and Migration

Establish a standing interagency policy process on Climate Change and Migration to coordinate U.S. government efforts to mitigate and respond to migration resulting from the impacts of climate change that brings together representatives across the scientific, development, humanitarian, democracy and human rights, and peace and security elements of the U.S. Government.

The standing interagency policy process on Climate Change and Migration should analyze the structure and coordination of U.S. policy, strategy and budgeting affecting populations vulnerable to climate change and migration and foreign assistance for climate change impacts on migration, review gaps and advance work around report recommendations. The standing interagency policy process on Climate Change and Migration should also take a holistic view of opportunities to address climate migration through supporting better understanding of climate and migration, assistance to governments and civil society to mitigate and respond to climate change, assistance to support people to adapt in place and people on the move, and assistance to migrants and host communities in destinations.

Given that climate-induced weather extremes will grow in severity in unexpected ways, the standing interagency policy process on Climate Change and Migration will provide a venue for developing long-term strategies consistent with the evolving scientific understanding of climate impacts, such as those communicated through the Intergovernmental Panel on Climate Change and the U.S. National Climate Assessment.

Lines of Effort to Consider through the Standing Interagency Policy Process on Climate Change and Migration

U.S. Government

- Consider developing a complementary report that addresses the impacts of climate change on migration/relocation within the United States to include special consideration in areas of rapid climate change and dense populations. The U.S. Government will evaluate coordination mechanisms to assist domestic communities already in need, as well as those expected to be at risk in the near future, given that a number of U.S. communities are already experiencing severe impacts from sea-level rise, permafrost thaw, drought, and wildfires.
- Encourage increased collaboration among climate scientists, sustainable development practitioners, human rights defenders and activists, and displacement experts, in consultation with other governments, local authorities, and communities with experience of planned and voluntary relocation. Identify and share best practices from across federal agencies engaged in climate resilience and preparedness activities with other nations to be further integrated into a suite of climate preparedness services as a means of reducing the number of forced migrations due to climate change.
- Assess how climate change may intersect with the criteria for refugee status, including claims:
 - based on environmental defense or climate change activism;
 - in which individuals may not have a viable internal relocation alternative because of the impacts of climate change;
 - in which individuals may experience the withholding or denial of relief from climate change impacts based on a shared protected characteristic, such as race or ethnicity; and

⁷⁰ Note: Recommendations and proposed actions are subject to appropriations and the Administration's resource allocation process.

- in which climate change may impact the state's willingness or ability to protect individuals fleeing persecution.

Improved Analytics

- Assess investments in predictive tools that forecast conditions correlated with migration and displacement and provide information in an accessible, open-access format to policy makers and program managers. Integrate these systems into agency planning processes.
- Empower the federal civil science agencies to increase provision of and support for analytic models and tools to international mission-areas to ensure climate science informs climate migration assessments and tracking.
- Consider investments in research, analysis, and programming to understand and address important questions about the likely evolution and consequences of climate related migration, including:
 - How do different social, economic, geographic, political, and other characteristics mitigate or exacerbate the effects of climate change on migration?
 - What geographies' conditions are most associated with the risk of immobility and trapped populations?
 - What is the role of migration in supporting adaptation and resilience from the household to national scales?
 - What are the likely risks associated with both new conflict flashpoints that may emerge in response to temporary or protracted forced displacement as well as the impact of climate driven migration on pre-existing conflict flashpoints, such as those associated with seasonal migration (e.g., farmer herder conflict)?
 - What are the likely responses of adversary and competitor states, as well as non-state and hybrid armed groups, in response to environmental shocks and climate driven migration?

Programming and Investments

- Assess how the United States can contribute to durable solutions for climate-related displacement by systematically including at risk IDPs and refugees in development programming by U.S. Government agencies including USAID and the International Development Finance Corporation (DFC). Review U.S. Government positions with International Financial Institutions and Multilateral Development Banks.
- Evaluate increased investments in resilience-building measures and local climate adaptation efforts, including capacity building, employing principles of locally led, equitable, and just development and ensuring that marginalized groups, people, and communities are intentionally and robustly included from the inception of activities. Researchers agree the pathway from climate-related migration to conflict is not direct and can be interrupted by robust institutions, inclusive and accountable governance, and rapid response that is equitable and culturally responsive.
- Consider scaling up support to urban areas to help localities plan for, accommodate, and integrate migrants and those displaced. This involves helping municipalities and communities build resilient urban systems, and ensuring migrants and displaced persons, particularly women and youth, have access to livelihood opportunities, health care, civic and political life, and labor and human rights protections in urban and peri-urban destination areas. This also involves enhancing integration of migration and displacement planning in climate adaptation, risk reduction, national development policies, internal migration governance, and increasing mobile social protection to further support people on the move.
- Evaluate how to implement measures, including best practices for the private sector, to ensure that climate actions to limit warming and increase resilience do not inadvertently displace populations in vulnerable situations, especially Indigenous people and marginalized groups

(e.g., deforestation to make room for large-scale solar power farms exacerbates climate change). Implement measures, including best practices for the private sector, to ensure the exploration for and extraction of green energy minerals does not inadvertently create or exacerbate new resource-based conflict.

- Consider engaging and coordinating more consistently with key multilateral stakeholders to take on a bold, cross-cutting leadership role in regional initiatives and multilateral mechanisms, where the United States can lead in providing transparent and prioritized sharing of information between domestic and international stakeholders, bridging the gap between climate change and migration actors, as well as sending observers to other regional engagements to expand state-to-state collaboration.
- Evaluate how to address critical gaps in development, humanitarian, and climate finance by committing funding toward the UN Network on Migration-established Migration Multi-Partner Trust Fund (MPTF) and other mitigation and adaptation efforts, and track the impacts in existing funding while avoiding burdening front line actors.
- Assess how to increase climate and/or environmental impact assessments in program planning and resource distribution to mitigate contextual climate drivers of migration.

Legislative

- Evaluate opportunities for funding for development and humanitarian programming to provide aid to people when displaced, help them recover rapidly for safe returns to their homes, support climate risk reduction actions, address the root causes of migration, support climate adaptation, build capacity at local, national, and regional levels, and harness the potential positive development impact of migration. In particular, increase social protection investments, including through economic inclusion models that target women, youth and groups in vulnerable situations, labor mobility and shock responsive and mobile safety nets.
- Explore with the Congress and stakeholders the need for additional protections for individuals who can establish that they are fleeing serious, credible threats to their life or physical integrity as a result of climate change.
- Evaluate whether reforms to the TPS statute would offer appropriate protection needs arising from climate-related displacement such as by removing the requirement that governments request TPS designation in cases of “environmental disaster,” establishing a legal mechanism to allow all TPS beneficiaries who otherwise qualify to apply for adjustment to permanent status under existing law, and updating the criteria for designation or re-designation.

ANNEX I: GLOSSARY OF TERMS

Adaptation: Process of adjustment to actual or expected climate change and its effects. Adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate change and its effects.

Adaptive capacity: Ability of systems, institutions, humans, and other organisms to adjust to potential damage, take advantage of opportunities, and respond to consequences of climate impacts.

Agro-pastoralism: Combination of agriculture, crop-based livelihood systems, and pastoralism.

Biodiversity: Variety of plant and animal life in the world or in a particular habitat or ecosystem.

Climate change: A change in the state of the climate that can be identified (for example, using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity.

Climate change-related migration (shorthand internal climate migration): Climate change-related migration is migration that can be attributed largely to the slow-onset impacts of climate change on livelihoods owing to shifts in water availability and crop productivity, or to factors such as sea level rise or storm surge.

Climate migrant/migration: Climate migrants are people who move - within or between countries - because of climate change-related migration (see above).

Coastal erosion: Erosion of coastal landforms that results from wave action, exacerbated by storm surge and sea level rise.

Deforestation: Conversion of forest to non-forest.

Desertification: Land degradation in arid, semi-arid, and dry sub-humid areas, collectively known as drylands, resulting from many factors, including human activities and climatic variations. The range and intensity of desertification have increased in some dryland areas over the past several decades

Displacement: Forced removal of people or people obliged to flee from their places of habitual residence.

Environmental mobility: Temporary or permanent mobility as a result of sudden or progressive changes in the environment that adversely affect living conditions, either within countries or across borders.

Evacuation: Moving people and assets temporarily to safer places before, during or after the occurrence of a hazardous event in order to protect them.

Extreme heat event: Three or more days of above-average temperatures, generally defined as passing a certain threshold (for example, above the 85th percentile for average daily temperature in a year).

Extreme weather event: Weather event that is rare at a particular place and time of year with characteristics of extreme weather varying from place to place in an absolute sense. When a pattern of extreme weather persists for some time, such as a season, it may be classified as an extreme climate event, especially if it yields an average or total that is itself extreme (for example, drought or heavy rainfall over a season).

Forced migration: Migratory movement in which an element of coercion exists, including threats to life and livelihood, whether arising from natural or human-made causes. This includes movements of refugees and internally displaced persons as well as people displaced by natural or environmental disasters, chemical or nuclear disasters, famine, or development projects.

Gender Based Violence: An umbrella term for any harmful threat or act directed at an individual or group based on actual or perceived biological sex, gender identity and/or expression, sexual orientation, and/or lack of adherence to varying socially constructed norms around masculinity and femininity. It is rooted in structural gender inequalities, patriarchy, and power imbalances. GBV is typically characterized by the use or threat of physical, psychological, sexual, economic, legal, political, social and other forms of control and/or abuse. GBV impacts individuals across the life course and has direct and indirect costs to families, communities, economies, global public health, and development.

Hazard: The potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.

Human Security: UN Member States affirmed the universal value of human security in General Assembly resolution 66/290, adopted in 2012 where it is agreed that human security is an approach to assist Member States in identifying and addressing widespread and cross-cutting challenges to the survival, livelihood, and dignity of their people.

Immobility: Inability to move from a place of risk or not moving away from a place of risk due to choice.

Internal migration (migrant): migration within national borders.

International migration (migrant): Migration that occurs across national borders.

Irregular Migration: Movement of persons that takes place outside the laws, regulations, or international agreements governing the entry into or exit from the State of origin, transit or destination.

Migration: Movement of persons that results in a change in the place of usual residence.

Mitigation (of climate change): Human intervention to reduce the sources or enhance the sinks of greenhouse gases.

Mobility: Movement of people, including temporary or long-term, short- or long-distance, voluntary or forced, and seasonal or permanent movement as well as planned relocation.

Parole: The Immigration and Nationality Act (INA) authorizes the Secretary of Homeland Security to use their discretion to parole any alien applying for admission to the United States temporarily for urgent humanitarian reasons or a significant public benefit. Parole allows an individual, who may be inadmissible, removable or otherwise ineligible for admission to the United States, to be paroled into the United States for a temporary period. Parole ends when the parole period expires, when the parolee leaves the United States, or when the parolee obtains an immigration status, whichever occurs first. Individuals can self-petition for parole and can also be petitioned by a third party such as State.

Planned relocation: People moved or assisted to move permanently away from areas of environmental risks.

Rainfed agriculture: Agricultural practice relying almost entirely on rainfall as its source of water.

Rapid-onset event: Event such as cyclones and floods which take place in days or weeks (in contrast to slow-onset climate changes that occur over long periods of time).

Refoulement: The act of forcing a refugee or asylum seeker to return to a country or territory where he or she is in danger of persecution or torture.

Representative Concentration Pathway (RCP): Trajectory of greenhouse gas concentration resulting from human activity corresponding to a specific level of radiative forcing in 2100.

Regular Migration: Migration that occurs in compliance with the laws of the country of origin, transit and destination.

Sea level rise: Increases in the height of the sea with respect to a specific point on land.

Slow-onset climate change: Changes in climate parameters—such as temperature, precipitation, and associated impacts, such as water availability and crop production declines—that occur over long periods of time.

A smallholding or smallholder farmer: A small farm operating under a small-scale agriculture model. Definitions vary widely for what constitutes a smallholder or small-scale farm, including factors such as size, food production technique or technology, involvement of family in labor and economic impact.

Stateless person: A person who is not considered as a national by any State under the operation of its law.

Stressor: Event or trend that has important effect on the system exposed and can increase vulnerability to climate-related risk.

Subsistence agriculture: Occurs when farmers grow food crops to meet the needs of themselves and their families on smallholdings. Subsistence agriculturalists target farm output for survival and for mostly local requirements, with little or no surplus.

Sustainable livelihood: Livelihood that endures over time and is resilient to the impacts of various types of shocks including climatic and economic.

System dynamics model: A model which decomposes a complex social or behavioral system into its constituent components and then integrates them into a whole that can be easily visualized and simulated.

Vulnerability: Propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

ANNEX 2: EXAMPLES OF CLIMATIC TRENDS AND EXTREMES THAT INFLUENCE MIGRATION

Manifestations of climate change	Environmental change	Pathways/effects that influence human security	Observed or potential influence on migration
Increasing warm days and nights	Decreases in surface and groundwater; desertification	Arable/grazing land degradation; drought stress on flora and fauna; lack of water for human settlements and agriculture; local economic decline; limitations to outdoor activities under extreme temperatures	Decline in pastoral land use, African Sahel; rural to urban migration in Malawi concurrent with increasing frequency and severity of drought since 1970
Heat waves increasing over land and ocean	Increase in temperature extremes, exceeding heat stress tolerance level of humans and ecosystems	Increase in excess death rate; impacts on food safety and changing ecological patterns of vector-borne, zoonotic, and environmentally sourced (e.g., from water-, soil-, or dust-borne pathogens) infectious diseases; increase in wildfire; coral bleaching events; more frequent harmful algal blooms	Heat wave deaths in India (2015), Europe (2019); impacts of weather extremes in highly vulnerable economies (e.g. Dominican Republic, Jamaica); agricultural land degradation
Increases in the intensity and duration of drought	Declining lake storage, streamflow, and groundwater	Water resource shortages and food insecurity; land degradation; reduction in crop, forest, and livestock production; increase in wildfire	Migration and conflict over water in Burkina Faso (ongoing); migration from drought-stricken lands in Ethiopia, Iraq and Somalia (2019)
Increase in heavy precipitation events	Flooding, erosion, channel modification, debris flows	Loss of life; impacts on homes and infrastructure; damage to crops and increase flood insecurity	Flash floods in Nepal (1993, 2020); monsoonal floods and abrupt migration in Bangladesh (1987-1988, 2004, 2007)
Increases in intense tropical cyclone activity	Storm surge flooding, landslides, coastal erosion, saltwater intrusion in soils and surface water, deforestation	Loss of human life and livelihoods; impacts to the built environment; salinity impacts on crops	Migration from Caribbean islands in the aftermath of Hurricanes Irma and Maria (2017) and after Tropical Cyclone Gorky, south-eastern Bangladesh (1991)
Rising sea levels	Erosion and inundation of coastal shorelines and low-lying environments	Impacts on the built environment, degradation of water supplies, economic losses; enhanced vulnerability to extreme events	Overwash and groundwater contamination in Pacific and Indian Ocean atolls (e.g., 5 m King tides, Republic of Marshall Islands, 2014)
Thawing permafrost	Collapse and retreat of Arctic coastal shorelines	Impacts on housing and infrastructure, ecosystems and release of GHGs; acceleration of warming	Relocation of Indigenous communities on the Arctic shoreline
Ocean warming and acidification*	Changes in marine species distribution, loss	Loss or movement of fish stocks; loss of tourism, subsistence	Economic losses, large-scale coral bleaching, e.g. Guam and

	of coral and other calcifying organisms	livelihoods, and other economic impacts	the Commonwealth of the Mariana Islands (2014-2017), Fiji (2020), Australia (2016)
Global increase in mean sea level	Inundation of low-lying coastal landforms and small islands	Loss of freshwater resources; chronic flooding of coastal communities; impacts on the built environment	Planned relocation of all or parts of small island nations, such as Tuvalu, Vanuatu, the Cartaret Islands of Papua New Guinea, and the Marshall Islands
Decline in snow, land-based ice, and sea ice	Changes in the seasonality and volume of meltwater discharge; pluvial flooding and glacial lake outbursts; ecosystem changes	Decline of dry-season water supplies, affecting sustainability of natural and human systems; effects on dam stability; acceleration of warming	Increasing flood threats in parts of China, the Andes, and the Indian sub-continent impacts on subsistence hunting

* Ocean acidification is not the result of the warming global temperatures, but climate change and ocean acidification are both caused by greenhouse gas emissions, particularly of CO₂.