



A Climate of Conflicts?

Political violence correlates strongly with climate: Civil conflict risk is seven to ten times higher in dry and tropical climates than in continental climate zones. Yet, there is little evidence that climatic variability and change are important in understanding this pattern. The prospect of climate change causing forced migration and food and economic insecurity, meanwhile, raises new concerns about possible future conflict scenarios.

Brief Points

- Climate change is not likely to have a common and universal effect on armed conflict risk.
- Indirect effects of climate on conflict may work via migration, food insecurity or economic shocks.
- Many of the factors that increase conflict risk also make societies vulnerable to climate change.
- Investing in climate change adaptation is likely to have significant, positive security implications.

Halvard Buhaug

Peace Research Institute Oslo (PRIO)

Ida Rudolfson

Peace Research Institute Oslo (PRIO)

The climate–conflict overlap

Contemporary civil conflicts are disproportionately located in dry and tropical areas, close to the Equator (Figure 1). In fact, the historical civil war rate among countries in warm and dry climates is ten times higher than the conflict rate among countries located in cooler, continental climate zones. The reason for this distinct clustering is not well understood. Common explanations point to a similar distribution of key underlying risk factors, such as poverty, natural resource dependence, poor governance, and unstable neighborhoods, but much of the variation in the geographic pattern remains unexplained.

If conflicts cluster in certain climates, could climate itself be a contributing cause? Dry and semi-arid regions, such as the African Sahel and parts of the Middle East, are characterized by highly volatile weather patterns and fragile ecological systems, which jointly may have impeded intensive agriculture and long-term investments, and the development of robust economic and political institutions.

Even if climate might be indirectly associated with societies' exposure to violent conflict through its influence on fundamental socio-economic, demographic, and political development trajectories, this association is complex and far from deterministic. Meanwhile, a separate question of far greater urgency is attracting increasing scientific as well as political attention: whether extreme weather and shifting climatic patterns affect the risk and distribution of armed conflict.

Climate variability and conflict

Motivated by recent conflict events in Darfur and the Arab world, there has been a rapid surge in research investigating the statistical relationship between climatic changes and armed conflict. While some of these studies report a positive relationship, others report negative effects or fail to uncover any relationship at all. Taken together, the research community concludes that climatic variability plays at most a marginal role in accounting for state-based violent conflict.

The lack of scientific evidence of a direct climate-conflict link might suggest that these phenomena are causally unrelated. However, such a conclusion would be premature and possibly false. First of all, while the public debate concerns consequences of climate change, the academic literature is largely limited to considering effects of climate variability, or short-term climatic changes, including individual droughts and other extreme weather phenomena. It is not given that societies will respond similarly to gradual, long-term shifts in normal conditions as they do to abrupt changes. The complex and reciprocal nature of the long-term climate-conflict relationship makes it very difficult to isolate and quantify the true causal contribution of climate change on armed conflict risk.

Second, much of the statistical empirical research to date is limited to considering possible aggregate and general effects between climatic anomalies and armed conflict. In contrast, qualitative work as well as rele-

vant policy and NGO reports typically stress the indirect and interactive nature of climate-driven impacts, portraying climate change as a 'threat multiplier' in vulnerable regions.

Causal mechanisms

Accepting that climatic variability and change do not have a uniform and universal impact on violent conflict risk, what might be the likely intermediate impacts that could translate adverse environmental hardship into organized violent conflict?

Three plausible causal mechanisms are considered particularly important in this regard, although their relevance depends critically on the presence of a set of conflict-facilitating scope conditions (Figure 2).

Migration

Today, there are more people living in cities than in rural areas, and by 2050 urban settlers will make up 70 percent of the global population. Virtually all population growth over the next 35 years will be absorbed by cities in the Global South.

Burgeoning cities in poor countries often lack adequate legal structures, sanitation, and health care. Also, job opportunities in the formal labor market may be limited, making the urban poor especially vulnerable to environmental hazards and socioeconomic shocks.

Physical processes associated with climate change are expected to accelerate rural-urban migration further, thereby also adding strains to public goods delivery in urban centers. For example, durable droughts and gradual deterioration of environmental conditions may push marginal populations into cities in order to find new modes of livelihood. Such a dynamic was discernible in the years preceding the 2011 outbreak of the Syrian civil war. Moreover, extreme weather events have the potential to trigger sudden migration flows through massive material destruction and disruption of local food and water supplies.

Migration, in turn, may be associated with increased conflict risk through several pathways: First, the arrival of migrants can lead to competition over scarce resources, such as land, food, and jobs. The violence in Darfur in the early 2000s is sometimes portrayed as a climate-driven land-use conflict. Second,

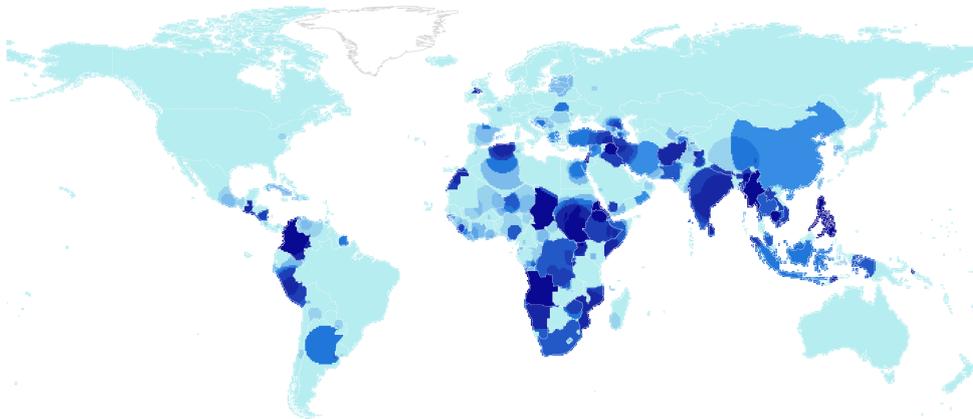


Figure 1. Global distribution of armed civil conflict since 1946. Darker shades indicate more durable zones of conflict.

migrants belonging to a different ethnic or cultural group than the host population can give rise to intercommunal tensions. The reluctance of the European Union to open up its borders in response to the recent Mediterranean migration crisis can be understood partly as a concern about possible consequences for the EU's internal security. Third, large transnational migration flows can create mistrust between the country of origin and receiving states regarding the treatment of the migrants. Due to poor data and lack of conceptual clarity, the causes and consequences of so-called 'environmental migration' have not been subjected to rigorous comparative research.

Distress-induced migration need not be exclusively negative, however. The urban absorption of rural migrants implies that cities can act as a societal safety valve, relieving the countryside of increasingly unsustainable environmental pressures. In addition, cities provide better access to health care and education opportunities, and concentration of people creates economies of scale. Historically, economic development has been strongly associated with rapid rural-urban migration.

Food insecurity

According to the World Bank, the global 2007–08 food crisis triggered demonstrations and riots in at least 48 countries. Among the world's top nine wheat importers – all located in the Middle East and North Africa – only Israel and the United Arab Emirates escaped social turmoil. While experts agree that the sudden increase in food prices was driven primarily by increasing fuel and fertilizing costs as well as market speculation, severe droughts and heat waves in major food-exporting countries also contributed to the crisis.

The largest share of food-insecure people can be found in Sub-Saharan Africa, where war, political instability, and lack of modern agricultural equipment have impeded food production and redistribution. Being significant food exporters in the early post-Colonial period, many African countries today are heavily dependent on imports of key food commodities, with resulting vulnerability to fluctuating food prices and transportation costs.

Food insecurity is closely related to poverty and poor governance. Farmers living on the

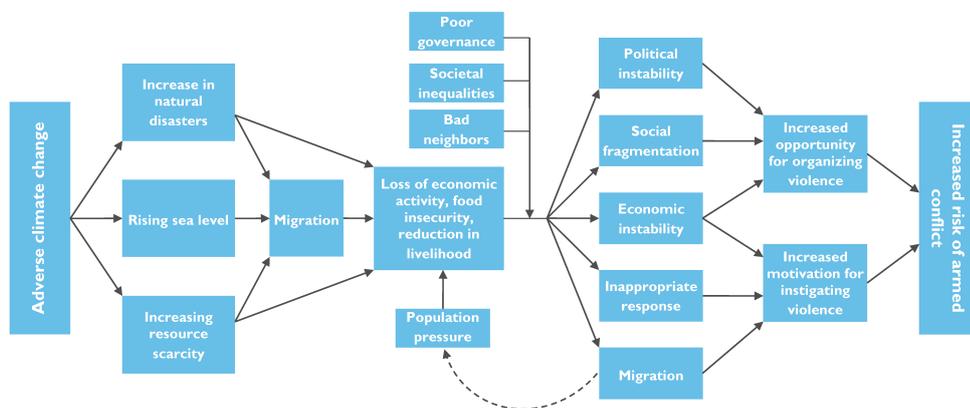


Figure 2. Plausible causal pathways

margins may have limited resources to cope with income loss from a bad harvest, and a lack of reliable seasonal weather forecasts impedes selling off livestock before the drought strikes. Agricultural output also influences local food supplies, and without well-functioning subsidies and redistribution systems, the consumer price of basic food commodities may double or triple in a matter of weeks.

Market price stability exerts a strong effect on social stability. Rapid upward shifts in food prices make it difficult for the poor to maintain their livelihood. A severe food crisis, in turn, is a symptom of poor governance and can serve as a powerful motivating cause for mobilization and protest. Large price volatilities also lead to uncertainty about the future, deterring investments in new production assets and increasing the cost of insurance schemes. Among the conditions associated with large price volatilities are high and increasing exposure to extreme weather events, and high dependence on food production systems vulnerable to such risks.

Economic shocks

Extreme weather events – and in the longer run, changing climatic conditions and sea-level rise – can have severe economic impacts beyond household-level effects on food prices and income from agricultural production.

Both export- and import-dependent agricultural economies are vulnerable to climatic shocks, which can dramatically reduce state revenues and impose unsustainable external debt. Increased spending on food imports may come at the expense of other social programs, such as health and education. In-

creased exposure to climatic hazards also reduces tourism, trade, and foreign direct investments.

Poor economic performance and economic shocks, in turn, are among the most robust and powerful correlates of civil conflict. Loss of state revenues can give rise to political challengers from within the regime, and poverty also lowers the opportunity cost of joining a rebellion.

Adapting to shifting environmental conditions and making the society resilient to future extremes are costly. This is especially the case in low-elevation coastal zones threatened by sea-level rise, where most of tomorrow's mega-cities will be found. Fragile states may lack the political will, financial resources, and know-how to adapt successfully, suggesting that the future will see an increasing gap between stable, wealthy societies and those caught in a poverty and instability trap.

Scope conditions

Societies do not respond to nature in a direct and mechanistic fashion. The extent to which climatic anomalies and change will affect migration patterns, food security, and economic development depends critically on the political and socioeconomic context. In fact, many of the factors that drive armed conflict today also determine societies' vulnerability to climate change: Countries characterized by chronic political instability, large and heterogeneous populations, widespread poverty and inequality, and high dependence on rain-fed agriculture are much more likely to elicit any of the adverse social effects described above (Figure 3).

However, neither forced displacement nor economic and food insecurities necessarily implicate violent contestation. The type and intensity of social responses will depend on characteristics of the affected population, as well as on the presence of alternative coping mechanisms, such as market transfers and state accommodation. Indeed, the response by the state is probably much more important in shaping the likelihood of conflict than the magnitude of the climatic phenomenon itself. To the extent that government-sponsored relief efforts reflect extant political power structures, for example by allocating a disproportionate share of the compensation to supporters of the incumbent regime, climate change may contribute to accentuating core societal cleavages and sow the seeds for future social unrest.

At the same time, an exogenous shock such as a rapid-onset climatic disaster may constitute a window of opportunity for improving inter-communal relations and political trust. For example, the 2005 peace agreement in Aceh that formally put an end to the long-standing secessionist insurgency has been attributed partly to the devastating impact of the 2004 Indian Ocean tsunami, and the subsequent concessions and relief aid granted by the Indonesian government.

Implications for the future

Forced migration, food insecurity, and economic shocks constitute only three of several possible mechanisms linking climate change to violent conflict. At the same time, increasing societal challenges imposed by climate change may also provide incentives for cooperation – among communities as well as between states. Indeed, a number of scientific studies reveal that cooperation, not conflict, appears to be the modal response to increas-

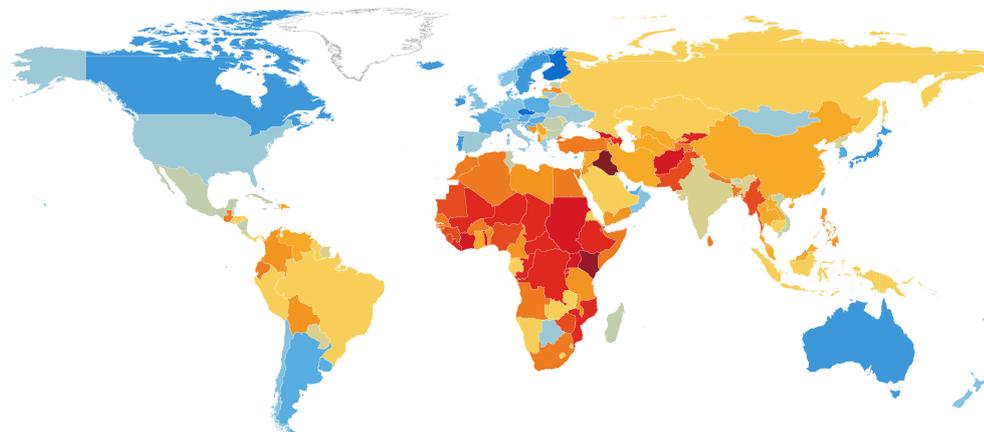


Figure 3. Heat map of country-specific climate vulnerability

ing resource scarcities. Also, while we are yet to see an armed conflict fought primarily over access to water or other subsistence resources, there is no shortage of treaties established to ensure equitable resource access for recognized user groups in resource-poor areas.

Whereas no one would question the fact that armed conflicts often have severe impacts on the environment, there is little scientific support for the notion that climatic phenomena negatively affect social stability and peace. At the same time, climate change is projected to accentuate adverse conditions already characterizing societies with high rates of political violence by limiting prospects for sustained economic growth and making climate change adaptation increasingly costly.

The result may be a growing gap between the haves and the have-nots: between wealthy and stable societies that are well prepared for the future, and poor, conflict-ridden societies that lack the necessary resources to adapt successfully and break out of the conflict trap.

How can we minimize the likelihood that this ‘inequality scenario’ will come about? Ensuring

good governance and a well-functioning economy are key. Investing in equitable access to health care and education, technology innovation and sustainable economic development, as well as supporting attempts to improve the transparency and capacity of political regimes therefore emerge as central development policies. Securing political stability and sound economic growth will not only improve societies’ capability to adapt successfully to tomorrow’s climate-related challenges, it will also aid their incentives to handle and solve social discontent peacefully. In this sense, the security challenges associated with climate change are primarily development challenges. ■

THE AUTHORS

Halvard Buhaug is Research Professor at PRIO and leader of two new research projects on climate change and security, funded by the European Research Council and the Research Council of Norway. Ida Rudolfson is Research Assistant at PRIO and, starting in September 2015, Doctoral Researcher at Uppsala University.

THE PROJECT

The Conflict Trends project aims to answer questions relating to the causes, consequences and trends in conflict. The project will contribute to new conflict analyses within areas of public interest, and works to produce thorough and quality based analysis for the Norwegian Ministry of Foreign Affairs.

PRIO

The Peace Research Institute Oslo (PRIO) is a non-profit peace research institute (established in 1959) whose overarching purpose is to conduct research on the conditions for peaceful relations between states, groups and people. The institute is independent, international and interdisciplinary, and explores issues related to all facets of peace and conflict.