

WORKING PAPER

CLIMATE CHANGE AND CONFLICTS IN THE MIDDLE EAST AND NORTH AFRICA

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Issam Fares Institute for Public Policy and International Affairs

Published by the Issam Fares Institute for Public Policy and International Affairs (IFI), at the American University of Beirut (AUB).

This report can be obtained from IFI or can be downloaded from the following website: www.aub.edu.lb/ifi.

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WORKING PAPER #50

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ABSTRACT

By adding pressure on already scarce resources and compounding preexisting threats such as political and economic deterioration, climate change's likely contribution to exacerbating conflicts and violence in the MENA region should not be dismissed.

However, the literature is broadly inconclusive about establishing a linear link between the effects of climate change and conflicts in MENA. Additional research and data collection are required to comprehensively examine the accuracy and magnitude of such links, depending on the many contexts they may fall under.

Considering that a number of countries are experiencing the repercussions of climate change without induced insecurity or conflict, well established and effective institutions are crucial for having higher levels of resilience, and adaptation in the face of climate-related shocks.

Climate induced migration should be addressed not only within the framework of climate change, but also by means of political economies that address other economic, technological, or political conditions that might foster or limit migration.

Conflict-sensitive adaptation measures can help avoid situations in which climate change heightens existing risks of destabilization or violent conflict. If designed and implemented properly, adaptation measures could help reduce tensions and catalyze processes that promote stability. The ways in which adaptation measures are designed and implemented can be a key determinant of climate change resilience.

INTRODUCTION

In the Middle East and North Africa (MENA), temperatures are rising faster than global average. It is predicted that climatic extremes will worsen in the coming decades¹. Compounding these effects, the region's population is projected to double by 2050, putting the region's resources under enormous pressure.

It has been debated that changes in global climate have been responsible for episodes of widespread violence and conflicts. The Intergovernmental Panel on Climate Change (IPCC) says there is "medium confidence" that climate change can indirectly increase risks of violent conflict by amplifying poverty and economic shocks².

This working paper argues that climate change alone will not directly induce conflict. The link between climate change and conflict exists but is still weak and inconclusive. However, climate change is imposing additional pressures on already scarce resources and deepening pre-existing menaces connected to water security, land degradation, migration and forced displacement. Countries should build their resilience to reduce the risks of climate change and reduce its influence in conflicts.

¹ Intergovernmental Panel on Climate Change. https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

² Thomas F. Homer-Dixon. *On the Threshold: Environmental Changes as Causes of Acute Conflict*. International Security. Vol. 16, No. 2 (Fall, 1991), pp. 76-116. The MIT Press.

EXISTING THREATS

The threats that pose the greatest risk include water scarcity, food availability – local/regional production and import of food and the reliance on foreign markets; and government instabilities.

By 2030, temperatures in the MENA region could rise by 2°C³. The region is already the world's most water-scarce, food-import dependent region, and climate change could trigger a further 20-40% decline in food and water provision. This will likely exacerbate further in the near future, with less precipitation and increased drought frequencies and heat waves. The Nile-delta is among the most threatened areas, with sea-level rise potentially displacing millions. In fact, Egypt's agricultural production is especially vulnerable to salinization under changing climate conditions. These impacts could be magnified by land subsidence, especially in the eastern part of the delta, and by extensive landscape modification resulting from both coastal modification and changes in the Nile's hydrogeology⁴.

The difficulties and costs of securing reliable sources of sufficient water are a challenge for growth and diversification of the MENA's stagnant economies. The World Economic Forum 2015 Global Risks Perception Survey, for example, ranked the water crisis as the most likely risk to MENA businesses and economies over the next 10 years, alongside unemployment and ahead of social instability and failures in governance⁵. Moreover, according to the World Bank, by 2050 MENA is expected to have the greatest economic losses from climate related water scarcity as a share of GDP⁶, between 6% and 14% (depending on the underlying economic and climate trajectories used in the analysis and policy scenario).

Agriculture - a source of income and employment in the region - will diminish more in the short- to mid-term. climate change will likely decrease agricultural output

due to heat stress and reduced available water leading to food scarcity, resulting in decreasing employment opportunities and potential economic downturns and posing to significant challenges to its development⁷.

Local tensions over access to food and water resources can spill over into neighboring countries, as people seek to find additional resources and safety, placing more strain on the resources of those countries, which could amplify tensions. In these instances, climate change does not directly cause conflict over diminishing access to water, for example, but it multiplies underlying natural-resource stresses, increasing chances of a conflict.

In recent years, there has been an increase in incidences of water-related violence around the world at the subnational level attributable to the role that water plays in development disputes and economic activities.

Though water scarcity is not the main determinant trigger of conflict, it can exacerbate tense relations and compound other underlying factors to spark violence. We can argue that, taking into consideration the challenges to sustainable peace and the history of tense bilateral and multilateral relations and on-going political mistrust among MENA countries, increasingly scarce water resources could also result in the next wave of heightened tension and conflicts in the region.⁸

Research has focused on the links between climate change, increased rainfall variability, and conflict⁹. The literature review revealed indeed a linkage between climate change and migration for the MENA region that is majorly due to water scarcity¹⁰. Seen through this lens, climate change may present a security challenge and

3 Food and water security MENA - NATO Parliamentary Assembly <https://www.nato-pa.int/download-file?filename=sites/default/files/2017-11/2017%20-%20176%20STC%2017%20E%20bis-%20FOOD%20AND%20WATER%20SECURITY%20MENA%20-%20MARTENS%20REPORT.pdf>

4 Intergovernmental Panel on Climate Change. https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

5 http://www3.weforum.org/docs/WEF_Global_Risks_2015_Report15.pdf

6 World Bank (2016) *High and Dry: Climate Change, Water, and the Economy*, Washington, DC: World Bank. Licence: CC BY 3.0 IGO <https://openknowledge.worldbank.org/handle/10986/23665>

7 The World Bank. <http://documents.worldbank.org/curated/en/894251519999525186/pdf/123806-REVISED-BLOG-CC-REGION-QN-002.pdf>

8 Saghir. J *Water Security and Growth: The case of the Middle East and North Africa Countries* McGill University. ISIS. 2018. https://www.mcgill.ca/isid/files/isid/pb-2018-01._saghir.watersecurity.pdf

9 Center for Climate and Security's multi-author volume, *Epicenters of Climate and Security: The New Geostrategic Landscape of the Anthropocene*. <https://climateandsecurity.org/epicenters/>

10 Wodon Q, Burger N, Grant A, Joseph G, Liverani A, Olesya T (2014) *Climate change, extreme weather events, and migration: review of the literature for five Arab countries*. In: Piguet E, Laczkó F (eds) *People on the move in a changing climate. The Regional Impact of Environmental Change on Migration*. Global Migration Issues 2 (pp 111–134). Dordrecht: International Organization of Migration, Springer

CLIMATE CONDITIONS AND VIOLENCE IN THE MIDDLE EAST: THE CASE OF SYRIA

can generate conflicts between agricultural and pastoral communities precipitated by climate-exacerbated droughts and water variability. This has been observed in Yemen and Syria. These stresses could increase tensions and conflict between communities, and precipitate the need for people to move – impacting the prices of livestock and other goods. In some cases, this could also lead to an increase in malnutrition and disease outbreaks, and adversely impact food security¹¹.

Migration can be a trigger of conflict by increasing the pressure on resources and people in the receiving areas, thus leading to a destabilization of society. On the other hand, migration can be a tool to prevent the onset of conflict because people voluntarily move to other areas to work and to send back remittances, which help increase prosperity and development in the originating areas. A literature review on the link between migration induced by climate change and environmental disasters has produced inconclusive results¹².

The entire region has suffered from State fragility and civil conflict, in one form or another, over the past decades. However, the combination of growing demand for food, impact of climate change, water scarcity, weak agricultural production, and, in some cases, unstable governments and civil conflict, increases MENA's vulnerability to economic shocks. Volatility in global food markets and sudden food shortages may trigger violent riots and – if left unaddressed – could destabilize States, inflame violence and increase public support for extremist groups offering seemingly viable alternatives. On the other hand, because conflicts are rarely, if ever, attributable to single causes, conflict analysis and concomitant efforts at reducing the risks of conflict must consider a multitude of complex relationships and contributing factors.

Given the geopolitical currents in MENA, this could have global repercussions such as increased disruptions of oil supply chains or increased migration. In fact, it is estimated that in last few years, climatic events accounted for about 10–20 percent of migration to EU countries¹³.

Syria sits in a band of relatively moist and productive land in the Middle East. From the 1970s till 1990s, the agricultural policies in Syria promoted production of staple crops leading to increase in number of wells and expanded use of inefficient and outdated irrigation methods.

Between 2006 and 2010, the region was hit by the worst multiyear drought since 1940¹⁴. In 2007–08, winter rainfall across Syria fell by a third¹⁵. The decreasing rainfall combined with rising temperatures resulted in a decline in soil moisture. This had dramatic consequences on Syrian agriculture. It caused the devastation of agricultural land on which at least 800,000 people depended in eastern Syria¹⁶. Syria's livestock economy, which accounted for about 40 percent of total agricultural production, was also severely affected. Overall, agriculture GDP contracted by 41 percent between 2011 and 2015, following a 10 percent decline in 2010.¹⁷

Crop yields failed by one-half to two-thirds. This shortfall meant Syria had to import large quantities of cereals, causing food prices to more than double. As the drought continued, 1.5 million of the rural population abandoned their land and headed to urban cities for work, a large portion of which were already overpopulated, where violence first erupted. They formed disenfranchised belts of disparate communities surrounding Hamah, Homs, and Daraa. Major events during this period and until the uprising are shown in the below table.

14 *The intense 2007–2009 drought in the Fertile Crescent: Impacts and associated atmospheric. Agricultural and Forest Meteorology. Volume 150, Issue 9, 15 August 2010, Pages 1245–1257* <https://www.sciencedirect.com/science/article/pii/S0168192310001334>

15 Francesca De Châtel. *Climate Change in the Syrian Uprising: Untangling the Triggers of the Revolution. Journal Middle Eastern Studies Volume 50, 2014 - Issue 4* <https://doi.org/10.1080/00263206.2013.850076>

16 John Waterbury. <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.363.5511>

17 FAO (Food and Agriculture Organization) and WFP (World Food Programme). 2016. "Crop and Food Security Assessment Mission to the Syrian Arab Republic." FAO and WFP, Rome.

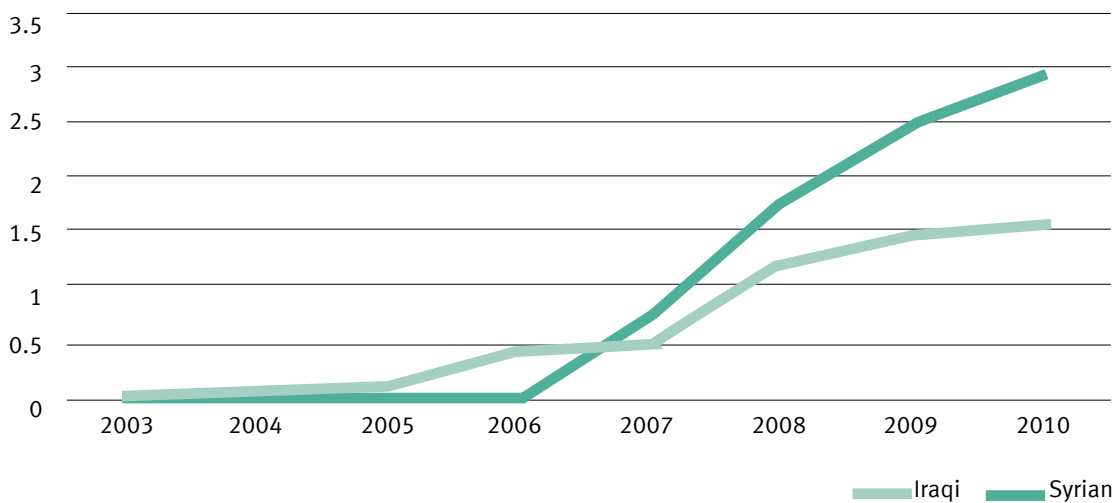
11 *American Journal of Agricultural Economics, Volume 96, Issue 4, 1 July 2014.*

12 World Bank (2014) *Turn Down the Heat: Confronting the New Climate Normal*. Washington, DC: World Bank. Licence: CC BY-NC-ND 3.0 IGO. <http://documents.worldbank.org/curated/en/317301468242098870/Main-report>

13 *Middle East and North Africa Regional Architecture: Mapping Geopolitical Shifts, regional Order and Domestic Transformations.* http://www.menaraproject.eu/wp-content/uploads/2017/07/menara_fn_7.pdf

TIMELINE OF EVENTS IN SYRIA PRIOR TO THE 2011 UPRISING

Iraqi and Syrian Refugees and Internally Displaced Persons (IDPs) Net Urban Influx between 2003-2010 (in Millions)



Major Events	
1971	On March 12, Hafez Al-Assad becomes president
Drought of 1988-1993	No major event
1995	Syria achieves self-sufficiency in wheat production
Drought of 1998-2000	In 2000, the Khabur River in NE dries
Drought of 2005-2010	Since 2005 the apartment prices in Damascus have more than doubled The winter of 2007-2008 was the driest in observed record Since 2007 the prices of wheat, rice and feed have more than doubled
2011	In March, the uprising began

Source: Author's compilation

Some experts argue that decades of dysfunctional agricultural policies, overuse of land and groundwater, and a sudden removal of fuel subsidies and simultaneous dramatic increases in global food prices ultimately led to extreme political unrest outbreak of conflict in Syria and followed by President al Assad use of his armed forces against them. The hypothesis that climate change-related drought during the years before 2011 was a major causing factor behind the civil war in Syria has been given much attention in the

literature, but is increasingly under question¹⁸.

18 T. Friedman, 'The Scary Hidden Stressor', *The New York Times*, 2 March 2013; <https://www.nytimes.com/2013/03/03/opinion/sunday/friedman-the-scary-hidden-stressor.html>. C.E. Werrel and F. Femia (eds.), 2013. *The Arab Spring and Climate Change*, Center for American Progress, Stimson, The Center for Climate and Security.

CLIMATIC CONDITIONS AND EXTREMISM

Terrorist organizations like the Islamic State of Iraq and Syria (ISIS) capitalized on the devastation wrought by climate change to attract new members as it happened in several agricultural villages in Iraq, many of which were successfully taken by ISIS via their recruitment tactics that were created to entice impoverished farmers who had their lives and incomes devastated by a series of natural disasters as mentioned above.

These ISIS recruiters even offered money, food, and other resources to rural Iraqis to lure them into joining the ranks of the jihadist group. With no means to sustain themselves through agricultural means, many farmers and other rural Iraqis accepted ISIS's bribes for both monetary and morale support.

The importance resources hold for terrorist organizations is emphasized by the ISIS efforts to capture the Mosul and Fallujah dams in Iraq, as well as the Iraqi regions of Zumar, Sinjar, and Rabiah, in order to gain control of the waters of the Tigris and Euphrates rivers as well as water sources in Syria, and fertile regions suitable for agriculture in both countries.

In fact, agriculture has received limited attention compared to other sources of ISIS revenues such as oil, looting, ransom, and various forms of taxation, although it was an important source of income for ISIS, which in 2014-2015 controlled over large parts of the breadbaskets of Syria and Iraq¹⁹.

Similar situations occurred with respect to the conflict in Darfur, in western Sudan and in Northern Nigeria. In Darfur rainfall had declined by 30% and agricultural production had fallen by 70%, while the average annual temperature rose by 1.5 degrees, contributing to conflict between pastoral and agricultural tribes over the use of land for grazing livestock or growing crops²⁰. The emergence of Boko Haram group in Nigeria can be traced to environmental developments and climate change, linking the founding of Boko Haram to the proliferation of victims of environmental crises in North Nigeria, who lacked food, shelter, and other basic necessities of life. Boko Haram's ranks then swelled after the migration of Chadian farmers as a result of droughts and desertification in Chad.

19 Hadi H. Jaafar, Eckart Woertz/ *Agriculture as a funding source of ISIS: A GIS and remote sensing Analysis*. <https://www.sciencedirect.com/science/article/pii/S0306919216303219>

20 The World Bank. <http://blogs.worldbank.org/arabvoices/climate-change-conflict-mena>

CLIMATE CHANGE: AN EARLY WARNING

Whilst many policymakers, researchers, analysts and media commentators paint a bleak picture of climate-fueled conflict on an almost incomprehensible scale of the conflict in Syria and Yemen and other parts of the World and climatic conditions have played a direct role in the deterioration of their economic conditions, this paper argues that caution must be applied in attributing climate change to conflicts.

Climate change could aggravate existing fragile situations and contribute to social upheaval or even violent conflict. Moreover, the climate-conflict linkage primarily plays out in contexts that are already vulnerable to climate change, and where income is highly dependent on agriculture. Food supply, water scarcity, migration patterns, and the occurrence of conflicts can be affected by climatic factors, however, there is not a mono-causal relationship with global warming. Other political and socioeconomic factors must be considered. A case in point is the 2011 food supply crisis in Egypt and subsequent protests and political instability. There is a relation to extreme events causing poor harvest in major producing countries, but also Egypt's high import dependency, inefficient bread subsidy system and high unemployment rate were major contributing factors. Other MENA countries, where the population spends a lower percentage of income on food and early adjustment of food prizes were made, were spared from protests and social conflicts.

A review of the literature reveals that there is no clear evidence that there is direct and linear relationship between climate change and the eruption of violent conflicts, particularly extensive inter and intra-state conflicts²¹. Sequences of events leading to outbreaks of violence are always multifactorial and complex and it is usually not possible to identify single triggering factors, but impact of climate change is one important factor²². In fact, it could contribute to violence in two different routes, one which is more like the case of

21 SIDA. *The Relation between Climate Change and Violent Conflict*. <https://www.sida.se/contentassets/c571800e01e448ac9dce2d097ba125a1/working-paper---climate-change-and-conflict.pdf>

22 Tänzler, Carius, Maas. *The Need for Conflict-Sensitive Adaptation to Climate* https://www.adelphi.de/de/system/files/mediathek/bilder/the_need_for_conflict_sensitive-adaptation_to_climate_change_1.pdf.

United Nations. <https://news.un.org/en/story/2019/01/1031322>

CONCLUSION

Climate Resilience – A Counter Balance

Syria and another one through being a “weapon” in the hands of terrorist groups and contributing to their upraise.

On the other hand, conflicts in Syria and Iraq show that impact of climate change more likely served as an early warning that could have put pressure on already scarce resources and exacerbated pre-existing issues, such as political instability, poverty, and unemployment, underscoring the importance of a conflict-sensitive approach to climate change in this context.

The 2014 Intergovernmental Panel on Climate Change states that “Human security will be progressively threatened as the climate changes”. Human insecurity almost never has single causes, but instead emerges from the interaction of multiple factors. Climate change is an important factor threatening human security. However, the evidence on the connection between climate change impacts and conflict outcomes is contested and not causal. It is highly place and time-specific, and is the product of many different, intersecting factors.

Under certain circumstances, climate-related change can influence factors such as human development, effective institutions, and governance affecting the likelihood of violent conflict that lead to or exacerbate conflict and can have an effect on the causes and dynamics of violent conflict in the region when: (a) it leads to a deterioration in people’s livelihoods; (b) it displaces people and increases levels of migration in vulnerable and highly natural resource dependent contexts; (c) it challenges the ability of states to provide the conditions necessary for “human security” and (d) it influences the tactical considerations of extremist groups.

In addition, the acceleration of climate change impacts will reshape prospects for development and increase the complexity of geopolitical risk, security and nature of extremism and terrorism. These conflicts have extremely complex historical, political, social and economic foundations, meaning that climate change should only be considered an exacerbating factor – rather than a direct force of conflict in the Middle East.

Even though climate change contribution to conflict and migration has not been proven to have a direct link but rather a contributing factor in interaction with other elements nevertheless countries should build their resilience to reduce the risks of climate change and reduce its influence on those factors. The link between climate and conflict could be mediated by a range of political, institutional and societal factors²³. However, if designed and implemented properly, such adaptation measures could help to reduce tensions and catalyze processes that promote stability. The ways in which adaptation measures are designed and implemented can therefore be a key determinant of climate change resilience in the region.

Addressing climate risk in the design and implementation of climate-resilient infrastructure is an immediate priority for the Middle East. The COP 21 Paris Agreement increases opportunities for climate-smart investment in the region’s infrastructure including energy, transport, water and agriculture, and sends a decisive market signal that the transition to a thriving clean economy is inevitable, irreversible, and irresistible, with an important role for private sector and private investment in climate solutions. It is thus imperative to invest in resilient infrastructure, including water management (irrigation, hydropower, water supply, and flood control), roads, bridges, energy, and other transport infrastructure.

The climate change challenge for the Middle East is primarily about adaptation and making development climate-resilient. This requires the improvement of our knowledge of climate impacts and effective technologies and their application; integration of climate considerations into development policies and plans (e.g. siting and building standards of large infrastructure projects, city design, land use planning sound agriculture and irrigation policies); and building local capacity for improved preparedness and adaptation.

²³ WBGU (2007). *Welt im Wandel: Sicherheitsrisiko Klimawandel*. Berlin: Springer, Rüttinger, L., Stang, G., Smith D., Tänzler D. and Vivekananda J. et al. (2015). *A New Climate for Peace – Taking Action on Climate and Fragility Risks*. Berlin/London/ Washington/Paris: adelphi, International Alert, The Wilson Center, EUISS.

In addition, in the MENA countries, investing in sustainable agriculture and rural development is an integral part of the solution to halt distress migration, as well as to fight malnutrition and poverty, and sustain peace. Climate-smart agriculture could bring higher agricultural productivity and greater climate resilience. This includes adoption of improved technology and access to inputs, greater commitment to agricultural research and strengthened human resource development.

A priority for MENA countries is to focus on water management, agricultural risk management, and conservation farming. Climate-smart agriculture relies on the limitless ingenuity of farmers, and includes proven techniques such as mulching, low or no-till production techniques, and developing drought or flood-tolerant crops to meet the demands of a changing climate. But Climate smart agriculture is also about weather forecasting and early warning systems. It also seeks to highlight changes in policy that will help farmers adapt to and succeed in combating the ill effects of climate change and development of alternative sources of income, to increase the coping capacity of communities to manage temporary losses of income and to strengthen communities' resilience in order to mitigate conflict risks. It could entail insurance schemes that smooth out the annual income of vulnerable populations, a reduction in income sensitivity to climate conditions, legal reform and improved land rights, drought preparedness programs and agricultural assistance.

In conclusion, transformative policies in the Middle East are needed and in pursuing such policies, there is a need to recognize that we are operating in a climate-changed world and that we need preventative measures that anticipate and mitigate exacerbated risks to avoid insecurity driven by food, water, and energy scarcities. The transition to a more energy and water secure and more diversified region is one of the most important ways that we can invest and seek advantages. Rather than focusing on the threats of climate change, this is an opportunity to use our climate awareness and our ability to innovate.

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ABOUT THE PROGRAM

The Climate Change and Environment Program

The Climate Change and Environment Program aims to initiate, develop and harness research, from both applied and social sciences fields, to define the most appropriate policy recommendations on issues related to climate change and environment in Lebanon and the Arab world. The program further aspires to activate the link between research and policy-making with the objective of improving policy development and the production of scientific discourse in response to policy needs. The program also intends to influence national and regional debates in international negotiations on climate change and sustainable development.

ABOUT THE ISSAM FARES INSTITUTE

The Issam Fares Institute for Public Policy and International Affairs (AUB Policy Institute) is an independent, research-based, policy-oriented institute. Inaugurated in 2006, the Institute aims to harness, develop, and initiate policy-relevant research in the Arab region.

The institute is committed to expanding and deepening policy-relevant knowledge production in and about the Arab region; and to creating a space for the interdisciplinary exchange of ideas among researchers, civil society and policy-makers.

Main goals

- ▶ *Enhancing and broadening public policy-related debate and knowledge production in the Arab world and beyond*
- ▶ *Better understanding the Arab world within shifting international and global contexts*
- ▶ *Providing a space to enrich the quality of interaction among scholars, officials and civil society actors in and about the Arab world*
- ▶ *Disseminating knowledge that is accessible to policy-makers, media, research communities and the general public*

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