



Global drought & climate migration: Impacts for Minnesota

Brenda Hoppe, PhD, Senior Research Scientist
Midwest Drought and Human Health Workshop
November 20-21, 2019

Thank You!

- Bruce Snyder, Health Professionals for a Healthy Climate
- Blain Mamo, MDH Refugee and International Health Program
- Vishnu Laalitha Surapaneni, UMN Assistant Professor of Medicine
- Patricia Fenrick, DHS Refugee Programs Office
- Megan Dayton, MN State Demographic Center



CLIMATE MIGRATION

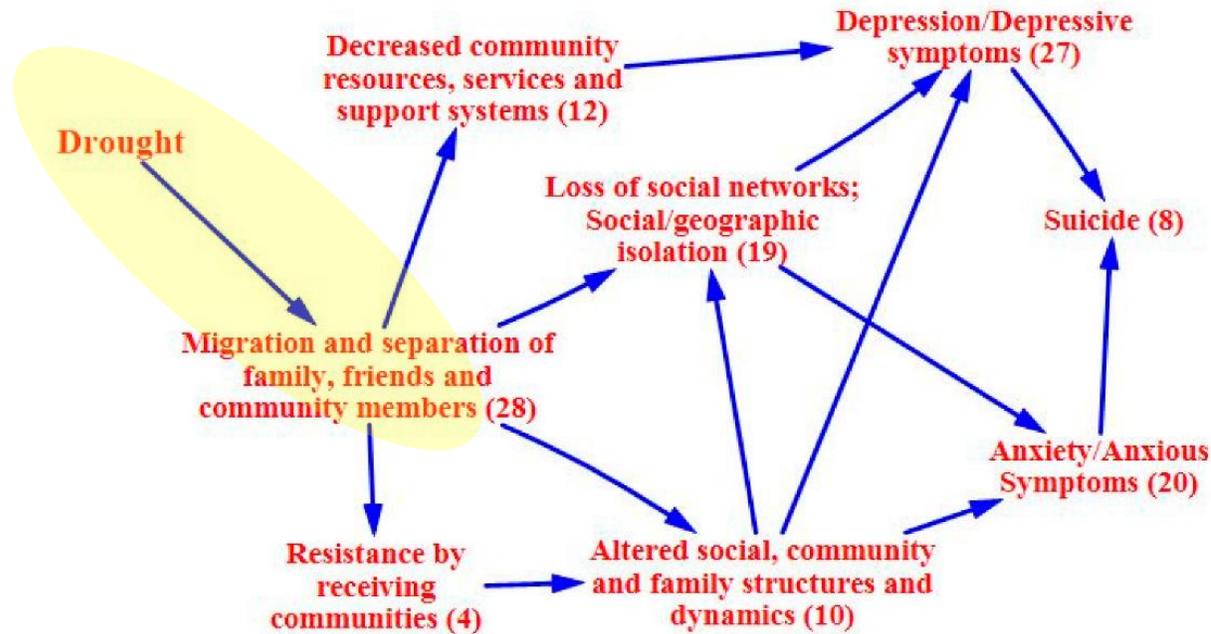
Refers to population displacement due to impacts on the environment from climate change, particularly from sea level rise, extreme weather events, and drought.



Climate Migration, Drought & Health

The Mental Health Outcomes of Drought: A Systematic Review and Causal Process Diagram

by Holly Vins¹, Jesse Bell^{1,2}, Shubhayu Saha¹ and Jeremy J. Hess^{1,3,*} ✉

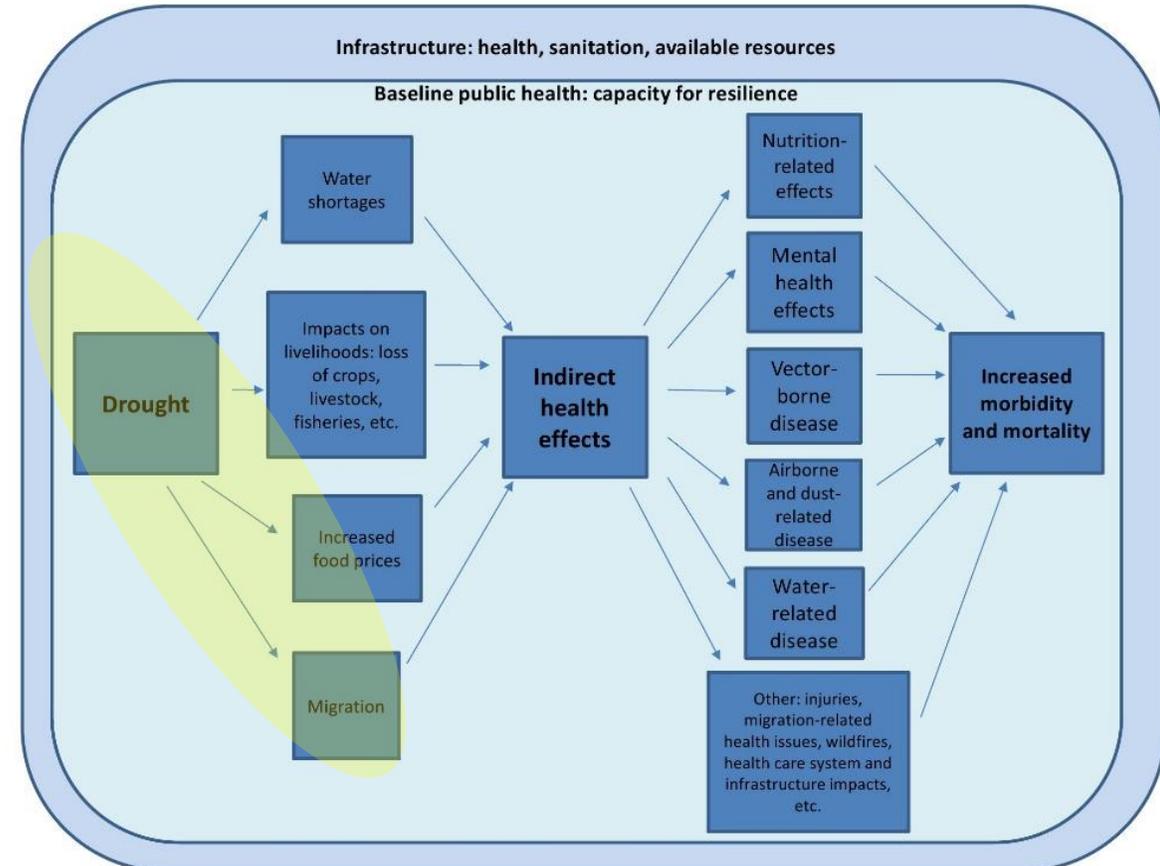


Health Effects of Drought: a Systematic Review of the Evidence

JUNE 5, 2013 · RESEARCH ARTICLE

■ AUTHORS

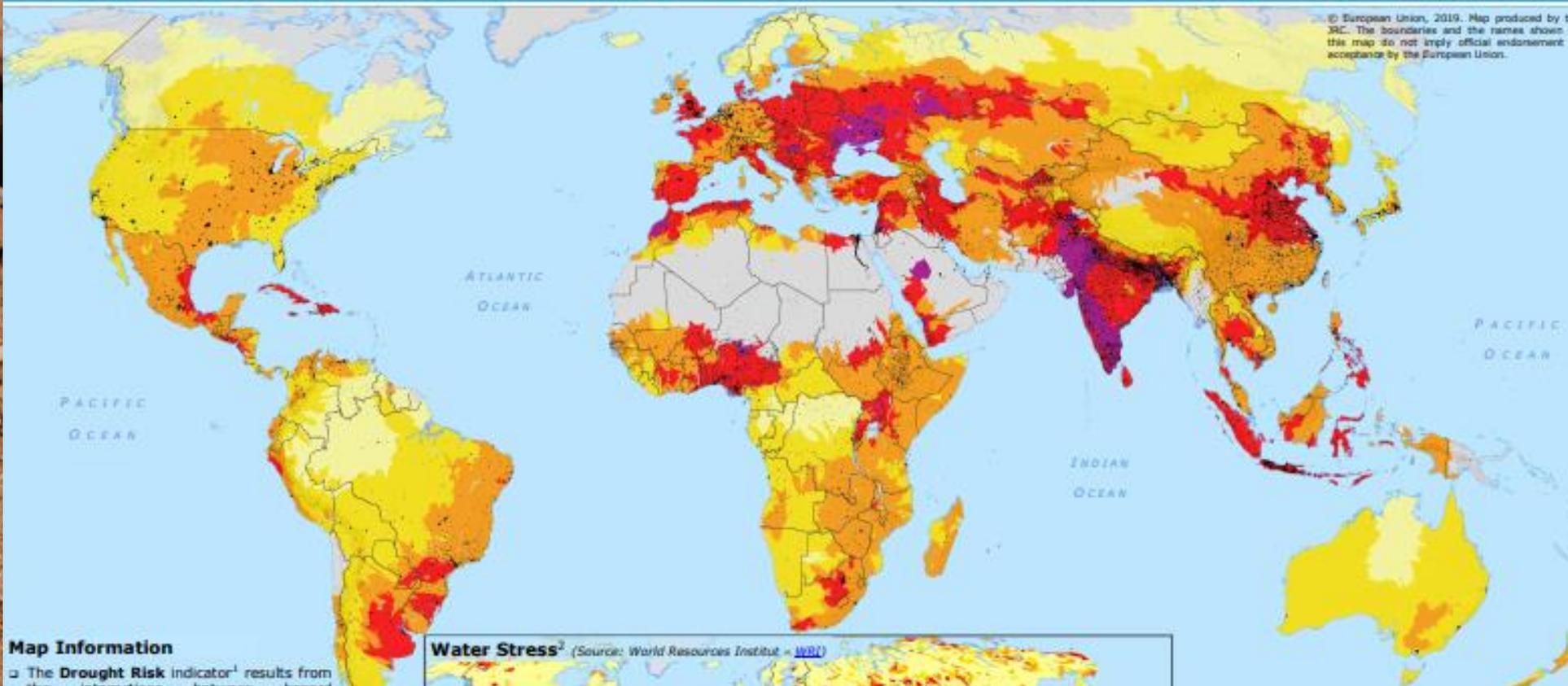
Carla Stanke Marko Kerac Christel Prudhomme Jolyon Medlock Virginia Murray



Global Drought Risk and Water Stress



© European Union, 2019. Map produced by the JRC. The boundaries and the names shown on this map do not imply official endorsement or acceptance by the European Union.

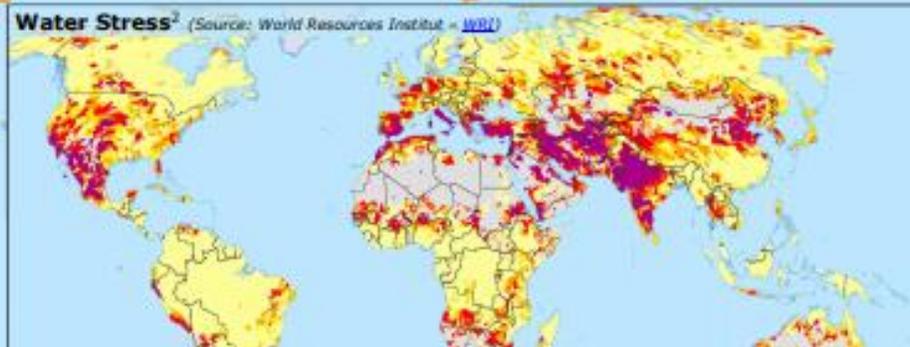


Map Information

□ The **Drought Risk** indicator¹ results from the interactions between hazard (probability of a drought event), exposure (amount of population, livelihoods, assets, resources, and services in drought-prone areas), and vulnerability (susceptibility of exposed elements to suffer adverse effects when impacted by a drought event). The drought exposure derives from the combination of population (Source: JRC [GHS1](#)), global agricultural lands (Source: [SDAC](#)), gridded livestock of the world (Source: [FAO](#)), and baseline water stress (Source: [WRI](#)).

□ The Baseline **Water Stress** indicator²

Water Stress² (Source: World Resources Institut - [WRI](#))



Drought Risk¹

Source: JRC [GDO](#)

- High (0.8 - 1)
- Medium-high (0.6 - 0.8)
- Medium (0.4 - 0.6)
- Low-medium (0.2 - 0.4)
- Low (0 - 0.2)
- Arid lands*, low water usage, no data



The northern triangle

USA

Mexico

Cuba

Belize

GUATEMALA

HONDURAS

Nicaragua

EL SALVADOR

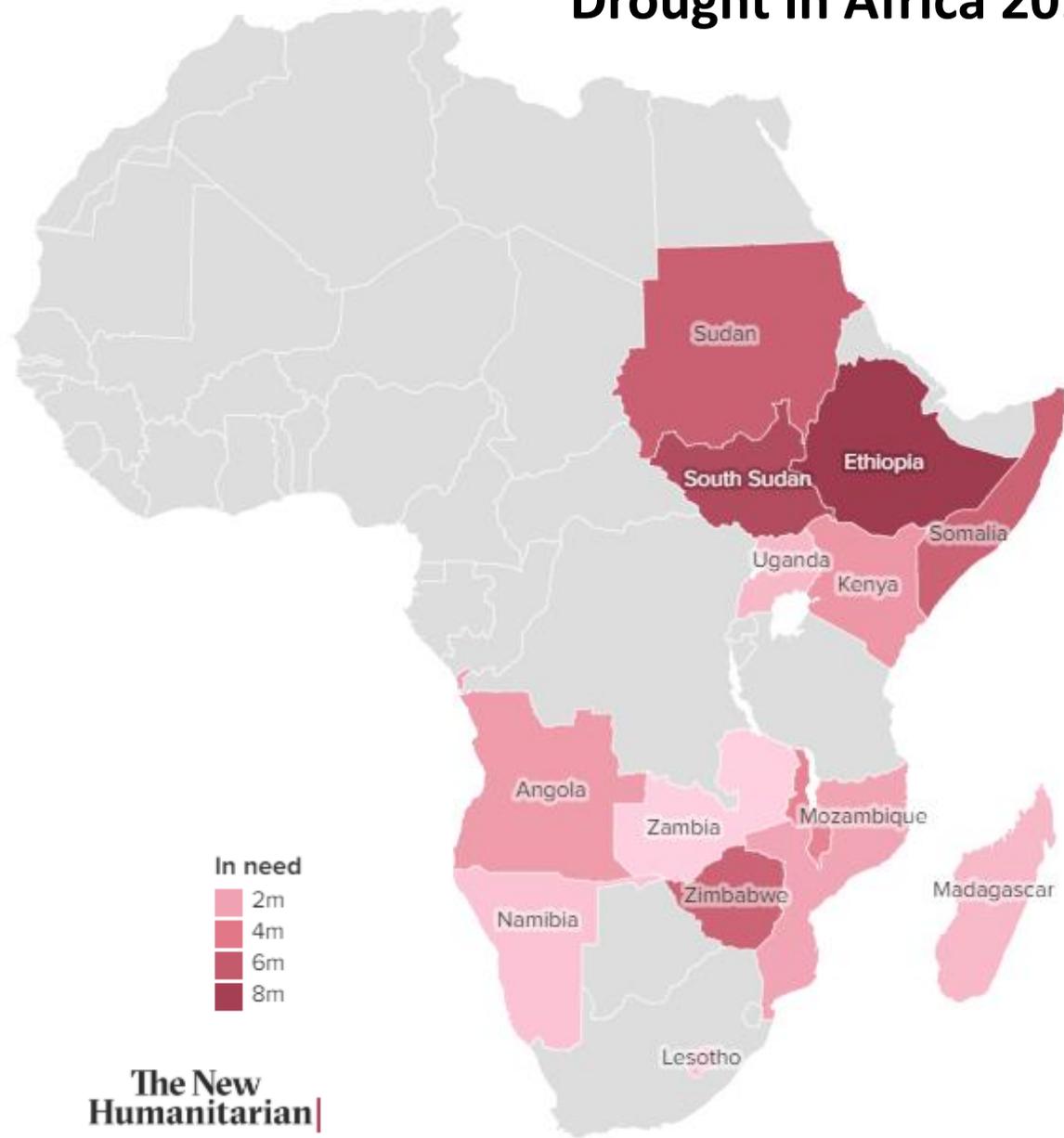
Costa Rica

Panama

Venezuela

Colombia

Drought in Africa 2019



The New Humanitarian



A mass grave for children in Dadaab during the 2011 East Africa drought.

Photo courtesy of [Wikimedia](#)

BIG STORY 10 AUGUST 28, 2019 / 3:15 PM / 3 MONTHS AGO

From Yemen to South Sudan, climate and water stress seen worsening conflict

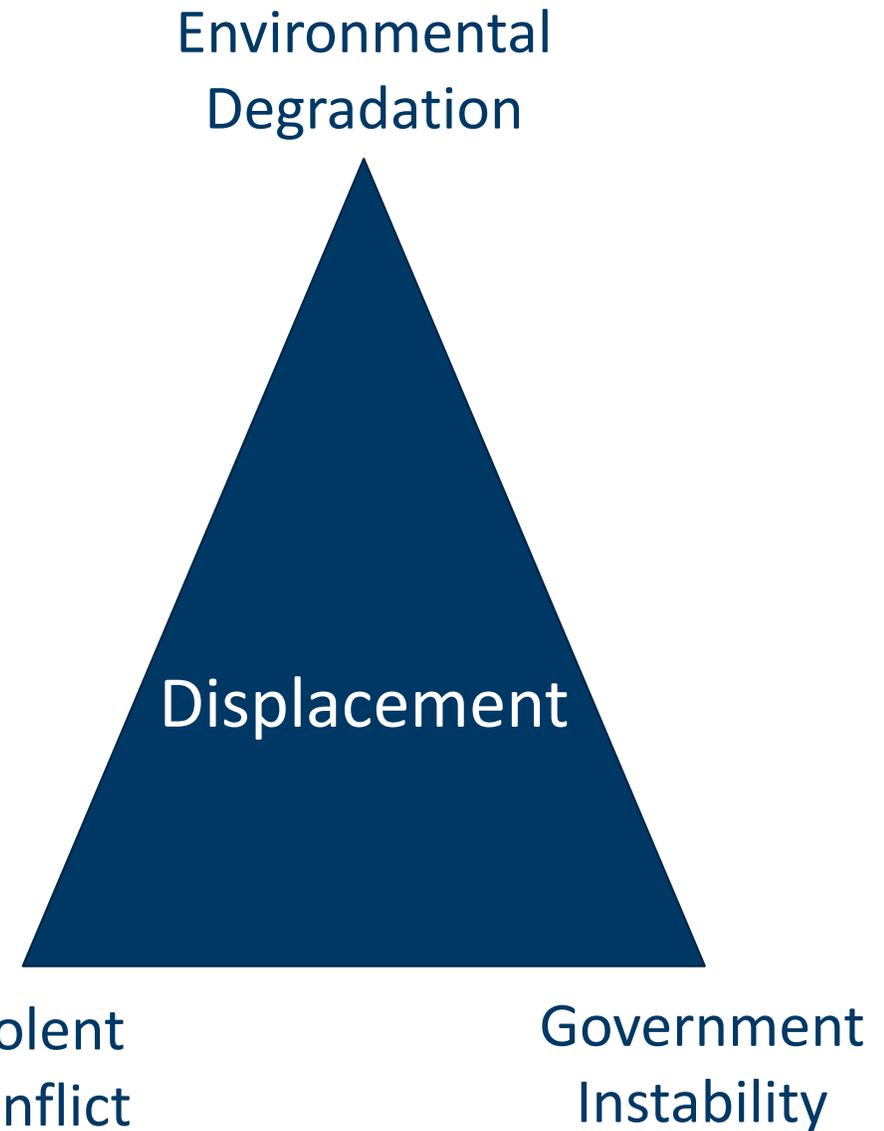
Adela Suliman

4 MIN READ



STOCKHOLM (Thomson Reuters Foundation) - Social and political tensions fueled by climate change have yet to translate into international military confrontations, but local conflicts are heating up due to pressures such as drought and water scarcity, officials and researchers said on Wednesday.

drought and water scarcity, officials and researchers said on Wednesday. confrontations, but local conflicts are heating up due to pressures such as fueled by climate change have yet to translate into international military STOCKHOLM (Thomson Reuters Foundation) - social and political tensions



Drought, Conflict & Climate Migration



ELSEVIER

Global Environmental Change

Volume 54, January 2019, Pages 239-249



Climate, conflict and forced migration

Guy J. Abel ^a, Michael Brottrager ^b, Jesus Crespo Cuaresma ^c, Raya Muttarak ^d

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<https://doi.org/10.1016/j.gloenvcha.2018.12.003>

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Highlights

- Growing public interest on climate driver of conflict and migration but evidence is scarce.
- Climate change is responsible for increase in asylum seeking through conflict.
- Reduced rainfall increases conflict which in turn drive **outflow of asylum seekers**.
- Established causal relationship between climate, conflict and asylum seeking only in the recent period.

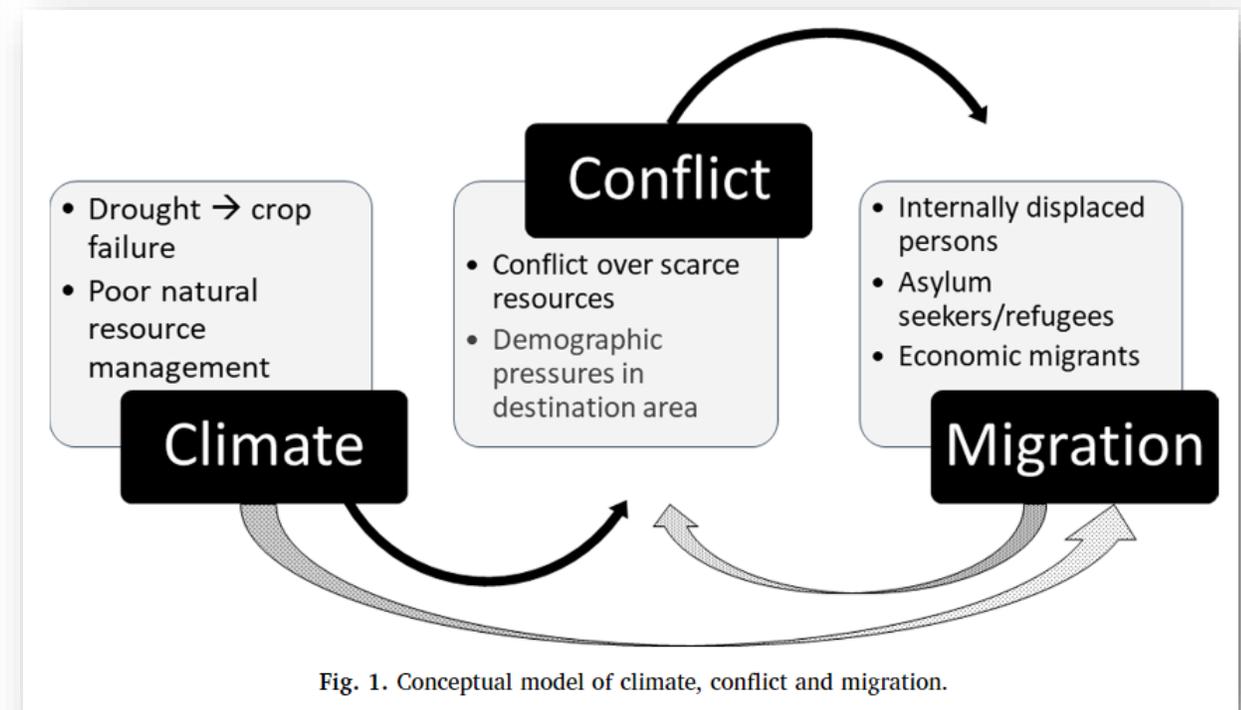
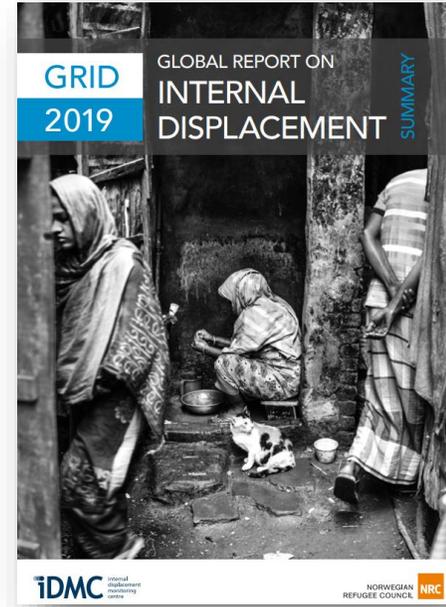
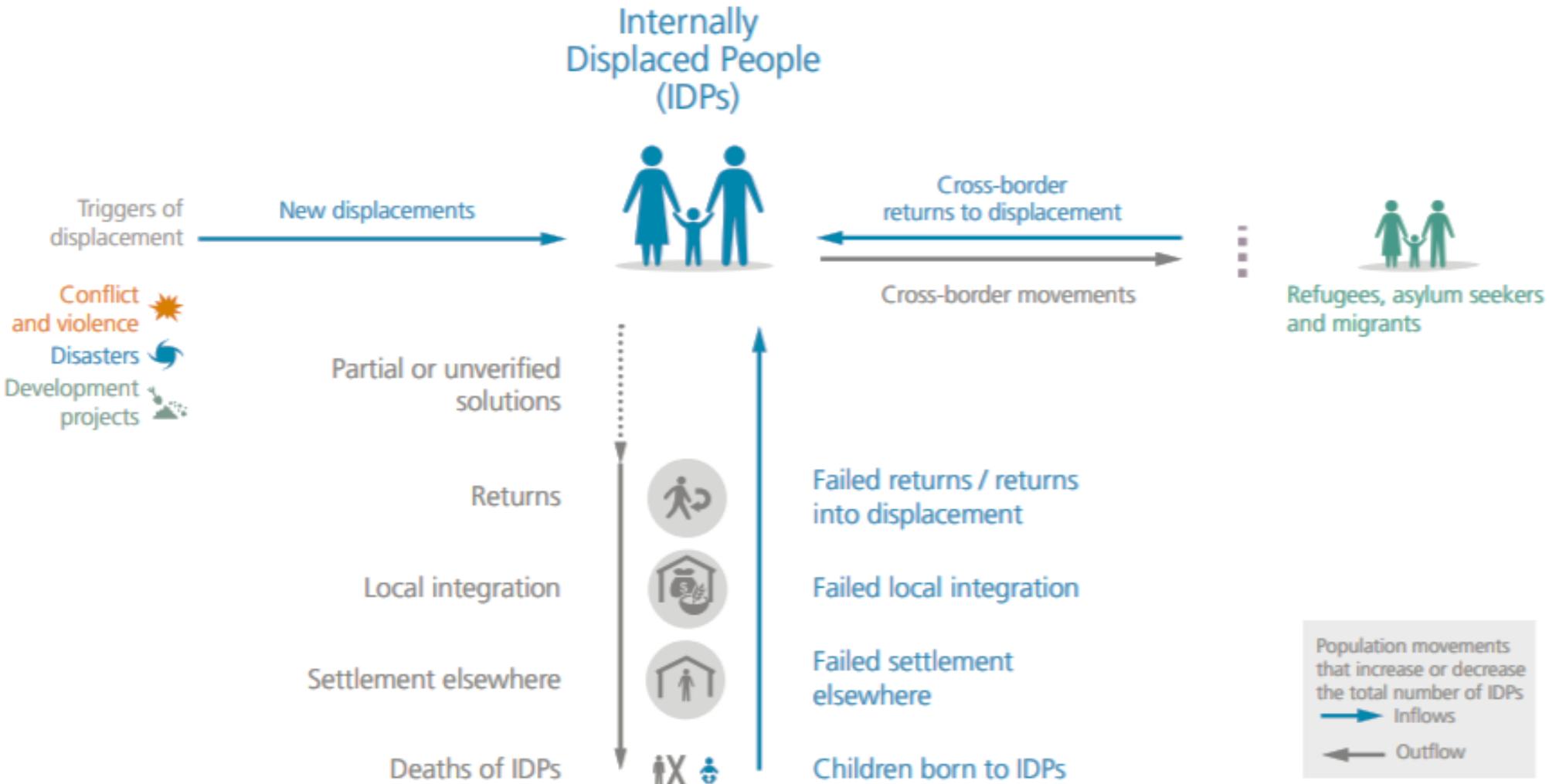
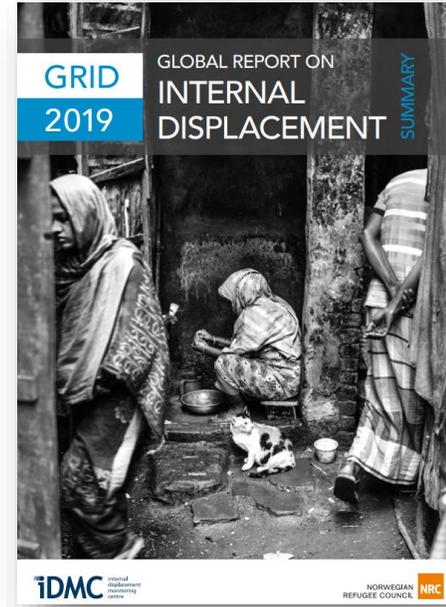
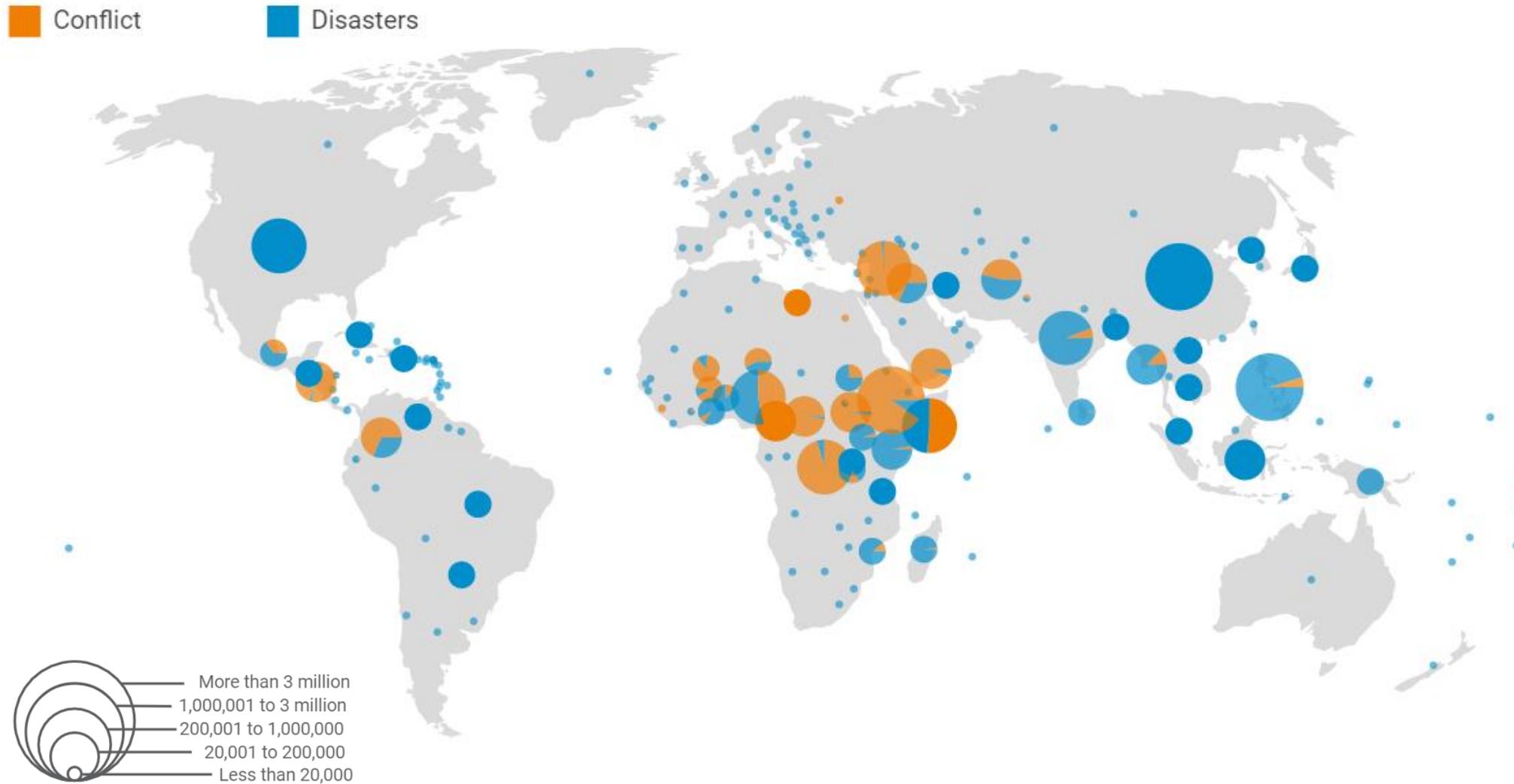


Fig. 1. Conceptual model of climate, conflict and migration.

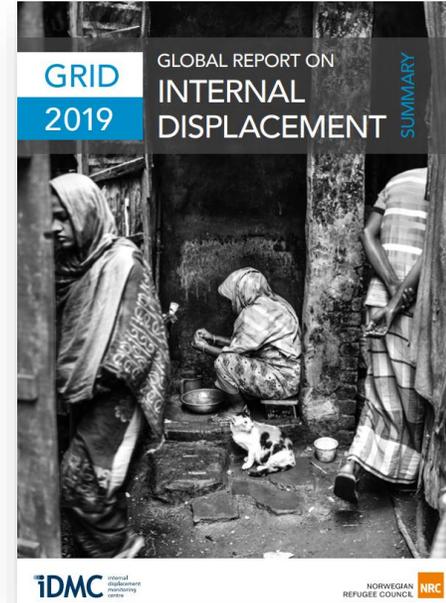
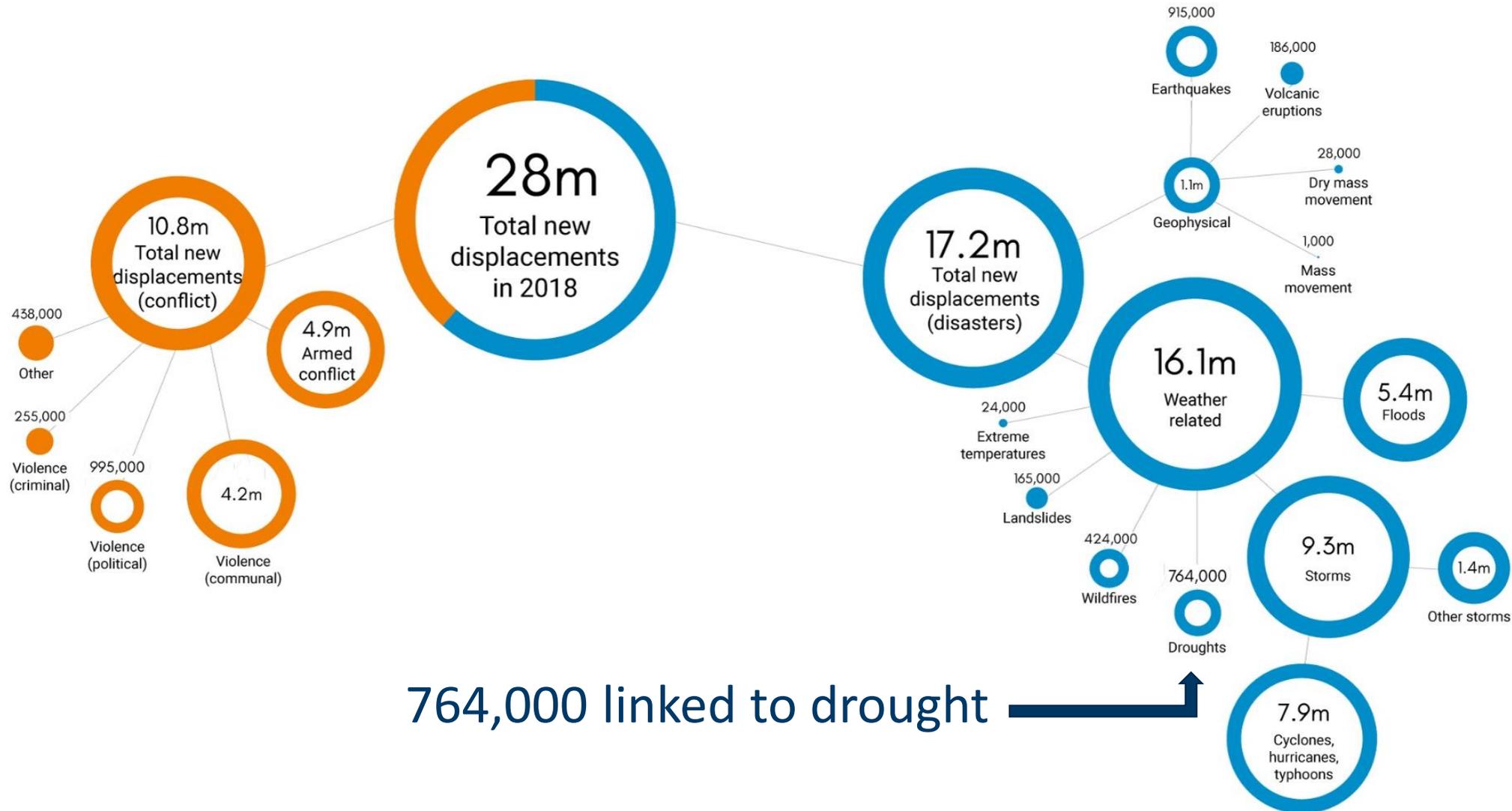
Drought, Conflict & Climate Migration



There were **28 million new displacements** associated with conflict and disasters across 148 countries and territories in 2018.



New displacements in 2018: Breakdown for conflict, violence and disasters





GROUNDSWELL

PREPARING FOR INTERNAL CLIMATE MIGRATION

WORLD BANK GROUP

Karla Kumbh Rignud, Alex de Zorzi, Bryan Jones, Jonas Bergmann, Willem Clemens, Kelly Ober, Jacob Schewe, Susana Adams, Brent McCluskey, Mike Heiser, and Amelia Midgley

140 million displaced by climate changes by 2050



Climate Migration, Drought & Health

- Climate-related disasters, like drought, are contributing to major shifts in migration patterns.
- Most data focused on IDPs but still give some indication of cross-border migration potential.
- U.S. needs to plan for increasing immigration and internal displacement from impacted populations.

No clear legal definition for people displaced by climate hazards

Climate migrant?

Climate refugee?

Climate-displaced person?

Environmental emergency migrant?

Environmental forced migrants?

Environmental motivated migrants?

Federal and State policy efforts



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Velázquez Introduces Historic Bill to Protect Environmental Migrants

October 23, 2019 | Press Release

Washington, DC – Rep. Nydia M. Velázquez (D-NY) has introduced H.R. 4732, the Climate Displaced Person's Act of 2019, the most kind legislation aimed at addressing the growing effect of climate change on human migration.

BOSTON STATEHOUSE

Is Massachusetts ready for more climate refugees?



Yusuf Vali of Boston's Office for Immigrant Advancement joined Rep. Liz Miranda to speak in support of a bill he said would help the state develop a "proactive plan" for supporting evacuees from future climate disasters, like the hurricane that devastated Puerto Rico in 2017. (Photo: Katie Lannan/SHNS)

by: Katie Lannan

Posted: Oct 30, 2019 / 10:06 AM EDT / Updated: Oct 30, 2019 / 10:06 AM EDT

BOSTON (SHNS) – After the deadly Category 5 Hurricane Maria forced Puerto Rican evacuees to settle

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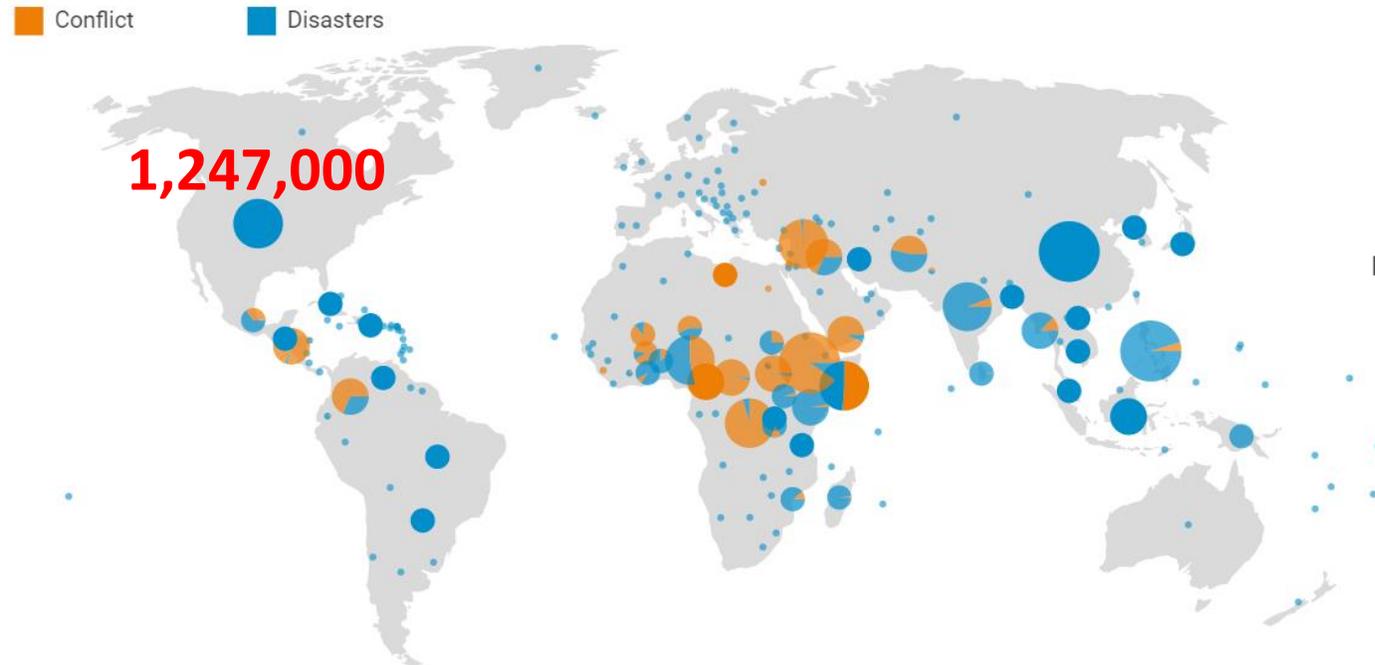
Observations

U.S. Cities Need to Plan for an Influx of Internal Climate Migrants

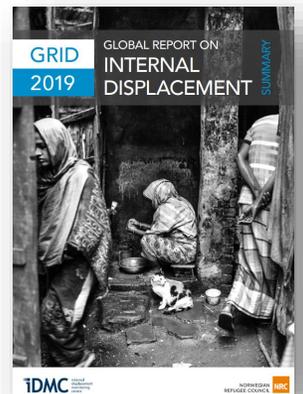
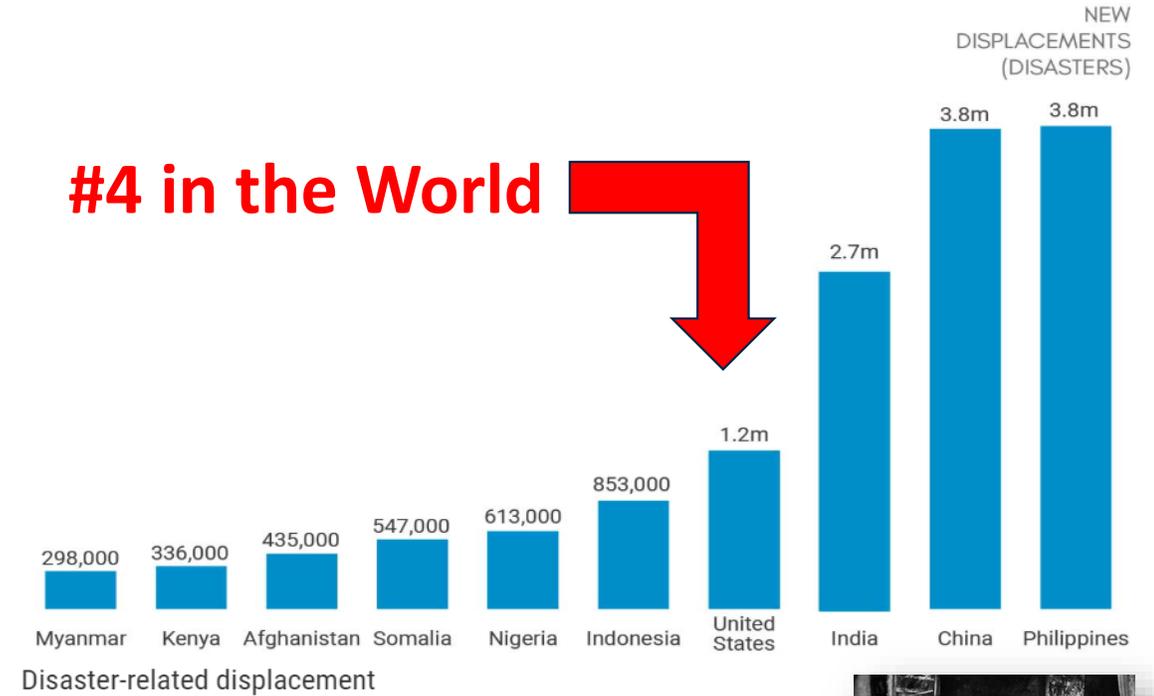
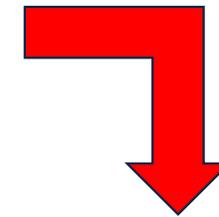
Migrations have already started in the face of droughts and hurricanes, and the situation is likely to get worse

By Victoria Herrmann on June 6, 2018

Federal and State policy efforts



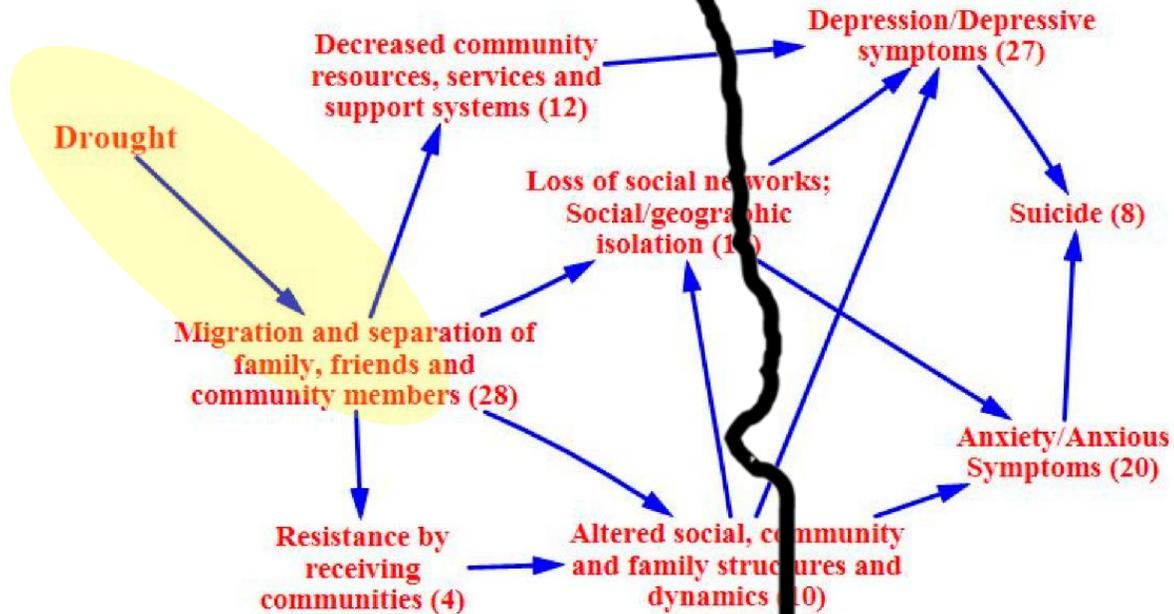
#4 in the World



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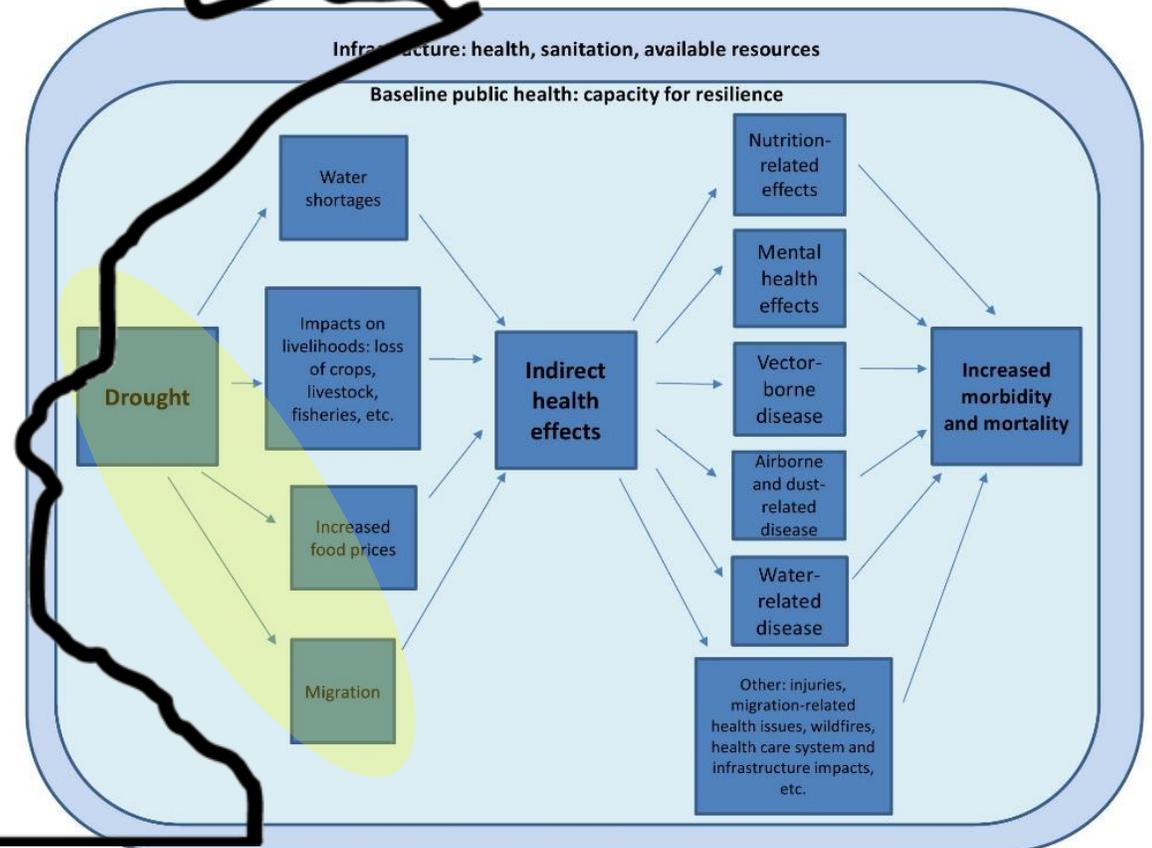


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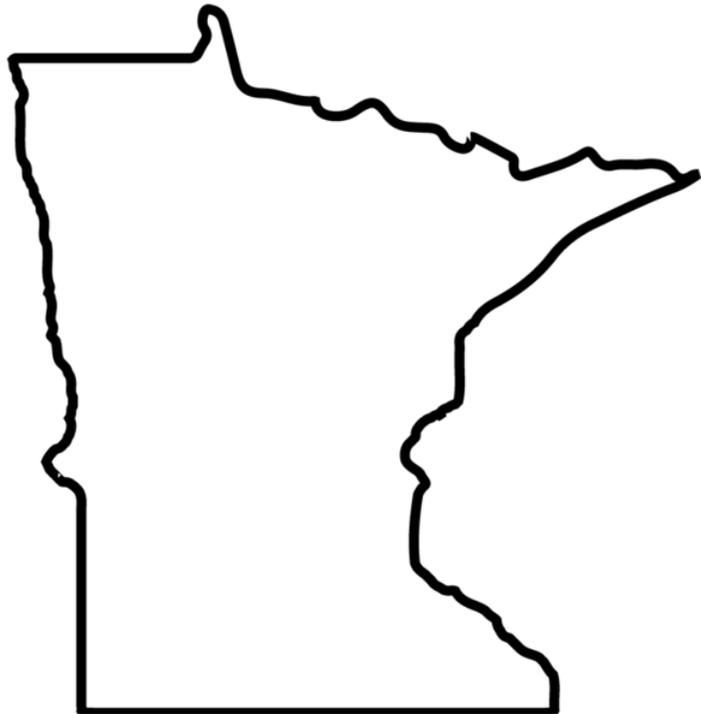
Carla S. Burke, Marko Kerac, Christel Prudhomme, Jolyon Medlock, Virginia Murray



U.S.

AMERICAN REFUGEES: HOW CLIMATE CHANGE MIGHT FORCE U.S. MIGRATION NORTH AND WHERE THEY COULD GO

BY **M.L. NESTEL** ON 3/22/19 AT 3:19 PM EDT



BIG STORY 10 OCTOBER 16, 2019 / 6:05 AM / A MONTH AGO

Future cool: Minnesota city ponders new boom as a climate migrant destination

Sebastien Malo

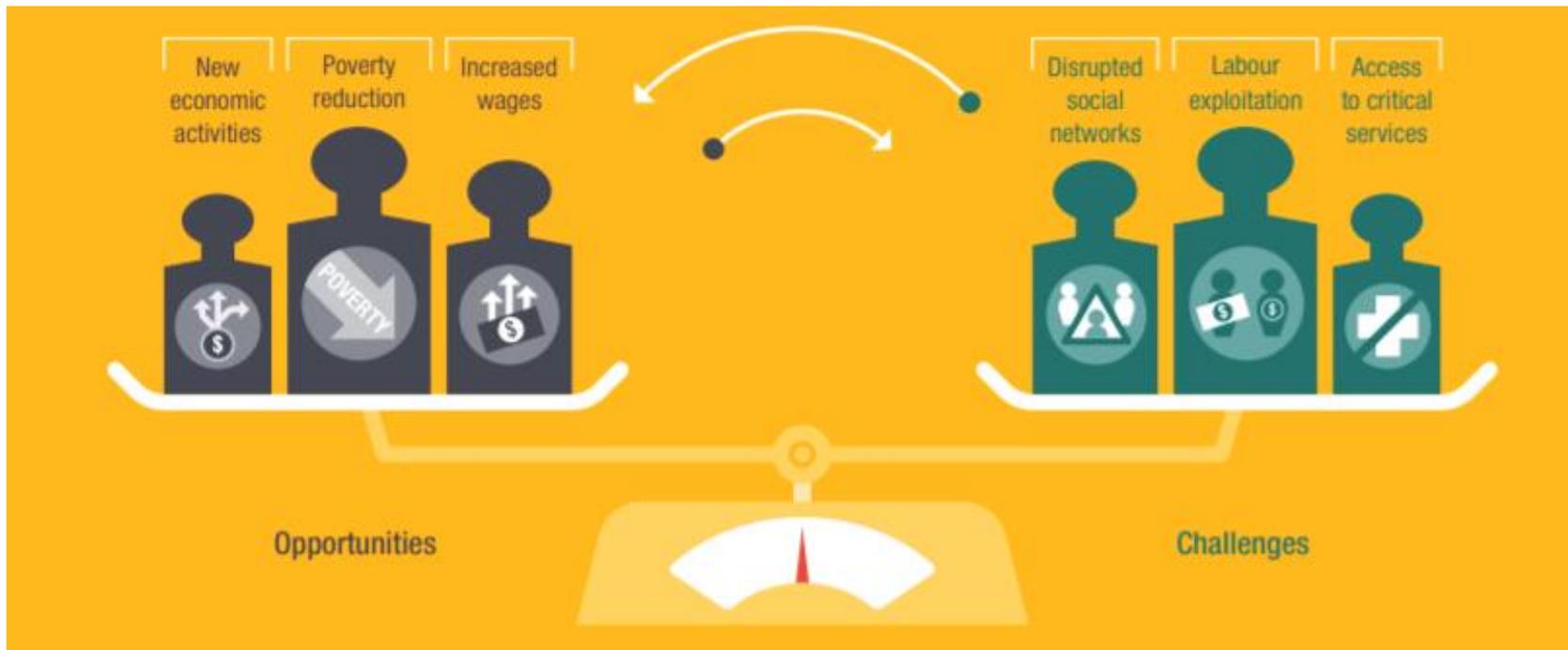
10 MIN READ

Through his research, Keenan believes two cities along the Great Lakes would be well-positioned sanctuaries for those fleeing warming or worsening climates: Buffalo, N.Y. and Duluth.

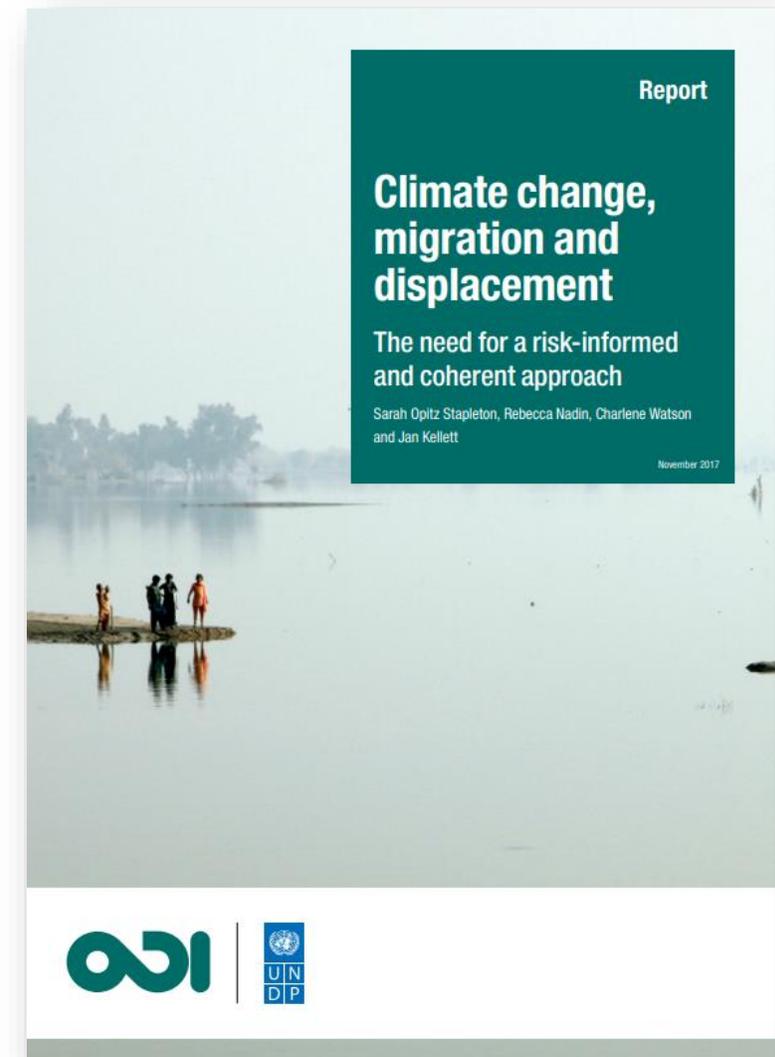
“Their sources of energy production are stable, they have cooler climates and they have access to plenty of fresh water,” Keenan [told the Guardian last year](#). “They also have less vulnerability to forest fires, as compared to somewhere like the Pacific north-west. They also have a legacy of excess infrastructural capacity that allows them to diversify their economy in the future. Land prices are cheap and they have a relatively well-educated and skilled labor force.”

Source: News Tribune, *Duluth as a destination for climate refugees?* Mar 20 2019

Climate Migration: Opportunities & Challenges



Source: UNDP, *Climate change, migration and displacement*, 2017.



Climate Adaptation Plans

St. Louis Park Climate Action Plan

February 2018

2040

Setting a course toward carbon neutrality



SAINT PAUL CLIMATE ACTION RESILIENCE PLAN

A FRAMEWORK FOR OUR COMMUNITY
TO ADDRESS THE IMPACT OF CLIMATE CHANGE



October 2019
City of Saint Paul
Mayor Melvin Carter

Minneapolis Climate Action Plan

A roadmap to reducing citywide greenhouse gas emissions





GLOBAL MIGRATION

Resilient Cities at the Forefront

Strategic actions to adapt and transform our cities
in an age of migration

POWDERED BY THE
ROCKEFELLER FOUNDATION

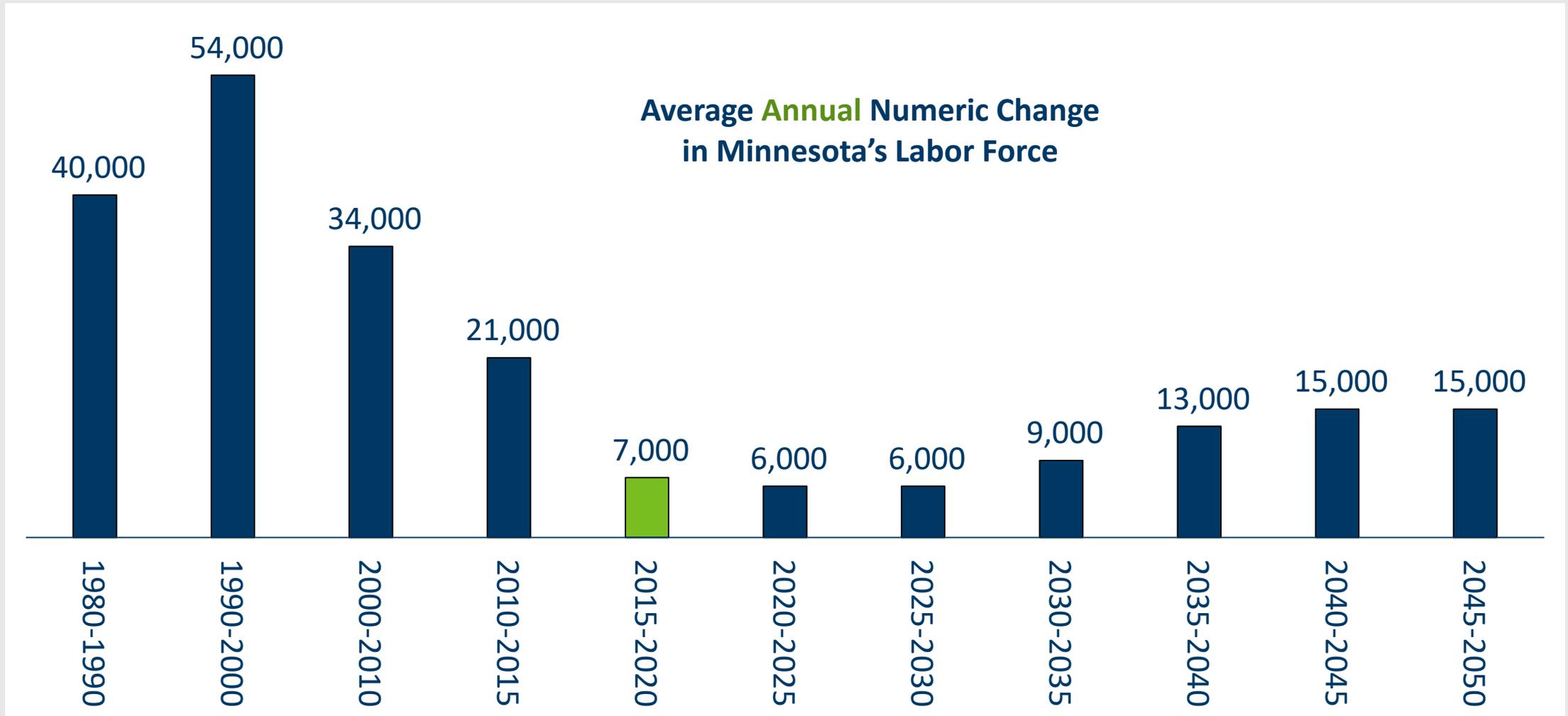


Network Exchange Program



Photo source: wikicommons

Minnesota's labor force growth is projected to slow further over the next 10 years

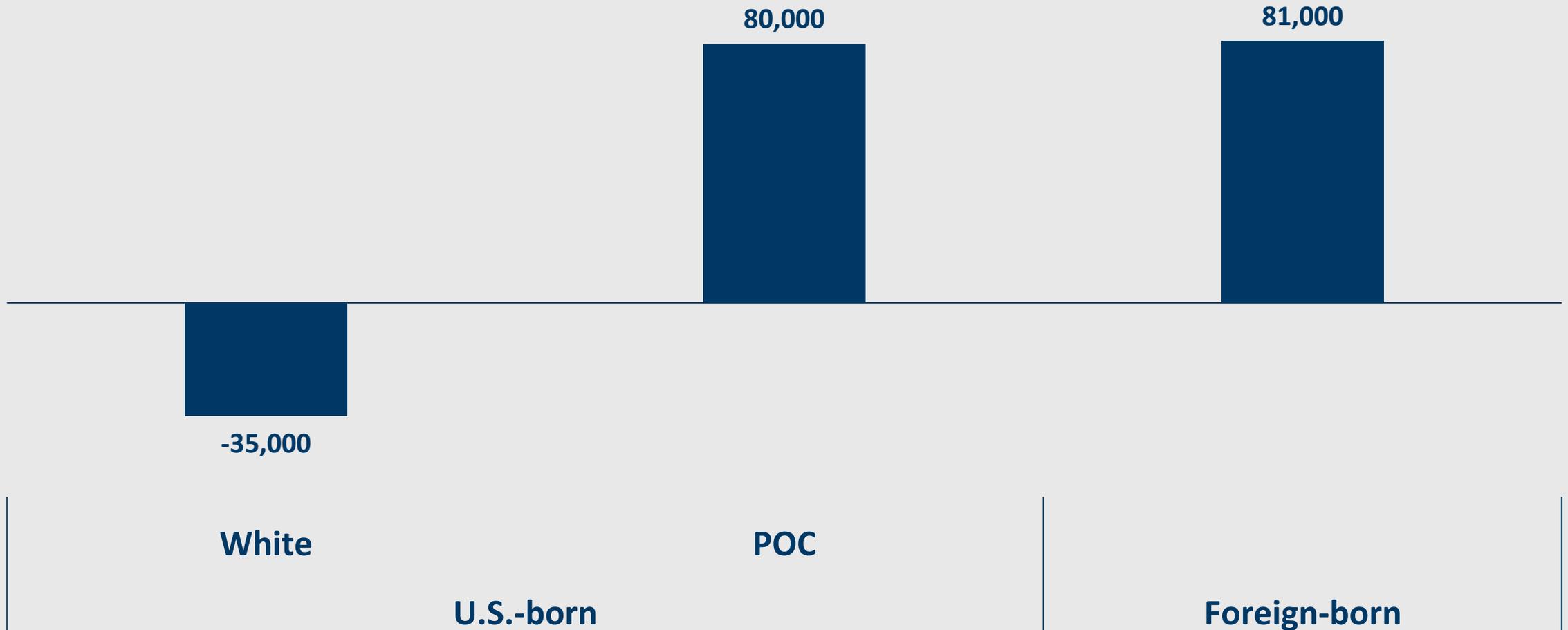


Slide author: Megan Dayton, State Demographer

Data Source: U.S. Census Bureau (1980—2015) & MN State Demographic Center Projections (2015-2045)

If not for Populations of Color and the foreign-born, the size of Minnesota's workforce would be declining

Total Change in Labor Force, Age 16+, 2011-2017, Minnesota



Slide author: Megan Dayton, State Demographer

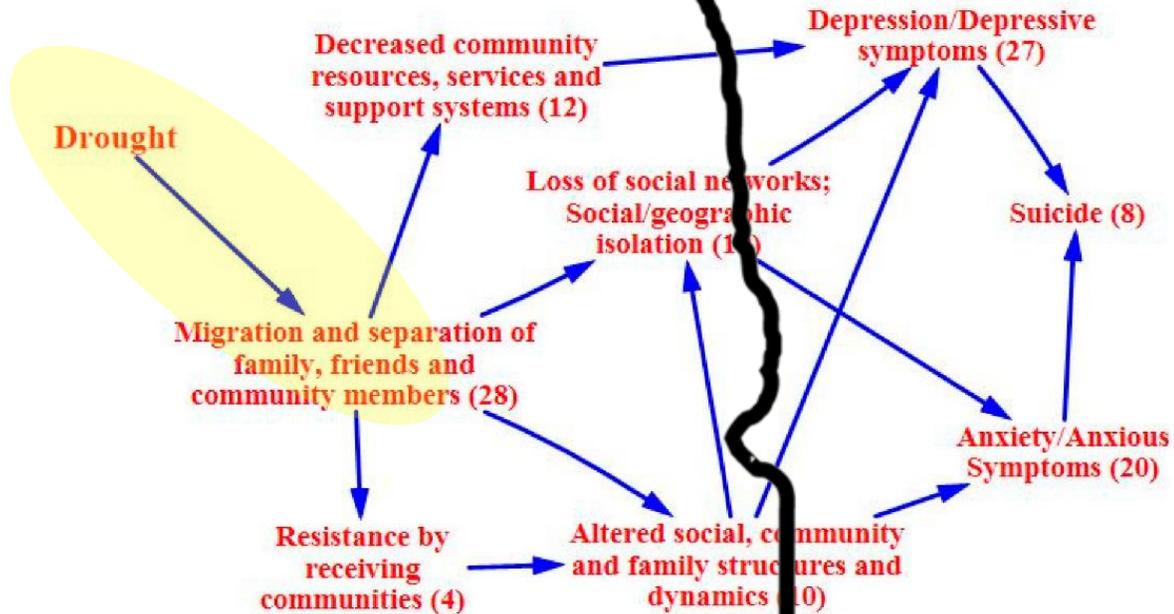
Source: U.S. Census Bureau, American Community Survey

- Climate hazards, like drought, are contributing to increased migration.
- Research evolving to help advance policy-making.
- Some indication that MN may experience more climate-influenced migration.
- Climate adaptation plans, especially state level, are a tool for considering impacts and opportunities.
- Immigration broadly is leading short term solution to slowing labor force growth across MN.

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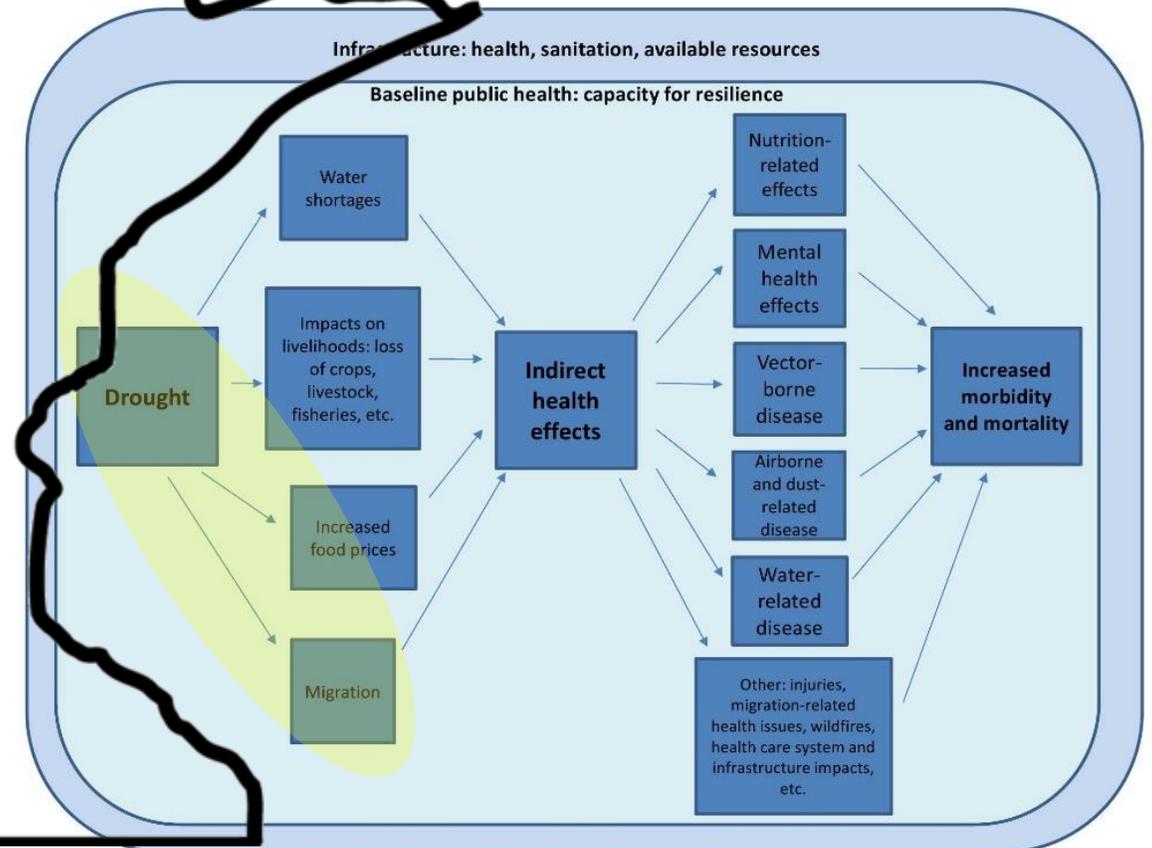


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Thank you!

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