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The Phase Zero Digital Toolbox

Visualizing global security, state instability,
climate change, and vulnerability of natural
resources

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Resource Security

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About the Author(s)

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About New America

We are dedicated to renewing America by continuing the quest to realize our nation's highest ideals, honestly confronting the challenges caused by rapid technological and social change, and seizing the opportunities those changes create.

About Resource Security

New America's Resource Security program looks at the intersection of security, prosperity, and natural resources.

About Phase Zero Project: Shaping the Competitive Space

The Pentagon has a planning concept called "Phase Zero": the time before conflict starts, when it is still possible to shape the global "competitive space" in order to prevent war or gain an advantage. The Phase Zero Project uses big data and a range of analytical tools to research the root causes of war today and redefine the competitive space, including how climate will change the risks to peace.

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Introduction

People have been using tools to adapt to the environment since the beginning of humankind. In today's environment, digital tools — not just tools of stone and metal — are increasingly helping humans adapt.

Today, complex interactions between demographic change, rising standards of living in many parts of the world, new technologies, and changing demands on natural resources are raising the risks to global security and prosperity. Climate change, in particular, means unprecedented shifts in the risk factors for conflict, social unrest, and forced migration. Digital tools can help governments, businesses, and other organizations better understand, anticipate, and plan for today's dynamic human security environment.

The Phase Zero Digital Toolbox is a curated list of existing digital tools for understanding complex interactions. These data visualization and decision support tools look at root causes of insecurity, such as: water and food scarcity; the record of humanitarian crises, conflicts, and state instability; and impacts of global climate change. Some make integrated assessments of multiple trends and variables. Some are purpose-built for specific end-users. Many are intended to raise public awareness. Most look at a range of data, everything from satellite imagery to on-the-ground surveys, and represent them as graphs or maps.

The Phase Zero team assembled this toolbox primarily to support our own research. We are sharing our research for two reasons: 1) to showcase the wide range of available digital tools in order to spur cross-pollination of approaches, and 2) to help would-be users of these tools find them. For inclusion, a tool must be free and publicly available, have multinational and ideally global coverage, and be published by a credible organization using documented sources. This is intended to be a sampling, not a comprehensive list of tools, and there were more tools behind firewalls that we were not able to evaluate.

We organized the tools based on a functional taxonomy (how people interact with the data) and issue area (to what end). Note these categories are not mutually exclusive, but intended to help you compare tools and find ones that may be useful.

Each tool has been classified into one of the following functional categories:

- **Research Tools**
- **Transparency Tools**
- **Index Tools**
- **Risk Assessment Tools**
- **Early Warning Tools**
- **Projection Tools**

- **Decision Support Tools**

You can also view the tools by issue:

- **Climate Change**
- **Conflict and State Instability**
- **Natural Resource Drivers**

If a tool covers more than one issue, it will be cross-listed.

Research Tools

Curations of various data sources for one-stop shopping or coherent stories

These tools are great for lightening the burden of finding information for journalists, scholars, policymakers, or interested members of the public. Some of these tools, such as the Uppsala Conflict Data Program, allow users to explore a novel data set provisioned from news, academic literature and other sources. Others, such as the Partnership for Resilience & Preparedness (PREP) tool, curate existing data sets relevant to a specific issue, making it easy for users to “shop” for the best data set for their needs.

Tool Name	Climate Change	Conflict and State Instability	Natural Resource Drivers
Environment Conflict & Cooperation Factbook	✓	✓	✓
Carbon Brief Weather Attribution Map	✓		
Carbon Brief Climate Funding Map	✓		
Global Terrorism Database		✓	
The Refugee Project		✓	
Uppsala Conflict Data Program		✓	
World Bank Open Data	✓	✓	✓
ReliefWeb		✓	✓
Humanitarian Data Exchange	✓	✓	✓
Resource Watch	✓		✓
Partnership for Resilience & Preparedness	✓	✓	✓

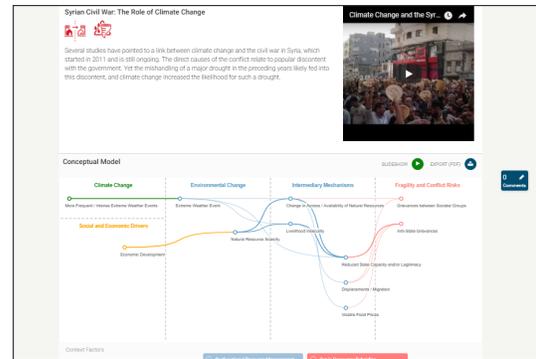
Environment, Conflict, & Cooperation Factbook (ECC Factbook)

adelphi¹

An extensive collection of more than 120 detailed, unique factsheets accessible through both a map and a searchable table.

The goal is for users to better understand the drivers behind environmental conflict and cooperation and to harness the lessons learned from earlier (non-) interventions.

Visit the tool here: factbook.ecc-platform.org



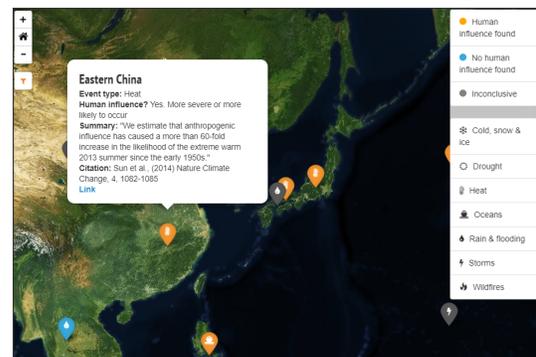
Source: *adelphi*

Mapped: Attributing extreme weather to climate change

Carbon Brief²

A geographic display of locations where peer-reviewed studies attribute extreme weather events to climate change.

Visit the tool here: www.carbonbrief.org/mapped-how-climate-change-affects-extreme-weather-around-the-world



Source: *Carbon Brief*

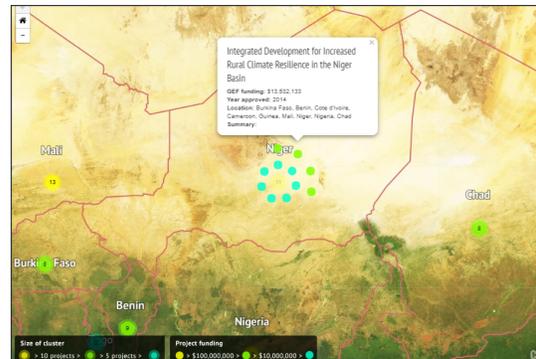
Mapped: Where multilateral climate funds spend their money

Carbon Brief²

A map profiling more than 1,000 projects funded from 2009-2017 by the four main multilateral climate funds.

The map includes: the Green Climate Fund (GCF); Adaptation Fund; Climate Investment Funds (CIF); and Global Environment Facility (GEF).

Visit the tool here: www.carbonbrief.org/mapped-where-multilateral-climate-funds-spend-their-money



Source: Carbon Brief

Global Terrorism Database (GTD)

START: The National Consortium for the Study of Terrorism and Responses to Terrorism³

An open-source, searchable database that catalogs information on terrorist events from 1970-2016 (with annual updates). The GTD includes data on 170,000 cases of domestic and international terrorism with up to 120 variables.

The primary purpose is to support research and analysis on terrorism.

Visit the tool here: www.start.umd.edu/gtd



Source: START

The Refugee Project

Hyperakt ⁴ and Ekene Ijeoma ⁵

An interactive map that allows viewers to explore the last 50 years of refugee migrations, from both the perspectives of country of origin and destination. UN data complemented by 100 contextual narrative stories, which detail events triggering each major exodus.

Visit the tool here: www.therefugeeproject.org



Source: Hyperakt & Ekene Ijeoma

Uppsala Conflict Data Program

Department of Peace and Conflict Research at Uppsala University ⁶

A conflict database of organized violence and civil war dating back to 1975. The user can visualize, filter, and download the data, which is updated annually.

Visit the tool here: ucdp.uu.se



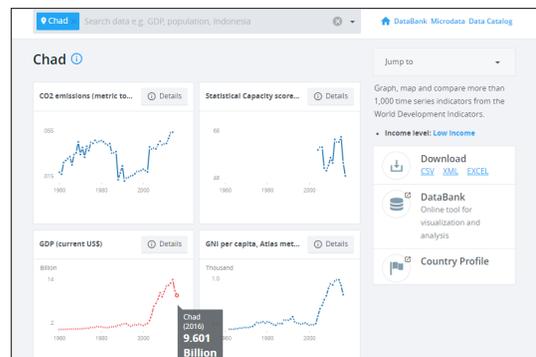
Source: Uppsala University

World Bank Open Data

The World Bank ⁷

A curated collection of longitudinal data and profiles of countries, for visualization and download.

The data covers a range of topics, including demographics, environment,



Source: The World Bank

economy, states and markets, and global links.

Visit the tool here: data.worldbank.org

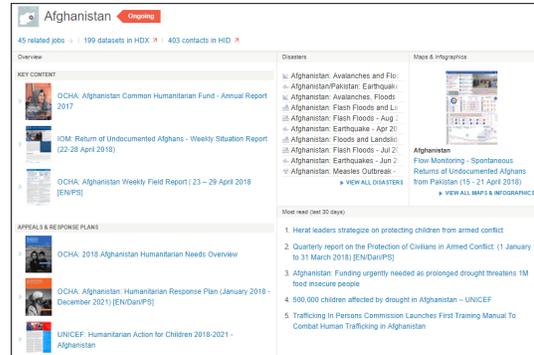
ReliefWeb

UN Office for the Coordination of Humanitarian Affairs (OCHA)⁸

The tool curates humanitarian information on global crises and disasters from more than 4,000 vetted sources. It is updated 24/7.

ReliefWeb Labs experiments with ways to improve information-sharing, including mobile apps, APIs, and shared taxonomies.

Visit the tool here: reliefweb.int



Source: UNOCHA

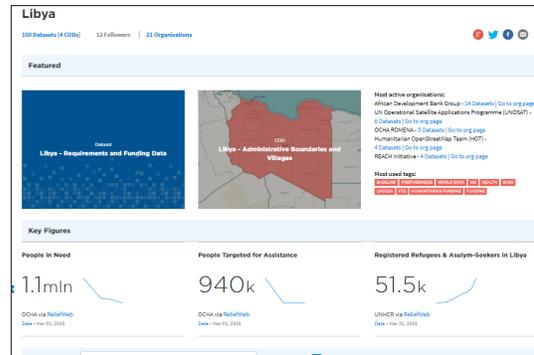
Humanitarian Data Exchange (HDX)

UNOCHA⁸

An open source platform with two types of data on humanitarian crises and response.

The first type is approximately 130 curated indicators that are comparable across countries. The second type of data includes more than 6,000 data sets contributed by vetted organizations.

Visit the tool here: data.humdata.org



Source: UNOCHA

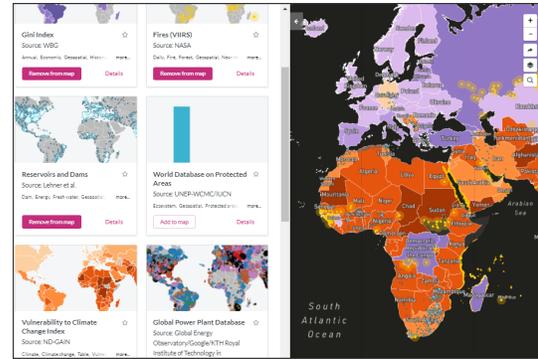
Resource Watch

World Resources Institute (WRI) ⁹

A platform to explore accurate, up-to-date insights about the planet.

Users can create and share visualizations or dashboards using data from satellites, sensors, and social media to tell stories about the state of our planet.

Visit the tool here: resourcewatch.org



Source: WRI

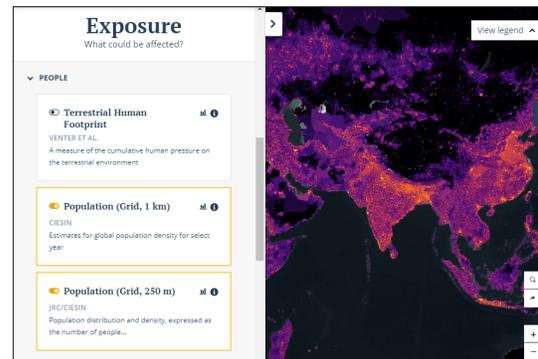
Partnership for Resilience & Preparedness (PREP)

Future Earth ¹⁰ and WRI ⁹

A map-based, open, online data platform that allows users to access and visualize spatial data on past and future climate, as well as physical and socioeconomic data.

The tool is built on the Resource Watch platform and allows organizations to customize dashboards to align local efforts.

Visit the tool here: www.prepdata.org



Source: Future Earth, WRI

Transparency Tools

Open information-sharing to promote accountability and more effective actions

These tools bring together data focused on issues of vulnerability, necessity, or controversy and display the information for comparison over time and/or across geographic areas. They are designed to provide a common base of information for policy-making and action. Not surprisingly, all of the tools in this section have “watch,” “transparency,” or “monitoring” in their titles. Some are external watchdogs, such as Global Forest Watch and AMTI, who use satellite data to track change over time. Others are partnerships with data providers to improve the international systems in which they operate. For example, Climate Watch publishes nations’ climate commitments under the Paris Agreement alongside other data sets for context, and Global Agricultural Geo-monitoring Initiative Crop Monitor (GEOGLAM) uses a combination of data from participating countries and satellite imagery to improve effectiveness of the agricultural commodities market.

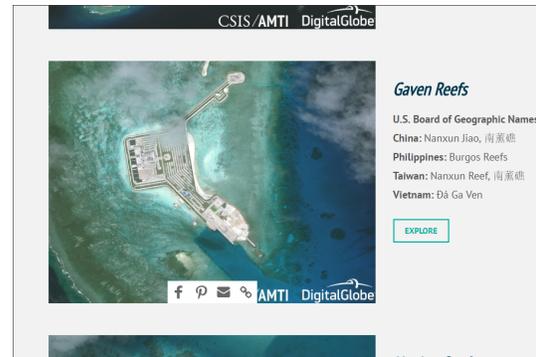
Tool Name	Climate Change	Conflict and State Instability	Natural Resource Drivers
Asia Maritime Transparency Initiative		✓	
Global Forest Watch			✓
Climate Watch	✓		
Global Agricultural Geo-monitoring Initiative Crop Monitor			✓

Asia Maritime Transparency Initiative

Center for Strategic and International Studies (CSIS)¹¹

An interactive, objective, regularly-updated source for maps, analyses, and curated satellite imagery. The goal is to promote transparency in the Indo-Pacific in order to dissuade assertive behavior, prevent conflict, and generate opportunities for cooperation and confidence building.

Visit the tool here: amti.csis.org

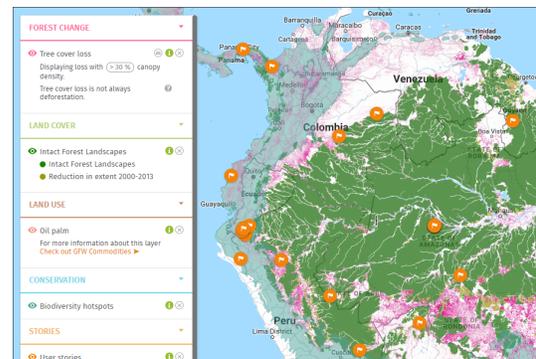


Source: CSIS

Global Forest Watch

WRI⁹

A global map of forest change data, such as global tree cover, pantropical carbon density, forest fires, boundaries for protected areas, and biodiversity hotspots. WRI utilizes a broad base of local partners, who submit narratives and consume the data.



Source: WRI

Although Global Forest Watch could also be considered a research tool, WRI's stated purpose is to promote transparency about governance of forest resources.

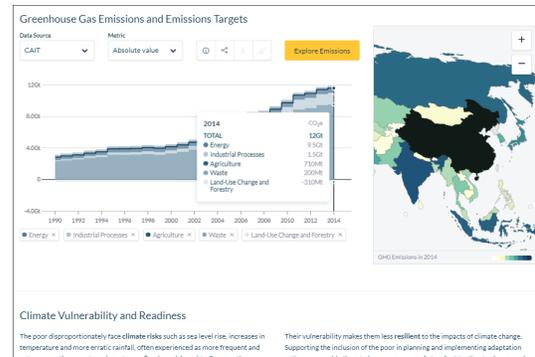
Visit the tool here: www.globalforestwatch.org

Climate Watch: Data for Climate Actions

WRI⁹ and the NDC Partnership¹²

A clearinghouse for dozens of datasets to compare Nationally Determined Contributions (NDCs) under the Paris Agreement, historical emissions data, emissions scenario pathways, and relevant sustainable development goals.

Visit the tool here: www.climatewatchdata.org



Source: WRI, the NDC Partnership

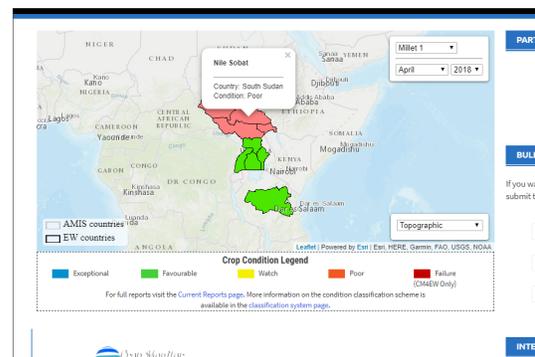
Global Agricultural Geo-monitoring Initiative Crop Monitor (GEOGLAM)

Group on Earth Observations at the World Meteorological Organization¹³

A crop monitoring tool that collects Earth observations from satellites and integrates them with ground-based and other in-situ measurements.

The goal is to improve market information and transparency in order to make international markets for agricultural commodities more effective.

Visit the tool here: cropmonitor.org



Source: GEOGLAM

Index Tools

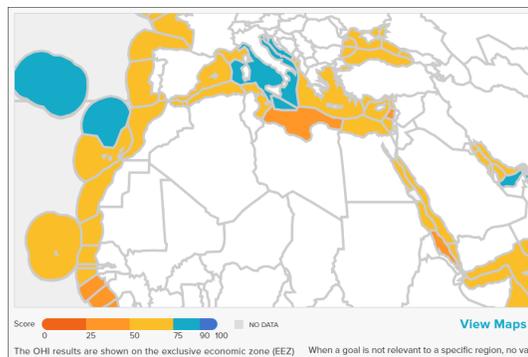
Apply standardized rankings to compare across geographies and time

These rankings incorporate data, observations, and analysis focused on an issue that is difficult to directly measure (such as “peace,” “state fragility,” or “ocean health”). These tools are typically updated annually, and those updates serve as newsworthy events to frame how countries have changed their rankings and how they compare to one another. Transparency of methodology and credibility of the organization are crucial for these tools, as they boil nations down to a single ranking. For example, the Ocean Health Index gains credibility because it was built on an open-source framework developed by an interdisciplinary team of scientists, and Global Peace Watch does so by letting users drill down to see the details of the data underlying the ranking.

Tool Name	Climate Change	Conflict and State Instability	Natural Resource Drivers
Ocean Health Index			✓
Worldwide Governance Indicators		✓	
Fragile States Index		✓	
Corruption Perceptions Index		✓	
Global Peace Watch		✓	

Ocean Health Index

National Center for Ecological Analysis and Synthesis, Sea Around Us, Conservation International, National Geographic, and the New England Aquarium¹⁴



Source: Ocean Health Index

An index that maps the level of achievement of widely accepted socio-ecological goals and scores for 220 countries and territories, Antarctica, and 15 High Seas regions.

There are 10 main goals in the index, including food provision, coastal economies, and coastal protection.

Visit the tool here: www.oceanhealthindex.org

Worldwide Governance Indicators

The World Bank⁷

A collection of indicators that ranks six broad dimensions of governance for more than 200 countries and territories over the period 1996-2016.



Source: The World Bank

The six indicators are voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption.

Visit the tool here: info.worldbank.org/governance/wgi

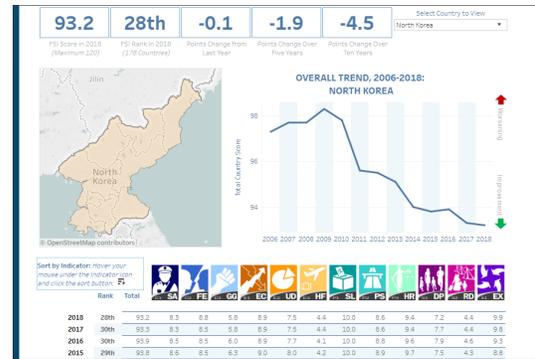
Fragile States Index

The Fund for Peace¹⁵

An index of twelve conflict risk indicators that measure the condition of a state over time.

The index uses qualitative and quantitative measures to assess the vulnerability of states to collapse across pre-conflict, active conflict, and post-conflict situations.

Visit the tool here: global.fundforpeace.org/index



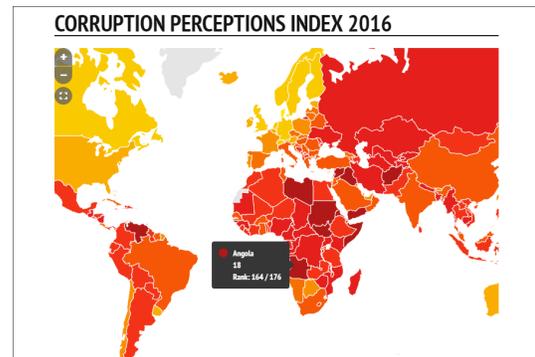
Source: The Fund for Peace

Corruption Perceptions Index

Transparency International¹⁶

An annual composite indicator based on 13 surveys, rankings, indices, and assessments to measure perceptions of public sector corruption in different countries around the world.

Visit the tool here: www.transparency.org

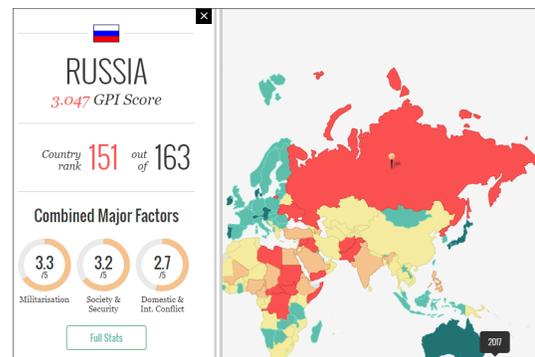


Source: Transparency International

Global Peace Watch

Vision of Humanity¹⁷

An annual index of 23 qualitative and quantitative indicators that measures the state of peace across three domains: safety and security, ongoing domestic and international conflict, and degree of militarization.



Source: Vision of Humanity

The tool allows the user to view detailed information on each country and indicator.

Visit the tool here: [visionofhumanity.org/indexes/global-peace-index](https://www.visionofhumanity.org/indexes/global-peace-index)

Risk Assessment Tools

Quantitative and qualitative judgments of risk

Most of these tools are multi-dimensional, looking on one side at plausible hazards and on the flip side at a country’s ability to respond or adapt to those hazards (note that “risk assessment” can refer to a scientific process with technical specifications in a number of fields. In this case, the tools in this category are generally using a broad definition of “risk assessment”). A third axis is that of time, which measures whether risk is increasing or decreasing. For example, Notre Dame’s Global Adaptation Initiative (ND-GAIN) ranks countries by vulnerability and readiness over 20+ years. Risk assessments focus on current conditions and are typically updated annually, though most have data going back ten or more years. Risk assessments are similar to indices in that they often assign a relative score and ranking to a country and the annual updating of these assessments can spur media interest and raise awareness on the risks countries face.

Tool Name	Climate Change	Conflict and State Instability	Natural Resource Drivers
Index for Risk Management		✓	✓
Climate Change and African Political Stability	✓	✓	
Global Flood Map			✓
Fragile Cities		✓	✓
Notre Dame Global Adaptation Initiative	✓	✓	✓
Drivers of Vulnerability Monitor		✓	✓
Early Warning Project		✓	

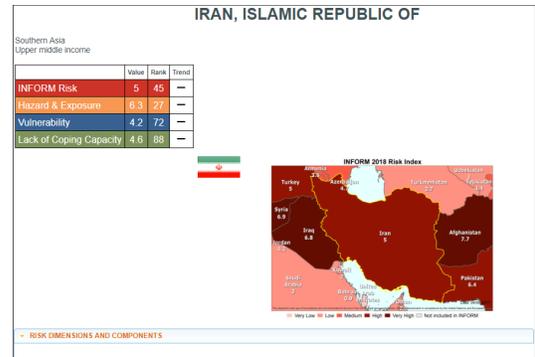
Index for Risk Management (INFORM)

Inter-Agency Standing Committee (IASC) Task Team for Preparedness and Resilience, the European Commission, and others¹⁸

An open-source risk assessment for humanitarian crises and disasters.

The vulnerability rankings are based on 50 indicators across three dimensions of risk: hazards & exposure, vulnerability, and lack of coping capacity.

Visit the tool here: www.inform-index.org



Source: IASC, EU Commission

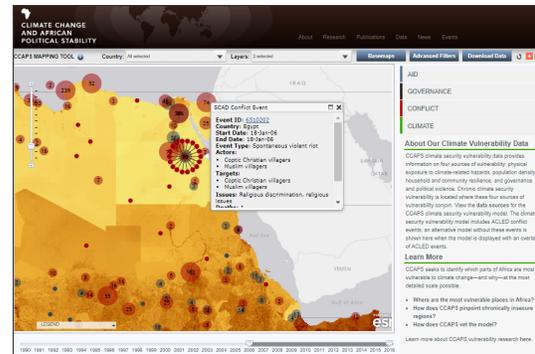
Climate Change and African Political Stability (CCAPS)

Strauss Center at the University of Texas at Austin¹⁹

A mapped display of information on four sources of vulnerability across Africa: physical exposure to climate-related hazards, population density, household and community resilience, and governance and political violence.

The data represented is from 2006 to 2016.

Visit the tool here: ccaps.developmentgateway.org



Source: Strauss Center

Global Flood Map

FM Global²⁰

An initial flood assessment tool, based on data and hydrologic models, that identifies areas in high and moderate risk flood zones.

Visit the tool here: www.fmglobal.com/research-and-resources/global-flood-map/flood-map



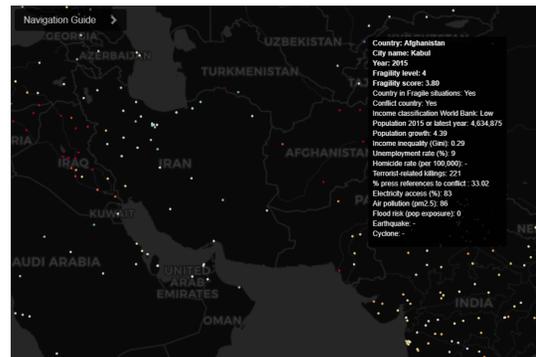
Source: FM Global

Fragile Cities

Igarape Institute²¹ in collaboration with United Nations University, World Economic Forum, and 100 Resilient Cities

A data visualization tool that tracks the distribution and evolution of fragility risk in at least 2,100 cities worldwide since 2000. It features a composite score of city fragility that combines multiple metrics, such as urbanization, inequality, concentrated poverty, youth unemployment, justice deficits, real and perceived insecurity, and natural hazard exposure.

Visit the tool here: fragilecities.igarape.org.br



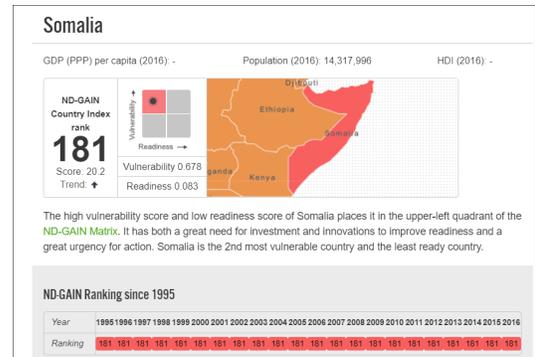
Source: Igarape Institute

Notre Dame Global Adaptation Initiative (ND-GAIN)

University of Notre Dame²²

A country-level ranking system that captures a country's vulnerability to climate change and other global challenges, and its readiness to improve resilience. It is updated annually.

Visit the tool here: gain.nd.edu



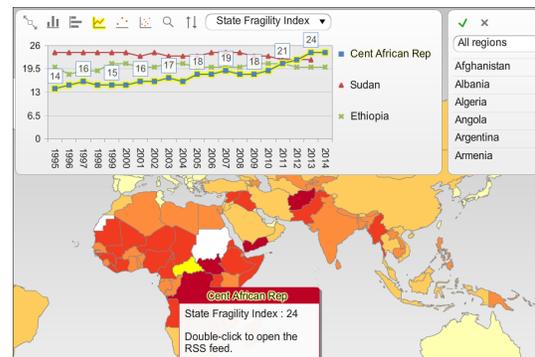
Source: University of Notre Dame

Drivers of Vulnerability Monitor

Hague Center for Strategic Studies (HCSS)²³

A global map that displays 50 security, economic, social, political, and geographic drivers of state vulnerability to intrastate conflict. It also tracks the change in each country's vulnerability from 1992 to 2014.

Visit the tool here: projects.hcss.nl/monitor/86



Source: HCSS

Early Warning Project

Simon-Skjodt Center for the Prevention of Genocide at the United States Holocaust Memorial Museum ²⁴

A tool that estimates whether a country will be susceptible to an onset of state-led mass killing in the next year.

The assessments come from the average of three statistical models that represent key perspectives on how best to anticipate when mass killing will occur. These quantitative models are supplemented with crowd-sourced expert opinions.

Visit the tool here: www.earlywarningproject.com



Source: *Simon-Skjodt Center for the Prevention of Genocide*

Early Warning Tools

Short-term forecasting or near real-time updates on situations that could escalate

A type of risk assessment, these tools tend to be updated daily or monthly, and the data are accompanied by analysis. Their purpose is spurring immediate response or other action. For example, iSciences' Water Anomalies forecast is designed to trigger further research into at-risk geographic areas, and the Council on Foreign Relations' Global Conflict Tracker organizes its conflicts based on the level of relevance to U.S. interests. The near-real-time nature of these tools often requires that they harvest their data from the regions they are reporting on, either through local media or boots on the ground. For example, the Famine Early Warning System (FEWS NET) has 22 field offices.

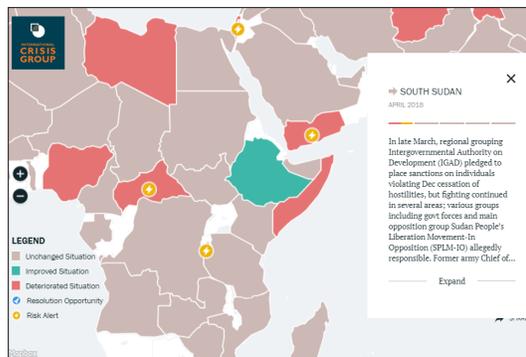
Tool Name	Climate Change	Conflict and State Instability	Natural Resource Drivers
Crisis Watch		✓	
Water Anomalies Forecast			✓
Famine Early Warning System Network			✓
Global Conflict Tracker		✓	

Crisis Watch

International Crisis Group ²⁵

A monthly early warning bulletin designed to provide regular updates on the state of the most significant situations of conflict around the world.

Visit the tool here: www.crisisgroup.org



Source: International Crisis Group

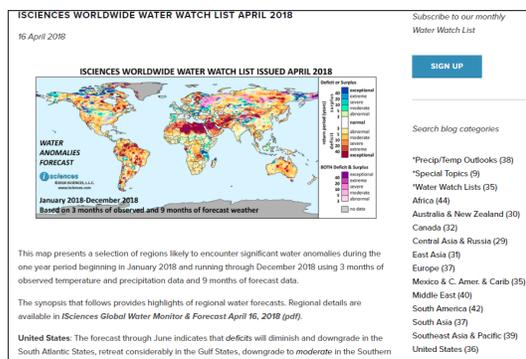
Water Anomalies Forecast

iSciences ²⁶

A monthly PDF report of current water anomalies and future forecasts (up to 9 months).

The underlying water security indicator model identifies regions with significant water anomalies -- either deficits or surpluses relative to historically expected quantities using a 1950-2009 baseline period.

Visit the tool here: www.isciences.com

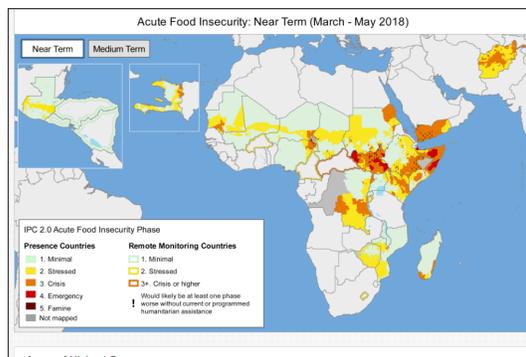


Source: iSciences

Famine Early Warning System Network (FEWS NET)

USAID, USGS, NOAA, NASA, USDA ²⁷

A near- and medium-term early warning tool with analysis on food insecurity in more than 36 of the world's most food-insecure countries.



Source: FEWS NET

The data are gathered from 22 field offices in collaboration with scientists and NGOs. The goal is to help government decision-makers and relief agencies plan for and respond to humanitarian crises.

Visit the tool here: fews.net

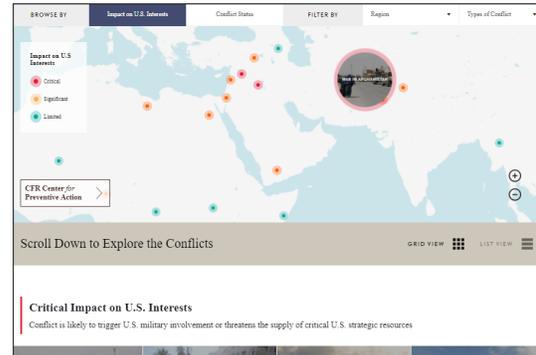
Global Conflict Tracker

Center for Preventative Action at the Council on Foreign Relations (CFR)²⁸

CFR's Preventive Priorities Survey identifies ongoing conflicts around the world and provides monthly updates with background information and available resources. As of May 2018, there are nearly thirty conflicts on the map.

The visualization denotes both the degree of impact on US interests as well as whether the conflict is worsening or improving.

Visit the tool here: www.cfr.org/interactives/global-conflict-tracker



Source: CFR

Projection Tools

Mathematical models that forecast future scenarios under various conditions

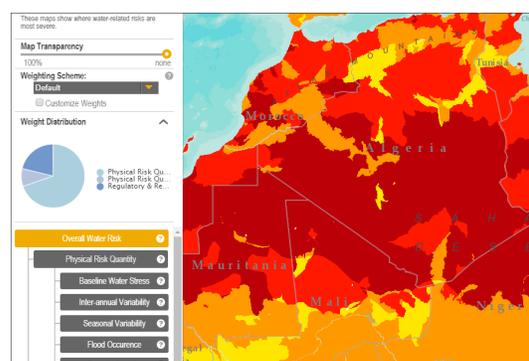
Projections are a specific type of tool that gives a general audience the ability to run models under different scenarios to see what happens in parts of the world. The time frames range from the next 20 years to the end of the century. These tools can be a powerful way to make complex calculations about the future more accessible. In other words, it's not necessary to have technical expertise to use these tools to determine how actions today may shape the future. When the Climate Impact Map first launched, for example, it was featured prominently in the *New York Times*.

Tool Name	Climate Change	Conflict and State Instability	Natural Resource Drivers
Aqueduct	✓		✓
Climate Impact Map	✓		
Climate Wizard	✓		
Surging Seas	✓		

Aqueduct

WRI⁹

Maps and indicators that compare current severity of water-related risks across geographies and show how climate change and socio-economic development could affect the availability of and demand for water resources over the coming decades. Users can adjust parameters, including customizing the weight of different indicators and choosing a carbon emission scenario.



Source: WRI

Visit the tool here: aqueduct.wri.org

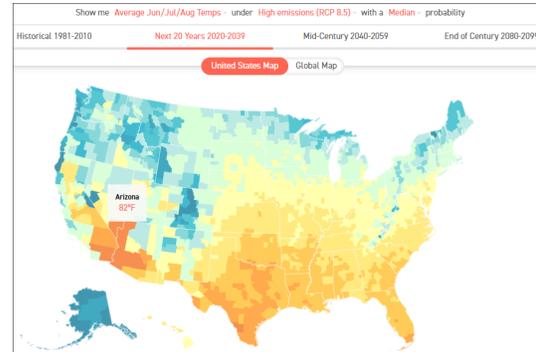
Climate Impact Map

Climate Impact Lab ²⁹

A straightforward data visualization of global and US climate change projections through the end of the century.

The interface allows users to zoom in to local areas and change the time frame, emissions scenarios, probability and ways to view temperature change (for example, "Number of days greater than 95 deg F.")

Visit the tool here: www.impactlab.org/map



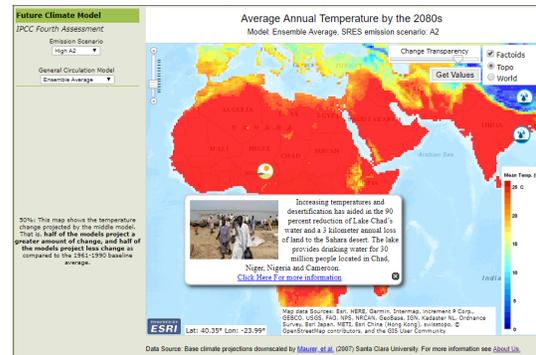
Source: Climate Impact Lab

Climate Wizard

The Nature Conservancy, University of Washington, and University of Southern Mississippi ³⁰

This tool maps historic and future predictions of temperature and rainfall around the world, with options to compare and view different predictive models and greenhouse gas emission scenarios.

Visit the tool here: www.climatewizard.org



Source: Climate Wizard

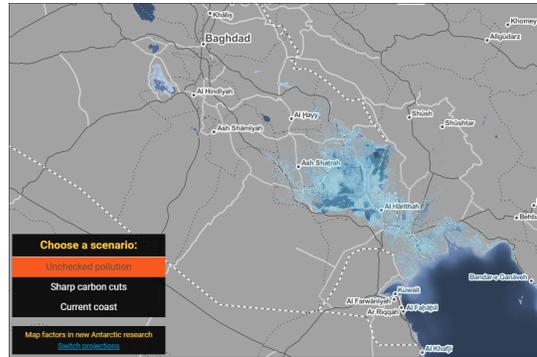
Surging Seas

Climate Central³¹

A visualization of local projected sea levels for the year 2100 under different carbon pollution scenarios.

The projections are based on peer-reviewed research, and include data on how many people will potentially be living on land that could be affected in the future.

Visit the tool here: sealevel.climatecentral.org



Source: Climate Central

Decision Support Tools

A combination of models, analytics, and data access to aid specific decision-makers

Decision support tools tend to be tightly coupled with discrete decisions by specific actors. Some tools, such as UNEP’s MapX and Earth Genome’s Green Infrastructure Support Tool (GIST), rely on a foundational platform that can be configured in collaboration with specific end-users. This type of co-creation is a great fit to inform decisions or actions in complex situations, but the tools customized for one user are less likely to be useful for a wider audience.

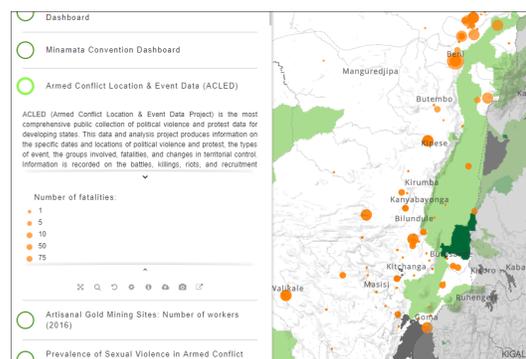
Tool Name	Climate Change	Conflict and State Instability	Natural Resource Drivers
MapX	✓	✓	✓
Long-Range Energy Alternatives Planning System			✓
Water Evaluation and Planning System			✓
Vital Signs			✓
Green Infrastructure Support Tool			✓

MapX

UN Environment Program, the World Bank, and the Global Resource Information ³²

MapX is a decision support tool where stakeholders can build customized applications on a common platform.

The goal is to generate actionable insights from geospatial data to inform dialogue and help all stakeholders



Source: UNEP

understand benefits and risks, manage expectations, and make evidence-based decisions.

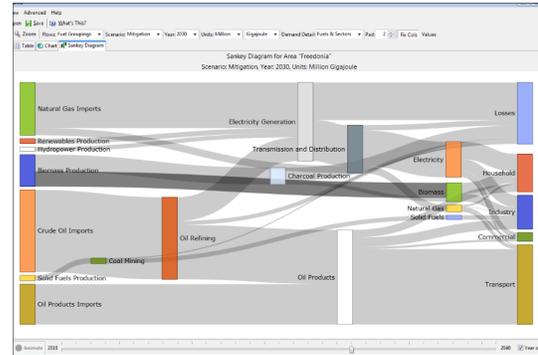
Visit the tool here: www.mapx.org

Long-Range Energy Alternatives Planning System

Stockholm Environment Institute (SEI)³³

An integrated, medium to long-term scenario-based modeling tool that tracks energy consumption, production, and resource extraction in all sectors of an economy. At least 32 countries used LEAP to create energy and emissions scenarios that were the basis for their Intended Nationally Determined Contributions on Climate Change (NDCs).

Visit the tool here: www.energycommunity.org



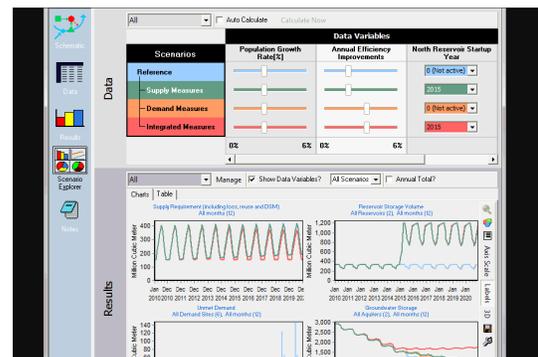
Source: SEI

Water Evaluation and Planning System

SEI³³

A software tool for integrated water resources planning that attempts to assist rather than substitute for the skilled planner. WEAP places demand-side issues, such as water use patterns, equipment efficiencies, re-use strategies, costs, and water allocation schemes, on an equal footing with supply-side topics, such as stream flow, groundwater resources, reservoirs, and water transfers.

Visit the tool here: www.weap21.org



Source: SEI

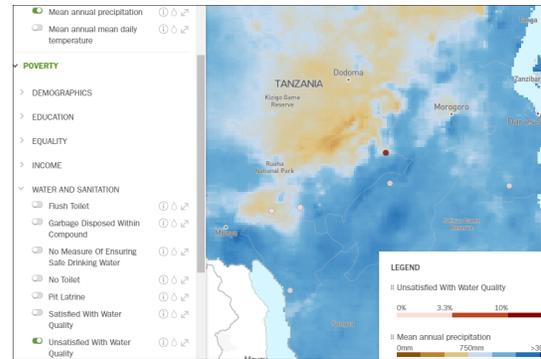
Vital Signs

**Conservation International,
Wildlife Conservation Society,
Africa Innovations Institute, and
Tanzania Forest Conservation
Group**³⁴

A collection and visualization of standardized data sets and baselines for tracking land degradation across several African countries.

The user can choose different levels of data granularity, ranging from households to global.

Visit the tool here: indicators.vitalsigns.org/map



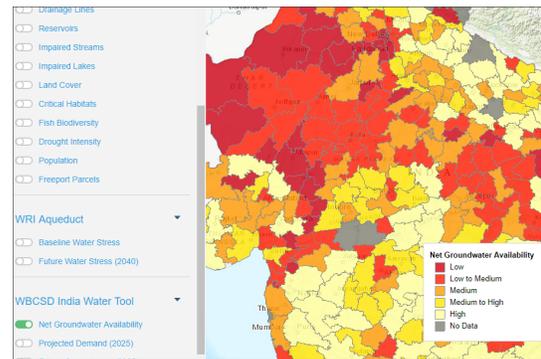
Source: Vital Signs

Green Infrastructure Support Tool

**Earth Genome³⁵ and World
Business Council for Sustainable
Development (WBCSD)**³⁶

A decision support tool that enables collaborative consulting based on the Earth Genome platform. It brings together 40+ indicators, scientists, and end-users to identify alternative solutions to water security risks.

Visit the tool here: www.earthgenome.org/gist



Source: Earth Genome, WBCSD

View the tools by issue:

The previous sections organized these tools by functional category.

If you want to browse the tools by *issue* (climate change, conflict and state instability, or natural resource drivers), the same tools are organized by issue in the next three pages.

- [Climate Change](#)
- [Conflict and State Instability](#)
- [Natural Resource Drivers](#)

Note that some tools span issues areas, so in those cases they will appear on multiple pages.

Climate Change

Some tools address more than one issue, and will be cross-listed.

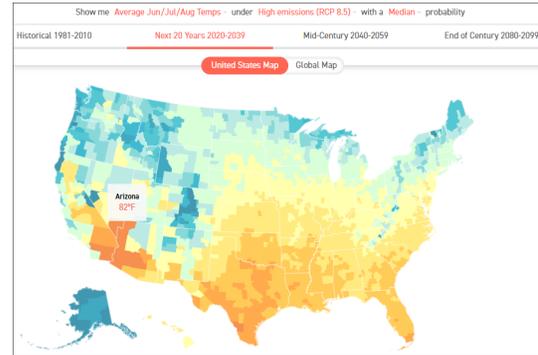
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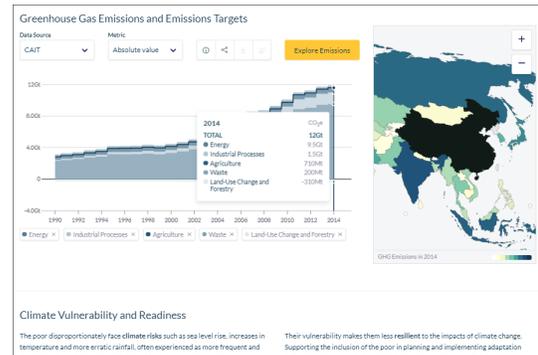
Source: Climate Impact Lab

Climate Watch: Data for Climate Actions

WRI ⁹ and the NDC Partnership ¹²

A clearinghouse for dozens of datasets to compare Nationally Determined Contributions (NDCs) under the Paris Agreement, historical emissions data, emissions scenario pathways, and relevant sustainable development goals.

Visit the tool here: www.climatewatchdata.org



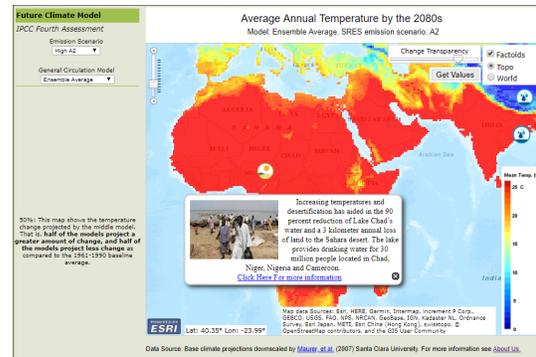
Source: WRI, the NDC Partnership

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The Nature Conservancy,
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Source: Climate Wizard

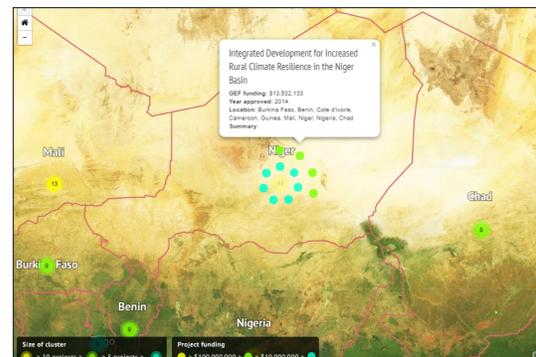
Mapped: Where multilateral climate funds spend their money

Carbon Brief²

A map profiling more than 1,000 projects funded from 2009-2017 by the four main multilateral climate funds.

The map includes: the Green Climate Fund (GCF); Adaptation Fund; Climate Investment Funds (CIF); and Global Environment Facility (GEF).

Visit the tool here: www.carbonbrief.org/mapped-where-multilateral-climate-funds-spend-their-money



Source: Carbon Brief

Mapped: Attributing extreme weather to climate change

Carbon Brief²

A geographic display of locations where peer-reviewed studies attribute extreme weather events to climate change.

Visit the tool here: www.carbonbrief.org/mapped-how-climate-change-affects-extreme-weather-around-the-world



Source: Carbon Brief

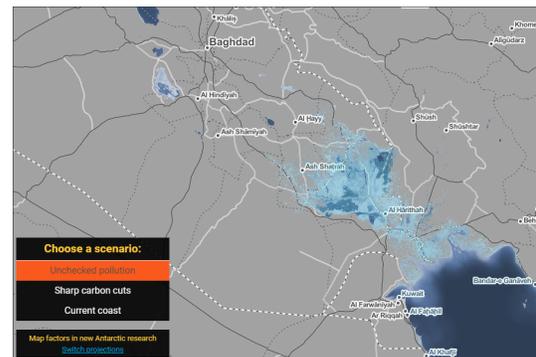
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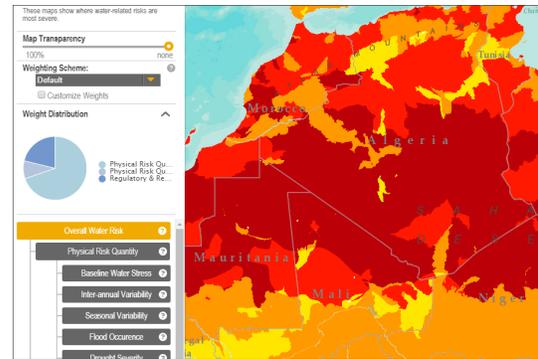
Aqueduct

WRI⁹

Maps and indicators that compare current severity of water-related risks across geographies and show how climate change and socio-economic development could affect the availability of and demand for water resources over the coming decades.

Users can adjust parameters, including customizing the weight of different indicators and choosing a carbon emission scenario.

Visit the tool here: aqueduct.wri.org



Source: WRI

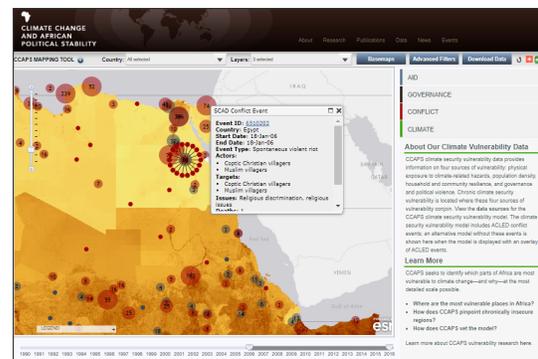
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Source: Strauss Center

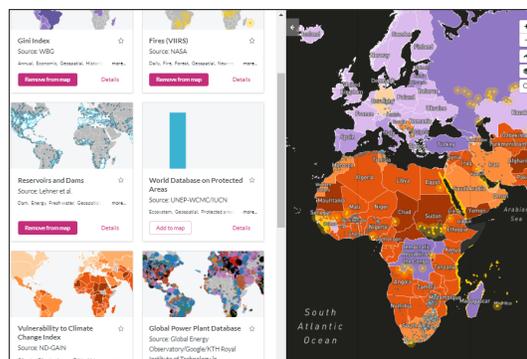
Resource Watch

World Resources Institute (WRI) ⁹

A platform to explore accurate, up-to-date insights about the planet.

Users can create and share visualizations or dashboards using data from satellites, sensors, and social media to tell stories about the state of our planet.

Visit the tool here: resourcewatch.org



Source: WRI

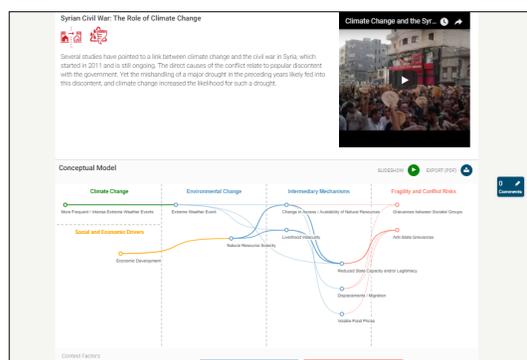
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Source: adelphi

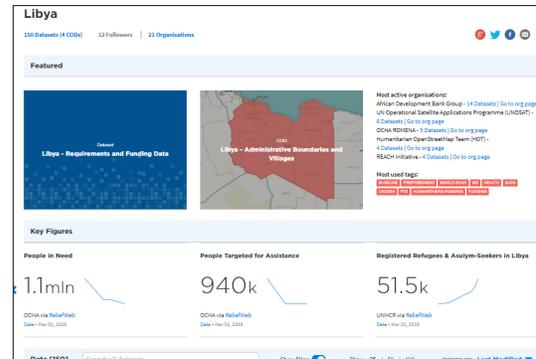
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An open source platform with two types of data on humanitarian crises and response.

The first type is approximately 130 curated indicators that are comparable across countries. The second type of data includes more than 6,000 data sets contributed by vetted organizations.

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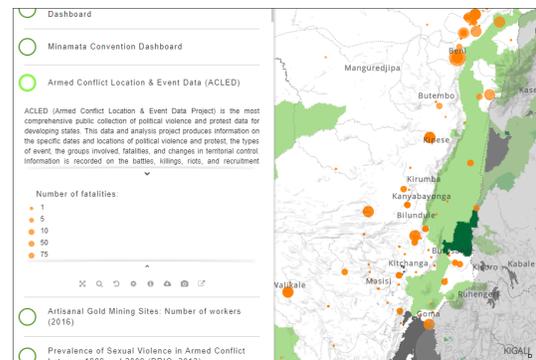
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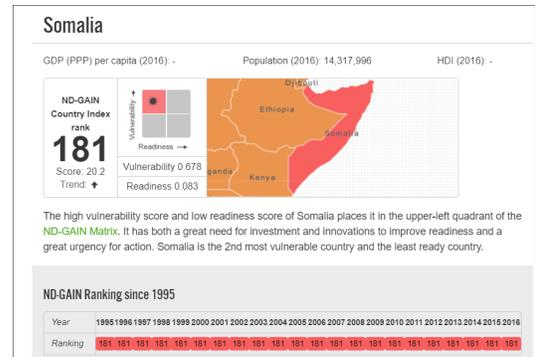
Source: UNEP

Notre Dame Global Adaptation Initiative (ND-GAIN)

University of Notre Dame²²

A country-level ranking system that captures a country's vulnerability to climate change and other global challenges, and its readiness to improve resilience. It is updated annually.

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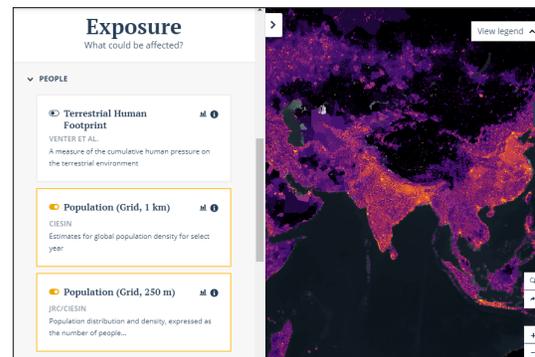


Source: University of Notre Dame

Partnership for Resilience & Preparedness (PREP)

Future Earth¹⁰ and WRI⁹

A map-based, open, online data platform that allows users to access and visualize spatial data on past and future climate, as well as physical and socioeconomic data.



Source: Future Earth, WRI

The tool is built on the Resource Watch platform and allows organizations to customize dashboards to align local efforts.

Visit the tool here: www.prepdata.org

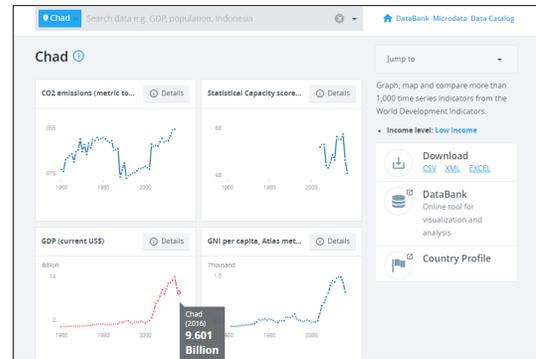
World Bank Open Data

The World Bank⁷

A curated collection of longitudinal data and profiles of countries, for visualization and download.

The data covers a range of topics, including demographics, environment, economy, states and markets, and global links.

Visit the tool here: data.worldbank.org



Source: The World Bank

Conflict and State Instability

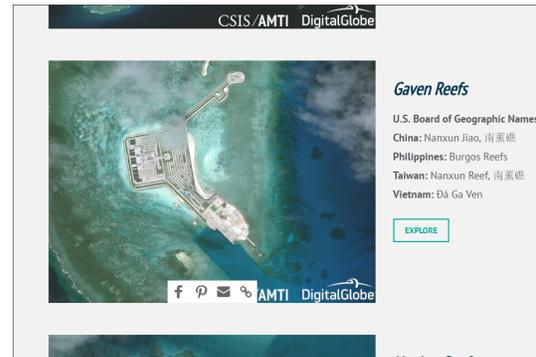
Some tools address more than one issue, and will be cross-listed.

Asia Maritime Transparency Initiative

Center for Strategic and International Studies (CSIS)¹¹

An interactive, objective, regularly-updated source for maps, analyses, and curated satellite imagery. The goal is to promote transparency in the Indo-Pacific in order to dissuade assertive behavior, prevent conflict, and generate opportunities for cooperation and confidence building.

Visit the tool here: amti.csis.org



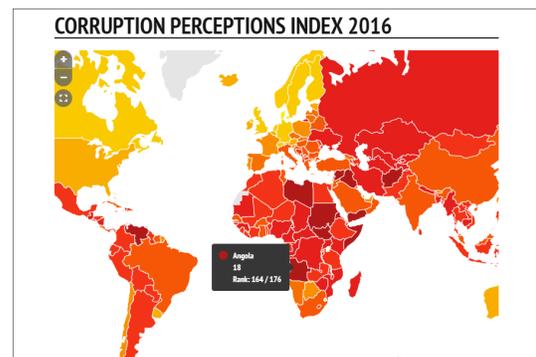
Source: CSIS

Corruption Perceptions Index

Transparency International¹⁶

An annual composite indicator based on 13 surveys, rankings, indices, and assessments to measure perceptions of public sector corruption in different countries around the world.

Visit the tool here: www.transparency.org



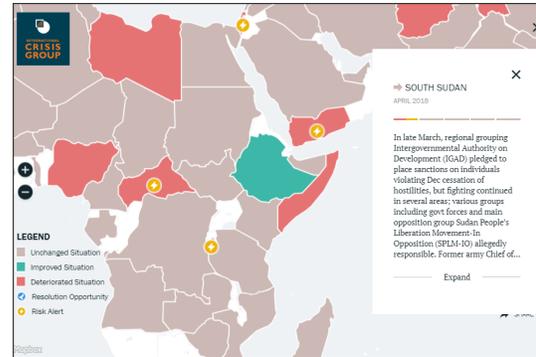
Source: Transparency International

Crisis Watch

International Crisis Group ²⁵

A monthly early warning bulletin designed to provide regular updates on the state of the most significant situations of conflict around the world.

Visit the tool here: www.crisisgroup.org



Source: International Crisis Group

Early Warning Project

Simon-Skjodt Center for the Prevention of Genocide at the United States Holocaust Memorial Museum ²⁴

A tool that estimates whether a country will be susceptible to an onset of state-led mass killing in the next year.

The assessments come from the average of three statistical models that represent key perspectives on how best to anticipate when mass killing will occur. These quantitative models are supplemented with crowd-sourced expert opinions.

Visit the tool here: www.earlywarningproject.com



Source: Simon-Skjodt Center for the Prevention of Genocide

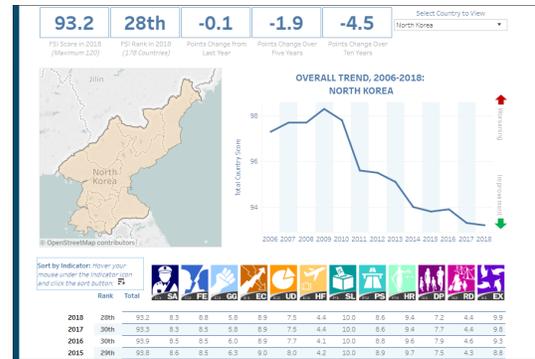
Fragile States Index

The Fund for Peace¹⁵

An index of twelve conflict risk indicators that measure the condition of a state over time.

The index uses qualitative and quantitative measures to assess the vulnerability of states to collapse across pre-conflict, active conflict, and post-conflict situations.

Visit the tool here: global.fundforpeace.org/index



Source: The Fund for Peace

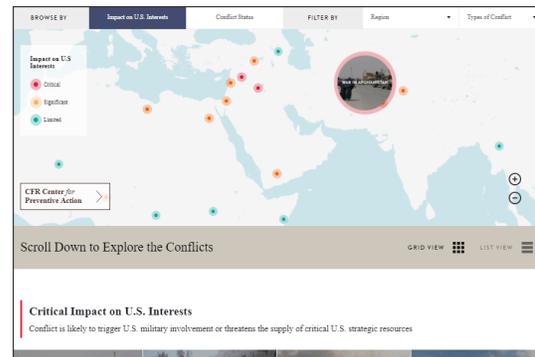
Global Conflict Tracker

Center for Preventative Action at the Council on Foreign Relations (CFR)²⁸

CFR's Preventive Priorities Survey identifies ongoing conflicts around the world and provides monthly updates with background information and available resources. As of May 2018, there are nearly thirty conflicts on the map.

The visualization denotes both the degree of impact on US interests as well as whether the conflict is worsening or improving.

Visit the tool here: www.cfr.org/interactives/global-conflict-tracker

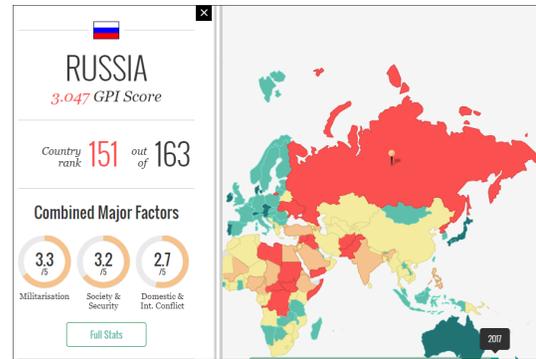


Source: CFR

Global Peace Watch

Vision of Humanity¹⁷

An annual index of 23 qualitative and quantitative indicators that measures the state of peace across three domains: safety and security, ongoing domestic and international conflict, and degree of militarization.



Source: *Vision of Humanity*

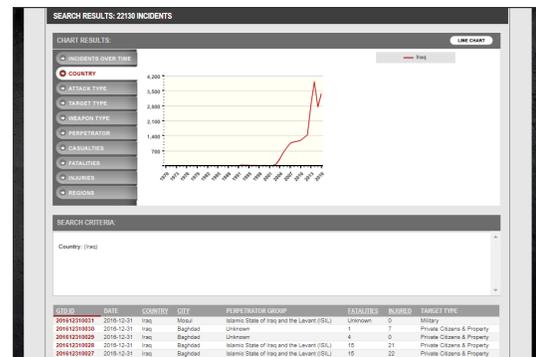
The tool allows the user to view detailed information on each country and indicator.

Visit the tool here: visionofhumanity.org/indexes/global-peace-index

Global Terrorism Database (GTD)

START: The National Consortium for the Study of Terrorism and Responses to Terrorism³

An open-source, searchable database that catalogs information on terrorist events from 1970-2016 (with annual updates). The GTD includes data on 170,000 cases of domestic and international terrorism with up to 120 variables.



Source: *START*

The primary purpose is to support research and analysis on terrorism.

Visit the tool here: www.start.umd.edu/gtd

The Refugee Project

Hyperakt ⁴ and Ekene Ijeoma ⁵

An interactive map that allows viewers to explore the last 50 years of refugee migrations, from both the perspectives of country of origin and destination. UN data complemented by 100 contextual narrative stories, which detail events triggering each major exodus.

Visit the tool here: www.therefugeeproject.org



Source: Hyperakt & Ekene Ijeoma

Uppsala Conflict Data Program

Department of Peace and Conflict Research at Uppsala University ⁶

A conflict database of organized violence and civil war dating back to 1975. The user can visualize, filter, and download the data, which is updated annually.

Visit the tool here: ucdp.uu.se



Source: Uppsala University

Worldwide Governance Indicators

The World Bank⁷

A collection of indicators that ranks six broad dimensions of governance for more than 200 countries and territories over the period 1996-2016.

The six indicators are voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption.

Visit the tool here: info.worldbank.org/governance/wgi



Source: The World Bank

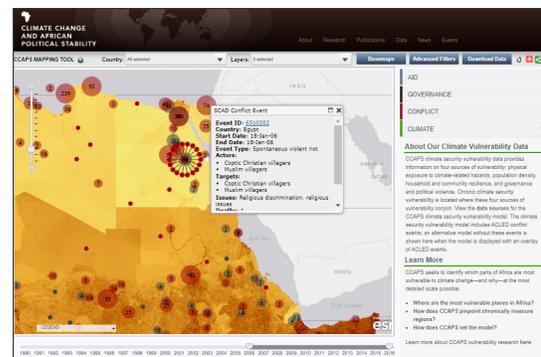
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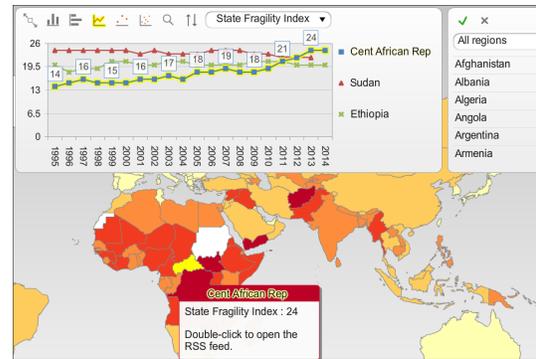
Source: Strauss Center

Drivers of Vulnerability Monitor

Hague Center for Strategic Studies (HCSS) ²³

A global map that displays 50 security, economic, social, political, and geographic drivers of state vulnerability to intrastate conflict. It also tracks the change in each country's vulnerability from 1992 to 2014.

Visit the tool here: projects.hcss.nl/monitor/86



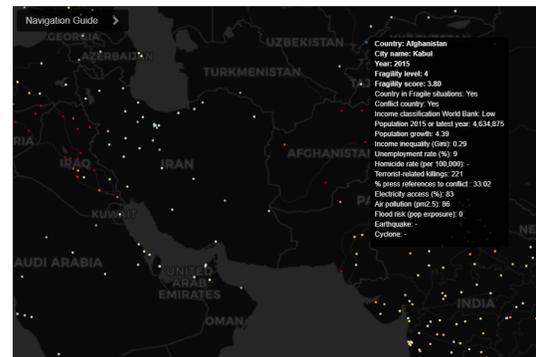
Source: HCSS

Fragile Cities

Igarape Institute ²¹ in collaboration with United Nations University, World Economic Forum, and 100 Resilient Cities

A data visualization tool that tracks the distribution and evolution of fragility risk in at least 2,100 cities worldwide since 2000. It features a composite score of city fragility that combines multiple metrics, such as urbanization, inequality, concentrated poverty, youth unemployment, justice deficits, real and perceived insecurity, and natural hazard exposure.

Visit the tool here: fragilecities.igarape.org.br



Source: Igarape Institute

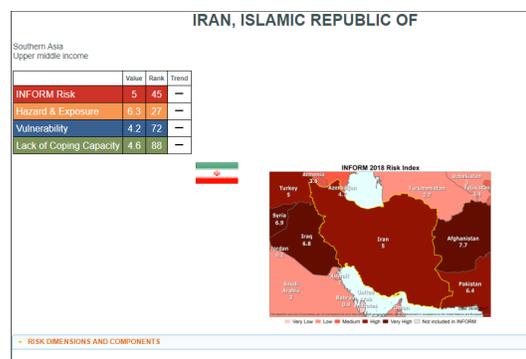
Index for Risk Management (INFORM)

Inter-Agency Standing Committee (IASC) Task Team for Preparedness and Resilience, the European Commission, and others¹⁸

An open-source risk assessment for humanitarian crises and disasters.

The vulnerability rankings are based on 50 indicators across three dimensions of risk: hazards & exposure, vulnerability, and lack of coping capacity.

Visit the tool here: www.inform-index.org



Source: IASC, EU Commission

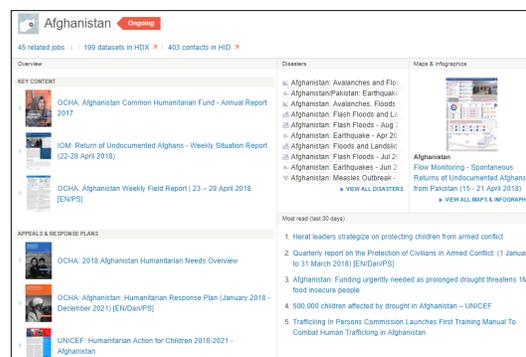
ReliefWeb

UN Office for the Coordination of Humanitarian Affairs (OCHA)⁸

The tool curates humanitarian information on global crises and disasters from more than 4,000 vetted sources. It is updated 24/7.

ReliefWeb Labs experiments with ways to improve information-sharing, including mobile apps, APIs, and shared taxonomies.

Visit the tool here: reliefweb.int



Source: UNOCHA

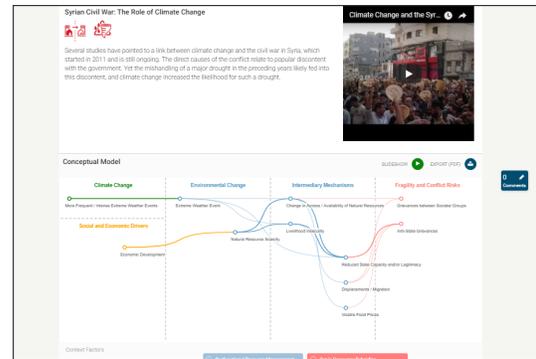
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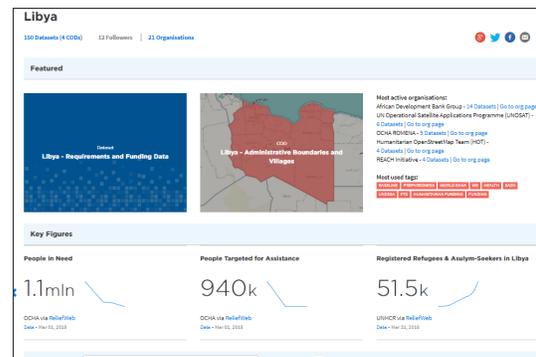
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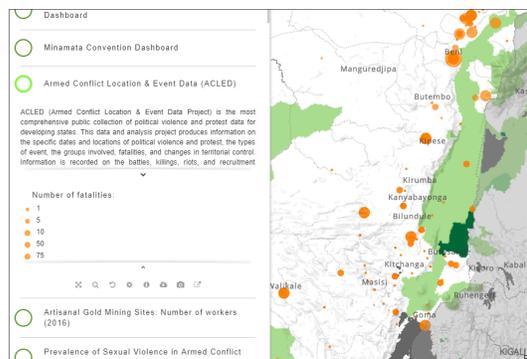
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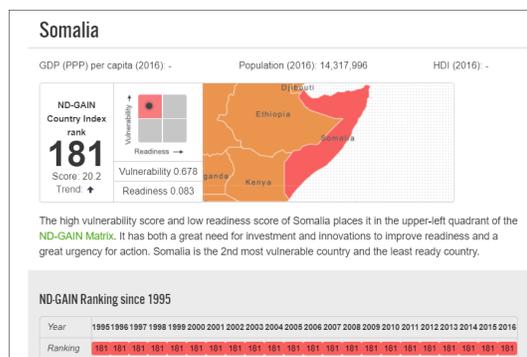
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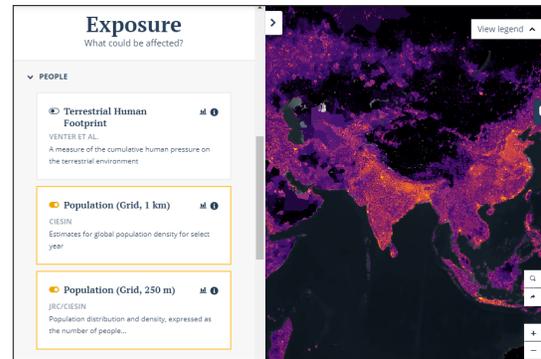


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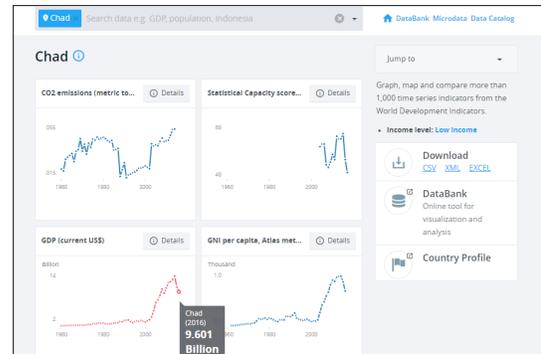
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A curated collection of longitudinal data and profiles of countries, for visualization and download.

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Visit the tool here: data.worldbank.org



Source: The World Bank

Natural Resource Drivers

Some tools address more than one issue, and will be cross-listed.

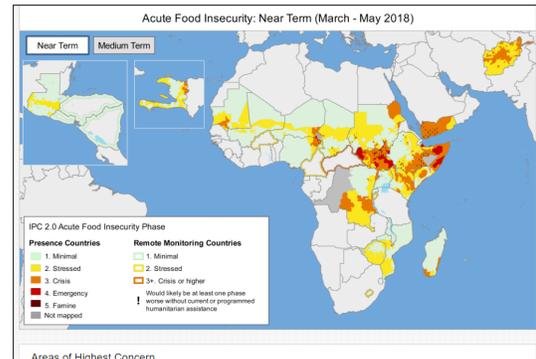
Famine Early Warning System Network (FEWS NET)

USAID, USGS, NOAA, NASA, USDA
27

A near- and medium-term early warning tool with analysis on food insecurity in more than 36 of the world's most food-insecure countries.

The data are gathered from 22 field offices in collaboration with scientists and NGOs. The goal is to help government decision-makers and relief agencies plan for and respond to humanitarian crises.

Visit the tool here: fews.net



Source: FEWS NET

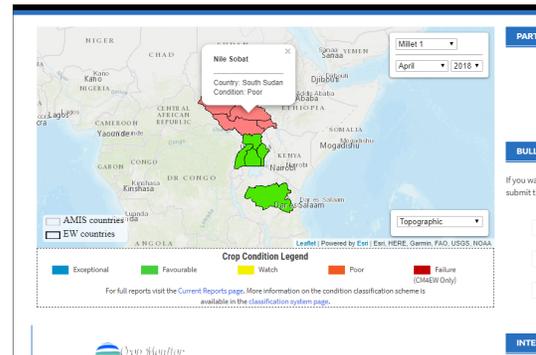
Global Agricultural Geo-monitoring Initiative Crop Monitor (GEOGLAM)

Group on Earth Observations at the World Meteorological Organization¹³

A crop monitoring tool that collects Earth observations from satellites and integrates them with ground-based and other in-situ measurements.

The goal is to improve market information and transparency in order to make international markets for agricultural commodities more effective.

Visit the tool here: cropmonitor.org



Source: GEOGLAM

Global Flood Map

FM Global²⁰

An initial flood assessment tool, based on data and hydrologic models, that identifies areas in high and moderate risk flood zones.

Visit the tool here: www.fmglobal.com/research-and-resources/global-flood-map/flood-map

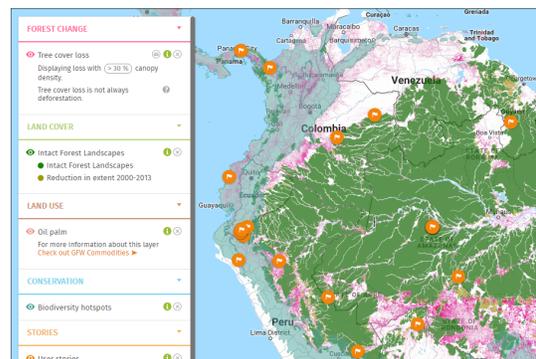


Source: FM Global

Global Forest Watch

WRI⁹

A global map of forest change data, such as global tree cover, pantropical carbon density, forest fires, boundaries for protected areas, and biodiversity hotspots. WRI utilizes a broad base of local partners, who submit narratives and consume the data.



Source: WRI

Although Global Forest Watch could also be considered a research tool, WRI's stated purpose is to promote transparency about governance of forest resources.

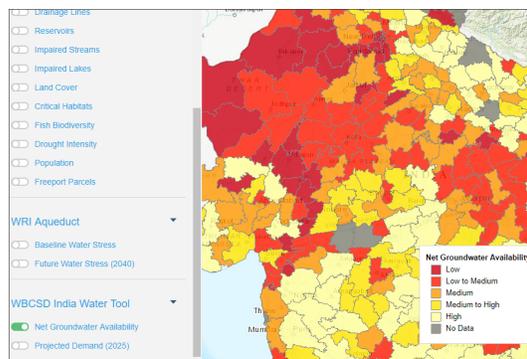
Visit the tool here: www.globalforestwatch.org

Green Infrastructure Support Tool

Earth Genome³⁵ and World Business Council for Sustainable Development (WBCSD)³⁶

A decision support tool that enables collaborative consulting based on the Earth Genome platform. It brings together 40+ indicators, scientists, and end-users to identify alternative solutions to water security risks.

Visit the tool here: www.earthgenome.org/gist



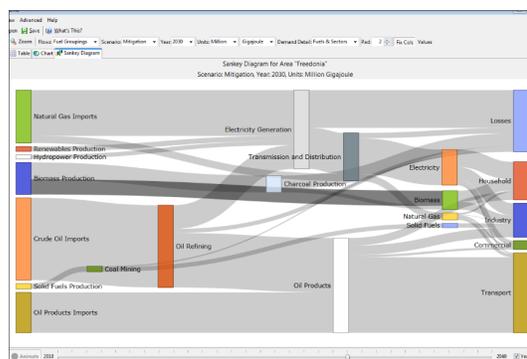
Source: Earth Genome, WBCSD

Long-Range Energy Alternatives Planning System

Stockholm Environment Institute (SEI)³³

An integrated, medium to long-term scenario-based modeling tool that tracks energy consumption, production, and resource extraction in all sectors of an economy. At least 32 countries used LEAP to create energy and emissions scenarios that were the basis for their Intended Nationally Determined Contributions on Climate Change (NDCs).

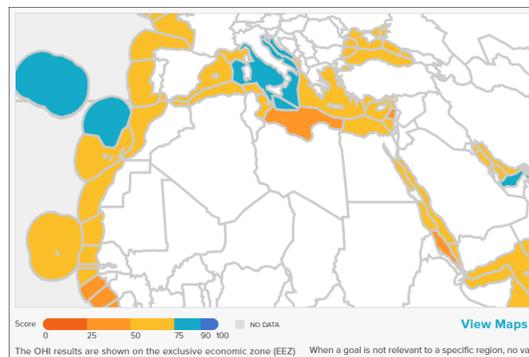
Visit the tool here: www.energycommunity.org



Source: SEI

Ocean Health Index

National Center for Ecological Analysis and Synthesis, Sea Around Us, Conservation International, National Geographic, and the New England Aquarium ¹⁴



An index that maps the level of achievement of widely accepted socio-ecological goals and scores for 220 countries and territories, Antarctica, and 15 High Seas regions.

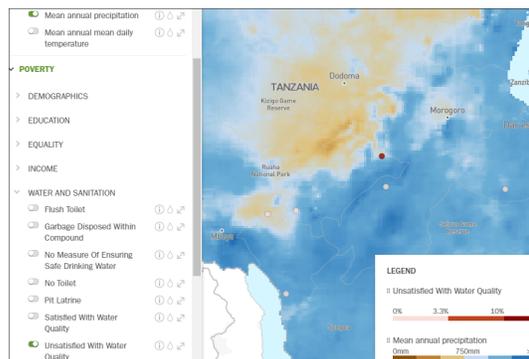
Source: *Ocean Health Index*

There are 10 main goals in the index, including food provision, coastal economies, and coastal protection.

Visit the tool here: www.oceanhealthindex.org

Vital Signs

Conservation International, Wildlife Conservation Society, Africa Innovations Institute, and Tanzania Forest Conservation Group ³⁴



A collection and visualization of standardized data sets and baselines for tracking land degradation across several African countries.

Source: *Vital Signs*

The user can choose different levels of data granularity, ranging from households to global.

Visit the tool here: indicators.vitalsigns.org/map

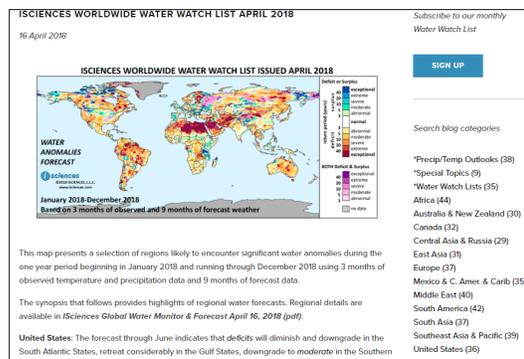
Water Anomalies Forecast

iSciences²⁶

A monthly PDF report of current water anomalies and future forecasts (up to 9 months).

The underlying water security indicator model identifies regions with significant water anomalies -- either deficits or surpluses relative to historically expected quantities using a 1950-2009 baseline period.

Visit the tool here: www.isciences.com



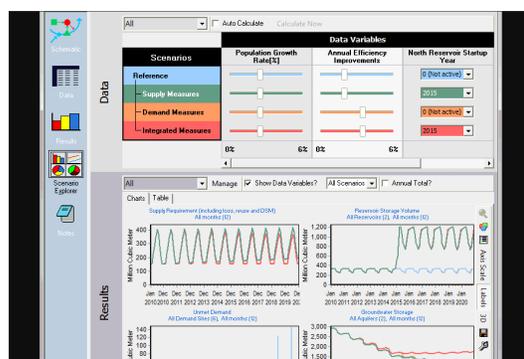
Source: iSciences

Water Evaluation and Planning System

SEI³³

A software tool for integrated water resources planning that attempts to assist rather than substitute for the skilled planner. WEAP places demand-side issues, such as water use patterns, equipment efficiencies, re-use strategies, costs, and water allocation schemes, on an equal footing with supply-side topics, such as stream flow, groundwater resources, reservoirs, and water transfers.

Visit the tool here: www.weap21.org



Source: SEI

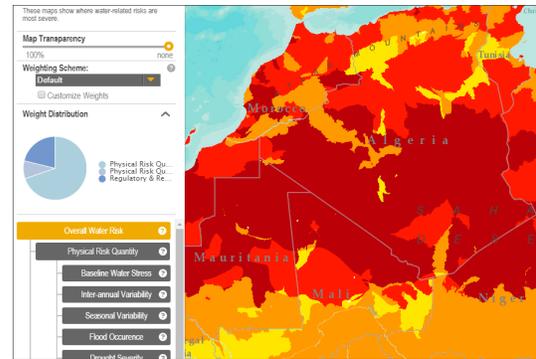
Aqueduct

WRI⁹

Maps and indicators that compare current severity of water-related risks across geographies and show how climate change and socio-economic development could affect the availability of and demand for water resources over the coming decades.

Users can adjust parameters, including customizing the weight of different indicators and choosing a carbon emission scenario.

Visit the tool here: aqueduct.wri.org



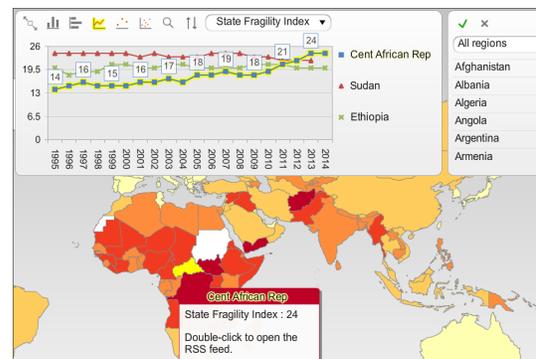
Source: WRI

Drivers of Vulnerability Monitor

Hague Center for Strategic Studies (HCSS)²³

A global map that displays 50 security, economic, social, political, and geographic drivers of state vulnerability to intrastate conflict. It also tracks the change in each country's vulnerability from 1992 to 2014.

Visit the tool here: projects.hcss.nl/monitor/86



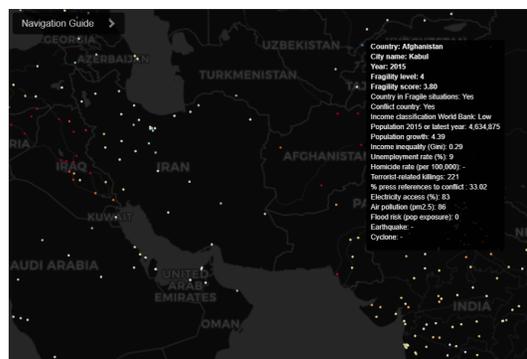
Source: HCSS

Fragile Cities

Igarape Institute²¹ in collaboration with United Nations University, World Economic Forum, and 100 Resilient Cities

A data visualization tool that tracks the distribution and evolution of fragility risk in at least 2,100 cities worldwide since 2000. It features a composite score of city fragility that combines multiple metrics, such as urbanization, inequality, concentrated poverty, youth unemployment, justice deficits, real and perceived insecurity, and natural hazard exposure.

Visit the tool here: fragilecities.igarape.org.br



Source: Igarape Institute

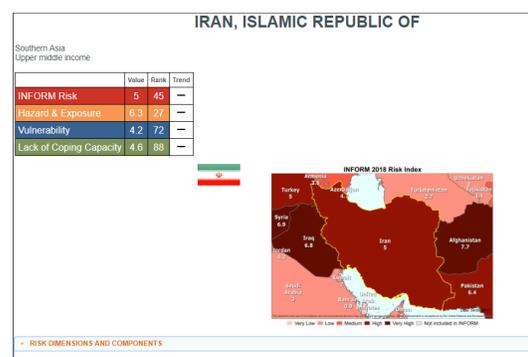
Index for Risk Management (INFORM)

Inter-Agency Standing Committee (IASC) Task Team for Preparedness and Resilience, the European Commission, and others¹⁸

An open-source risk assessment for humanitarian crises and disasters.

The vulnerability rankings are based on 50 indicators across three dimensions of risk: hazards & exposure, vulnerability, and lack of coping capacity.

Visit the tool here: www.inform-index.org



Source: IASC, EU Commission

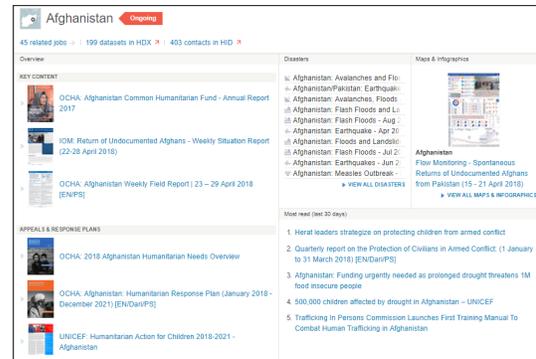
ReliefWeb

UN Office for the Coordination of Humanitarian Affairs (OCHA) ⁸

The tool curates humanitarian information on global crises and disasters from more than 4,000 vetted sources. It is updated 24/7.

ReliefWeb Labs experiments with ways to improve information-sharing, including mobile apps, APIs, and shared taxonomies.

Visit the tool here: reliefweb.int



Source: UNOCHA

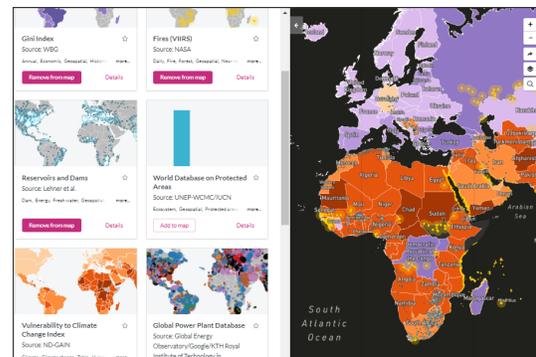
Resource Watch

World Resources Institute (WRI) ⁹

A platform to explore accurate, up-to-date insights about the planet.

Users can create and share visualizations or dashboards using data from satellites, sensors, and social media to tell stories about the state of our planet.

Visit the tool here: resourcewatch.org



Source: WRI

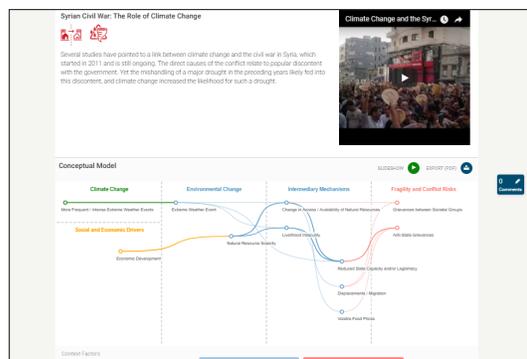
Environment, Conflict, & Cooperation Factbook (ECC Factbook)

adelphi¹

An extensive collection of more than 120 detailed, unique factsheets accessible through both a map and a searchable table.

The goal is for users to better understand the drivers behind environmental conflict and cooperation and to harness the lessons learned from earlier (non-) interventions.

Visit the tool here: factbook.ecc-platform.org



Source: adelphi

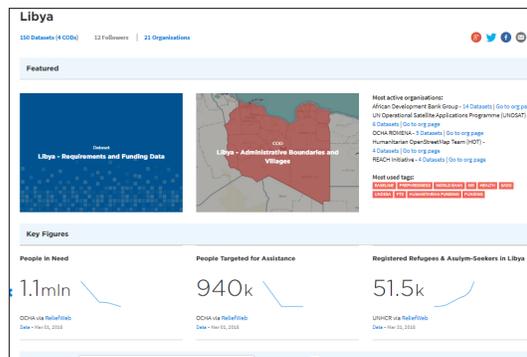
Humanitarian Data Exchange (HDX)

UNOCHA⁸

An open source platform with two types of data on humanitarian crises and response.

The first type is approximately 130 curated indicators that are comparable across countries. The second type of data includes more than 6,000 data sets contributed by vetted organizations.

Visit the tool here: data.humdata.org



Source: UNOCHA

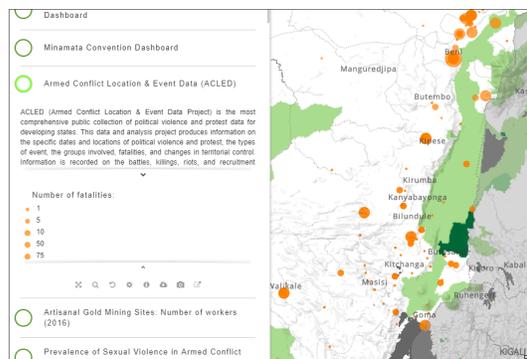
MapX

UN Environment Program, the World Bank, and the Global Resource Information ³²

MapX is a decision support tool where stakeholders can build customized applications on a common platform.

The goal is to generate actionable insights from geospatial data to inform dialogue and help all stakeholders understand benefits and risks, manage expectations, and make evidence-based decisions.

Visit the tool here: www.mapx.org



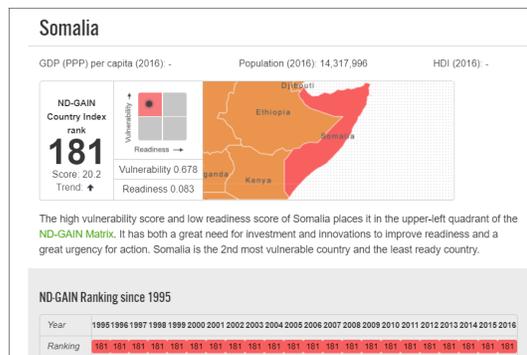
Source: UNEP

Notre Dame Global Adaptation Initiative (ND-GAIN)

University of Notre Dame ²²

A country-level ranking system that captures a country's vulnerability to climate change and other global challenges, and its readiness to improve resilience. It is updated annually.

Visit the tool here: gain.nd.edu

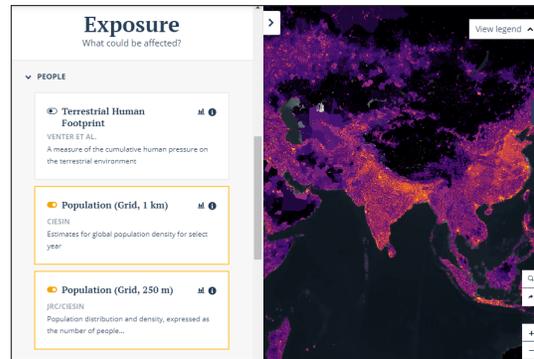


Source: University of Notre Dame

Partnership for Resilience & Preparedness (PREP)

Future Earth¹⁰ and WRI⁹

A map-based, open, online data platform that allows users to access and visualize spatial data on past and future climate, as well as physical and socioeconomic data.



Source: Future Earth, WRI

The tool is built on the Resource Watch platform and allows organizations to customize dashboards to align local efforts.

Visit the tool here: www.prepdata.org

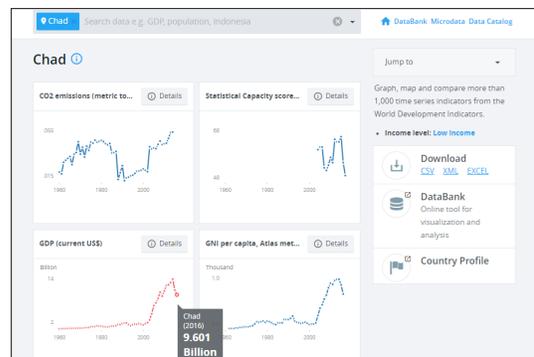
World Bank Open Data

The World Bank⁷

A curated collection of longitudinal data and profiles of countries, for visualization and download.

The data covers a range of topics, including demographics, environment, economy, states and markets, and global links.

Visit the tool here: data.worldbank.org



Source: The World Bank

Notes

- 1 A Berlin-based independent research firm focused on environment and development funded by the German government and diverse clients.
- 2 A U.K.-based news site focused on energy policy and climate science funded by foundations.
- 3 A research Center of Excellence at the University of Maryland, funded by the U.S. government.
- 4 An NYC-based social impact design studio that collaborates with philanthropies, government agencies, and social enterprises.
- 5 A Nigerian-American artist, professor, and fellow at the Kennedy Center.
- 6 A public university in Sweden.
- 7 An international financial institution with 189 member countries.
- 8 A UN office that mobilizes and coordinates humanitarian assistance.
- 9 A U.S.-based independent environmental research organization funded by foundations, government, corporations, and NGOs.
- 10 An international research organization funded by foundations, governments, and universities.
- 11 A U.S.-based independent research organization funded by foundations, governments, and corporations.
- 12 A global coalition of countries and international organizations devoted to advancing the NDCs and SDGs with a climate focus.
- 13 A voluntary partnership of 100+ national governments and 100+ international organizations.
- 14 A collaboration of U.S.-based independent research, advocacy, and educational institutions, diversely funded.
- 15 An independent U.S.-based research and educational organization focused on conflict prevention funded by corporations, governments, foundations, and individuals.
- 16 An independent anti-corruption organization headquartered in Germany with 100 local chapters worldwide, funded by governments, corporations, foundations, and international organizations.
- 17 A project of the Institute for Economics and Peace, and Australia-based independent research organization funded by an individual donor.
- 18 A UN organization that coordinates among UN and other international humanitarian groups.
- 19 A public university research collaboration funded by the U.S. Department of Defense.
- 20 A U.S.-based property insurance company.
- 21 A Brazil-based independent research organization funded by governments, foundations, NGOs, and individuals.
- 22 A private U.S.-based university.
- 23 An independent Netherlands-based research organization, funded by governments, foundations, and NGOs.
- 24 An independent U.S.-based museum, funded by the U.S. government and private donations.
- 25 An independent peace-building research and advocacy group, funded by foundations, corporations, governments, NGOs, and individuals.
- 26 A Michigan-based consulting firm.
- 27 A USAID-managed, U.S. intergovernmental investment.

28 An independent U.S.-based research organization funded by governments, corporations, NGOs, and individuals.

29 A U.S.-based independent environmental research organization funded by foundations, governments, corporations, and NGOs.

30 A collaborative effort between an independent environmental advocacy group (funded by individuals and governments) and two public U.S. universities.

31 An independent, U.S.-based research organization focused on climate science, funded by foundations and governments.

32 A project of international institutions, funded through fee-for-service.

33 A global science policy research organization headquartered in Sweden, funded by the Swedish and other governments, foundations, corporations, and NGOs.

34 Independent research and advocacy groups based in the U.S., Uganda, and Tanzania with diverse funding sources.

35 A private consulting company.

36 An independent advocacy group led and supported by member companies.



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