Theme 3: Data Science

Use data to help us better understand the impact of conflicts on children.

Conflict on children

We estimate 400 million children live in countries where there is war or violent conflicts.

Yet it is difficult to keep a relevant, granular and up-to-date view on how and where children are affected by conflict and how this adds to other vulnerabilities.

New data sets like high resolution population estimates and semi real-time recording of conflict events based on news offer unprecedented tools to make sure we put additional light in this critical problem.
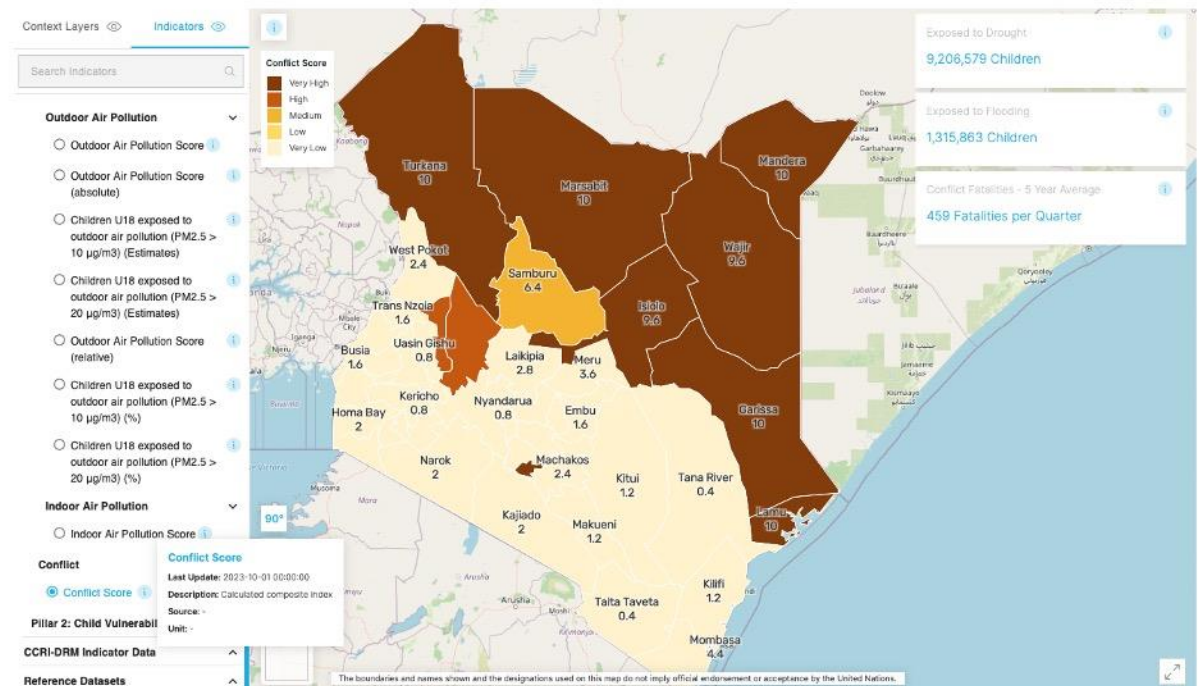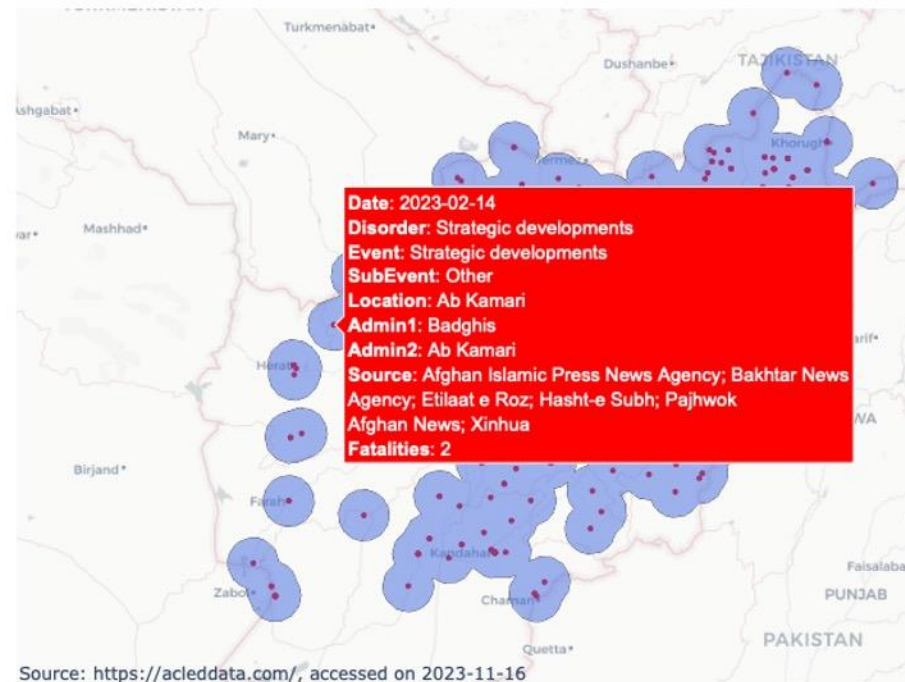
But they also brings new challenges for which we need help, hands and brains to ensure we correctly transform this data in relevant insights

Conflict on children

We are starting to explore new datasets and to incorporate conflict indicators in our dashboards and data tools.

There is plenty of room for improvement

Conflict on children

Data-Sources Overview

CONFLICT: The Armed Conflict Location & Event Data Project (ACLED) provides real-time data on the locations, dates, actors, fatalities, and types of all reported political violence and protest events around the world.

POPULATION: **WorldPop** provides high-resolution geospatial data on population distributions, demographics, and dynamics, focusing on low and middle-income countries.

CONTEXT:
UNICEF Indicator Data Warehouse that comprises children relevant data and indicators in all sorts of categories at country level.

The **WorldRiskIndex** data set contains multiple indicators at the country level ranging from hazard exposition to vulnerability by those events.
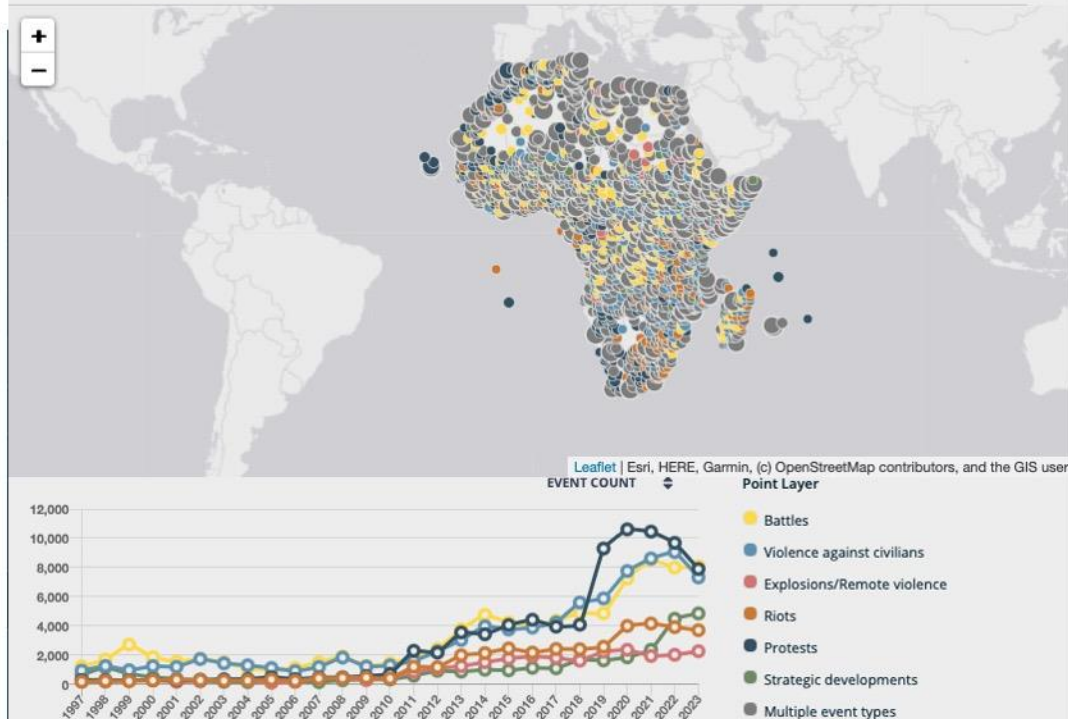
CONFLICT: ACLED Data

Conflicts from 1997 to now. The types of conflict recorded might differ.

Data on different types of conflicts, e.g., Battles, Violence against civilians, Explosions/Remote violence, Riots, Protests, Strategic developments. Contains latitude and longitude values and additional information like number of fatalities.

HOW MANY CHILDREN: WorldPop Data

Algeria

Gridded Sex-Disaggregated School-Age Population 2020 per grid-cell (People/Km²) at a resolution of 30 arc seconds (approximately 1km at the equator)

WorldPop

High

Low

500 km
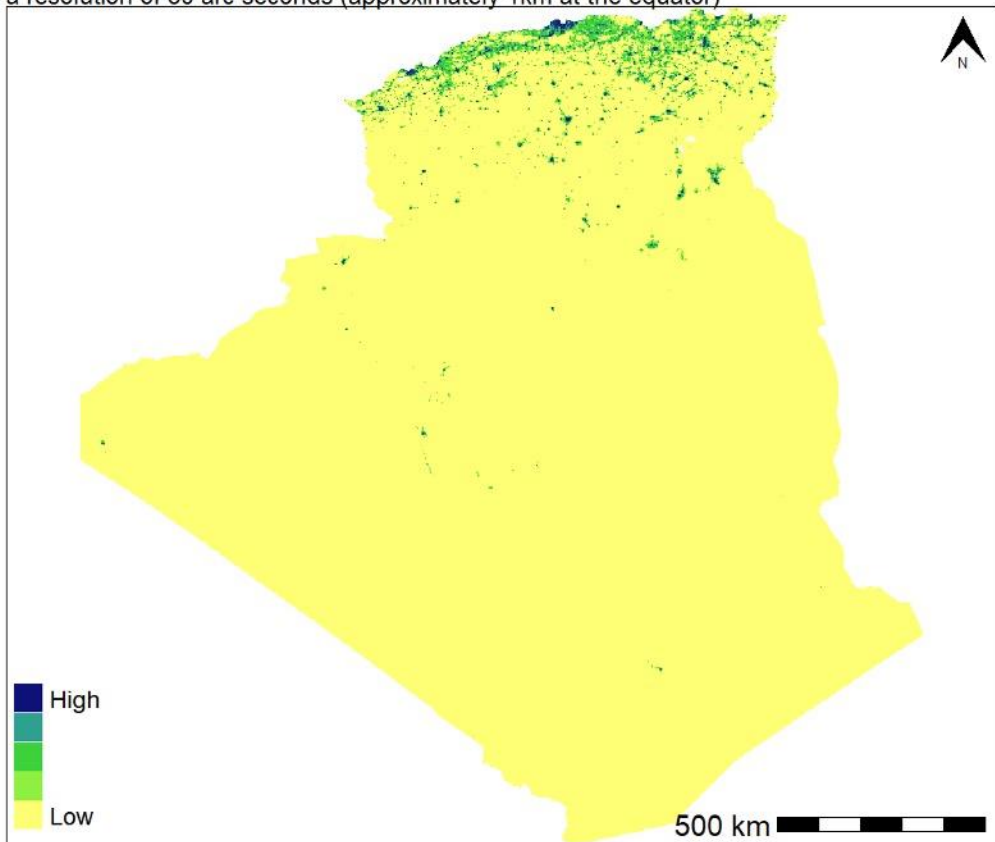
Bondarenko, M., Sorichetta, A., Vargas Mesa, G., Gagnon, A.A., Tatem, A.J. (2022). Gridde Sex-Disaggregated School-Age Population Datasets for Countries and Dependent Territorie in Africa in 2020, doi: 10.5258/SOTON/WP00732

Gridded Sex-Disaggregated School-Age Population in 2020 for all African countries at approximately 1km resolution.

File Descriptions:

DZA_M_PRIMARY_2020_1km	Male Primary-School-Age Population in 2020
DZA_F_PRIMARY_2020_1km	Female Primary-School-Age Population in 2020
DZA_F_M_PRIMARY_2020_1km	Female and Male Primary-School-Age Population in 2020
DZA_M_SECONDARY_2020_1km	Male Secondary-School-Age Population in 2020
DZA_F_SECONDARY_2020_1km	Female Secondary-School-Age Population in 2020
DZA_F_M_SECONDARY_2020_1km	Female and Male Secondary-School-Age Population in 2020

CONTEXT: UNICEF Data Warehouse Data

Data for different indicators at the country level for all countries or the subnational level for Kenya.

CONTEXT: WorldRiskIndex Data

E	Exposition
EI_01	Earthquakes
EI_01a	Annually Averaged Population Exposed To Strong Intensity (Peak Ground Acceleration 0.1 g Or Higher)
EI_01b	Annually Averaged Population Exposed To Strong Intensity (Peak Ground Acceleration 0.1 g Or Higher)
EI_01c	Annually Averaged Population Exposed To Severe Intensity (Peak Ground Acceleration 0.2 g Or Higher)
EI_01d	Annually Averaged Population Exposed To Severe Intensity (Peak Ground Acceleration 0.2 g Or Higher)
EI_01e	Annually Averaged Population Exposed To Extreme Intensity (Peak Ground Acceleration 0.4 g Or Higher)
EI_01f	Annually Averaged Population Exposed To Extreme Intensity (Peak Ground Acceleration 0.4 g Or Higher)
EI_02	Tsunamis
EI_02a	Annually Averaged Population Exposed To Strong Intensity (Coastal Run-Up Height 1.0 m Or Higher)
EI_02b	Annually Averaged Population Exposed To Strong Intensity (Coastal Run-Up Height 1.0 m Or Higher)
EI_02c	Annually Averaged Population Exposed To Severe Intensity (Coastal Run-Up Height 3.0 m Or Higher)
EI_02d	Annually Averaged Population Exposed To Severe Intensity (Coastal Run-Up Height 3.0 m Or Higher)
EI_02e	Annually Averaged Population Exposed To Extreme Intensity (Coastal Run-Up Height 5.0 m Or Higher)
EI_02f	Annually Averaged Population Exposed To Extreme Intensity (Coastal Run-Up Height 5.0 m Or Higher)
EI_03	Coastal Floodings
EI_03a	Annually Averaged Population Exposed To Strong Intensity (Inundation Height 0.5 m Or Higher)
EI_03b	Annually Averaged Population Exposed To Strong Intensity (Inundation Height 0.5 m Or Higher)
EI_03c	Annually Averaged Population Exposed To Severe Intensity (Inundation Height 1.0 m Or Higher)
EI_03d	Annually Averaged Population Exposed To Severe Intensity (Inundation Height 1.0 m Or Higher)
EI_03e	Annually Averaged Population Exposed To Extreme Intensity (Inundation Height 2.0 m Or Higher)
EI_03f	Annually Averaged Population Exposed To Extreme Intensity (Inundation Height 2.0 m Or Higher)
EI_04	Riverine Floodings
EI_04a	Annually Averaged Population Exposed To Strong Intensity (Inundation Height 0.5 m Or Higher)
EI_04b	Annually Averaged Population Exposed To Strong Intensity (Inundation Height 0.5 m Or Higher)
EI_04c	Annually Averaged Population Exposed To Severe Intensity (Inundation Height 1.0 m Or Higher)
EI_04d	Annually Averaged Population Exposed To Severe Intensity (Inundation Height 1.0 m Or Higher)
EI_04e	Annually Averaged Population Exposed To Extreme Intensity (Inundation Height 2.0 m Or Higher)
EI_04f	Annually Averaged Population Exposed To Extreme Intensity (Inundation Height 2.0 m Or Higher)

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Exposure — number and share of the population regarding: Strong / Severe / Extreme — Intensity Levels, Earthquakes, Tsunamis, Cyclones, Coastal Floodings, Riverine Floodings, Droughts, Sea-level rise

$$WorldRiskIndex = \sqrt{Exposure \times Vulnerability}$$

Vulnerability is composed of: Susceptibility, Lack Of Coping Capacities, Lack Of Adaptive Capacities

Different indicators related to exposure or vulnerability, either as number or percentage share, at the country level. This data is for the whole population of a country, not necessarily for children! Doesn't really take conflict events into account (except people killed in conflicts).

Conflict on children

Data needs:

1. **We need to advocate:** how can we better quantify how many children are affected by conflict? Trends? Degrees/severity/types of conflict? Temporal memory (protracted crisis and accounting for impact of past conflicts)? (Conflict indicators / Trends at the country level...)
2. **We need to plan:** how can we better understand within a country where children are affected by conflict, in different dimensions (high resolution maps of Impact of conflict on children at a)
3. **We need to understand** compound crisis: What's the relation between conflicts and natural hazards/climate change? How do we quantify the combined vulnerabilities? (Kenya data)

Challenges:

- **Good visualizations**: its is difficult to come with striking visualizations, able to convey this complex story in simple ways
- **Good algorithms and analysis:** multidimensional problem. Different conflicts will affect children differently: type, frequency of occurrence, memory effects of conflict, cumulative effects, compound effects with other vulnerabilities, severity of the conflict event... it is a complex problem and we need ideas to identify powerful indicators/models that can help us quantify and understand, even partially, this problem
- **Understanding the data itself:** How should we interpret ACLED data? Is conflict really growing, or might be that more things are being recorded?

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Outcome:

Indicator(s) that depicts the actual possible impact of a conflict on children as closely as possible which can be displayed on a map on GeoSight.