CHILD MARRIAGE AND CLIMATE RISK OVERLAP

METHODOLOGY

Our analysis shows the overlapping risks of child marriage and climate risks for young girls on a global scale, using subnational data where possible to properly reflect within-country inequalities. The analysis follows the approach we used for Save the Children's report *Generation Hope: 2.4 billion reasons to end the global climate and inequality crisis* when analysisng the overlap between child poverty, climate risk, and conflict, as well as the extensive methodology we have developed in 2022.

DATA

Climate risk

As previously described, we estimate climate risk by the share of children estimated to experience at least one extreme climate event per year (wildfires, crop failures, droughts, river floods, heatwaves, and tropical cyclones). This is based on an analysis by the Vrije Universiteit Brussel for Save the Children, using the largest multi-model climate impact projections database available to date as part of the Inter-Sectoral Impact Model Intercomparison Project phase 2b (ISIMIP2b). The analysis then aggregated the child population per grid (using a 0.5 x 0.5-degree resolution) in which an extreme climate event (wildfires, crop failures, droughts, river floods, heatwaves, and tropical cyclones) was projected to occur in the ISIMIP data. To enable comparability to child marriage, we then aggregate it at a subnational level, using spatial boundaries to estimate the proportion of children in each region who are affected by at least one extreme climate events per year. On average, 80% of children across our sample were projected to experience at least one extreme climate event in 2020.

Child marriage

Our sample covers 140 countries, across which approximately 11 million children get married every year (using the latest avaiable national-level estimate per country and apply this to 2023 UN population estimates). We estimate child marriage rates directly from household surveys for 104 countries (Demographic Health Surveys and Multi-Indicator Cluster Surveys between 2010 and 2022). For 92 of those countries – home to almost 9 out of 10 child marriages per year – we were able to estimate child marriage rates on a subnational level and link those to administrative regions (or other regional definitions used in the respective surveys). We use national-level estimates from UNICEF for a further 36 countries not covered by the survey data. Child marriage is being measured by the proportion of women (age 20-24 years) who were married or in a union before their 18th birthday.

Overlap

To estimate girls affected by at least one extreme climate event and being married as a child, we estimated the proportion of climate-affected children as well as women (20-24 years) married before age 18 in 1,2000 regions (1,152 subnational regions and 48 nation states). We assume that child marriage is equally distributed within those regions, possible leading to an underestimate given that poorer households (where child marriage is more prevalent) often live in more risk-prone areas.

RESULTS

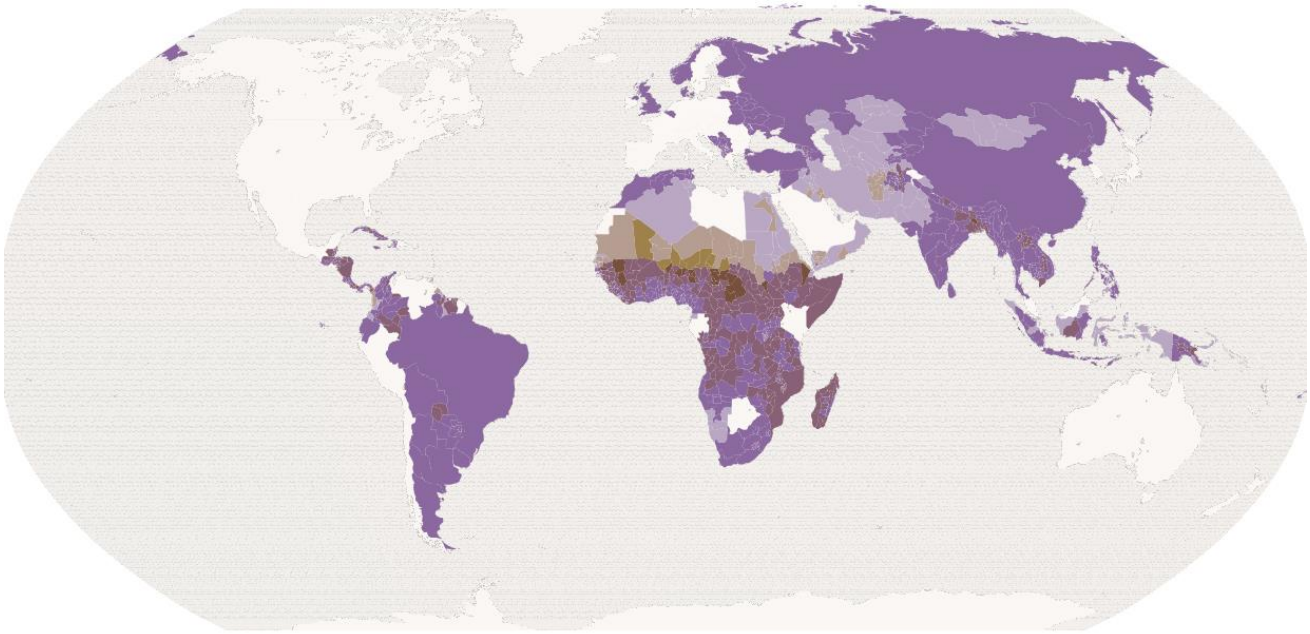
We find:

- Almost **9 million girls every year are affected by both extreme climate risk and child marriage.**
- Circa **two-thirds of child marriages every year (65.6%) occur in regions with above-average climate risks** (more than 80% of children are expected to experience at least one extreme climate event per year).
- A **hotspot analysis reveals countries where we find a particular high combination of child marriage and climate risk**. The top 10 countries where child marriage and climate risk is particularly interlinked[1] are: Central African Republic, Guinea, Chad, Mozambique, Bangladesh, South Sudan, Burkina Faso, Mali, Niger, and Malawi. These countries are also characterised by large population growth: the number of adolescent girls in those 10 countries is on average expected to grow by 7% between 2023 and 2030, from ca. 29.9 million to 32.2 million by the end of the decade. By 2050, UN population estimates suggest even that 39.9 million adolescent girls may live in these 10 countries, an increase of 33% between now and then. Finally, **most of those countries are also characterised by high levels of child poverty:** in 6 out of 8 countries (for which we have comparable estimates of multidimensional child poverty[2]), at least 70% of the child population are considered poor (compared to 50% across 86 countries with comparable data).
- Hotspots based on national level average hide important geographic inequalities within countries. **A similar hotspot analysis on a more granular level based on a subnational level** (for 92 countries where we have those detailed information) reveals regions within countries with a particularly high combination of both child marriage and climate risk. The top 10 regions include four in Central African Republic, three in Chad, and one region each in South Sudan, Guinea, and Nigeria.

[1] Hotspots are calculated as the product of child marriage rates and climate risk in each country or subnational regions. In most cases, those are countries where both indicators are disproportionally high, but in some cases one extremely high indicator in one dimension mean a country is considered a hotspot, even if the other indicator is not disproportionally high.

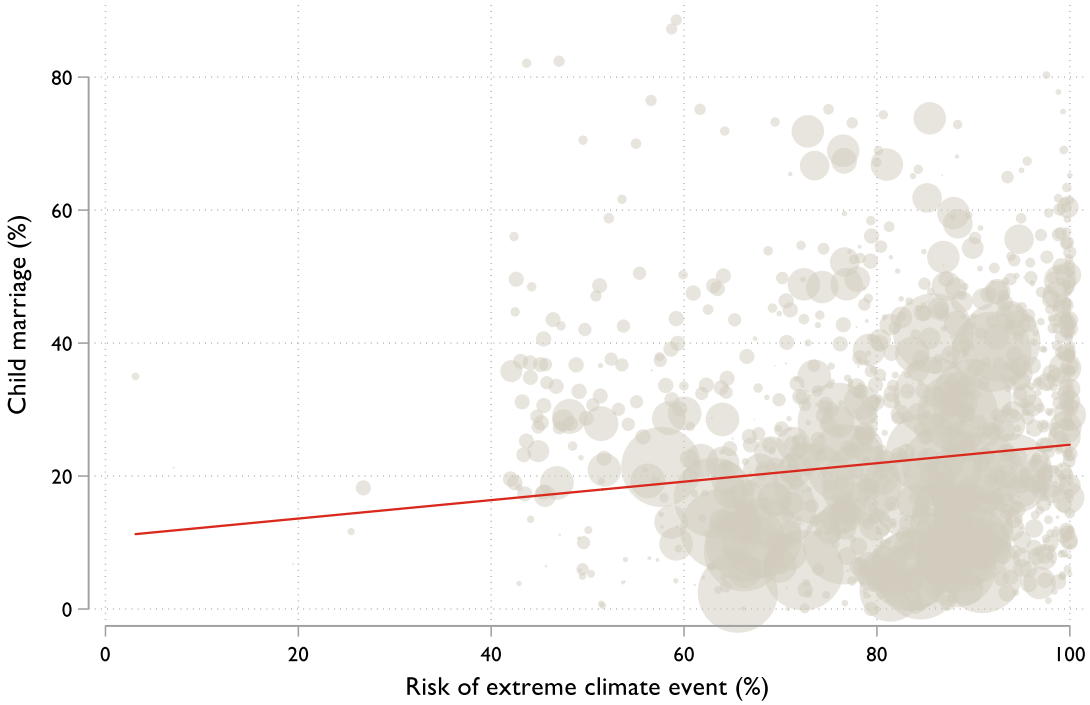
[2] Multidimensional poverty estimates the percentage of children which are severely deprived in at least one of the following dimensions: water, sanitation, education, health, nutrition, housing.

Figure 1: Hotspots of the overlap between child marriage and climate risk can be found across Sub-Saharan Africa (especially in the Sahel) amd South Asia. (LEGEND TO FOLLOW)



- Across our full sample, **girls living in regions with higher climate risks are on average more likely to experience child marriage**, compared to girls living in less risk-prone areas. The result is statistically signifcant across various specifications (with and without controlling for country-specific factors, latter with a smaller subsample of countries). However, that does not necessarily mean that climate risks are directly causing child marriages or that this holds in each context, but rather that *on average* we find higher child marriage rates in region which also are characterised by higher climate risks (more specifically, regions with higher climate risks are positively correlated with regional levels of child marriage). In fact, there is a lot of variation in the data: some regions with highest risks of extreme climate events have lower-than-average child marriage rates, and some regions with the highest child marriage rates in the world are not necessarily those with the higest climate risks.

Figure 2: Regions with higher climate risks are on average also those with higher child marriage rates.



- We find the statistical relationship between climate risk level of the region and child marriage rates to be even stronger for girls within the poorest 20% of households, suggesting that the **interlinkage between climate risk and child marriage is particularly pronounced for the poorest girls**. We do not find statistical significant correlations for women in the richest 20% of households.