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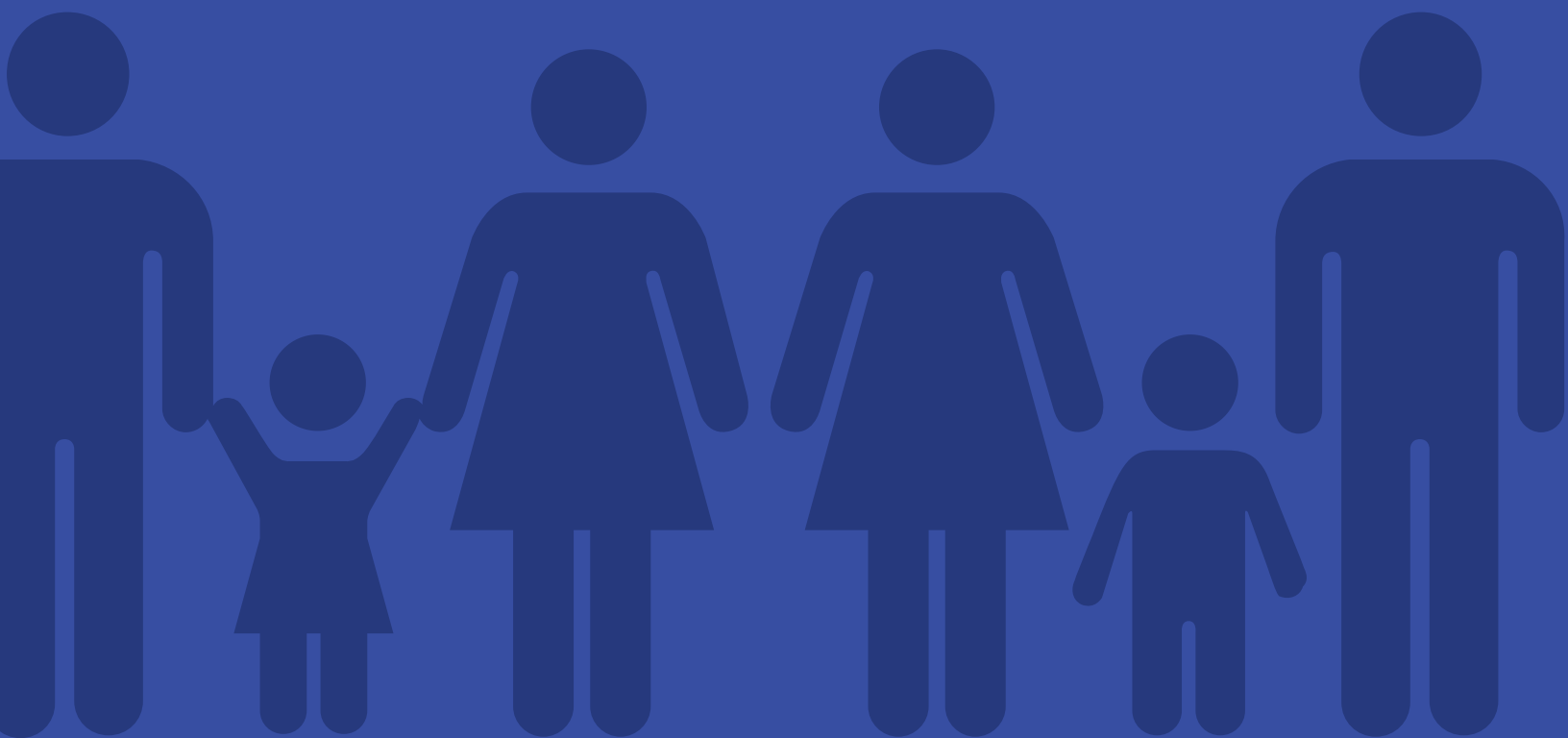
Workshop in Sustainable Development Practice

UNICEF Headquarters
Risk Analysis and Preparedness Section,
Office of Emergency Programmes




IMAGINING THE NEXT TEN YEARS OF MEGADISASTERS:

*Exploring the Future of UNICEF's Humanitarian
Work through the Lens of Children*

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GLOSSARY OF TERMS

ACRONYMS

| | |
|---------------|---|
| CCCs | Core Commitments to Children in Humanitarian Action |
| COs | Country Offices |
| EMOPS | Office of Emergency Programme |
| EPI | Environmental Performance Index |
| GRIP | Guidance for Risk-Informed Programming |
| GE.EST | Government Effectiveness Estimate |
| GDP | Gross Domestic Product |
| HDI | Human Development Index |
| IDP | Internally Displaced Person |
| PTOR | Preliminary Terms of Reference |
| RAPS | Risk Analysis and Preparedness Section in EMOPS |
| SIPA | School of International and Public Affairs |
| SDGs | Sustainable Development Goals |
| UNICEF | United Nations Children’s Fund |

DEFINITIONS

Capacity: The combined strengths, attributes and resources available within a community, organization or society. Capacity may include infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership and management.

Crisis/Disaster: A serious disruption to the functioning of a community or a society involving widespread human, material, economic and/or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. For the purposes of this project, crisis and disaster are used interchangeably.

Hazard: A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption and/or environmental damage.

Impact: The consequences or effect of an event or situation. The term extends to human, economic and environmental impacts, and may include death, injury, disease and other negative effects on human physical, mental and social well-being.

Likelihood: The probability of a shock (or the 'tipping point' of a stress) occurring in a given time frame.

Megadisaster: A high-impact, low-probability event with highly complex, cascading effects that have the potential to overwhelm systems and alter society.

Polycrisis: The interaction of present and future global risks with compounding effects such that the overall impact exceeds the sum of each part.

Risk: The likelihood of shocks or stresses leading to the erosion of development progress, the deepening of deprivation and/or humanitarian crisis affecting children or vulnerable households and groups.

Shock: A sudden and potentially damaging hazard or other phenomenon. A shock can also refer to the moment at which a slow-onset process (a stress) passes its 'tipping point' and becomes an extreme event.

Stress: Similar to a shock, a stress is a longer-term trend that undermines the potential of a given system and increases the vulnerability of actors within it.

System: A unit of society (e.g., individual, household, group of people with common characteristics, community, nation), a unit of ecology (e.g., a forest) or a physical entity (e.g., an urban infrastructure network).

Vulnerability: This is defined as the characteristics and circumstances of individual children, households or communities that make them particularly susceptible to the damaging effects of a shock or stress.

EXECUTIVE SUMMARY

The UNICEF/RAPS section focuses most of its emergency preparedness efforts on low-to-medium-impact, high-probability scenarios, thereby leaving high-impact, low-likelihood scenarios relatively unexplored. Our SIPA Workshop team seeks to delve into these types of scenarios by examining the compounding effects of megadisasters on children's wellbeing. Drawing on desk research, expert interviews, and data analysis, the final deliverable consists of an interactive simulation that provides a series of character-based vignettes that imagine the realities children face as they navigate increasingly dire and complex megadisasters, as well as the forecasted impacts of these events on children's lives through quantitative modeling.

INTRODUCTION

THE CLIENT

The fundamental mission of UNICEF is to promote the rights of every child, everywhere, in everything the organization does. Through its programmes, advocacy, and operations, UNICEF realizes its commitment to saving children's lives, defending their rights, and helping them fulfill their potential in over 190 countries and territories. Within UNICEF, the Office of Emergency Programme (EMOPS) provides strategic and coordinated support to Country Offices (COs) preparing for and responding to humanitarian crises, in collaboration with Regional Offices, to ensure that they have the right capacities to respond effectively and deliver on UNICEF's Core Commitments to Children in Humanitarian Action (CCCs). EMOPS leads efforts to ensure that UNICEF's role in complex emergencies and natural disasters is clearly defined, that the organization is properly equipped to fulfill that role, and that all levels of the organization are prepared to deliver its mandate (PTOR: 2). Furthermore, the Risk Analysis and Preparedness Section in EMOPS (RAPS) supports UNICEF COs in their readiness to meet the CCCs in humanitarian emergencies and contribute to UNICEF's general ability to assess and adapt to a multitude of risks (PTOR: 2). RAPS' aim is to help UNICEF best prepare to save and protect lives, and to reduce countries' and populations' fragilities and children's vulnerability around the world towards reaching the SDGs (PTOR: 2).

PROJECT CONTEXT

The amalgam of the COVID-19 pandemic, climate crises, the war in Ukraine, and the subsequent rise in cost-of-living and energy prices reflects the tremendous challenges RAPS and UNICEF as a whole face in their aims to effectively prepare for and respond to crises. Alone, each crisis – health, climate change, conflict, and economic downturn – present a “traditional” risk to UNICEF, its programming, and the children they seek to protect. Yet, the interplay between disparate, cascading, and compounding crises culminates in a “non-traditional” and potentially catastrophic global disaster.

OBJECTIVES

Understanding the implications of polycrises to UNICEF’s operations and capacity to deliver its mandate, RAPS leadership recognizes the salience of anticipating how polycrises are the future of megadisasters. Thus, to further impel a reorientation of UNICEF’s internal risk management mindset towards assessing and preparing for these low-likelihood but high-impact crises, our project sought to:



Develop a comprehensive understanding of polycrises and megadisasters through robust thematic and country research;



Present UNICEF staff with an inventory of potential, research-based megadisaster scenarios and their forecasted impacts;



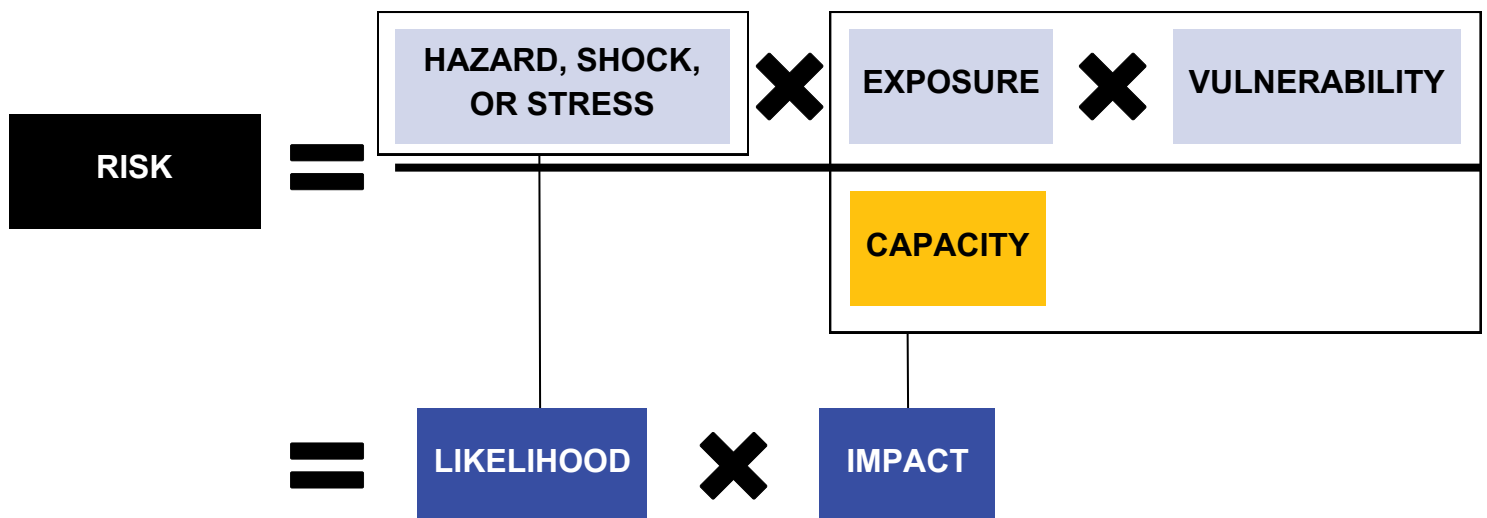
Develop an interactive, multimedia product with child-centered vignettes that enables UNICEF staff to actualize and analyze the detrimental effects of megadisasters on the children protected under their mandate.

BACKGROUND

DEFINING RISK

Risk is determined probabilistically as a function of hazards, shocks, and stress; exposure; vulnerability; and capacity (UNICEF 2018: 16).

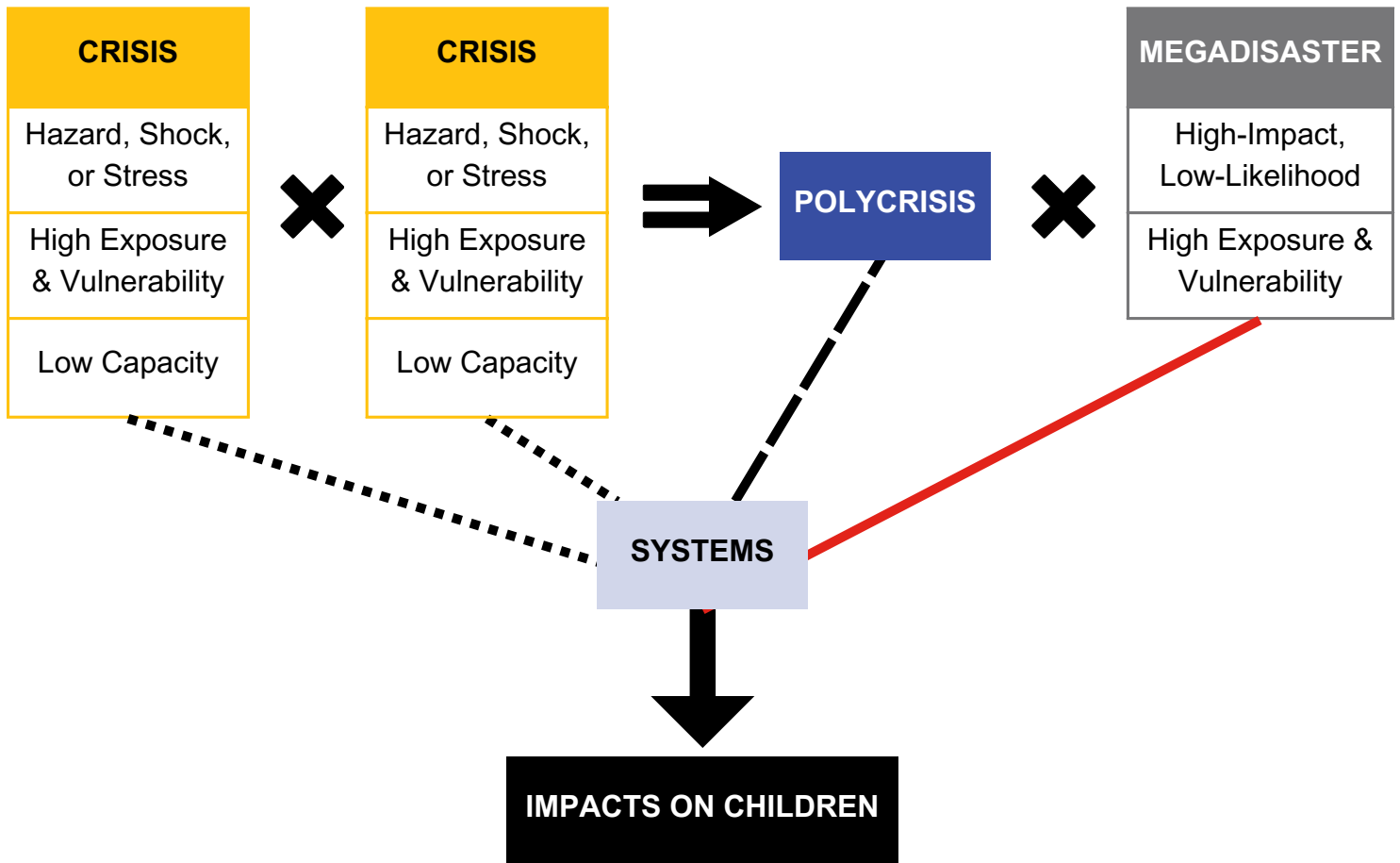
Figure 1: Risk Formula



DEFINING MEGADISASTERS

Hazards, shocks, and stress can lead to a **crisis/disaster** in contexts where **capacity** is low while **exposure** and **vulnerability** are high. **Polycrises** are the interaction of these risks such that their **impacts** compound on one another to produce greater harm due to the interconnectedness of global **systems**. In contexts of polycrises where local, national, and international actors lack capacity, the low-**likelihood** but high-impact occurrence of a **megadisaster** threatens to overwhelm systems and alter society.

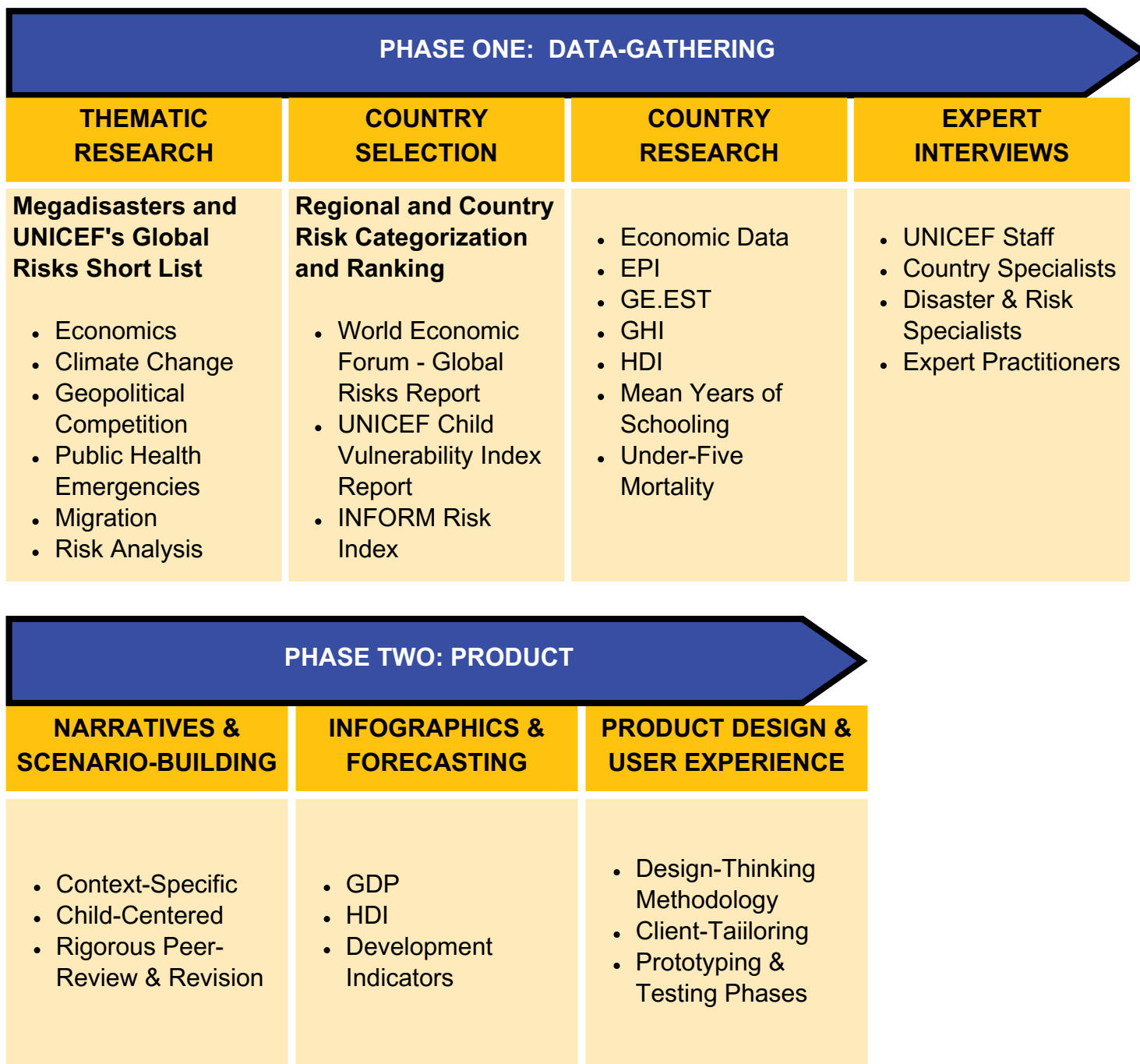
Figure 2: Framework for Megadisasters



METHODOLOGY

Upon receiving the Preliminary Terms of Reference (PTOR), our team initially sought to examine the history of megadisasters, map their causes and effects, and provide actionable recommendations for UNICEF's operations and programming in preparation for future megadisasters.

Figure 3: Workflow for Final Deliverable



IN-DEPTH COUNTRY RESEARCH

To garner a deeper understanding of megadisasters and their potential implications for UNICEF, our team first conducted extensive thematic research on UNICEF's Short List of Global Risks – economic downturn, climate change, geopolitical competition, public health emergencies, and migration – as well as on the overall risk analysis process in the context of emergency preparedness programming.



The global economy has the potential to be either a primary cause or an aggravating factor of a global crisis. Rapid currency fluctuation, stock market collapse, and fiscal crisis can bring tenuous infrastructure to its knees. Markets are increasingly dependent on digital technology and interconnectedness, which malign actors might target with destructive cyber attacks. When such disasters occur, it is getting harder to contain the effects of an economic crisis to one particular country or region. With the world's economies and supply chains being ever more interconnected, the sudden collapse of a market for inputs can cause disastrous shortages around the globe. The disappearance of medicines, agricultural infrastructure, and information technology can cause special problems for the world's children, even in the absence of a total economic collapse. Moreover, economic instability increases the intensity of competition for resources, which can lead to intra-state and international conflict.

With the planet's population continuing to increase, the economic pie must grow even faster to keep up. Even as the world's richest countries continue to prosper, there are concentrated pockets of poverty that not only cause unnecessary human suffering, but lead to global instability and wasted human capital. Many developed markets face the additional challenge of an aging population. Medical advances have prolonged life expectancy, meaning that there the ratio of economically productive workers to pensioners is getting smaller, threatening a deflationary spiral and financial implosion for countries that cannot adapt. There is a nearly endless supply of willing migrants to make up the gap, but political considerations often stand in the way of an economically efficient solution. In fact it is nearly impossible to disentangle the global economy from the political rationales that govern it. Although well-functioning markets are the best way to create prosperity, they may also be co-opted by the politically powerful to the detriment of the common good. This can create extractive institutions, misallocation of resources, and conflict, which when combined with economic and social vulnerability can lead to disastrous outcomes.



CLIMATE CHANGE

It is anticipated that climate change will soon reach the point of irreversibility and will bring ever more unpredictable and devastating environmental impacts as an integrated risk (Burgess 2022). It is currently contributing to flooding disasters in low-lying regions of Pakistan and Nigeria, devastating homes and livelihoods in areas where people already live at the margin of financial ruin. Extreme heat is in danger of altering long-established agricultural patterns, bringing desertification to once-fertile areas, while (much more slowly) opening colder areas to more extensive exploitation (Parkera 2020). Access to water will become increasingly contested, as the supply of fresh water dwindles even as the population explodes. Food security may become more and more precarious as a result, leading to famine, mass migration, and war. Understanding the likely impacts of climate change will be an important tool of UNICEF's arsenal when preemptively planning for the protection of vulnerable children and their families. To that end it would be wise to consult not only with disaster management personnel, but also climate and geological experts, to get a sense of the range of disasters that may befall mankind in the years to come.

Sadly, it is just at the point where medical advances have led to increased survival rates for children that nature has removed or altered the resources needed to sustain them. Many countries in the low latitudes are seeing population growth and resource depletion in tandem. Inevitably this creates significant vulnerabilities, as greater populations live closer to the edge of starvation. When combined with the unpredictable events connected to the rapid alteration of climatic patterns, these vulnerabilities can easily lead to catastrophe. While migratory flows, or even preemptive displacement may alleviate the pressure on resource-challenged regions, such solutions are controversial and may require an unrealistic level of solidarity and common purpose among the world's many nations and peoples.



GEOPOLITICAL COMPETITION

In addition to the range of natural disasters which may be random or predictable, careful analysis of political developments can reveal trends in emerging conflicts leading to adverse outcomes for young people. The return of great power competition, coupled with declining liberal democracies/rising authoritarianism is notable. The current war in Ukraine came as a surprise to the international community, which should have done a better job preparing for

its impacts. What other areas are likely to erupt in war over the next ten years? The Sahel region is one of particular concern for UNICEF. Weak government and increased competition for land due to ecological change and high birth rates have made the Sahel a powder-keg for international conflict. Coups have been spreading through the region as popular and military discontent spreads (Essoungou 2013; OECD 2022). Militant extremism has metastasized across indefensible borders, bringing violence and provoking destabilizing military reactions. What can be done to protect the children of this region? And how can it be done in a way that does not prolong the region's agony by supporting corrupt governments at the expense of civil society?

In addition, asymmetrical warfare poses tremendous risks to human security. Attackers no longer need the resources of a state to inflict significant damage on entire societies. In our tightly networked world, hackers from thousands of miles away can bring vulnerable infrastructure to its knees, targeting hospitals, power plants, banks and other essential services. The more technologically advanced countries are perhaps even more vulnerable than those of the developing world, as disaffected movements find ways to leverage their own technology against themselves. Marginalized and oppressed communities may have little stake in world stability and are capable of causing increasingly violent disruption. Thanks to social networks and artificial intelligence, they will have more avenues of cooperation as they seek to undermine a world order which has disfavored them.



PUBLIC HEALTH EMERGENCIES

Although the COVID-19 Pandemic shocked the world and disrupted access to services for children globally in the educational and health services, human-caused/man-made public health emergencies also pose risks in future contexts. Many countries entered the pandemic with weak health systems that were not able to treat the myriad illnesses that already existed, such as malaria, tuberculosis, cholera and HIV/AIDS, but the pandemic exacerbated these underlying woes even further. Furthermore, with increasing causal ties to climate change, and decreasing coordination systems and global supply chain strength, public health emergencies have become an integrated and system-wide risk that impacts children globally. Hunger, malnutrition and treatable diseases are rampant among the vulnerable children of the world. UNICEF would benefit from understanding these issues more holistically in order to coordinate the world's resources on behalf of its youth.

The rapid spread of Covid demonstrated the near-impossibility of geographically containing a highly transmissible epidemic. With travel around the world easier than it has ever been, what happens in Wuhan happens everywhere. Up until now, the world has been spared the spread of more fatal diseases such as ebola only because of its relatively weak transmission sector, but there is every possibility that a future disease could combine

lethally and ease of spread. Moreover, advances in genetic manipulation have brought about the possibility of an artificially manufactured disease that could be deployed by malicious actors seeking to sow chaos or harm specific populations. And of course the paucity of hygiene measures in perpetually overcrowded refugee facilities provides an incubator for diseases which are easily treated elsewhere, such as cholera and tuberculosis.



MIGRATION

Geopolitical competition, economic disruptions, and climate change will likely lead to an increase in both internal and external displacement for millions of children and their caregivers in the upcoming decade. In light of certain risks, both population growth and shrinkage are important factors to consider in future contexts. As we have seen with the invasion of Ukraine and constant violence in areas such as the Sahel, millions of children are increasingly forced to seek safety with their caregivers, leading to a heightened need to understand the difficulties children face in this realm. The difficulties and dangers (including violence, exploitation, etc.) faced by migrating children can have long-lasting physical and psychological impacts that may prevent them from fulfilling their potential (UNICEF 2022). Separately, demographic patterns globally in the next several decades will lead to a decrease in birth rates in developed countries and an increase in birth rates in developing countries, a fact that will lead to even more scarcity on a global stage and force millions of people to migrate to seek better opportunities for themselves and their children.



RISK ANALYSIS

Risk analysis is conducted by many different organizations, including UNICEF. UNICEF's country offices mainly use Situational Analysis to determine potential risks for their program planning. The organization sets ten thematic areas that allow each country's office to identify its risks. UNICEF also mobilizes a tool named Guidance on Risk-Informed Programming (GRIP), which proposes a methodology for conducting child-centered risk analysis and leading a collaborative process with multiple child rights stakeholders (including children, adolescents, and youth) to design or adapt programs to reduce risk, build resilience, and promote peace. Risk is determined by the level of hazard, exposure, vulnerability, and capacity. UNICEF also uses the Index for Risk Management (INFORM) to determine the levels of risk. In Vietnam's child-centered risk assessment report issued by the UNICEF Vietnam office, the child vulnerability indicator includes indicators related to education, poverty, safety, and households' economic status.

This desk research served as a valuable initial entry-point into understanding the multifaceted nature of megadisasters and the difficulty of emergency response planning for organizations such as UNICEF.

EVOLUTION OF METHODOLOGY

Consultations with the client revealed significant interest in a deliverable that would challenge UNICEF staff to think beyond “traditional” crises in an interactive and creative manner. Accordingly, our team re-evaluated how we could pivot our methodology to meet the client’s needs.

To address the quantitative elements requested by the client, we envisioned using modeling software that incorporated historical trends to forecast the impacts of crises/disasters in vulnerable countries and regions. From the projected data, we sought to develop infographics that underscore the extent to which key indicators of children’s wellness, including malnutrition and school absenteeism, are altered by polycrises and megadisasters. The main goal of this deliverable was to take a quantitative, macro perspective of historical megadisasters while also informing UNICEF about the potential implications of polycrises and megadisasters on the horizon.

Moreover, we envisioned creating a series of vignettes that follow the imaginary but potential life of a child affected by polycrises and megadisaster over a ten-year period. Through the use of an interactive, multimedia product, this deliverable sought to impel UNICEF staff to contemplate “non-traditional”, low-likelihood but high-impact disasters and actualize their detrimental impacts on children.

EMPIRICALLY-BASED COUNTRY SELECTION

Following our project rescope, our team sought to develop a robust research database to identify the top risks on a country and regional basis; analyze children’s vulnerabilities; and rank the most vulnerable countries and regions, as explained in [Figure 4](#):

Figure 4: Empirically-Based Country Selection

| RESEARCH | | ANALYZE | | REFINE |
|---|--|--|---|--|
| RISK RANK | SELECT SOURCE | CATEGORIZE | PRIORITIZE | REFINE |
| <p>Risk sources:</p> <ul style="list-style-type: none"> World Economic Forum Global Risks Report 2023 UNICEF Child Vulnerability Index Report INFORM RISK | <p>Matched the sources with our project goals.</p> <ul style="list-style-type: none"> Hazard, Vulnerability and Capacity Applicable to Humanitarian Field Applicable to Children Regional/Country-Based | <p>Created the strategy to categorize each country.</p> <ul style="list-style-type: none"> Defined Global Regions to be MECE <ul style="list-style-type: none"> Mutually Exclusive Collectively Exhaustive Assigned Countries to Regions | <p>Analyzed the most vulnerable countries based on the UNICEF Child Vulnerability index.</p> | <p>Analyzed the bottom three countries and prioritized one final country.</p> <p><i>*All regions continued with the bottom one except for the MENA region</i></p> |

First, we examined relevant sources that identify, categorize, and rank risks on a country and regional basis. The main sources considered were:



World Economic Forum (WEF) - Global Risks Report 2023: is an annual publication that identifies and analyzes the most pressing global risks according to experts from around the world. The report focuses on both short-term and long-term risks, including economic, geopolitical, societal, technological, and environmental risks. It also explores the interconnectedness of these risks and their potential impact on various regions and industries. The report also provides insights and recommendations for governments, businesses, and civil society to help mitigate the identified risks and build more resilient systems (WEF 2023).



UNICEF Child Climate Index Report: is based on two pillars. The first pillar is the exposure of children to climate and environmental shocks, which is evaluated based on several indicators related to climate change, including exposure to floods, droughts, cyclones, heatwaves, and sea-level rise. The second pillar is the vulnerability of children in each country, which is evaluated based on several indicators related to children's health, education, and protection, including malnutrition, education access, child labor, and violence against children (UNICEF 2021).



INFORM Risk Index: is based on risk concepts published in scientific literature and envisages three dimensions of risk: hazards and exposure, vulnerability and lack of coping capacity dimensions. They are conceptualized in a counterbalancing relationship: the risk of what (natural and human hazard), and the risk to what (population) (DRMKC 2023).

Next, we evaluated how closely each risk source aligned to the goals of our project. Specifically, we sought disaggregated indicators related to hazard, vulnerability, and capacity; humanitarian and child-centered data; and the inclusion of country-specific data.

For example, while the *WEF's Global Risks Report* provided a straight-forward categorization of risks for each country and region, its emphasis on private and business entities left significant gaps in child-centered data and other salient humanitarian aspects. Consequently, our team opted to base our country selections on the second pillar of the *UNICEF Child Climate Index Report*, which included indicators relevant to children's rights, country-specific vulnerabilities, and UNICEF's mandate.

To select specific countries, we categorized countries into six regions, summed each country's individual Child Vulnerability Score, and selected the country with the highest score (i.e. where children are most vulnerable) in each region, as reflected in **Figure 5**.

In the MENA region, however, our team opted to select Yemen – the second-highest scoring country – over Afghanistan – the highest-scoring country – due to the relatively recent and rapid change in the latter's context, which, thereby, hindered our capacity to most effectively analyze potential megadisasters and their impacts on children.

Figure 5: Country Scores and Selection

| America | | East Asia & Pacific | | Europe | |
|-----------|-----|---------------------|-----|----------|-----|
| Country | CV | Country | CV | Country | CV |
| Guatemala | 5.1 | Lao PDR | 5.8 | Bulgaria | 3 |
| Bolivia | 4.5 | Cambodia | 5.6 | Armenia | 2.9 |
| Honduras | 4.3 | South Korea | 5 | Romania | 2.5 |

| Middle East & North Africa | | South Asia | | Sub Saharan Africa | |
|----------------------------|-----|------------|-----|--------------------|-----|
| Country | CV | Country | CV | Country | CV |
| Afghanistan | 7.9 | Pakistan | 6.4 | Chad | 9.4 |
| Yemen | 7.8 | Bangladesh | 5.1 | Angola | 8.9 |
| Jordan | 3.4 | India | 4.6 | Congo DR | 8.6 |

IN-DEPTH COUNTRY RESEARCH

After selecting countries, we utilized a multitude of sources, including the World Bank, United Nations Development Programme, United Nations Environment Programme, World Health Organization, and World Food Programme, to cultivate an in-depth understanding of each country context, as delineated in [Figure 6](#):

Figure 6: Country-Specific Data Sources

| CATEGORY | SOURCE | INDICATOR |
|---------------|-----------------|--|
| Composite | UNDP | Human Development Index (HDI) |
| Economic | World Bank | Economic Data |
| Climate | UNEP | Environmental Performance Index Score (EPI) |
| Education | UNDP | Mean Years of Schooling |
| Public Health | WHO | Under-Five Mortality Rate |
| Food Security | WFP / Brookings | Percentage of Population & Global Hunger Index (GHI) |
| Governance | World Bank | Government Effectiveness Estimate Score (GE.EST) |

INTERVIEWS

To ensure our project incorporated a critical humanitarian lens, our methodology included expert interviews with staff at UNICEF, other UN agencies, and scholars in the humanitarian field. In total, we interviewed nine specialists with an amalgam of expertise in risk analysis, emergency preparedness, climate change and disaster risk reduction, UNICEF and its position in the overall humanitarian landscape, and country-specific contexts, including Yemen and Chad. A more detailed summary of the information gleaned from our interviews can be found in [Annex 1](#).

NARRATIVE & SCENARIO-BUILDING

Subsequently, our team drew from our data analysis, desk research, interviews, and input from our faculty advisor – an experienced humanitarian worker across multiple agencies in the UN system – to develop three well-researched, context-specific crises/disasters that reflect the potential risks for each region over the next ten years. Across our six region-country pairings, we covered a wide range of risks that incorporated our thematic research area documents, including: Climate Change & Environment, Economics, Geopolitics & Conflict, Migration, and Public Health, as depicted in **Figure 7**:

Figure 7: Country-Specific Risks and Crises

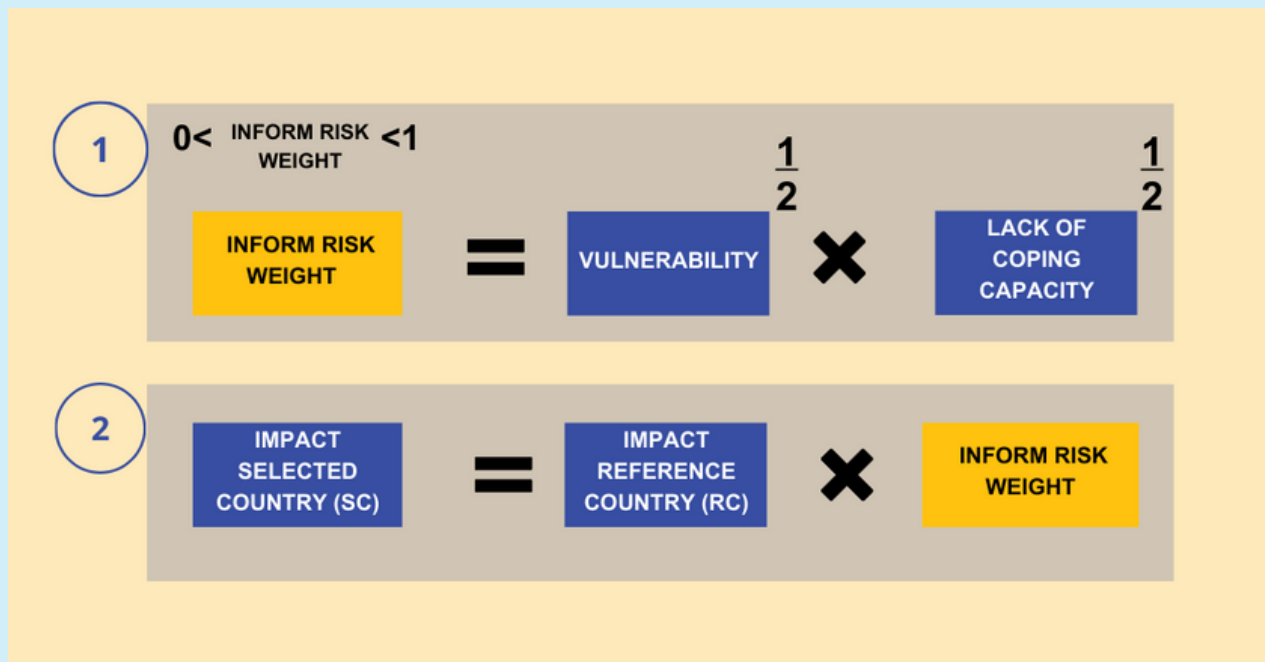
| REGION | COUNTRY | RISK CATEGORY | 2023 CRISIS | RISK CATEGORY | 2028 CRISIS | RISK CATEGORY | 2033 MEGADISASTER |
|--------|-----------|------------------------------|----------------------------|---|--------------------|--|---------------------|
| AMS | Guatemala | Climate Change & Environment | Volcano | Climate Change & Environment | Earthquake | Geopolitics & Conflict | Civil War |
| EAP | Lao PDR | Geopolitics & Conflict | Gangs, Unexploded Ordnance | Climate Change & Environment | Flood | Public Health | Avian Flu |
| EUR | Bulgaria | Geopolitics & Conflict | Political Tension | Climate Change & Environment; Public Health | Heat Wave; Disease | Climate Change & Environment; Geopolitics & Conflict | Flood; Cyber Attack |
| MENA | Yemen | Climate Change & Environment | Oil Spill | Geopolitics & Conflict | Civil War | Climate Change & Environment | Extreme Heat |
| SAS | Pakistan | Climate Change & Environment | Water Scarcity | Geopolitics & Conflict | Political Tension | Economics; Geopolitics & Conflict | Economic Sanctions |
| SSA | Chad | Geopolitics & Conflict | Military Takeover | Climate Change & Environment | Drought | Geopolitics & Conflict | War |

****Note: Migration and Economic risks were incorporated into the scenarios as secondary effects of events**

FORECASTING MEGADISASTER IMPACTS

To supplement our narratives with quantitative infographics, our team undertook time series analysis to forecast the impacts of potential megadisasters. For each potential crisis event, we utilized historical data from the five most impactful events on GDP and population growth. In our Guatemala storyline, for example, an earthquake was selected as a potential disaster; thus, we identified the five most impactful earthquakes historically and utilized data such as the number of fatalities and the percentage of the population affected to create a baseline indicator. Next, we weighted the data from the *INFORM Risk Index* to predict the impact on the selected country, taking into consideration its vulnerability and capacity, as described in [Figure 8](#):

Figure 8: Weighting the Data

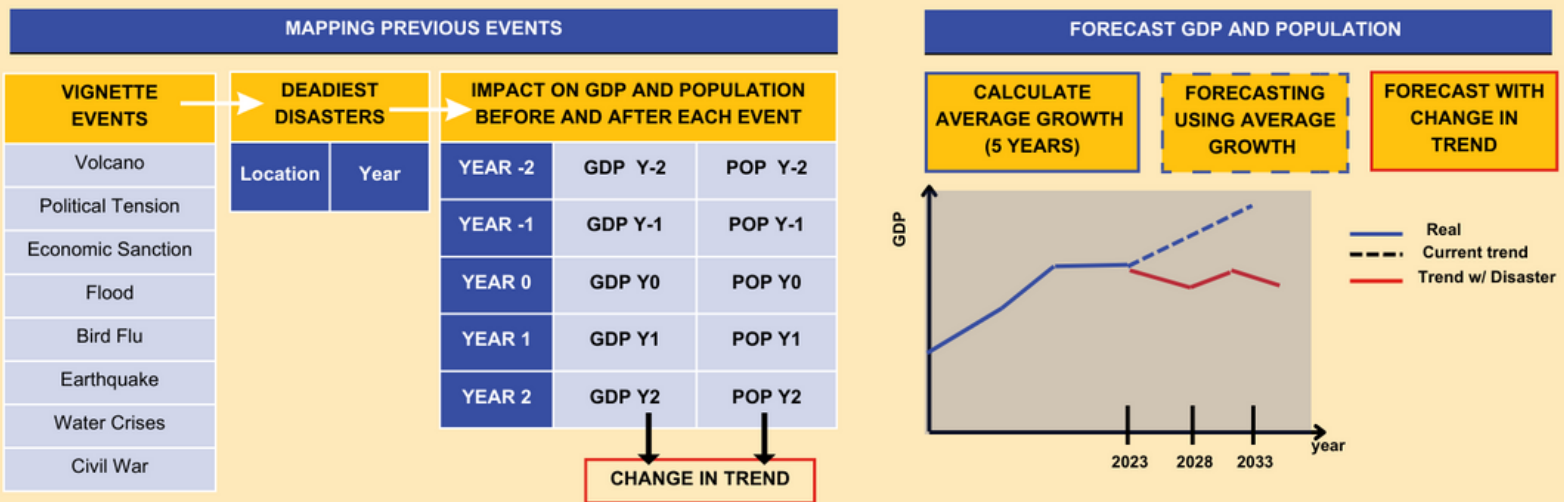


Then, we forecasted indicators for population and GDP growth of the selected country using the previous analysis to predict changes on current trends starting in 2023. A time data analysis was used to predict the population and GDP growth of the country selected, using the average growth rate of the previous five years as a reference. The impact of disasters on a country's GDP was then used to create a new forecast of population and GDP growth. This involves using the impact of disasters for the following two years and the original growth rate calculated in Part One: Step One for the next years.

The same process is repeated for each new event occurring every five years and layered on top of each other in line with our description of layers in megadisasters. This methodology allowed us to consider both historical trends and the impact of disasters on GDP and population growth, which permitted us to provide a comprehensive forecast that takes into account both short-term disruptions caused by disasters and long-term growth patterns.

Figure 9 represents an overview of our forecasting model:

Figure 9: Forecasting Model



PRODUCT DESIGN & USER EXPERIENCE

Several members of our team focused exclusively on the product build to ensure the final deliverable met the needs of the client. First, the team created user personas to account for the distinct interests and needs of UNICEF staff in offices at the country, regional, and HQ levels. Moreover, the team undertook an exhaustive testing phase by presenting several versions of the product to our faculty advisor and staff in EMOPS for feedback. Outcomes of our prototyping and testing phase added layers of both back-end and front-end considerations. For instance, we ensured that the product would be accessible and usable by a wide range of devices, so it could be easily shared among UNICEF staff by email and other internal communication.

We also incorporated principles of storytelling by creating an engaging and interactive experience to capture users' attention and maximize impact. The use of a design thinking process allowed the team to understand the needs of our client at UNICEF, develop a framework, prototype a multimedia product, and implement feedback in a circular cycle. This allowed us to create a product that aimed to encourage UNICEF staff to engage with and reflect on the impact of megadisasters on children in their own work.

LIMITATIONS & CONSTRAINTS

While our methodology enabled us to collect an abundance of data, several limitations and constraints arose. First, our project necessitated in-depth research and knowledge of a multitude of topics, including but not limited to: risk analysis, migration, economic downturn, public health, geopolitical competition, climate change, UNICEF's mandate and operations, regional risks and dynamics, country-level risks and contexts, and crisis forecasting; thus, our team was constrained by time in our ability to develop both a broad and deep understanding of each topic. Secondly, as RAPS focuses extensively on "traditional" risks where data is largely available, the client felt our team's added value was derived from including scenarios beyond UNICEF's customary purview. Consequently, our team was limited in finding data to support our "non-traditional" scenario for the final deliverable. Moreover, due to time constraints and scheduling conflicts, the interview portion of our methodology was not as exhaustive as intended. Despite these limitations and constraints, our team was still able to collect and utilize a rich profusion of data to produce our final deliverable.

FINAL PRODUCT

Expanded versions of the narrative storyline can be located in [Annex 2](#); however, [Figure 10](#) provides a QR code as well as the link to the final product:

Figure 10: QR Code and Link to Final Product



<https://view.genial.ly/641e09f8375fa40019d013e4/interactive-content-draft-final-product>

CONCLUSION

The amalgam of the COVID-19 pandemic, climate crises, the war in Ukraine, and the subsequent rise in cost-of-living and energy prices reflects the tremendous challenges RAPS and UNICEF as a whole face in their aims to effectively prepare for and respond to crises. Alone, each crisis – health, climate change, conflict, and economic downturn – present a “traditional” risk to UNICEF, its programming, and the children they seek to protect. Yet, the interplay between disparate, cascading, and compounding crises culminates in a “non-traditional” and potentially catastrophic global disaster.

Understanding the implications of polycrises to UNICEF’s operations and capacity to deliver its mandate, RAPS leadership recognizes the salience of anticipating how polycrises *are* the future of megadisasters. Thus, to further impel a reorientation of UNICEF’s internal risk management mindset towards assessing and preparing for these low-likelihood but high-impact crises, our project sought to: 1) develop a comprehensive understanding of polycrises and megadisasters through robust thematic and country research; 2) present UNICEF staff with an inventory of potential, research-based megadisaster scenarios and their forecasted impacts; and 3) develop an interactive, multimedia product with child-centered vignettes that enables UNICEF staff to actualize and analyze the detrimental effects of megadisasters on the children protected under their mandate.

To accomplish the goals of the project, our SIPA Workshop team conducted extensive thematic research and country-specific research; analyzed several risk databases and sources; interviewed nine experts; forecasted the impacts of potential megadisasters through quantitative modeling; developed twelve child-centered vignettes tailored to regional and country contexts; and produced an interactive, multimedia product to enable UNICEF staff to imagine the realities children face as they navigate increasingly dire and complex megadisasters.

ANNEX 1

Extended Summaries of Expert Interviews

OVERVIEW

A vital part of our process involved data-gathering through nine interviews with experts and country officers from inside UNICEF, as well as several professors at Columbia University. A brief summary of the interviews is found below:



It is a unanimous sentiment that there are always more crises than the international community can handle at any one time, and the overwhelming level of immediate crises makes it difficult to plan for remote disasters of the future. While this may be a blind spot, it is important to keep in mind the difficult choices that field personnel already face, and to avoid provoking demoralization among those on whose shoulders the burden of action falls.



The unpredictable and inexorable progress of climate change is an unknown that weighs heavily on those responsible for risk analysis. Even if current energy needs were to magically plummet tomorrow, the Earth would not be able to escape the effects of warming in the next ten years. This will reduce the sustainability of life in many parts of the world, exposing millions to vulnerability. The immediate impacts of climate change cannot be resisted, only remediated.



Technological change presents opportunities, but also challenges for humanity. Social media has already proved that interconnectedness can be an accelerant for destructive trends, and the advent of AI could easily magnify that danger. The following is a précis of each of the interviews we conducted.

EXTENDED SUMMARIES

Romano Lasker, Program Specialist, United Nations Development Programme, interview conducted February 8, 2023.

Mr. Lasker focused on the position of UNICEF specifically and the United Nations more generally within the humanitarian landscape. He observed that the UN consists of many overlapping and even competing institutions which are difficult to coordinate effectively. He pointed out that UNICEF's range of responsibilities is ever-growing, but it might be of greater value to the world for it to focus on its areas of comparative advantage, perhaps facilitating rather than directly providing humanitarian aid which other groups might be more able to administer. He suggested that we focus on "winnable" scenarios in areas of UNICEF's expertise, such as water desalination.

Jean-Marie Guéhenno, Kent Visiting Professor of Conflict Resolution at Columbia SIPA, interview conducted March 27, 2023.

Professor Guéhenno provided an expansive overview of threats facing the world in the next ten years. He was particularly focused on the role technology, and particularly AI, could play in increasing social fragmentation, leading to an era of renewed conflict. Social media has increased the reach of disinformation, panic movements and radical movements around the world. He expects migration to increase dramatically, causing social strain as cities grow bigger than ever, while nearly permanent refugee camps leave their residents in limbo without rights or economic opportunity. In such contexts, non-political actors such as gangs take on political power, as violence continues to be "democratized".

Jen Stephens, Global Lead on Disaster Risk Reduction, UNICEF, interview conducted March 28, 2023.

Ms. Stephens' expertise is on climate change and disaster risk reduction (DRR). Her perspective was that all agencies need to converge on DRR and focus their efforts on reaching people at the greatest risk by engaging

local authorities and organizations who are in a better position than national governments to know what is really happening. She also felt that we are drastically underestimating the potential effects of climate change, due to an understandable focus on immediate humanitarian needs. She pointed out that it is very difficult to assess the risk for children when most data is not disaggregated by age. Migration may be part of the solution, but that idea is still very sensitive in both source and target countries.

Abolfazi Masoumi, Regional Emergency Specialist at UNICEF, MENA Office in Amman, interview conducted March 29, 2023.

Mr. Masoumi was attuned to societal tensions created by inequality in the distribution of wealth, as well as state to state tension. He also felt that environmental hazards are being underestimated, and that much more intra- and international cooperation is needed to respond to the likely disasters of the future, especially in the areas of water management, conflict and epidemics such as cholera which are still present in the Middle East where he is based. He admitted that due to the more immediate humanitarian pressures, some of his colleagues are not enthusiastic about long-term disaster preparedness. But he pointed out that development is a part of UNICEF's mandate, and is a major contributor to systemic resilience.

Robert Jones, Regional Emergency Specialist at UNICEF, West Africa Office in Dakar; Ahmed Ould Sid'ahmed Aida, UNICEF, Chad Country Office; Katia Petion, UNICEF, Chad Country Office, interview conducted March 30, 2023.

Mr. Jones was kind enough to invite two members of the Chad country office to join the conversation. We had an extensive discussion of some of the issues facing Chad in particular and Africa in general. There are protracted emergencies in Chad, among them an alternation between drought and flooding, armed insurgency, weak governance, coups d'état, cholera epidemics and the intercommunal conflict between herders and farmers that pervades the Sahel region. The long-range risk strategy focuses on strengthening community resilience, forging strong links with local actors, anticipatory action (cash distribution ahead of known emergencies) and extending planning to the 2-3 year range, instead of six

months as it has normally been. The resurgence of great power competition in Africa, including the presence of Russian militia and Chinese construction investment has made aid distribution more difficult. Children are particularly vulnerable, as schools flounder and public health suffers, and girls face the extra challenges in that they perform the dangerous task of collecting water, which exposes them to predation and ignores their hygiene issues.

Flavio Bartmann, Professor of International and Public Affairs, Columbia SIPA, interview conducted April 3, 2023.

Professor Bartmann, who teaches time series analysis at SIPA, assisted the team in developing the methodology for predicting economic and social indicators reflecting the crisis in the storylines for each country. To make accurate predictions, having high-quality data is essential. However, since some of the indicators the team wanted to use, especially those related to children, did not have good quality data, Professor Bartmann suggested starting with predictions based on available data that is consistent across countries, such as GDP and population. Additionally, he provided examples of different countries having varying capacities and capabilities to prepare and respond to the crisis, which will directly impact the people affected. This helped the team use certain measures to adjust the impact of each crisis to the specific circumstances of each country.

Nick Wasunna, Chief of Field Operations, UNICEF Yemen, interview conducted April 3, 2023.

Mr. Wasunna provided invaluable insights into the plight of Yemen, a country whose fortunes have plummeted since the onset of civil war in 2014. The country lies in a state of permanent humanitarian emergency, with over 80% of its citizens dependent on food aid. Water is scarce and is a source of conflict between tribes. Much of it is wasted on the production of qat, a narcotic leaf of no nutritional value, but of great cultural importance. Disease is rampant, and the medical system is failing in much of the country. UNICEF's strategy is to preserve access to the suffering public by maintaining relations with all the warring parties in Yemen. The Yemen office deals with Ansar Allah (the Houthis) while the Aden office deals with the recognized government of Yemen (RGOY). UNICEF gamely attempts to supply desperately needed WASH and education services, but

the total segregation by sex (Mahram) makes it difficult to transmit aid to women and children. The military situation has stabilized in the big cities such as Sana'a, where gunfire is more seldom heard from the UNICEF compound, but fierce fighting along the line of control continues, as the Houthis pummel the RGOY-controlled oil fields, trying to force a revenue sharing settlement. China's recent attempts to broker peace between Saudi Arabia and Iran are viewed with cautious optimism.

Lea Nordmann, Risk Analyst, UNICEF Geneva, interview conducted April 6, 2023.

Ms. Nordmann discussed the current approach to risk analysis utilized by the organization. The process involves horizon scanning, identifying main drivers and seasonal variables for each context, obtaining country-based feedback every two months, defining assumptions, creating worst-case scenarios, and forecasting potential human resource, supply, and financial constraints. Nordmann emphasized the importance of creating contingency plans for worst-case scenarios and engaging with people on the ground to better adapt available resources. She also suggested that cyber attacks are an overlooked hazard that should be addressed in the project. Overall, Nordmann's insights provide valuable information on how UNICEF manages risks in the ever-changing global landscape.

Tsedeye Girma, Chief of Risk Assessment and Preparedness Division, UNICEF HQ, interview conducted April 6, 2023.

Ms. Girma gave an overview of how UNICEF's Risk Assessment and Preparedness Division operates. She spoke about the coordination with the UN's other risk assessment agencies and their attempts to create a dynamic 5-year plan to replace the previous static versions, which did not adjust to events quickly enough. She spoke about the importance of sorting through the enormous quantities of available data to find those that are most relevant to UNICEF's work, and she regretted the fact that most of the data is not age-disaggregated. Her sense is that the patterns we are used to have ceased to exist, and we must develop new paradigms. The agency's weaknesses include a laborious decision making process and a lack of bandwidth. In addition the UN system of working with national governments has the pitfall that those governments often deliberately marginalize minorities or political opposition within their borders. In the long run migration might be part of the solution, and even pre-emptive displacement in situations where climate change makes current populations unsustainable, although the idea is extremely controversial.

ANNEX 2

Extended Narratives

2023

Irina is a 7-year-old Roma girl living in Veselinovo, a rural village in southeastern Bulgaria(1). As an ethnic minority, Irina and her family experience discrimination, poverty, and barriers to accessing education, healthcare, and the labor market. Irina's father works sporadic, low-wage agricultural jobs while her mother stays home to care for Irina, her three brothers, and their elderly grandparents(2). As a result, her family struggles to stay above the poverty line. Despite significant barriers, Irina attends compulsory preschool where she enjoys drawing and playing with her classmates(3). Bulgaria, Irina's home country, is in the midst of unprecedented political crisis. After four parliamentary elections, the government remains fragmented and unable to adopt nor

BULGARIA: IRINA

effectively implement key legislation. Strategies to reduce disaster risks, improve climate resilience, and promote the integration and inclusion of Roma people are amongst the adversely impacted National Plans(4). The ensuing political turmoil is further compounded by a deepening economic crisis as a result of the war in Ukraine. As the inflation rate, unemployment rate, and cost of food and energy increase, the most vulnerable households – including Irina's family – are disproportionately affected(5). Consequently, Irina's father becomes unemployed. The family faces food insecurity and falls below the poverty line. Irina's parents are unable to afford her kindergarten's attendance fees and hidden expenses, and she is forced to drop out(6).

2028

As a heat wave strikes southeastern Europe – one of several in the last five years –, the incidence of water-borne diseases rapidly begins to rise (7). Without the implementation of early warning systems nor adequate access to a clean water source, Irina, her family, and several villagers become violently ill after drinking water collected from a nearby stream (8). As Irina's father struggles to maintain em-

ployment, the family is unable to afford healthcare (9). The high out-of-pocket expenses for medical services and discriminatory attitudes from health officials against Roma peoples further deter the family from seeking medical attention. As a result, Irina's mother, youngest brother, and grandparents die. At just 10 years old, Irina is left to care for her father and two brothers.

Irina, now 17 years old, is married and expecting a child (10). She spends her days care-taking for her husband, aging father, and younger brother. In 2028, Yambol experiences unprecedented levels of rainfall. Without the implementation of integrated water management systems, the nearby Tundzha River rapidly floods. Due to discriminatory laws and practices, many Roma families – including Irina’s – cannot own land and thus

built their homes on a highly flood-prone ravine. As a result, Irina’s home – already dilapidated due to its poor infrastructure, erratic weather patterns, and soil erosion – is washed away while her father, husband, and brother are inside. They are amongst thousands affected by the flood. At just 17 years old, Irina is orphaned, widowed, homeless, uneducated, destitute, and with child.



EXPLANATORY NOTES & HYPERLINKS

1. Veselinovo is a poor rural Roma community that has not integrated with the country. Furthermore, Yambol Province is located in the southeast and is ranked as the highest province at risk for flooding.

[https://www.moew.government.bg/static/media/ups/articles/attachments/DRM%20-%20Full%20Report%20-%20First%20Draft%20\(2018-04-27\)%20-%20EN%20-%20for%20printing%20v2675c5b0db190d4aa5dae48daf147c909.pdf](https://www.moew.government.bg/static/media/ups/articles/attachments/DRM%20-%20Full%20Report%20-%20First%20Draft%20(2018-04-27)%20-%20EN%20-%20for%20printing%20v2675c5b0db190d4aa5dae48daf147c909.pdf)

2. The share of employed Roma is 19.24%, which is close to the national average for the Roma; but the share of the unemployed is 31.48%, which is much higher than the national average for the Roma of 19.35%.

<https://www.oecd.org/publications/reaching-out-and-activating-inactive-and-unemployed-persons-in-bulgaria-7b91154a-en.htm>

3. As of 2016, 91% of Roma children attend compulsory preschool.

<https://www.unicef.org/bulgaria/media/9126/file>

4. <https://www.moew.government.bg/static/media/ups/categories/attachments/Strategy%20and%20Action%20Plan%20-%20Full%20Report%20-%20%20ENd3b215dfec16a8be016bfa529bcb6936.pdf>

5. <https://www.unicef.org/media/136706/file/Bulgaria-2022-COAR.pdf>

6. 45% of Roma children do not attend kindergarten due to attendance fees, hidden expenses, and other barriers to entry.

<https://www.unicef.org/bulgaria/media/2821/file/BGR-situation-analysis-children-women-bulgaria.pdf.pdf>

The level of education of the Roma in Yambol is lower than the Roma average in Bulgaria: 60.4% of 20-60 year old Roma have not attended school, have dropped out of school in the first years, or have received primary education at most.

https://www.worldbank.org/content/dam/Worldbank/document/ecal/Bulgaria/Roma_Gender-ENG.pdf

7. Higher temperatures are also likely to lead to an increase in the number of water and food-borne diseases (i.e. salmonellosis and gastro-intestinal infections), to which children are especially vulnerable, and water quality may also suffer from algal contamination and concentration of pollutants.

<https://www.preventionweb.net/publication/climate-risk-country-profile-bulgaria>

8. 40% of Roma people lack access to a water supply.

<https://www.unicef.org/bulgaria/medial9126/file>

9. Roughly 50 percent of Bulgarian Roma do not have state health insurance. Furthermore, many marginalized groups, including Roma peoples, do not seek medical attention due to the high cost and discriminatory attitudes of healthcare professionals.

<https://academic.oup.com/eurpub/article/24/5/707/477203?login=false>

10. The average age of marriage for Roma women is 17 years old.

<https://www.unicef.org/bulgaria/medial2821/file/BGR-situation-analysis-children-women-bulgaria.pdf.pdf>

BULGARIA: IVAN

2023

Ivan is a 7-year-old Ukrainian boy who fled to Bulgaria with his mother following the Russian invasion in 2022. His father, a conscripted soldier, is presumed dead. Despite receiving temporary protection status, Ivan and his mother experience difficulties accessing housing, education, healthcare, and the labor market (1). Ivan participates in an informal education programme but is unable to attend regularly due to the lengthy distance of the learning hub from his home. Ivan's mother, an experienced nurse, struggles to find work despite a nationwide shortage of healthcare workers (2). As a result, Ivan and his mother rely on food vouchers, cash-based interventions, and the government's free hotel-lodging programme. The sudden influx of refugees in Bulgaria is compounded by unpre-

cedented political turmoil and a deepening economic crisis. After four parliamentary elections, the government remains fragmented and unable to adopt nor effectively implement key legislation. Strategies to provide support and integrate refugees, reduce disaster risks, improve climate resilience, and mitigate cyberthreats are amongst the adversely impacted National Plans (3). Vulnerable groups – including Ivan's family – are the most disproportionately affected. As the government terminates the hotel-lodging programme, Ivan and his mother are forced to move to an overcrowded state facility in Plovdiv (4). Ivan is eventually able to enroll in a Bulgarian school but struggles to keep pace with his classmates due to the language barrier, gaps in his education, and bullying.

2028

As a heat wave strikes southeastern Europe – one of several in the last five years –, the incidence of water-borne diseases rapidly begins to rise (5). Without the renovation of Bulgaria's water management system, Ivan, his mother, and hundreds of other people who share their building's water system become violently ill after drinking water from the faucets in their apartments (6). After spending

two weeks in the hospital, Ivan and his mother recover. While Ivan's mother pays the monthly contributions requisite for health insurance, the existing benefits package fails to provide sufficient coverage for Ivan and his mother's treatment. Consequently, Ivan's family experiences catastrophic out-of-pocket health spending and falls below the poverty line (7).

2033

In 2033, Bulgaria is the victim of the largest cyber attack in history. As power outages and disruptions to various other sectors erupt throughout the country, heavy rains begin to fall in Plovdiv (8). Without the implementation of integrated water management systems, the nearby Maritsa River rapidly floods. While on the bus home from school, Ivan and his moth-

er are caught in a flash flood. Their calls for help go unanswered due to disruptions in the communications and emergency services sectors. As their vehicle begins to flood, they escape in search of safety. Ivan and his mother are amongst thousands who drown.



EXPLANATORY NOTES & HYPERLINKS

1. https://asylumineurope.org/wp-content/uploads/2023/03/AIDA-BG_Temporary-Protection_2022.pdf

2. <https://www.rferl.org/a/bulgaria-failing-ukraine-refugees/32160171.html>

3. <https://www.moew.government.bg/static/media/ups/categories/attachments/Strategy%20and%20Action%20Plan%20-%20Full%20Report%20-%20%20ENd3b215dfec16a8be016bfa529bcb6936.pdf>

4. **Plovdiv is located in south-central Bulgaria along the Maritsa River. Furthermore, many Ukrainian refugees have relocated to Plovdiv Province.**

<https://data.unhcr.org/en/situations/ukraine>

5. **Higher temperatures are also likely to lead to an increase in the number of water and food-borne diseases (i.e. salmonellosis and gastro-intestinal infections), to which children are especially vulnerable, and water quality may also suffer from algal contamination and concentration of pollutants.**

<https://www.preventionweb.net/publication/climate-risk-country-profile-bulgaria>

6. **Much of the water infrastructure in Bulgaria needs rehabilitation or extension. Most water and sanitation infrastructure was built in the 1960s and 1970s, and is in need of repair.**

<https://www.oecd.org/environment/resources/financing-water-supply-sanitation-and-flood-protection-country-fact-sheet-bulgaria.pdf>

7. **The incidence of impoverishing or catastrophic health spending in Bulgaria is high compared with other EU countries, with 8% of households experienced impoverishing health spending in 2018 and 19% experienced catastrophic health spending; Furthermore, poorer households, including refugees and migrants, are more disproportionately affected.**

<https://www.who.int/publications/i/item/9789240070707>

8. **Plovdiv is ranked as one of the most flood-prone areas in Bulgaria.**

<https://www.preventionweb.net/publication/climate-risk-country-profile-bulgaria>

CHAD: TAHIR

2023

Growing up in the towns surrounding the Lake Chad Basin, Tahir grew up viewing the water as an extension of himself. He and his friends used their makeshift canoes to zip past each other and made bets to see who would catch the most fish. Life was easier several years ago when Tahir, the oldest of 6 boys, and his father were able to catch just enough to feed themselves, but the receding water levels forced them to migrate to the more dangerous parts of the lake controlled by armed groups (1). Unfortunately, his father was a victim of one of the armed groups along the lake just two years ago (2). At just eight years old, he had vowed to stay away from these groups because his father wouldn't have wanted him to join them, but it was becoming harder (3). His father's death led Tahir to drop out of sch-

ool and to begin working full-time, and he became the sole provider for his brothers. However, over time the lake that had previously provided so much for his family was running dry (4). At the same time, the promise of a meal and protection for him and his siblings from the many rebel and terrorist groups was enough to force Tahir to reconsider his aversion to joining one of them (5). Still, Tahir kept out of trouble until a recent influx of armed groups sprung up in his neighborhood. Rumor was that the peace talks between the military government and rebels failed – again – but this time the military didn't just take over, they began a brutal crackdown on his community, barely distinguishing between combatants and civilians as they usurped power (6).

2028

Now 13 years old, Tahir has lived under the brutal military dictatorship that oversaw the termination of international humanitarian assistance to the country and the almost complete collapse of public sector provisions and security in Chad. Like many young Chadians surrounding the lake, Tahir sought safety through community, founding a self-defense group for the fishermen in his town with the goal of supporting their families financially and ensuring their collective survival amid the constant threat of violence from armed groups (7). However, in recent years the goals of the group evolved from pure self-defense to include taking over territo-

ry, although they were clear that they would never commit murder. Amid the worst drought the country has ever faced, Tahir found it difficult to stand by as his younger siblings, most of whom dropped out of school to become fishermen themselves, saw their already small earnings dwindle further and their hunger levels rise (8). Tahir and his group slowly began to co-opt local towns until the water ran dry, but they soon began to face conflict not just with armed groups, but also a host of other actors including farmers, cattle herders, and civilians, all of whom are actively seeking to support themselves in the midst of a crumbling landscape (9).

2033

Eight years into the drought, the water in the lake had almost completely run out, fueling the conflicts that have created the most unstable region in the world. Now, Tahir and his group find themselves displaced alongside millions of others at the Lake, forcing them to migrate elsewhere (10). Leaving everything behind, Tahir and his group observed the country outside of the lake for the first time. They heard gunfire surrounding them at every juncture. Whether the shots were from the military, armed groups, or the government did-

n't matter; Chad had become a country in name only. Armed militia groups, most of which were made up of everyday people pushed to the brink of desperation because of resource scarcity, were roaming the country with impunity. Recognizing this fact, Tahir was at an inflection point: should he join an armed group? He had vowed never to kill, since he knew the pain of losing his father to these groups, but as the country imploded on itself, he felt he needed to choose a life of looting and violence for survival.



EXPLANATORY NOTES & HYPERLINKS

1. Receding water levels in the Lake Chad Basin has worsened economic outcomes for Chadians who rely on that industry for survival. This has caused a migration out of this region.

<https://news.un.org/en/story/2018/07/1014002>

2. The interactions between different armed groups along the Lake Chad Basin has created unstable, violent conditions, which has led to the deaths of hundreds of people.

<https://www.unhcr.org/en-us/news/stories/2021/9/6138fac74/climate-change-fuels-clashes-cameroon-force-thousands-flee.html>

3. Boko Haram – one of the active armed groups in Chad – still actively practices child recruitment as part of their grander strategy.

https://www.voanews.com/a/extremism-watch_experts-boko-haram-recruiting-children-soldiers-suicide-bombers/6195472.html

4. Recent projections based on NASA's scientific findings indicate that the Lake Chad Basin will severely recede and be almost nonexistent in the upcoming decades. Additionally, the Lake has already receded by almost 90% since the 1960s.

<https://www.unep.org/news-and-stories/story/tale-disappearing-lake>

5. Child malnutrition in Chad is high and is likely to remain high because of worsening food security concerns in the country.

<https://www.unicef.org/chad/stories/malnutrition-chad-stories-behind-figures>

Terrorist and armed groups employ a variety of tactics to co opt children, which includes promises of food security and physical safety for themselves and their families.

Maza, Kangdim Dingji, Umut Koldas, and Sait Aksit. 2020. "Challenges of Countering Terrorist Recruitment in the Lake Chad Region: The Case of Boko Haram" Religions 11, no. 2: 96.

6. Chad's recent political history is fraught with uncertainty, which includes a series of failed talks that have prevented democracy from occurring in the government. Additionally, the Chadian military has used many unsavory tactics to usurp power.

<https://africacenter.org/spotlight/non-transition-chad-military-government/>

The Chadian government and military have allegedly committed a host of human rights abuses against civilians since the most recent military takeover of the country..

<https://freedomhouse.org/country/chad>

7. There exists several vigilante and self-defense groups in Chad to counter the violent tactics of armed groups in the country.

<https://www.africaportal.org/publications/taking-our-security-our-hands-role-vigilante-groups-fight-against-boko-haram-terrorist-group-lake-chad-basin/>

Vigilante/self-defense groups have allowed civilians to promote their own internal security, specifically in the Lake Chad Basin.

<https://www.crisisgroup.org/africa/west-africa/nigeria/244-watchmen-lake-chad-vigilante-groups-fighting-boko-haram>

8. The Lake Chad Basin is extremely vulnerable to climate change, and droughts have the potential to create a seismic shift in resource scarcity.

<https://climateknowledgeportal.worldbank.org/country/chad/vulnerability>

9. There is a variegated number of armed actors who already exist in Chad and the security situation will likely continue to be volatile in the upcoming years.

<https://www.undp.org/africa/publications/conflict-analysis-lake-chad-basin>

10. The volatile security situation has a disproportionate effect on children in Chad and has led to migration at great levels.

<https://www.africanews.com/2023/03/17/central-sahel-10-million-children-threatened-by-insecurity-unicef/>

CHAD: IBRAHIM

2023

Destined to one day lead the political opposition in Chad, Ibrahim was born into relative privilege. His father, one of the country's oil tycoons, had a distinguished political career that lasted several decades and provided him a sense of protection in the confines of the capital, N'Djamena (1). Unlike the thousands of parents in the country who worried that their children would not make it to their fifth birthday, Ibrahim's parents focused mainly on ensuring that their three children were primed for success in Chad (2). As such, Ibrahim lived a sheltered life in N'Djamena, spending his weekends on play dates with the children of diplomats and politicians from the most affluent families in the country. In the absence of hardship and the continued accrual of power, Ibrahim's father did not make a contingency plan if the peace talks failed. He assumed that the negotiations amo-

ng the various actors would just stall only to be resumed later, as had occurred time and time again in Chadian politics, and he truly believed the military would never take over in a brutal fashion (3). However, their world came crashing down just as they were celebrating Ibrahim's second birthday in one of their favorite restaurants, often frequented by expatriates in the capital. With the news that the Chadian government had collapsed and that the military had completely taken over, Ibrahim and his family fled to the country's only international airport, only to find that it, too, was under military control. At that moment, the family knew it had to flee deep to the northern part of Chad. They had purposely sought out a location with which they had no familiarity because it was necessary to hide their identities as the political elite.

2028

Several years into the military takeover, Ibrahim did not know the riches his parents experienced. He only knew Chad to be a country ruled by force without regard for international standards of human rights. Now aged seven, Ibrahim's reality had changed completely. Once the star pupil of his private school, Ibrahim could not finish his schooling and instead had begun to learn the cattle herding trade to help support his family (4). Following the military takeover, his family chose to invest what remained of their radically devalued fortune in cattle herding because it allowed them to live nomadically, which was of paramount importance as they

hid from the stories of their past. One important key to their survival was the rainfall that allowed the cattle to graze, providing sustenance for Ibrahim and his family, but rain had become increasingly scarce (5). As a matter of fact, Chad was experiencing the worst drought in its history, which forced Ibrahim and his family to move even more often than usual. Unfortunately, Chadians everywhere were suffering as water became scarcer, leading to a marked increase in violent conflict between cattle herders and farmers (6). For the first time in his life, Ibrahim felt true fear and an unbearable hunger.

By this point, the drought had all but decimated economic livelihoods for Chadians far and wide, leading Ibrahim and his family to join the millions across the country who lived in camps for internally displaced people. Ibrahim spent his early teenage years in this camp, dreaming about what Chad looked like before the military took over. Without proper access to water in the camp, Ibrahim grew desperate, regularly venturing out to find the last remnants of lakes and rivers that were increasingly being governed by armed groups. Up until that point, Ibrahim had seen farmers defending their land from outsiders, but the

armed groups soon asserted their authority and controlled all aspects of life in the land they claimed. Their main objectives were not ideological, but rather had the goal of the survival of their communities. Under the cover of midnight, Ibrahim tried to make another run to retrieve water for his family in a neighboring area, but this time he was unsuccessful. He saw the barrel of the gun pointed at him by another boy two years his junior. Frail from hunger, dehydration, and years of trauma, he stood there, motionless and indifferent to the fate that awaited him.



EXPLANATORY NOTES & HYPERLINKS

1. Chad's economy is heavily dependent on oil exports. Furthermore, there are very few oil companies in the country, meaning that the wealth from oil is highly concentrated.

<https://oec.world/en/profile/country/tcd>

2. Child mortality under 5 in Chad has decreased over the past decade, but still remains among the highest in the world.

<https://data.worldbank.org/indicator/SH.DYN.MORT?locations=TD>

3. The ruling and opposition parties alongside the military have employed a variety of political tactics in recent years during the peace talks that demonstrate the institutional weakness of the government.

<https://www.aljazeera.com/news/2022/8/8/chad-military-govt-opposition-groups-sign-peace-deal-in-qatar>

4. Agriculture is one of the main economic sectors in the country and cattle herding constitutes a big portion of this agricultural sector.

<https://www.trade.gov/country-commercial-guides/chad-market-overview>

5. Cattle herders in Chad find themselves in increasingly precarious situations, as they are vulnerable to the effects of climate change for their everyday survival.

<https://minorityrights.org/programmes/library/trends/trends2019/chad/>

6. There has been an increase in clashes between cattle herders and farmers in Chad over the past few years, partially as a response to increasing resource scarcity.

<https://www.aljazeera.com/news/2021/2/17/at-least-35-killed-in-chad-herder-farmer-clashes>

GUATEMALA: MARIA

2023

Maria is a seven-year-old girl who lives in Antigua, a city in the central highlands of Guatemala. Maria lives with her parents, who are members of the indigenous pride community (1). Her parents met during a memorial for those killed during the civil war in 1980 (2). Because they were both passionate about protecting the history and rights of indigenous people, they became guides at a UNESCO World Heritage Site in Antigua, the former capital and the cultural, economic, religious, and political center of the region (3). In the fall of 2023, Antigua, which is located sixteen kilometers from the Volcan de Fuego volcano, was spewed in ash and lava from an

unexpected eruption, destroying the entire city (4). Crops and livestock were obliterated, leaving many families without any source of income. Tourism to the UNESCO World Heritage Site was suspended due to the volcanic disaster, and Maria's parents, who worked as guides, lost their jobs, putting them under severe financial strain. Like many other children, Maria and her younger brother were traumatized by the event, and her parents struggled to provide for them. Maria witnessed her family's financial hardship and the impact it had on her community. Many people had lost their homes, and some had lost loved ones.

2028

Maria, now twelve years old, still is grappling with the trauma of the volcanic eruption in 2023. She struggles with feelings of helplessness and anxiety, which affect her relationships with other children and her ability to learn in school. Maria's parents have worked tirelessly to rebuild their home and find alternative sources of food and income for the community, but now a devastating earthquake strikes the region, destroying most of the housing stock and public buildings and leaving few roads intact. Maria, who was at school then, became stuck in the rubble as her school crumbled around her. After almost twenty-four hours in pain, alone, and in fear, she was rescued by a team from the national Red Cross and sent to an emergency shelter

She tried to find her parents, but learned they were still trapped in the rubble of the Parish of San José (5). When the rubble was finally cleared, Maria looked on in horror as her mother's remains were carried away. Back at the emergency shelter, Maria found herself unprotected and was sexually assaulted by a Ladino boy (6). The earthquake, coming so soon after the devastation of the volcanic outburst, had a devastating impact on the life of children like Maria. She not only had her education disrupted but also struggled without access to basic supplies like food, and water. Unable to obtain an abortion, which is illegal in Guatemala, she is now pregnant with a baby whose father is unknown (7).

2033

Maria is now seventeen, and has been reunited with her father. Her daughter Esperanza is now four years old. Having found out about the sexual violence Maria and other children in the Mayan Pride community experienced, her father was outraged. The earthquake had destroyed much of the country's farmland, leading to years of unemployment and poverty, and humanitarian aid was scarce. The economic scarcity led to a violent armed ethnic conflict between the Mayans and the Ladinos, who were not treated by the government after the disaster. Maria's father, fueled by the community's anger and his own desire for revenge for what happened to his daughter, was one of the main leaders of the demonstrations, calling for justice for the Mayans. As tensions between Mayans and Ladinos in entire Central America

escalated, a new wave of violence and repression swept the country. Mayans and Ladinos clashed in the streets, and the government's response was increasingly heavy-handed, using military force to suppress the Mayan pride movement and its supporters. This outburst of inter-communal violence, compounded by governmental repression, led to the death of tens of thousands, some directly by violence, others from endemic diseases and famine. The devastation made farming impossible, and gangs controlled the remaining food supplies. Maria's father was rounded up by the Civil Defense Patrols and never seen again (8). Maria and her child joined a Mayan rebel movement and fled with them to the inhospitable Darien gap.



EXPLANATORY NOTES & HYPERLINKS

1. The CNN article highlights the struggles of children in Guatemala, including those from indigenous communities, to access education and nutrition, giving context to Maria's upbringing.

<https://www.cnn.com/2023/03/17/world/guatemala-library-children-education-nutrition-cnnheroes/index.html>

2. The PBS article provides a timeline of the civil war in Guatemala, which is relevant to Maria's parents' shared passion for indigenous rights and their meeting at a memorial for those killed during the conflict.

<https://www.pbs.org/newshour/health/latin-america-jan-june11-timeline-03-07>

3. The UNESCO World Heritage Site listing provides historical and cultural context for Antigua, the city where in the story Maria's parents worked as guides.

<https://whc.unesco.org/en/list/65>

4. The Smithsonian Magazine article provides information about the volcanic eruption in Guatemala, which destroyed Antigua and left many families.

<https://www.smithsonianmag.com/smart-news/five-things-know-about-eruption-guatemala-180969233/>

5. The GCatholic article provides information about the Parish of San José, which is used as a reference to Maria's mother being trapped in the 2028 earthquake.

<http://www.gcatholic.org/churches/data/whsGT.htm>

6. The New Humanitarian article highlights the issue of gender-based violence in Guatemala, including sexual assault.

<https://www.thenewhumanitarian.org/news-feature/2023/03/15/child-shelter-justice-guatemala-gbv>

7. The New York Times article discusses the illegality of abortion in Guatemala, which in the story prevents Maria from accessing the medical care she needed after becoming pregnant.

<https://www.nytimes.com/2022/03/15/world/americas/guatemala-abortion-law.html>

8. The Insight Crime article provides context about organized crime and violence in Guatemala. In the story, the criminal context led to the disappearance of Maria's father and her eventual flight with a Mayan rebel group.

<https://insightcrime.org/guatemala-organized-crime-news/guatemalal#:~:text=Transporting%20illegal%20drugs%20north%20comprises,crimes%20and%20other%20illegal%20enterprises>

GUATEMALA: LORENZO

2023

Lorenzo, a five-year-old boy, lives in Tansha, a small village in Guatemala. The village is home to 250 other Indigenous Mayan communities living in the eastern mountainous region of Chiquimula. Like many of the other children in his community, Lorenzo suffers from chronic malnourishment, as his mom is only able to provide an unbalanced diet of beans and fried eggs (1). One day, Lorenzo, his brother, and friends hear a loud rumbling noise from the nearby volcano. They look up and see smoke and ash rising into the sky. As they flee, they see the devastating effects of the eruption all around them – destroyed ho-

mes, farms, and trees. The air was thick with smoke and toxic fumes. After walking for hours, they reach a temporary shelter set up by relief workers, and receive basic supplies such as food, water, and medical aid. As the aid workers moved on, Lorenzo and his family struggled to survive in the cramped conditions of the shelter, where disease and malnutrition were rampant. Lorenzo's health worsened, and he became weak and lethargic. His mother tried to feed him and his brother as much as possible, but the limited supply of food led to his brother's death.

2028

Lorenzo is now ten years old. The temporary shelter closed, and Lorenzo's family returned to Tansha. When they arrived, they found that their village was unrecognizable. The once-lush fields and forests were now blackened in ash and debris, and the few remaining homes were severely damaged. Lorenzo's family had lost everything, and they had to start from scratch (2). As they began rebuilding their lives, a 7.5 magnitude earthquake hit Guatemala (3). The earthquake caused a major landslide, burying half the village, killing

twenty-five thousand people, and leaving more than one million homeless. Lorenzo lost his mother, his friends, and his house. He found himself alone, trapped in the village with no way to leave. With roads to the rest of the country blocked by rubble, the few survivors of his village soon began to run low on food and supplies. Afraid of facing hunger again, Lorenzo and the other villagers had no choice but to leave Tansha on foot and look for shelter on the outskirts of Guatemala City.

2033

Lorenzo is now fifteen. The volcanic eruption and the earthquake destroyed much of the country's agricultural land, leading to years of cyclical unemployment and poverty. This context fanned the flames of a civil war insurgency between the Mayans and the Ladinos. One day, Lorenzo was approached by a group of Mayan insurgents recruiting young men to join their cause. At first, Lorenzo was hesitant, but because he had lost everything and had no family to provide him with money or food, he joined their clan as a "transportista," or transporter (4). Meanwhile, Lorenzo was quickly drawn to the cause of the Mayan insurgents, trained in guerrilla warfare, and sent out to the front lines of the conflict. As the Mayan insurgency escalated into a full-

fledged regional war, Lorenzo rapidly became a prominent leader of his paramilitary unit, and became involved in the drug trade to finance the unit's operations. This brought on a conflict with competing Colombian gangs. At this stage, the entire Central American region had become a cauldron of violence, disease, and climatic deterioration. The devastation made farming impossible, and gangs controlled the remaining food supplies. In an effort to move a supply of cocaine across the Guatemalan border, Lorenzo was captured by his Colombian rivals and found himself enchained as a slave, forced to harvest cocaine leaves. No governmental agency or international organization came to his help.



EXPLANATORY NOTES & HYPERLINKS

1. The New Humanitarian article is relevant to Lorenzo's story as it highlights the chronic malnourishment faced by children in Indigenous Mayan communities in Guatemala.

<https://www.thenewhumanitarian.org/news-feature/2021/7/15/how-covid-19-and-climate-shocks-are-hurting-childrens-health-in-guatemala>

The Human Rights Watch report sheds light on the Childrens rights violations that were happening in Guatemala during Lorenzo's lifetime.

<https://www.hrw.org/world-report/2023/country-chapters/guatemala#:~:text=Harassment%20and%20violence%20against%20journalists,and%20migrants%20remain%20major%20concerns>

2. The New Humanitarian article provides information about the devastating effects of climate shocks and other disasters, such as volcanic eruptions and earthquakes, on communities in Guatemala.

<https://www.thenewhumanitarian.org/news-feature/2021/7/15/how-covid-19-and-climate-shocks-are-hurting-childrens-health-in-guatemala>

3. The worlddata.info article is relevant as it shows the occurrence of a 7.5 magnitude earthquake that happened in Guatemala. The event is used as a real example of a major event that affected Lorenzo's life in the story.

<https://www.worlddata.info/america/guatemala/earthquakes.php>

LAO PDR: KINA

2023

Kina is a 5-year-old Laotian girl, part of the Mon-Khmer minority group, living on a remote part of the Bolaven Plateau in Salavan province bordering the Mekong River in the South of Lao PDR (1). Arabica coffee is a key export product of the Bolaven Plateau, and Kina's parents make their living by cultivating coffee beans (2). Governance in Kina's village is extremely weak. Because of poor road networks and lack of access to remote areas, major infrastructure such as the Mekong River dam is not well managed or maintained (3). Furthermore, in a vacuum of any type of formal government enforcement, there has been an increase in the activities of local militias and gangs vying for control of the opium poppy trade (4). These groups have started to increase their membership by conscripting local children. While Kina's pare-

nts are uneducated, they believe that schooling is an important way to secure a better future for all of their children. Therefore, Kina's brothers only work part-time harvesting and processing coffee beans when they are not attending a local school (5). Kina's parents want to start sending her to school too, and since coffee production is too dangerous for her, she stays home and helps her mother with household chores until the school session begins. A local gang has conscripted all of the able-bodied boys from local schools, including Kina's two older brothers. Kina now has to take over her brothers' coffee harvesting and processing responsibilities full time so her family can secure their livelihood. Kina and her parents' dreams of education and a better future slips away.

2028

Kina is now ten years old, and her home is deteriorating from erratically changing precipitation patterns that bring on severe monsoon-like rains. A saddle dam built to protect the areas bordering the Mekong river from catastrophic floods is breached (6). Kina's home in the Mekong River basin is washed away and her father dies. Kina and her mother, as well as thousands of other families in her area are displaced. A humanitarian organization evacuates them to

a higher-ground area in central Lao PDR in the mountainous Xaisomboun province. Having lost their livelihood harvesting and processing coffee beans, Kina and her mother have to adapt to their new environment. They begin to raise chickens for eggs and livestock, a predominantly female occupation (7). They decide to settle into this new environment, as it seems that going back to their old life is not possible in the foreseeable future.

2033

15-year-old Kina and her mother have settled into a remote and rural area in Xaisomboun province. Like many of the locals, they are heavily involved in the poultry industry, producing chickens and eggs. A new strain of avian influenza is introduced by wild fowl intermixing with their chickens (8). Furthermore, the flu becomes airborne and contagious to humans. Local healthcare is practically non-existent, as there are not enough well-trained healthcare workers in remote rural areas like the one where Kina

her mother now reside (9). Kina's mother is in close contact with the infected chickens, and soon contracts the avian flu herself. Without access to healthcare, her condition quickly worsens, and she dies, leaving Kina orphaned. This strain of avian flu is particularly fatal to chickens, causing Kina and other locals' poultry to die. Uncontrolled and unaddressed by the weak healthcare and government disease control systems, this strain spreads throughout the country and the region through poultry and livestock exports.



EXPLANATORY NOTES & HYPERLINKS

1. The largest ethnic group on the plateau is the Laven (Bolaven means 'Home of the Laven'). Several other Mon-Khmer ethnic groups, including the Alak, Katu, Tahoy and Suay, also live on the plateau and its escarpment.

<https://books.google.com/books?id=jm4GBvwaF50C&pg=PA255>

2. Arabica coffee is a key export product of the Bolaven Plateau.

<https://laolandinfo.org/en/salavan-province/>

3. Due to poor road networks and little access to reach and service infrastructure such as the Mekong River dam is not well managed or up-kept.

<https://www.theguardian.com/sustainable-business/2015/may/06/dams-hydropower-mekong-river-thailand-laos-don-sahong-xayaburi>

4.. Opium from Lao PDR is an essential part of the larger regional transnational crime economy, with heroin produced in, and trafficked from, the Golden Triangle earning billions of dollars annually for organized crime and groups that challenge peace and stability.

[*Opium Poppy Cultivation in the Golden Triangle. \(2006\).*](#)

5. Laotian workers may suffer from accidents and diseases due to heavy lifting, unsafe use of machinery, snake and insect bites, and exposure to pesticides associated with coffee harvesting.

https://www.ilo.org/asia/media-centre/news/WCMS_843931/lang--en/index.htm

6. Sudden breaching of a saddle dam on July 23, 2018, on the perimeter of the Xe Nammoy hydroelectric-power reservoir, recently constructed in the Mekong basin, southern Laos, caused catastrophic flooding. The dam breach is consistent with engineering failure and poor assessment of hazards.

<https://doi.org/10.1016/J.GEOMORPH.2020.107221>

7. Poultry farming is common in Xaisomboun province as a main way for ethnic farmers to generate income. Women commonly have more contact over the rearing process.

Burgos, S., Otte, J., & Roland-Holst, D. (n.d.). Poultry, HPAI and Livelihoods in Lao People's Democratic Republic-A Review.

8. Lao PDR has relatively large knowledge gaps in respiratory tract infection diagnosis and management.

<https://doi.org/10.3201/EID1307.061197>

9. There is a shortage of employed health workers and lack of well trained staff in remote and rural areas of Lao PDR, in 2014, there were 0.6 health workers per 1000 population. According to the Service Availability and Readiness Assessment, only 60% of health centers in the Lao PDR are ready to provide basic health services to the population. Lack of basic amenities, limited diagnostic capacity and absence of essential medicines are the key reasons.

<https://apps.who.int/iris/handle/10665/274721>

Local healthcare is practically non-existent, as there are not enough well-trained healthcare workers in remote rural areas.

<https://apps.who.int/iris/handle/10665/207762>

LAO PDR: KOA

2023

Koa is a 8-year-old Laotian boy, part of the Lao Loum (Lowland Lao) group in a rural area in the outskirts of the Savannakhet province near the Mekong River in the south of Lao PDR (1). Many areas in the province are pervaded by unexploded ordnance, which continues to threaten lives (2). Governance in Koa's village is extremely weak and development has been limited by the high costs of expanding infrastructure and the danger caused by landmines. The lack of access to remote areas means that major infrastructure such as the Mekong River dam is not well managed or maintained (3). Koa's village does not have a school or roads, so he goes to school in a neighboring area (4). Both his parents cultivate a small rice paddy for their livelihood, so Koa walks unaccompanied.

unaccompanied a great distance to get to and from school during the week. He assists his family with rice cultivation when he is not in school (5). On his way to school one day, Koa is injured by an explosion which leaves him alive, but physically disabled. Local healthcare is practically non-existent, as there are not enough well-trained healthcare workers in remote rural areas like the one where Koa and his family reside (6). Koa, who has lost one of his legs due to inadequate medical services, is no longer able to cover the great distance to his school on foot, so he stops attending. Furthermore he is unable to help in the rice paddy. Koa and his parents' face difficulties with adapting to Koa's new condition and they struggle with their livelihood on the rice paddy.

2028

Koa is now 13 years old, and his home is suffering from erratically changing precipitation patterns that bring on severe monsoon-like rains. A saddle dam built to protect the areas bordering the Mekong river from catastrophic floods is breached (7). Koa's home in the Mekong River basin is washed away and their family's rice paddy is destroyed. Koa's family, as well as thousands of others in her area are displaced. A major area of rice cultivation for the country and region is wiped out (8). A humanitarian organization evacuates them to higher ground

in central Lao PDR in the mountainous Xaisomboun province. Having lost their livelihood cultivating rice, Koa and his family have to adapt to their new environment. They begin to raise chickens for eggs and for livestock. Koa is able to manage the responsibilities of rearing the chickens, and he takes on this task so that his mother can help contribute to the family's livelihood in other ways (9). His family decides to settle into this new environment and they see positive aspects of their new life, particularly for Koa.

2033

18-year-old Koa and his family have settled into a remote and rural area in Xaisomboun province. Like many of the locals, they are heavily involved in the poultry industry, producing chickens and eggs. A new strain of avian influenza is introduced by wild fowl intermixing with their chickens (10). Furthermore, the flu becomes airborne and contagious to humans. Koa becomes infected as he is in close contact with their chickens.

He experiences severe respiratory and diarrheal symptoms (11). Without access to healthcare facilities and unable to reach a doctor, Koa dies. This strain of avian flu is particularly fatal to chickens, causing Koa's and other locals' poultry to die. Uncontrolled and unaddressed by weak healthcare and government disease control systems, this strain spreads throughout the country and the region through poultry and livestock exports.



EXPLANATORY NOTES & HYPERLINKS

1. The Lao Loum, literally meaning 'lowland Lao', are the inhabitants of the river valleys and lowlands along the Mekong River and make up over 68% of the population of Laos, of whom half are of the Lao ethnic group.

<https://web.archive.org/web/20131026015347/http://laotourism.org/savannakhet.htm>

2. Development has been limited by the high costs of expanding infrastructure and the danger caused by landmines.

<https://www.csis.org/analysis/opportunities-us-development-cooperation-laos>

3. Due to poor road networks and little access to reach and service infrastructure such as the Mekong River dam is not well managed or up-kept.

<https://www.theguardian.com/sustainable-business/2015/may/06/dams-hydropower-mekong-river-thailand-laos-don-sahong-xayaburi>

4. The poorest children and those who live in remote rural areas in Lao PDR are often the hardest and costliest to reach.

[*Schooling, Poverty, and Disadvantage in the Lao People's Democratic Republic.*](#)

5. Lao PDR has a high reliance on natural resources and more than 60% of laborers are employed in the agriculture sector, which contributes 16% of GDP.

www.ucw-project.org

6. There is a shortage of employed health workers and lack of well trained staff in remote and rural areas of Lao PDR, in 2014, there were 0.6 health workers per 1000 population. According to the Service Availability and Readiness Assessment, only 60% of health centers in the Lao PDR are ready to provide basic health services to the population. Lack of basic amenities, limited diagnostic capacity and absence of essential medicines are the key reasons.

<https://apps.who.int/iris/handle/10665/274721>

Local healthcare is practically non-existent, as there are not enough well-trained healthcare workers in remote rural areas.

<https://apps.who.int/iris/handle/10665/207762>

7. Sudden breaching of a saddle dam on July 23, 2018, on the perimeter of the Xe Nammoy hydroelectric-power reservoir, recently constructed in the Mekong basin, southern Laos, caused catastrophic flooding. The dam breach is consistent with engineering failure and poor assessment of hazards.

<https://doi.org/10.1016/J.GEOMORPH.2020.107221>

8. Around 80% of the population are involved in some form of agriculture. Savannakhet province is a major area of rice cultivation for the country and region.

[https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Laos%20Rice%20Report%20Annual Bangkok Laos 06-08-2020](https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Laos%20Rice%20Report%20Annual%20Bangkok%20Laos%2006-08-2020)

9. Poultry farming is common in Xaisomboun province as a main way for ethnic farmers to generate income.

[*Poultry, HPAI and Livelihoods in Lao People's Democratic Republic-A Review.*](#)

10. Lao PDR has relatively large knowledge gaps in respiratory tract infection diagnosis and management.

<https://doi.org/10.3201/EID1307.061197>

11. Symptoms of avian influenza include severe respiratory and diarrheal symptoms. The main cause of hospital mortality was acute respiratory infection (ARI) which was responsible for the highest number of deaths (113 cases), among which 49% (55 cases) occurred in children under the age of five AND the 2nd most common cause of mortality in hospitals was diarrhea (50% of these cases were also in children under five).

<https://onlinelibrary.wiley.com/doi/full/10.1002/jmv.27004>

PAKISTAN: ISHAN

2023

In a rural area of Pakistan, there lived a five-year-old boy named Ishan. He had two older brothers and two older sisters. His parents made their living tending the crops on a nearby farm. Although Ali's family was Hindu ethnicities, his family was proud to be Pakistanis. Ishan loved to follow his parents around as they worked, fascinated by the plants and animals surrounding him. In the year 2023, a severe water shortage struck the area, leaving Ali's family without any source of income (1). With the crops withering and dying, his parents were forced to find alternative sources of employment to support their family. Ali's father, Muhammad, had heard about job opportunities in the city and

decided to migrate with the entire family to find work (2). Although he was able to find a job, his salary was not enough to feed the family, so Ali's older brothers decided to leave school and emigrate to the United Kingdom to look for work (3). They were able to find jobs and send money back home to his family (4). Finances were still tight, so Ali's mother Fatima also started working as a housemaid. Ali's oldest sister Noor had just graduated elementary school, but with her mother working, Noor decided not to enroll in secondary school so that she could take on the responsibility of caring for Ishan and her other sister (5).

2028

Ishan was able to attend school thanks to his brothers' financial support and his two older sisters left the family after their respective marriages. Now alone, he worked hard and excelled in his studies, knowing that education was his ticket to a better life. His parents were saving money for him to enroll in college someday, so he could get a well-paid job and help the family. Meanwhile, political tensions in neighboring countries caused an influx of migrants, and anti-immigrant sentiment grew. In India, political polarization caused many Muslims to flee to Pakistan (6). As a result, urban areas in Pakistan saw a rapid increase in population. Unfortunately, insufficient urban

planning and delayed infrastructure development led to a lack of access to basic public services in some urban areas (7). In addition inflation got worse in the cities, and Muhammad lost his job (8). Muhammad was not the only one who was affected by this issue, and this rapidly growing unemployment rate led to frustration among the local population. Some people in Pakistan started blaming migrants for these issues, and a fringe anti-migrant political party gained popularity, leading to an unprecedented increase in hate crimes against perceived migrants.

2033

In 2033, an extreme anti-migrant political party won the election in Pakistan, and their policies raised serious human rights concerns. Despite the recommendation of the international community to take immediate action in securing the rights of migrants and minorities, the new government refused to comply. As a result, the United Nations imposed economic sanctions on the country, targeting the individuals responsible for the government's actions. While the sanctions were targeted to avoid any impact on the humanitarian sector, the legal restrictions on the activities of commercial banks meant that Ali's family was unable to receive remittances from his broth-

ers living abroad (9). Eventually the domestic banking system was suspended, which prevented people from withdrawing their savings (10). Ali, who had always dreamed of enrolling in college after graduating from secondary school, was unable to do so due to the lack of money caused by the economic sanctions. In addition, due to his ethical status, discrimination against Ishani and his family was getting worse even though Ishan has spent his entire life as a Pakistani. His parents refused to get medical services and Ishan cannot find a single job to earn money for his life (11).



EXPLANATORY NOTES & HYPERLINKS

1. 322% of internal freshwater resources were withdrawn annually in 2019.

<https://data.worldbank.org/country/pakistan>

2. Internal migration in Pakistan is usually undertaken by low-skilled workers who move from the rural mountain districts to urban areas.

<https://dtm.iom.int/sites/g/files/tmzbd11461/files/reports/Pakistan%20Migration%20Snapshot%20Final.pdf>

3. According to the World Bank, the completion rate of lower secondary education still remains 49% in 2019.

<https://data.worldbank.org/country/pakistan>

4. According to the World Bank, the total remittance received in 2021 was 31.3 billion USD, which counts for up to 9% of the country's GDP (2021).

<https://data.worldbank.org/country/pakistan>

5. According to the World Bank, the gender parity index (GPI) for school enrollment of primary and secondary (gross) was 0.88 in 2019.

<https://data.worldbank.org/country/pakistan>

6. Pakistan's Prime Minister Imran Khan showed deep concern about India's new citizenship law implemented in 2019, that millions of Muslims living in India would be forced to leave as a result of the law. Additionally, the ongoing curfew in Indian-administered Kashmir – will create “a refugee crisis that would dwarf other crises”.

<https://www.aljazeera.com/news/2019/12/17/millions-of-muslim-refugees-could-flee-india-pakistan-pm-khan>

7. As Islamabad is one of the most urbanized cities in South Asia, experts point out that the urban planning is poorly done, leaving issues on housing, sanitation, health and etc.

<https://www.theigc.org/blogs/six-biggest-challenges-facing-pakistans-urban-future>

8. According to the World Bank, only 36% of the population are using safely managed drinking water services in 2020.

<https://data.worldbank.org/country/pakistan>

9. Reference to the Afghanistan case in 2021.

<https://www.voanews.com/a/afghanistan-remittances-fall-as-poverty-threatens-lives-/6711994.html>

10. <https://www.voanews.com/a/afghanistan-remittances-fall-as-poverty-threatens-lives-/6711994.html>

11. <https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=PK>

PAKISTAN: KAREM

2023

Karem was raised in a loving family in Islamabad, Pakistan, where her father worked as a public servant for the government (1). With three siblings by her side, Karem's childhood was filled with pride in her father's important work, and she dreamt of serving her country as well. Her parents recognized the value of education and ensured all their children did well in school. However, Pakistan's water scarcity problem, previously predicted, became more evident in urban ar-

reas, increasingly limiting access to clean water (2). School closures were frequent due to the shortage of water for students' meals and sanitation facilities. Despite these challenges, Karem continued her studies at home and helped her family access fresh water. Her perseverance exemplifies the strength and dedication of many young Pakistanis working to overcome their country's difficulties.

2028

Pakistan faced numerous economic challenges in the wake of a depression and high inflation, and public services began to feel the strain. Meanwhile, there was a large influx of refugees and migrants due to political tensions in surrounding countries. The IMF was among the institutions to offer assistance, but it made its loans conditional on the government making painful cuts to public service expenses (3). Unfortunately, rapid population growth in urban areas worsened the situation, as insufficient urban planning

and delayed infrastructure development led to a further deterioration of basic public services. Karem's family was not immune to the impact of these challenges. As a result of the IMF's reforms, her father lost his job, and Karem and her siblings were no longer able to continue their studies. To make matters worse, some people in Pakistan began to blame the migrants for these issues, and a fringe anti-migrant political party gained popularity, exacerbating an already complex and difficult situation.

2033

Karem married at the age of 18, but the fact that she lost her first baby due to poor sanitation highlights the challenges of basic living conditions in Pakistan. However, she remained resilient and was blessed with another child who survived (4). Sadly, the situation in Pakistan deteriorated further in 2033, when an extremist anti-migrant political party won the election and came to power. Their new policies led to rampant abuses of human rights. Despite international pressure, the government failed to take action, leading to economic sanctions imposed by the United

Nations Security Council. While the sanctions were targeted to avoid any impact on the humanitarian sector, they inevitably affected the economy and the lives of ordinary people like Karem and her family. Access to basic health services, food, and sanitation facilities posed a significant challenge for Karem's new family, which was already struggling with financial instability. They became unable to procure sufficient basic nutrition and hygiene for Karem's baby, who became malnourished and stunted (5).



EXPLANATORY NOTES & HYPERLINKS

1. Public servants receive more than average salary of the country.

<https://tribune.com.pk/story/2364468/5-ad-hoc-allowances-made-part-of-civil-servants-basic-pay>

2. In addition to water shortage due to a lack of resource management agreement between Pakistan and India, urban population growth is accelerating the shortage situation.

<https://www.cda.gov.pk/projects/waterSupply.asp#:~:text=Scarcity%20of%20water%20especially%20the,year%20aggravating%20the%20water%20shortage>

3. Due to its economic situation, Pakistan accepted support from IMF, with strict conditions.

<https://www.voanews.com/a/pakistan-will-unwillingly-accept-strict-conditions-of-imf-deal-pm-says-16978540.html>

4. According to the World Bank, Pakistan has a high mortality rate for children under age 5.

<https://data.worldbank.org/indicator/SH.DYN.MORT?locations=PK>

5. “By reducing resources available for public investment, sanctions can have an effect comparable to conflict on the ability of individuals to lead healthy lives, including children”.

<https://www.unicef.org/globalinsight/medial/2531/file/%20UNICEF-Global-Insight-Sanctions-and-Children-2022.pdf>

YEMEN: SAFWAN

2023

Safwan is an eight-year-old Yemeni boy from the hinterlands of Sana'a. He is a member of a tribe which has been attacked by Houthi rebels for resisting their demands to surrender their land (1). His family lives on less than \$2/day which his father earns in freelance construction (2). Their nutrition is supplemented by international humanitarian aid, but they are perpetually on the verge of hunger (3). The explosion of the Safer tanker has a devastating impact on their lives. As the Red Sea is flooded with 1,000,000 barrels of oil, a fire rages, degrading the quality of the air around them (4). Safwan's father suffers from emphysema and cannot go outside to work. In addition, the ports of Al-Hodayda and Salif are now inaccessible to humanitarian aid (5). A small amount of relief is airlifted by the inter-

national community, but the missions are dangerous and the supply of food slows to a trickle. Since all humanitarian aid is distributed to tribes which support the Houthis, Safwan's tribe is deprived of aid, and the price of grain skyrockets. The community can no longer resist the Houthis demands and decides to surrender their land. However due to their prior resistance, this does not assuage the Houthi authorities, who proceed to expel most of the village, including Safwan's family (6). The family is forced to migrate with their entire community further inland over dusty roads in the hope of reaching Yemeni government territory. Of the 10,000 who leave, only 5,000 survive the journey, and Safwan's father is not among them.

2028

Five years later, Saudi-Iranian talks have foundered, and war has returned to Yemen. Government forces are attempting to blockade Houthi territories and in their desperation have turned to irregular Saudi militia for assistance (7). Among their number are hardened jihadists willing to go to extreme lengths to turn the conflict into a religious war against the mostly Shiite Houthis. Safwan has been forced into a paramilitary camp for children. The jihadis have integrated ideological indoctrination into Safwan's military training (8). Saudi leader MBS's increasingly despotic and capricious rule has left him with very few allies, and unrest has been spreading throughout the Kingdom. The Saudi-Israeli security alliance has devastated MBS's popularity, and sympathy for the Palestinian

cause leads to rage at MBS's abandonment of it. There are rumblings of revolution throughout Saudi Arabia as the religious authorities contemplate abrogating their close relationship to the crown. The US is desperate to preserve the monarchy so as not to jeopardize its oil supply, and therefore refuses to do anything about the increasingly brutal war in Yemen. The UN is unable to act, due to the refusal of China and Russia to countenance international pressure on Iran. Heavy fighting in Southern Yemen strikes Safwan's camp, and he is severely injured, losing a leg to a Houthi mortar shell. The Houthi's propaganda minister announces the attack as a "successful operation against a terrorist base."

2033

Climate change has dramatically increased temperature throughout lowland Yemen. The summer average high temperature in Aden has risen from 98F in 2023 to 104F in 2033 causing Yemen's water supply to disappear (9). The few remaining crops have failed, and international aid has become so dangerous that efforts to relieve Yemen's misery have dwindled. While the war has slowed down as fewer and fewer resources are at stake, widespread famine kills over 1,000,000 people, and millions more attempt to flee the

country. The entire Arabian peninsula is becoming less and less habitable, and many Yemenis board makeshift rafts to try to reach Somaliland, which is known as an outpost of relative stability (10). Safwan and his mother offer themselves as slaves to human traffickers in exchange for transport to Somaliland. When a Saudi patrol appears in the Red Sea, the captain advises the crew to get rid of the Yemenis, and Safwan and his mother are cast into the Sea (11).



EXPLANATORY NOTES & HYPERLINKS

1. While individual tribes remain mostly neutral in Yemen's civil war, and generally accommodate themselves to whichever government is in control of their land, conflict with local commanders based on tribal principles of honor can lead to violence and expulsion.

<https://www.acaps.org/special-report/yemen-introduction-tribal-system>.

2. Yemen's economy has contracted by over 50% since the onset of the civil war, leaving millions in extreme poverty.

<https://digitallibrary.un.org/record/3983337>.

3. Over 80% of Yemenis depend on international humanitarian aid for their nutritional needs.

<https://digitallibrary.un.org/record/3983337>.

4. The Safer tanker could explode at any moment, and the health consequences for Yemen could be disastrous.

<https://www.crisisgroup.org/middle-east-north-africa/gulf-and-arabian-peninsula/yemen/how-avert-imminent-disaster-yemens-red-sea-coast>.

5. <https://doi.org/10.1038/S41893-021-00774-8>.

6. The Houthi government has applied brutal pressure on Yemen's tribes, extorting concessions and seizing resources. Middle East Institute.

<https://www.mei.edu/blog/yemens-tribes-face-houthis-all-alone>.

7. Saudi Arabia has been the chief international sponsor of the RGOY, leading a coalition of Arab states in opposition to the Iran-backed Shi'ite Houthis.

<https://cfcr.org/global-conflict-tracker/conflict/war-yemen>.

8. Children have been forced into military roles on both sides of the conflict.

<https://www.dw.com/en/underage-martyrs-recruiting-child-soldiers-in-yemen/a-58203651>.

9. Yemen is already in danger of running out of water. Climate change could substantially worsen Yemen's plight, as temperatures rise and fresh water becomes more scarce.

[//www.unodc.org/unodc/en/piracy/GARS.html](http://www.unodc.org/unodc/en/piracy/GARS.html).

10. Traditionally Yemen has been a destination for Somali migrants fleeing conflict, but recently with the desperate conditions in Yemen, reverse migration from Yemen to Somalia has become more common.

https://www.voanews.com/a/extremism-watch_yemen-unrest-makes-somalia-unlikely-safe-haven-refugees/6181089.html

11. The seas surrounding Yemen, especially the gulf of Aden, are extremely dangerous. Smugglers and pirates prowl the waters, playing cat and mouse with the surrounding navies who patrol the waters.

[//www.unodc.org/unodc/en/piracy/GARS.html](http://www.unodc.org/unodc/en/piracy/GARS.html).

YEMEN: MARYAM

2023

Maryam is a 7-year old Somali immigrant to Yemen. With the chaos brought about by the civil war, her family thought it would be a good time to migrate to Yemen in the hope of reaching Saudi Arabia, where they have heard that even menial workers can make good money. They cross from Boosasso and arrive at Aden where they are taken in by a Somali family, where they join 13 other Somalis in a two-room apartment. Her father finds work with a fishing crew protected by their local fishing village. One week after their arrival, the Safer tanker explodes, which has a devastating impact on their lives. The Red Sea is flooded with 1,000,000 barrels of oil, which soon begins to seep into the Gulf of

Aden, destroying marine life and making fishing impossible. The Somalis hosting Maryam's family, along with many other coastal families are forced to leave their homes behind and begin to migrate to other areas. They flee northward in the direction of Saudi Arabia by an eastern route in order to avoid Houthi territory. They hope to reach the oil fields of Tarib, but on the way they are rounded up by qat farmers in the vicinity of Ad-Dhali and forced to work in the fields cultivating the popular narcotic, living in a shack with 23 other Somali families (1). Maryam's mother is pregnant, and delivers her baby without medical assistance. The baby survives but Maryam's mother does not.

2028

Five years later Saudi-Iranian talks have floundered, and war has returned to Yemen. Ad-Dhali is subject to heavy fighting along the line of control between the Houthis and the Government of Yemen. The geopolitical realities are not conducive to a peaceful settlement. Saudi leader MBS's increasingly despotic and capricious rule has left him with very few allies, and unrest has been spreading throughout the Kingdom (2). The Saudi-Israeli security alliance has devastated MBS's popularity, and sympathy for the Palestinian cause leads to rage at MBS's abandonment of it (3). There are rumblings of revolution throughout Saudi Arabia as the religious authorities contemplate abrogating their close relationship to the crown. The US is desperate to preserve the monarchy so as not to jeop-

ardize its oil supply, and therefore refuses to do anything about the increasingly brutal war in Yemen (4). The UN is unable to act, due to the refusal of China and Russia to countenance international pressure on Iran (5). Maryam and her father are caught by Houthi forces and are forced to return to Aden. They decide to attempt a return to Somalia, and are given a tip which leads them to a human trafficking network. The smugglers separate the child from the father. The father is sent back to the qat farms, while Maryam is sent to a brothel. While Maryam is too young to be used for prostitution, she is forced to perform menial tasks and to serve the prostitutes (mostly other Somali immigrants) and clients (6).

2033

Climate change has dramatically increased temperature throughout lowland Yemen. The summer average high temperature in Aden has risen from 98F in 2023 to 104F in 2033 causing Yemen's water supply to disappear (7). The few remaining crops have failed, and international aid has become so dangerous that efforts to relieve Yemen's misery have dwindled. While the war has slowed down as fewer and fewer resources are at stake, wide-

spread famine kills over 1,000,000 people, and millions more attempt to flee the country. The brothel no longer exists and Maryam is wandering the streets of Aden, wasting away for lack of food and water. By the time she reaches the IOM shelter in Aden it is too late. Like thousands of other stranded migrants, she is dead of starvation by the age of 17.



EXPLANATORY NOTES & HYPERLINKS

1. Qat is a mild narcotic which plays an important role in Yemeni society. Men get together to chew qat in the evenings, during which they may transact business or form alliances. Unfortunately qat farming is heavily water-intensive, and much of Yemen's meager water supply is devoted to the herb, Coffee can be sold abroad and would be much better for the Yemeni economy.

<https://www.undp.org/yemen/publications/qat-and-coffee-value-chain-analysis-yemen>.

Somali immigrants are vulnerable and subject to exploitation.

<https://www.hrw.org/report/2014/05/25/yemens-torture-camps/abuse-migrants-human-traffickers-climate-impunity>.

2. MBS has concentrated power to an unusual degree, shaking up the traditional consensus based ruling style of the Saudi royal family.

<https://www.hrw.org/report/2014/05/25/yemens-torture-camps/abuse-migrants-human-traffickers-climate-impunity>.

3. Saudi Arabia has been edging toward increased cooperation with Israel in their struggle against the mutual menace posed by Iran.

<https://www.hrw.org/report/2014/05/25/yemens-torture-camps/abuse-migrants-human-traffickers-climate-impunity>.

4. The United States has a deep and long-standing relationship with Saudi Arabia going back to the founding of Aramco, the Saudi national oil company.

[http://www.sup.org/books/title/?id=10072.](http://www.sup.org/books/title/?id=10072)

5. China and Russia are assertive in the security council, generally siding with despotic regimes against international interference in their “internal affairs”. They are also keen to constitute a counterweight to the US’s hegemonic stance in foreign relations.

[https://www.cfr.org/backgrounder/china-russia-relationship-xi-putin-taiwan-ukraine.](https://www.cfr.org/backgrounder/china-russia-relationship-xi-putin-taiwan-ukraine)

6. In spite of religious prohibition, prostitution still occurs in Aden, and African immigrants are particularly vulnerable to exploitation.

[https://www.reuters.com/article/us-yemen-somalis-prostitution-idUSTRE61950M20100210.](https://www.reuters.com/article/us-yemen-somalis-prostitution-idUSTRE61950M20100210)

7. The Arabian peninsula, already one of the hottest areas of the world, may be subject to more intense heat trends due to climate change.

[https://doi.org/10.1007/s00382-021-05858-x.](https://doi.org/10.1007/s00382-021-05858-x)

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