



Foresight Project

Introduction

DRC DANISH
REFUGEE
COUNCIL

Content

Background

- Foresight Model
- Use Example: COVID-19 Impact
- Annex

2,5 year partnership with IBM; funding from Danish MFA

Background

- Forced displacement have doubled within the last 20 years with estimated 70.8 million forcibly displaced around the world in 2018.
- A wealth of data is publicly available today. However, humanitarian and development organizations, UN agencies and policy makers alike **face difficulties in effectively using the various datasets and weighing displacement-driving factors** and aggregate them into actual **predictive modeling**
- DRC, with funding from the Danish Ministry of Foreign Affairs, to explore the potential for using predictive analytics in the humanitarian sector

Project Objective

- Incorporating a range of factors for a given country, such as economy, conflict, food security, etc. the project objective is **to build a model that attempts to forecast displacement 1-3 years out in Myanmar and Afghanistan**
- The purpose of the project is **to assist in planning operations by providing a solid evaluation of the risk of displacement in each context**. The weighing of the individual factors will contribute to the knowledge on drivers of forced displacement, which among other things will help DRC in advocacy and planning of activities.
- Knowledge dissemination is an important part of the project and an interface is being constructed which will present the forecast of the built model as well as enabling the analyst to produce alternative scenarios by changing some of the factors. The interface will also allow the analyst to add context-specific analysis to ensure all available knowledge is included.

Content

- Background

Foresight Model

Model

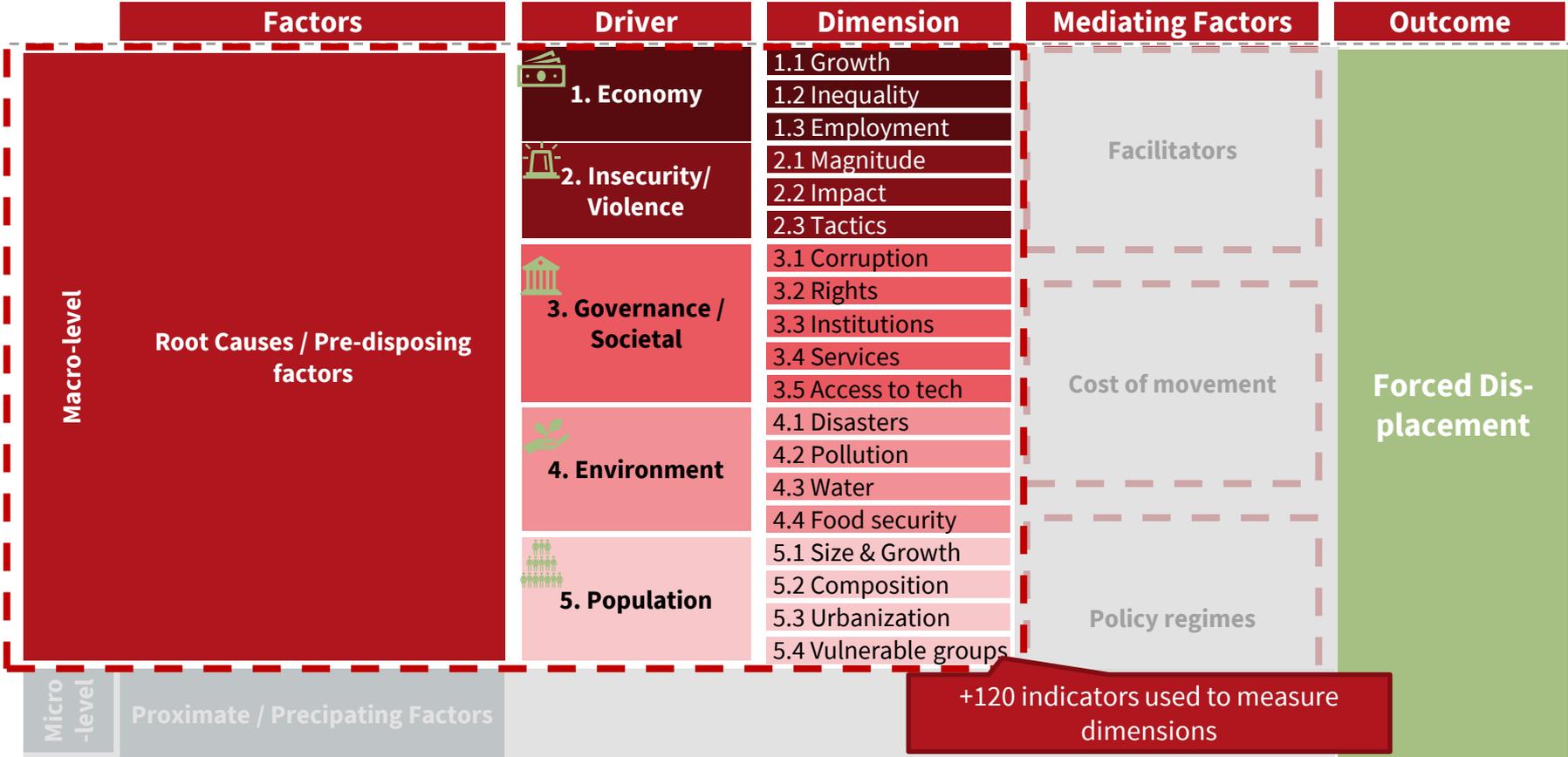
> Outputs

> Use Cases

- Use Example: COVID-19 Impact

- Annex

Framework cover key displ. drivers



Learn historical patterns, model produces three outputs

DATA

UNHCR
The UN Refugee Agency

ACLED

Freedom House

UPPSALA UNIVERSITET

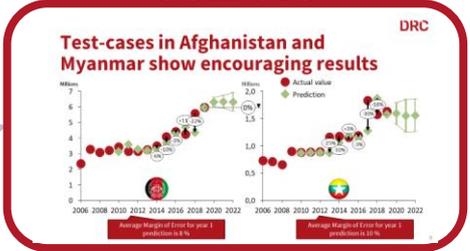
MACHINE LEARNING MODEL & BAYESIAN NETWORK ANALYSIS

DRC DANISH REFUGEE COUNCIL

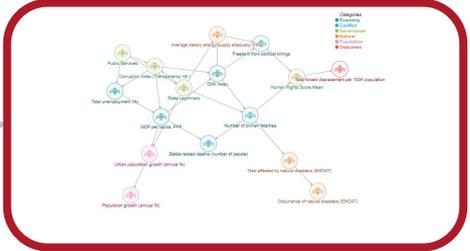
Data on the +120 indicators are all from open sources

Based on 25 years of historical data, the model finds patterns and learn from these to predict future

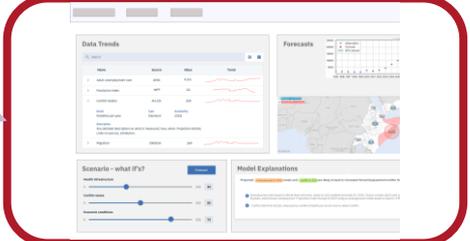
OUTPUTS



Forecasts



Causality



UI

Content

- Background

Foresight Model

> Model

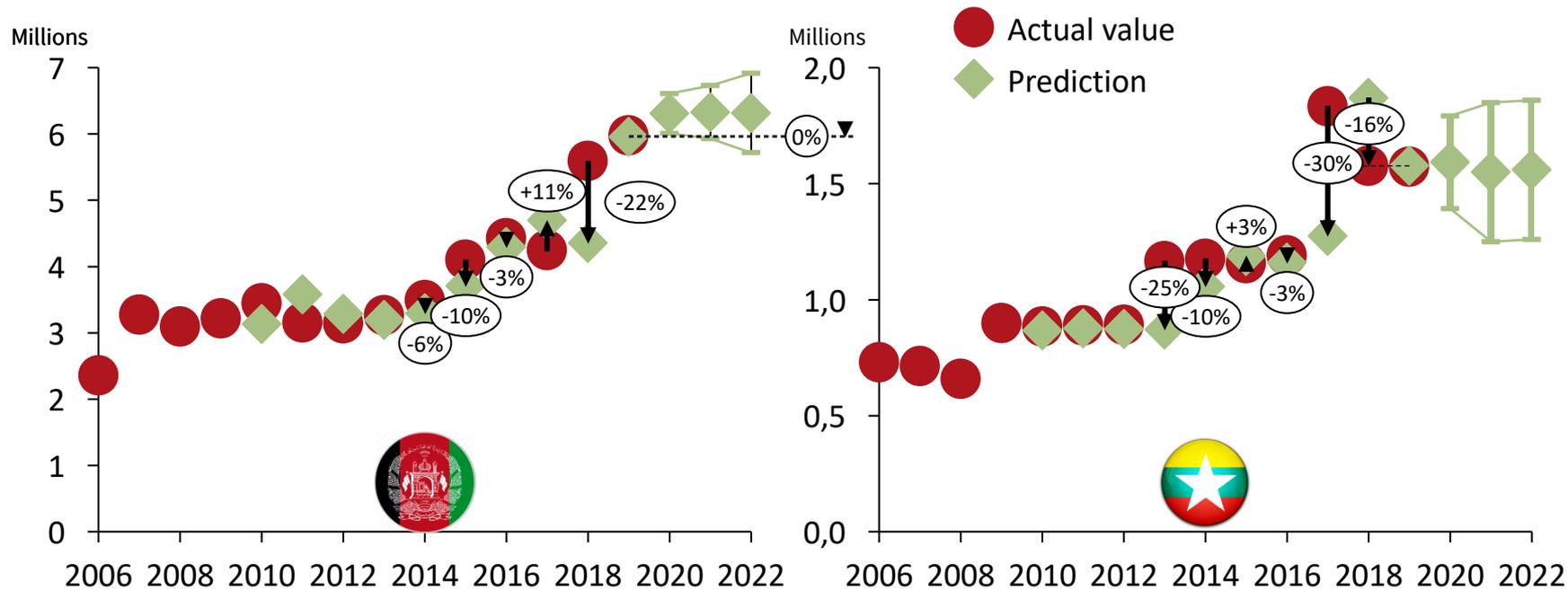
Outputs

> Use Cases

- Use Example: COVID-19 Impact

- Annex

Test-cases in Afghanistan and Myanmar show encouraging results

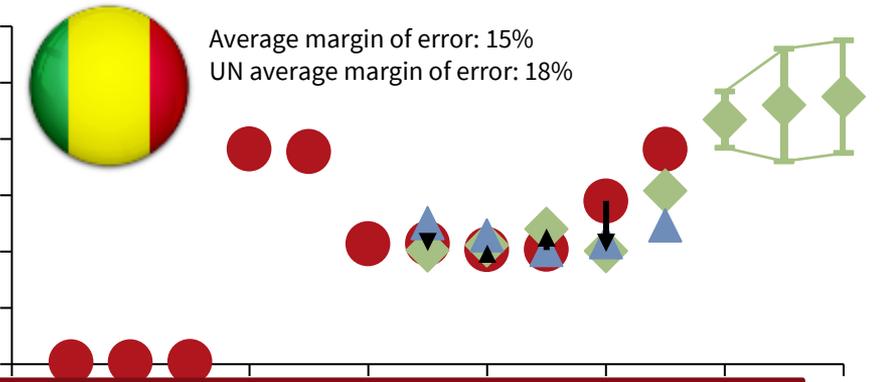
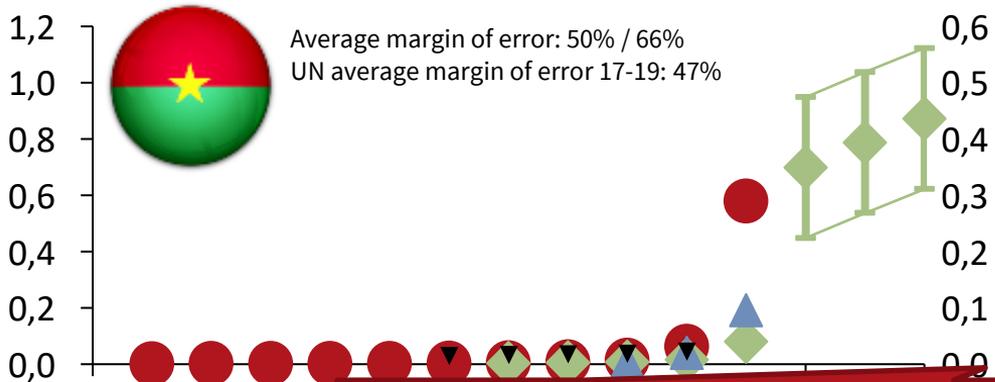
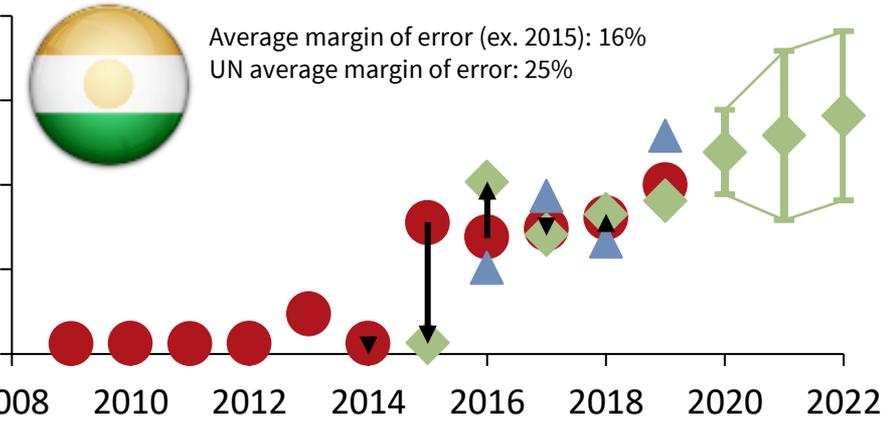
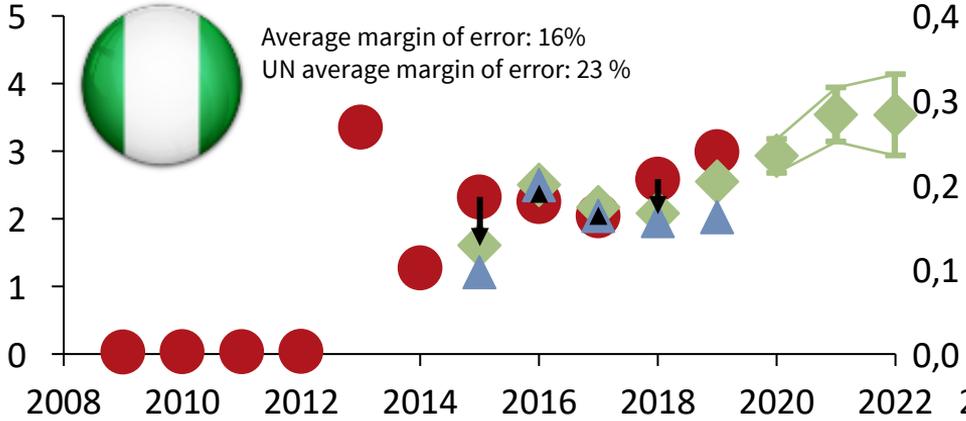


Average Margin of Error for year 1 prediction is 8 %

Average Margin of Error for year 1 prediction is 10 %

Sahel Forecasts

● Actual value ▲ UN HRP Forecast
◆ Prediction



Our model appear more accurate than the planning figures/forecasts in UN Humanitarian Response Plans

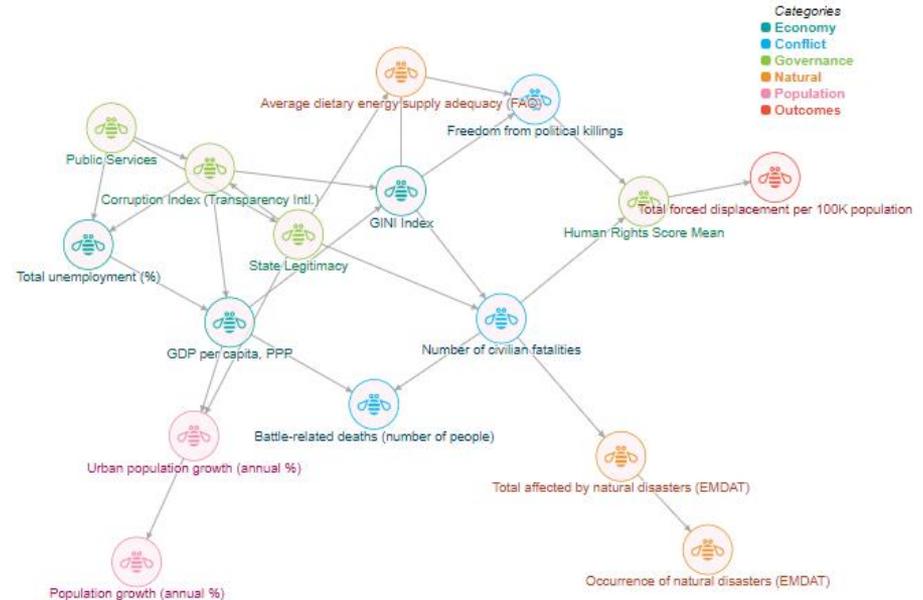
Causal network understanding can be used to develop scenarios

Linkages between the different indicators in the framework has been established based on expert interviews and literature review.

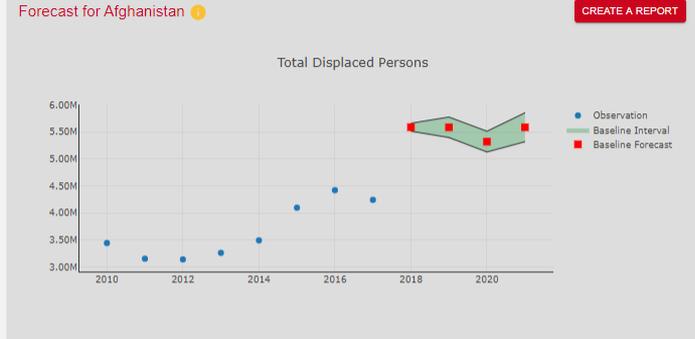
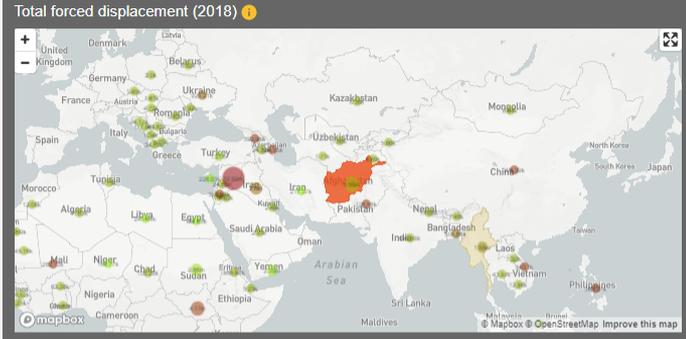
Bayesian Network Analysis determine whether those linkages can be found in the data and what the value of the linkages are i.e. if public institution quality decreases by x how will that impact rights and public services.

The model is generic and builds on historical data for 28 countries with a history of displacement

This informs scenario-building by showing how the various aspects are interrelated.



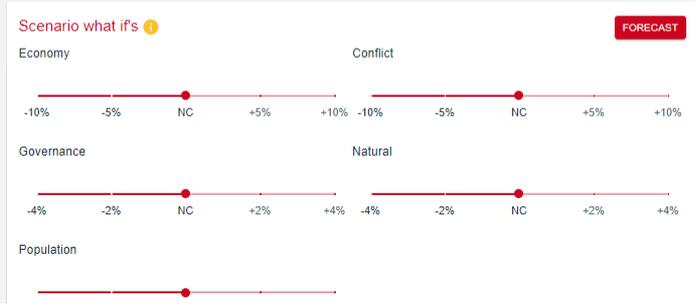
Online Interface allow for analysis, interaction and scenario-buidling



Data trends for Afghanistan

Search

Name	Source	Value	Trend
Access to electricity (% of population)	Worldbank	97.7	
Age dependency ratio (% of working-age population)	Worldbank	84.08	
Battle-related deaths (number)			



Content

- Background

Foresight Model

> Model

> Outputs

Use Cases

- Use Example: COVID-19 Impact
- Annex

Engagement and use within the wider Humanitarian Community



- Inform strategy and programme development
- Support funding and budget processes
- Inform diplomatic efforts globally and nationally



- Engagement with Centre for Humanitarian Data on peer review, content inputs, etc.
- Use model in HRP processes
- Global advocacy efforts on forced displacement



- Active member of the informal working group on Humanitarian Data Science and Ethics



UPPSALA
UNIVERSITET

- Existing partnerships and coordination with other NGOs and academics active in the field of predictive analytics
- Use in INGO forums, for advocacy purposes (local/global) and programming response



- Current seat in the Emergency Directors Group
- Use in early warning and horizon scanning processes



- Assessing opportunities for further engagement

Content

- Background

- Foresight Model

- Use Example: COVID-19 Impact**

- Annex

COVID-19 Displacement Scenario particular severe in Sahel

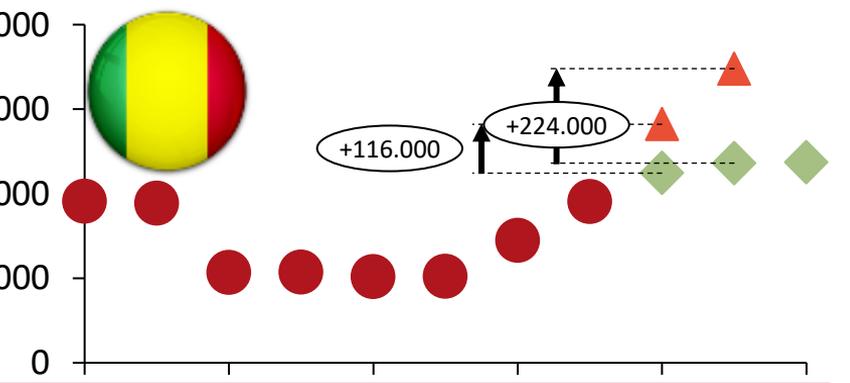
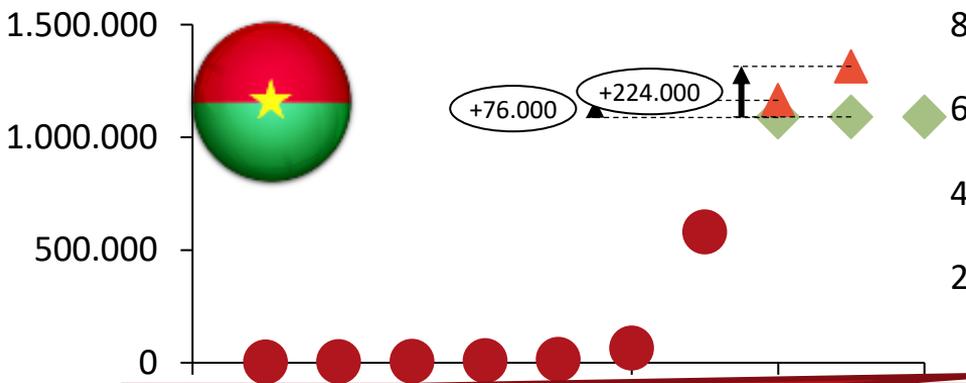
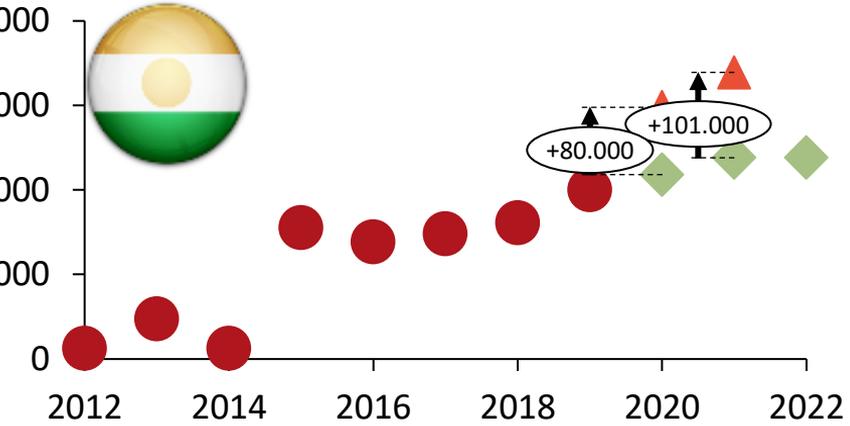
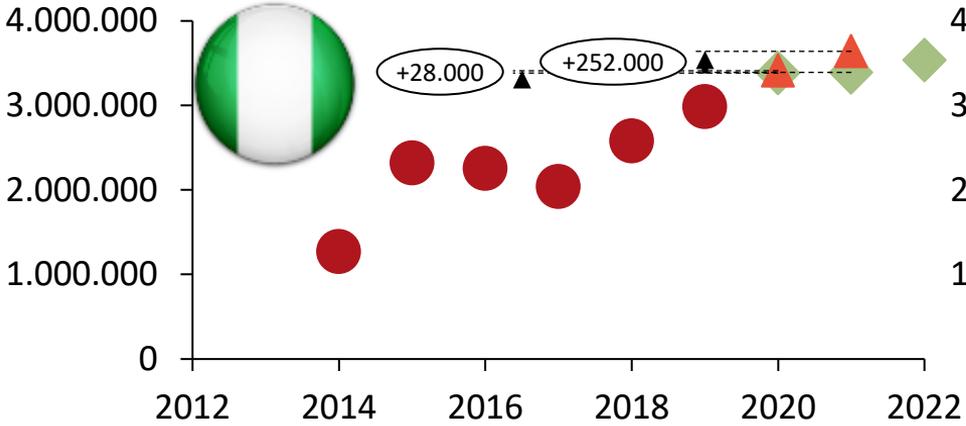
%-point change due to COVID-19 in risk of large-scale displacement*



*Developed using causality analysis model. Denotes the %-point change in likelihood of a country moving into a higher displacement bracket than their current position based on estimated impact of COVID-19. The impact of COVID-19 has been assessed based on desk-research using sources such as IMF, ACLED, V-DEM, FAO, INFORM, IOM, Human Rights Watch

Sahel Forecasts

● Actual value ◆ Baseline prediction ▲ COVID-19 scenario



Approximately 1 million people were forecasted to be displaced in Sahel by end 2021. COVID-19 Scenario suggests that this number can increase to 1.9 million



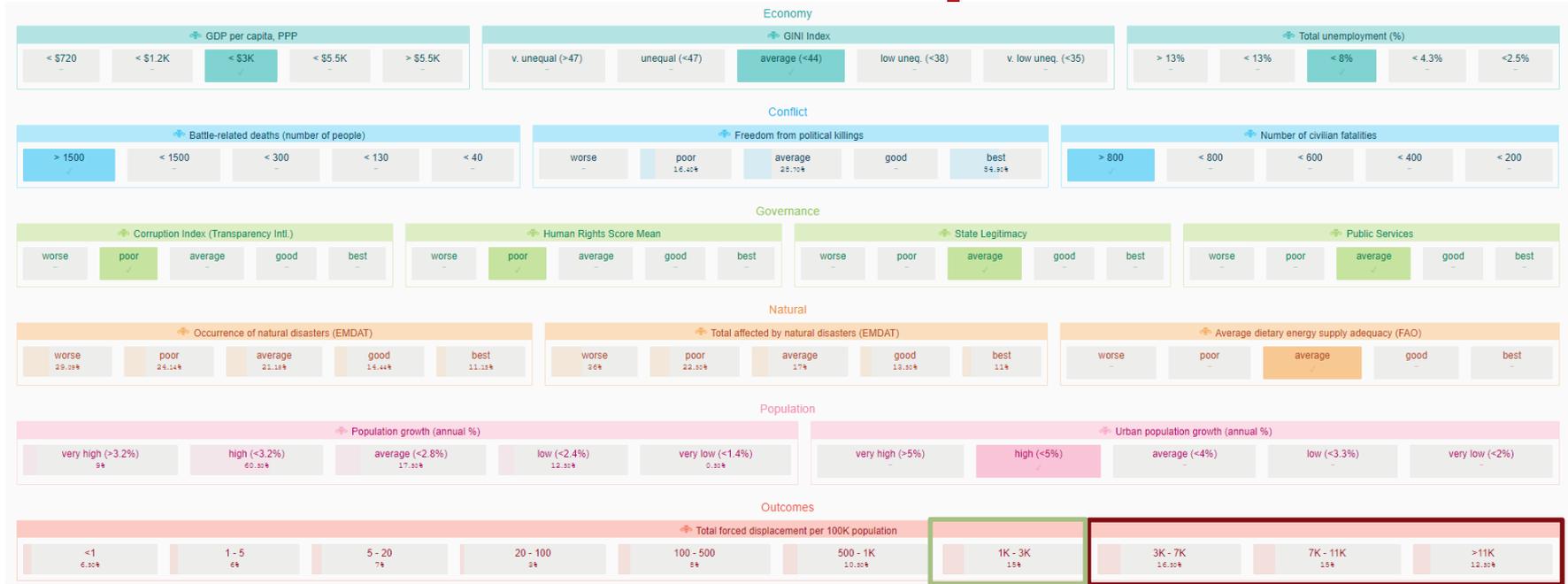
If you are interested in collaborating or accessing the online platform feel free to reach out at alexander.kjaerum@drc.ngo

Content

- Background
- Foresight Model
- Use Example: COVID-19 Impact

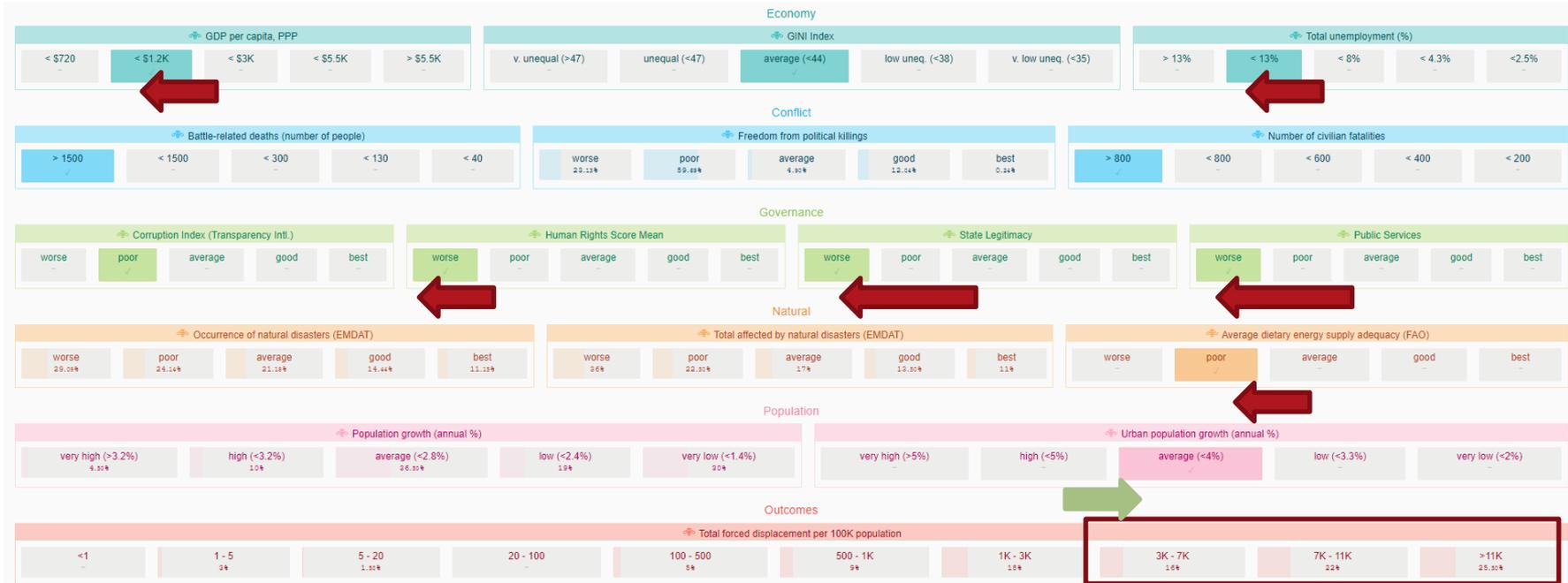
Annex

Baseline Scenario for Nigeria show 44% risk of increased displacement



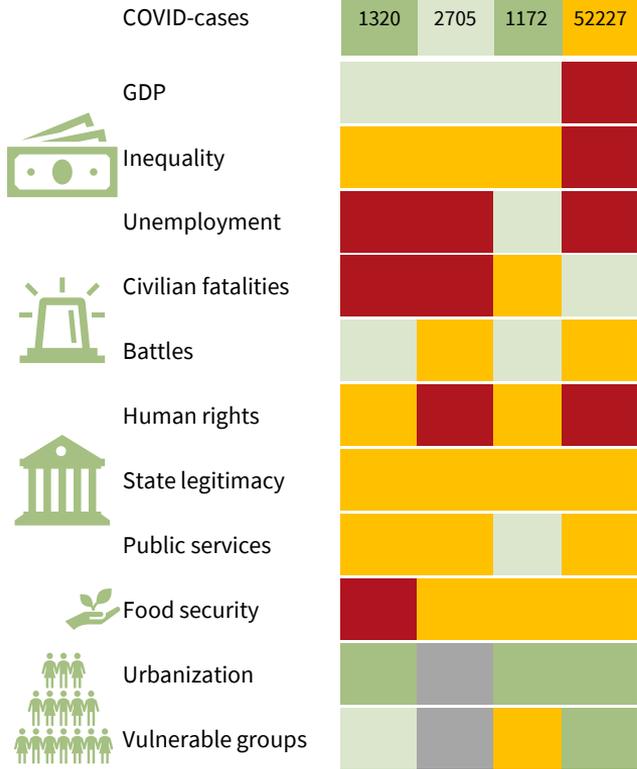
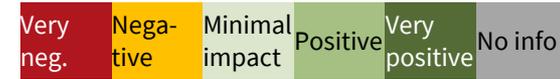
- Currently appr. 2.4 million displaced in/from Nigeria= 1,3k per 100k
- Pre-COVID-19 / baseline risk of increased per capita displacement approximately 44 %

COVID-19 Scenario suggest risk increases to 64%



- COVID-19 Scenario increases risk of large-scale displacement from 44 % to 64 %
- The most conservative estimate would entail approximately 250,000 displaced due to COVID-19

COVID-19 Impact (August)



- GDP in Nigeria expected to fall to by 5,4% in 2020 (IMF June), Burkina Faso growth expected to fall to 2%, Mali 1,5% and Niger to 1% (IMF April). Sub-Sahara appear less impacted (except Nigeria) than more advanced econ.
- Expected 14-% point temporary increase in poverty in Nigeria, also relatively high remittance dependency especially poor households. Poor households in other countries also expected to feel drop in remittances
- Study show 23% job loss in Mali and 22% in Burkina Faso. DRC assessment in Niger suggest less impact on employment. Forecasts suggest Nigeria's unemployment rate could rise from 23,1% in 2018 to 33.6% by end 2020
- Fatalities in Burkina Faso is up 52% during COVID compared to pre-COVID 2020 and 278% compared to 2019 in Mali up 17% during COVID-19 and up 272% compared to 2019. Also significant increases in Nigeria and Niger
- Battles increased by 53% during COVID-19 and up 77% compared to 2019 in Nigeria. Also increases in three other countries including increased JNIM activity in Mali and Burkina Faso
- Security forces criticized for using excessive or disproportionate force against civilians in Nigeria. Media has been restricted. State response, in particular in Mali, violate human rights standards and risk democratic backsliding
- All countries have limited coping capacity which threaten state legitimacy. Many protests in Niger and Nigeria. In Niger these have led the government to gradually lift many of the restrictions in the country
- In Burkina Faso, temporary suspension of vaccination campaigns, reduced access of humanitarian organizations. School closures have also been enacted in all countries. Budget re-allocated from e.g. education to health
- Food insecurity expected to triple in Burkina Faso, in Mali expected to double. Border closures risk blocking a large part of the migrant workforce in agriculture decreasing areas sown and therefore expected agricultural production
- Travel has been prohibited, in the short-term likely decreasing urbanization, which is a driver of displacement. In medium- to longer-term COVID-19 likely to increase urbanization due to insecurity and unemployment
- In Niger, a high number of migrants have been stranded in transit centres in Niger. Niger also witnessed increased returns from Nigeria, which can lead to secondary displacement in Niger.

*Sources such as IMF, ACLED, V-DEM, FAO, INFORM, IOM, Human Rights Watch, WFP and DRC data/assessments