From indices to insight

A proposal to enhance the risk assessment of the Dutch Early Warning/Early Action process

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Clingendael Report

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Executive Summary

- Early Warning and Early Action (EWEA) processes are supported by a large number of analytical tools. The vast array of available quantitative indices and forecasting models offer more opportunities than ever before to ground risk assessments on substantial amounts of data. The challenge, however, is to do so in a manner that does justice to the myriad of ways in which instability and conflict can emerge;

- Ideally, Early Warning and Early Action is grounded on detailed context analyses of power relations, local complexities and regional conflict risks *as well as* on quantitative indices that reliably and unbiasedly track developments over time. While these detailed processes may be valuable, they require substantial amounts of time and resources that are often not available;

- Therefore, this report looks for a way to produce quick EWEA assessments that combine the advantages of structural data collection with the ability of researchers to account for the different ways in which conflict and violence may occur. Hence, these assessments go beyond a mere reproduction of quantitative trends, as they also include analysis designed in such a way as to limit human bias in the process;

- Available quantitative data that could be used to support EWEA processes come in various shapes and forms. Some indices observe violence, others measure driving forces. Some indices forecast the future, others observe incidents in the past. Some indices focus on coup risks, others on environmental degradation. This report makes a distinction between two types of indices: 1) those indices that directly observe or predict risks of conflict and violence; and 2) those indices that measure potential drivers of conflict and violence. The former involves observations on the number of violent incidents in countries, between countries and the risk of a coup or mass killing, while the latter involves data on the quality of governance, political competition, economic development and existing social grievances, to name but a few. This report contains a proposal to categorise the available data to this effect;

- While it may be tempting to reduce all complexity into a single score for the risk of conflict and violence, this report advises otherwise. Single scores only provide an illusion of certainty and miss out on the different manifestations of conflict and violence, as well as the different consequences they have for policy-making. Presenting and visualising the differences between indices will increase both our understanding of actual risks and will help analysts to make more reliable assessments about the risk of conflict and instability;

- Hence, this approach allows analysts to make use of the different indices and models based on their respective strengths and weaknesses. To better understand the drivers of conflict and violence and to best make use of the vast number of indices, this report presents a way in which manifestations of conflict and violence can be categorised. Conflict can occur *between* countries, *within* countries, or even manifest itself as high levels of violence in countries that are otherwise not experiencing traditional forms of armed conflict. In addition, this report also contains a proposal to disaggregate several complex indices into their constituent parts and clustering their indicators according to the different drivers of conflict and violence that they measure. This is to 'compare apples with apples'. Acknowledging that conflict and instability have multiple causes, the data are then grouped into 'political', 'economic', 'social' and 'environmental' drivers.

- This report, subsequently, presents a proposal for visualising these data to allow for a quick inspection of noteworthy trends. Attention should be paid not only to the countries that appear highest in the overall rankings, but also to those that have more rapidly deteriorated in recent years concerning specific drivers of violence and instability.

- Finally, this report advocates a multi-step approach whereby the most readily available, regularly updated and policy-relevant indices and models are combined and visualised in a manner that allows for a comparison over time, within regions, and between different drivers of instability. To this end, it presents a methodology for a structured qualitative discussion and a quantitative assessment by country experts through a Delphi method. As much as data sciences have advanced and reinforced the ability of analysts, it remains exactly at the intersection of quantitative data and qualitative assessment where the risk assessments must take place that feed into early warning/early action processes.

1 Introduction

Over the course of the last three decades, countless scholars, diplomats and experts have sought to develop reliable ways to predict and prevent violent conflict and instability. These efforts have yielded a vast array of analytical instruments, ranging from indices that measure various proximate and structural causes of instability to forecasting models that estimate the probability of an outbreak of violent conflict.

Presently, there is a great deal of data available ranging from better measures of political violence and better predictors of violence. Moreover, as data sciences advance, social scientists have been able to develop new models and refine their predictions. However, as such tools proliferate, so do the challenges for policymakers. First, more data does not always mean 'better' data. Key indicators such as on political inclusivity, local grievances and competition are often still not readily available. Second, more data and better methodologies have not always meant a better insight into conflict risks. While we have generally become better in predicting the continuation and intensity of ongoing conflict, it remains a major challenge to predict which countries will become unstable and when. Third, perhaps the biggest problem is that even when having a clear insight into conflict risks, converting these insights into actionable policies remains difficult. In these instances, it is often not a lack of information or insufficient early warning signals per se that pose the key obstacles, but rather the ability to convert these data points into policy-relevant analysis and to identify relevant entry points for preventive efforts.[1]

These challenges are particularly relevant for the Government of the Netherlands. In 2018 the Government of the Netherlands prioritised conflict prevention as the first goal of its Integrated International Security Strategy, emphasising the importance of '*a solid information position, with up-to-date and detailed information, based in part on innovative big data solutions for peace and security*'.[2] Since the adoption of this strategy, the Ministries of Foreign Affairs (MFA) and Defence (MOD) have made significant investments in enhancing their ability to provide early warning and early action (EWEA). As part of its focus on 'Data for Peace and Security' (D4PS) the MFA has developed a number of data-driven tools that rely on an array of indices and forecasting models in

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1   For a good overview of the longstanding difficulties in converting early warning signals into early action responses and the inherent limitations of quantitative forecasts within this process, see International Crisis Group, "Seizing the Moment: from Early Warning to Early Action," *Crisis Group Special Report* (June 2016).
2   Ministry of Foreign Affairs of the Netherlands, *Working Worldwide for the Security of the Netherlands: an Integrated International Security Strategy 2018-2022* (May 2018), 26.

order to compile long lists, short lists and watch lists of countries that are at increased risk of experiencing violent conflict or instability (see *figure 1*). The process builds on a methodology proposed by the Clingendael Institute in 2020.[3]

Within the framework of the multi-annual PROGRESS research programme, the Dutch MFA has commissioned the Clingendael Institute to provide recommendations on how to build upon these existing data tools and strengthen the capacity of the authorities to assess the risk of violent conflict and instability. The specific objective was to make better use of the available quantitative indicators and data and to design a process that did not require in-depth individual country assessments. As such, the method was meant to inform the decision to go from a long list to a short list of countries with likely higher risks. After that, more targeted in-depth studies could be commissioned.

This report, hence, devises a method for a general scan of countries in order to identify those countries that should be monitored and studied in more detail. The focus of the report will be on the first, exploratory phases of the process, where open-source quantitative indices are used to make a selection of countries that should be further examined.[4] In doing so, the report addresses the three challenges mentioned above (missing data, conflict theories and how to act) by providing a detailed methodology to enhance early warning processes. To this end, this report will a) discern different types of indices (i.e. those that observe and predict violence and instability, and those that seek to explain it); b) categorise the vast array of indices on drivers of conflict and instability through a concrete proposal on how to cluster and interpret them; c) operationalise these quantitative insights within the context of the Dutch EWEA process; and d) integrate the quantitative data into a qualitative analysis process through an expert workshop and the use of several rounds of Delphi surveys.

In order to meet these objectives, this report is structured as follows. Chapter 2 will set out the overall methodology of the proposed process. Chapter 3 critically examines the advantages and disadvantages of many indices. Chapter 4 then puts forward a proposal on how to cluster these indices into those that observe conflict and violence and those that measure the underlying drivers of conflict and violence. Moreover, it proposes a disaggregation of the latter group of indices into four clusters of the main drivers of conflict and instability. Finally, chapter 5 puts forward recommendations on how this data can be interpreted, visualised and subsequently used in a qualitative expert workshop.

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3   See Danny Pronk & Kimberley Kruijver, *Wijzer in de Toekomst: Beschouwing over de Early Warning/Early Action methodiek van de Rijksoverheid*, (The Hague: The Clingendael Institute, 2020), 8-9.

4   See in particular phase #1, step #1 in Pronk and Kruijver, *Wijzer in de Toekomst*, 8-9.

Figure 1   The early warning/early action process currently in use within the Dutch MFA

EW-scan	Longlist	Shortlist + Watchlist	Conflict analysis	Theory of change	Execution
- Structural drivers - Quantitative - External, (semi) open-sources	- 20-30 cases - Excluding cases - Imminent risks - Quantitative & qualitative	- Prioritisation - Interests - Leverage - Added value	- Drivers - Triggers - Resilience - Stakeholders & actors - Power relations	- Pathway to violence - Pathway to peace - Integrated approach - Early action Advise	- Implementation - M&E

2 Methodology and Design

This study maps 19 separate indices that deal with manifestations of conflict and violence. This chapter puts forward a methodology on how to use this data to make reliable EWEA assessments. To this end, this chapter first describes the proposed process and highlights how quantitative data sources can be combined with qualitative analysis to produce results that fit the proposed stages in the Dutch EWEA process (quick assessments and prioritisation). Subsequently, it proposes to discern manifestations of conflict and violence into three different forms: intra-state conflict; inter-state conflict and other violence. Finally, it puts forward suggestions on how to categorise and disaggregate those indices that measure the key drives of conflict and violence.

2.1 Designing a mixed-method approach

The proposed design of the EWEA process is motivated by the insight that there is no consensus in the conflict literature on what causes conflict and violence, be it inter-state, intra-state and 'other' political violence in non-conflict settings. For example, an authoritative review on civil war research states "Existing theory is provocative but incomplete, […] and making little progress in key areas. […] Cross-country analysis of war will benefit from more attention to causal identification and stronger links to theory".[5] Ten years earlier, a previous comprehensive review of conflict literature observed that there was "no consensus on the measure of the civil war", which meant that it was not clear how a civil war could be defined. Moreover, the same review pointed out that explanations of civil wars had "unstable empirical results […]", which meant that predictors of violence were found in some studies but not in others.[6]

The literature identifies some variables that are clearly associated with conflict and violence, such as a lower level of GDP.[7] However, the interpretations of why these variables play a role differ widely and point to the fundamental uncertainty of why

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5   Christopher Blattman and Edward Miguel, "Civil War," *Journal of Economic Literature* 48, no. 1 (2010): 3.

6   Nicholas Sambanis, "What Is Civil War?: Conceptual and Empirical Complexities of an Operational Definition," *Journal of Conflict Resolution* 48, no. 6 (2004): 814.

7   James D. Fearon, "Why Do Some Civil Wars Last So Much Longer than Others?," *Journal of Peace Research* 41, no. 3 (2004): 275–301; James D. Fearon and David D. Laitin , "Ethnicity, Insurgency, and Civil War," *American Political Science Review* 97, no. 1 (2003): 75–90; Paul Collier, Anke Hoeffler and Dominic Rohner, "Beyond greed and grievance: feasibility and civil war," *Oxford Economic Papers* 61, no. 1 (2009): 1–27.

violence occurs. For some, low GDP levels mean that the state is weak. This in turn implies a strategic opportunity for challengers to attack. Others argue that lower GDP levels mean that people lack basic commodities and will seek resource predation to satisfy basic needs. Still others argue that low GDP levels mean there is little service provision by the state and in turn that lower GDP levels thus proxy high levels of grievances. Hence, the same empirical finding supports three radically different interpretations of why countries are at risk of conflict and violence.

To complicate matters even further, conflict patterns can change over time. One deviant example is that in recent years conflicts have taken place in countries with high(er) GDP levels: Mali, Niger, Libya, Ukraine and Syria all had relatively high GDP levels when conflict broke out. In addition, theories based on historical patterns, for example in post-colonial settings, might not be able to explain conflict dynamics that have developed after the Arab Spring.

For all these reasons, conflict research increasingly stresses that conflict occurs in a myriad of ways and that there is not one specific mix of variables and indices that leads to conflict and violence.[8] The insight of multiple 'pathways to conflict' – to paraphrase a recent World Bank/UNDP study on the subject – has partly found its way into EWEA indices.

The 'traditional indices' – those that describe fragility and instability (e.g. the Fragile State Index or the Global Peace Index) – have not fully accounted for this reality. Several continue with methodologies that constitute an index by assigning weights to specific variables. Based on these weights an 'overall' risk score is produced (e.g. 'low' economic development means a 'higher' risk). Leaving the technical aspects aside, this means that traditional indices are based on the assumption that there is 'one' pathway to conflict. This is contradicted by empirical research.

A number of new forecasting indices, however, have taken into account the insight that there are multiple pathways to violence and instability. Examples include forecasting models such as the Global Conflict Risk Index (GCRI), VIEWS, and CoupCast, which will be examined in more detail in chapters 3 and 4. Previously, forecasting models tried to include the best variables based on the best conflict theory, for example a specific mix of grievances, resource and weak state capacity, and subsequently assessed the 'fit' of a model (so-called P-value models). Building on the insight that conflict and violence have multiple causal pathways, the new models are based on 'random forest methodology'. These models do not assume one conflict theory but, depending on conflict, timing

8   See Stathis N. Kalyvas, "The Landscape of Political Violence," in *The Oxford Handbook of Terrorism*, eds. Erica Chenoweth, Richard English, Andreas Gofas, and Stathis N. Kalyvas (Oxford University Press, 2010).

and context, derive the best fit from the variables (through 'self-trained' algorithms).[9] Hence, these methodologies explicitly seek to identify the multiple pathways and are context-dependent.[10] For this reason, the number of variables included in new forecasting models is larger (with a maximum of approximately 40 variables) and more diverse than previous models (10-20 variables).

While this is technically and conceptually in line with the findings of empirical research, these models are no panacea either. Predictive models are good at forecasting continued violence (e.g. most models find that previous violence is the most robust indicator for new violence) but cannot accurately predict conflict and violence in countries that were previously peaceful, or changes in the dynamics of ongoing conflicts. They are therefore clearly limited for the purpose of EWEA processes, since their main aim is to be 'ahead of the curve' rather than to intervene in ongoing conflicts.

This report's proposal for a better EWEA risk assessment, therefore, seeks to account for the multiple ways in which conflict and violence occur and recognises that, so far, no technical solution can by itself credibly predict manifestations of conflict and violence. Therefore, we collect, analyse and visualise quantitative data to serve as input for a structured human assessment of the risks of conflict and violence. This human assessment allows us to account for the multiple ways in which conflict and violence can emerge and to make informed decisions to prevent the transition from 'peace' to 'violence'. As convincingly argued by the OECD in its seminal study of conflict early warning and early response: "there is no "best methodology" or "best set of indicators" (…). the best way to use these methods is to combine quantitative and qualitative tools. This ensures the necessary triangulation required for creating a robust evidence base for decision making."[11] But even this combination will have its limitations (e.g. timing will always be difficult to predict).

The advantages of this approach vis-à-vis purely quantitative predictive models are twofold. First, mixed-method assessments help to explain *why* some countries score higher or lower on particular indices and can shed light on the causes of expected conflict and violence. Second, mixed-method assessments can account for the

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9   For a good overview of the challenges of earlier predictive models and their evolution into random forest models, see Hannes Mueller and Christopher Rauth, "The Hard Problem of Prediction for Conflict Prevention," *CEPR Discussion Papers* 13748 (May 2019).

10 Michael D. Ward et al., "Learning from the Past and Stepping into the Future: Toward a New Generation of Conflict Prediction," *International Studies Review* 15, no. 4 (2013); Matina Halkia et al., "The Global Conflict Risk Index: A quantitative tool for policy support on conflict prevention," *Progress in Disaster Science* 6 (2020).

11 Organisation for Economic Co-operation and Development, "Conflict and Fragility. Preventing Violence, War and State Collapse: The Future of Conflict Early Warning and Response," (2009): 15.

ubiquitous problem of missing data in most of the models; forecasting literature points out that predictions can only be as good as the data that is fed into the model. Even the best models lack information on actual grievances or political competition, and they often operate only on a national level and miss out on sub-national developments or differences between regions. They also tend to have an 'input lag' and rely on data that is often at least a year old, if not more. Qualitative assessments cannot solve this problem by themselves, but allow for an explicit discussion on the limitations and a structured reflection on missing data and multi-causal patterns of conflict and violence.

Achieving the right balance between quantitative and qualitative assessment is one of the most challenging aspects of early warning and conflict analysis. With this in mind, *Figure 2* proposes a step-by-step operationalisation of quantitative data and how to integrate this with qualitative analysis through a structured expert workshop, as further discussed in Chapter 5.

Figure 2   Summary of the proposed methodology for incorporating quantitative and qualitative data for EWEA purposes

Define region of analysis	Gather and process the data	Visualise the data	Regional workshop	Finalise assessment
- Use regional structure of the MFA/MoD - Keep # of countries manageable	- Collect into a single database - Disaggregate indices - Normalize & cluster indicators	- Country page with sub-indicators per cluster and risk forecasts - Regional overview with rankings on both static and dynamic scores	- 10-15 country experts - Three rounds of Delphi surveys - Contrasting and comparing expert assessment with index data	- Drafting of concluding report - Integrating risk assessment with impact assessment

2.2   Types of indices and evolution in forecasting methodology

With this mixed-method approach in mind, the question arises how the power of quantitative conflict data and predictive models can best be harnessed as a credible basis for EWEA assessments. Two key challenges in this regard are, on the one hand, the overwhelming amount of data and, on the other, the fact that data is not always actualised or readily available. As our purposes are global and dynamic in nature, we have restricted ourselves to data that is continuously updated, open source and has global reach.

For the present purposes, a distinction is made between two categories of indices: those *recording* or *predicting* conflict and violence on the one hand, and those *measuring* the drivers of conflict and violence on the other (see *Figure 3*). This categorisation allows for risks to be more clearly identified and the drivers can be better understood, which in turn allows for the formulation of targeted policy interventions.

Indices that *record* and *predict* conflict and violence largely rely on automated systems, manual coding or a combination of both. They come in two forms: first, there are indices that record incidents of conflict and violence, for example by gathering event data on violence against civilians. By counting and categorising incidents these can be used for trend analysis and comparisons between countries and over time. Second, there are forecasting models that make assessments of the probability of the emergence of conflict and violence. Such predictive indices are based on complex statistical methods. These indices should be seen as complementary to merely extrapolating trends. As data science has advanced, more and more institutions have developed predictive models.

Finally, the largest subset of indices are those that *measure the drivers of conflict and violence*. Such indices can range from measuring one variable (e.g. the quality of governance) to measuring and combining a vast array of different indicators across a range of thematic categories. The latter indices often compress all data into one or a few scores that indicate the degree of vulnerability to conflict and violence. As a result, they tend to operate from certain theoretical assumptions about the root causes of conflict and structural drivers of instability. The compound scores of these indices are most frequently used to construct rankings of countries, which are already useful in their own right. Most indices, however, are also transparent about the different components they include, which makes it possible to disaggregate them into their constituent parts. Predictive indices usually include a variety of these data sources.

Figure 3   Methodology to select, categorise and disaggregate indices and models of conflict and violence
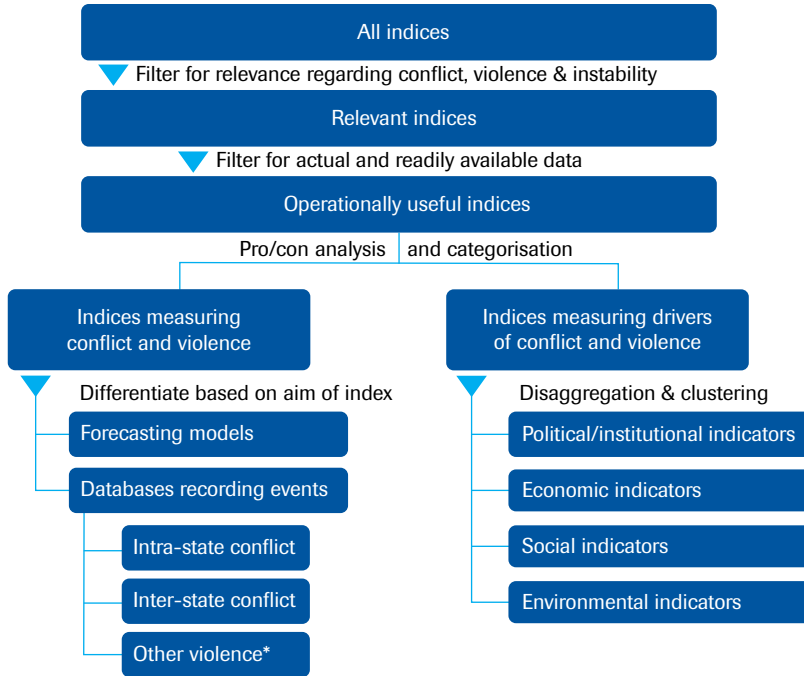
2.3   Measuring conflict and violence

Within the framework of this report, conflict and violence are divided into three separate manifestations that are relevant to the Dutch EWEA process: intra-state conflict; inter-state conflict; and other forms of political violence. This categorisation both relies on academic literature and squares well with the mandates of the various departments of the MFA and MOD of the Dutch Government.

The first manifestation is **inter-state conflict**, i.e., violence between two or more governments. While such conflicts are much rarer than intra-state conflicts, these conflicts have the potential of being far more disruptive on a regional level and therefore have potentially a more significant impact on the national security interests of the Netherlands. Inter-state conflict can be defined in a variety of ways (e.g., there are definitions offered by Correlates of War, UCDP, ACLED and Heidelberg). We use the Heidelberg definition first and foremost as it is the only structural collection of inter-state conflicts even though there are concerns about the reproducibility of its findings: "A political conflict is a positional difference between at least two assertive

and directly involved actors regarding values relevant to a society (the conflict items) which is carried out using observable and interrelated conflict measures that lie outside established regulatory procedures and threaten core state functions, the international order, or hold the prospect of doing so." Inter-state conflict occurs when at least two states are involved. Using Heidelberg means that we allow for non-violent and violent conflicts. While up until the 1980s it was common to predict inter-state conflict (e.g. through the State Failure/Political Instability Task Force (PITF) or the Militarized Interstate Dispute (MID) work of the Correlates of War project), virtually all present indices predict internal conflict rather than conflict between states. This is an important frontier for future EWEA work.

The second and most prominent manifestation is the occurrence of **intra-state conflict**. For the present purposes, intra-state conflict is defined in line with the most commonly used definition from the Uppsala Conflict Data Program (UCDP): "a contested incompatibility that concerns government and/or territory where the use of armed force between the government of a state and a non-state armed group, that results in at least 25 battle-related deaths in one calendar year". This means that intra-state conflict always involves a government and should reach at least 25 combatant rather than civilian deaths. In these conflicts, various types of violence can occur, ranging from government-rebel violence, non-state to non-state violence and one-sided violence (violence against civilians).[12] Since the 1970s, conflict prevention has largely focused on armed violence within countries, be these expressed in ethnic group conflict, secessionist movements, insurgents or rival political factions.[13] While internal conflict has recently become more internationalized (with about 25% of all these conflicts demonstrating open or tacit involvement by geopolitical or regional players[14]), internal conflict still constitutes the brunt of violence across the globe. It is for this reason that the vast majority of available indices and predictions focus on this type of conflict.

However, conflict and violence also take forms that are not well captured by these two definitions of inter-state and intra-state conflict. For one thing, the commonly used 25 battle-related deaths definition by UCDP excludes early mobilization towards conflict, smouldering conflicts that then and now flare up and all sorts of violence that are an expression of conflict fault lines but do not reach the (arbitrary) threshold. Moreover, a large number of countries have sustained levels of political violence that take place

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12   The definitions of inter-state, intra-state and non-state violence are those of the Uppsala Conflict Data Program (UCDP) of the Uppsala University Department for Peace and Conflict Research.

13   Kristian Skrede Gleditsch, Nils W. Metternich, Andrea Ruggeri, "Data and progress in peace and conflict research," *Journal of Peace Research* 51, no. 2 (2014).

14   E.g. Richard Gowan, "Fragile Contexts are Increasingly Battlegrounds in Geopolitical Contests," United Nations University, Centre for Policy Research (2018).

in generally peaceful settings.[15] For example, episodes of election violence, violence against civilians, intimidation and killing of the opposition are all very common.[16] It is especially this latter category that has increased in prominence in recent years but hardly figures explicitly in indices designed to forecast armed conflict. Since there is no good definition of this manifestation of violence nor of 'instability' itself[17], we suggest using '**other political violence**' as the third manifestation. In order to measure it, a pragmatic solution is to rely on the most prominent database that is the only one that is able to capture this type of violence, the Armed Conflict Location and Event Data project (ACLED). To this end, we take all political violence reported by ACLED – defined as "the use of force by a group with a political purpose or motivation" – and propose to separate its data into three strands: inter-state conflict, intra-state conflict (based on the conflict identified by UCDP and HIKK) and 'other political violence'. The last category then serves as the measure for this third class of violence.

2.4   Measuring the drivers of conflict and violence

A final set of indices is concerned with the drivers of conflict and violence. While useful in their own right, these indices present analysts with three problems. First, many indices are themselves based on *other* indices, leading to overlapping indicators and problems related to covariance and correlation (meaning that the exact same data underpins different indices). Second, these indices may use the same terms but may mean and measure different things. For example, the Global Peace Index, the Global Conflict Risk Index and the Fragile States Index all have a score for 'political stability' but these scores are based on very different ideas of what political instability entails, what sub-elements it comprises, and entirely different datasets. Third, due to their methodology of aggregating data, these indices may not reveal certain vulnerabilities of countries. Various indices lump together different data points into a compound score (e.g. 'fragility'). While this creates the impression of an overall risk, it is also based on theoretical assumptions of how these variables relate to one another. Moreover, there is a real risk that analysts do not consider the various sub-elements (and thus the real drivers of potential instability) but just base themselves on compound scores.

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15   ACLED, *Global Conflict and Disorder Patterns: 2020*, (Paper presented at the Munich Security Conference, 2020).

16   OECD, *States of Fragility 2016: Understanding Violence* (Paris: OECD Publishing, 2016); Stathis Kalyvas and Scott Straus, "Stathis Kalyvas on 20 Years of Studying Political Violence," *Violence: An International Journal* 1, no. 2 (October 2020); Gleditsch, Metternich and Ruggeri, "Data and progress in peace and conflict research".

17   For a good discussion of different definitions of instability, see Nick Donovan et al., "Countries at Risk of Instability: Risk Factors and Dynamics of Instability," *UK Prime Minister's Strategy Unit background paper*, 2005.

In order to help EWEA analysts to understand the different drivers of conflict, this report disaggregates indices measuring drivers of conflict and violence and regroups the variables on which they are based into four different clusters: political/institutional, economic, social and environmental factors. As a result, the different structural causes of violence and instability are made clearly visible and can – consequently – be compared both with each other and over time. The four categories and the justification for their selection will be discussed in more detail as part of the analysis of the respective indices.

3 Overview and evaluation of indices

Presently, the Kingdom of the Netherlands relies only on a handful of indices for their early warning assessments. This chapter seeks to provide a comprehensive overview of the available indices and presents 19 indices that either record or forecast dynamics of conflict and violence or measure their drivers. The idea of this extensive review is to identify useful new (sub-)indicators that might be included in evidence-based early warning assessments.

The selection of these indices is presented in *Table 1*. *Table 1* contains general information on the indices and highlights three elements. First, whether the respective index is of a primarily quantitative or qualitative nature. Second, whether the index records or forecasts conflict and violence or whether it seeks to measure the drivers of conflict and violence. Third, what the index claims to be able to explain.

Table 1   Overview of the selection of 19 indices

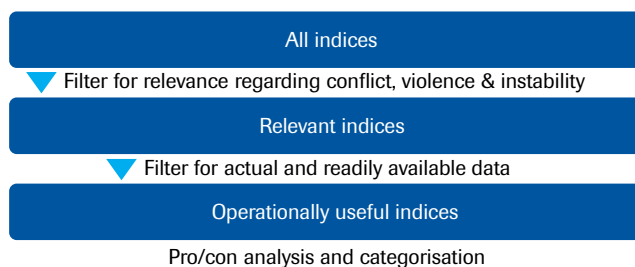| Index	Quantitative vs. qualitative	What it seeks to explain
Indices recording events of conflict and violence		
Armed Conflict Location and Event Data	Quantitative	Political violence
Heidelberg Conflict Barometer	Quantitative + Qualitative	Political conflict
Uppsala Conflict Data Program	Quantitative	Armed conflict/organized violence
Indices forecasting conflict and violence		
CoupCast	Quantitative	Risk of coup d'état
CrisisWatch	Qualitative	Instability/Conflict intensity
Early Warning Project	Quantitative	Mass killings
Global Conflict Risk Prediction	Quantitative	Conflict Intensity/Violent conflict
Integrated Crisis and Early Warning System	Quantitative	Instability
ViEWS	Quantitative + Qualitative	Political Violence – State-based armed conflict – One-sided violence – Non-state armed conflict

Index	Quantitative vs. qualitative	What it seeks to explain
Indices measuring drivers of conflict and violence		
Center for Systemic Peace	Quantitative	State fragility
Country Policy and Institutional Assessment	Quantitative	Ability to make use of aid
EU INFORM Risk	Quantitative	Risk of humanitarian crisis
Failed and Fragile States Index	Quantitative	Fragility
Fragile States Index	Quantitative	State fragility
Global Peace Index	Quantitative + Qualitative	Negative peace
Global Conflict Risk Index	Quantitative	Conflict Intensity/Violent conflict
Positive Peace Index	Quantitative + Qualitative	Positive peace
States of Fragility	Quantitative	Fragility
World Governance Indicators	Quantitative + Qualitative	Political instability

This overview is by no means exhaustive; there are numerous other indices that measure factors related to conflict and violence, either on a global or a regional level. As this research seeks to develop a generalisable methodology for a mixed-method EWEA assessment, only those indices with global coverage that either focussed on the risk of the occurrence of conflict and violence or dealt with the drivers of conflict and violence have been identified.

After assembling the data of the above listed indices, it became clear that not all indices provide useful datasets. Therefore, a careful consideration of which indices and databases could be regarded as most useful and which would be determined to be of less relevance was carried out. *Figure 4* presents a schematic representation of the funnelling method used to determine the eventual list of operationally useful indices. Phase one of the funnelling exercise was to assemble the indices and databases that state something about conflict and violence or their drivers. Subsequently, these indices were filtered on the basis of data availability, and the recency and readability of the data files. The indices that did not pass this initial test are not included in the eventual list of available indices. This has led to the exclusion of the following indices: ICEWS, Failed and Fragile States Index from Carleton University and the States of Fragility Index from the OECD.[18] At present, data from the Global Conflict Risk Index (GCRI) and the underlying data from the Positive Peace Index (PPI) were not publicly available. However, government representatives are in a position to gain access to these datasets and therefore we have included them, for now, in the category of 'available indices'.

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18 The OECD States of Fragility Index presently only covers 57 'fragile contexts' and has no global coverage. If the index expands its geographical scope it would be helpful to include it.

Figure 4   Phase 1 – Funnelling of the available indices

All indices

▼ Filter for relevance regarding conflict, violence & instability

Relevant indices

▼ Filter for actual and readily available data

Operationally useful indices

Pro/con analysis and categorisation

3.1   Assessment of indices

Now that the indices have been checked for their data availability and their degree of recency, the following 15 indices will be outlined in more detail: ACLED, Center for Systemic Peace, Country Policy and Institutional Assessment, CoupCast, CrisisWatch, Early Warning Project, EU INFORM Risk, Fragile States Index, Global Conflict Risk Index, Global Peace Index, Heidelberg Conflict Barometer, Positive Peace Index, Uppsala Conflict Data Program, ViEWS, World Governance Indicators. General information on the indices and their different variables can be found in Annex I.

This chapter provides an analysis of the main advantages and disadvantages of the 15 selected indices and what their added value is. The order of the analysis is based upon the categories that the indices fall into, as can be derived from *Table 1*.

3.2   Indices recording conflict and violence

ACLED
Data from the Armed Conflict Location and Event Data Project (ACLED) has several advantages. One of the main advantages is that it is the only source that provides a near real-time detailed description of political violence and identifies political violence trends in specific countries and regions. The data is available from 1997 to the present for certain regions (e.g. Africa), but for other regions the data is more recent and only goes back to 2016 and to the present. As a result, the ability to engage in longitudinal trend analysis depends on the region and the purpose of the trend analysis. For example, predictions between 1-5 years in the future would generally need 5 to 10 years of available data to allow for strong extrapolations. It also makes comparisons over time and between countries and regions more difficult. As ACLED seeks to describe political violence, it means that it does not contain information on instances of crime and is careful when including incidents that are at the intersection between crime and politics.

Heidelberg Conflict Barometer

The Heidelberg Institute for International Conflict Research (HIIK) Conflict Barometer includes an enormous amount of aspects related to conflict dynamics, including actor involvement, intensity level, the number of casualties, etc. Here we focus on the part that describes inter-state conflict.

The HIIK barometer does not uncover the underlying causes of conflict, considering that it does not include economic, societal, and environmental factors. Therefore, the barometer is less useful if one wants to obtain a better understanding of the root causes of a conflict. Moreover, due to the nature of the HIIK conflict barometer and the fact that they are relatively slow in producing their output – the most recent conflict barometer that is publicly available stems from 2019, this means that the barometer is less suitable for the purpose of forecasting.

Uppsala Conflict Data Program

The Uppsala Conflict Data Program (UCDP) database can mainly be used for the purpose of distilling trends with reference to armed conflict. By covering the events of armed conflict, non-state conflict and one-sided violence, the UCDP provides a helpful overview of the development of these types of conflict. This makes it possible to see longer-term trends in conflict dynamics in a specific country, thereby providing relevant information for, e.g., policymakers. However, as the UCDP primarily covers events of conflict and violence, it is of less value for the purpose of forecasting. Even though the past might give some indication of what might happen in the future, this is not a given and the identified trends can therefore never predict the future course of conflict. In addition, the threshold of 25 battle-related deaths that is applied as a criterion can be debated and can lead to chronic under-accounting. The index also largely relies on major international news aggregators, but makes efforts to include local news sources to prevent under-reporting. Moreover, considering the principal focus on events of conflict and violence, the UCDP does not provide any insight into the factors that may contribute to the emergence of conflict and violence. This makes it difficult for practitioners to prevent conflict, because they are not able to gain any insights into the causes that should be addressed.

3.3 Indices forecasting conflict and violence

CoupCast[19]

The usefulness of CoupCast lies primarily in that it outlines the chance that a (successful) coup might occur in a specific country in the near future. This, however, does not say anything about the actual levels of instability in a country and the likelihood that a conflict might emerge. CoupCast focuses on a highly specific dependent variable, the risk of a coup attempt, thereby excluding all other aspects that might contribute to the increase in instability and/or the emergence of conflict. Consequently, the output of CoupCast makes it difficult to draw any conclusions on the exact level of (political) instability in a country. Therefore, it appears that CoupCast is only relevant when one wants to know exactly what the chance is that a coup attempt might occur in the near future, and less useful when it comes to being able to discern the broader trends regarding instability and conflict dynamics.

CrisisWatch

The usability of CrisisWatch as a tool for early warning lies primarily with the fact that it provides qualitative analyses of the development of various conflicts across the world. At a glance, decision-makers are able to see whether the conflict situation in a country has been stable, deteriorated or improved in the past month. Additionally, CrisisWatch provides a short overview of the events that have occurred in the past month, thereby determining the appreciation of the conflict situation. However, the forecasting period of CrisisWatch is relatively short, considering that it only looks at the month ahead. It also depends on the judgment of individual analysts, which cannot be easily compared across countries and over a longer period of time. Therefore, it can be said that for the purposes of long-term policy orientation, CrisisWatch is not suitable. Moreover, CrisisWatch only covers those countries where conflicts currently exist or where there is a risk of the emergence of conflict, and thereby the conflict tracker only has a limited coverage of the world. In addition, the conflict tracker does not provide statistical data on the overarching trends and underlying causes of instability and conflict, making it very difficult to draw any conclusions on the factors that have contributed to instability and conflict. In that regard, ICG's conflict tracker is mainly relevant when in the short term one wants to gain an insight into the actual status of the conflict situation in a particular country.

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19   At the time of writing, CoupCast was still a continued database. However, during the publication phase, it became clear that from August 2021 onwards, data collection has ceased. This makes the database less relevant for future purposes.

Early Warning Project

The usefulness of the Early Warning Project (EWP) derives from the fact that it is a very helpful tool in gaining an insight into future trends and risks of (potential) mass atrocities. By including a broad range of aspects (as outlined in Annex I) the EWP tries to uncover the underlying causes of mass atrocities. Therefore, the EWP can prove to be a helpful tool for early warning, considering that it detects certain underlying problems, and helps governments, civil society groups and others to address these challenges so that they can thereby try to prevent mass atrocities. However, the output that is delivered by the EWP is very much centred around mass killings, thereby not saying anything about the general level of instability in a country. Of course, a (potential) correlation between mass atrocities and instability exists, considering that a country which is prone to mass atrocities cannot be considered as 'stable' and a stable country is less likely to have mass atrocities. However, this correlation cannot be automatically assumed and most certainly does not imply causation. Therefore, the EWP remains primarily useful for the purpose of early warning with reference to mass atrocities, but not for the purpose of gaining an insight into a country's general level of instability.

Global Conflict Risk Index[20]

The added value of the Global Conflict Risk Index (GCRI) lies primarily in that it is one of the most sophisticated forecasting indices. By looking 1-4 years ahead, it provides practitioners with valuable information regarding the possible occurrence of violent conflict. This supports practitioners in determining long-term policy goals that are intended to prevent the emergence of conflict. This ensures that the (financial) means are allocated most efficiently, in line with the predictions of violent conflict. The greatest disadvantage, however, is that the GCRI solely makes use of a quantitative method, focussing on processing data, and lacking expert judgement and analysis in their research.[21] Another limitation of the GCRI is that, while using open-source data, the output is only accessible to those who have access to the EU science portal (i.e., EEAS and EU personnel, government officials of EU member states and services with whom the EEAS has established cooperation).[22] Finally, various of the underlying data-sources of the GCRI tend to be published with some delay meaning that also the GCRI is published with (nearly) a year delay. At the time of publication, some of the predictions are therefore already outdated. An experimental dynamic GCRI monitoring

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20 The GCRI does not provide publicly available data. Therefore, we were only able to retrieve limited data from the GCRI. However, government officials have access to (the data of) the index. Therefore, this index is still included in the list, considering its relevance and importance for the purposes of early warning.

21 European Commission Joint Research Centre, "Global Conflict Risk Index, Version July 2017" (2017). [Accessed through Resource Watch, on 23 March 2021].

22 We thank one of the reviewers for pointing this out. Furthermore, after all analyses are done, there is a political assessment on what countries are ultimately relevant meaning that some countries may disappear as priority countries.

also uses automated news readers such as the Global Data on Events, Language and Tone (GDELT) dataset, which has certain limitations due to its methodology of counting news reports.

ViEWS

The Violence Early Warning System (ViEWS) of the Uppsala University Department of Peace and Conflict Research systematically monitors all locations in Africa that are at risk of conflict and assesses the risks of conflict escalation. Moreover, as ViEWS provides forecasts for the upcoming 36 months, it is valuable for the purpose of long-term policy planning, allowing policymakers to decide on the allocation of resources in an informed manner. This will eventually benefit policy effectiveness and efficiency. Another advantage of the ViEWS model is that it makes use of a variety of models, thereby including a very broad range of aspects, including politics, economics, social factors, and geography. However, the combination of these models into an ensembled model makes it more difficult for users of ViEWS to gain a precise insight into the underlying causes of armed conflict, as they are, in the end, only informed about the forecast. In addition, ViEWS is a relatively recent project that is still under development. This is demonstrated by the fact that its databases, for now, only cover conflicts and political violence in Africa. Even though the ViEWS researchers are of the belief that worldwide coverage would be possible, this is at present not the case, thereby limiting its usability despite the system's potential.

3.4   Indices measuring the drivers of conflict and violence

Center for Systemic Peace[23]

The usefulness of the Center for Systemic Peace's fragility index is that it can provide essential insights into the (historical) trends of a specific country on the four dimensions (security, political, economic and social). In that context, it can provide an insight into how the level of fragility has developed over time in a specific country and which countries have severely deteriorated in the last couple of years. This might support the allocation of resources to that specific country in order to prevent further instability. However, as the index is primarily focused on (historical) trends, it is less useful for forecasting purposes. The index does not provide predictions for the near future, which makes it less relevant for early warning. In addition, the indicators that

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23   The Center for Systemic Peace's State Fragility Index only has data available for the period up until 2018. The underlying reason being that financial support from the US government was terminated in February 2020. Beginning with the year 2019, updated data resources will therefore be embargoed until a new funding mechanism can be implemented. Considering that the data is 'out there', but not publicly available, we decided to include this index as 'relevant', despite the fact that we currently have no access to more recent data.

are used to evaluate the four dimensions are not all-encompassing, but are rather limited. For example, within the economic dimension, no information is included on unemployment or aid dependency rates, aspects that might be essential in determining whether a country is economically fragile or not. In essence, various central parameters are omitted in the different dimensions, making it difficult to draw conclusions on the level of instability based on this index alone.

Country Policy and Institutional Assessment

The added value of the Country Policy and Institutional Assessment (CPIA) lies primarily in that it effectively assesses the ability of countries to make use of allocated aid. Another advantage is that the assessment provides relevant information regarding a state's ability to deliver economic growth and to reduce poverty.[24] The assessment delivered by the CPIA can therefore steer future aid allocation processes, both by international organisations as well as national governments. However, the sole focus on (economic) governance might make the CPIA less useful for indicating broader trends and developments regarding instability and conflict. Moreover, this institutional focus limits the inclusion of other essential aspects, such as human rights, political freedoms, and ethnic compilation, that might affect conflict dynamics and instability. This leads us to determine that the CPIA does not provide an all-encompassing picture of the potential causes of conflict and is therefore of limited use.

EU INFORM Risk

The EU INFORM Risk Index can be of great practical value, considering that it is a very sophisticated and a well thought out index. It effectively covers the institutional, economic and environmental aspects and provides considerable attention to conflict intensity as such. These are all factors that can potentially contribute to the destabilisation of a country. The index provides a thorough insight into a country's level of vulnerability in specific domains, thereby highlighting the (potential) drivers of conflict and instability for a specific country. However, the EU INFORM Risk Index also has a downside, considering that political factors, except for a government's coping capacity with reference to hazardous events, and social factors, related to the ethnic composition of a country, are not included in the index. It is well known that political and social factors can (further) contribute to instability and might even cause the emergence of conflicts. Considering that these aspects are not covered means that the index, by itself, may therefore create an incomplete picture of the overall causes of humanitarian crises and disasters.

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24 Independent Evaluation Group (World Bank Group), *The World Bank's Country Policy and Institutional Assessment* (2010), 14.

Fragile States Index

The strength of the Fragile States Index (FSI) lies primarily in that the index uses an enormous amount of information as input for the index, and that it is able to make this information digestible and easily accessible for the public. The FSI thereby provides a highly relevant overview of the level of state fragility in the four overarching categories: cohesion, economic, political and social/cross-cutting indicators. One aspect that is not covered by the FSI is the environmental dimension. Even though there is still a debate surrounding the potential effects of environmental factors on instability and conflict, there seems to be some common ground that environmental aspects can play an essential role in deteriorating the socio-economic conditions in a country and thereby increase the risk of destabilisation. Moreover, the downside of having to process an enormous amount of data is that the FSI does not provide real-time predictions of fragility. The information that is being used as input for the FSI is collected over the year and subsequently reported on. Therefore, the index appears to be less useful for forecasting purposes. In contrast, the FSI's added value lies more in the fact that it allows deteriorating trends of state fragility (in the four categories) to be identified. Another potential disadvantage of the FSI is that the methodology of integrating quantitative data from the underlying CAST framework with qualitative expert assessments is not fully transparent and that – as a consequence – reported trends might be spurious. This might leave outsiders uninformed about the way in which particular scores have been produced and cast doubt on the overall usage of the data at the same time, but some of its sub-indicators (such as factionalized elites) are unique to the FSI and as such are, for the time being, one of the only ways in which to approximate relevant variables.

Global Conflict Risk Index[25]

In addition to its forecasts on the possible occurrence of violent conflict, the GCRI also contains useful information on the drivers of conflict and violence within its underlying data. While the index itself has been discussed under 3.2 above and many of its indicators are drawn from other open-source databases, it is recommended to also extract certain variables from the GCRI as further described in chapter 4.

Global Peace Index

The Global Peace Index (GPI) is primarily of relevance when one seeks to gain an insight into the conflict dynamics and the security aspects of a country, considering the three domains (domestic and international conflict, societal safety and security, and militarisation). The broad range of indicators that are included in these domains makes the index highly valuable for the purposes of distilling conflict trends in a country in

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25 The GCRI does not provide publicly available data. Therefore, we were only able to retrieve limited data from the GCRI. However, government officials have access to (the data of) the index. Therefore, this index is still included in the list, considering its relevance and importance for the purposes of early warning.

past years. However, the index does not incorporate the domains and indicators that (potentially) say something about the root causes of conflict. For example, economic and social factors are largely omitted, even though these factors can very well contribute to the destabilisation of a country or even the emergence of conflict. Therefore, the index is less valuable if one wants to gain a better understanding of the underlying causes of instability and conflict.

Positive Peace Index

Rather than looking at the aspects that might contribute to instability and the emergence of conflict, the PPI looks at the presence of elements that contribute to peace and prosperity. In that sense, the PPI makes it possible to rapidly determine which prerequisites for peace are either present or absent. When a certain indicator scores badly, it is an indication of a potential area for future instability and thereby signals to governments that such an area should be closely monitored. The disadvantage of the PPI, however, is that the thematical focus of the index lies primarily with politics. Even though some social and economic aspects are included as well, the centre of gravity lies with the political and institutional indicators. By applying such a narrow focus, it is possible that the index misses other potential aspects that may affect peace, and eventually the stability of a country. Moreover, considering that the index provides yearly updates of the previous year, the PPI is more useful for understanding peace trends than for forecasting. Hence, it can be said that the PPI allows one to observe which countries have become less peaceful in recent years but lacks the ability to predict the (near) future.

World Governance Indicators

The benefit of using the World Governance Indicators (WGI) derives primarily from the fact that the WGI provides a useful insight into the political and institutional factors that might contribute to the emergence of conflict and instability. By scoring countries on the six diverging dimensions, the WGI pays considerable attention to the political and institutional context of a country. However, the emphasis on the political and institutional dimension also implies that other dimensions are excluded from the WGI. This leads us to determine that the WGI does not provide an all-encompassing overview of the aspects that might contribute to the emergence of conflict and/or instability. Rather, the WGI is only of added value when one wants to gain an insight into the perceptions of political and institutional factors that can result in conflict. The risk that this brings is that one can never obtain a complete picture of the fragile situation a country may find itself in. Moreover, the WGI is primarily relevant for distilling trends in relation to governance dynamics and perceptions, making it less useful for the purpose of forecasting future conflicts.

3.5   Conclusion

The evaluation of the selected indices, as provided above, demonstrates that all these indices have their advantages and disadvantages. In essence, all of the analysed indices have added value in one way or another. Hence, there is not one index that is completely irrelevant for the purposes of early warning. Therefore, it can be concluded that none of the indices should be left out in this phase of the research, although the availability of recent and disaggregated data from indices such as CSP and PPI remains a challenge. In order to help analysts to make the best use of this significant number of selected indices they will be further disaggregated and clustered in the subsequent chapter.

4   Categorisation, disaggregation and clustering of indices

The previous chapter evaluated the advantages and disadvantages of many indices. The key question, subsequently, is how these indices can be used for better informed mixed-method EWEA assessments. To this end, this chapter focusses on two elements: 1) indices that record and/or forecast conflict and violence; and 2) indices that measure the drivers of conflict and violence (see *figure 5*). This chapter suggests how the large number of indices can be used to better measure the three main types of conflict and violence (inter-state conflict; intra-state conflict; and 'other violence') and how the available indices on drivers of conflict and violence can be disaggregated and their constituent parts can be regrouped into 'political/institutional', 'economic', 'social' and 'environmental' indicators.

Figure 5   Categorisation of operationally useful indices
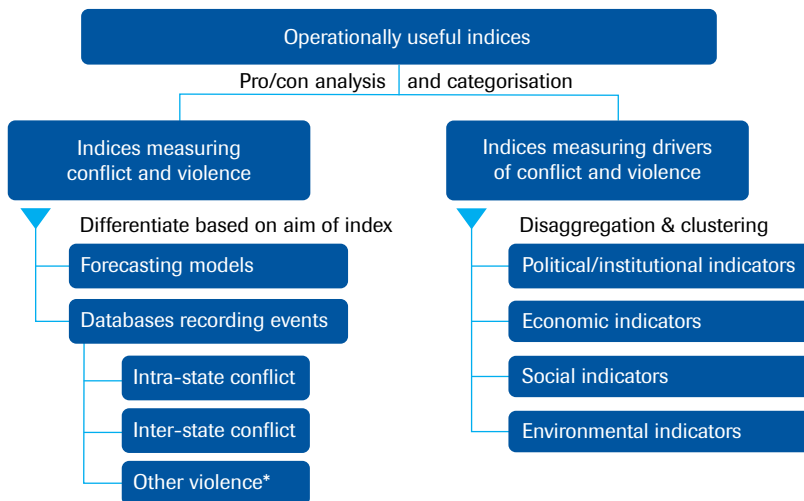
4.1 Categorisation of indices that record and predict conflict and violence

The primary indices that describe events of conflict and violence are the datasets of UCDP, HIIK and ACLED (see *Table 2*). These datasets can be used to construct the trendlines of past occurrences of violent conflict and extrapolate these into a risk assessment. All three datasets can also be used for heat maps and trend assessments.

Table 2   Indices measuring conflict and violence through recording events

Variable	Index
Internal conflict/intra-state conflict	UCDP
Conflict Barometer National Power	HIIK
Grand Total events of political violence	ACLED

Secondly, indices that forecast conflict and violence are CoupCast, EWP, GCRI and ViEWS (see *Table 3*). These forecasting models integrate explanations for violence into their models, but each forecasts different types of conflict or violence. Since they already directly forecast the potential risk of conflict and violence it is not required to further disaggregate these forecasts. On the other hand, further integrating these models is also not advisable, as these models measure very different things (e.g., CoupCast measures the risk of coups, while EWP measures the risk of mass killings). As a result, integrating those indices into one single forecast for 'conflict and violence' would undermine the added value and level of detail that each of these models separately provides.

Table 3   Indices measuring conflict and violence through forecasting

Variable	Index
Risk of coup d'état	CoupCast
Risk of mass killings	Early Warning Project
Extremely violent conflict (probability)	Global Conflict Risk Index
Violent conflict (probability)	
Risk of armed conflict	ViEWS

4.2 Categorisation of indices that measure drivers of conflict and violence

Indices that measure the drivers of conflict and violence are by far the most common. In order to address the three problems mentioned under section 2.4, this section proposes four clusters of indicators as potential drivers of conflict and violence in a country: political/institutional, economic, social and environmental indicators.

While drivers of conflict and violence can be categorised in a myriad of ways, the choice for these four clusters is based on their correspondence to the internal grouping used by the more prominent external indices such as the Fragile States Index and the Positive Peace Index as well as predictive models such as GCRI and ViEWS. Another reason is that ministries and their departments tend to have the same segmented internal organisation into units that focus on environmental factors, political issues, economic drivers, etc. As a result, the proposal for clustering ensures that the various departmental units can engage in the follow-up to mitigate conflict risks. Annex 2 describes in detail what underlying data is used for each (sub-)indicator.

It should be clear that these four clusters are not the only drivers of conflict and violence, nor is there any agreement on the relative importance of these groupings in leading to conflict (its onset), the type of the conflict and the ways in which it is sustained. Conflict is explained by multiple causes, which are often mutually reinforcing. Therefore, the categorisation is based upon a structured expert judgement to interpret the relations between and the relative importance of these four drivers of conflict and violence. Each cluster will be briefly discussed below.

4.2.1 Political/institutional indicators

The cluster 'Political and institutional indicators' groups several variables that may contribute to the emergence of conflict and violence. The conflict literature finds that non-democratic states tend to exclude large minorities from political power.[26] Also, states with recent regime changes (and thus weak or weakly controlled institutions) tend to have higher risks of violence.[27] The same holds true for states experiencing recent (violent) protests. Protests can escalate into political instability when governments mishandle them.[28] Some research suggests that weak service

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26 Håvard Hegre, Tanja Ellingsen and Scott Gates, "Toward a Democratic Civil Peace? Democracy, Political Change, and Civil War, 1816-1992," *American Political Science Review* 95, no. 1 (2001); Lars-Erik Cederman, Andreas Wimmer and Brian Min, "Why Do Ethnic Groups Rebel? New Data and Analysis," *World Politics* 62, no. 1 (2010); Edward N. Muller and Erich Weede, "Cross-National Variation in Political Violence: A Rational Action Approach," *Journal of Conflict Resolution* 34, no. 4 (1990); James Raymond Vreeland, "The Effect of Political Regime on Civil War: Unpacking Anocracy," *Journal of Conflict Resolution* 52, no. 3 (2008).

27 Lars-Erik Cederman, Simon Hug and Lutz F. Krebs, "Democratization and civil war: Empirical evidence," *Journal of Peace Research* 47, no. 4 (2010); Daron Acemoglu and James A. Robinson, *Economic Origins of Dictatorship and Democracy*, (Cambridge, UK: Cambridge University Press, 2006).

28 Charles Tilly, *From mobilization to revolution* (New York: Random House, 1978); Hegre et al., "ViEWS: A political violence early-warning system," *Journal of Peace Research* 56, no. 2 (2019).

provision can lead to violence[29] as well as corruption.[30] The consistent finding of the effect of GDP per capita is likewise often associated with weak institutions and thus higher chances of violence.

However, the interpretation of these findings is severely contested. Some claim that weakly developed political institutional environments, like the absence of strong state institutions, elite power struggles, political exclusion, lacklustre service provision and the presence of corruption, sponsors grievances and leads to societal revolt.[31] Others see political weakness in strategic terms and point to the ability of challengers to emerge and how elite competition can lead to weak institutions.[32]

Therefore, political and institutional indicators are related to the level of stability in a country and a deterioration of the political and institutional situation may, under certain conditions, contribute to the emergence of conflict and violence. We have mapped political and institutional indicators into those that are linked to either 1) the functioning of the (political) institutions of the state and/or 2) the way various groups are struggling for political power and control over key state institutions.

Following this definition, this indicator group ranges from the ability of a government to provide health services, to the safeguarding of human rights and controlling corruption. It also includes control over the security sector, the extent to which the state has a monopoly on the use of force, and the way in which the security sector interacts with the population. Based upon the above, the following indices and their corresponding variables should be included in this cluster of political and institutional indicators (see *Table 4*). Detailed information on and the descriptions of the variables can be found in Annex II.

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29 Håvard Hegre and Håvard Mokleiv Nygård, "Governance and Conflict Relapse," *Journal of Conflict Resolution* 59, no. 6 (2015): 984-1016.

30 Philippe Le Billon, "Buying peace or fuelling war: the role of corruption in armed conflicts," *Journal of International Development* 15, no. 4 (2003): 413-426.

31 Huma Haider, "Understanding Violent Conflict," *Conflict: Topic Guide*, GSDRC Applied Knowledge Services (2014): 7-11.

32 James D. Fearon, "Why Do Some Civil Wars Last So Much Longer than Others?" *Journal of Peace Research* 41, no. 3 (2004): 275–301; James D. Fearon and David D. Laitin, "Ethnicity, Insurgency, and Civil War," *The American Political Science Review* 97, no. 1 (2003); Daron Acemoglu, Georgy Egorov and Konstantin Sonin, "Do Juntas Lead to Personal Rule?" *American Economic Review* 99, no. 2 (2009); Barry R. Weingast, "The Political Foundations of Democracy and the Rule of Law," *The American Political Science Review* 91, no. 2 (1997); Robert H. Bates, "The Logic of State Failure: Learning from Late-Century Africa," *Conflict Management and Peace Science* 25, no. 4 (2008); Robert H. Bates, Avner Greif and Smita Singh, "Organizing Violence," *Journal of Conflict Resolution* 46, no. 5 (2002).

Table 4   Political and institutional indicators

Variable	Index
Public sector management and institutions	CPIA
Institutional coping capacity	EU INFORM Risk
State legitimacy	Fragile States Index
Public services	
Human rights and the rule of law	
Security apparatus	
Factionalized elites	
External intervention	
Regime type	Global Conflict Risk Index
Regime performance	
Militarisation	Global Peace Index
Free flow of information	Positive Peace Index
Good relations with neighbours	
Voice and accountability	World Governance Indicators
Political stability and absence of violence	
Government effectiveness	
Control of corruption	

4.2.2 Economic indicators

Since the 1990s, evidence has mounted that economic factors contribute to a country's level of instability or the emergence of conflict.[33] For example, there is a link between low levels of GDP per capita and the outbreak of conflict which shows that poorer countries, but also middle-income countries, have higher risks of conflict than 'rich countries'.[34] Likewise, a stream of research suggests that the presence of certain natural resources (gold, diamonds and oil) tend to be associated with higher conflict risks.[35]

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33   Paul Collier, "Economic Causes of Civil Conflict and their Implications for Policy," in *Managing Global Chaos*, eds. A. C. Chester, F. O. Hampson and P. Aall (Washington DC: US Institute of Peace and World Bank, 2000); Edward Miguel, Shanker Satyanath and Ernest Sergenti, "Economic Shocks and Civil Conflict: An instrumental variables approach," *Journal of Political Economy* 112, no. 4 (2004).

34   Blattman and Miguel, "Civil War."

35   Philippe Le Billon, "The political ecology of war: natural resources and armed conflicts," *Political Geography* 20, no. 5 (2001); Päivi Lujala, Nils Petter Gleditsch and Elisabeth Gilmore, "A diamond curse? Civil war and a lootable resource," *Journal of Conflict Resolution* 49, no. 4 (2005); Michael L. Ross, "How Do Natural Resources Influence Civil War? Evidence from Thirteen Cases," *International Organization* 58, no. 1 (2004): 35-67; Paul Collier, Anke Hoeffler and Måns Söderbom, "On the Duration of Civil War," *Journal of Peace Research* 41, no. 3 (2004); Fearon and Laitin, "Ethnicity, insurgency, and civil war".

Recent research observes a relation between aid dependency and conflict: high levels of aid combined with a country's inability to implement sound economic policies may lead to an increase in armed violence.[36]

Again, as is the case with political/institutional factors, there is a great deal of unclarity about causal relationships. Some argue that lower economic development invites rent-seeking by elites, outsiders and predative movements, while others argue that it generates grievances that either materialise in regime-opposing movements or provide a reservoir for elite manipulation.[37] These examples demonstrate that economic factors can affect a country's level of stability and contribute to the emergence of conflict and violence.

In that context, central elements that might affect the economic situation in a country include, but are not limited to, GDP per capita, economic decline, trade balance, unemployment, horizontal inequalities, economic management, the business environment, government debt, socio-economic vulnerability as expressed by aid dependency and inequality, human flight and the brain drain, etc. Based upon the above, it is proposed to include the following indices and their corresponding variables in this cluster of economic indicators (see *Table 5*). Detailed information on and descriptions of the variables can be found in Annex II.

Table 5   Economic indicators

Variable	Index
Economic management	CPIA
Structural policies	
Socio-economic vulnerability	EU INFORM Risk
Economic decline	Fragile States Index
Uneven economic development	
Human flight and brain drain	
Development and distribution	Global Conflict Risk Index
Provision and employment	
High levels of human capital	Positive Peace Index
Sound business environment	

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36   See for example: Nadia Tahir, "Does aid cause conflict in Pakistan?" *Defence and Peace Economics* 28, no. 1 (2021): 112-135; Benjamin Crost, Joseph Felter and Patrick Johnston, "Aid Under Fire: Development Projects and Civil Conflict," *American Economic Review* 104, no. 6 (2014): 1833-56.

37   E.g. Christopher Cramer, "*Homo Economicus* Goes to War: Methodological Individualism, Rational Choice and the Political Economy of War," *World Development* 30, no. 11 (2002).

4.2.3 Social indicators

Like the political, institutional and economic indicators, social factors are also found to affect the potential for the emergence of conflict and violence. Research has demonstrated that inequalities that align with religious, ethnic, or cultural identities (often referred to as 'horizontal inequalities') are more likely to result in violence.[38] Recently, also ethnic diversity has reappeared as a potential explanation for violence.[39] Other factors include income inequality and the distance to the capital and border areas (all meant to proxy state neglect).[40] Many studies find that countries with large populations and a high population density are at a higher risk of violence[41], even though the causality of this has not been proven. Previous violence is also generally a strong predictor of new violence, which is why most forecasting models mainly derive their predictive power from looking at previous incidents of violence.[42]

These social indicators cannot be interpreted in one clear way. Common readings suggest that structural exclusion and the sense of collective injustice may result in the fact that a particular social group feels alienated from the wider society. In turn, this may contribute to animosity and resentment, which can serve as a breeding ground for conflict.[43] Other research, however, suggests that social divisions are mobilised by political actors, create stumbling blocks for mobilisation and stress one element above the others. What this suggests is that taking social factors into account is important for understanding the underlying causes of conflict and violence, but also that the specific conditions are unclear and complex.

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38   Barbara Harff and Ted Robert Gurr, *Ethnic conflict in world politics* (New York: Routledge, 2018).

39   Halvard Buhaug, Scott Gates and Päivi Lujala, "Geography, Rebel Capability, and the Duration of Civil Conflict," *Journal of Conflict Resolution* 53, no. 4 (2009); Julian Wucherpfennig et al., "Politically Relevant Ethnic Groups across Space and Time: Introducing the GeoEPR Dataset," *Conflict Management and Peace Science* 28, no. 5 (2011).

40   M. Rodwan Abouharb and Anessa L. Kimball, "A New Dataset on Infant Mortality Rates, 1816–2002," *Journal of Peace Research* 44, no. 6 (2007): 743-754.

41   Clionadh Raleigh and Håvard Hegre, "Population size, concentration, and civil war. A geographically disaggregated analysis," *Political Geography* 28, no. 4 (2009); Clayton L. Thyne, "Cheap Signals with Costly Consequences: The Effect of Interstate Relations on Civil War," *Journal of Conflict Resolution* 50, no. 6 (2006).

42   Hegre et al., "ViEWS : A political violence early-warning system"; Artur N. Usanov and Tim Sweijs, "*Models Versus Rankings: Forecasting Political Violence*," The Hague Centre for Strategic Studies Working Paper (March 2017); Håvard Hegre, Nils W. Metternich, Håvard Mokleiv Nygård, and Julian Wucherpfennig, "Introduction: Forecasting in peace research," *Journal of Peace Research* (2017): 113-124; Jack A. Goldstone et al., "A Global Model for Forecasting Political Instability," *American Journal of Political Science* 54, no. 1 (2009).

43   World Bank and the United Nations, *Pathways to Peace: Inclusive Approaches to Preventing Violent Conflict*, (World Bank, 2018); Huma Haider, "Understanding Violent Conflict."

Aspects that may affect the social dimension are: social cohesion, gender (in)equality, the strength of civil society, ethnic diversity, demographic pressures, the number of refugees and IDPs in a country, social inclusion, and group grievances. This cluster includes factors that influence and shape the interaction within different groups in society, which could put the societal fabric under strain, with instability as a result. Based upon the above, the following indices and their corresponding variables should be included in the cluster of social indicators (see *Table 6*). Detailed information on and descriptions of the variables can be found in Annex II.

Table 6   Social indicators

Variable	Index
Policies for social inclusion and equity (nos. 7-10)	CPIA
Vulnerable groups	EU INFORM Risk
Group grievances	Fragile States Index
Demographic pressure	
Refugees and IDPs	
Ethnic compilation	Global Conflict Risk Index
Demographics	
Acceptance of rights of others	Positive Peace Index

4.2.4 Environmental indicators

The fourth and last cluster of drivers of conflict and violence that may help in explaining these dynamics is the cluster of environmental indicators. Unlike the previous clusters, the effect of environmental indicators on conflict and violence is more contested. Major research projects in the 1980s and 1990s were not able to find any conclusive evidence of a link between the environment and violence. Recent research on the alleged effects of climate change is also rebutted in the conflict community.[44] Environmental factors are seldom a direct cause of conflict.

The only exception pertains to terrain types that may facilitate rebellion such as rough, mountainous or forested terrain that limits access to regions which in various studies explains the presence of violence.[45] Consequently, recent debates have focussed on the question whether scarcity can contribute to violent conflict, but the jury is still out on the result.

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44   Mach et al., "Climate as a risk factor for armed conflict," *Nature* 571 (2019): 193-197.

45   Fearon and Laitin, "Ethnicity, insurgency, and civil war"; Håvard Hegre and Nicholas Sambanis, "Sensitivity analysis of empirical results on civil war onset," *Journal of Conflict Resolution* 50, no. 4 (2006).

Some research suggests that environmental shocks can lead to a deterioration of the institutional or economic situation of a country, which in combination might increase the risk of the emergence of conflict but other research finds that scarcities (e.g., over water) tend to promote cooperation more than they invite conflict.[46] Some of the elements that may affect the environmental situation in a country are climate change, the risk of natural disasters and geographic challenges – despite the caution in interpreting these results.

Based upon the above, the following indices and their corresponding variables should be included in the cluster of environmental indicators (see *Table 7*). Detailed information on and descriptions of the variables can be found in Annex II. There is some room to improve this measure with other potentially indicators (e.g. consider the work of the Water, Peace and Security consortium and the 'Weathering Risk' project.

Table 7   Environmental indicators

Variable	Index
Policies for social inclusion/equity (no. 11)	CPIA
Natural hazards	EU INFORM Risk
Geographic challenges	Global Conflict Risk Index

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46   There is some debate on the degree on the extent to which climate change leads to international cooperation, its functional forms and adherence. See Guri Bang, Arild Underda and Teinar Andresen, *The Domestic Politics of Global Climate Change: Key Actors in International Climate Cooperation* (Cheltenham, UK: Edward Elgar Publishing, 2015); Robert O. Keohane and David G. Victor, "Cooperation and discord in global climate policy," *Nature Climate Change* vol. 6, 570–575 (2016); David G. Victor, "Toward Effective International Cooperation on Climate Change: Numbers, Interests and Institutions," *Global Environmental Politics* 6 (3): 90–103 (2006); Christoph Oberlack and Klaus Eisenack, "Alleviating barriers to urban climate change adaptation through international cooperation," *Global Environmental Change*, Volume 24, 349-362 (2014). However, at the local, bilateral and regional level cooperation is very common. See: Huma Haider, "Understanding Violent Conflict."; Erica DeNicola et al., "Climate Change and Water Scarcity: The Case of Saudi Arabia," *Annals of Global Health*, Volume 81, Issue 3, 342-353 (2015); Jorge M. Pacheco, Vítor V. Vasconcelos and Francisco C. Santos, "Climate change governance, cooperation and self-organization," *Physics of Life Reviews*, Volume 11, Issue 4 (2014); Caitlin A. Doughty, "Building climate change resilience through local cooperation: a Peruvian Andes case study," *Regional Environmental Change* 16, 2187–2197 (2016); Shlomi Dinar, David Katz, Lucia De Stefano and Brian Blankespoor, "Climate change, conflict, and cooperation: Global analysis of the effectiveness of international river treaties in addressing water variability,"*Political Geography*, Volume 45, 55-66 (2015); Parvin Sultana et al., "Transforming local natural resource conflicts to cooperation in a changing climate: Bangladesh and Nepal lessons," *Climate Policy*, 19:1, 94-106 (2019).

5 Recommendations on integrating quantitative and qualitative data

This chapter will conclude the analysis of the different databases with a process proposal on how to select the data, visualize it and integrate it with qualitative expert analysis in a regional workshop. Each step will be briefly discussed in turn.

5.1 Preparing the quantitative data for qualitative analysis

To present indicators to qualitative experts, the available data has to be *gathered, normalised, disaggregated and collated*. Data gathering can be automated for several of the indices that offer an Application Programming Interface (API), but several indices only release their datasets once per year in specific file formats that will require manual inclusion into the database. In order to reliably extract trends and provide forecasts on the chance of conflict and violence with a time range of 1-5 years the data should ideally be collected and included for a period of 10 years, even if not all indices currently offer data this far back. A longer time frame for trend analysis also compensates for the challenge that some indices have a time lag of a year or more.

Since different indices use different scoring systems, it is essential to normalise the data into a standard scale so that indicators can be easily compared. If a cluster of a particular index consists of multiple variables, one normalised score should be aggregated, not multiple normalised scores per variable. In case the index uses a reversed scale (where 1 is the worst outcome and 10 the best), this should also be accounted for in the formula. In order to obtain sufficient granularity and associate higher scores with higher levels of risk it is advisable to apply a scale from 0-10, with 10 being the worst and 0 being the most stable.

5.2 Visualising the data

Once the data has been collected and processed it should be *visualised and presented* in a manner that makes it readily accessible and useful to analysts. This report does not advocate the wholesale lumping together of (cross-index) indicators into single scores, due to the risks of counting the same variables several times (autocorrelation) and the loss of nuance. Instead, it suggests to build upon the experience of the Root

Causes Dashboard and Risk Monitor by expanding both the country pages and making a regional overview with a number of visualisations. See *Box 1* for suggestions on a number of distinctions to be made within the data.

Box 1   Three distinctions to keep in mind when presenting data for the workshop

- Static and dynamic values. Most indices have a habit of producing rankings of countries based on their static, most recent scores and only show a relatively limited option to compare change over time using dynamic values; a steady or rapid decline in one of the indicators could give analysts important flags that warrant attention.
- Absolute values and relative values, i.e., both listing a country's absolute values *and* how it compares to other countries in the region. This allows for numbers to be put into perspective and is particularly important for probabilistic estimates, where a relatively small percentage that seems innocuous can nonetheless be significant if it is double or triple that of other countries in the region.
- Compound scores and disaggregated indicators. For analysts it is most convenient to reduce the number of indicators by applying a weighting scheme to turn them into compound scores. However, due to the vastly different nature of the different indices and the multifaceted dynamic of the three dependent variables, the 'holy grail' of a compound score that sums up everything in one single figure is both unattainable and undesirable. Recent research on drivers of political instability in sub-Saharan Africa points out that "*states are vulnerable for a variety of reasons, and that it may not be useful to sum up indicators to generate one overall score that can be used to rank states across time.*". Where possible analysts should therefore have the opportunity to directly work with the disaggregated data. Only at the initial stages of analysis can the use of an unweighted average of the different indicators in each of the four clusters be considered for visualisation purposes, with the caveat that these compound scores should only be relied upon to compare *across* countries and that the underlying data should always be readily available.

For the <u>country page</u> the following four visualisations could be included to allow for easy interpretation by analysts:

1. For the event recording indices (ACLED, HIIK and UCDP): the events visualised as trendlines over the last 10 years. This allows analysts to extrapolate and notice upward trends that warrant further attention.
2. For the indices that forecast conflict and violence (GCRI, CoupCast, Early Warning Project and, if available, ViEWS): the forecast percentages visualised as trendlines over the last 10 years for the different manifestations of conflict and violence. This gives a quick, at-a-glance overview of the probabilistic assessments of external forecasting models.
3. For the indices that measure drivers of conflict and violence: a <u>scatter chart</u> that plots the different indicators for the four clusters (as outlined in *Table 2*). The Y-axis should include the absolute value, the X-axis should show the change over time, ideally with an option for analysts to adjust the timeframe to allow for change over a 1-year, 3-year, 5-year and 10-year period. This allows analysts to quickly cluster together indicators in four quadrants, paying most attention to the top-right quadrant where the absolute value is already high and the deterioration is significant.
4. Additionally, for the qualitative indices such as ICG, their trend analysis ("significantly deteriorated", "significantly improved" or "neither") and, if available, specific assessments ("conflict resolution opportunity" or "conflict risk alert") could be included on the country page as separate textboxes, linking through to the underlying reports.

The <u>regional overview</u> allows for a comparison between and the prioritisation of countries in a delineated region; it therefore inevitably summarises and compresses the data, but should do so in a manner that does not lose its underlying integrity and analytical value. In addition to an overview of the absolute and static scores themselves in table format, the following two views could be included:

*   An overview and ranking of the countries in the region with the highest scores in each of the forecasting indices and indices of fragility and instability. This allows for a quick overview of which countries are seen as most at risk by each of the different indices.
*   An overview of the countries that have experienced the sharpest deterioration in the political/institutional, economic, social and environmental categories. In order to reduce the number of data points generated by this overview, here a compound score for each category consisting of an unweighted average of the different underlying indicators could be employed, taking into account the caveats mentioned above.

5.3 Combining quantitative data with qualitative expert analysis through a Delphi workshop

Once the quantitative data has been collected, collated and visualised, country analysts or policy-makers with knowledge of the region could in theory already draw their own conclusions and on that basis make a list narrowing down the number of countries into a shortlist.

However, it is highly advisable to introduce one additional step in this process in order to collectively review the quantitative data. This helps to account for the complex ways in which conflict and violence occur and allows for the quantitative data to be integrated with the qualitative assessments of country experts. Depending on the scope of the analysis and the available time and resources, countries that consistently rank among the most stable in the different categories and that show few signs of deterioration over time could be excluded.

In order to structure the expert discussions during the country workshop and convert these to quantitative scores that can be juxtaposed with the quantitative data harvested during the previous stages, it is advisable to use a structured communication technique known as the *Delphi method*. This technique, designed by the RAND corporation in the 1950s, uses successive rounds of surveys and feedback in order to foster expert consensus on complex issues and generate collective forecasts.[47] Multiple rounds of Delphi surveys can be used to initially gauge expert opinion, identify the main points where assessments diverge, stimulate a qualitative debate on these topics, work towards a convergence of opinions and eventually integrate them into a single assessment.

As part of the workshop process the following nine steps should be taken (see *Figure 6*):
1. **Define the regional level of analysis** in order to decide on the scope of the exercise. In theory the method should be applicable to the world at large, but for the purpose of the Dutch EWEA process, the starting point for choosing the appropriate level of analysis could be the regional subdivisions that currently exist within the Dutch MFA. The division into six fairly large regions as suggested by Pronk and Kruijver would be another option.[48] That said, the larger the chosen region, the more difficult it will be to find experts that can comment on each of the countries, and

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47   For more information on the Delphi method see Mylène Rivière, "What is the Delphi Method and What is it Used For?", Mesydel (blog), February 21, 2018; for an application of the methodology to strategic planning in response to armed conflict, see Roanne van Voorst and Dorothea Hilhorst, *Humanitarian action in disaster and conflict settings: Insights of an Expert Panel* (Rotterdam: International Institute of Social Studies, May 2018), pp 8-9.

48   Pronk and Kruijver, *Wijzer in de Toekomst*.

the less time is available per country. Past experience with regional conflict analysis workshops indicates that an ideal range is between 10-20 countries.

2. **Identify workshop participants**. In order to strike a balance between the need for a relatively representative survey and still ensure enough room for a qualitative discussion, the number of participants in the workshop should range between 10-20 experts with a wide range of regional and thematic expertise. Special attention should be paid to ensure that there is no regional bias in the selection of the experts and that the group has sufficient expertise in each of the four thematic clusters (political/institutional, economic, social and environmental). Policy-makers can be included at this stage in their capacity as experts if time permits, although their participation may be more relevant in later stages of the EWEA process specifically to gauge Dutch interests.

3. **Conduct a first, asynchronous survey**. All participants in the workshop should receive a survey well in advance, asking them to score the expected stability of the selected countries according to seven indicators: the three manifestations of violence and instability (inter-state, intra-state and other political violence) and the four main potential drivers of conflict and violence (political/institutional, economic, social and environmental). In order to add a qualitative layer to the analysis they can also provide a brief explanation for each of the indicators. In order to avoid inadvertently generating bias the experts will be asked to complete this survey *without* having access to the open-source index data.

4. **Compare and contrast the expert assessments**. For each country, both the average score on each indicator and the standard deviation (StDev) of the survey responses should be made visible. Higher StDev scores effectively mean more divergence within the group; these should be flagged for discussion purposes, together with the countries with the highest ratings.

5. **Compare and contrast the expert assessments with the data yielded by the indices**. For each of the indicators the average ranking of the experts should be visualized next to the disaggregated data of the indices, using the regional overview page as a starting point and digging deeper into the individual country pages where needed. Areas where the assessment of the experts diverges significantly from those of the indices should be flagged for discussion.

6. **Present the results to the experts**. Prior to the discussion the researchers will present both the results of the first phase of the Delphi and the comparison with external indices to the experts, together with an indication of the main areas of divergence and relevant quotes from the qualitative assessments.

7. **Organise a qualitative, structured discussion**, focusing on both the countries with the highest scores and on the countries where there is most divergence between the experts themselves on the one hand, and between the indices and the experts on the other. The discussion should particularly focus on *why* countries score higher than others; both the regional overview and the individual country pages can be referred to throughout the discussion.

8. **Conduct a second, synchronous Delphi survey, followed by a shorter discussion**. Following the discussion the experts will be asked to complete the survey a second time, allowing them to adjust their assessment based on the discussion and the data provided by the indices. The workshop moderators will then focus the discussion particularly on those areas where divergence remains strongest.

9. **Draft a concluding report** integrating the results of the second survey, the final discussion, and the quantitative data of the indices into a single set of recommendations for the list of countries that should be further analysed, including regarding their potential impact on Dutch national interests.

Figure 6   Involving country experts through a country workshop and Delphi methodology
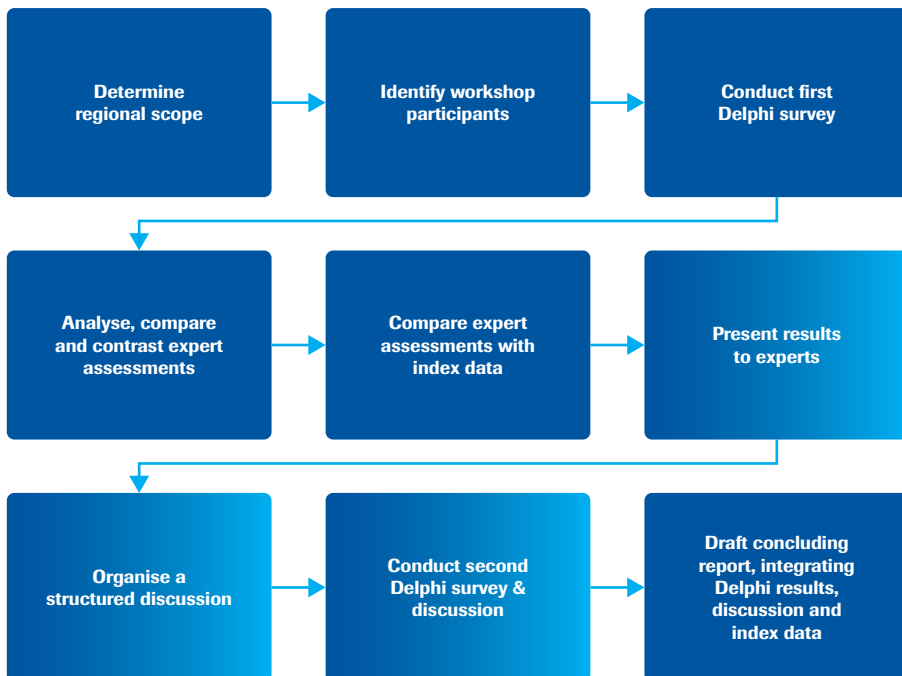
Annex I   Overview of Indices

ACLED

The Armed Conflict Location & Event Data Project (ACLED) is a non-profit organisation. It is a disaggregated data collection, analysis and crisis mapping project. It collects data on dates, actors, locations, fatalities and types of reported violence and protests across Africa, the Middle East, Latin America & the Caribbean, East Asia, South Asia, Southeast Asia, Central Asia & the Caucasus, Europe, and the United States and since 2021 has global coverage.[49] ACLED data are coded by experienced researchers who collect information primarily from secondary and local sources, partners and organisations. In addition to the quantitative dataset covering events of political violence, ACLED also produces qualitative analyses to describe, explore, and test conflict scenarios as well as developing early warning tools. Its quantitative dataset is based on a transparent methodology that is clearly outlined in the ACLED codebook. This codebook provides well worked-out definitions of the five event types that are related to 'political violence' (dependent variable). Political violence is defined by ACLED as "the use of force by a group with a political purpose or motivation"[50]. ACLED also defines five event types and 25 sub-event types.

Center for Systemic Peace

The Center for Systemic Peace (CSP) is primarily engaged in innovative research with reference to political violence within the structural context of the global system. CSP monitors political behaviour in each of the world's major states (with a population greater than 500,000) and reports on emerging issues and persisting conditions related to the problems of political violence and state failure.[51] One of the CSP's main products is the State Fragility Index, which rates countries according to their level of fragility in effectiveness and legitimacy across four dimensions: security, political, economic, and social.[52] The State Fragility Index is based on the premises that any assessment of a state's ability to win the loyalty of its people depends on its performance in multiple spheres. In addition, governing regimes need to exhibit both effectiveness and legitimacy in their performance. Put differently, "to achieve maximum stability a regime must both carry out the tasks expected of a competent government and maintain legitimacy by being perceived as just and fair in the manner it carries out those tasks"[53].

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49   "About ACLED," ACLED, accessed on 11 March 2021.

50   ACLED, *Armed Conflict Location & Event Data Project (ACLED) Codebook*, (2019), 7.

51   "Our Mission," Center for Systemic Peace, published 2014, accessed on 12 March 2021.

52   Monty G. Marshall and Gabrielle Elzinga-Marshall, *Global Report 2017: Conflict, Governance, and State Fragility* (Vienna, USA: Center for Systemic Peace, August 27, 2017), 34.

53   Marshall and Elzinga-Marshall, "Global Report 2017," 44.

Dependent Variable	General	Event type	Sub-event type
Political violence	Violent events	Battles	Armed clash Government regains territory Non-state actor takes over territory
		Explosions/remote violence	Chemical weapon Air/drone strike Suicide bomb Shelling/artillery/missile attack Remote explosive/landmine/IED and grenade
		Violence against civilians	Sexual violence Attack and abduction/forced disappearance
	Demonstrations	Riots	Violent demonstration Mob violence
		Protests	Peaceful protest Protest with intervention Excessive force against protesters
	Non-violent actions	Strategic develop-ments	Agreement Arrests Change to group/activity Disrupted weapons use Headquarters or base established Looting/property destruction Non-violent transfer of territory Other

Each of the indicators is rated on a four-point fragility scale: 0 "no fragility," 1 "low fragility," 2 "medium fragility," and 3 "high fragility" with the exception of the Economic Effectiveness indicator, which is rated on a five-point fragility scale (including 4 "extreme fragility"). The State Fragility Index then combines scores on the eight indicators and ranges from 0 "no fragility" to 25 "extreme fragility."

Dimension	Indicator	Variables/Sub-indicators
Security	Effectiveness	Total Residual War, a measure of general security and vulnera-bility to political violence, 1994-2018 (25 years). – Sum of annual scores for all wars in which the country is directly involved for each continuous period of armed conflict – Interim years of "no war" between periods of armed conflict – Years of peace, or no war, since the end of most recent war period
	Legitimacy	State Repression, a measure of state repression, 2003-2018 (based upon the Political Terror Scale). – Nine-year average – Four-year average – Most recent value

Dimension	Indicator	Variables/Sub-indicators
Political	Effectiveness	Regime/Governance Stability, 1998-2018. – Regime durability – Current leader's years in office – Total number of coup events
	Legitimacy	Regime/Governance inclusion, 2018. – Factionalism – Ethnic group political discrimination against 5% or more of the population – Political salience of elite ethnicity – Polity fragmentation – Exclusionary ideology of ruling elite
Economic	Effectiveness	GDP per capita, 2010-2018. – The annual values for the past seven years are reviewed to verify that the value in the most recent year is consistent with values in previous years and that a threshold/category change in a country's GDP per capita indicator score is part of a consistent trend.
	Legitimacy	Share of Export Trade in Manufactured Goods, 2003-2018. – Merchandise exports include two classes of products: manufactured goods and primary commodities; low percentage of manufactured goods indicates a high reliance on primary commodities for foreign exchange. The annual values of this variable are examined to ensure that the most recent annual value is a representative value within the established range for that country.
Social	Effectiveness	Human Capital Development, 2018. - Based on data from the Human Development Index from UNDP.
	Legitimacy	Human Capital Care, 2018. - Based on the infant mortality rate (the number of deaths of infants under one year old from a cohort of 1,000 live births).

Country Policy and Institutional Assessments
The World Bank's Country Policy and Institutional Assessment (CPIA) measures the ability of a country's policy and institutional framework to address issues like poverty, sustainable growth and making effective use of development assistance. Eventually, this assessment leads to country performance ratings that are used for allocating resources from the International Development Assistance.[54] The assessment consists of a set of 16 criteria that are clustered in four groups: economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions.

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54 Independent Evaluation Group (World Bank Group), *The World Bank's Country Policy and Institutional Assessment* (2010), 13.

This broadly reflects the determinants of growth and poverty reduction identified in the economics literature.

Each of the indicators/criteria is rated on a scale from 1 (very weak) to 6 (very strong).

Dependent Variable	Group	Indicator/criteria
Ability to make use of aid	Economic management	Macroeconomic management
		Fiscal policy
		Debt policy
	Structural policies	Trade
		Financial sector
		Business regulatory environment
	Policies for social inclusion/equity	Gender equality
		Equity of public resource use
		Building human resources
		Social protection and labour
		Policies and institutions for environmental sustainability
	Public sector management and institutions	Property rights and rule-based governance
		Quality of budgetary and financial management
		Efficiency of revenue mobilisation
		Quality of public administration
		Transparency, accountability and corruption in the public sector

CoupCast
CoupCast is the principal forecasting project of the One Earth Future Foundation. CoupCast uses historical data and machine learning to predict the likelihood that a coup attempt might occur in any country on a month-to-month basis. CoupCast predicts the risk of a coup attempt for the subsequent two years. Coups, unlike other political crises, are precisely timed events with the aim of ousting a specific individual or regime from power. This leads to the conclusion that the risk of a coup may vary greatly over the course of a year. Therefore, CoupCast estimates the risk of a coup attempt on a month-to-month basis. The dataset that is being used to predict the risk of a coup attempt is the 'Rulers, Election, and Irregular Governance (REIGN)' dataset. The data that is being collected and reviewed by the researchers includes: historical coup data, socio-economic conditions, political conditions, political violence indicators, regional shocks and leader traits.

Dependent Variable	Variables	Description
Coup d'état risk	Leader characteristics	Elected, tenure, age, male/female, military career
	Regime characteristics	Regime type, regime duration
	Election events	Last election, last loss, anticipation of election in nearby future, referendum, legislative election, executive election, irregular election
	Irregular events	Successful coup, coup attempt, previous violent civil conflict

CrisisWatch

CrisisWatch is the International Crisis Group's (ICG) global conflict tracker, a tool designed to help decision-makers prevent deadly violence by keeping them up to date with developments in over 70 conflicts and crises worldwide, identifying trends and alerting them to the risks of escalation and opportunities to advance peace. It does so from a qualitative perspective, not including statistical data or making use of indices. The CrisisWatch conflict tracker both looks ahead as well as assesses the past. In assessing the past month, CrisisWatch classifies each development of a conflict by labelling the conflict as 'significantly deteriorated', 'significantly improved', or 'neither deteriorated nor improved'. In looking forward to the month ahead, CrisisWatch identifies whether there is a risk of escalation in an already existing conflict or a risk of the emergence of a new conflict in a specific country by issuing a so-called 'conflict risk alert'. Another possibility is that CrisisWatch sees a window of opportunity to advance peace efforts. In this case, the conflict tracker will issue an alert on a 'conflict resolution opportunity'.

Early Warning Project (US Holocaust Museum)

The Early Warning Project (EWP) is a joint initiative by the US Holocaust Memorial Museum (USHMM) and the Dickey Center for International Understanding. Studies have shown that mass atrocities are never stand-alone events: they are always preceded by a range of 'early warning signs'. If these signs are detected, their causes be addressed, thereby preventing potential catastrophes. Through making use of both quantitative and qualitative methods the EWP aims to spotlight countries (worldwide) where mass atrocities have not begun, but where the risk of such violence is high.[55] Aspects that are taken into account when making the risk assessment are grouped into five categories: 1) basic country characteristics; 2) war and conflict; 3) human rights and civil liberties; 4) governance; and 5) socio-economic aspects. Subsequently, countries at risk can broadly be divided into four groups: 1) highest risk; 2) unexpected results; 3) increasing risk; and 4) consistently high risk.[56]

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55 "Early Warning Project," accessed on 15 March 2021.
56 "How to Use Our Statistical Risk Assessments," Early Warning Project, accessed on 15 March 2021.

To generate a risk assessment, use is made of a simple roadmap: 1) identifying historical episodes of state- and non-state-led mass killings; 2) compiling data on potential 'predictors' or 'risk factors' - i.e. characteristics of countries that are thought to be associated with the likelihood of mass killing in the near future; 3) training different statistical algorithms on historical data (1945 to 2015) to identify a model that performs well in predicting the onset of mass killings within the training set; 4) testing alternative models and selecting one that maximizes accuracy; and 5) using current data on countries to make forecasts two years into the future.

Dependent Variable	Category	Variables
Mass killings	Basic country characteristics	Region, age of country, population size
	War and conflict	Ongoing mass killings, previous mass killings, battle-related deaths, coup attempt(s) in past five years
	Human rights and civil liberties	State party to the optional protocol to the ICCP, freedom of religion, political killing, freedom of domestic movement, freedom of discussion, social group equality, evenness of civil liberties, civil society repression
	Governance	Minority control, candidate restriction, party ban, judicial reform, power distributed by social group
	Socio-economics	Infant mortality rate, annual % change in GDP per capita, ethnic fractionalisation, trade openness

EU INFORM Risk

The EU INFORM Risk Index is a global, open-source risk assessment for humanitarian crises and disasters. The index provides support for decisions on prevention, preparedness and response. In essence, the INFROM Risk Index has three dimensions: hazard & exposure, vulnerability and lack of coping capacity. These dimensions are conceptualised in a counterbalancing relationship: the risk of what (natural and human hazards), and the risk to what (population). The INFORM model balances two major forces: the hazard & exposure dimension on the one side, and the vulnerability and the lack of coping capacity dimensions on the other side.[57]

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57 "INFORM Risk," European Commission; "INFORM Risk - Methodology," European Commission, accessed on 16 March 2021.

Dependent Variable	Risk dimension	Description	Indicators
Risk of humanitarian crisis	Hazard & Exposure	Probability of physical exposure associated with specific hazards. As such it represents the load that the community must deal with when exposed to a specific hazard.	Natural hazards
			Human hazards
	Vulnerability	Intrinsic predispositions of an exposed population to be affected, or to be sus-ceptible to the damaging effects of a hazard.	Socio-economic vulnerability
			Vulnerable groups
	Lack of coping capacity	Ability of a country to cope with disasters in terms of formal, organized activities and the effort of the coun-try's government as well as the existing infrastructure which contribute to the reduction of disaster risk.	Institutional
			Infrastructure

Fragile States Index
The Fund For Peace's primary tool in assessing a country's level of state fragility is the Fragile State Index (FSI). The FSI helps to identify when a state is not capable of coping with the pressure that is put upon it by (external or internal) pressure factors. The ultimate goal of the FSI is to measure trends in pressures within each individual state. By identifying the most salient pressures within a country, it creates the opportunity for deeper analysis and planning by policy-makers and practitioners alike to strengthen a state's resilience.[58] The FSI does so by making use of the CAST method, which essentially comes down to a content analysis of English-language sources, including media articles, research reports and other qualitative data points (in total 45-50 million sources yearly). The FSI makes use of four broad indicator categories: cohesion, economic, political, and social and cross-cutting indicators. These categories are then divided into twelve risk indicators. The indicators provide a snapshot in time that can be measured against other snapshots in a time series to determine whether conditions in a certain country have been improving or deteriorating. In addition to the quantitative dataset, the Fund For Peace also produces a yearly report that provides a qualitative interpretation of the most important quantitative results. However, considering that this report is only issued once a year, it is of less relevance for the purposes of this research.

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58   "Methodology," Fragile States Index, published in 2018 , accessed on 16 March 2021.

Dependent Variable	Category	Indicators
State fragility	Cohesion	Security apparatus: the security threats to a state and serious criminal factors.
		Factionalized elites: the fragmentation of state institutions along ethnic, class, clan, religious, or racial lines.
		Group grievances: divisions and schisms between different groups in society and their role in access to services or resources, and inclusion in the political process.
	Economic	Economic decline.
		Uneven economic development: inequality irrespective of actual performance.
		Human flight and the brain drain: the economic impact of human displacement and the consequences for a country's development.
	Political	State legitimacy: representativeness and openness of a government and its relations with its citizenry.
		Public services: the presence of basic state functions.
		Human rights and the rule of law: relationship between the state and its population insofar as fundamental human rights are protected and freedoms observed/respected.
	Social and cross-cutting	Demographic pressures: pressure upon the state derived from the population or the environment.
		Refugees and IDPs: pressure upon states caused by the forced displacement of large communities, measuring displacement within countries as well as refugee flows into others.
		External intervention: influence and impact of external actors in the functioning of the state.

Global Conflict Risk Index

The Global Conflict Risk Index (GCRI), created by the European Commission's Joint Research Centre, is an index that presents the statistical risk of violent conflict in the upcoming 1-4 years. By forecasting the risk of violent conflict, the GCRI is in essence an early warning system that provides policy-makers with a global risk assessment. With the passage of time, the GCRI has improved the development of a methodology that helps in defining conflict and a regression model for predicting such conflicts. The basic underlying assumption of the GCRI is that structural conditions in a particular country can be connected to the occurrence of violent conflict. To that end, five risk areas are identified: political, social cohesion & public security, conflict prevalence, geography & environment, and the economy.

Dependent Variable	Risk area	Component	Independent variables
Conflict intensity	Political	Regime type	Regime type
			Lack of democracy
		Regime performance	Government effectiveness
			Level of repression
			Empowerment of rights
	Social cohesion & public security	Ethnic compilation	Ethnic power status
			Ethnic diversity
		Public security & health	Corruption
			Homicide rate
			Infant mortality
	Conflict prevalence	Current conflict situation	Recent internal conflict
			Neighbours with violent conflict
		History of conflict	Year since highly violent conflict
	Geography & environment	Geographic challenge	Water stress
			Oil producer
			Structural constraints
		Demographics	Population size
			Youth bulge
	Economy	Development & distribution	GDP per capita
			Openness
			Income inequality
		Provision & employment	Food insecurity
			Unemployment rate

Global Peace Index

The Institute for Economics and Peace (IEP) produces the Global Peace Index (GPI) on a yearly basis. The GPI measures a country's level of 'negative peace'. The concept 'peace' is difficult to define and it is often approached in a simplistic manner by stating that peace is achieved when violence or the fear of violence is absent, described as 'negative peace'. Negative peace is then measured by the GPI in three domains of peacefulness: ongoing domestic and international conflict, societal safety and security, and militarisation. Each of these domains has its own set of indicators, 23 in total. In addition to the qualitative dataset, the IEP publishes an annual report that contains a qualitative analysis of the main findings of the index, thereby translating the data into a textual analysis. However, as these reports are produced on a yearly basis, instead of regularly, it is less relevant for the purposes of this research and will thus not be considered.

Dependent Variable	Domain	Description	Indicators
Peacefulness	Ongoing domestic & international conflict	The extent to which countries are involved in internal and external conflicts, as well as their role and duration of involvement in conflicts.	Number and duration of internal conflicts
			Number of deaths from external organized conflict
			Number of deaths from internal organized conflict
			Number, duration and role in external conflicts
			Intensity of organized internal conflict
			Relations with neighbouring countries
	Societal safety & security	The level of harmony or discord within a nation.	Level of perceived criminality in society
			Number of refugees and IDPs as a percentage of the population
			Political instability
			Political terror scale
			Impact of terrorism
			Number of homicides per 100,000 people
			Level of violent crime
			Likelihood of violent demonstrations
			Number of jailed population per 100,000 people
			Number of internal security and police officers per 100,000 people
	Militarization	The link between a country's level of military build-up and access to weapons and its level of peacefulness, both domestically and internationally.	Military expenditure as a percentage of GDP
			Number of armed services personnel per 100,000 people
			Volume of transfers of major conventional weapons as recipients (imports) per 100,000 people
			Volume of transfers of major conventional weapons as suppliers (exports) per 100,000 people
			Financial contribution to UN peacekeeping operations
			Nuclear and heavy weapons capabilities
			Ease of access to small arms and light weapons

HIIK Conflict Barometer[59]

The Heidelberg Institute for International Conflict Research (HIIK) produces its Conflict Barometer on a yearly basis, covering political conflict dynamics and developments worldwide. The HIIK has analysed political conflicts by focusing on conflict processes rather than merely on the quantitative threshold of the number of casualties of war. Therefore, it can be said that the HIIK is primarily concerned with the concrete actions and communications between the parties to a conflict. The HIIK defines political conflict as "a perceived incompatibility of intentions between individuals or social groups"[60]. In order to explain political conflict, HIIK primarily looks at conflict actors, conflict measures and conflict items. This is done through determining the level of conflict intensity, where a distinction is made between a dispute, a non-violent crisis, a violent crisis, limited war and war.

Dependent Variable	Description	Elements
Political conflict	A positional difference (= perceived incompatibility of ideas and beliefs) between at least two assertive and directly involved actors regarding values relevant to a society (the conflict items) which is carried out using observable and interrelated conflict measures that lie outside established regulatory procedures and threaten core state functions, the international order, or hold the prospect of doing so.	Conflict actors: individual or collective actors who (a) are conceived as unitary, distinguishing themselves from one another through their internal cohesion and internally shared goals, and (b) are perceived as assertive.
		Conflict measures: all actions and communications by a direct or indirect actor within the context of a specific political conflict. There are two types of conflict measures: constitutive conflict measures, the presence of which establish or sustain the existence of a political conflict on a certain intensity level, and corollary conflict measures, appearing alongside constitutive conflict measures.
		Conflict items: material or non-material goods which are claimed by the direct conflict actors through constitutive conflict measures. Including: ideology/system, national power, autonomy, secession, decolonisation, subnational predominance, resources, international power, other.

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59   "Methodology," Heidelberg Institute for International Conflict Research (HIIK).

60   Heidelberg Institute for International Conflict Research (HIIK), *Conflict Barometer 2019* (Heidelberg: HIIK, 2019), 6.

Dependent Variable	Description	Elements
Conflict intensity	A feature of all conflict measures in a geographical and temporal place. The primary temporal unit of analysis is the calendar month; the primary geographical unit of analysis is the region, that is the top-level, subnational, political division of the state.	Dispute: if it meets all elements of the basic concept of a political conflict. Non-violent conflict – low intensity.
		Non-violent crisis: if physical violence is being implicitly or explicitly threatened to persons or property by at least one of the actors, or if one actor uses physical violence against property, without regarding the injury of people as acceptable. Non-violent conflict – low intensity.
		Violent crisis: when at least one actor uses force sporadically against persons – or things in case that physical violence against people is considered acceptable. The applied means and consequences are limited. Violent conflict – medium intensity.
		Limited war: when at least one actor uses force against persons and maybe things in a distinctive way. The applied means and consequences altogether are serious. Violent conflict – high intensity.
		War: when at least one actor uses force massively against persons and maybe things. The applied means and consequences altogether need to be framed as extensive. Violent conflict – high intensity.

Positive Peace Index

The Positive Peace Index (PPI) is another product of the Institute for Economics and Peace. It shares similarities with the GPI, in that it is a composite index built to gauge a multidimensional concept. In contrast to the GPI, however, the PPI approaches 'peace' from a positive angle, rather than the negative angle. Positive peace in this regard refers to the attitudes, institutions and structures that create and sustain peaceful societies. The PPI is an eight-pillar index of factors that are associated with peaceful societies: acceptance of the rights of others, equitable distribution of resources, free flow of information, good relations with neighbours, high levels of human capital, low levels of corruption, a sound business environment, and a well-functioning government. Moreover, within these pillars the 24 indicators are divided among three domains: attitudes (social views or perceptions), institutions (impact of formal institutions on society) and structures (underpinning of the socio-economic system).[61]

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61   Institute for Economics and Peace, *Positive Peace Report 2019: Analysing the Factors that Sustain Peace* (Sydney: Institute of Economics and Peace, 2019), 84.

Dependent Variable	Pillar	Domain	Indicator
Positive Peace	Acceptance of the rights of others	Structures	Gender inequality index
		Attitudes	Group grievance
		Attitudes	Exclusion by socio-economic group
	Equitable distribution of resources	Structures	Inequality-adjusted life expectancy index
		Structures	Poverty headcount ratio at $5,50 a day
		Structures	Equal distribution of resources index
	Free flow of information	Attitudes	Freedom of the press
		Attitudes	Quality of information
		Structures	Individuals using the internet (% of the population)
	Good relations with neighbours	Attitudes	Hostility to foreigners/private property
		Structures	International tourism, the number of arrivals (per 100,000)
		Structures	The extent of regional integration
	High levels of human capital	Structures	Share of youth not in employment, education or training
		Structures	Researcher in R&D
		Structures	Healthy life expectancy at birth
	Low levels of corruption	Institutions	Control of corruption
		Attitudes	Factionalized elites
		Institutions	Irregular payments and bribes
	Sound business environment	Structures	Business environment
		Structures	GDP per capita
		Structures	Prosperity index score
	Well-functioning government	Institutions	Political democracy index
		Institutions	Government effectiveness (estimate)
		Institutions	Rule of law (estimate)

UCDP

The UCDP is worldwide the main provider of data related to organised violence and civil war. The definition that the UCDP adopts for 'armed conflict' has become the global standard. The definition is as follows: "A state-based armed conflict is a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at

least 25 battle-related deaths in one calendar year"[62]. By producing high-quality data, which is systematically collected, has a global coverage, and is comparable across cases and countries, the programme provides a unique source of information for practitioners and policymakers.[63] The UCDP primarily works through observing events that must meet the criteria of constituting either armed conflict, non-state conflict or one-sided violence.

Dependent Variable	Event type	Definition
Armed conflict/ organised violence	Armed conflict	A state-based armed conflict is a contested incompatibility that concerns governments and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in one calendar year.
	Non-state conflict	The use of armed force between two organised armed groups, neither of which is the government of a state, which results in at least 25 battle-related deaths in a year.
	One-sided violence	The deliberate use of armed force by the government of a state or by a formally organised group against civilians which results in at least 25 deaths in a year.

ViEWS

The Violence Early Warning System (ViEWS) of the Uppsala University Department of Peace and Conflict Research is a pilot programme that is currently being developed, tested, and improved to address the challenges of preventing, mitigating and adapting to large-scale political violence.[64] In essence, ViEWS provides forecasts 3 years into the future for three types of political violence: state-based conflict, non-state conflict and one-sided violence.[65] ViEWS produces forecasts on political violence at two levels of analysis: country-months and subnational geographical location months.[66] The ViEWS forecasts build on several models, drawing on insights from decades of quantitative peace and conflict research. Some of these models are thematic, focussing on topics such as conflict history, the economy, political institutions, and geography. Others are

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62 "UCDP Definitions," Department of Peace and Conflict Research, Uppsala Universitet, accessed on 19 March 2021.

63 "About UCDP," Department of Peace and Conflict Research, Uppsala Universitet, accessed on 19 March 2021.

64 "About ViEWS," Department of Peace and Conflict Research, Uppsala Universitet, accessed on 19 March 2021.

65 Håvard Hegre et al., "ViEWS : A political violence early-warning system," *Journal of Peace Research* 56, no. 2 (2019): 156.

66 "Units of analysis," Department of Peace and Conflict Research, Uppsala Universitet, accessed on 19 March 2021.

more general, combining multiple themes or using information at the country and the subnational level to generate forecasts. These various forecasting models are then combined to create an ensembled model.[67]

Dependent Variable	Type of political violence	Definition
Political Violence	State-based conflict	A contested incompatibility that concerns governments and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in one calendar year.
	Non-state conflict	The use of armed force by two formally organized groups, neither of which is the government, which results in at least 25 battle-related deaths in a year (incl. conflicts between rebel and ethnic groups).
	One-sided violence	The deliberate use of armed force by the government of a state or by a formally organized group against civilians which results in at least 25 battle-related deaths in a year.

World Governance Indicators
The Worldwide Governance Indicators (WGI) is the World Bank's main tool that measures 'governance' for over 200 countries and territories over the period 1996–2019. Governance is this regard consists of "the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them"[68]. The WGI report on the level of governance is based on six dimensions: voice and accountability, political stability and the absence of violence, government effectiveness, regulatory quality, the rule of law, and control of corruption. The various indicators are collected on the basis of perceptions of enterprise, citizen and expert survey respondents in industrial and developing countries. These data are gathered from a number of survey institutions, think tanks, non-governmental organisations, international organisations, and private sector firms.

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67 Hegre et al., "ViEWS : A political violence early-warning system," 156.

68 "Worldwide Governance Indicators," World Bank, accessed on 22 March 2021.

Dependent Variable	Dimension	Description
Governance	Voice and account-ability	Perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
	Political stability and the absence of violence	Perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.
	Government effective-ness	Perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formu-lation and implementation, and the credibility of the government's commitment to such policies.
	Regulatory quality	Perceptions of the ability of the government to formu-late and implement sound policies and regulations that permit and promote private sector development.
	Rule of law	Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likeli-hood of crime and violence.
	Control of corruption	Perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

Annex II   Categorisation of Indices

Political and institutional indicators

Variables	Description	Index
Public sector management and institutions	Cluster that encompasses property rights and rule-based governance; quality of budgetary and financial management; efficiency of revenue mobilization; quality of public administration; transparency, accountability and corruption in the public sector.	CPIA
Institutional coping capacity	The ability of a country to cope with disasters in terms of formal, organized activities and the effort of the country's government.	EU INFORM Risk
State legitimacy	The representativeness and openness of government and its relationship with the citizenry.	Fragile States Index
Public services	The presence of basic state functions that serve the people.	
Human rights and the rule of law	The relationship between the state and its population insofar as fundamental human rights are protected and freedoms are observed and respected.	
Security apparatus	The security threats to a state and serious criminal factors.	
Factionalized elites	The fragmentation of state institutions along ethnic, class, clan, racial or religious lines, as well as brinksmanship and gridlock between ruling elites.	
External intervention	The influence and impact of external actors in the functioning of a state (incl. political intervention, forceful intervention and economic intervention).	
Regime type	Includes data on the regime type and the lack of democracy.	Global Conflict Risk Index
Regime performance	Includes data on government effectiveness, level of repression and empowerment rights.	

Variables	Description	Index
Militarisation	The link between a country's level of military build-up and access to weapons and its level of peacefulness, both domestically and internationally.	Global Peace Index
Free flow of information	Information on the freedom of the press, the quality of information and the percentage of the population that is using the internet.	Positive Peace Index
Good relations with neighbours	Information on hostility to foreigners/private property, international tourism, the extent of regional integration.	
Voice and accountability	Perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	World Governance Indicators (World Bank)
Political stability and the absence of violence	Perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.	
Government effectiveness	Perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	
Control of corruption	Perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	

Economic indicators

Variables	Description	Index
Economic management	Cluster that contains three central elements: macroeconomic management, fiscal policy and debt policy.	CPIA
Structural policies	Cluster that contains three central elements: trade, financial sector, and business regulatory environment.	
Socio-economic vulnerability	The (socio-economic) predispositions of an exposed population to be affected, or to be susceptible to the damaging effects of a hazard; including inequality and aid dependency.	EU INFORM Risk
Economic decline	Factors related to economic decline, including public finances (government debt), economic conditions, economic climate and economic diversification.	Fragile State Index
Uneven economic development	Inequality within the economy, irrespective of the performance of an economy, including economic equality, economic opportunity and socio-economic dynamics.	
Human flight and brain drain	The impact of human displacement (for economic or political reasons) and the consequences this may have on a country's development, including aspects like retention of technical and intellectual capital, and remittances.	
Development and distribution	Component of the economic risk area. Includes GDP per capita, openness of the economy and income inequality.	Global Conflict Risk Index
Provision and employment	Component of the economic risk area. Includes food insecurity and unemployment rates.	
High levels of human capital	PPI pillar incl. share of youth not in employment, education or training, researchers in R&D, and healthy life expectancy at birth.	Positive Peace Index
Sound business environment	PPI pillar incl. business environment, GDP per capita and prosperity index score.	

Social indicators

Variables	Description	Index
Policies for social inclusion and equity (nos. 7-10)	Cluster that includes gender equality, equity of public resource use, building human resources, social protection and labour.	CPIA
Vulnerable group	The (socio-economic) predispositions of an exposed population to be affected, or to be susceptible to damaging effects of a hazard; incl. vulnerable groups (e.g. uprooted people).	EU INFORM Risk
Group grievances	Divisions and schisms between different groups in society – particularly divisions based on social or political characteristics – and their role in access to services or resources, and inclusion in the political process.	Fragile States Index
Demographic pressure	Pressures upon the state deriving from the population itself or the environment around it (incl. population growth, population distribution, population density, (infant) mortality, the state of public health, food and nutrition, the environment and resources.	
Refugees and IDPs	The pressure upon states caused by the forced displacement of large communities because of social, political, environmental or other causes, measuring displacement within countries, as well as refugee flows into others.	
Ethnic compilation	Component of social cohesion/public security risk area incl. ethnic power status, ethnic diversity, and transnational ethnic bonds.	Global Conflict Risk Index
Demographics	Component of geography & environment risk area incl. population size and youth bulge.	
Acceptance of rights of others	PPI pillar incl. information on gender (in)equality, group grievances and the exclusion by socio-economic group.	Positive Peace Index

Environmental indicators

Variables	Description	Index
Policies for social inclusion/ equity (no. 11)	Policies and institutions for environmental sustainability. The extent to which environmental policies and institutions foster the protection and sustainable use of natural resources and the management of pollution.	CPIA
Natural hazards	Probability of physical exposure associated with natural hazards. As such it represents the load that the community must deal with when exposed to a natural hazard event. Examples: floods and earthquakes.	EU INFORM Risk
Geographic challenges	Component of geography/environment risk area, including water stress, oil producer and structural constraints.	Global Conflict Risk Index