Trends and Impacts in Conflict Settings, No. 6

Developing a Risk-Assessment Framework for the Arab Region

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Economic and Social Committee for Western Asia

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Abbreviations and acronyms

ACLED	Armed Conflict Location Event Dataset
AUC	area under receiver operator curve
CAMS	Climate Analysis and Monitoring System
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
COW	correlates of war
DRM	disaster risk management
ECOWAS	Economic Community of West African States
ESCWA	Economic and Social Commission for Western Asia
GCC	Gulf Cooperation Council
GDP	gross domestic product
GED	georeferenced event dataset
GHCN	Global Historical Climatology Network
GPI	gender parity index
IAF	institutional assessment framework
IDMC	Internal Displacement Monitoring Centre
IDP	internally displaced person
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
LDC	least developed country
Loess	local regression
MDG	Millennium Development Goal
MENA	Middle East and North Africa

NAVCO	Nonviolent and Violent Campaigns and Outcomes
NGO	non-governmental organization
NOAA	National Oceanic and Atmospheric Administration
ODI	Overseas Development Institute
OECD	Organization for Economic Cooperation and Development
PITF	Political Instability Task Force
PRIO	Peace Research Institute Oslo
RMR	regional monthly reviews
ROC	receiver operator curve
SDG	Sustainable Development Goal
SFTF	State Failure Task Force
UCDP	Uppsala Conflict Data Program
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction (formerly known as UNISDR)
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIFIL	United Nations Interim Force in Lebanon
UNTSO	United Nations Truce Supervision Organization
VAT	value-added tax
WEF	World Economic Forum
WFP	World Food Programme
WHO	World Health Organization
WPS	women, peace and security

1. Understanding Risks in the Arab Region

1. Understanding Risks in the Arab Region

A. Violent conflict, humanitarian crisis and political instability in the Arab region

The Arab region is undergoing profound transformations due to social, economic and governance factors, in addition to violent conflict, humanitarian crisis and political instability. The regional peace and security challenges threaten social and economic development trajectories and will make it very difficult for many countries in the region to reach their Sustainable Development Goals (SDGs) by 2030. In order for countries to reach their development targets, policymakers and stakeholders must understand the current and future risks of violence, crisis and instability — and the drivers of these risks — so that they can tailor their social, economic, environmental, governance, and security policies in ways that enhance prevention, mitigation, resilience, and response. Understanding risks, defined here as a combination of the probability of an adverse outcome and the potential impact of that outcome, is the first step in addressing those risks. This publication proposes a regional risk-assessment framework, including a methodology for understanding and communicating the risks of violent conflict, humanitarian crisis and political instability in the Arab region; the sources, drivers and interactions of these risks; and their potential future trends. This framework is intended to provide a regional public good by helping member States allocate resources more efficiently, take steps for prevention and mitigation, and prioritize the people and assets that are most exposed, thereby supporting the attainment of their SDG targets on schedule. The proposed framework rests solidly on existing best practices in the political, economic and environmental risk literature and is organized around the four main components of risk, which are hazard, exposure, vulnerability, and capacity.

This publication is an initial step in a longer process of consultation, collaboration, revision, and refinement. The proposals and concepts in this publication should be understood as 'food for thought' for the consideration of our project partners, member States and stakeholders, and we welcome constructive engagement on all aspects of this publication and the wider project.

The risk-assessment framework is intended to be a methodology for understanding and communicating the risks of violent conflict, humanitarian crisis and political instability in the Arab region, the elements that comprise those risks, the underlying drivers of those risks and their potential future trends. Given the complexity and interdependence of conflict, crisis and instability in the Arab region, the framework will, by necessity, pay special attention to the regional or transnational dimensions of these risks, which are comparatively less studied and less understood. Once the methodology has been designed and implemented, this framework will generate several key outputs. First, it should produce regularly updated assessments of the risks of

violent conflict, humanitarian crisis and political instability across the Arab region, spatially and temporally disaggregated to the greatest possible extent. Second, the framework should generate a regular series of longer substantive analyses published every biennium that assess emergent trends shaping the region. Finally, the methodology should be flexible enough for the Economic and Social Commission for Western Asia (ESCWA), its partners and its member States to utilize for customized analytical products, for example in responding to requests by member States for risk assessments on emerging issues.

The intent is to provide member States and the United Nations system with detailed, up-to-date and regular analyses of the multiple interacting pressure points in the Arab region. The project will establish a platform for information sharing and collaboration and propose a common methodology, based on existing best practices and United Nations models, for publication in a guidance note in both Arabic and English.

This chapter provides the motivation for the project, describes some key issues, concepts, and definitions, and identifies existing approaches and good practices for risk assessment. Chapter 2 describes historical patterns of conflict, crisis and instability in the Arab region, and reviews the leading explanations for these patterns. Chapter 3 looks at the developing landscape of risk in the region, identifying a number of deeply-concerning "megatrends" as well as potential "catalysts" for conflict, crisis and instability. Given the particular importance of trends in gender issues to risks in the Arab region, chapter 4 provides a detailed overview of recent changes in the social, economic, political, legal, and constitutional circumstances of women and girls. Chapter 5 introduces a state-of-the-art machine-learning technique that can be used to predict future risks across the region and ventures some initial findings as a proof of concept. Chapter 6 concludes the publication with some ideas about the way forward.

ESCWA is ideally situated to lead a project to develop a regional risk-assessment framework. ESCWA has a long and established record quantifying the impact of conflict on development outcomes in the Arab region and analysing demographic trends, water scarcity, poverty, gender inequality, climate change, and food insecurity, all of which are considered key drivers of future risks in the region. Moreover, ESCWA has long-standing partnerships with the relevant member State institutions, United Nations entities and specialized think tanks, and intends to mobilize this network both to contribute to this project and to be the primary audience for the risk-assessment framework.

There is much existing literature assessing the global risks of violent conflict, humanitarian crisis and political instability. The added value of this project derives from focusing on drivers of risks that are particular to the Arab region; focusing especially on the regional and transnational drivers of such risks, whereas most assessment methodologies focus only on the country level; gathering fine-grained and georeferenced data to the greatest possible extent, using ESCWA's resources and institutional relationships in the region; and leveraging the new incident-level databases on conflict, crisis and instability, which are still new enough that this project will be treading on relatively fresh ground.

During this project, ESCWA intends to draw on its intergovernmental machinery to engage and

advocate with its member States, raising awareness of the multitude of risks facing the Arab world and improving regional cooperation on these issues. Internally, the framework should also be used to improve United Nations development programming and policymaking.

B. The importance of risk assessment

Risk assessments and risk forecasts are essential components of effective public policy, across any number of policy domains, including, among others, natural disaster management, economic planning, security-sector policy, social protection, and even education. Understanding risks, defined as a function of the probability of an adverse outcome and the potential impact of such an outcome, is the first step in reducing and managing those risks. Understanding risks allows policymakers to allocate resources efficiently, to take steps for prevention and mitigation, and to prioritize the people and assets that are most exposed. Moreover, understanding the likely trends and underlying drivers of risks allows policymakers to address areas of vulnerability and to build resilience well in advance of possible negative events. Risk-conscious policymaking is an international best practice.

The Arab region faces profound peace and security challenges, which, in turn, threaten trajectories for social and economic development. In the Arab region, a better understanding of the levels, trends and drivers of the risks of violent conflict, humanitarian crisis and political instability will help governments in the region tailor their social, economic, environmental, governance, and security policies in ways that improve prevention, mitigation, resilience, and response. Effectively reducing such risks can save countless lives and lead to improved development outcomes and increased well-being across the Arab region. A risk-assessment framework is therefore a regional public good because it will help member States by providing critical information and advice for addressing common threats in a collaborative fashion.

An inclusive and participatory process of assessing risks can have other benefits. According to the United Nations guidelines for national disaster risk assessments, a successful regional risk-assessment process can bring together multiple sectors and stakeholders to understand these risks and the causes of these risks from various hazards and vulnerabilities. A successful regional risk assessment, embedded in national development and policy planning, can be the foundation for successful risk management, ranging from prevention and reduction to preparedness, response and recovery.[1]

An important feature of analytical models is their ability to communicate their findings in policy-relevant and actionable terms. It is not enough, for example, to produce single-point estimates of the risks of conflict or instability without accompanying explanations about the drivers of risk and their trends over time, explained in accessible terminology and aimed at influencing public policy design and implementation. For example, an assessment framework would not be helpful to practitioners if it merely told us that Iraq, Libya, Syrian Arab Republic, and Yemen are the countries with the highest risk of ongoing conflict in the near term. Rather, the framework should also strive to explain why these countries are at heightened risks, how these risks and their drivers are

changing over time (or are not), and where these risks are more (or less) acute. The framework, for example, could point practitioners to political exclusion, poor job prospects and water stress as key drivers of conflict risk in country A, but point to price fluctuations, low State capacity and extremist ideologies as key drivers in country B. Therefore, a core task of the risk-assessment framework will be to translate its estimates into policy-relevant narratives that practitioners can use and to see how different risks interact, compound and cascade. The framework should help policymakers identify potential remedies and confront the trade-offs of policy alternatives.

C. Defining risk

Economists generally define risk as the expected value or expected utility of some event, where:

EV = (probability of an event occurring) * (expected loss in case of that event) (1.1)

A simple example is a gambler betting on dice or roulette in a casino: the likelihood of all potential outcomes of a dice roll or a roulette spin are well known, as are the amounts wagered and the payoffs offered by the casino for each potential outcome. With this information, gamblers could calculate their expected value or risk of a given wager in a given game. The probability of some event occurring can be described as the "hazard" or "hazard rate" of some occurrence. In certain cases, this probability of future events can be estimated using the frequency of historical events, or, as in the case of a fair set of dice or a fair roulette wheel, by known physical characteristics.

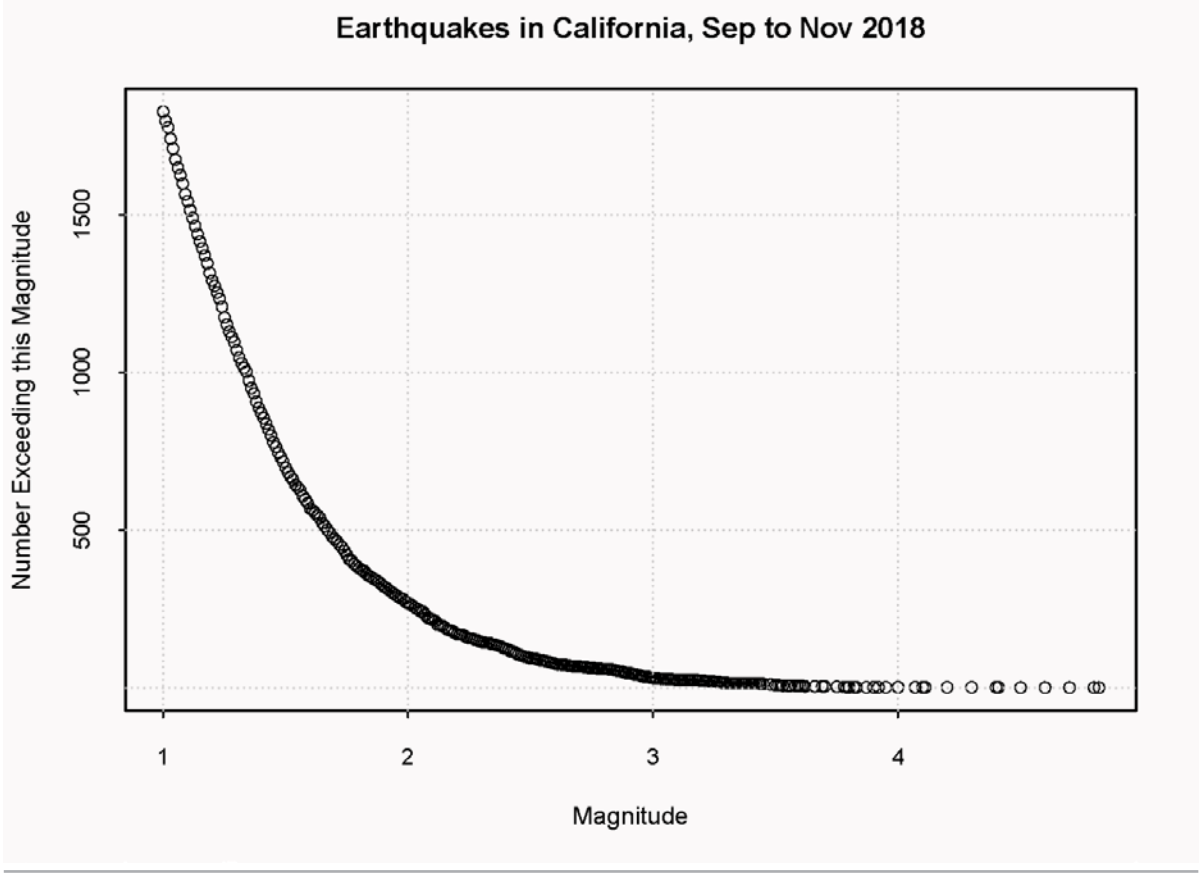
This basic definition of risk can be elaborated depending on the exact risk being calculated. For example, similar approaches are used in assessing natural disaster risk, such as for earthquakes of a given magnitude:

Earthquake risk = (probability of an earthquake) * (estimated damage and losses) (1.2)

Calculating earthquake risk is relatively straightforward. Since the early 1900s, the size, location and frequency of earthquakes have been well measured and recorded using seismographs; it turns out that the frequency and magnitudes of earthquakes follow a mathematical relationship called a "power law".

As an example, figure 1 shows the cumulative frequency of earthquakes of a given magnitude in California in September, October and November 2018.[2] The magnitude scale for earthquakes is by definition in logarithmic form, meaning that an increase of one point on the magnitude scale is equivalent to approximately 32 times greater intensity or amount of energy released, while a two-point increase on the magnitude scale represents a 1,000 times greater intensity. Over the three-month period, there were 1,826 earthquakes in California, the vast majority of which were quite small: 1,558 of these earthquakes had a magnitude of less than 2.0. Only 268 earthquakes exceeded a 2.0 magnitude, and two earthquakes exceeded a 4.0 magnitude. This so-called power-law relationship is indicated by the shape of the scatterplot in figure 1.

Figure 1. Frequency and magnitude of earthquake hazards



Source: Author based on data from the United States Geological Survey, accessed January 2020.

In addition to the probability of an earthquake of a given magnitude over time, experts can also calculate the number of potential fatalities and injuries, as well as the potential damage to infrastructure, using information on construction patterns, building codes, geology, population density and location, and so forth. Experts might also estimate the potential economic losses of an earthquake of a given size using historical data on losses. With each of these inputs, experts can then calculate the earthquake risk. They can claim, for example, that there is a 60 per cent chance of a magnitude 6.7 earthquake occurring in Los Angeles in the next 30 years,[3] and the potential damage of such an earthquake is on the order of $35 billion in 2018 dollars. The earthquake risk from a 6.7 magnitude quake in the next 30 years, in other words, the expected value of such an earthquake, is therefore roughly $21 billion.

This quantified risk assessment gives policymakers some sense of how much they should be willing to spend to mitigate this earthquake risk, through retrofitting buildings, emergency preparedness, recovery planning,

relocating facilities, or other interventions. This figure also allows comparisons with other quantified natural disaster risks, such as cyclone or wildfire risks, which then facilitates the prioritization of disaster mitigation and disaster management policies and weighing their trade-offs.

Not every natural disaster risk is as straightforwardly calculated as earthquake risks. Fires, floods and cyclones follow certain annual and seasonal patterns, but their frequencies are less predictable than earthquakes and, in recent times, are changing due to climate change. Anticipating the damages and losses from such events is also more difficult.

Summarizing international good practices, the United Nations Office for Disaster Risk Reduction (UNDRR), formerly known as UNISDR, provides the following definition of disaster risk:

"The potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society, or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability, and capacity".[4]

This definition disaggregates risk into four components. A hazard is the adverse event, the earthquake, cyclone, flood, or other natural disaster. Hazards can be characterized by their "location, intensity or magnitude, frequency and probability".[5] The other three components of risk, namely, exposure, vulnerability and capacity, together determine the impact of a given natural disaster on a community.

Exposure is the situation of people, infrastructure, housing, production capacities, and other tangible human assets located in hazard-prone areas. Measures of exposure can include the number of people or types of assets in an area.

Vulnerability is defined as the conditions determined by physical, social, economic, and environmental factors or processes which increase the susceptibility of an individual, a community, assets, or systems to the impacts of hazards.

Capacity is defined as the combination of all the strengths, attributes and resources available within an organization, community or society to manage and reduce disaster risks and strengthen resilience. Capacity may include infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership and management.

In cases where these four components of risks cannot be precisely quantified, UNDDR recommends more qualitative assessments. Disaster risk comprises different types of potential losses which are often difficult to quantify. Nevertheless, with knowledge of the prevailing hazards and the patterns of population and socioeconomic development, disaster risks can be assessed and mapped, in broad terms at least. It is important to consider the social and economic contexts in which disaster risks occur and that people do not necessarily share the same perceptions of risk and their underlying risk factors.

The UNDDR approach seems appropriate for a risk-assessment framework for the Arab region, given the challenges in quantifying the impacts of violent conflict, humanitarian crisis and political instability on societies. Instead of attempting exact quantification,

a risk-assessment framework should instead look at broad levels of hazard, exposure, vulnerability, and capacity, as well as the drivers of these factors, in the Arab region.

D. Defining risk assessment

Given the seemingly endemic nature of conflict, crisis and instability in the region, the extensive conflict and non-conflict pressure points at play, and the complexity and interaction of risk factors, member States would greatly benefit from a regional risk-assessment framework to help decision makers and stakeholders understand and address the likelihoods of violent conflict, humanitarian crisis and political instability and their potential impacts on society. Ideally, such a framework would aggregate a number of relevant qualitative and quantitative inputs, process these inputs, apply a methodology to them, and then report out risk assessments of these hazards at different levels (regional, national and local) and over different time horizons.

Adapting the language of the UNDDR guidance on natural disasters, we define a risk assessment for conflict, crisis and instability in the following manner:

Assessments of the risks of violent conflict, humanitarian crisis and political instability are qualitative and quantitative approaches to determine the nature and extent of such risks by analysing potential hazards and evaluating existing conditions of exposure and vulnerability that together could harm people, property, services, livelihoods, the environment, and society more widely. The assessments should include the following: the identification of hazards, including their location, intensity, frequency, and probability; the analysis of exposure and vulnerability, including the governance, social, health, environmental, and economic dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities and sources of resilience with respect to likely risk scenarios.

Such assessments would be useful not least because they would clearly identify a regional policy agenda for the prevention and mitigation of risks, which in turn would contribute to strengthening resilience and, therefore, to the achievement of sustainable social and economic development.

E. Good practices for risk assessment

The existing practitioner literature provides an excellent starting point to develop a risk-assessment framework for the Arab region, which should adapt existing methodologies, particularly from institutions within the United Nations system. Most of the existing risk-assessment methodologies share some common features. The initial steps typically consist of problem definition, scoping, background and desk research, and project planning and organization. The middle phases of the assessments — the substance of the assessments — typically consist of collecting and synthesizing qualitative and quantitative inputs, looking at both root causes and proximate causes, mapping existing policy interventions, noting interactions among processes, ensuring attention to gender and human rights dimensions, and weighing alternative scenarios. The final stages involve validation and peer review, report drafting, strategic communications, and follow through and project sustainability.

A supplementary technical paper reviews a number of different risk-assessment methodologies and identifies some good practices on which to draw.[6] According to this paper, the risk-assessment framework should incorporate good practices from various disciplines, should be grounded in the SDGs, and account for regional and transnational drivers of risk. Considering the intended audience and users, the framework should be clear and transparent, so that decision makers and stakeholders can easily understand how the assessments are generated. The framework should be probabilistic to the greatest extent possible, in the sense that the framework should both incorporate uncertainty into its methodologies and produce assessments that clearly convey the uncertainties inherent to all risk assessments.

Substantively, the framework should incorporate both qualitative inputs (such as expert assessments) and quantitative inputs (such as economic, environmental, social, and political indicators). The framework methodology should incorporate explanatory inputs that are fundamentals, namely, relatively fixed or unchanging features of the region such as geography, ethnicity or culture, and explanatory inputs that are time-variant or that might be context-specific such as economic growth or decline, conflict spillover or political developments. The framework methodology should be continuously revised and improved, based on its track record and utility to member States and the United Nations system. Finally, the framework should produce assessments that have clear and actionable policy implications.

F. Essential steps in a risk assessment

As mentioned in the previous section, a supplementary technical paper, available online, reviewed some of the most relevant methodologies available, none of which exactly fits the requirements for a comprehensive risk-assessment framework for the Arab region. Building on best practices, this section identifies some essential elements for a risk-assessment methodology; that is, the most critical steps from programmatic, organizational and substantive perspectives. The aim is to: (a) embed project management good practices and principles such as forming a good team, collecting good data and developing mechanisms for validation, monitoring, evaluation, and ensuring project sustainability; (b) motivate and guide regional actors in establishing systems for understanding risk; and (c) encourage holistic assessments that provide an understanding of the many different dimensions of risk, namely, hazards, exposures, vulnerabilities, and capacities.

1. Organize for a successful assessment

Before tackling the substance of a risk assessment, a number of organizational steps must be taken to enhance quality control, promote effectiveness and coherence, and ensure project follow-through (or project sustainability). These include establishing a governance mechanism, that is, the institutions, bodies, guidelines, and procedures that will govern the risk assessment; defining the policy and technical scope and agreeing on the purpose and objectives of the assessment; developing a data management plan; gathering

the required administrative, technical and financial capacities to conduct the risk assessment; and drafting terms of reference for the risk assessment.

2. Conduct essential background research

The experts conducting the assessment must do background research which should encourage a deeper understanding of drivers, stakeholders and key dynamics. Analytic documents can include situational analyses, stakeholder analyses, factor/driver assessments, and trend assessments. These tools should look at root and structural factors, intermediate and proximate factors that are visible manifestations of the phenomena under assessment, and triggers that could lead to cascading effects. The background research should aim to produce a synthetic and holistic assessment to guide more detailed analysis to follow. Given the dynamic context of the Arab region, its situation along major geopolitical fault lines and its exposure and vulnerability to social and economic shocks, the background research needs to be updated regularly.

3. Assess hazard, exposure, vulnerability, and capacities/resilience

The next step should be a more thorough understanding of risk through detailed analyses of the hazard, exposure, vulnerability, and capacity/resilience. The analysis should provide insight into the interaction of hazards with exposure and the multiple dimensions of vulnerabilities. The detailed risk assessment should provide a specific impact and its likelihood and indicate a confidence level or level of uncertainty. If possible, probabilistic risk assessments should be conducted. In cases where such a technique is not feasible, the risk assessment can use more deterministic or scenario-based analyses.

Holistic assessments should include diverse types of direct and indirect impacts of natural or man-made disasters of physical, social, economic, environmental, and institutional nature. They should also provide information on the underlying drivers of risk, such as climate change, poverty, inequality, weak governance, and unchecked urban expansion. Consideration should be given to both extensive events (frequent but low-impact) and intensive events (occasional but high-impact), as well as potential cascading events and simultaneous events linked to the same cause.

This step should utilize a variety of complementary risk analysis methodologies, ranging from fully-qualitative assessments to semi-quantitative and fully-quantitative methods: probabilistic regression-based and machine-learning techniques, scenario-building, historical analysis, and expert evaluations. For effective risk management, it is critical to understand risks for all types of hazards; interlinkages between hazards, vulnerabilities and capacities; and comparison of different types of risk. Key considerations include identifying and compiling existing input data, assessing government management capacities and determining the sources and drivers of risk, the direct and indirect impacts, and potential cascading risks.

4. Synthesize, communicate, follow through, and inform policy

The purpose of any risk assessment is to influence public policy, and, therefore, it is essential to prepare the outputs of the risk assessment for communication with stakeholders and for incorporation into

decision-making processes. Some tools might include the following: (a) scenario-building to better understand possible trends and potential trajectories; (b) table-top exercises that include stakeholders and policymakers; (c) synthetic and integrated narratives; and (d) interactive online platforms. The project might also consider technical assistance to member States to help them craft risk-conscious public policy interventions.

G. Conclusion

Chapter 1 introduced the motivation for this publication and the wider project, reviewed some essential concepts and terminology and proposed some good practices and essential steps for a risk-assessment methodology, based on a careful reading of existing frameworks used by the United Nations and others. The next three chapters provide some of the building blocks for a fully-fledged risk assessment. Chapter 2 reviews historical patterns of conflict, crisis and instability in the Arab region and provides some theoretical explanations for such patterns. Chapter 3 looks prospectively at the megatrends and catalysts that will shape regional risks in the coming decades, while chapter 4 looks specifically at the trends in gender dynamics in the region, given their importance.

Chapter 5 then ventures a quantitative and predictive analysis of future patterns of conflict, crisis and instability in the region, and chapter 6 concludes with some ideas for the way forward. Together, all chapters are intended to provide a vivid demonstration of the usefulness of risk assessment as a policymaking tool and of the power of using mixed-method approaches for such assessments.

2. Historical Patterns of Conflict, Crisis and Instability

2. Historical Patterns of Conflict, Crisis and Instability

A. Introduction

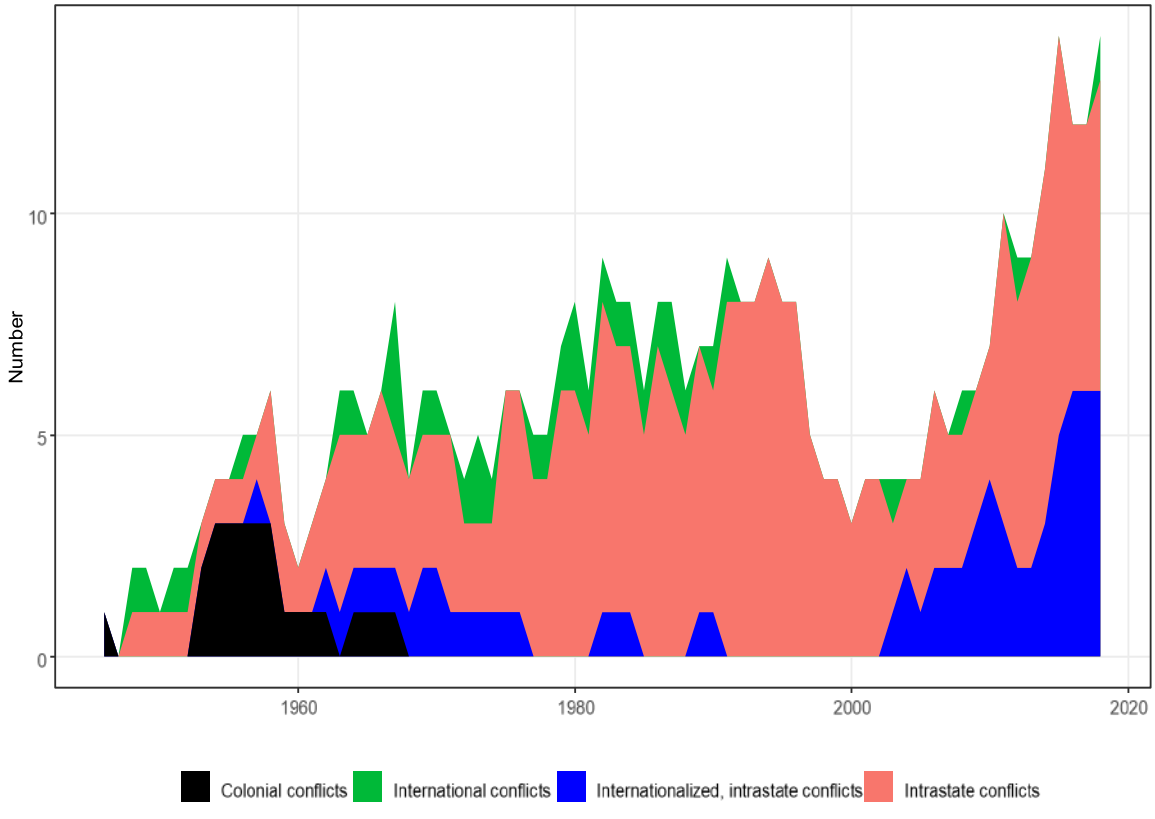
To understand how risks in the Arab region will develop in the coming years, we must first understand how patterns of conflict, crisis and instability in the region have evolved in the past and why these patterns evolved in the ways that they did. That is, we must understand the historical drivers of conflict, crisis and instability in the Arab region. This chapter begins with a discussion of empirical patterns in the location, intensity, frequency, and duration of episodes of armed conflict and political instability in the Arab region since 1946, with a particular focus on the period since 1989, of which quantitative data becomes more widely available and richer. It then discusses the dominant explanations for these patterns given in the social science literature, particularly the economic, political, social, environmental, transnational, and other factors that have generated risks in the past and present.

The logic here derives from the disaster-risk discipline discussed in chapter 1 and, in greater detail, in Willcoxon (2019), where it says that to anticipate future risks of, for example, cyclones, earthquakes or wildfires, we must understand "location, intensity or magnitude, frequency, and probability" of the hazards under assessment.[7] While this chapter mostly focuses on aspects of the hazards of conflict, crisis and instability, a fully-fledged historical risk assessment would also examine historical trends in exposure, vulnerability, capacity, and resilience: these too are critical building blocks for comprehensive and integrated risk assessment and should be taken up in the next phases of this project.

B. Patterns of armed conflict in the Arab region

Roughly half of all countries experienced an internal conflict since 1960; one-third experienced an intensive civil war.[8] Since the end of the Cold War, but particularly since the early 2000s, a substantial body of social science research has emerged that uses quantitative methods to study the correlates of violent conflict, humanitarian crisis and political instability. The data on conflict are by now quite rich, allowing for detailed assessment of patterns. One of the primary sources is the Uppsala Conflict Data Program (UCDP), which publishes, among other datasets, a georeferenced incident-level dataset (GED) that can be used to chart out spatial and temporal patterns.[9] Another key source, with more frequently updated data but less historical range for the Arab region, is the Armed Conflict Location Event Dataset (ACLED), which publishes data on certain parts of the world on a weekly basis.[10]

Figure 2. Conflicts in the Arab region, by type, 1946-2018

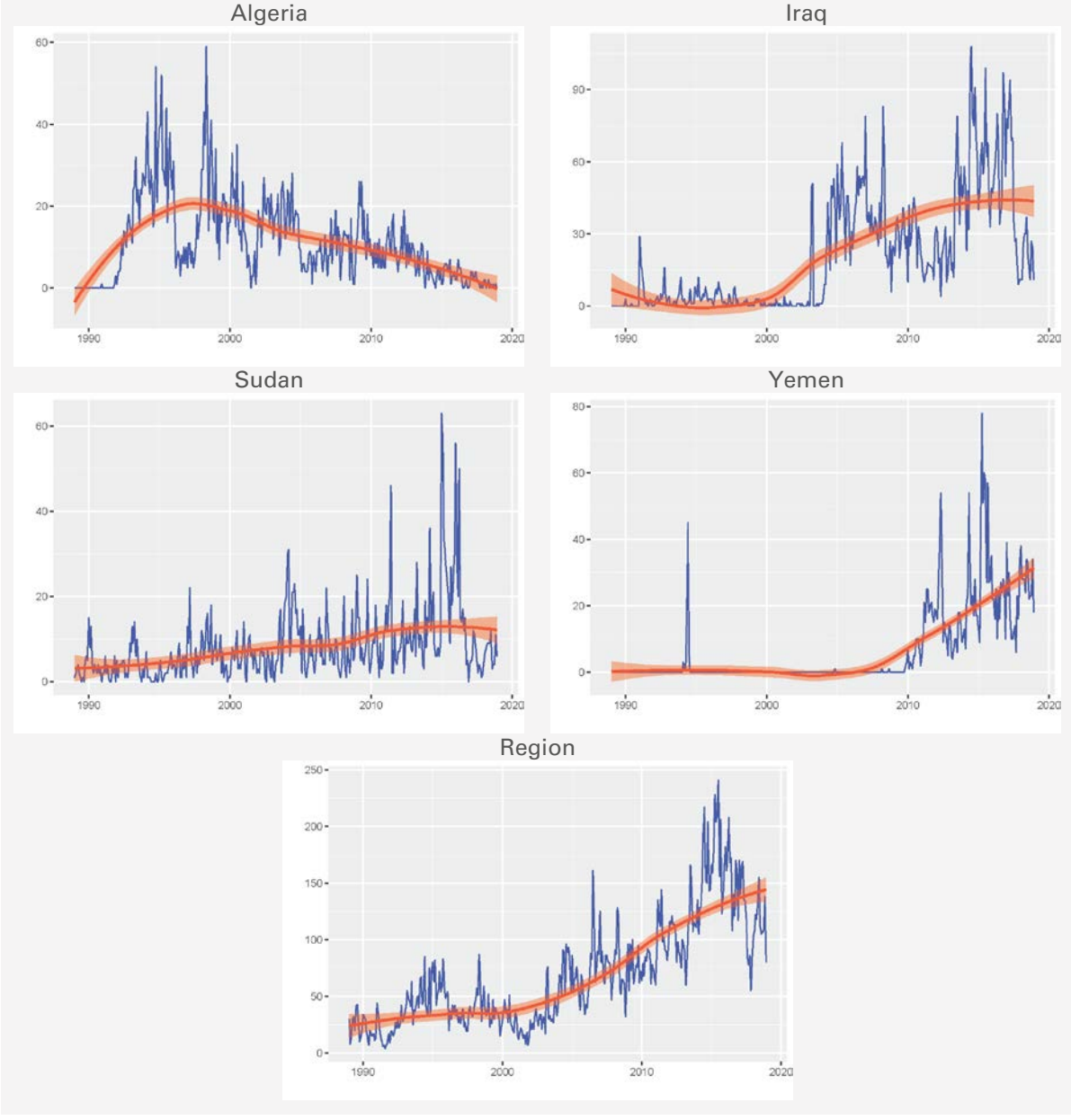


Sources: Pettersson, Therese, Stina Högbladh and Magnus Oberg (2019). Organized violence, 1989-2018 and peace agreements. Journal of Peace Research, vol. 56(4); and Gleditsch, Nils Petter, Peter Wallensteen, Mikael Eriksson, Margareta Sollenberg, and Håvard Strand (2002). Armed conflict 1946-2001: A new dataset. Journal of Peace Research, vol. 39(5), pp. 615-637.

Figure 2 shows trends in the prevalence of conflicts in the Arab region, by type, since 1946. The trends over the decades show some striking patterns. Only in 1947 are there no armed conflicts of any type. Processes of decolonization are completed by the mid-1960s; international conflicts are a more-or-less constant feature of the Arab State system from the mid-1960s to the mid-1990s, with one or more conflicts ongoing in almost every year during that period. Since the mid-1990s, international conflict has been less common. By far the most common type of conflict throughout the entire 1946-2018 period is internal (or civil) conflict, but, until the aftermath of the invasion of Iraq led by the United States in 2003, such conflicts have been largely fought only by internal actors. The number of internationalized internal conflicts sharply increases in the post-2003 period, and these sorts of complex proxy conflicts account for most of the dramatic increase in conflicts since the early 2000s. Interestingly, the period between the first Gulf War (1990-1991) and the U.S.-led invasion of Iraq (2003) saw a dramatic improvement in the conflict landscape: there were no international conflicts, no internationalized internal conflicts,

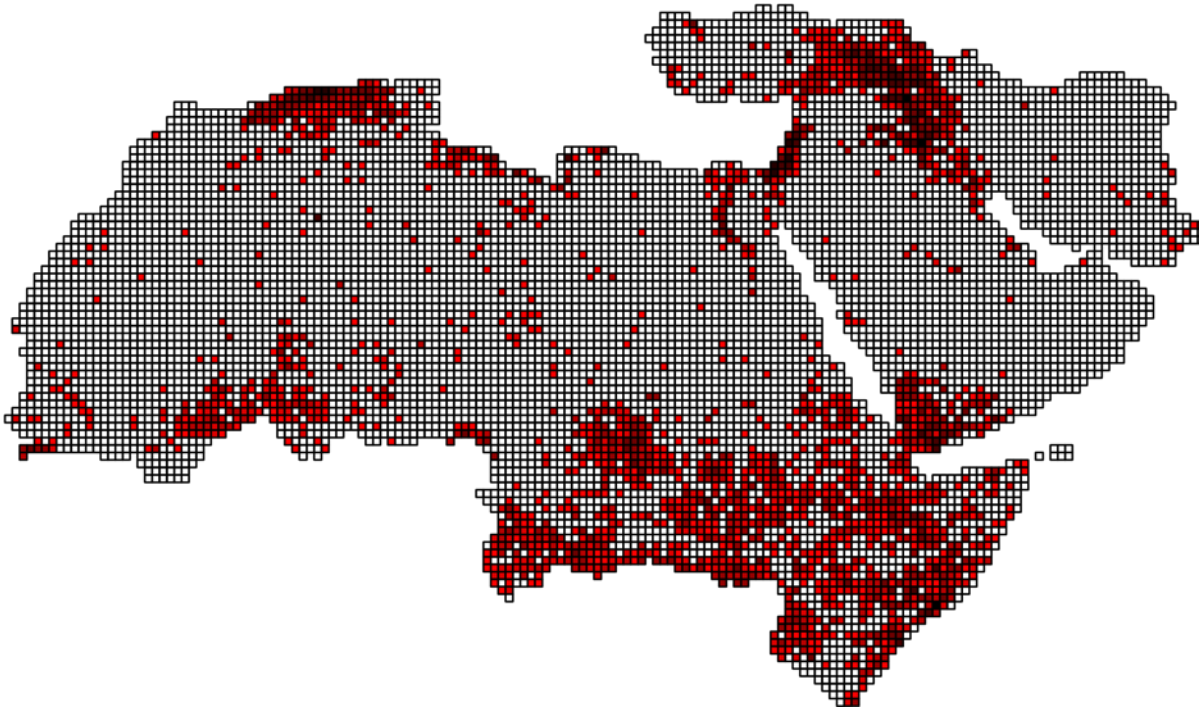
and the number of internal conflicts dropped by more than half. Evidently, international, regional and national actors missed an opportunity during that period to entrench a more peaceful regional dynamic; quite the opposite occurred. The impact of the 2003 U.S.-led invasion of Iraq still reverberates around the Arab State system and has now been compounded by other factors.

Figure 3. Trends in monthly conflict incidents, 1989-2018



Source: Author based on data from the UCDP Georeferenced Event Dataset, version 19.

Figure 4. Geographically disaggregated data on violent conflict



Source: Tollefsen, Andreas Forø, Håvard Strand and Halvard Buhaug (2012). PRIO-GRID: A unified spatial data structure. Journal of Peace Research, vol. 49(2), pp. 363-374.

There are more precise incident-level data for the period since 1989. Using the GED dataset, figure 3 shows monthly conflict incidents in four countries during 1989-2018, in addition to the pattern for the entire Arab region. Local regression (Loess) curves show the trends over time. Regionally, there is a sharp upward trend since the invasion of Iraq, though country-level patterns do vary. Algeria, for example, shows a gradual decline in monthly violence since peaking in the late 1990s.

This same dataset allows us to depict conflict in a spatially disaggregated format.

Figure 4 shows georeferenced data on violent conflict since 1989 in Western Asia, Northern Africa, the Sahel region, and the Horn of Africa, using the PRIO-GRID cell framework. The PRIO-GRID dataset is a standardized spatial grid structure with global coverage at a resolution of 0.5 x 0.5 decimal degrees. The PRIO-GRID dataset provides spatially disaggregated data at the grid-cell level on social, demographic, terrain, economic, and environmental factors, and, crucially, is linked directly to data on violent conflict provided by UCDP and data on ethnic group exclusion and other horizontal inequalities. In figure 4, white grid cells experienced

no violent conflict incidents during 1989-2018, while red grid cells experienced conflict of varying intensity. A greater intensity of red reflects a greater number of conflict incidents.[11]

Clear geographic patterns emerge. While virtually almost every country in the Arab region has experienced conflict since 1989, there is notable clustering, and large expanses of territory that experience no conflict at all. In the Eastern Mediterranean and North Africa regions, conflict is clustered in the most populous and urban areas, while in south-eastern Turkey, Iraq, the Sahel region, and in the Horn of Africa, conflict is distributed more widely across rural areas.

C. Patterns of political instability in the Arab region

Unlike with violent armed conflict, there is no conventional definition for political instability in the social science literature. Political instability has been conceptualized as the incidence of *coups d'état*, State failures, institutional collapse, mass protests, popular uprisings, insurrections, democratic reversals, and other similar phenomena. In the political science literature, these phenomena are typically measured using dichotomous variables (occurrence or non-occurrence of *coups d'état*, for example). The probabilities of some events have been well modelled (for example, *coups d'état* and democratic reversals), but some others less so (for example, mass protests). The economic and social impacts of political instability do not seem to have been systematically quantified.

Coups d'état and irregular or unconstitutional leadership changes are common manifestations of political instability. In an early quantitative analysis, Londregan and Poole find that the probability that a government is overthrown through force is inversely related to the country's income level per capita and its rate of economic growth: the wealthier a country is on a per capita basis and the faster its economy is growing, the less likely a coup or coup attempt will occur. Notably, the relationship between successful coups and per capita income is non-linear: the incidence of coups is roughly constant across the bottom three quintiles of income, but in the highest two quintiles the incidence of coups drops sharply. The implied coup risk of countries in the highest income quintile is negligible. Londregan and Poole also find that "coups spawn countercoups": the probability of a coup is higher when previous governments have been overthrown, holding all else constant.[12]

Powell and Thyne introduce an updated list of coups and coup attempts since 1950 and explore both the origins of coups and their effects on the political and economic trajectories of countries.[13] In explaining the frequency and patterns of coups, Powell finds that characteristics of the military appear to be far more important on coups than economic influences. He identifies two successful coup-proofing strategies: first, where regimes attempt to impede or deter coordination among military actors through the multiplication and counterbalancing of armed forces, and, second, where the regime purchases loyalty through excessive military spending.[14] Thyne (2010) emphasizes foreign influences on the likelihood of coups, specifically that hostile signaling from the United States increases the likelihood of coups in Latin American countries, while supportive signaling has a stabilizing effect on Latin American regimes.[15]

Table 1. *Coups d'état* in the Arab region, by country, 1950-2010

Country	All attempts	Successes
Algeria	4	2
Bahrain	0	0
Comoros	9	4
Djibouti	1	0
Egypt	2	2
Iraq	12	4
Jordan	2	0
Kuwait	0	0
Lebanon	2	0
Libya	3	1
Mauritania	7	5
Morocco	2	0
Oman	1	1
Palestine	0	0
Qatar	3	2
Saudi Arabia	0	0
Somalia	3	1
Sudan	13	4
Syrian Arab Republic	11	8
Tunisia	1	1
United Arab Emirates	2	0
Yemen	9	5

Source: Powell, Jonathan M. and Clayton L. Thyne (2011). Global instances of coups from 1950 to 2010: A new dataset. Journal of Peace Research, vol. 48(2), pp. 249-259.

Table 2. *Coups d'état* in the Arab region, 1950-2010

Decade	All attempts	Successes
1950s	13	6
1960s	26	14
1970s	21	8
1980s	12	7
1990s	10	3
2000s	5	2

Source: Powell and Thyne, 2011.

Coups have been an extremely common form of political instability in the Arab region, particularly during the Cold War. In total, 87 coups were attempted in the Arab region during 1950-2010, of which 40 coup attempts (46 per cent) were successful.[16] This means that, on average, 1.45 coups were attempted each year from 1950 to 2010. However, coups are highly clustered phenomena. Indeed, 62 per cent of all coups in the Arab region occurred in just five countries, namely, Comoros, Iraq, the Sudan, the Syrian Arab Republic, and Yemen. Table 1 shows the significant variation across countries. Table 2 shows that coups were most prevalent during the 1960s and 1970s and that the frequency of such episodes of instability has markedly declined since the Cold War peak.

Another common manifestation of political instability are mass mobilizations or popular protests, and, in the past decade, quantitative scholars have introduced new datasets on these phenomena. In addition to the sources described above, Chenoweth and her co-authors developed the Nonviolent and Violent Campaigns and Outcomes (NAVCO) Data

Project, which "catalogues major nonviolent and violent resistance campaigns around the globe from 1900-2013".[17] Salehyan et al.[18] introduced the Social Conflict in Africa Database, which contains information on thousands of incidents of protests, riots, strikes, communal violence, and other forms of unrest for 47 African countries since 1990, including acts of government repression. Figure 5 gives trends in monthly protests and riots since 2009 in four North African countries.[19]

D. Risk drivers thought to be important in the Arab region

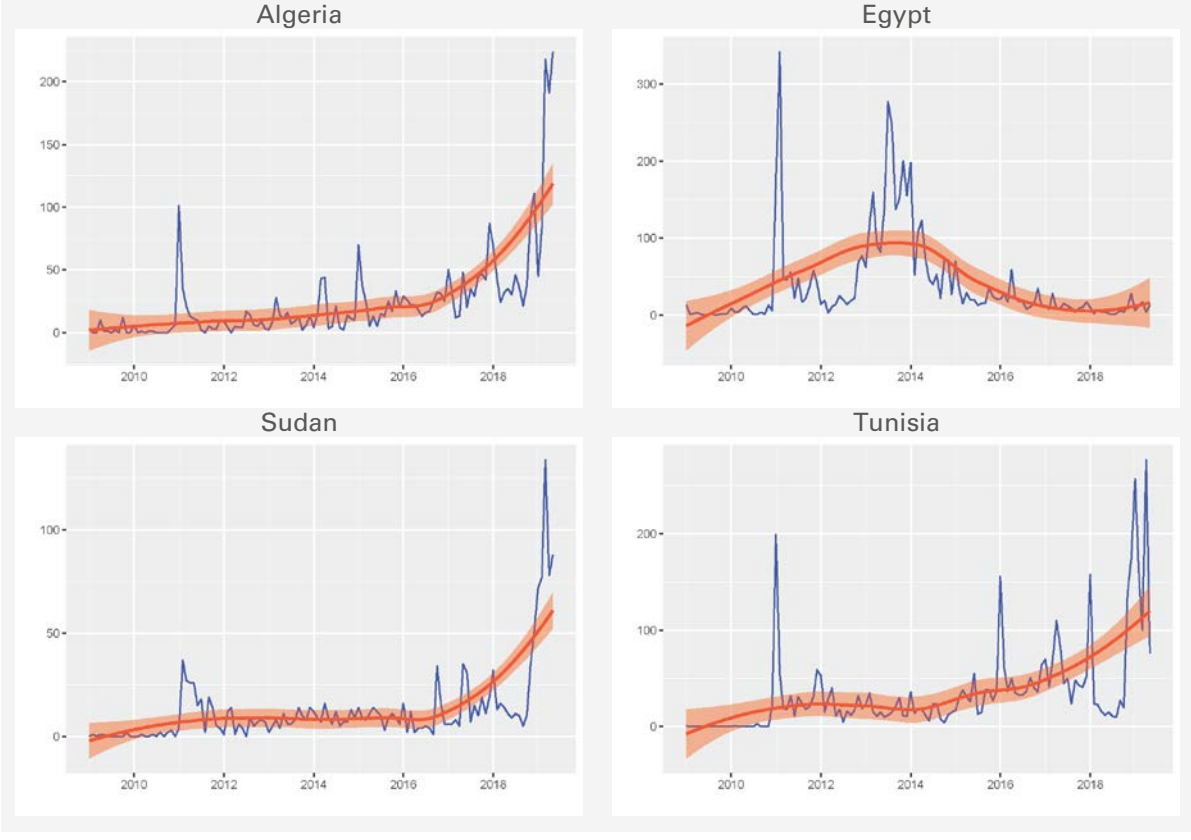
This section provides explanations for the location, intensity and frequency of conflict, crisis, and instability in the Arab region. Since the early 2000s, quantitative social scientists have introduced a common repertoire of explanatory variables for conflict, crisis and instability globally, such as income per capita, growth in income per capita, income inequality, primary commodity exports, population size, ethnic fractionalization or polarization, challenging terrain features, regime duration, level of democracy, and the presence of peacekeepers or third-party military forces, among many others. This research has found strong evidence that countries face a higher risk of the onset of civil conflict if they are low income and have weak State institutions, large populations and challenging terrain. There is weaker evidence that oil production, ethnic exclusion, recent independence, and gender inequality may be correlated with the onset of civil wars.[20] Similar explanations prevail for conflict intensity, duration and relapse. For example, Buhaug, Gates and Lujala find that geographic factors such as location, terrain and natural resources combine with rebel fighting capacity to explain conflict duration.[21] Notably, the presence of United Nations peacekeeping forces is robustly correlated with avoiding conflict relapse.[22] The gender dimensions of conflict dynamics are gaining increasing attention from researchers; given the particular relevance of gender inequalities, exclusion and disempowerment to politics and development in the Arab region, this subject is treated separately in chapter 4.

A similar set of variables appears to correlate with various forms of political instability.

Other manifestations of political instability, such as mass mobilization and protest, are less thoroughly studied using such methods. Though scholars working on Latin America, Africa, Asia, and Eastern Europe have developed rich comparative analyses and individual case studies describing critical episodes of mobilization and political transition, there is, as yet, no "generalized explanation of when and where [non-violent] uprisings are most likely to occur".[23] One methodological challenge is that individuals and groups often conceal their rebelliousness until the latest possible moment, making the identification of a revolutionary threshold difficult.

What factors have shaped and will shape the risks of violent conflict, humanitarian crisis and political instability across the Arab region? Despite a wealth of new research since 2011, no consensus has yet emerged among area experts about the factors driving the extraordinary turmoil around the region. Most explanations have focused on the underlying and often complementary structural conditions enveloping countries in the region: rentier economies sustained by hydrocarbon and strategic revenues, authoritarian governance

Figure 5. Selected trends in monthly protests and riots, 2009-2019



Source: Author based on data from the Armed Conflict Location and Event Dataset, accessed January 2020.

and widespread corruption, rapid demographic growth far outpacing the growth in decent employment opportunities, patriarchal gender relationships, the strength and interests of the security sector institutions, and widespread abuse of human rights.

According to this line of argument, these structural conditions slowly worsened over time until a set of triggers provoked mass mobilizations in 2011. Once popular mobilizations occurred, individual regimes made strategic decisions about survival strategies that were conditioned by the State resources and administrative capacities at their disposal and the orientation of their regimes to their populations. These decisions then determined whether subsequent political developments were violent and fragmenting, such as in Libya or Yemen, or negotiated and relatively peaceful, such as in Jordan, Morocco and Tunisia.

Gaub offers an alternative model, suggesting a three-dimensional approach that recognizes root causes, catalysts and triggers and that emphasizes the interplay among them. She notes that, while most States impacted by the Arab uprisings shared a number of root causes, "their catalysts were vastly diverse".[24]

Ultimately, catalysts are what give the conditions for popular mobilization their sense of urgency, and the capacity of States to "manage these frustrations plays a decisive role in keeping them in check".[25]

Broad strategic logics aside, the causes and consequences of violence and instability in the Arab region, and the Arab uprisings of 2011 in particular, remain areas of intensive research and debate. Beyond largely internal sources of risks, there are also a number of very important transnational, regional and international drivers of conflict, crisis and instability across the Arab region. Indeed, these drivers are arguably as important as predominantly internal ones in shaping patterns of conflict, crisis and instability. When compared to other regions around the world, the Arab region may suffer from the most intense and most diverse such set of drivers, at least since the end of the Cold War.

1. Horizontal inequality, perceptions and grievances

A major recent joint publication by the United Nations and the World Bank titled "Pathways for Peace: Inclusive Approaches to Preventing Violent Conflict" emphasized the role of horizontal inequalities and perceptions of inequality and injustice in generating grievances that shape patterns of conflict.[26] Collier and Hoeffler[27] and Fearon and Laitin[28] discounted grievance-based explanations for the onset of civil wars, noting that political, economic and social grievances were so common, almost universal, that they could not independently explain patterns of internal violent conflict. Nonetheless, horizontal inequalities and the grievances they may generate can explain how groups are mobilized to violence. "Emotions, collective memories, frustration over unmet expectations, and a narrative that rouses a group to violence can all play a role in this mobilization. The chances of violence are higher if leaders in a group can both frame the intergroup inequality as unfair and assign blame to another actor, usually a different identity group or the state".[29] Elites use these grievances opportunistically to mobilize constituencies and secure their political power, heightening risks of conflict if not directly precipitating it.

Prevention efforts need to pay special attention to perceptions of inequality and injustice.[30] In his seminal work, Gurr argued that perceptions of relative deprivation across groups provided the key motivation for violent collective action.[31] "Perceptions play a powerful role in creating feelings of exclusion and injustice that maybe mobilized toward violence. Indeed, evidence suggests that perceptions of exclusion and inequality often matter more for their potential for mobilization than do measured inequality and exclusion".[32] Addressing exclusion and horizontal inequality is therefore important as a prevention strategy. To the extent possible, a comprehensive risk-assessment framework for the Arab region should incorporate data on perceptions of grievances, inequality and injustice.

2. Governance deficits, conflict and instability

Governance deficits in the Arab region can be decomposed along two dimensions. On the one hand, there are severe deficits in how many governments in the region tend to form public policy, that is, without consulting the legislature, without incorporating public input, without transparency. On the other hand, there are deficits in how governments in the region implement public policy, that is, corruptly, inefficiently, unevenly, and incompletely.

The twin governance deficits in some countries in the Arab region are thus deficits related to inclusion, participation and competition and deficits related to institutional capacity.

In 2010, a leading scholar of democratization, Larry Diamond, noted that governance in the Arab region was "a striking anomaly—the principal exception to the globalization of democracy" since the start of the third wave of democratization in the mid-1970s.[33] Eight years after the start of the Arab uprisings, only Tunisia has successfully established reasonably democratic political institutions. The problem extends beyond closed and non-competitive elections. Arab publics and stakeholders have difficulty accessing government resources, expressing themselves freely, holding authorities responsible for their actions or inactions, and influencing government decision-making. Data from the World Bank suggest that institutions in the Arab region are distinctive in their lack of voice and accountability, though there is considerable variation within the region.

Civil conflicts and episodes of political instability are instances of institutional failures, and often the fighting destroys State institutions and capacity even further. Low capacity to implement public policy makes transitioning out of conflict or through episodes of political instability exceptionally difficult. Peacemakers and peacebuilders can craft the best-designed peace agreements and policy recipes, but without State capacity to implement them, these policy frameworks will be hollow. State weakness makes it very difficult for post-war governments to make credible commitments to rebels or potential rebels to implement reform agendas or peace agreements.[34]

This type of governance deficit has certainly impacted patterns of conflict and transition in the Arab region since 2011. State weakness in Libya and Yemen meant that the State elites lacked the "institutional capacity to check the escalation of social conflicts or, indeed, hold underdeveloped and weakly consolidated states together in the face of rising violence".[35] The Qaddafi and Saleh regimes had, over decades, employed personalism, State weakness and informality as governing strategies; it is unsurprising that, in these contexts, critical junctures like the Arab uprisings in 2011 "produced state collapse and violent conflict".[36]

3. Economic and demographic factors

The political economies in the Middle East and North Africa (MENA) have distinctive features that are thought to influence patterns of conflict, crisis and instability. In their discussion of the origins of the Arab uprisings, Cammett et al. identify root causes as "insufficient job creation, labor market pressures exacerbated by the youth bulge, the mismatch between educational systems and labor market needs, the declining quantity of water and rising dependency on food imports, the continuing decay of the public sector, the mixed record of economic liberalization, a growing housing crisis in urban areas, and the rise of political Islam across the region".[37] Widespread corruption and cronyism, declining welfare regimes, unequal opportunities, and perceptions of insecurity fed popular grievances leading up to the 2011 uprisings or social mass movements in a number of Arab countries.[38]

Social scientists have identified the so-called youth bulge, and its intersection with poor

employment prospects, as a key driver of conflict in the Arab region. The demographic trends in the Arab region are remarkable: over 50 per cent of the Arab population are under the age of 25 and two-thirds are under the age of 30. Youth employment in the Arab region persistently lags behind all other regions. In 2014, youth unemployment was at 28.2 per cent in the Middle East and 30.5 per cent in North Africa.[39] Youth unemployment has been worsened by conflict, crisis and instability since 2011, but the problem stretches back much further than the Arab uprisings. The MENA region has been the worst regional performers for youth employment for at least the past 20 years.[40] Unemployed youth, especially unemployed young men, are argued to be at heightened risk of recruitment into criminal behaviour,[41] to be more sympathetic to terrorism,[42] and to contribute to the risks of revolution and civil war.[43]

Another set of economic explanations for violent conflict, humanitarian crisis and political instability in the Arab region centre around the unusually important role of oil and natural gas production in their economies, and the dependency of government revenues and household incomes on the export of those hydrocarbons. Large oil revenues are thought to affect conflict patterns in two ways. First, oil is an easily lootable commodity, and its presence provides incentives for rebels to organize, secure the oil production and export it themselves. Second, oil revenues contribute to a governance "resource curse". Oil revenues are easy for States to secure and extremely lucrative; States with such endowments have little need to develop the intrusive complex bureaucracies essential for extracting tax or tariff revenues from personal income, commercial exchanges or international trade. As a result, the State capacity of oil producers is comparatively low given their per capita income.[44]

4. Environmental factors

From a global perspective, the empirical evidence linking climate change to conflict, crisis and instability is mixed. As a representative example, Hsiang, Burke and Miguel reviewed the climate and conflict literatures and found that deviations from moderate temperatures and precipitation patterns systematically increase interpersonal and intergroup conflict risk.[45] The findings of their meta-analysis have been challenged by Buhaug et al.[46] and others, who argue, along with the United Nation's Intergovernmental Panel on Climate Change (IPCC), that "collectively the research does not conclude that there is a strong positive relationship between warming and armed conflict".[47]

While the quantitative analysis of global, cross-national data has not found clear linkages between climate and conflict, evidence of a local effect in the Arab region appears unambiguous. Conflicts in Darfur, southern Sudan and Yemen are heavily conditioned by climate change, environmental stresses and competition over agricultural and water resources. Bread riots have been a recurrent manifestation of contentious politics in the region for decades. Some commentators have identified food price volatility as a major trigger for the Arab uprisings in 2011, including four years of drought in the Syrian Arab Republic that precipitated internal migration from rural areas to urban ones.

As the effects of climate change continue to worsen over time, the Arab region is likely to

see persistent deterioration in its peace, security and development circumstances. According to the IPCC, North Africa, in particular, is the world's second most vulnerable region to climate-related risks.[48] Overall, developing countries will be most impacted by climate change due to many factors, including the economic importance of climate-sensitive sectors such as agriculture, and the limited financial and human capacity to adapt to climate change and mitigate its impacts. Heightened vulnerability and diminished resilience and capacity are further compounded in conflict settings.

5. Security-sector governance

Another set of arguments about conflict in the Arab region centre on the peculiar endowments and preferences of the region's armed forces and security-sector actors. Bellin[49] argues that authoritarianism in the Arab region is robust specifically because of the capacity and will of the security sector to "repress democratic initiatives originating from society".[50] On the one hand, the capacity of some Arab security sectors to repress dissent depends on two factors, namely, large fiscal resources available to the coercive apparatuses, derived from massive hydrocarbon and strategic rents; and alliances with western powers. On the other hand, the willingness of some Arab security sectors to repress dissent derives from low institutionalization and professionalism, and the close alignment of security sectors with governing regimes; and weak popular mobilization to challenge the ascendancy of the security apparatuses. Arab countries vary on these four dimensions, and the configuration of these four factors shapes the strategic interactions that ultimately explain patterns of internal violence.

E. Strategic, transnational and regional risk drivers

This chapter has so far identified a number of sources of risk that might be considered predominantly internal: the economic, social, political, geographic, and other characteristics of a country that drive its risks of conflict, crisis and instability. Beyond these internal sources of risks, there are also a number of very important transnational, regional and international drivers of conflict, crisis and instability across the Arab region. Indeed, these drivers are arguably as important as the predominantly internal ones in shaping patterns of conflict, crisis and instability. When compared to other regions around the world, the Arab region arguably suffers from the most intense and most diverse such set of drivers, at least since the end of the Cold War.

Along with central and eastern Europe and north-east Asia, the Middle East has been a location of some of the most intense strategic competition since World War II. However, unlike in Europe or north-east Asia, many States did not fall cleanly into the camp of either the United States or the Soviet Union and were instead contested areas where the superpowers cultivated alliances and frustrated adversaries. Some countries in the region were better able to play the superpowers off each other or otherwise leverage their strategic positions to their advantage, receiving political and military support in return. Often, however, this strategic competition led to violent conflict, humanitarian crisis and political instability. The outbreak and development of the 1956 Suez Crisis, the Iran-Iraq War and the Ogaden War between Somalia and Ethiopia of 1977-1978, for example, were each heavily conditioned by Cold War strategic competition. Table 3 gives a list of the international wars in the Arab region since 1946; a quick glance down

the list is enough to confirm how many such conflicts implicated strategic powers and non-Arab countries, directly or indirectly. Furthermore, political instability also was driven by external actors: a series of coups, attempted coups and internal proxy conflicts during the Cold War can be attributed at least in part to strategic competition between the two superpowers or between the superpowers and non-aligned countries in the Arab region.

Table 3. International conflicts in the Arab region, 1946-2018

Name	Start	End
Arab-Israeli war	1948	1949
Suez conflict	1951	1952
Tunisian independence	1953	1956
Algerian independence	1954	1962
Suez conflict	1956	1956
Conflict in Western Sahara	1957	1958
Tunisia-France conflict	1961	1961
Algeria-Morocco conflict	1963	1963
Ethiopia-Somalia conflict	1964	1964
South Yemen independence	1964	1967
Arab-Israeli war	1967	1967
North Yemen-South Yemen conflict	1972	1972
Arab-Israeli war	1973	1973
Iran-Iraq conflict	1974	1974
Ethiopia-Somalia conflict	1977	1978
North Yemen-South Yemen conflict	1979	1979
Ethiopia-Somalia conflict	1980	1980
Iran-Iraq war	1980	1988
Gulf War	1990	1991
US-led invasion of Iraq	2003	2003
Djibouti-Eritrea conflict	2008	2008
Sudan-South Sudan conflict	2012	2012

Source: Sundberg and Melander, 2013.

While some forms of strategic competition have abated since the end of the Cold War, others have remained constant and new ones have emerged. Western Asia contains three of the most important maritime bottlenecks in the world: the Bosporus and Dardanelles, the Strait of Hormuz, and the Suez Canal and Bab al-Mandab Strait. Each of these maritime corridors is vitally important for the security and commerce of major powers, such as Russia, Turkey, the United Kingdom, and the United States, and tensions over access to them is an essentially permanent feature of regional geopolitics. Furthermore, the Arab-Israeli conflict, the occupation of Palestine and the disposition of the Palestinian refugees remain unresolved and are persistent sources of regional risk. In recent years, strategic tensions between Iran and its neighbours, particularly in the Gulf, have increased and have been amplified by the Syrian and other conflicts. Finally, international military interventions have had catastrophic consequences for the Arab region, driving patterns of violent conflict, humanitarian crisis and political instability that continue to reverberate years later.

The Arab region will continue to be an area of intensive strategic competition for the foreseeable future, and such competition will continue to shape patterns of risk in unpredictable ways. The region has an additional disadvantage since there are no international or regional organizations that bridge the deep strategic divides. This circumstance contrasts to the situation in Europe and Asia, where institutions such as the Organization for Security and Co-operation in Europe and the Shanghai Cooperation Organization provide forums for strategic competitors to address areas of mutual concern and to prevent and manage conflict.

A final regional or international aspect of risks in the MENA region are spillover effects from already-existing conflict, crisis and instability. Once conflict, crisis or instability has been initiated in one part of the Arab State system, it heightens the risks of conflict, crisis or instability for other members of the system. The most obvious recent examples are from the Syrian Arab Republic, where conflict spilled over into Iraq in 2014 and where refugee flows have generated crises in Jordan and Lebanon (and, indeed, in Europe). Working from global data, quantitative researchers have offered different mechanisms for the transmission of risks across borders, including transnational ethnic linkages,[51] deliberate external sponsorship of insurgencies,[52] refugee flows,[53] and trade shocks.[54] Returning foreign fighters are another potential vector of risk transmission in the Arab region. The wider concern in the MENA region is that a regional conflict trap has entrenched itself, making it almost impossible to escape from the transnational risks caused by both historical and ongoing conflict, crisis and instability.

F. Conclusion

This chapter has assessed patterns of conflict, crisis and instability in the Arab region since 1946, with a particular focus on the period since 1989. The risks of conflict, crisis and instability in the region are acute, and this chapter has presented data on their types, intensity, frequency, and location. Since 2003, violent conflict has surged across the region, with particularly intense violence occurring in Iraq, Somalia, the Syrian Arab Republic, Libya, the Sudan, and Yemen. In the coastal areas of the Mediterranean, conflict is clustered in well-populated urban areas; however, in Iraq, the Sahel, south-western Arabia, and the Horn of Africa, violence is also a rural phenomenon. While *coups d'état* are far less common in the Arab region than they were during the Cold War, popular mobilization and protests have become far more prevalent a form of political instability since 2011. Given that about half of the conflicts end up recurring, and that instability tends to breed further instability, the Arab region will likely face such hazards for years to come.

3. Megatrends, Catalysts and Future Risks

3. Megatrends, Catalysts and Future Risks

A. Introduction

The future can be though about in many ways: scenarios lay out a variety of possible pathways, horizon-scanning detects developments hitherto unnoticed, and feasibility studies show the way towards a desirable future. Risk assessment, in turn, is its negative counterpart: it zeroes in on those elements which could do harm in the future. Assessing risk is always a combination of at least two steps: firstly, the potential danger is identified, and secondly, its likelihood and potential impact is calculated. In a possible third step, policy interventions can be developed to counter these dangers.

Prior to the above, any type of foresight exercise must establish the context in which this risk will be situated. This is by default not a perfect exercise: uncertainty is the key feature of the future. But because tomorrow is an extension of today, we can reduce this uncertainty at least to some extent. After all, there are developments which can be expected to shape the future, and increase or decrease risk. These developments are called trends, which extrapolate from observable dynamics occurring today. That said, the future is made up of more than just trends, which are themselves blind to sudden and unexpected events: trends are not the future, but they shape the future.

There are a number of medium- to long-term trends which are likely to influence the evolution of vulnerability to conflict and political instability in the Arab region. It is these trends which will effectively create the larger context for a thorough-going regional risk assessment.

This chapter analyses the megatrends and catalysts that will shape the risks of conflict, crisis and instability in the Arab region in the coming decades. Some of these trends, including climate change, are relatively well-known, though their linkages to conflict, crisis and instability are only beginning to be understood and quantified. Other trends, such as greater connectivity, are less well understood as potential drivers of conflict, crisis and instability. In all cases, however, these megatrends and catalysts and their linkages to conflict, crisis and instability are worthy of greater and more systematic analysis by both scholars and practitioners. The following sections provide a broad sketch and an initial analysis of the most critical trends for ESCWA member States to grasp, which will hopefully precipitate a longer and more regular process of monitoring and assessment in which ESCWA member States, their stakeholders, the United Nations system, and other relevant actors can engage.

B. A methodology of trends: megatrends and catalysts

A trend can be generally defined as the overall direction in which something is developing or changing. Trends are therefore useful analytical tools when it comes to creating a broader framework for future thinking.

In general, trends are easily identifiable as they can be observed in the past and present; they are normally measurable and can be backed up with evidence. In contrast to other elements of the future, they come with a certain degree of predictability and therefore assist in reducing uncertainty.

But not all trends are the same: beyond their difference in content, there is also a difference in pace. Some very meaningful trends develop over a much longer period than others, which are called megatrends: developments that are already underway, that will evolve over the next 20-50 years, and that are very difficult if not impossible to influence in the near-term. Inevitably, these trends will frame all possible futures and are the maximum of certainties available.

A second category are trends that develop much faster, over five to ten years. While these near-term trends can often be clearly identified, they come with a higher degree of uncertainty because they move faster than megatrends. In that sense, they are catalysts, agents of change which will impact other trends, and can be labeled uncertain certainties. Though also challenging to address, such catalysts are more amenable to policy interventions.

Taken together, megatrends and catalysts drive the future into a certain direction; but the exact shape of the future, and the risks that come with it, will depend on a number of other elements which are simply uncertain, and which include, on the one hand, by policy-decisions by humans, and on the other, developments which have not yet been identified.

C. Megatrends in the Arab region

When thinking about the future, megatrends are first helpers. This is because megatrends have several characteristics in common that help narrow down future scenarios from infinite possibilities to narrower possibilities. As their name suggests, megatrends are trends that occur on a large scale; they, therefore, affect large groups of humans, States, regions, and in many cases, the entire world. Megatrends also unfold over an extended period of time: their lifespan is normally at least a decade, and often longer. Most importantly, megatrends are linked to the present and are, therefore, phenomena which can already be observed today. Because megatrends are measurable and affect many, and for a long period of time, they lend an increased degree of visibility to a previously foggy future.

In this sense, megatrends are the strategic forces that shape the future in a manner akin to a slow-moving glacier: they cannot easily be turned around by humans. In contrast to many other factors concerning the future, this type of trend can be backed up by verifiable data. Therefore, megatrends serve as the backdrop against which any future of the region will be set.

However, while megatrends present a high degree of measurability, they are still open to interpretation. This is where forecast is different from foresight: whereas the former establishes a future fact (for instance, the number of people who will have Internet access), foresight interprets this fact (for instance, that increased connectivity means that international trade will become faster).

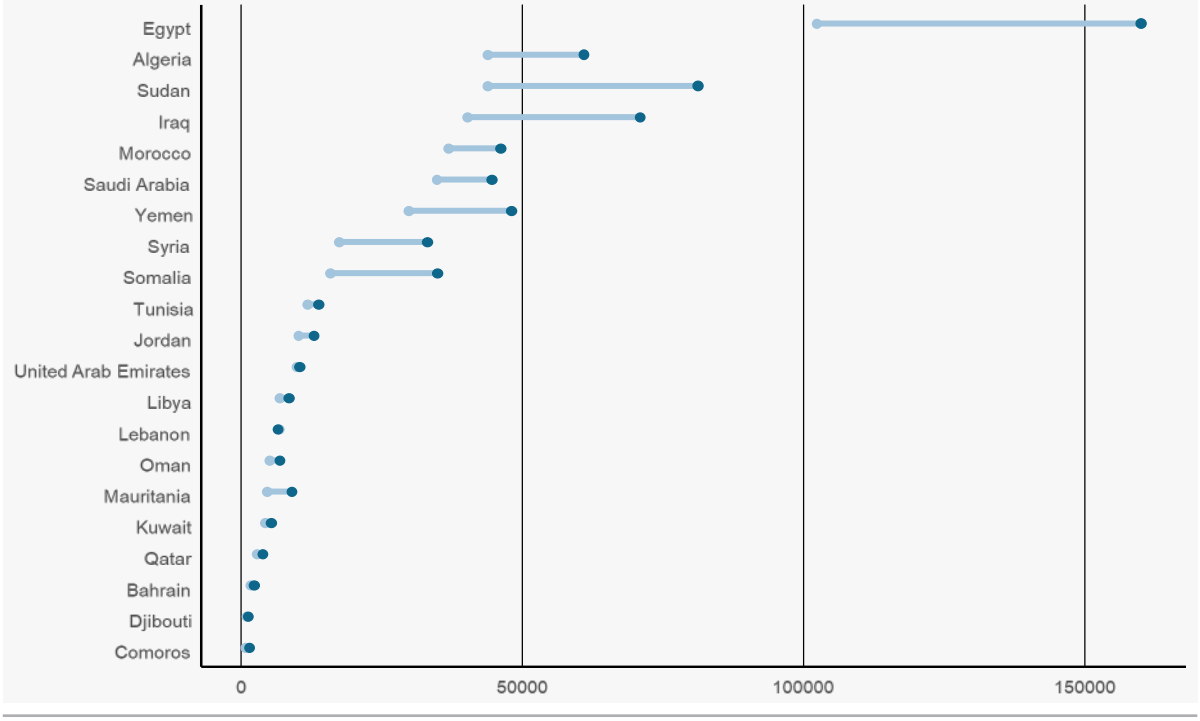
1. Demography

Demography is one of the trends most easily identified. Because it is known for certain how many people are born today, there is reasonable certainty to assume how many will be alive in two or three decades. It is, therefore, safe to assume that the population in the Arab region will continue to grow dramatically in the coming decades, even though its population growth rate is beginning to slow down. From 2020 to 2050, the region is expected to grow from 431 million people to 662 million.[55] In other words, the region will add 231 million inhabitants by 2050. Figure 6, based on data from the, shows that the population in all States will grow (except for Lebanon), albeit at greatly varying rates.

In raw numbers, this development will particularly affect Egypt, Iraq, Somalia, the Sudan, the Syrian Arab Republic, and Yemen. Figure 7 shows the growth in percentage terms: the top five growers will be, in order, Somalia, Mauritania, the Syrian Arab Republic, the Sudan, and Iraq.

Two megatrends will shape population for several decades, namely, the decline in fertility rates and the increase in life expectancy. By 2035, the average Arab will have a life expectancy of 75 years, up from 71 today.[56] In addition, women in the region will continue to have fewer children, the average rate of children per woman dropping from 3 today to 2.5 in 2045.

Figure 6. Change in total population between 2020 and 2050



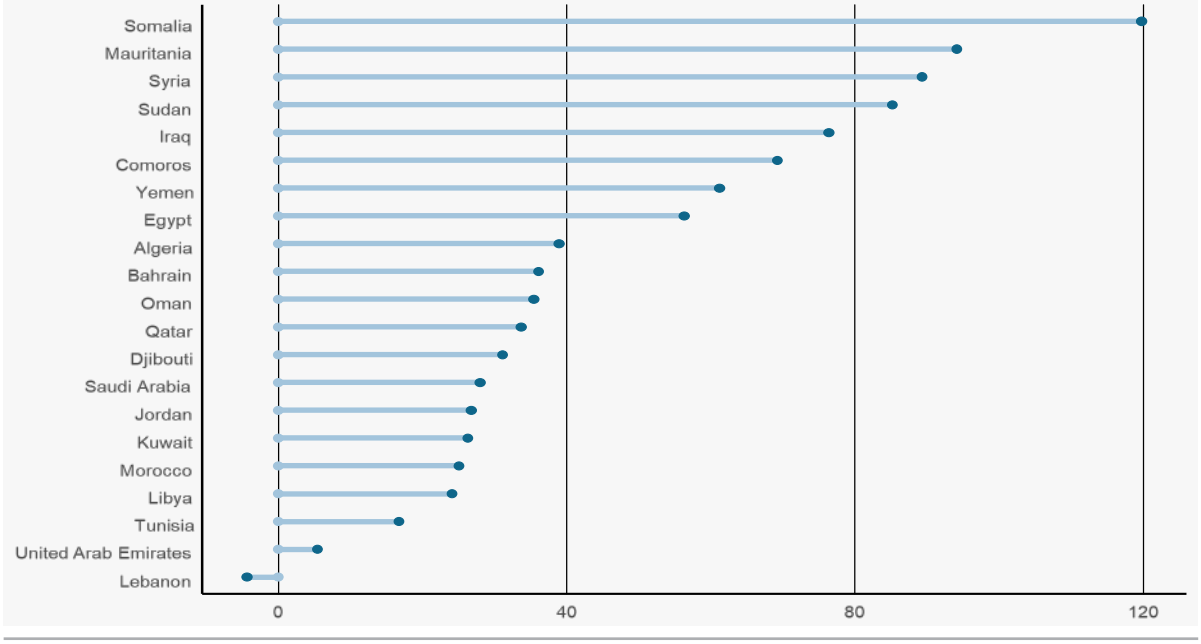
Source: United Nations Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019: Methodology of the United Nations population estimates and projections (ST/ESA/SER.A/425).

Taken together, this means that the Arab region is nearing the completion of its demographic transition from high birth and death rates to lower birth and death rates, and it will complete this transition much faster than other world regions did, over the course of between 13 and 40 years rather than the 50 to 150 years it took countries of the Organization for Economic Cooperation and Development (OECD). This accelerated demographic transition means that the region requires policy measures adapted to this unique demographic reality.

However, until this transition is complete, the Arab region will still have the features of the youth bulge, meaning a disproportionately young population. While the share of the population under the age of 30 will drop from currently 65 per cent to 45 per cent in 2030, the youth bulge is still very pronounced.[57] Again, the patterns are not evenly distributed, and the youth bulge is particularly concentrated in the Mashreq, especially in Iraq, the Syrian Arab Republic and Palestine.

At the same time, older adults will also comprise a larger share of the population as life expectancy increases.[58] By 2050, the share of citizens above 60 will increase by 15 per cent. Again, there are significant differences among subregions: Algeria, Lebanon, Morocco, and Tunisia are "fast agers", seeing these effects by 2030; Egypt, Jordan, Libya, the Syrian Arab Republic, and member countries of the Gulf Cooperation Council (GCC) are "moderate agers", meaning they will see these effects before 2050; and Iraq, Mauritania, Palestine, the Sudan, and Yemen are "slow agers", meaning they will begin the aging transition after 2050.

Figure 7. Change in total population between 2020 and 2050 (*Percentage*)



Source: UN DESA, 2019a.

Population growth has both advantages and disadvantages. A large workforce, for instance, can lead to the demographic dividend, namely, growth in the population leading to growth in the economy.[59] That said, the demographic dividend is limited by a number of other developments, which are the following: good governance; solid macroeconomic management; carefully designed trade policy; efficient infrastructure; well-functioning financial and labour markets; and effective investments in health, education and training.[60]

Where these elements are missing, however, a large young population can become a burden rather than an opportunity as not enough jobs are available. This is where demography can pose a challenge to Arab decision makers, not just to avoid political instability, but also to not miss the window of economic opportunity. Currently, the region is struggling with providing jobs for young people. With some 25 per cent, and reaching 30 per cent in some countries such as Tunisia, the youth unemployment rate exceeds that of any other region.[61]

This means that there is an inherent risk of crisis or instability in States with high shares of unemployment. However, the link between violence and youth is not a straightforward one. While it is true that a large young population correlates with violence and instability, the relationship between the two is not directly causal.[62] Young populations correlate with instability only under a set of circumstances, one of which is youth unemployment. Even then, the link is not always clearly established, meaning that youth unemployment alone is not enough to cause violence or criminality. Instead, it needs to be flanked by corruption, injustice, discrimination, humiliation, and experience of violence as additional drivers. Other, more individual, factors include low levels of education, violence within the family, poor parenting practices, low levels of family income, and unemployment within the family.

This means that a large youth cohort is a risk only when a set of conditions arises, amongst which unemployment plays an important but not exclusive role.[63] In other words, a large young population is first and foremost a governance issue.

2. Displacement and migration

Displacement and migration are both prominent megatrends shaping the Arab region that have been growing steadily over the past decades. Economic migration in the region comes in three shapes: firstly, Arab citizens leaving their country of origin within the region; secondly, Arab citizens seeking work outside the region, and thirdly, non-Arabs seeking work in the region. Each shape comes with its own set of challenges.

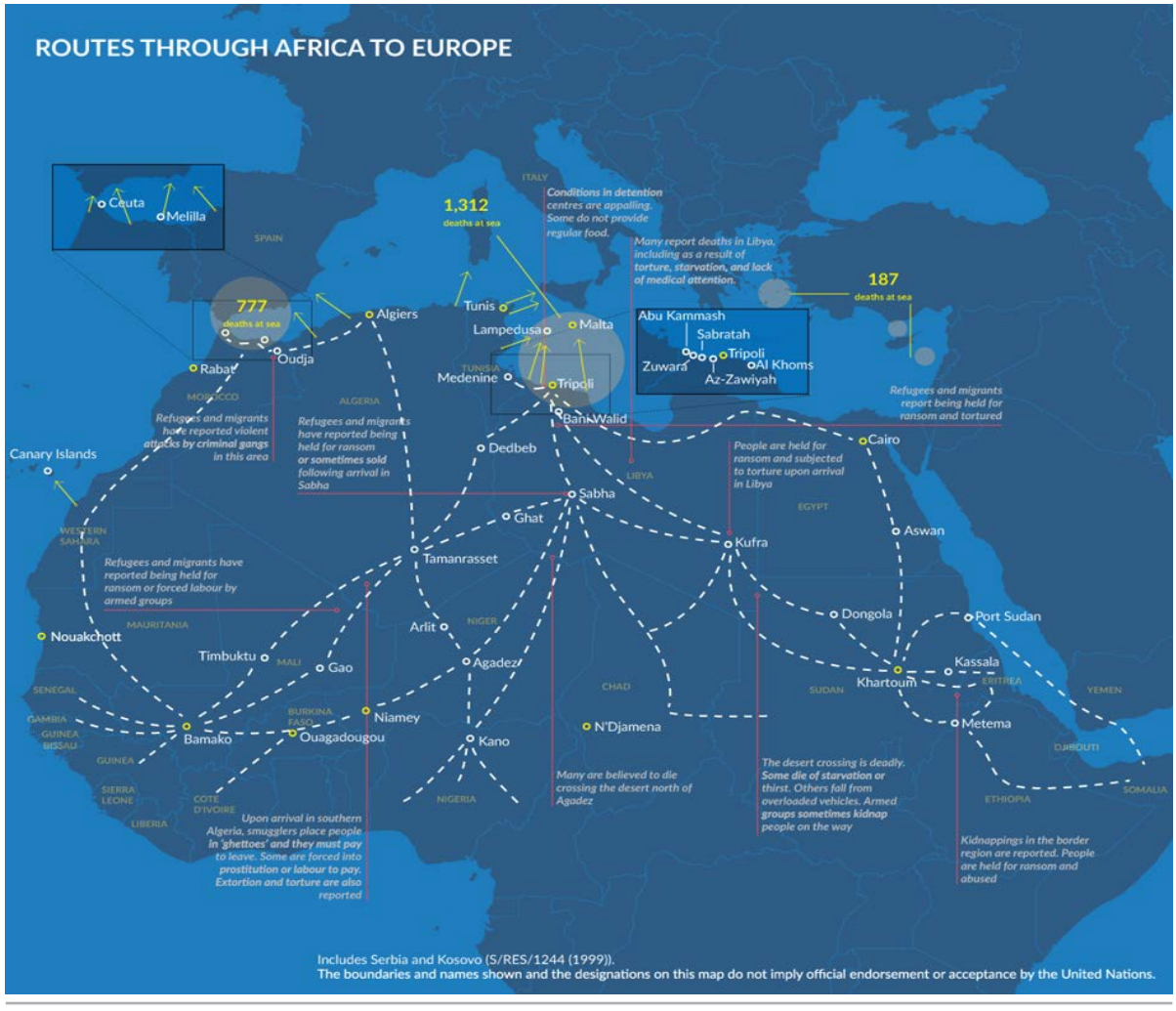
The first type of migration concerns Arabs leaving their home country to work in another Arab country; they make up 37 per cent of migrants within the region. Sending countries are mainly Palestine and the Syrian Arab Republic, which make up half of all intra-Arab migrants, but also Egypt. Destinations are mainly in the Gulf, but also Lebanon and Jordan.

The second type concerns citizens from South Asia, south-eastern Asia, the Horn of Africa, and Europe. Taken together, the first and second type of migrants have grown from 25 per cent to 35 per cent of the total population in the region since 2005. On average, the share of foreign labour in the Arab region is at 10 per cent, with

the vast majority concentrated in the Gulf States. Overall, the number of migrants has increased by 150 per cent from under 15 million to 35 million between 1990 and 2015.[64]

Thirdly, Arab migrants have left the region primarily to seek work in Europe. The largest source of migrants in the region is the Mashreq (57 per cent of migrants), followed by the Maghreb (21 per cent). Just under 20 percent of migrants are from Arab LDCs and just 3 percent from GCC countries. In total, 11 million Arabs live outside their region of origin. In 2015, an estimated 26 million people from Arab countries were living outside their home country, both within and outside the region—almost 5.7 million more than in 2010 and almost 15 million more than in 1990.

Figure 8. Major migration routes through Africa to Europe, 2017 and 2018



Source: This figure was reproduced based on United Nations High Commissioner for Refugees (UNHCR) (2019). Desperate Journeys: Refugees and migrants arriving in Europe and at Europe's borders. Technical report.

Migration does not include, however, citizens displaced due to conflict. The number of displaced persons increased by 142 per cent between 1990 and 2015; and the Arab region is hosting the largest population of forcibly displaced persons in the world of currently 16 million people, of which 11 million are internally displaced persons (IDPs) and 3 million are refugees (not including the 5.2 million Palestinian refugees).[65] Arab LDCs face high levels of internal displacement due to conflict and violence. In Somalia, the number of conflict-related IDPs at the end of 2017 was as high as 825,000, 2,072,000 in the Sudan and 2,014,000 in Yemen.[66] While conflict and violence were by far the biggest causes of displacement in the Sudan and Yemen, a further 899,000 people were displaced in Somalia due to disasters in 2017 alone.[67] The region will be a transit hub for migrants for the foreseeable future. Figure 8 shows the major migration routes for Africans attempting to migrate to Europe, all of which pass through North Africa.

Economic migration comes with both risks and benefits: while the brain drain is significant, the remittances that come with Arab citizens working abroad are also considerable. The 11 million Arabs living outside the region send substantial sums of financial aid home; from the Middle East, this amounted to $120 billion in 2016. These payments can have a positive impact on economic growth and inflation, imports and trade deficit, bank deposits and credit available to the private sector, and bank foreign exchange deposits. That said, remittances can create financial dependence and exacerbate inequalities within the receiving country. They are, therefore, not by default a solution to national economic and social issues.

Sadly, refugees and IDPs, themselves already victims of violent conflict, can play a role in the onset of instability elsewhere, too. This can happen for a number of reasons: in already fragile societies, they put added pressure on infrastructure and social systems. In contrast to economic migrants, refugees struggle to integrate into the labour market.

IDP and refugee crises heighten vulnerabilities around urbanization and access to clean water and services. Since conflicts and droughts are the main drivers of internal displacement, the vast majority of displaced persons in the Arab region are not living in refugee camps, but cities. Refugee populations have been absorbed by cities such as Tripoli, Amman and Sana'a, which already struggle to provide basic services such as drinkable water.[68] Even without factoring in urban population growth or global warming, Sana'a is set to be the first city in the world to deplete its groundwater reserves between 2030 and 2040, bringing further humanitarian disaster to the city, which has already been hit by outbreaks of cholera.[69] This means that the risk of refugees and IDPs is quickly developing not only into an economic and social, but also environmental and health problem.

As a result of these pressures, tensions between the host community and the refugees and IDPs can indeed become violent. The oldest example in the area is the case of the Palestinian refugees who played a role in civil conflict in both Jordan and Lebanon, but so did internal migration from Lebanon's south to Beirut. In a United Nations survey in Lebanon, 38 per cent of those questioned believed that tension built up due to increased competition for employment due to the influx of Syrian refugees. Also cited were competition over resources (by 11 per cent)

and services (by 9 per cent) and cultural differences (by 6 per cent).[70] In Jordan, Syrian refugees have been accused of contributing to an increase in crime rates, which is true within the camps, but not for the Jordanian society as a whole.

As a result of these tensions, regional refugees and IDPs remain in a limbo status. This could bear important risks for instability and even violent conflict.

Studies of displaced populations from Afghanistan, Bosnia and Burundi bear witness to the fact that refugees are unlikely to return to post-conflict zones that lack security and economic opportunities, and where governance is weak and services are inadequate.[71] Whenever displaced people do return to their countries of origin, they are likely to move to cities in search for economic opportunities that are no longer available in rural areas, thus exacerbating the urbanization crisis in the region.

3. Climate change

Climate change will continue to have a profound effect on the Arab region. According to the IPCC, North Africa, in particular, is the world's second-most vulnerable region to climate-related risks.[72] Summer temperatures in the region are expected to rise by 1 to 1.5 degrees Celsius by 2050, with extreme increases of up to 2 degrees Celsius in parts of Iraq, Saudi Arabia and Algeria. Winter temperatures will rise to a lesser extent but could still reach an increase of 1 to 1.5 degrees Celsius in the Arabian Peninsula and Iraq.[73]

In addition to an overall increase in temperatures, climate change is also expected to cause increased weather volatility in the region. Since the 1960s, droughts, earthquakes, floods, and storms in the region have all been steadily increasing in frequency, intensity and range, hitting countries such as Saudi Arabia (floods), Oman (cyclones) and Bahrain (sand and dust storms), which were previously less affected by extreme weather than others in the region.[74]

There is also evidence that heat waves will be more frequent, particularly in major cities. Riyadh is expected to have an average of 59 heat waves per year during 2010-2039, compared to just 12 during 1961-1990. Similarly, Cairo is expected to go from 7.5 to 22.5 heat waves per year.[75]

Temperature increases and extreme weather conditions will be accompanied by increased water scarcity in a region that is already extremely vulnerable. Currently, 13 Arab countries are described as suffering from extreme water scarcity, in other words, less than 500 m^3 water per capita, and water withdrawal is unsustainably high, particularly in the GCC countries.[76] Water availability in the region is expected to fall by 20 per cent by 2030, due to declining precipitation, rising water demand caused by higher temperatures, and increased seawater intrusion into coastal aquifers.[77]

Arab LDCs will be the hardest hit by climate change, as they have the lowest adaptive capacity and greatest structural problems. Climate change will also have a severe effect on countries in the region experiencing conflict or its fallout. GCC countries have a greater adaptive capacity but will not be able to avoid the effects of climate change altogether. The most vulnerable populations in all countries, namely, rural communities, the urban poor, and marginalized or displaced populations, will be hit hardest.

Although agriculture accounts for just seven per cent of the region's gross domestic product (GDP), it is very important for food security as nearly 40 per cent of the population, in particular the poorest, depend on agriculture.[78] Temperature increases could reduce yields of certain crops by up to 30 per cent in some areas if producers do not, or cannot, adapt. This would have a particularly great impact on the region, which is already heavily reliant on grain imports, with 50 per cent of wheat and barley, 40 per cent of rice and almost 70 per cent of maize being imported, making it particularly vulnerable to price shocks and food shortages.

Climate change is likely to increase displacement and both temporary and permanent migration to cities.

A further risk to the region posed by climate change is rising sea levels. Many of the region's major urban centres are in coastal areas. Countries such as Qatar, Tunisia and the United Arab Emirates are particularly vulnerable. Rising sea levels also pose a significant risk to Egypt. Just a 50 cm sea-level rise would lead to the displacement of 2 million people and losses of $35 billion in land, property and infrastructure in Alexandria alone. Sea-level rises would also have an impact on the Nile Delta, exacerbating existing problems of subsidence, salt intrusion and poor drainage.[79]

Water scarcity is likely to increase tensions between neighbouring countries, particularly around fresh water sources such as the Nile. In 2015, Ethiopia began construction of Africa's biggest dam, sparking tensions with the downstream nations Egypt and the Sudan, which view the river as paramount to their water security. These tensions are likely to increase as water becomes ever scarcer.

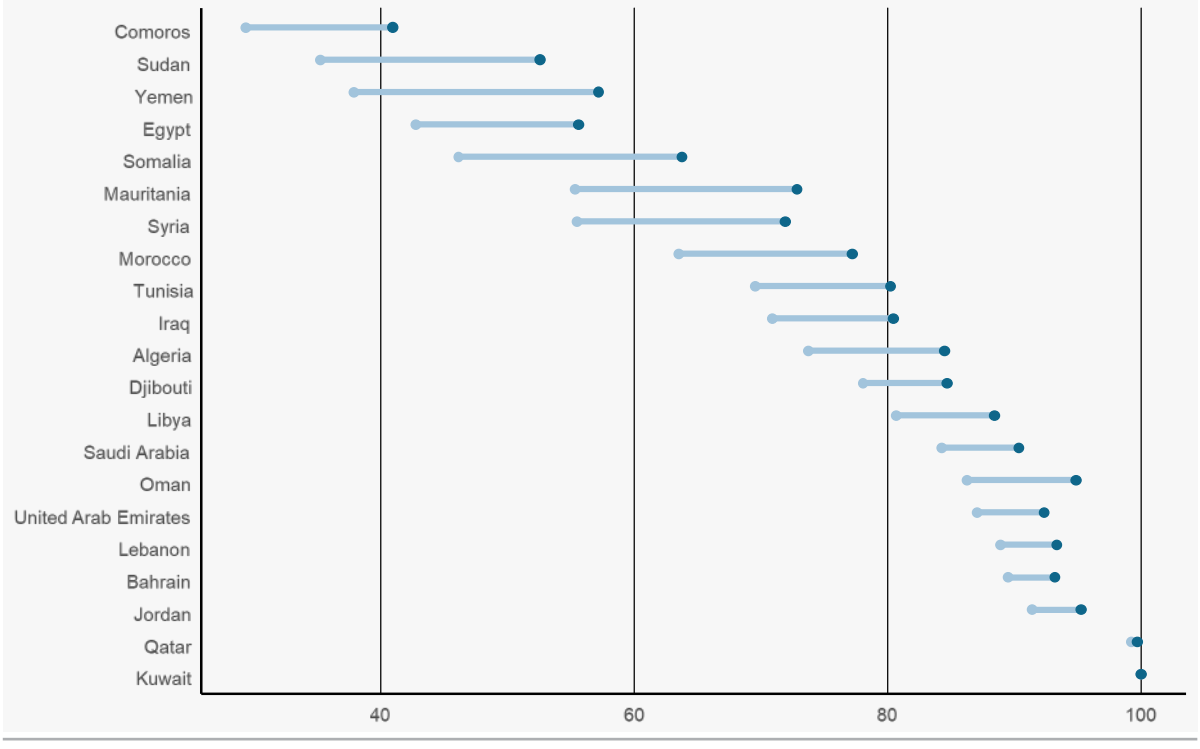
Some progress, however, has been made in disaster risk management (DRM) in the region in recent years. Algeria, Djibouti, Egypt, Lebanon, Morocco, and Yemen have established DRM units within their governments. Nonetheless, progress has been slow and uncoordinated at both strategic and operational levels and seeks only local solutions to regional issues.

4. Urbanization

Urbanization has been a megatrend in the Arab region for several decades and is expected to continue, although more slowly than in recent years. The average urban growth rate between 2005 and 2010 was at 2.98 per cent, and is projected to fall to 1.86 per cent between 2025 and 2030.[80] Nonetheless, this would mean an increase of 107.2 million urban dwellers between 2010 and 2030 alone.[81] Figure 9 shows changes in the percentages of the population residing in urban areas from 2020 to 2050.

In general, the least urbanized countries in the Arab region in 2020 will see the largest shifts toward greater urbanization by 2050, including Mauritania, Somalia, the Sudan, and Yemen. As elsewhere in the world, this growth will be concentrated in medium-sized cities of one to five million inhabitants; even though megacities are already a feature of the region, no new ones are projected to emerge in the coming years. In general, cities are much larger in the Mashreq and the Gulf, whereas Maghreb cities tend to be medium in size and fewer.

Figure 9. Changes in the population residing in urban areas, 2020-2050 (*Percentage*)



Source: World Urban Prospects, 2018.

The biggest cities, such as Cairo, Khartoum and Sana'a will take in the largest populations, but smaller cities such as Ibb and Al-Mukalia in Yemen, Ar-Rayyan in Qatar and Nyala in the Sudan will also experience significant growth in proportion to their current size.[82]

Urbanization in the region is driven by a number of interrelated push-and-pull factors. Particularly in the GCC countries, rapid economic development has drawn large rural-urban migration, as well as immigration from abroad. In the Maghreb, Mashreq and LDCs, meanwhile, urbanization is driven more by a lack of economic opportunities in rural areas, the impact of climate change on rural populations and ongoing conflict. Additionally, high fertility rates in cities continue to contribute to increasing urban populations. Of course, conflict also has displaced populations mostly to cities.

Like many other megatrends discussed in this chapter, urbanization is not per se a positive or negative trend; it depends very much on how it is managed. Two aspects come into play here: firstly, why populations moved into the cities in the first place; and, secondly, whether their arrival has been controlled and properly designed.

It is, therefore, fair to say that the cities of least concern are located in the Gulf, while urban agglomerations in the Mashreq and the Arab LDCs are of highest concern; in general, rapid urbanization across the region has proceeded with little or no planning. Construction codes are rarely applied and environmental considerations often ignored, even in the better-constructed cities in the Gulf. The lack of adequate urban planning and governance leaves such settlements highly vulnerable to extreme weather and to the effects of climate change. In Jeddah, for example, the 2011 floods exposed poor urban planning (roads were built along *wadi* flood plains, for instance) and revealed the degradation of environmental buffers that had previously protected the city from floods.

Where cities are small and lack the administrative capacities of larger cities, they will struggle to provide services to their rapidly swelling populations. In Yemen, for instance, 67 per cent of urban residents live in slums and informal settlements and lack basic services such as water, sanitation and solid waste collection.[83]

Maghreb countries such as Algeria, Egypt, Morocco, and Tunisia have taken steps to address problems with poor housing and to minimize slums. Efforts have been limited to small schemes, however, and there is too big a gap between the investment required and what has been allocated. Urban slums and the deprivation associated with them will continue to be a feature of the Arab urban landscape long into the future. Urbanization is, therefore, not itself a risk, but it sits at the intersection of other risk factors such as poverty, climate change and conflict.

5. Connectivity

Although the Arab region still lags behind global trends towards greater connectivity, it is catching up very fast. Connectivity here should to be understood more broadly than simply Internet connectivity: it also comprises transportation and communications infrastructure that connect peoples, States and regions.

Since 1990, the region has made huge progress in literacy rates, increasing from 64 per cent to 81 per cent by 2016, and the region is now well ahead of South Asia and Sub-Saharan Africa.[84] This progress will allow the region to reap the benefits of the Internet, reflected in the fast-growing Internet penetration, which stood at 58 per cent in 2017, up from 15 per cent a decade earlier.[85] Mobile cellular subscriptions jumped from 55.8 subscriptions per 100 persons to 112.1 subscriptions per 100 persons in the same time period.[86]

In addition, efforts to improve regional road networks have increased over the last decades. The 2001 treaty creating the Arab Mashreq International Road Network, for instance, aims at improving more than 31,000 km of roads connecting the signatory States of the treaty. In addition, the improvement of ports and airports have accelerated both air and sea travel despite the persisting visa regimes in the region.

Where leveraged well, connectivity has a large potential for trade and economic growth. Yet, as a multiplier of numerous human activities, it also has the potential to accelerate the proliferation of illicit activities such as drug smuggling and human trafficking, and, of course, the spread of terrorist propaganda, fundraising, knowledge, and expertise

It also creates a new arena for real-life antagonisms to be contested: for all its benefits, cyberspace is a now theatre of cyberwar, cyberterrorism and cybercrime.

At the moment, Arab States are not prepared for the downsides of connectivity, but violent non-State actors and illicit groups are prepared to exploit them and, indeed, are already adept at doing so. The so-called Islamic State group, in addition to other, smaller groups, has used the vast online reach to encourage terrorist attacks well beyond their physical location. The cyberdomain is also used for espionage activities, such as the Flame and Gauss malwares. Flame, for instance, targeted universities and firms in Lebanon, Saudi Arabia and the Syrian Arab Republic, whereas Gauss targeted financial institutions mainly in Lebanon.

Financial criminals are also increasingly targeting the region due to its poor awareness both at the institutional and individual level.[87] For instance, in late 2012 and early 2013, an international gang targeted banks in Oman and the United Arab Emirates, hacking into the system and withdrawing U$45 million from cash machines in 27 countries.

In order to reap the benefits of this connectivity, States in the region will have to take a number of precautions ranging from awareness-raising to regulatory measures.

6. Proliferation of small arms and light weapons

Although the Arab region has been one of the most highly militarized regions of the world since World War II, the last decade has even seen increases in arms proliferation to which there are three dimensions, namely the diversion and stockpile leakage in post-conflict settings; the transfer of arms to non-State actors; and the ongoing military build-ups by States.

Conflicts are one of the main culprits in this regard; they create the conditions for Arab Governments intentionally releasing weapons into their societies, non-Arab Governments delivering weapons illegally to local proxies or the looting of stockpiles. For instance, the invasion of Iraq led to the transfer of at least 4.2 million small arms and light weapons to non-State actors or the wider civilian population, some of which ended up fueling the insurgency of the so-called Islamic State. In Libya, more than 15 million weapons not only ended up in the hands of the population, but also spread into as many as 14 countries, including man-portable air-defense systems, which are capable of shooting down civilian jetliners, among other aircrafts. These weapons are blamed for having destabilized northern Mali in 2012, which, in turn, led to a *coup d'état* in Bamako. In Lebanon, Libya, the Syrian Arab Republic, and Yemen, non-State actors have received weapons from State sponsors, directly or indirectly.[88]

In addition to these "unofficial" weapons, States in the region also continue to expand their military arsenal; seven of the ten countries with the highest military spending as a proportion of their GDP are in the Middle East, and five of the world's ten largest importers of major arms during 2013-2017 were in the MENA region. Unfortunately, all of this is a trend decades-long in the making and difficult to undo.

It goes without saying that violent high-casualty conflicts can emerge and unfold even in the absence of sophisticated weaponry, the genocide in Rwanda being one example. Weapons alone do not cause conflict but they

can greatly accelerate it and make fighting more damaging and demobilization and recovery more expensive and complex. This is even more so the case as conflicts tend to be intra-State, and therefore fought more with small arms and light weapons.

Weapons not only have a direct lethal effect, but also play a political role as they can escalate grievances into violent conflict. The presence of weapons also contributes to security dilemmas, leading to displacement, choked commercial activities, reduced access to health care and education, and destroyed or damaged infrastructure.

There are several ways to mitigate this situation, but none of them are particularly implemented in the region. When it comes to the release of State weapons into the civilian population, stockpile management is a real concern. Had both Iraq and Libya had better stockpile management measures in place before their respective conflicts, weapons would not have proliferated as easily as they did. There is also a worrisome tendency in the region to deliver weapons purposefully to non-State actors which do not regulate the flow of weapons. In addition, States cooperate little with each other to control the spread of small arms and often lack the capacity to even formulate their needs when it comes to assistance in this regard.

D. Catalysts in the Arab region

The megatrends described above are robust and decades-long phenomena and will require similarly substantial and continuous efforts to shape them. What makes these megatrends even more prone to risk is when they are flanked by other shorter-term trends that are termed catalysts. These catalyst trends interact with megatrends in complex ways: they can amplify and speed up the megatrends, add a sense of urgency or multiply an existing threat. Because of their shorter lifespan, between six months and ten years, these catalysts are much more likely to stand at the centre of policy decisions than megatrends. In some cases, when catalysts emerge (such as an episode of food price volatility), they might distract from or inhibit Arab societies from addressing megatrends (such as climate change) that pose even greater long-term threats. Indeed, without wise decision-making, short-term policy responses to catalysts might even worsen megatrends. That said, megatrends and catalysts are best addressed in an integrated fashion.[89]

Since catalysts develop much faster than megatrends, they are more difficult to anticipate with a high degree of certainty. Nonetheless, catalysts can be identified and measured to a degree that is relevant for improved policymaking in the Arab region.

1. Food price volatility

Over the last three decades, the Arab region has increased its food imports substantially; at present, half of all food staples are imported across the region, projected to increase to 64 per cent by 2030. This is the result of two converging trends: the production of cereals and, to some extent, meat and milk, has remained constant since the 1990s, while consumption has increased because populations are growing.[90]

While food imports are not a problem themselves, overreliance on imports exposes populations to the risk of both supply and price shocks on the world market. Food import

dependence, in essence, makes food security an economic, rather than environmental, challenge. Poor populations, particularly the urban poor, are particularly at risk from such shocks. The degree of import dependence is high: despite being home to only five per cent of the world's population, the Arab region takes one third of the world's imports of sheep meat and more than a quarter of milk and wheat on the global market.[91]

While all countries in the region import a significant amount of the food they consume, the risk is much higher when food import spending exceeds the country's total fiscal surplus. The GCC countries spend around five per cent of export earnings on food imports, while elsewhere the figures are much higher. Saudi Arabia imports 90 per cent of its grain needs, but due to its fiscal surplus, it has the space to dampen food price inflation or raise wages to make up for higher food costs, whereas Egypt, which is able to meet almost half of its food requirements, runs a fiscal deficit of some ten per cent of its GDP. This exposure means that Egyptians would be much harder hit by food price inflation, in particular those 13 million Egyptians living on less than U$2 per day.[92]

Poor communities are also hit particularly hard by food price increases as existing social protection systems face challenges during price spikes. Many countries in the region use blanket subsidies to encourage food production, but these come under great strain when global food prices rise.[93]

Particularly vulnerable are the region's LDCs, where spending on food imports is high and volatile. Djibouti's food imports have reached four times the value of total exports several times in recent years, and in Somalia, it has been double. These countries are highly reliant on international grants and loans, as well as remittances.[94] Any future food price shocks will spell disaster for both countries.

Vulnerability to supply and price shocks is also exacerbated where countries rely on a relatively small number of suppliers for their food imports. The Arab region is particularly reliant on wheat, of which 66 per cent of the global stock is exported by just 5 countries, with most Arab countries relying primarily on just two, namely, Russia and France.[95]

Supply shocks can be caused by harvest failures, but also by policy interventions such as export bans, often in response to supply problems domestically. In other words, shocks are normally sudden events difficult, but possible, to anticipate.

A recent study argues, for example, that an export ban on wheat from Russia would reduce cereal supply by more than five per cent for 18 million people globally who live under the international poverty line. Such a scenario is increasingly likely due to global warming and potential redirection of Russian wheat exports from the Middle East to China.[96]

The impacts of food price shocks can be wide-reaching. Some scholars have made connections between reduced wheat yields in Russia between 2008 and 2010, a subsequent Russian export restriction, increases in wheat prices across the Arab region, and the subsequent Arab uprisings in 2011.[97] By this analysis, the catalyst of food price vulnerability interacted with existing megatrends and other catalysts such as economic stagnation, high youth unemployment, and unaccountable and corrupt governance to trigger political instability and violent conflict.

Given how few of the megatrends and other catalysts have been addressed since 2011, food price instability remains are key area of concern in the Arab region.

There are, of course, steps that can be taken to combat food price rises. Arab States could take steps to increase domestic production, for example, by investing in productivity and intensification of farming, particularly through irrigation. Studies show that a 25 per cent increase in yield would increase the Arab region's self-sufficiency ratio from 34 per cent to 41 per cent by 2030.[98] However, this will not be possible without governments embarking on a long-term strategy, avoiding environmentally or economically unsustainable quick fixes such as seawater desalination or deep-well groundwater extraction. There is little evidence of an appetite in the region for such long-term thinking.

Alternatively, governments can invest in other countries to gain direct access to food supplies. Saudi Arabia and the United Arab Emirates have taken some steps in this direction, investing in food production in more fertile regions of the Sudan, although this has been somewhat controversial given the Sudan's food security challenges.[99] This option, while favoured by some GCC countries, will not be fiscally viable for many others.

A final approach is to create buffer stocks of grain for use in the case of a sudden price shock. Saudi Arabia currently has wheat reserves for eight months and aims to increase this to 12 months in the near future.[100] If all countries in the region had just three months' reserves, this could decrease the effects of a price shock by 30 to 50 per cent.[101] Once again, this approach is unlikely to be adopted outside of the GCC countries.

2. Water scarcity

Given its geography and climate, the Arab region has always faced water scarcity, but this problem threatens to reach seriously destabilizing levels in coming decades. Water security is a cross-cutting issue that affects a range of different sectors, including agriculture, food security, health, and human settlements.

Currently, 12 countries in the Arab world are categorized as suffering from severe water scarcity, holding less than 500 m^3 per capita. The regional average is only slightly better, at 650 m^3 in 2014. In comparison, the world average is 6,000 m^3 per capita.[102]

By 2030, it is estimated that climate change will reduce renewable water resources by a further 20 per cent.[103] Higher temperatures and a lack of precipitation will damage both the quality and quantity of water supplies and cause increased droughts across the region.[104]

Scarcity will be compounded by the unsustainable water extraction that characterizes most of the region. Of the region's total fresh water consumption, 85 per cent goes to agriculture, with groundwater reserves being used up without integrated planning.[105] Extracting groundwater beyond their natural replenishment rates is rapidly depleting reserves, and the water table in the region has dropped by a meter per year for the last 30 years.[106] Even areas with relatively rich surface water resources are increasingly relying on groundwater to reach demand, which is estimated to reach 43 km^3 more than supply between 2020 and 2030.

Urban growth also contributes heavily to overconsumption of water in the region, and in

particular in the wealthy GCC States. A large proportion of this water consumption is met through desalination, which, however, drives up the cost of water and will contribute to increasing water inequity.

Water scarcity will have the greatest effect in Arab LDCs, where governments are not able to adapt to meet demands. The urban poor, agricultural communities and other marginalized groups, often already lacking access to clean drinking water and improved sanitation, will be hard hit by water scarcity. Waterborne diseases will become a particularly common problem. As mentioned, Sana'a is set to be the first city in the world to deplete its groundwater reserves between 2030 and 2040, with the rest of Yemen not far behind.

Water scarcity will be a major source of conflict both between and within Arab countries. Almost every country in the region depends on rivers or aquifers shared with their neighbours, and poor governance of shared water resources threatens the stability of the region, particularly in the Nile and Jordan River basins.

A key concern for Egypt is the construction of the Grand Ethiopian Renaissance Dam project on the Blue Nile, which threatens to limit downstream water flow of the Nile. Egypt gets 90 per cent of its freshwater supply from the river and sees this project as a credible threat to national security. The Sudan supports the Ethiopian project, however, as the Sudan hopes it will allow expanded agricultural production and provide cheap electricity. While some progress has been made in the dispute over recent years, confidence-building between the three countries will still be needed to avoid re-escalation of tensions.[107]

In order to limit the impact of water scarcity, water governance will need to focus on sustainable water use, energy efficiency and investment in research and development in water technology. Governments in the region, however, tend to focus on short-term measures and environmentally and economically unsustainable solutions such as the use of desalination; 70 per cent of the world's desalination plants are in the region.[108] Reducing overextraction of water is politically unpopular and, while the scarcity of water is often understood within senior levels of government ministries, this rarely translates into public political discourse.[109]

3. Governance and economic policies

Government actions can also inadvertently act as catalysts for conflict, crisis and instability. As discussed in chapter 2, some State institutions in the Arab region have a number of deficits which contribute to their risks of conflict, crisis and instability, among them a lack of accountability, high exclusion and low participation, low administrative effectiveness and regulatory quality, lack of respect for human rights and the rule of law, and corruption. As a result, popular dissatisfaction with political institutions will remain high and a likely catalyst for conflict, crisis and instability in the region, as we have seen again in Algeria and the Sudan in early 2019.

Lack of structural transformation explains a lot about economic growth volatility and the weak growth-employment-poverty relationship in most of the Arab region. The region's relatively high average economic growth over the decades prior to global economic slowdown in 2008, and the slow recovery in following years,

did not significantly improve incomes of the poor, nor did it generate enough decent work for the growing educated labour force. The growth process in the past yielded mainly informal and poorly paid jobs. Labour productivity has barely budged, economic growth has been sluggish, and benefits have been unevenly shared. In this context, the evolution of differences in wages and productivity trends in the economic growth processes and the impact of redistributive fiscal policy are two important issues for examination.

Broadly speaking, governments have not developed policies that generate adequate income for their lower- and middle-income citizens, and a potential risk of discontent arises from an increasing divergence in the trends of labour and capital shares of income.

Furthermore, the burden of direct taxes in the Arab region tends to be higher for the middle-income population than for the richest-income decile. This burden is implicitly more compounded by the fact that formal-sector employees benefit from social insurance, which is partly contributory and partly subsidized by tax resources. The indirect tax is regressive in nature, as in any other developing country, but constitutes the major source of tax revenue for most middle-income countries in the region, and, over time, the share of indirect tax has increased. Recent tax reforms in the Arab region have placed greater emphasis on value-added tax (VAT) to raise resources for the governments in the GCC and several other countries.

The Middle East is characterized by a dual social structure. There is an extremely rich group at the top, whose income levels are broadly comparable to their counterparts in high-income countries, and a much poorer mass of the population left with little income. The extreme inequality between the top rich and the rest of the population can be explained by the rentier nature of economy based on appropriation of oil rents in the Middle East. The middle class, the middle 40 per cent of the population, is more impoverished in the Middle East than in the United States and Western Europe, with an income share of less than 30 per cent as compared to 40 and 45 per cent, respectively.

There lies an opportunity in these economic challenges and their discontents: they can serve, and have done so in the past, to generate the necessary momentum to undertake institutional reforms that then propel the region into the next industrial revolution. At the moment, only the Gulf States and, to a lesser extent, Egypt are likely to benefit from artificial intelligence and other technological innovations, but the potential exists also for other States. Perhaps, and more importantly, economic performance is to be seen less as a numerical factor and more as one which features in a positive sense in national identity and well-being among the region's citizens.

4. Radicalization and violent extremism

Although elements of both radicalization and violent extremism have existed in the Arab region for decades, the problem has increased in both scope and reach since the invasion of Iraq in 2003 led by the United States. Yet, at a regional perspective, radicalization and violent extremism are not solely the problems of societies experiencing conflict and occupation: countries such as Saudi Arabia and Lebanon have experienced comparatively little violent conflict over the same period yet face problems of radicalization.

The recruitment success of the so-called Islamic State in the region is only one indication that the radical potential is real: aside from Syrians and Iraqis, which made up approximately half of the organization, it also managed to attract more than 12,000 citizens from other Arab countries (7,000 from the Middle East and 5,000 from the Maghreb).[110] This means that, despite the defeat of the organization, the recruitment pool has not dried up, instead leading to the formation of new organizations.

5. Transnational organized crime and illicit networks

In recent years, a number of new transnational risks have emerged in the MENA region that are related to trafficking, smuggling and organized crime. Governance issues, insecurity, conflicts, poverty, and economic disparities all play a role in the onset of illicit trafficking of migrants, drugs, weapons, and money. The risks emerge partly for geographic reasons: the Arab region is located between major suppliers of weapons, drugs, and migrant labour and their final consumer markets, partly because conflict, crisis and instability in the region have created corridors for illegal economic activities. In some cases, conflicts themselves have generated demand for drugs, weapons and illicit labour. As a result, major smuggling and trafficking routes crisscross the Arab region, contributing to local conflict, crisis and instability.

The scale of these transnational phenomena is quite large. The United Nations Office on Drugs and Crime estimated that, in 2016 alone, approximately 480,000 migrants were smuggled overland from Sub-Saharan Africa to North Africa, producing revenues for smugglers somewhere between $1 billion and $1.5 billion.[111] Another 117,000 migrants were smuggled from the Horn of Africa to the Arabian Peninsula along sea routes in 2016, producing revenues of $9 million to $22 million for smugglers. Many migrants remain in the Arab region, while others continue onward to Europe. In 2016, approximately 375,000 migrants were smuggled into Europe across the three major routes in the Mediterranean Sea, generating revenues for smugglers of $320 million to $550 million.

Illicit drug trafficking is another pressing transnational problem in the Arab region. North Africa is a transit area of growing importance for the smuggling of cocaine from South America to Europe. According to 2018 World Drug Report of the United Nations Office on Drugs and Crime (UNODC), the quantity of cocaine seized in Africa doubled in 2016, with countries in North Africa seeing a six-fold increase and accounting for 69 per cent of all the cocaine seized in Africa in 2016.[112] Drugs are also trafficked into the Arab region for local consumption, which appears to be rising, especially the non-medical use of opioid pharmaceuticals, amphetamine-like stimulants, and cannabis.

Heroin is trafficked into Europe primarily along the so-called Balkan Route, which extends from Afghanistan through Iran, Turkey and the Balkan countries, and then on to western and central European markets.[113] While the Balkan route mainly bypasses Arab countries, its proximity does generate risks of conflict, crisis and instability in the region.

For example, drug trafficking has been a key source of financing for non-State armed groups operating along the border areas of Iraq, the Syrian Arab Republic and Turkey since the early 1980s.[114] The heroin trade along the Balkan route alone is valued in the tens of billions of United States dollars annually.

The region is increasingly consuming drugs too, particularly pills such as Captagon. There appears to be a growing amphetamine market in the Middle East, and quantities seized in the region have been growing in the past few years.[115] Local suppliers usually meet local demand: trafficking reports show that amphetamine is mostly trafficked among countries within the Middle East, and most of the amphetamine seized in the Middle East is believed to originate in Lebanon and the Syrian Arab Republic.[116] Amphetamine markets seems to be expanding into North Africa as well, with a recent spike in amphetamine seizures suggesting a growing trafficking connection between North Africa and the countries in the Middle East.[117]

Transnational arms trafficking is another significant risk factor in the Arab region. Conflicts in Libya, the Syrian Arab Republic, Yemen, and elsewhere have increased demand for weapons and ammunition of all types; transnational networks steal these weapons, seize them or purchase them on the black market, and then sell them on to customers. As discussed above, the collapse of State authority in Libya led to Qaddafi's vast arsenal being looted by local groups; among others, these weapons flowed to violent non-State actors in northern Mali, fueling conflict and political instability there. From a regional perspective, arms are thought to be illicitly trafficked along the same routes used for migrant smuggling and drug trafficking, and often by the same groups.

Overall, these transnational phenomena shape risks of conflict, crisis and instability in the Arab region in at least the following three ways. First, violent non-State actors are often key players in these lucrative illicit activities. Many militias in Libya, for example, are either directly involved in oil and migrant smuggling or are "taxing" the profits of the smuggling networks, and these violent non-State actors sustain themselves, in part, through such revenues.[118] Second, many transnational criminal networks engage in systematic corruption, at border crossings, in customs facilities, in law enforcement agencies, and among politicians. The presence of these transnational networks in the Arab region, therefore, undermines good governance and the honest provision of basic services, which, in turn, heightens risks of violent conflict, humanitarian crisis and political instability. Finally, these lucrative markets quickly develop into war economies, in which actors gain powerful incentives to maintain or increase conflict, crisis and instability as enabling conditions for their highly-profitable criminal enterprises. In the worst case, States are captured by organized crime, hollowing out institutions, leading to government inefficiency and thereby increasing instability. In this case, the State itself becomes a risk factor.

6. Geoeconomic changes

The geostrategic importance of the regions' oil economy, and the wealth that comes with it, will change in the foreseeable future. While overall demand for oil will remain robust over the next decade due to increased industrialization, especially in Southeast Asia, the demand from Europe will likely drop at roughly the same speed as China's and India's demand is projected to grow.[119] Europe will decline in population size, is unlikely to experience unusually strong economic growth and is decarbonizing its energy needs. In addition, the Arab region itself is likely to consume more oil itself as its population continues to grow, leaving less of the resource available for export; and new gas pipelines planned through Russia and Turkey will further decrease oil exports to Europe.

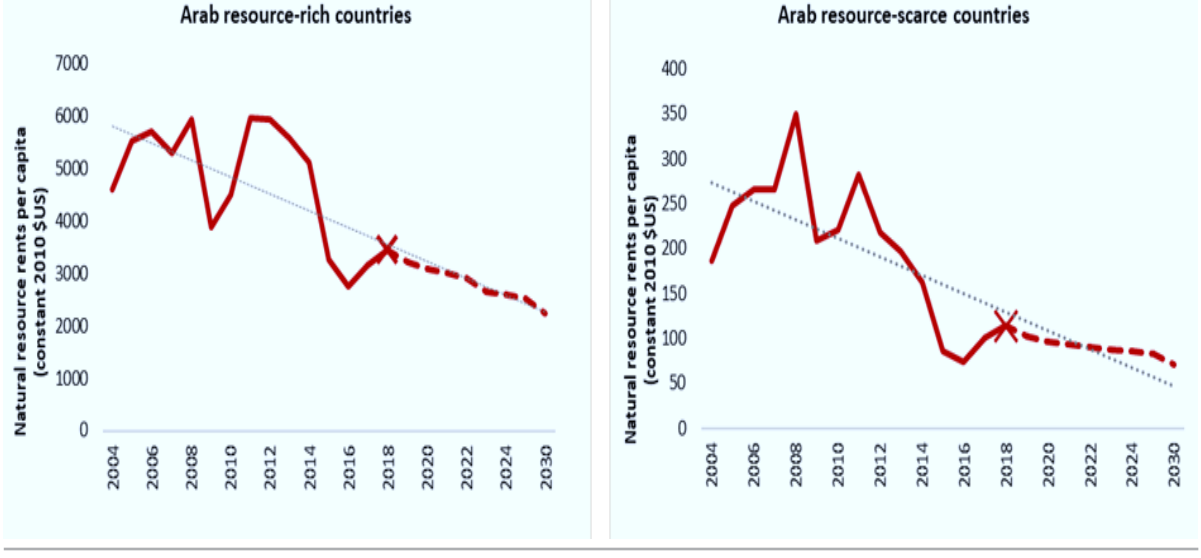
At the same time, the economic growth of China and greater south-east Asia will expose the region to greater dependence and political exposure, of China in particular. China has already signaled that the Middle East is an important link in its Belt and Road Initiative, pledging significant infrastructure investments and loans to the region. While China does not seem to intend to establish a military presence in the region, it is likely to outmatch Europe's energy imports by 2040. The region will, therefore, remain vulnerable to geostrategic power struggles in the years to come.

Although the oil-producing States in the region are unlikely to run out of oil in the coming decade, an economic transition away from the resource is imperative. Firstly, the energy transition in Europe could occur faster than currently planned, leaving the States exposed to export dependency. Secondly, a regular transition will require changes in education, investment and mindset which will take several decades to achieve. If these changes do not occur, those States will head towards some form of instability and be unable to meet the social and economic needs of the population.

7. Falling oil rents

Rents from natural resources and their economic spillovers shaped much of the Arab region's socioeconomic development over the past decades. Especially in the nine net-oil-exporting countries, high per-capita rents from natural resources formed the provision of government subsidies and enabled low tax rates and disproportionate public-sector employment. The resource wealth influenced the development trajectory for net oil importers in addition to investments, remittances and tourism.

Figure 10. Natural resource rents per capita, 2004-2030



Source: Calculations by the author.

Non-renewable natural resources, however, are finite and will contribute to a significant reduction in per-capita rents in the mid- to long-term and make regional economies highly susceptible to oil-price fluctuations. As figure 9 shows, oil rents per capita are projected to decline for both oil and non-oil rich countries.[120] This trend is a result of a decline in oil prices after 2008 and the high population growth in much of the region. It will indirectly affect oil-poor countries, many of which are heavily reliant on these external sources of foreign currency, through falling worker remittances, direct investments and other channels.

E. Conclusion

Arab States face severe challenges in the coming decade and, as a result, are high-risked when it comes to political and economic instability. All these impending risks are directly linked to existing problems, which form the baseline risk. Postponing reform, lacking long-term vision and single-issue approaches to economic problems, for instance, are all likely to make matters worse in the medium- to long-term.

That said, these challenges also present the region with opportunities. Economic reform and job creation can be turned into a momentum of change; climate change, shared security challenges and connectivity could serve as a basis for more cooperation which, in turn, could generate trust. Simply put, risk awareness is not designed to stifle action but, on the contrary, promote it.

4. Gender and Risks

Trends in the Arab Region

4. Gender and Risks: Trends in the Arab Region

A. Introduction

A growing theoretical and empirical literature asserts a number of direct and indirect associations between the prevailing gender dynamics in the Arab region and conflict, crisis and instability. The associations operate in multiple, complex directions. Conflict, crisis and instability have eroded the position of women and girls in the Arab region, causing increasing rates of child marriage and fertility, disproportionate mortality, worsened health outcomes, reduced school enrolment, worsened labour market access, greater prevalence of sex trafficking and slavery, and shifts in public attitudes away from gender equality. At the same time, entrenched patriarchal attitudes, a lack of women's political representation, inadequate women's participation in peace and national dialogue processes, and slower economic growth due to the exclusion of women from economic activity are also thought to contribute to higher risks of conflict, crisis and instability and to reduce the effectiveness of peace settlements and peacebuilding initiatives.

At the global level, the United Nations and its member States have, through a number of resolutions and conventions, acknowledged the gender dimensions of conflict and violence. Therefore, it is worthwhile to introduce in this chapter a separate discussion of recent and potential future trends concerning gender in the Arab region. Whether these trends will be megatrends or catalysts as defined in the previous chapter depends on how quickly they evolve over time. While gender norms are usually comparatively slow to evolve, from a global perspective and also in the Arab region, there have also been episodes of quite rapid changes in the constitutional and legal rights of women and girls, as well as in their economic and social status. Notably, this chapter documents how complex the wider trends across the Arab region are, with a number of important gains running in parallel and interacting with the impact of conflict, crisis and instability.

Like many of the trends discussed in the previous chapter, trends impacting women's rights and gender equality in the Arab region can have both positive and negative influences on the underlying elements of risk, namely, on the frequency and intensity of conflict, crisis and instability; the exposure of women and girls to these hazards; the vulnerability of women and girls to the impacts of hazards; and the capacity of governments and communities to prevent, mitigate and respond to these risks effectively. Much will depend on political will to translate gender-sensitive policy advice into durable reforms and effective humanitarian and development interventions.

This chapter begins by presenting the complex picture of trends on gender relations and women's rights across the Arab region and ends by advocating close attention to the

gender dimensions of risk and arguing for the central role of gender in any risk-assessment methodology.

B. Trends in social, political and economic inclusion

Throughout the last decade, the Arab region as a whole has witnessed several advances regarding women's status at the political and economic levels. According to the World Economic Forum's (WEF) Global Gender Gap Report, which benchmarks progress towards gender parity across four thematic dimensions, societies in the MENA region have closed 60 per cent of their overall gender gap.[121] Yet, although it would be incorrect to downplay the importance of some recent advances, overall progress toward gender equality has been slow compared to the scale of the challenges involved. According to the WEF, it would take 153 years to close the gender gap if current rates of progress are sustained, and there appears to be no outstanding reason to expect a change in this trend in the coming decade. Furthermore, although differences in performance across various gender-related indicators can be relatively large between Arab States, there are no marked differences in trends between subregions. Comparatively over- and underperformers, depending on the indicator used, can be found between States in the Maghreb and Mashreq subregions, among GCC members and even Arab LDCs.

With that said, progress has occurred. In the political realm, women in all Arab States have gained greater representation in political institutions including parliaments, governments, bureaucracies, judiciaries, and local councils.[122] The gender gaps in educational enrolment and literacy have been largely bridged for new cohorts in most Arab States.[123] Several States have also removed restrictions on women's ability to work, including restrictions on movement, allowed activities and time, and others have taken active steps to encourage women's participation in labour markets, including programmes to upgrade and match skills.[124]

However, women's presence in political and public institutions remains weak and uneven and arguably owes more to the use of quotas in specific institutions, such as parliaments, rather than a full recognition of the value of their contribution to public life. Beyond numerical representation, there is also little evidence that women are able to play an equal role in, and have a substantial impact on policymaking.[125] Women's low economic participation is another key challenge that still has to be addressed in most Arab States. Although there are notable national disparities, the regional average rate of participation of women in the formal labour force reached only 20.9 per cent in 2017, compared to the world average of 48.7 per cent, and less than a third of the rate for men, at 75 per cent.[126] There are also noticeable gender gaps in job quality and average wages.[127] Increases in women's education have not translated into economic empowerment, owing to factors such as the uneven gender distribution of unpaid care work.[128]

Despite these advances, inequalities between men and women remain large in the Arab region, which continues to trail all other regions in most global indices relating to gender equality. Women in the region continue to face diverse, multidimensional, intersecting, and self-reinforcing forms of discrimination in the legal, social, economic, and political spheres, which result in gender inequalities across a variety of

indicators. Taken as a whole, they perpetuate the lower status of women in Arab societies. Arab governments will remain, on the whole, unwilling, or unable, to implement the comprehensive policy actions required to achieve full equality between women and men. Piecemeal progress with specific advances is, therefore, likely to remain the trend. The type and scale of these advances will vary across different countries, depending on their respective context and priorities, and could, for example, include the repeal of discriminatory legal provisions, increased compliance with relevant international frameworks and positive action toward women's economic and political empowerment.

On the upside, greater political will to improve women's rights and work towards gender equality has become more notable in most Arab States in recent years, as leaders rightly identify women's marginalization as a key barrier to economic and social development. It is also possible that past advances, including legal rights, education and political and social empowerment, will trigger a snowball effect and increase social pressure on governments to introduce further reforms. Nevertheless, other policymaking priorities, the weight of conservative gender norms and social institutions and the shrinking space given to civil society organizations and women's human rights defenders (section G) will likely continue to dampen the pace of progress. Pushbacks against gender equality might also be observed, particularly in situations of instability and conflict.

C. Compliance with legal, constitutional and treaty obligations

Since the 2010-2011 uprisings, there have been notable efforts in the Arab region to affect gender-sensitive constitutional and legal reform and to enforce compliance with international frameworks and norms, and women rights activists sought to influence such processes. However, legislative reforms have been piecemeal and not substantially linked to overall policy reform. Additionally, legislation and its enforcement remain weak. In some instances, such reform has led to a backlash and a regression in rights for women and girls and other marginalized populations. Despite reforms, all Arab States still maintain some form of legal discrimination in constitutional provisions and in criminal, labour, nationality, or personal status laws.[129]

At the State level, the vast majority of constitutions in the region explicitly outline equality between men and women as citizens. However, many also declare *sharia* as the foundation of national legislation with a focus on gender complementarity (as demonstrated in most personal status laws), therefore nullifying any possibility of gender equality. Additionally, only a handful of constitutions in the region acknowledge the State's obligation to gender equality and women's empowerment, including ensuring equal opportunities, women's political participation, addressing violence against women, and care for vulnerable women.[130]

The reform of penal codes has been piecemeal, yet, the reform of articles commonly labeled as so-called "marry your rapist" laws stands out as noteworthy. In 2014, Morocco repealed article 475 of the penal code in response to the subsequent suicide of 16-year-old Amina el Filali who was forced to marry the man who had raped her. Subsequently, in 2017, Jordan, Lebanon and Tunisia repealed similar laws, and Palestine followed a year later with the passage of Law no. 5 of 2018. However, a more

substantial overhaul of the penal codes is needed for greater gender sensitivity.

Only six States in the region have stand-alone domestic violence laws,[131] though Tunisia's law covers a broad scope of violence including physical violence, moral violence, sexual violence, political violence, economic violence, and overall discrimination against women. Most of these laws address physical, psychological, sexual, and economic violence to varying degrees; reform articles of the penal code related to violence; outline steps to be taken by the criminal justice system with a survivor-centred approach; and provision for civil and criminal protection orders.[132] However, implementation remains uneven, and the impact or enforcement of such laws is unclear because few States collect comprehensive and timely data. Notably, there are legislative gaps; no laws in the region explicitly criminalize marital rape within domestic violence laws or penal codes, though rape of a woman by a man other than her spouse is often criminalized harshly within the penal code. Laws penalizing sexual harassment in the public sphere or in the workplace exist in several States.[133] In other instances, States have general provisions in penal codes.[134]

All Arab States have personal status laws based upon some type of interpretation of religious law (primarily Christian and Muslim); most have been codified. Personal status laws regulate what happens in the family, including marriage, inheritance, divorce, and maintenance, areas that disproportionately impact women and girls. Women's organizations and activists have pushed for decades to reform or remove religiously affiliated personal status laws, with little success. In several States, legislation that is in conflict with personal status laws may result in the personal status law taking precedence.

Nationality laws within the Arab region continue to discriminate based on gender, preventing women from passing on their nationality to their children and/or their foreign-born spouse. Nine States in the region continue to hold specific reservations to article 9 of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) that demands equality with regards to nationality, rendering women as unequal citizens. Not only is this a human rights violation, it also imperils conflict-affected women and their children. For instance, children born under the rule of the Islamic State in Iraq and the Syrian Arab Republic to local women and foreign fighters have been rendered stateless because women were unable to pass on their nationality. Those children are now unable to access necessary services such as access to identity paperwork and health and education services, potentially leading to a lost generation.

Labour laws in the region are more progressive, protecting women from being dismissed for being pregnant and asserting the right to paid maternity leave, even though the International Labour Organization's (ILO) recommendation of 14 weeks is not necessarily complied with. A few States have provisions for the right to equal pay for equal work when compared to men. All States have legal restrictions on women's work, for example regarding possible occupations, working hours and location.[135]

At the international level, the majority of States in the Arab region have acceded to CEDAW and engage with the CEDAW reporting process. However, many States continue to hold reservations against CEDAW,

primarily articles 2, 9, 16, and 29, which deal with issues of gender discrimination, family, nationality, and State sovereignty.[136]

In a region heavily impacted by conflict, only five Arab States have acceded to the Rome Statute, the treaty establishing the International Criminal Court,[137] making it difficult to pursue those responsible for gender-based war crimes and crimes against humanity at the international level. Based on current governmental stances, it seems highly unlikely that Arab States will be joining the International Criminal Court. Momentum also seems to have been lost in developing a regional legal accountability mechanism, as was put forth after the uprisings of 2010-2011. Regional and national accountability options are, therefore, likely to remain largely inexistent, carrying the risk of impunity and denying survivors access to justice, particularly women and girls who have been abused, raped, sexually enslaved, and forced into marriage.

D. Participation in governance, peace processes and national dialogues

Women continue to be marginalized within peace processes and national dialogues in the Arab region. The United Nations, with Security Council resolution 1325 and the women, peace and security (WPS) agenda, generally serve as the framework for mainstreaming women's participation in peacemaking and peacebuilding processes, and addressing violence against women in conflict, particularly sexual violence. However, it seems that few States directly engage with the framework and women's civil society is still dubious of the framework's applicability to conflicts in the region. Some women's rights activists and members of civil society note that the WPS agenda does not accurately address long-term occupation and displacement. CEDAW General Recommendation No. 30 on Women in Conflict Prevention, Conflict and Post-conflict Situations serves as CEDAW's link to the WPS agenda.

In 2015, the League of Arab States drafted the Executive Action Plan on the Regional Strategy on Protecting Women in the Arab Region: Peace and Security. It is unclear what impact this strategy has had on member States. According to the strategic framework, the Executive Action Plan aims to define the priorities for the coming years, guarantee the implementation of regional and international resolutions on WPS, ensure women's participation in decision-making, and combat gender-based violence. There is no clear indication that Arab States are engaging with the strategic framework or the Executive Action Plan, or if they have had any influence on national action plans on United Nations Security Council resolution 1325 and WPS, where they exist. Currently, only five States in the region have national action plans,[138] which appear to benefit from external donor guidance rather than regional guidance.

As for peacekeeping missions in the region, women continue to be sorely underrepresented. According to data published by the United Nations Department of Peace Operations for September 2019, the United Nations Interim Force in Lebanon (UNFIL) had 589 female troops, and the United Nations Truce Supervision Organization (UNTSO) had 16 female troops (United Nations Peacekeeping, 2019).[139] The numbers of women from the Arab region formally represented as military observers or staff officers as of April 2018

remain similarly low, including Tunisia at 10.5 per cent, Morocco at 4.5 per cent, Egypt at 2.4 per cent, and Jordan at 2 per cent.[140]

Post-conflict States or those undergoing transition have struggled with ensuring women's substantial participation, in addition to gender-sensitive legal reform. While women continue to be viewed, stereotypically, as peacemakers and peacebuilders, their formal inclusion in peace processes and national dialogues is limited to non-existent. Notably, only 32 peace agreements (out of 119 catalogued) in the Arab region between 1990 and the present day make mention or have provisions on women, gender or sexual violence.[141] Quantifiable measurements of women's participation in regional agreements or processes are lacking. Concerning transitional processes, some States initially adopted gender quotas only to retreat once the processes broke down. In more recent cases, women have been be locked out or sidelined. And, when women are included, it is often due to women's rights activists and women's civil society pushing for inclusion and, to a lesser extent, pressure from external actors such as donors or the United Nations (ESCWA, forthcoming).[142]

On the surface, possibilities for women's entry into formal peacemaking and peacebuilding mechanisms appear to be limited, as women are seen as a marginal group with single-issue interests. Some observers have argued that women's participation as mediators could be more visible, and possible, at the local level given women's ties to their communities and the possibility to gain buy-ins from local male leaders. Observers also note that women's links to their clans or immediate families may facilitate this participation, although opportunities in this regard remain limited.

E. Rights on reproductive and sexual health, well-being and violence against women

Women's health indicators, in general, have been improving in the Arab region. Regionally, female life expectancy has increased, communicable disease rates have fallen, and maternal and child health rates are positive. However, drastic differences between States persist, and conflict has stalled progress in many States, particularly in conflict-affected LDCs such as Somalia, the Sudan and Yemen.

In terms of women's reproductive and sexual health rights, the Arab States focus more on reproductive rights related to motherhood rather than women's independent health rights. In 2017, the total fertility rate for the Arab region was 2.8 children per woman.[143] Fertility rates become an important measure of women's social equality and of opportunities beyond motherhood; high fertility rates may also correlate with an increase likelihood of internal conflict.[144] In recent decades, the maternal mortality rate in the Mashreq and Maghreb subregions has progressively declined, and is among the lowest in the world in GCC countries. The average maternal mortality rate for the region is at 81 and the lifetime risk is 1 in 400.[145] In 2013, there were 8,000 maternal deaths in the region, 8,200 in 2014 and 8,000 in 2015.[146] Maternal mortality rates are highest in Yemen, at 100 for every 100,000, and Djibouti, at more than 200 for every 100,000.[147] All States except for Tunisia prohibit abortion.

Violence against women and girls has a devastating impact on women's health, education, ability to work, and ability to exercise their citizenship and, as a result, affects the well-

being of society as a whole and perpetuates gender inequalities. Most Arab States do not gather thorough and timely data on violence against women. However, the World Health Organization (WHO) estimates that 37 per cent of women in the MENA region have experienced some form of physical and/or sexual violence by their partner or spouse; this is the second-highest rate worldwide.[148]

In terms of curbing or eliminating harmful practices in the region, results are mixed. According to UNICEF,[149] the Arab region has made the fastest progress in reducing child marriage, from 34 per cent to 18 per cent over the last three decades. Currently, one out of five girls in the Arab region is married off before the age of 18.[150] However, conflicts in the region have interfered with this progress. Female genital mutilation persists in a handful of States. In countries where this practice is prevalent, legal measures attempt to address it, and it has been officially banned in Djibouti, Egypt and the Sudan. However, this practice continues to impact the lives of a significant number of girls in the Arab region.[151]

Efforts by Arab States to address women's sexual and reproductive health have made headway, though conflict continues to hold a number of States back or compounds pre-existing issues. Much focus has been placed on maternal health, with limited regard for women's sexual health rights. Work to document and address violence against women has not progressed in a substantial or coordinated manner. Action has mainly focused on legal reform with little investment in changing attitudes and practice. Against this backdrop, it is unlikely that major advances will be made in the near future, especially under the negative impact of conflict.

F. Conflict-related sexual and gender-based violence

Despite alleged increases, the Arab region's response to documenting and addressing conflict-related sexual and gender-based violence has been limited. Overall, the region performs poorly on the Women, Peace and Security Index 2019/20, which can be traced largely to high levels of violence and conflict, discriminatory laws and low rates of inclusion.[152] This index measures the following three basic dimensions of well-being: inclusion (economic, social, political); justice (formal laws and informal discrimination); and security (at the family, community and societal levels). It captures and quantifies these three dimensions through 11 indicators and presents a comprehensive measure of women's well-being. In 2019/2020, eight of the twenty lowest-ranked States were from the Arab region, all of which are impacted by conflict directly or indirectly. The Women, Peace, and Security Index 2017/2018 revealed a similar scenario.[153]

Situations of conflict, post-conflict and displacement may exacerbate existing violence and may also lead to new forms of violence against women. For instance, in Iraq, sexual and gender-based violence was a central feature of the conflict related to the rise of the so-called Islamic State, perpetrated by State and non-State actors. The Islamic State proudly published various forms of sexual and gender-based violence as part of its ideology, including rape and sexual harassment; forced, early and child marriage; sexual enslavement; and trafficking. Likewise, Al-Shabab in Somalia has also codified child marriage as part of its military policy.

Conflict-related sexual and gender-based violence continues within the Arab region,

with new or reconstituted forms of violence taking centre stage. Member States have made few efforts to document such violence. In many instances, conflict-related violence is an extension of the violence women face in times of peace or stability, which is why it is oftentimes tolerated. Member States have weak legal systems to name and address such violence in a gender-sensitive manner and are rarely willing to allow the international community to step in and render justice. Likewise, very few transitional justice mechanisms and processes have been put in place, so justice remains elusive for both men and women.

Of the transitional justice mechanisms and processes that have been attempted in the region, few have sought to compensate and/or rehabilitate survivors and victims. In the aftermath of the 2010-2011 uprisings, such processes were initiated in Egypt, Libya, Tunisia, and Yemen; however, only Tunisia reached a formal result with the creation of the Truth and Dignity Commission in 2014. As part of this commission, a Women's Committee was responsible for mainstreaming gender across the commission's work and finding justice for women who endured sexual violence at the hands of the previous regime.[154]

G. Shrinking space for civil society and human rights

Laws regulating NGOs in the Arab region have consistently placed curbs on how civil society operates. In the past, many NGOs often worked under the radar or identified loopholes in legislation and, thus, were able to play a key role in advocating the empowerment of women and the elimination of various forms of discrimination. After the uprisings in 2010-2011, there was a significant increase in the number of entities identifying as part of civil society, particularly women's civil society. In response, many States began to reinforce and augment their laws on NGOs, increasingly prohibiting the work of civil society and making it almost impossible for NGOs to engage with international donors and access international venues.

Women's human rights defenders have also been strongly targeted,[155] in many instances resulting in imprisonment, curbs on travel, frozen assets and/or closures. Some women's civil societies and defenders of women's human rights have linked the State's focus on countering the financing of terrorism to the increasingly shrinking space in the region.[156] With a number of new civil society organizations formed in recent years and women's rights activists speaking more publicly, civil society appears to be growing stronger in the region, yet only few voices are able to challenge human rights abuses. Still, less and less women's civil society organizations and women's human rights defenders are able to engage internationally, which limits funding possibilities, engagement in solidarity work, expanding networks, and increasing capacity, a development which causes the state of women's rights in the region to stagnate or even regress.

H. The relevance of the gender dimension to assessing risks

Women in the Arab region continue to face diverse, multidimensional, intersecting, and self-reinforcing forms of discrimination in the legal, social, economic, and political spheres, which result in gender-based inequalities. Based on their magnitude, these inequalities do not

only show impact at the personal, family and community level, but also at the State and regional level. That is because the emergence and/or increase in these inequalities can lead to greater national and regional instability. Researchers have noted that higher levels of gender equality may equate with less belligerency, both domestically and internationally.[157]

Legal, social, economic, and political inequalities are often the root causes of conflict, making the encouragement of inclusive, sustainable development vital to preventing conflict. In the Arab region, women suffer from entrenched gender inequalities, with significantly lower rates of economic and political participation. Women also face significant additional constraints in accessing justice when their fundamental rights are breached.[158] In many cases, breaches of the rights of women and girls provide an early warning that further human rights abuses on a broader scale, or conflict, may be likely.[159] The situation of women and girls and the increase in gender inequality could serve as an indicator of impending inter- and intra-State conflict or political unrest. For example, a rise in instances of violence against women might indicate the incapacity of security and judicial institutions. Similarly, dropping school attendance of girls can suggest that families do not consider the environment to be secure. A rise in the number of female-led households might indicate that men have been conscripted, imprisoned or killed. Such insights have generated interest in mainstreaming concerns regarding women's security and safety within early warning systems, to reflect the specific risks they face before, during and after conflicts. For example, timely and reliable information on movements of armed groups or their proximity to civilian centres can prevent instances of mass rape. Gender-sensitive early warning systems can also reflect the status of women's rights and the functioning of accountability mechanisms.

Gender-sensitive early warning systems could be assessed quantitatively, qualitatively and legally. Quantitatively, strategic data on the situation of women and girls can illuminate significant trends. Qualitatively, an analysis can identify trends such as the rise of particular conservative social norms in society or the experiences of women and girls, such as increases in the incidents of sexual harassment in the street. In terms of legal analysis, trends in gender-sensitive legal reform and implementation, or the converse, may also prove to be useful indicators of the institutionalization of gender equality, or rather, inequality. Such indicators, when taken in combination with other elements of an early warning system, may serve to highlight impending institutional misfunction or the deterioration of a State. Thus, examining indicators of gender equality and inequality is very important when assessing risks.

The trends reported in this chapter give women and girls a clear stake in preventing conflict and sustaining peace. There is ample evidence showing that the meaningful inclusion of women is a key factor in preventing conflict and mitigating its root causes, as more equal societies and gender-sensitive institutions tend to be more resilient. At the same time, women have proved themselves as excellent agents for peace: their participation in peace processes heightens the quality and sustainability of their outcomes, avoiding a relapse into conflict.[160] Including women in peace processes also increases the legitimacy and perceived fairness of these

processes and their outcomes *vis-à-vis* the general population. In the Arab region, women in States such as Iraq, Libya, the Syrian Arab Republic, and Yemen have made positive contributions to local peacebuilding process in recent years, although they remain generally marginalized in formal negotiations. There is also growing evidence that women contribute effectively to diffusing tensions. A study in Jordan has, for example, highlighted women's ability to revert processes of radicalization.[161]

The status of women and girls in any given society serves as an indication of structural inequalities which, in turn, can promote greater instability and conflict. Thus, States must take gender equality and women's empowerment seriously. Ensuring gender equality and women's empowerment is not only a human rights issue, but also contributes to the progress of the State and its population as a whole, thus securing human rights and establishing greater security and stability for all.

5. Forecasting Conflict, Crisis and Instability

A Machine-learning Approach

5. Forecasting Conflict, Crisis and Instability: A Machine-learning Approach

A. Introduction

Effective prevention is not possible without a proper understanding of the present and future risks of violent conflict, humanitarian crisis and political instability. To this end, this chapter develops a quantitative risk assessment-tool for the Arab region. As proof of concept, a purely statistical and data-driven risk-assessment tool is presented here, based on widely available economic, social, governance, environmental, geographic, and other indicators. The method used is called random forest model, which is a machine-learning technique that is particularly useful for prediction and risk-assessment purposes. The random forest model predicts the response variable, here conflict, using a decision tree and some predictor variables. Such quantitative tools have been shown to produce reasonably accurate risk assessments for conflict, crisis and instability. Whereas the focus is on developing this quantitative tool, it must be pointed out that this is but one of several tools that are necessary to assess risks effectively and accurately. At a minimum, deep qualitative and contextual information should augment this quantitative tool, at the regional, country and local levels.

This chapter provides details from some of the extant literature on quantitative risk models, or on conflict prediction, which it is most often labeled in the literature.[162] It then delves into some of the research on risk factors for conflict, crisis and instability and discusses particular trends and drivers of conflict, crisis and instability in the Arab region. Next, it justifies the statistical model, explains its technical aspects and presents the results from the model. Lastly, it discusses some of the implications and the future work needed to make this tool operational.

B. Literature review of conflict, crisis and instability forecasting

The aim of forecasting conflict, crisis and instability has a long and distinguished pedigree in peace and conflict research. J. David Singer, one the founders of modern conflict research, stated, as seen in the epigraph, in his presidential address to the Peace Science Society that a core task of the discipline was to "forecast, with increasing reliability, the outcomes which are most likely to emerge out of a given set of background conditions and behavioral events".[163] Moreover, Singer explicitly stated that the goal of this was to "aid, augment, bypass, or subvert those who now decide questions of war and peace".[164] After this initial burst of enthusiasm about forecasting, and about our forecasting abilities, in the early days of modern conflict research, however, forecasting quickly fell out of mode. Throughout the 1970s, 1980s and 1990s, systematic attempts to forecast conflict were few and far between. This changed dramatically in the late 1990s, and

conflict prediction is today a thriving subfield of conflict research. This new wave of research on conflict forecasting builds on and borrows substantially from the work done in previous decades. This section reviews this literature and organizes it into three more or less distinct generations of conflict forecasting.[165]

Before delving into the details, however, it is worth noting that even though reliable forecasting or early-warning systems that could indicate risks before conflict erupted or escalated has for a long time been seen as something that would make it possible to prepare for, intervene in, or build resilience against deadly conflicts,[166] this goal is by no means uncontroversial. Prediction has for a long time been viewed with scepticism and has often been seen as unfeasible. A particular type of critique has come from authors who argue that conflict, crisis and instability are, by their very nature, rare events, or 'black swans'[167] that cannot be predicted using the type of statistical techniques usually drawn on in the discipline. This section does not deal explicitly with this line of criticism, but notes that attempts to take this critique seriously, especially by dealing with the so-called 'fat tail' nature of the phenomenon, do indeed exist.[168]

1. First-generation conflict forecasting

The first generation of conflict prediction was inspired by the work of Richardson[169] and Wright.[170] It was, in particular, driven forward by the foundational work of J. David Singer and the Correlates of War (COW) project. The COW project constituted a first systematic attempt to accumulate scientific knowledge about war.[171] In this first generation of conflict forecasting, early warning was an explicit goal and seen as important end in its own right.[172] These early efforts also included the first attempts at utilizing event type data, often highly granular data of the 'who did what to whom, where, and when' form, a type of data that today is seen as especially useful for short-term, even real-time, early warning. Pioneering work by Azar and McClelland and Hoggard provided templates for collecting fine-grained data sufficiently effective to approximate real-time conflict early warning.[173,174]

This first enthusiasm for conflict prediction quickly faded, however, as it became clear that the results did not match the initially high ambitions, and throughout the 1970s and early 1980s explicit efforts to use statistical models to predict or warn against armed conflict are relatively rare.[175]

2. Second-generation conflict forecasting

The second generation of conflict prediction started in earnest in the early 1980s. Two innovations were particularly important in this period: first, the explicit linking of theory and prediction, particularly in the development of game-theoretic models specifically aimed at producing predictions; and second, the introduction and development, for social science, of computational methods often more appropriate for forecasting. In terms of linking theory and prediction, the works of Bruce Bueno de Mesquita stand out. Bueno de Mesquita, Newman and Rabushka made explicit the link between theory and conflict prediction by using game-theoretical models to predict armed conflict as well as other foreign and domestic policy events.[176] For developing computational methods, the work of Schrodt, and colleagues, stands out. From the late 1980s, Philip Schrodt has been building statistical models based on extensive news-source data to predict armed

conflict. He used methods from artificial intelligence and machine learning, including neural networks, to predict State-based conflict.[177] Such methods are now increasingly being used in the discipline. To perform more effective early warning, it also became clear that the discipline had to make use of more granular data.[178] Schrodt is also a pioneer in moving away from the widely used country-year datasets, constructed from the COW collection of data and similar sources, to instead use more high-resolution event-type data attempts to track 'who did what to whom, where, and when' at spatial and temporal levels that are as fine-grained as possible.

Schrodt, Davis and Weddle introduced algorithms for automatically classifying and coding political events based on large amounts of text from news articles.[179] These techniques have since been further refined and now allow the discipline to use increasingly more fine-grained data to code both dependent and independent variables. While the country-year format pushed the discipline forward,[180] empirical analysis and forecasts alike are increasingly cast on a daily, weekly, or monthly level.[181] This is reflected in the increasing demand for spatio-temporally-disaggregated event data.[182]

3. Third-generation conflict forecasting

The focus on and ambition for early warning that was articulated in the second generation of conflict forecasting generated a substantial amount of policy interest. A high-water mark in this respect was the development of the US-Government-financed State Failure Task Force (SFTF), later renamed the Political Instability Task Force (PITF), which marks the advent of the third generation of conflict forecasting. The goal of the PITF was to predict a wider range of political instabilities, from *coups* and revolutions to armed conflict, two years before they occurred. Goldstone et al. conclude that the PITF studies "have substantially achieved that objective".[183,184] One of the key insights from the PITF is that simplistic models with a few powerful variables performed just as well as complex models, at least at the country-year level. Beginning in the mid- to late 2000s, conflict prediction became a very active subdiscipline of conflict research and is now increasingly seen as a 'mainstream' effort by the wider scientific community.[185] This push was driven by the ambition to predict in itself, but it was also given additional academic weight by the realization, most succinctly communicated by Ward, Greenhill and Bakke and Schrodt,[186,187] that prediction often is a better way of evaluating research than more traditional significance and p-value based approaches. In short, a prediction framework allows researchers to assess the extent to which their models, or individual variables, are able to recreate the observed data. This, arguably, is a better yardstick for evaluating the strengths and utility of a model than standard significance testing of estimates.

This realization of some of the fundamental weaknesses of p-value approaches marks a major turn in the third generation of conflict forecasting and represents a clear move away from hypothesis testing using p-values to an increased use of out-of-sample methods. Out-of-sample evaluation means splitting your data into several subsets and then using one subset to train the model and other subsets to evaluate it. Out-of-sample methods, developed in particular in the works of Hastie, Tibshirani and Friedman,[188] are particularly well suited for guarding against overfitting, which is the

tendency to fit data to noise instead of measuring signal. For work purely aimed at theory testing, ensuring that models are not overfitted is an important concern. For efforts directly aimed at forecasting and early warning, however, it is absolutely fundamental. Out-of-sample methods have, thus, today become a staple of methodology for researchers doing conflict forecasting.

The same period also experienced important methodological innovations. These include, in particular, the use of ensemble methods and tree-based approaches. Ensemble methods, routinely used in meteorological forecasting, work by leveraging a range of models that by themselves are particularly good at modelling a certain aspect of a complex phenomenon and that together, when properly weighted, are able to produce much more reliable forecasts for the macro-phenomenon of interest than any one model by itself. Such methods are used, for instance, by the ViEWS project.[189] Tree-based approaches, often called decision trees, have been shown to be very useful for prediction tasks where the final outcome often relies on a range of interactions between variables. Random forest approaches, a particular tree-based approach, to country-level forecasting have been shown to improve predictive performance dramatically compared to general linear models.[190] Tree-based approaches are less well suited for theory development, however, since it is often hard to pinpoint exactly which variable, or set of variables, is important for predicting the outcome.

Prediction is now used throughout the discipline of peace and conflict research. Greatly helped by the advances in computationally intensive methods to collect and analyse data, researchers increasingly follow Schrodt in using automated event-coded data from news wires to study, for instance, how public opinion affects the Israel-Palestine conflict,[191] or whether news data can be used to predict the outbreak of the First World War.[192] The focus is not confined to armed conflict but extends to predicting governance breakdown-related issues such as irregular leadership transfers[193] and *coups d'état*,[194] in addition to one-sided violence,[195] social movements, and many other forms of political violence[196] and their consequences.[197] These studies have in common that they use data at a granular level, sometimes days or months instead of years, to predict conflict in the short term. Other studies rely on country-year data to produce long-range predictions. Hegre et al. forecast civil conflict many decades into the future,[198] as do Witmer et al.,[199] and explore how different scenarios for United Nations peacekeeping deployments would affect the incidence of armed conflict in the world.[200]

C. Building a quantitative risk-assessment model

Chapters 2, 3, and 4 reviewed some of the primary drivers of risk in the Arab region. With this background, the next step is to build a quantitative risk-assessment tool, and to test this tool to gauge its accuracy. There are, essentially, two ways to go about building a predictive, or a risk-assessment, model. The first way starts with a conceptual or theoretical model of the phenomenon in question and then attempts to build a model which matches this theoretical or conceptual model as closely as possible. That is, it takes an explicitly deductive approach to model-building. When conflict researchers build statistical models to test, for instance, the implications of a game-theoretic model, this is usually the goal.[201]

The alternative second way is to take a more inductive approach. Here, the model is built through a series of out-of-sample-testing exercises.[202] Instead of focusing on the importance of one or another set of variables, in this approach, the researcher remains agnostic about what the model should look like and instead lets the model selection be guided by measures of out-of-sample, or similar, predictive accuracy. In practice, however, these two avenues are seldom mutually exclusive and most practical projects will inevitably involve a combination of the two. Researchers will inevitably have theoretical priors for which variables should go into the model, and this will guide model selection. Nonetheless, out-of-sample exercises should be used to inform this process if the goal is to maximize predictive accuracy.

For our purposes here, the following is taken as starting point: (a) the existing literature on conflict prediction and the literature on Arab-specific conflict drivers laid out above; and (b) the United Nations-wide INFORM model discussed in detail in a parallel technical paper.[203] In particular, this model also builds heavily on an existing prediction model, namely, the ViEWS model.[204] ViEWS is the most ambitious active conflict-prediction effort, and taking this as starting point ensures that this exercise is state of the art. The ViEWS model, however, is not optimized for the Arab region since it neither takes into account the special characteristics of the Arab region nor is primarily geared towards being a tool for policymakers and decision makers, so it is only used as a the basis to start building a risk-assessment model. Consequently, out-of-sample evaluation will be relied on to further specify the model and to select specific features, in other words, variables to be included as core predictors in the model.

1. Statistical model

The backbone of a quantitative risk-assessment model is a statistical model. The primary interest here is in a categorical dependent variable, namely, the presence or absence of armed conflict. Hence, what is needed is a statistical model optimized to deal with such a variable. A range of statistical and machine-learning techniques have been suggested to build predictive models for categorical variables, including logistic regression models,[205] neural networks,[206] and random forests.[207] These estimators all have their strengths and weaknesses, but lately a growing consensus has emerged arguing that random forests are particularly useful for prediction and risk-assessment purposes.[208] The random forest model,[209] a machine-learning technique, is based on a combination of classification and regression trees and random feature selection. The random forest model predicts the response variable, here conflict, using a decision tree and some predictor variables. The tree consists of a number of branches, and the key part of the model centres around how to split up the tree into these branches. These splits are found by searching across the values of the predictor variables until the point that best separates between, for our purposes, conflict or peace can be found. The tree is continually split up into branches until it reaches some predefined achievement.

A random forest is an ensemble technique that relies on estimating a series of distinct models and then combining them into a full model.[210] Such ensemble techniques are widely used in weather forecasting and has been shown to substantially improve predictive accuracy. A random forest model consists of a set of decision trees; for each of these trees, the

algorithm searches for the optimal way to slice the data across values of the predictors so as to maximize its ability to predict the dependent variable. This is done multiple times and allows the model to deal with interactions between variables. Moreover, the random forest models are flexible and versatile and do not require massive amounts of computing power to work. Consequently, the random forest is used as the 'work horse' model for this risk-assessment tool. In addition, and to ensure robustness, all models are run using a standard logistic regression model; by and large, results are not sensitive to using one or the other model, but differences do, naturally, occur.

In building the model, the out-of-sample technique cross validation is relied on. Cross validation involves splitting the data set-up into several sets, or folds. The central idea is to divide the data into at least two parts. One part is used to build the model, and the other part (which the statistical model has not been allowed to 'peek at' as the model is built) is used to measure the predictive accuracy of the model. The data set aside for testing is then effective out-of-sample for the model, and it should be harder for the model to make accurate predictions for this heretofore unseen data. Such out-of-sample evaluation is particularly important, and indeed powerful, for guarding against overfitting.[211] When building a statistical model, a central concern is that, by adding features and increasing the predictive power of the model, one is not making the model more adapt at picking up important and central trends and drivers of, for instance, conflict. Instead, by adding more and more detail, one builds a model that features a range of more or less idiosyncratic detail, noise, that preceded particular past conflicts, but which were not central drivers, and which are not likely to replicate in the future. In essence, the model becomes incapable of seeing the forest for all the trees. Such a model may get very high marks for accuracy in sample, but, once it is faced with new and unseen data and tries to uncover the same random patterns, it has little or no ability to produce accurate predictions. To guard against this, we follow Hastie, Tibshirani and Friedman and use *k*-fold cross validation, *k* referring here to the number of folds the data is sliced up into.[212] We use the standard 10 folds, entailing that the data is randomly sliced up into 10 folds, each iteratively held out to test the accuracy of the model.

2. Data sources and approach

As proof of concept, the random forest model is run with internal armed conflict as the dependent variable, with the intention to run the model with political instability as the dependent variable in future iterations of the analysis. To make predictive assessments of the risk of internal conflict in the Arab region, two time-series cross-sectional panels were created: first, a country-year panel of the 22 members of the League of Arab States from 1946 to 2018; and second, their land-contiguous neighbours. Arab neighbours are included in the analysis because it is suspected that there are strong transnational and regional risk factors for the Arab countries. These neighbours of Arab States, from west to east, are Senegal, Mali, Niger, Chad, the Central African Republic, South the Sudan, Ethiopia, Eritrea, Kenya, Turkey, and Iran.[213] The list of independent States and their dates of entry into the international State system are taken from Gleditsch and Ward.[214]

For the country-year panel, a dichotomous indicator for conflict incidence is used as dependent variable. This variable is scored 1 in

country-years in which any internal armed conflict is ongoing, and zero otherwise. The list of conflicts since 1946 and their dates is taken from the UCDP/PRIO Armed Conflict Dataset version 19.1, which is the list of armed conflicts that is the most widely used in the social sciences. The UCDP/PRIO definition of an internal armed conflict is a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, a government of a State and a non-governmental party, results in at least 25 battle-related deaths in a calendar year.[215]

To explore the spatially disaggregated patterns of conflict risk, a second grid-year panel based on the PRIO-GRID dataset was created. The PRIO-GRID dataset is a standardized spatial grid structure with global coverage at a resolution of 0.5 x 0.5 decimal degrees. The PRIO-GRID dataset provides spatially disaggregated data at the grid-cell level on social, demographic, terrain, economic, and environmental factors, and, crucially, is linked directly to the data on violent conflict provided by UCDP, in addition to data on ethnic group exclusion and other horizontal inequalities. The dependent variable in the grid-year panel is a dichotomous indicator if a grid-cell experiences a conflict incident in a given year, taken from the UCDP Georeferenced Event Dataset 19.1, which provides conflict incident data at the grid-level for all countries, except the Syrian Arab Republic, since 1989.

A number of indicators that capture the political, economic, social, geographic, environmental, and other factors that might potentially influence patterns of conflict risk were merged into these panels. Particular attention was paid to the factors that are thought to be distinctive to the Arab region which were reviewed above. These factors include oil rents, aid dependency, ethnic exclusion, the size of military forces, disempowerment of women, authoritarianism, demographic growth, youth unemployment, and economic stagnation.

The indicators are taken from the most-widely used, highest-quality and peer-reviewed data sources, including the United Nations, the World Bank's World Development Indicators, the Polity project, the Varieties of Democracy project, the Correlates of War project, and others. The full list of indicators is available from the authors in a short codebook.

3. Country-level data

(a) Economic factors

Income levels were measured in two ways, first, using GDP per capita from the World Bank's World Development Indicators database and, second, using GDP per capita from the Maddison Project Database of 2018. Income growth is measured as the change in GDP per capita, taken from the World Development Indicators database, which also provides data on oil rents as a percentage of GDP, inflation rates, and the percentage of agricultural production of the economy. Countries' oil rents are coded zero for all years prior to their first year of oil production.[216]

(b) Political, regime and military factors

The political and regime features of countries were taken from the Polity project and the Varieties of Democracy project. The extent to which a country's political institutions demonstrated participatory, inclusive and competitive features was indicated by their Polity2 score.[217] Alternative measurements of important qualities of political institutions were

also included, using data from the Varieties of Democracy project; the level of electoral democracy was measured by the polyarchy index, the extent of political participation (apart from electoral participation) was given by the participation index, and the extent of liberalism was given by the liberal index.[218]

The extent to which the armed forces dominate the executive decision-making in a country is measured using a military regime index. Furthermore, the size of the armed forces is measured on a per-capita basis, stitched together from the National Material Capabilities dataset,[219] part of the Correlates of War project,[220] and then supplemented by figures taken from the World Development Indicators database. The per-capita personnel figures are calculated using the personnel and population figures provided in each source. Finally, the durability of the country is measured by its age in years, the years since its independence, to be precise, which are calculated from the dates of entry into the international State system provided by Gleditsch and Ward.[221]

(c) Social, demographic and gender factors

Population figures and the youth bulge were calculated from the United Nations World Population Prospects, revision 2017. The youth bulge is calculated as the percentage of the population that are men and boys between the ages of 15 and 29. The percentage of the population that is politically excluded or marginalized is provided by the Ethnic Power Relations dataset. From the World Development Indicators database come the percentages of the population living in urban settings and the infant mortality rate.

The gender parity index (GPI) in the primary school system published by the Institute for Statistics of the United Nations Educational, Scientific and Cultural Organization (UNESCO) is used here to measure gender exclusion and disempowerment. GPI is the ratio of girls to boys enrolled at primary level in public and private schools, where a GPI of less than 1 suggests girls are more disadvantaged than boys in learning opportunities and a GPI greater than 1 suggests that boys are more disadvantaged than girls.[222] The annual number of refugees and other persons of concern present in each country are published by the United Nations High Commissioner for Refugees (UNHCR).

(d) Environmental and geographical factors

A number of scholarly studies have found that terrain features favouring insurgency contribute to a country's risk for armed conflict.[223] Here, insurgency-favouring terrain is measured as the percentage of territory that is mountainous, as taken from the United Nations Environment Progamme Mountain Watch publication, via the PRIO-GRID dataset.

(e) Factors related to conflict and instability

Armed conflict is often preceded by popular mobilization, mass protest and other forms of political instability. The model below includes two variables capturing these potential leading indicators. The first variable measures the number of peaceful protests and violent riots in a country annually, as counted by the Armed Conflict and Location Event Dataset;[224] and the second one indicates the number of 'irregular leadership changes' in a country annually, from the Archigos dataset, version 4.1.[225]

In the Archigos dataset, leadership changes are coded as irregular "when the leader was removed in contravention of explicit rules and established conventions",[226] and include events such as *coups*, popular uprisings and assassinations. Given the time-series structure of the data and the potential for serial correlation, a number of conflict- and time-related control variables are also introduced, such as the time since the last conflict, the lag of conflict and a decay function of the conflict.

4. Grid-level data

The following grid-level variables were all accessed through the PRIO-GRID database website.[227]

(a) Demographic and social factors

The population of a grid cell is derived from the Gridded Population of the World dataset, version 3. The number of excluded ethnic groups in a grid cell, that is, the number of ethnic groups that are discriminated against or politically powerless, in a grid cell is derived from the GeoEPR 2014 dataset, update 2.[228]

(b) Development and land-use factors

The economic development level of a grid cell is measured in two ways. The gross cell product, akin to a gross domestic product, is measured in United States dollars and is based on the G-Econ dataset version 4.0, developed by the Nobel Prize-winning economist William Nordhaus and his colleague Xi Chen.[229] The night-lights variable measures the average night-time light emission from the grid cell, which is suggestive of the built environment and development level of that grid cell. These night-light values are calibrated to fall between 0 and 1.

Economic activity at the grid-cell level is captured in other variables as well. The presence of petroleum resources is given as a dummy variable indicating whether on-shore petroleum deposits have been found within the given grid cell, based on the Petroleum Dataset version 1.2.[230] Land use, and therefore the broad economic activity of a grid-cell, is captured by three variables, namely, the percentage area of the cell covered by agricultural land, pasture land and urban agglomerations.[231]

(c) Terrain and geographic factors

Challenging terrain features, geography and inaccessibility are measured in four different ways. The first measurement is the percentage of the grid cell that is mountainous terrain, as measured in the United Nations Environment Progamme Mountain Watch publication. The second measurement is the mean travel time in the grid cell to the nearest major city (larger than 50,000 residents); the travel time is given in minutes. The third measurement is the spherical distance in kilometres from the grid-cell centroid to the country's capital city; PRIO-GRID calculates this distance based on the coordinate pairs of capital cities given in the cShapes dataset version 0.4-2.[232] Finally, the distance of a grid cell from the country's borders is calculated as the spherical distance in kilometres from the cell centroid to the border of the nearest land-contiguous neighbouring country, based on country-border data using cShapes version 0.4-2. This latter measurement may capture border-related conflict-risk factors, such as spillover effects from neighbouring countries.

(d) Environmental factors

Drought intensity is measured by the proportion of months out of 12 months that are part of the

longest streak of consecutive months at drought level. PRIO-GRID takes these figures from the International Research Institute for Climate and Society at Colombia University.[233]

The temp variable gives the yearly mean temperature, in degrees Celsius, in the cell, based on monthly meteorological statistics from the Climate Analysis and Monitoring System of the Global Historical Climatology Network (GHCN/CAMS), developed at the National Oceanic and Atmospheric Administration (NOAA), Climate Prediction Center, National Weather Service.

D. Preliminary results and discussion of the risk-assessment framework

Having described the statistical model to be used and detailed what data goes into it,[234] it will now be examined how well this model performs and how it can be used as part of a wider risk-assessment framework.

1. Models

Two series of models were fit to further investigate risk factors for conflict in the Arab region. The first series is a set of four country-level models geared towards probing different sets of risk factors for conflict in the Arab region. The first, baseline, model takes as its starting point the ViEWS model. It includes a number of variables mostly covering structural and conflict-history issues. More specifically, the models include information about the following:

(a) Conflict history: This set of variables includes a lagged conflict indicator, years since conflict and a decay function for time in peace, in addition to a measure of the years since independence of the country;
(b) Demographic factors: These include total population, percentage of urban population and youth bulges;
(c) Socioeconomic development: These variables include GDP, GDP growth, oil rents, military expenditure, GDP emanating from natural resource extraction, size of the agricultural sector, inflation, and infant mortality;
(d) State features: These include size of the military, the political regime, excluded populations, refugees, IDPs, and mountainous terrain.

Three more substantive models are added to this baseline mode, namely, a political instability model, measuring irregular leadership changes and demonstrations; a governance model, including measures of the quality of governance from the World Bank Governance indicators; and a survey model, including survey measures from the Arab Barometer.

For all models, all predictors are lagged by one year, so that predictions are made iteratively one year into the future.

The second series includes a more tentative PRIO-GRID level analysis.[235] The PRIO-GRID is a 0.5 by 0.5 decimal grid-cell system for the entire world. Using PRIO-GRID allows to go beyond the rudimentary country focus and to get closer to where the risk actually is. Currently, however, the availability of data at the grid-cell level is more restricted. The grid-level analysis consists of a model which includes the baseline model variables, but with variables measured at the grid level, when appropriate, instead of the country level.

2. Predictive accuracy

Before delving into the substantive aspects of the risk assessments of the five models, the actual predictive performance of the model has to be discussed. To assess predictive performance, the *k*-fold cross-validation scheme laid out above is relied on. It should be noted also that, against the realization growing over the last few years in conflict research that statistical significance by itself can be a poor judge of the quality of a model,[236] as discussed above, the particular parameter effects or significance of individual variables are not discussed here.[237] Instead, in line with more and more researchers, especially those studying models with categorical outcome variables, focus is on checking the predictive power of the model and making this the integral part of model evaluation.

A useful risk model, by necessity, has to be able to classify as accurately as possible which countries are at a high and which are at a low risk of, in this case, armed conflict. The central question, then, is not what specific variables most highly correlate with conflict, but what model as a whole performs best in classifying risks. To this end, this paper does not focus at all on statistical significance but, instead, uses measures of the predictive performance of the overall model as the yardstick for what constitutes a useful, or not very useful, risk model.

Table 4. Predictive accuracy

Model	Accuracy	AUC	Sensitivity	Specificity
Base	0.717	0.932	0.873	0.884
Instability	0.713	0.933	0.869	0.888
Governance	0.719	0.937	0.871	0.886
Survey	0.905	0.955	0.936	0.897

Source: Calculations by the author.

Not surprisingly, there are a number of ways in which the predictor performance of a model can be measured. Following the pioneering work in the discipline by King and Zeng,[238] this was most often done using receiver operator curve (ROC) characteristics. ROC is a plot of the true positive rate (*TP*) against the false positive rate (*FP*) for all combinations of these values in the data.
A perfect model would produce a plot in which the area under the ROC, often called simply the AUC, has a value of 1. A perfect ROC would plot a line going from the lower-left corner to the top-left and then straight to the top-right corner. Substantially, the AUC is equal to the probability that the model predicts a randomly chosen positive observed instance as more probable than a randomly chosen negative one. Here, it means the probability that a randomly-drawn conflict year will have a higher predicted risk of conflict than a randomly-drawn peace year. AUCs, however, have two drawbacks: they are too optimistic when dealing with highly-skewed variables such as conflict, and they neglect the relative importance of true versus false positives.

Therefore, accuracy, sensitivity and specificity of the models are reported individually (table 4).

The sensitivity, or the true positive rate, is defined as $\frac{True\ positives}{True\ positives+False\ negatives}$, while the specificity is defined as $\frac{True\ negatives}{True\ negatives+False\ positives}$. Whereas the sensitivity of the model is a good measure of how well the model performs in detecting and picking up actual conflicts, the specificity gives information about the extent to which the model produces false alarms.

The accuracy is defined as $\frac{True\ positives+True\ negatives}{True\ positives+True\ negatives+False\ positives+False\ negatives}$ and is more of an overall measure. The accuracy indicates how the models perform across the different k-fold iterations, in other words, how close the models are to reproducing observed rates of conflict and peace.

These measures of predictive performance for the four country-year models are reported in table 4. It should be noted that, whereas the base, instability and governance models all are estimated on the same set and number of observations, the amount of data available for the survey model is much more restricted. Caution, therefore, needs to be exercised in comparing the survey model with the other models.

Overall, the four models all perform quite well in predicting internal armed conflict. The quite restrictive baseline gets high rates for AUC, sensitivity and specificity. Accuracy measures across the *k*-fold splits are also good. The baseline model performs worse, on average, than the other three models but the differences are small and substantively not important. Of the three models, baseline, instability and governance, estimated on the same set of observations, the governance model clearly performs best. There is a substantial body of work on the governance deficit in the Arab world so the fact that this model performs well underscores the importance of these themes. As discussed by Hegre and Nygård,[239] quality of governance in the ESCWA region is, on average, lower than in other developing regions; the region is home to some of the most repressive States, a continued lack of political participation and competition and a disproportionate amount of the world's armed conflicts, despite its relative wealth and well-educated citizenry. Moreover, for most of these indicators, the region is either stagnant or moving in a negative direction. Countries that have experienced conflict have a higher risk of seeing renewed conflict. The risk of renewed conflict in countries with good governance, however, drops rapidly after the conflict has ended.[240] In countries characterized by poor governance, this process takes much longer. Hence, improving governance is an important part in reducing conflict in the ESCWA region, and good governance will, in turn, decrease the likelihood of conflict. At the same time, however, conflict leads to steady erosion of the quality of governance. This "political conflict trap" seems stronger in the ESCWA region than in other developing countries.[241]

Perhaps somewhat surprisingly, adding the political instability features to the model does not substantively improve the performance of the model. It should be noted that here, only a very restricted set of instability variables, irregular leadership changes and demonstrations were investigated, and it might very well be that a more systematic search for such variables would reveal important features that add predictive performance. It is also possible that a model that incorporated more information on the inner workings of political regimes would improve performance.

Lastly, the survey model clearly performs the best of all models. To some extent, this may be a result of the sparseness of the data, since survey data is available for a handful of countries only.[242] Nonetheless, the fact that the model does perform as well as it does at the very least points to the potential usefulness of including survey- and perception-based measures in quantitative risk models and to the utility of continuing to explore such models.

The results of the four country-year models are discussed at length in a technical paper to be posted online.

3. PRIO-GRID-level analysis

The results of the PRIO-GRID-level analysis are tentative, and more work is needed before these results can be considered reliable.

Table 5. Predictive accuracy for PRIO-GRID-level model

Model	Accuracy	AUC	Sensitivity	Specificity
Base	0.789	0.902	0.843	0.824

Source: Calculations by the author.

Nonetheless, results clearly point towards the possibility of building a useful grid-cell level risk-assessment model. Table 5 shows the same set of predictive accuracy figures for the grid-level model. In terms of accuracy, the model performs somewhat worse than the country-level models, but not by much. This is actually quite impressive given that, instead of just predicting conflict level for a handful of countries, this model has to produce estimates for close to 180,000 grid cells.

The results of the grid-level model are also discussed at length in a technical paper to be posted online.

E. Conclusion

This chapter has shown how a quantitative risk-assessment model for the Arab world can be constructed, has discussed various issues in how to construct such a model, and, most importantly, has shown that it is feasible to develop a functioning and reasonably accurate risk-assessment model. The scope of this study has, by necessity, meant that many relevant issues and themes had to be excluded. This study should mainly be seen as a first step in these efforts. Much work remains, but this study, by demonstrating feasibility, has shown that these efforts should continue, and resources should be devoted to further developing this framework.

From a quantitative and technical perspective, more work is needed in the following three areas: first, the model needs to be substantially more refined in how it deals with the dynamics of conflict, governance and political instability; second, it needs to be further explored how to best integrate survey and perceptions data into the model; and third, more analyses and exploring how to include expert opinion in the model are necessary. One possibility is to use a Bayesian model where informed priors can be informed by expert opinion.[243]

A returning issue with all structured risk assessment is how to move from a risk-assessment model to a framework in which risk assessments inform policy and are actually used to make timely policy interventions. Much work remains to be done here but ESCWA, with its structure and presence in the region, has the potential to be highly beneficial to such efforts.

6. The Way Forward

6. The Way Forward

A. Developing a risk-assessment framework for the Arab region

The risks and drivers of risks in the Arab region are multidimensional and interrelated. They are local, national and regional; economic, social, political, and strategic; time invariant, slow moving and rapidly shifting; easily quantified; and completely qualitative. The numerous stress factors for violent conflict, humanitarian crisis and political instability, ranging from displacement to aid dependency, water and food insecurity, governance deficits, and violence against women and girls, need to be regularly monitored and their ramifications analysed against the backdrop of an extremely fluid and interconnected regional context marred by competing geopolitical interests. With respect to the risks of conflict, crisis and instability in the Arab region, some important drivers of the frequency and intensity of the hazards will also drive patterns of vulnerability and capacity. For example, declining income per capita would simultaneously affect the hazard rate for conflict, the vulnerability of populations to the impacts of conflicts, and the capacity of governments to respond to conflict.

This publication has argued for developing a comprehensive risk-assessment framework for the Arab region. In order for countries to reach their development targets, policymakers and stakeholders must understand the current and future risks of violence and instability, and the drivers of these risks, so that they can tailor their social, economic, environmental, governance, and security policies in ways that enhance prevention, mitigation, resilience, and response. Understanding risks is the first step in addressing those risks. A regional risk-assessment framework would be a methodology for understanding and communicating the risks of violent conflict, humanitarian crisis and political instability in the Arab region, the sources and drivers of these risks and their potential future trends. This framework would help member States allocate resources more efficiently, take steps for prevention and mitigation, and prioritize the people and assets that are most exposed, and thereby reach their sustainable development targets on schedule. The proposed framework should build on existing best practices in the risk literature, particularly disaster-risk reduction, and should be organized around the four main components of risk, which are hazard, exposure, vulnerability, and capacity/resilience.

Figure 11 integrates the themes introduced in this publication into a broad framework for understanding risks in the Arab region, noting the issues, drivers and concepts raised in the previous chapters. The model presents, as a starting point for future discussion and refinement, a framework adapted from the INFORM model, tailored to the contexts of the Arab region.[244] Figure 11 identifies how each subcomponent of risk is related to the SDGs; the linkages between this risk framework and the SDGs and 2030 Agenda are strong and multifaceted.

Figure 11. A framework for understanding risks in the Arab region

Hazard							Expo-sure	Vulnerability																						Capacity								
Violent conflict			Crisis	Political instability			People & assets	Economic					Environ.			Social vulnerabilities									Political & human rights			Prior hazard		Institutions				Infra-structure			Social resilience		
International conflict	Civil conflict	Terrorism	Man-made humanitarian crisis	Coups d'état	Mass mobilization and protest	State and institutional failure	Population	Infrastructure, buildings	Inequality	Inflation	Macroinstability	Poverty	Unemployment	Climate change	Food insecurity	Water scarcity	Demographic stress	Displaced populations	Exclusion of women and youth	Horizontal inequalities	Migrant populations	Polarization and extremism	Poor education	Corruption	Poor human rights	Political exclusion	Prior conflict exposure	Prior political instability	Administrative capacity	Aid dependency	Military capacity	Resources and public finances	Communications	Health care	Roads and WASH	Active civil society	Reconciliation processes	Traditional groups
SDG 16	SDG 16	SDG 16	SDG 16	SDG 16	SDG 16	SDG 16	Cross-cutting	Cross-cutting	SDG 5, 10	SDG 1, 2, 8	SDG 8	SDG 1	SDG 8	SDG 13	SDG 2	SDG 6	SDG 3	Cross-cutting	SDGs 4, 5, 10	SDG 10	Cross-cutting	SDG 16	SDG 4	SDG 16	SDG 16	SDG 16	SDG 16	SDG 16	SDG 16, 17	SDG 8, 16	SDG 8, 16	SDG 16, 17	SDG 9	SDG 3, 9	SDG 6, 9	SDG 5, 10, 16	SDG 5, 10, 16	SDG 5, 10, 16

Source: Authors, adapted from inform model.

Given the complexity and interdependence of conflict, crisis and instability in the Arab region, which has been clearly articulated in chapters 2 through 5, any framework will also, by necessity, consider regional and transnational dimensions of risks.

Once implemented, this framework will generate several key outputs. First, it should produce regularly-updated assessments of the risks of violent conflict, humanitarian crisis and political instability across the Arab region, spatially and temporally disaggregated to the greatest possible extent. Second, the framework should generate a regular series of longer, substantive, analyses published every biennium that assess emergent trends shaping the region. Finally, the methodology should be flexible enough for ESCWA, its partners and its member States to be utilized for customized analytical products, for example in responding to requests by member States for risk assessments on emerging issues.

B. Essential steps for risk assessment

Based on prevailing good practices and definitions, the following subcomponents should form the substantive core of a comprehensive and integrated risk assessment in the Arab region.

1. Hazard assessment

This component reflects the probability of future outbreaks of violence and instability across the region, in addition to their potential location, intensity and duration. The hazard assessment should employ innovative quantitative methodologies, such as the machine-learning technique demonstrated in chapter 5, and should utilize the high-quality and spatially-disaggregated data that is being produced in the region, including at ESCWA, on climate, economic activity, social indicators, and others. The hazard assessment should also include

qualitative expert inputs. The associated technical papers demonstrate a grid-level hazard assessment that yields actionable information on future hazards.

2. Exposure assessment

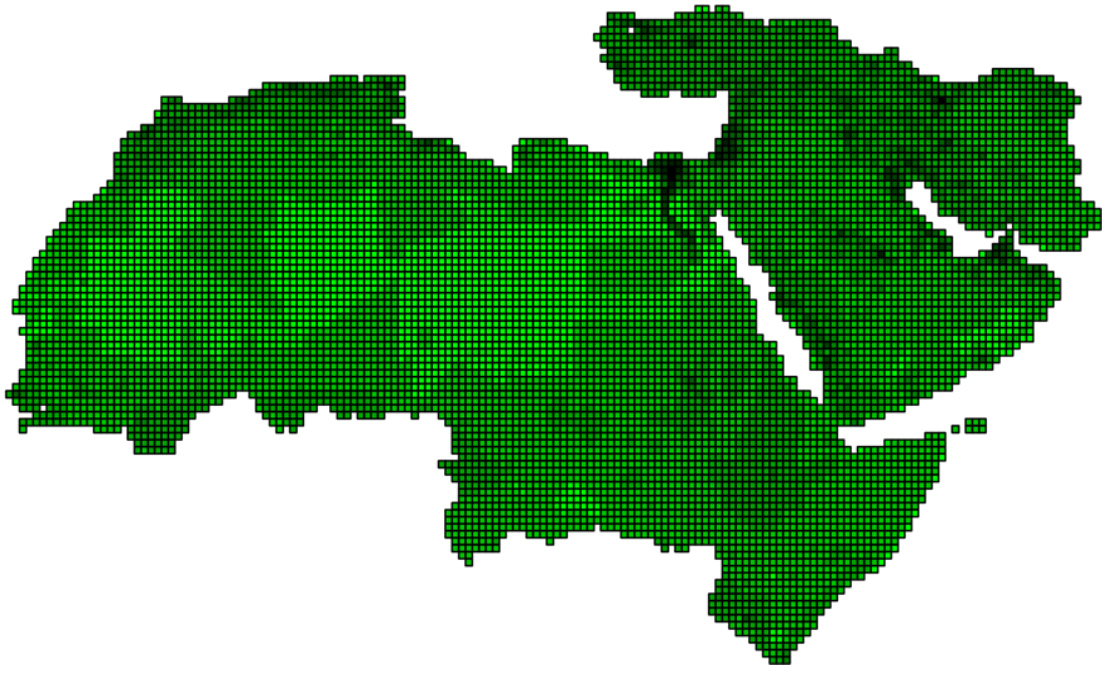
Exposure is defined as the situation of people, infrastructure, housing, production capacities, and other tangible human assets located in hazard-prone areas. Measures of exposure can include the number of people or types of assets in an area. An exposure assessment would calculate the location, density and value of people and assets across the Arab region, which would be useful not only for conflict and political risk assessments but also assessments of climate risk, food insecurity risk, gender-related risks, and other significant development questions in the region. A simple grid-level exposure assessment shown in figure 12 demonstrates the feasibility of such an exercise in future phases of the project. In this map, exposure is a function of population of the grid cell and, to capture the infrastructure present, the average night-time light emission, as measured by orbiting satellites.[245] Darker shading represents areas with greater exposure. Not surprisingly, given their population density and urbanization, the Levant and the Nile Delta regions are the areas most exposed to potential hazards, while the Sahara desert and parts of the Arabian Peninsula have very low exposure due to sparse population and little infrastructure.

3. Vulnerability assessment

A vulnerability assessment would measure the conditions determined by physical, social, economic, and environmental factors or processes which increase the susceptibility of an individual, a community or a territory to the impacts of episodes of conflict, crisis and instability. Such vulnerabilities might derive from existing patterns of marginalization, disempowerment of women and youth, poverty, food insecurity, water scarcity, employment status, and so forth. In particular, the vulnerability assessment should identify high-risk individuals and communities such as disadvantaged ethnic or sectarian groups, women, youth, poor, the disabled, migrants, and displaced persons.

Figure 13 proposes a notional vulnerability map at the grid level, based on a simple function of exposure to drought, the number of excluded ethnic groups and the infant mortality rate. In this map, intended for discussion purposes only, darker shading represents areas with greater vulnerability. Compared to the data on hazard and exposure, the data on vulnerability are rather sparse and usually available only at the national level. ESCWA and its partners have the great opportunity to add tremendous value by collecting and processing improved data from regional and national sources. Such indicators might include gender empowerment and inequality, socioeconomic vulnerability (human development index, multidimensional poverty index, Gini coefficients, and humanitarian dependence), and vulnerable groups and territories (displaced people, youth population, HIV prevalence, tuberculosis prevalence, malaria mortality rate, underweight children, child mortality, food insecurity, and climate risk).

Figure 12. Exposure of people and assets in the Arab region

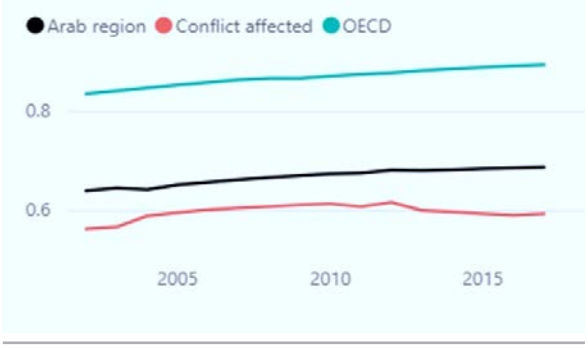


Source: Calculation and visualization by the author.

Figure 13. Vulnerability in the Arab region

Source: Calculation and visualization by the author.
Note: The light shading in South Sudan is due to missing data.

Figure 14. The human development index in the Arab region (*As compared to OECD and conflict-affected countries*)



Source: Calculations by the author based on the UNDP human development indices.

4. Capacity and resilience assessment

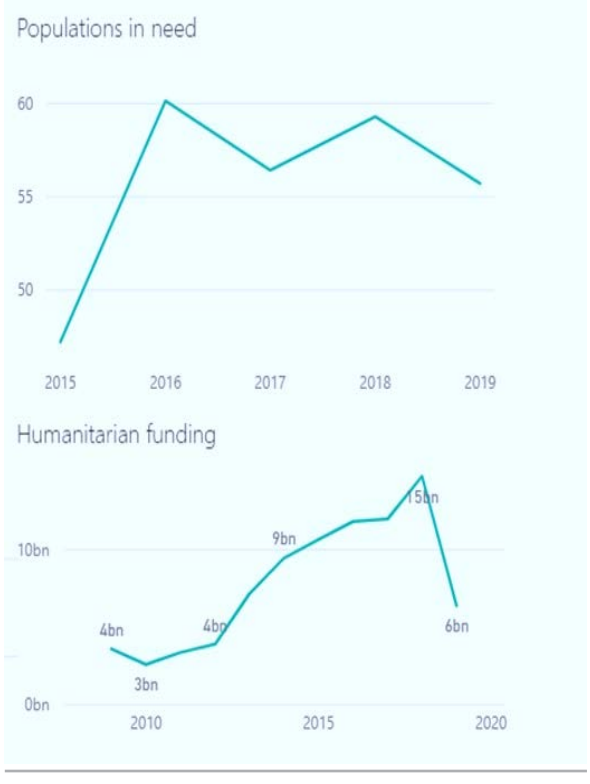
The risk assessment should also analyse institutional capacities and sources of resilience. Capacity and resilience are a combination of all the strengths, attributes and resources available within a community or society to manage and reduce conflict and political risks. Capacity may include infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership and management. This assessment would evaluate the capacity of local and national actors and the non-governmental sources of resilience in civil society, such as traditional systems, informal institutions and social cohesion to respond to episodes of conflict, crisis and instability.
It would also need to address the existing international interventions, particularly United Nations institutions, and identify any major programming gaps. These assessments should identify and attempt to map governance capacities, service delivery, financial resources, aid dependency, military and security capacities, civil society organizations and NGOs, political resources, and so forth.

There are a number of potential ways to measure, cross-nationally, the capacity of States to meet the needs of their citizens.

(a) Human development index

Over the years, low human development averages have been observed in the Arab region. The OECD human development index regional average was 0.89 in 2017, while it only reached 0.69 in the Arab region in the same year. The trend of this index in the conflict-affected Arab countries is worse than it is in non-conflict-affected countries; there, a deterioration in living conditions was recorded, with the human development index decreasing from 0.62 in 2012 to 0.59 in 2017.

Figure 15. Humanitarian needs and funding



Source: Calculations by the author based on OCHA figures.

(b) Populations in need and funding trends

After several years of crisis, the scale of the humanitarian needs of people in the conflict-affected Arab countries is very high, and these needs are not being met with commensurate donor funding. Despite only a slight decline in assessed needs in 2019, the financial resources available plummeted in the same year.

(c) World Governance Indicators

The countries of the region are performing weakly in the different dimensions of indicators measuring governance when compared with other regions, including a characteristic of the relationship between State and society in the Arab region which is the lack of voice and public accountability and political stability. In 2017, the Arab region scored -1.05 and -1.01 for the dimensions of voice and public accountability and political stability, respectively. However, OECD showed a considerably stronger performance for these two dimensions with 1.07 for voice and public accountability and 0.60 for political stability. Arab countries in crisis are showing yet a weaker performance, namely, less than the regional average for all the six dimensions of governance.

(d) Education assistance needs and low performance

In 2019, 16.163 million school-aged children required assistance to continue their education in the seven crisis countries, namely, Iraq, Libya, Palestine, Somalia, the Sudan, the Syrian Arab Republic, and Yemen. Educational underperformance, however, is a persistent problem throughout the entire region. Figure 16 shows the underperformance in the math proficiency of students in the region compared to the OECD average in 2018.[246] Maghreb countries perform worst on the scale which runs from a low score of 1 to a high score of 1,000.

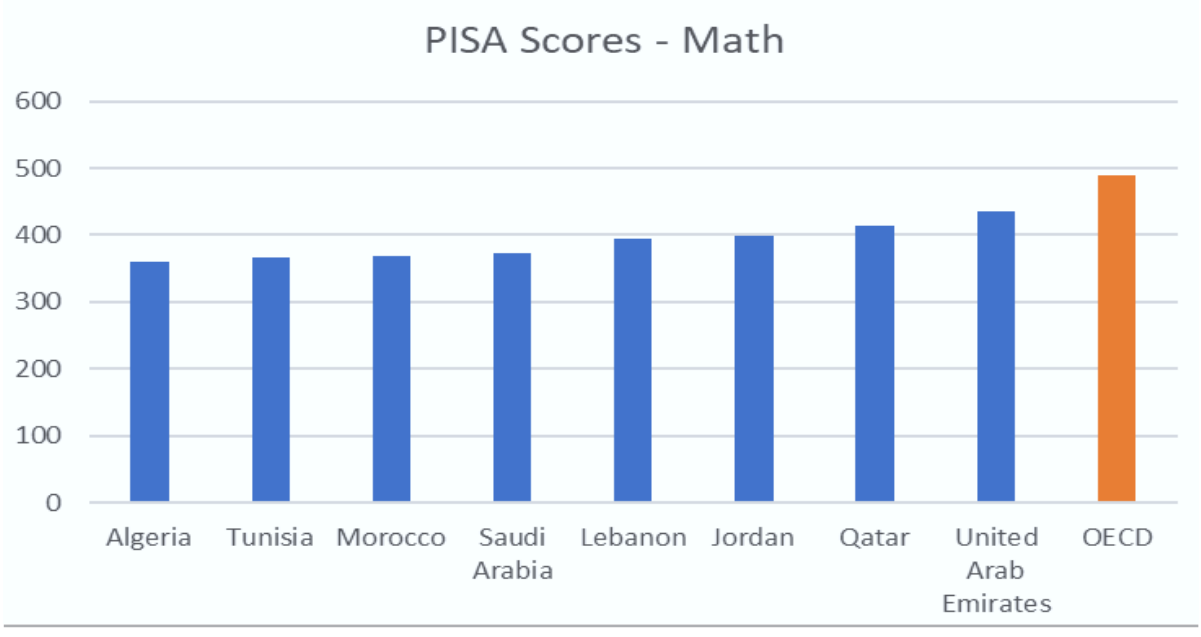
Figure 17 shows the reading performance of 15-year-old students at country level, which are similar to the math performance.

(e) Measuring and mapping capacity

The project can also attempt to measure capacity at the subnational level. Figure 18 presents a notional capacity mapping at the grid level for the year 2014; this figure is only intended to demonstrate that mapping capacity at the local level is potentially feasible as a next step of the project. In the figure, capacity is a function of military strength (the number of soldiers per capita as measured by the World Bank), government effectiveness (as measured by the World Bank) and the accessibility or inaccessibility of a grid cell (measured in travel time to the nearest city of 50,000 inhabitants). Darker grid cells represent areas with lower capacity and lighter grid cells with higher capacity. Here, too, ESCWA and its partners can advance the spatial understanding of capacity and resilience in the Arab region, developing new data sources down to the local level.

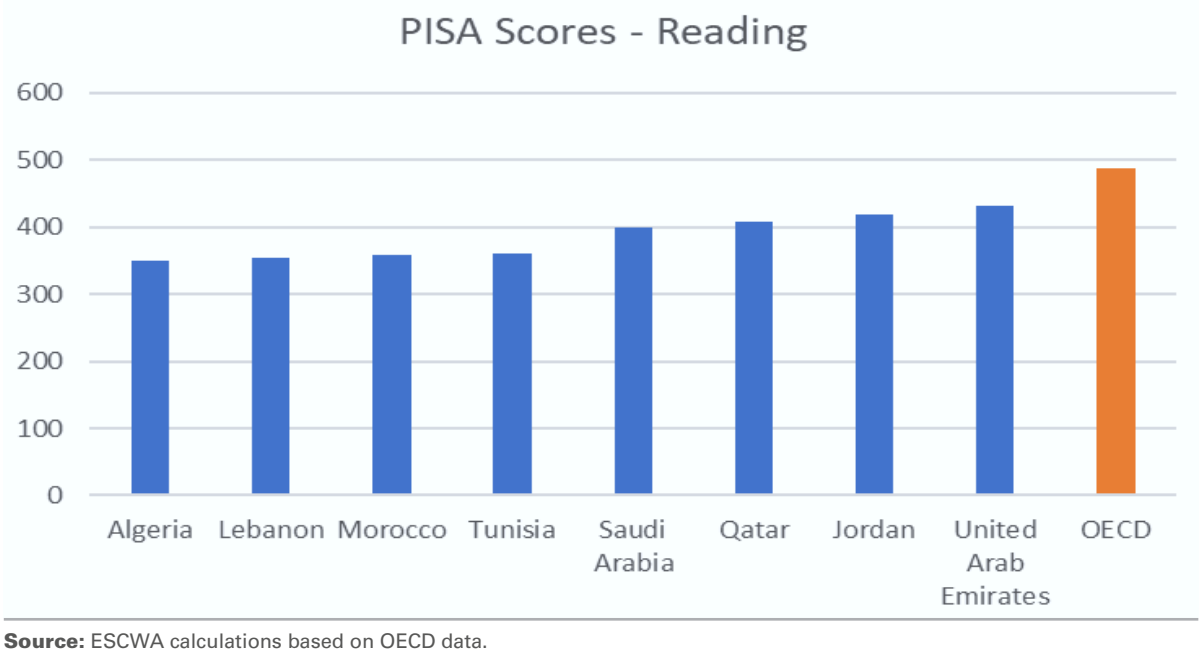
Improving institutional capacities in conflict-affected State bureaucracies is highlighted as a crucial component of addressing risks. In order to increase capacities, the importance and impact of self-assessments of institutions and bureaucrats is emphasized, which incites better understanding and ownership of policy proposals, in contrast to the more top-down donor-imposed approach. This re-emphasizes the actor-centric approach in administrative capacity enhancement.

Figure 16. Math proficiency of students aged 15 in Arab countries



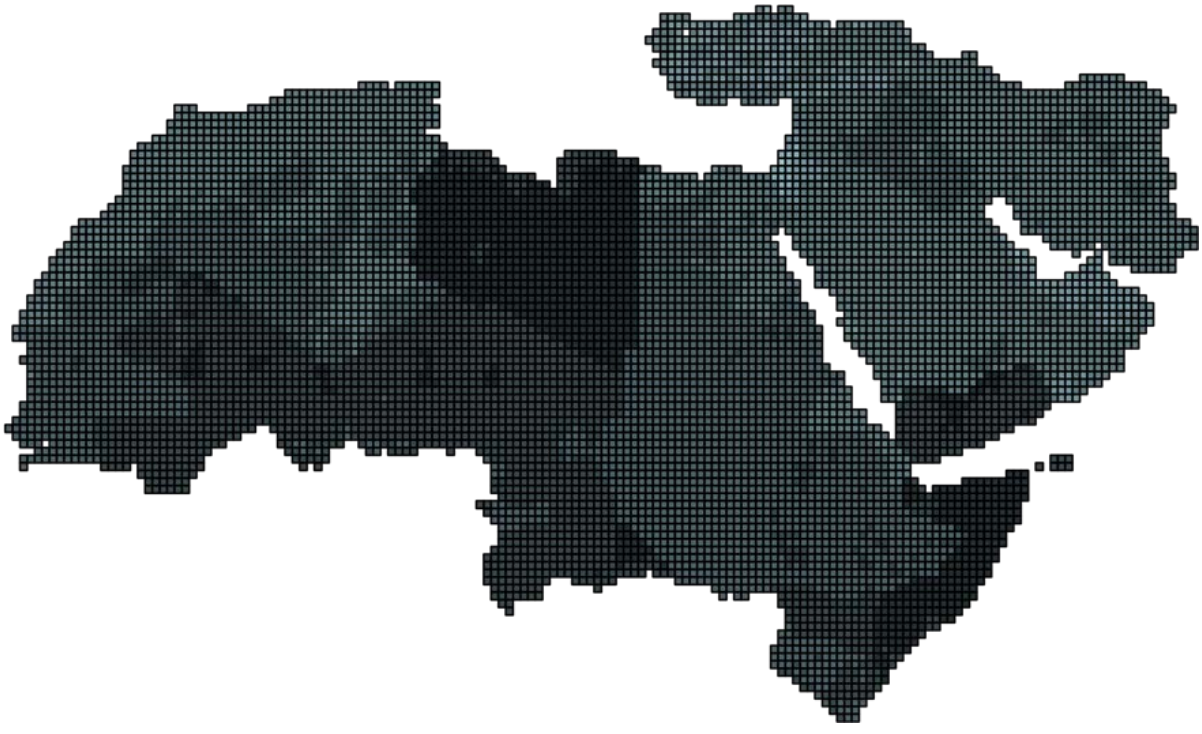
Source: ESCWA calculations based on OECD data.

Figure 17. Reading proficiency of students aged 15 in Arab countries



Source: ESCWA calculations based on OECD data.

Figure 18. Capacity in the Arab region



Source: Calculations by author based on data from the Armed Conflict Location and Event Dataset, accessed January 2020.

C. Organizing for a successful assessment

In order for a regional risk-assessment process to be successful, a risk-assessment framework for the Arab region should provide several outputs in collaborative work with other institutions, including a platform for member States and experts to discuss and exchange information, periodic analytic policy options and technical assistance to member States to develop risk-sensitive planning and programmes. Regular risk assessments are particularly important due to the non-static nature of socioeconomic, environmental and governance challenges. Humans respond and adapt to challenges, thereby altering underlying risks constantly. Ideally, a risk-assessment framework should include the following aspects:

- Be framed within the SDGs;
- Locate policy tradeoffs;
- Identify 'what' and 'when';
- Be tied to decision-making processes;
- Launch a conversation on 'who'.

With these aspects in mind, the risk assessment is an analysis that captures the most critical factors; it is integrated and interactive and, at the same time, dynamic, meaning that it reflects events and shocks when they happen.
In essence, a risk assessment is a process during which all the mentioned factors come together, something no quantitative model can capture.

In this regard, human intelligence, or rather analysis, cannot be replaced regardless of the level of sophistication of the adopted quantitative methodology. Rather, the methodology should be responsive to the context and must look at issues systematically. Given context of the Arab region, namely, a high frequency of rapidly unfolding events, developments need to be continuously reassessed. Furthermore, similar to an initiative by the Economic Community of West African States (ECOWAS), ESCWA should create the political space to discuss risk assessments. It should ensure that a risk-assessment methodology is replicable and promotes collective thinking among policymakers on hazards and vulnerabilities, so as to strengthen mitigation policies and capacities.

Given the importance of megatrends and catalysts in shaping risks, the risk-assessment framework must be flexible enough to handle varying dimensions of time, that is, it must be able to produce a variety of outputs depending on the time horizon which clients are interested to assess. As noted in chapter 3, megatrends are conceptually distinct from more short-term catalysts and defined as pattern of change occurring over decades and more. Megatrends are more risk-generating when influenced by more short-term catalysts. Catalysts can interact with megatrends in complex ways, sometimes amplifying megatrends, sometimes redirecting them. For the Arab region, both megatrends and catalysts are critical aspects of risk assessments, and both should be regularly monitored and assessed against the backdrop of other risk drivers such as drivers and spillover effects of conflict. Such shocks have immediate impact, and, hence, the assessment must focus regularly on the catalysts that are triggers of shocks.

1. Quantitative considerations

As proof of concept, chapter 5 proposed a quantitative forecasting approach, which is machine learning, for assessing one type of hazard, namely, internal armed conflict, across the Arab region at the country- and grid-levels. The chapter demonstrated that such forecasting models can give accurate, policy-relevant insights into hazards in the Arab region, at least in the short run; such an approach can serve as one of the main inputs to a wider, mixed-methods process of risk assessment. To maximize the utility of the forecasting exercise, the next iteration should include the following:

- The integration of ESCWA data directly into the model, including georeferenced, time-series data on climate change in the region, multidimensional poverty indicators, and micro-level data on health, well-being and education. ESCWA can establish an internal working group to coordinate these data sources with external partners;
- The integration of perception and public opinion research into the model, namely the multiple, cross-national waves of the Arab Barometer Survey and the World Values Survey;
- The integration of protest data into the model, particularly from the ACLED project. Protests can act as both predictor of conflict and, in a separate model, a dependent variable measuring political instability. The result would be two machine-learning models, one that forecasts internal armed conflict and another that forecasts protests, that both feed into the risk-assessment framework;
- The inclusion of actor-based analyses into the quantitative component of the risk assessment. This may involve adding

an actor-based ensemble into the machine-learning technique described in chapter 5, or it may involve parallel, but complementary, regression-based modeling.

2. Qualitative considerations

As noted throughout this report, qualitative considerations are as, if not more, important than the quantitative aspects of the risk-assessment framework. Therefore, it is necessary to explore in greater detail qualitative methodologies for the next phase of the project. The emerging discipline of foresight offers a number of such qualitative methods and may include, for example, the following:

- Scenario methods, which are intended to develop narratives on alternative potential futures and to identify events, developments and trends that generate these potential futures;
- Delphi methods, which are intended to generate expert consensus on specific research questions. Delphi methods use repeated, independent rounds of structured questionnaires or focus groups, with the group's opinion aggregated and communicated to participants after every round of interviews. The idea is for the experts to converge on a significantly narrowed set of opinions about the future, which can then be used for planning purposes;
- Workshops and regular conferences should be convened for experts and practitioners to generate and disseminate knowledge on the evolution of risks in the region and to review the findings of ESCWA's biennial flagship publication, Trends and Impacts in Conflict Settings. This framework should produce regularly updated regional assessments to feed into decision-making at headquarters and at the United Nation's regional hubs. Finally, the framework should be flexible enough to be deployed in a number of settings at the regional, national and local levels, so that it can be used to respond to requests by member States for technical assistance on issues related to conflict and governance.

As a starting point for the assessment framework, the project should recruit a committee of experts and practitioners to develop a formal qualitative approach, provide peer review on the assessment outputs and provide qualitative expert opinion on risks and their drivers in the region. The experts would, by necessity, come from diverse methodological and disciplinary backgrounds, covering at least the subjects in the model in figure 11. This expert group should be the custodian of the central methodological tool in the framework, a new guidance note on conflict-risk assessment in the Arab region, in Arabic and English, for use by member States, the United Nations system and other actors in the region. A quantitative platform should also be developed to gather and process diverse streams of risk-related data, apply rigorous methodologies to them and produce spatially and temporally disaggregated risk assessments, similar to the proposal in chapter 5.

3. Synergies with existing United Nations processes

The pillars of the regional monthly reviews (RMR) of United Nations member States provided by Headquarters must be considered. RMR is a key element for deriving policies towards risk assessment and conflict prevention

of the United Nations, an output that is action-oriented and provided for United Nations high management only. The RMR is comprised of three key elements: (a) backward-looking historical trends covering three years; (b) forward-looking forecasts based on indices derived from external sources; and (c) expert opinion based on interviews of experts within United Nations institutions. The following recommendations for building a risk-assessment framework for the Arab region emerge from the RMR:

- The framework should be customized to feed into emerging work on regional conflict prevention;
- The production of the regional risk assessment should also feed into the RMR process, and vice versa;
- The added value of the framework will be custom-tailored policy recommendations to both the United Nations and member States.

In 2018, ESCWA launched an institutional assessment framework (IAF) that has been implemented with three Arab governments thus far, namely, Iraq, Palestine and Yemen. IAF was developed to cater for the assessment of such institutional capacities that are deemed pivotal in cases of emergencies and according to prevailing set priorities dealing with fragility.

Although it targets elevating the resource utilization efficiency to its maximum, given the dire need at such instances, IAF also promises to constitute a strategy for pre-emptive preparedness whereby assessing institutional gaps ahead of increased calamities may prove to be most crucial to alleviate their impact; the participants in the seven workshops held by ESCWA confirmed this important dimension.

Over and above, the coordination with other public administrations, civil organizations and international donors proved to be a crucial arena for boosting the overall response and preparedness in crisis times.

As IAF was conceived and shaped up, through the experimental and encouraging implementation undertaken thus far, for Arab countries under severity, the following conclusions and features of IAF come to suggest a solid platform for the promising risk-assessment framework for the Arab region:

- The philosophy of IAF promotes, in a practical fashion, the premise of building institutional efficiency of public administration in preparing for and dealing with risks. The State thus regains its assets of legitimacy, community protection and welfare;
- The implementation of the IAF methodology helps shape, in a direct and pragmatic manner, such consensus, efficient coordination and planning faculties that are deemed crucial in dealing with hazards;
- The self-growing nature of IAF inside the public administration of an institution or around a particular crisis arena suggest a minimal yet highly efficient investment in training and upgrading capabilities for ongoing capacity-building and measuring of exposure and vulnerability, thereby enhancing the ventures of forecasting and handling hazards;
- The uniformity in the methodology and the flexibility of its tools ensure a solid mechanism for cross-administration and cross-border coordination and suggest a practical regional dimension of the implementation framework.

D. Conclusion

Keeping in mind the above, policy interventions should focus on addressing the underlying drivers of risks rather than only ameliorating their impacts. Moreover, they should adopt inclusive approaches to build broad partnerships for peace based on broad coalitions. The provision of support should start before a crisis evolves and end only after conflict abates. United Nations institutions have a crucial strategic advantage to pursue such a strategy as only they are endowed with a mandate in all policy areas at the central governmental level. There is little risk of bias towards policy areas in which governments and international organizations have less expertise. The outcome of the risk assessment and its associated process should aim at putting pressure on action. It should trigger action by decision makers before disaster strikes.

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130. For example, Egypt calls upon the State to protect women from all forms of violence under article 11 of the constitution, whereas Tunisia notes that the State will take the necessary steps to eliminate violence against women under article 46 of the constitution. Article 15 of Somalia's provisional constitution prohibits any form of violence against women, among other types of violence; and article 28 in Yemen's constitution notes that the State shall protect women from all forms of violence. Iraq's constitution broadly condemns all forms of violence and abuse in family, schools and society under article 29.
131. Bahrain, Iraq, Jordan, Lebanon, Morocco, Saudi Arabia, and Tunisia all have stand-alone laws. Algeria does not have a stand-alone law, but has directly amended its penal code.
132. For a greater discussion on protection order legislation in the Arab region, see ESCWA, 2019.
133. For example, Algeria, Egypt, Iraq, Jordan, Libya, Morocco, Qatar, Somalia, Saudi Arabia, the Sudan, and Tunisia.
134. For example, Bahrain, Djibouti, Kuwait, Lebanon, Oman, Palestine, Syrian Arab Republic, and Yemen.
135. UNDP and others, 2018.
136. Only two States in the Arab region, namely, Libya and Tunisia, have acceded to the CEDAW Optional Protocol.
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Chapter 5

162. For simplicity, the term 'conflict' is used throughout this report instead of the more accurate 'internal armed conflict' or 'internal war.' Here, conflict is defined following Gleditsch and others (2002b) as 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.
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221. Gleditsch and Ward, 1999.
222. This proxy variable for gender exclusion and disempowerment is selected because these time series are the most complete ones available for the region, compared to other potential indicators. However, it should be noted that the primary level GPI has measurement limitations; most countries in the Arab region have achieved rough parity at the primary level, but still exhibit strong social markers of gender inequality and disempowerment. Secondary school enrolment figures are generally preferable to measure gender parity, but there is a trade-off in that these time series are less complete across the region. Additional potential indicators such as fertility rates, political participation, economic participation, or gender-based violence legislation also suffer from cross-sectional or longitudinal incompleteness. This issue is flagged for further investigation of better proxies in the next phase of the project.
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237. This is, of course, not just the case for conflict research. For conflict research, this realization has been driven in particular by some troubling findings. Ward, Greenhill and Bakke (2010) find that the most cited articles explaining the onset of civil war are largely incapable of predicting such conflicts. Hegre and others (2013) show that such events are not inherently unpredictable. One possible reason for the discipline's inability to build models capable of predicting events such as civil wars can be traced to what Ziliak and McCloskey (Ziliak, Stephen T. and Deirdre N. McCloskey (2008). The Cult of Statistical Significance: How the Standard Error Costs Us Jobs, Justice, and Lives. Ann Arbor, MI: University of Michigan Press) call the "cult of statistical significance". Researchers have been overly focused on the degree to which an estimated effect is significantly different from zero, and, for the most part, theory and model evaluation have consisted of checking the degree to which effects are in the expected direction. In the process, researchers have disregarded actual substantial effects.
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Chapter 6

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The Arab region is undergoing profound transformations due to social, economic, and governance factors, as well as violent conflict, humanitarian crisis, and political instability. The regional peace and security challenges threaten social and economic development trajectories and will make it very difficult for many countries to reach their Sustainable Development Goals by 2030. In order for countries to reach their development targets, policymakers and stakeholders must understand the current and future risks of violence, crisis, and instability—and the drivers of these risks—so that they can tailor their social, economic, environmental, governance, and security policies in ways that enhance prevention, mitigation, resilience, and response. Understanding risks—defined here as a combination of the probability of an adverse outcome and the potential impact of that outcome—is the first step in addressing those risks.

This publication proposes a regional risk-assessment framework: a methodology for understanding and communicating the risks of violent conflict, humanitarian crisis, and political instability in the Arab region; the sources, drivers, and interactions of these risks; and their potential future trends. This framework is intended to provide a regional public good by helping member States allocate resources more efficiently, take steps for prevention and mitigation, and prioritize the people and assets that are most exposed—and thereby support the attainment of their sustainable development targets on schedule. The proposed framework rests solidly on existing best practices in the political, economic, and environmental risk literatures, and is organized around the four main components of risk: hazard, exposure, vulnerability and capacity.

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