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for every child

The Economic Cost of Conflict
in North East Nigeria

Contents

Foreword

The Economic Cost of Armed Conflict in North East Nigeria is more than just an analysis or a collection of financial data – it is also a depiction of the impact of armed conflict on the affected population. The report is a societal mirror that reflects the immense challenges and complex realities of life in a region long ravaged by armed conflict. As the Governor of Borno State, the heart of North East Nigeria, I can bear witness to the suffering, resilience and determination of our people over the past 14 years.

The findings of this study, conducted by Frontier Economics on behalf of UNICEF, quantify the ongoing conflict's devastating economic and human impact. The loss to our economy that totals more than 100 billion US dollars over a 13-year period is staggering. However, what truly resonates are the stories behind these numbers: the children who have been recruited and used by armed groups, and deprived of an education; the families forcibly displaced from their homes and the communities struggling to rebuild themselves.

Over the last 13 years of the conflict, the three northern states of Borno, Adamawa and Yobe together have recorded over 100,000 direct conflict-related deaths. While we have made strides in reducing these numbers, the humanitarian consequences remain vast and heartbreaking.

However, this report should not be seen as a tale of despair. Instead, it guides us towards understanding, compassion and concerted action. It outlines the challenges and shows us the pathways to recovery, resilience and growth. As Governor, I am committed to translating the report's insights into tangible, targeted interventions that alleviate immediate suffering and address the underlying issues. This calls for all levels of government, international organizations and community leaders to unite with a renewed sense of purpose. We must heed the lessons contained within these pages and recognize that our actions today will shape our tomorrow. Our response to this report must be nothing short of a robust, multisectoral approach that places our children's dignity, health, education and well-being at the forefront of our efforts. Borno State is resilient. Its people are strong and its future is bright. But to reach its potential, we must turn the report findings into fuel for change.

I thank UNICEF for this invaluable contribution to understanding the conflict's impact. Let it not merely be a document of record, but also a catalyst for meaningful, lasting progress in our beloved Borno State and North East Nigeria.

Professor Babagana Umara Zulum
CON, Mni, FNSE, GCON (Niger)
Executive Governor
Borno State

Preface

Children's rights to protection and education have been adversely impacted by the armed conflict in North East Nigeria that has raged on for more than 14 years. The humanitarian crisis in this region remains fundamentally a protection crisis, compounded by challenges in the availability of and access to basic services. Shockingly, grave violations of children's rights are on the rise and education is under attack at an unimaginable level, placing children in a position of great vulnerability. The data collected and verified by the United Nations through the monitoring of grave violations demonstrate the compound cost in lives and futures for Nigerian children. Over 6,400 grave violations were verified by the United Nations in Nigeria between 2017 and 2021.

The estimated economic cost of the conflict due to violence and grave violations perpetrated (as detailed in this report) has profoundly impacted the country's children and gross domestic product (GDP) per capita. So far, over the period of the conflict, cumulative losses (i.e., the losses that build up each year that the economy is damaged) have amounted to around 100 billion US dollars (US$), an indicator of the lost development opportunities suffered as a result of the conflict. These results highlight that the conflict, while regionally focused, has a broader spillover that could be detrimental to the country. Given the economic size of Nigeria relative to the rest of the Economic Community of West African States, these adverse growth effects are likely to have broader regional impacts.

UNICEF funded this study to gain a deeper understanding of the effects of conflict on economic development and the social welfare system, particularly child protection programmes. The study assesses the estimated economic and social consequences of the conflict on Nigeria, particularly in the north-eastern region, and its effects on the protection and well-being of children and youth. Additionally, the study calculates the financial impact of the conflict and the chances lost by children living in such areas.

The conflict cost analysis study will inform policy dialogue and evidence-based interventions to improve the lives of children in North East Nigeria. Children face multiple child rights violations, including the deprivation of education, health, nutrition and child protection services essential to their physical, mental and cognitive development during childhood. The primary objective of this work is to provide rapid community-sourced data in real-time to strengthen the evidence base and inform policy decisions and country-level programming.

Advocacy points

All parties to the conflict are encouraged to cease the perpetration of grave violations against children. The children of Nigeria have suffered enough. Without accountability, any chance of reconciliation and peace will remain elusive.

The government should allocate an appropriate budget to strengthen the child protection system's promotion, prevention and response capacities. Investing in child protection contributes to the development of human capital.

The international community should increase resources for unconditional, predictable and long-term multisectoral funding to support holistic family and gender-specific, community-based and socioeconomic reintegration programmes for children and women affected by armed conflict.

Children and their families want peace, and families want a hopeful future for their children. Missing childhoods represent the heavy toll the conflict is exerting on children in Nigeria. The continuation of the armed conflict robs children of their rights and future, disrupts the income and livelihoods of families and leads to the collapse of local markets. We must all work together to bring peace, promote reconciliation and strengthen social cohesion. These will significantly contribute to the region's and the country's social and economic development.

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UNICEF Representative
Nigeria

Acknowledgements

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Glossary of terms

Cost of war: The cost of war can be calculated in a number of ways. For example, it could be reported as the value of physical assets destroyed. In the context of this research, the cost of war is defined as the reduction in economic activity, measured by GDP, attributable to the conflict.

Cumulative cost of war: The cost of war added up over a period of years. If the cost is US$100 million per annum, then after five years the cumulative cost will be US$500 million (in undiscounted terms).

Enrolment rate: The net enrolment rate is the ratio of children of official school age who are enrolled in school to the population of the corresponding official school age. Net enrolment rate for primary (secondary) school is calculated by dividing the number of students of official school age enrolled in primary (secondary) education by the population of the age group which officially corresponds to primary (secondary) education, and multiplying by 100.

Forced displacement: The involuntary or coerced movement of a person or people away from their home or home region. Forced displacement can occur across national borders and within the borders of the person's own country.

Food insecurity: People are food insecure when they lack regular access to enough safe and nutritious food for normal growth and development and an active and healthy life. This may be due to unavailability of food and/or lack of resources to obtain food. Food insecurity can be experienced at different levels of severity. The Food and Agriculture Organization identifies the following categories of food insecurity: mild, moderate and severe.

Gross domestic product (GDP): The total monetary value of the goods and services produced by an economy in a year, giving a measure of national economic output.

Global poverty: Global poverty is defined as the number of people worldwide who live on less than US$1.90 a day. A person surviving on less than US$1.90 a day lives in extreme poverty, as defined by the World Bank.

Grave violations of children's rights: The United Nations has defined six grave violations against children in armed conflict: killing and maiming of children; recruitment and use of children; sexual violence against children; attacks on schools or hospitals; abduction of children; and denial of humanitarian access. The United Nations Security Council adopted its first resolution on children and armed conflict in 1999.

Human capital: Human capital consists of the knowledge, skills and health that people accumulate throughout their lives, enabling them to realize their potential as productive members of society, as defined by the World Bank.

Acronyms and abbreviations

BHA	Bureau for Humanitarian Assistance
BMZ	Federal Ministry for Economic Cooperation and Development (Germany)
DDR	disarmament, demobilization and reintegration
ECHO	European Civil Protection and Humanitarian Aid Operations
ECOWAS	Economic Community of West African States
EU	European Union
FCDO	Foreign, Commonwealth and Development Office (United Kingdom)
GDP	gross domestic product
IDPs	Internally Displaced Persons
IMF	International Monetary Fund
IS	Islamic State
ISWAP	Islamic State's West Africa Province
JAS	Jama'atu Ahlis-Sunna Lidda'awati Wal-Jihad (People Committed to the Propagation of the Prophet's Teachings and Jihad; commonly known as Boko Haram)
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
SDC	Swiss Agency for Development and Cooperation
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	Office of the United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNODC	United Nations Office on Drugs and Crime
US$	US dollar(s)

Executive summary

The United Nations Children's Fund (UNICEF) commissioned a research study to estimate the economic cost of the conflict in North East Nigeria, with a specific focus on violence and grave violations against children. The conflict in the North East has continued for years, reaching a peak of 10,000 annual direct conflict-related deaths in 2015 (Uppsala Universitet, 2022). Although conflict deaths have since fallen to around 3,000 per annum (Uppsala Universitet, 2022), the humanitarian consequences continue to be immense, with 2.6 million people currently displaced internally in North East Nigeria (UNHCR, 2022).[1]

UNICEF reported in 2018 that more than 1,400 schools had been the subject of attacks (UNICEF, 2018). More recently, there have been similar armed attacks on schools elsewhere in Nigeria by armed criminal gangs imitating Jama'atu Ahlis-Sunna Lidda'awati Wal-Jihad's (JAS) tactics. In 2021, UNICEF estimated that around 1 million children could miss schooling. Some 920,000 children were reported to suffer malnutrition and close to 300,000 suffered from acute malnutrition (Integrated Food Security Phase Classification, 2021).

The direct effects of conflict, in terms of death and injury, loss of livelihoods, displacement and damage to infrastructure, are transformed into long-term economic impacts. This is because these impacts reduce the rate of economic growth for the country affected by conflict relative to what it might have been, had conflict not occurred.

This study provides a quantitative estimate of the economic cost that arises from violence and grave violations. Specifically, it estimates an econometric model that measures the impact of the intensity of conflict in a country on its level of GDP per capita. The model is based on the number of conflict deaths in preceding years and the number of people who continue to be displaced by the conflict. Using this approach, the study found that, as at 2021, the Nigerian economy was 2.5 per cent smaller than it would have been, had there been no conflict. It also found that, for the duration of the conflict, cumulative losses (i.e., the losses that build up each year that the economy is damaged) were around US$100 billion.[2] The monetary measures are an indicator of the lost development opportunities suffered as a result of the conflict.

Even in an optimistic outlook, it will take time for the conflict to be resolved and for life and the economy to return to normal. In considering a situation in which the effects of the conflict gradually decrease over a 10-year period, the study found that substantial impacts will still be generated during this time, leading to cumulative losses in the region of US$150–200 billion in total over that period.

This modelling assumes that Nigeria would gradually return to the same growth path it would have followed, had conflict not occurred. However, it is likely that prolonged conflict, via the effects of grave violations of children's rights to education and of human capital, will result in long-term 'scarring', with economic consequences. This means the economy may never reach the potential it would have experienced if there had been no conflict. The literature on the effects of human capital on economic growth indicates that damage to human capital will result in reduced prospects in the long term, to the extent that the economy will converge to a lower level of productivity. The results show that even if the conflict were resolved, this might result in the economy being 0.55 per cent smaller as at 2030 than it otherwise would have been. This equates to around US$3 billion in lost GDP per annum going forward.

The study confirms that the impacts of conflict are not confined to the regions that experience these most acutely. Nigeria as a whole is worse off as a result of the conflict, and therefore there is a

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1 Refugee estimates from the Office of the United Nations High Commissioner for Refugees (UNHCR, 2022) and conflict deaths from the Uppsala Conflict Database (Uppsala Universitet, 2022). Headline statistics presented relate to all of Nigeria, which may include effects of other or related conflicts.

2 Range of US$91–113 billion.
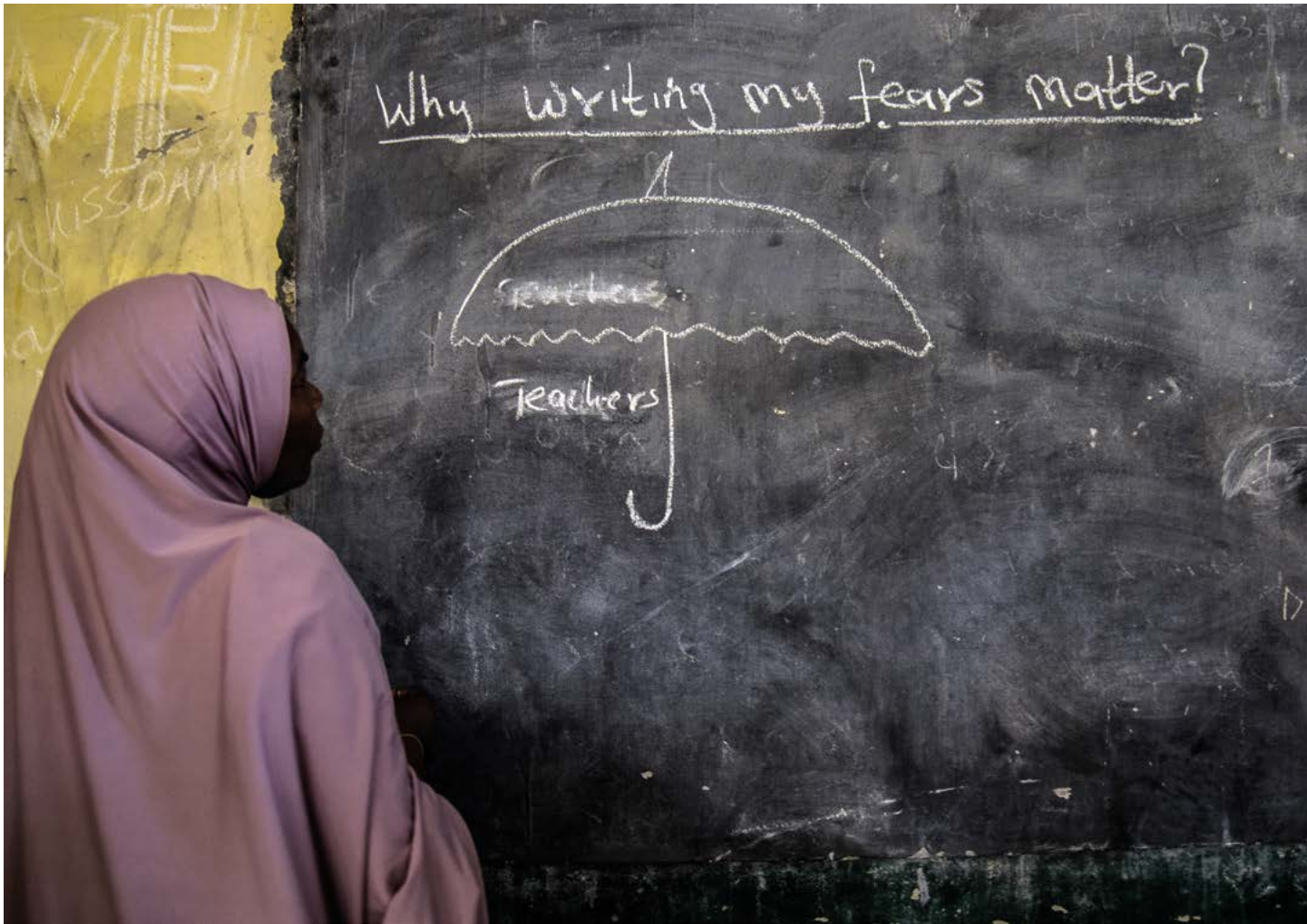
national interest in resolving the conflict. Moreover, given Nigeria's economic size relative to the rest of the region, slower growth in the country may have broader regional spillover effects. That is, regional growth is likely to be lower than in a counterfactual case in which Nigeria was free of conflict.

The results detailed in this report likely understate the true cost of the conflict, mainly because they are based on a simple comparison between growth observed in the conflict period and what it might have been, had there been no conflict. In this conflict-free counterfactual there are still many other factors that adversely affect Nigeria's growth. While no assumptions were made that these have been dealt with, it is possible, though, that in a world in which Nigeria was not affected by conflict, the authorities may have had more resources, both material and political, to tackle other factors constraining growth. Had this been the case, the gap between growth under conflict and growth free of conflict would most likely have been greater, and the estimated effects of the conflict consequently higher.

> *... it is possible ... that in a world in which Nigeria was not affected by conflict, the authorities may have had more resources, both material and political, to tackle other factors constraining growth.*

Impact of conflict in Nigeria: At a glance

DEATH AND INJURY *

Direct conflict-related deaths (adults and children):

2,000 per year	2010–2013
8,000	2014
9,000	2015
3,000	2021
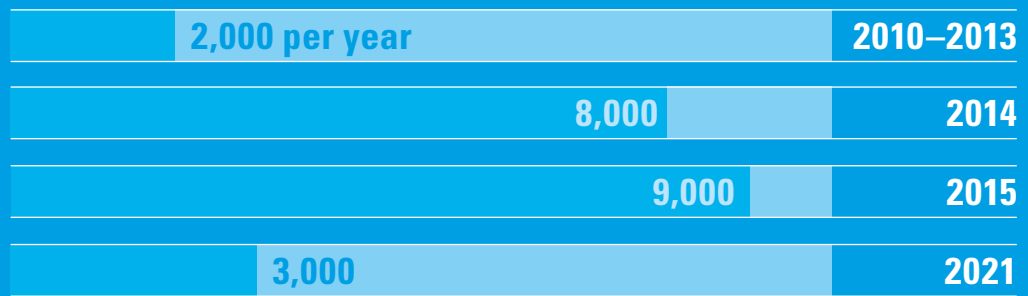
2,205 children were **killed** (1,209) or **maimed** (996) between 2017 and 2021

DISPLACEMENT **

In 2021, **2.6 million people** were **displaced** internally in North East Nigeria

CHILDREN

Nutrition

2020#
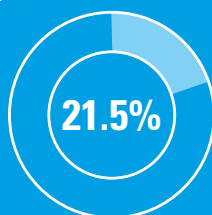
21.5% increase in **child malnutrition**

2021##

Malnutrition: **920,000 children**

Acute malnutrition: **300,000 children**

Education ###

School enrolment decreased between 2013 and 2018

primary school enrolment decreased by **6.66%** > **secondary school** enrolment decreased by **12.69%**

Grave violations of children's rights*

Between 2017 and 2021:

5,537 children recruited by armed groups

9,131 grave violations

Annual child abductions:

244 in 2017

55 in 2019

211 in 2021

Rape or sexual violence against children:

151 cases in 2017

7 cases in 2019

53 cases in 2021

ECONOMY
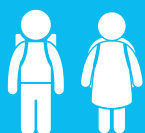
Effect of **reduced school enrolment on per capita growth: -0.547** percentage points***

Infrastructural damage:

2017–2021: **70 attacks** on **schools and hospitals***

>

In 2018, **more than 1,400 attacks** on **schools**†

Sharp increase in **food insecurity** since 2015, with **21.4%** of the population experiencing **severe food insecurity** by 2019 ###

The Nigerian **economy is smaller** than it would have been had there been no conflict: ***

2008–2021 cumulative losses: approximately **US$100 billion**

Cumulative losses by 2030 (even if conflict ended now): US$150–200 billion

Further cumulative losses (by 2030) due to lost educational opportunities: **US$15 billion**

1 Background and context

1.1 Overview of the conflict

Conflict in North East Nigeria has its origins in the creation of Jama'atu Ahlis-Sunna Lidda'awati Wal-Jihad (JAS). Established in Maiduguri in Borno State in 2002 as JAS, which in Arabic means 'People Committed to the Propagation of the Prophet's Teachings and Jihad', the group aimed to support Islamic education and establish an Islamic State (IS) in Nigeria. Violence perpetrated by JAS began to escalate in 2009. By 2013, the group had gained greater influence and more territory in the region, its methods had become more deadly and it was increasingly targeting civilians. Between 2010 and 2013, the annual average of direct fatalities from the conflict reached 2,000, leading the Nigerian government to declare a state of emergency in the Borno, Adamawa and Yobe states (hereafter the BAY states) in 2013 (UNDP, 2020).

The deadliest period of conflict to date was 2014–2015. Events involving JAS resulted in nearly 8,000 deaths in 2014 and 9,000 in 2015. In 2015, the group pledged allegiance to the so-called Islamic State, becoming Islamic State's West Africa Province (ISWAP). A more effective military response on the part of the government meant that the group began losing territory, fighters and resources in early 2015. Towards the end of the year, the group was restricted to north-eastern Borno. Nigerian President Muhammadu Buhari declared this a 'technical' defeat of JAS.

In 2016, the group saw an ideological split. A splinter group, active under the banner of ISWAP, remained in contact with IS and is now located around Lake Chad. Originally small, ISWAP expanded in 2018 and began forming relationships with local communities. The other group, operating as JAS, based itself in southern Borno (UNDP, 2020).

1.2 Grave violations

The conflict in Nigeria has seen a concerning level of grave violations of children's rights. This reflects a failure to protect vulnerable children in North East Nigeria. The data on grave violations collected by the United Nations demonstrate the compound cost in lives and futures for Nigerian children. This is likely to be the tip of the iceberg as numbers cannot fully capture the experiences of child victims.

This section presents verified data from 2017 to 2021 on four grave violations in Nigeria: abductions; killing and maiming; rape or sexual violence; and attacks on schools and hospitals. This is followed by comparisons of verified incidents with five other conflict-affected African countries. The United Nations also collected data on two further grave violations against children: recruitment and use of children by armed groups and denial of humanitarian access. These data are presented in Annex B: Grave violations.

1.2.1 Nigeria: Verified grave violations in North East Nigeria

Figure 1 (page 11) shows the total grave violation figures for Nigeria for the period 2017–2021, including verified cases of all six grave violations. The clear trend is of a sharp decline in incidents from 2018 to 2020 (with just a slight increase in 2021), indicating a more recent improvement in conditions for children in Nigeria.

Figure 2 (page 11) focuses on child abductions. It shows an initial downward trend, with annual abductions decreasing from 244 in 2017 to 73 in 2019, followed by a notable increase to 211 by 2021.

Between 2017 and 2021, the United Nations recorded 2,619 cases of killing or maiming of children in Nigeria. Figure 3 (page 11) demonstrates an annual decrease in the number of these violations over the five-year period, with numbers falling from a

Figure 1: Total grave violations in Nigeria, 2017–2021
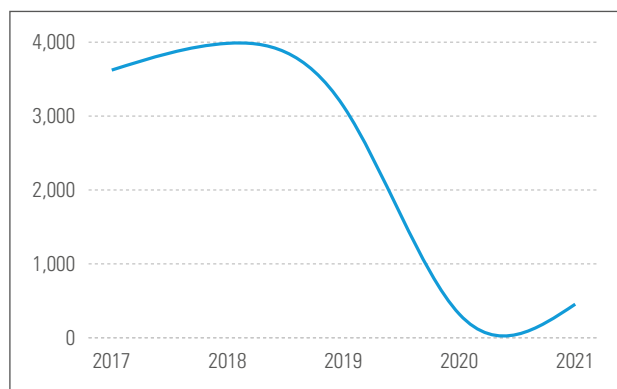
Source: United Nations Security Council, 2020 and 2022

Figure 2: Abductions of children in Nigeria, 2017–2021
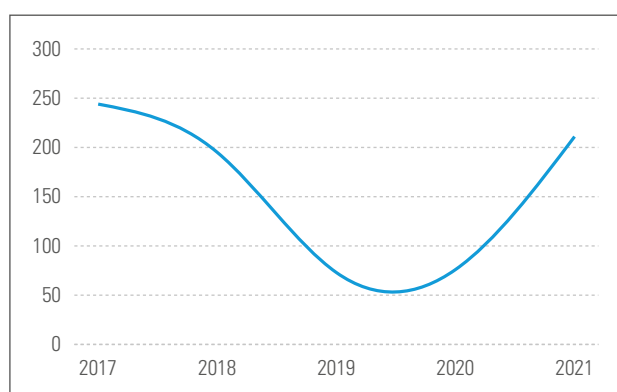
Source: United Nations Security Council, 2020 and 2022

Figure 3: Killing or maiming of children in Nigeria, 2017–2021
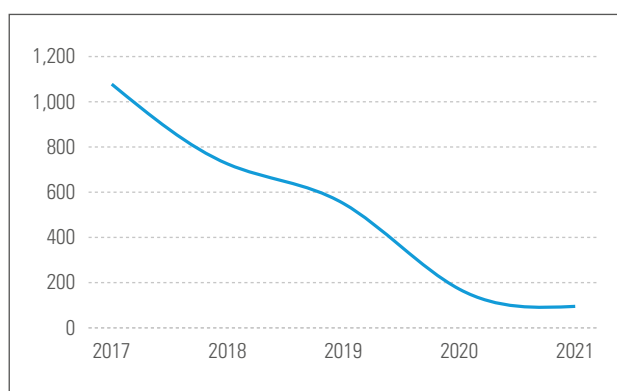
Source: United Nations Security Council, 2020 and 2022

high of 1,078 in 2017 to 95 in 2021. Figure 4 reports a similar picture in the data for rape or sexual violence against children. Although there was a slight increase in cases in 2021 to 53, this number is clearly lower than the 230 cases recorded in 2017.

Between 2017 and 2021, a total of 70 attacks on schools and hospitals was reported by the United Nations in Nigeria (United Nations Security Council,

Figure 4: Rape or sexual violence against children, 2017–2021
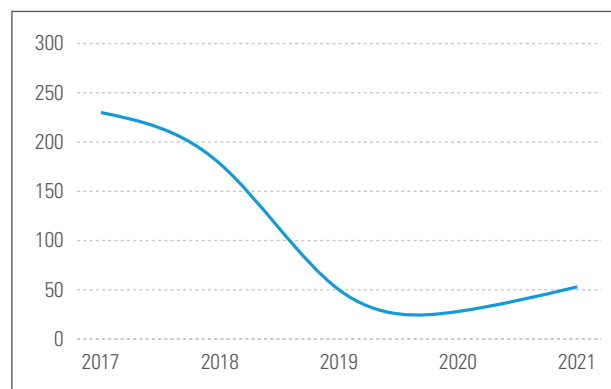
Source: United Nations Security Council, 2020 and 2022

Figure 5: Attacks on schools and hospitals in Nigeria, 2017–2021
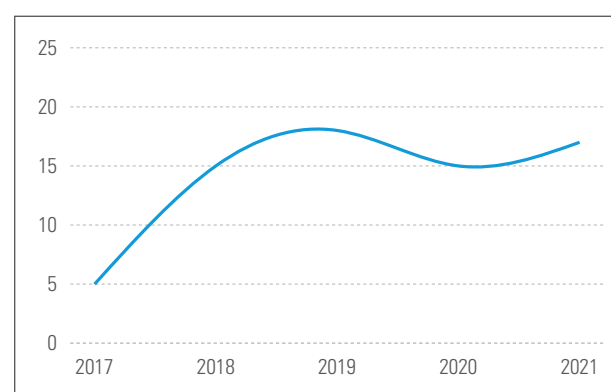
Source: United Nations Security Council, 2020 and 2022

2020 and 2022). Numbers rose from five attacks in 2017 to 15 or more in subsequent years (Figure 5). While the grave violations documented in this report will impact children's futures, attacks on schools and hospitals have a broader and more immediate impact. Not only do they harm the education and well-being of the children who would use them, but they also affect behaviour, as people may stay away from schools or hospitals as a precaution. This will likely have an acute effect and negatively affect children's life chances.

1.2.2 Cross-country comparisons of grave violations

Comparing cases of grave violations in Nigeria against other African conflict-affected comparators can give a relative sense of the scale of harm done to children in Nigeria. The comparator countries chosen are the Democratic Republic of the Congo, Mali, South Sudan, Somalia and the Central African Republic since these are featured in the reports from which the data are sourced (United Nations Security Council, 2020 and 2022). This section focuses only on the verified cases

for each violation between 2017 and 2020 as reported in the United Nations Security Council Secretary-General's Annual Reports for 2017–2019 and 2020–2021 (United Nations Security Council, 2020 and 2022).

The annual total grave violations are given in Figure 6. It illustrates that Nigeria's decline over the period is not universally experienced. Grave violations in the Democratic Republic of the Congo increased over the period and were considerably higher than those in Nigeria. Somalia also saw a consistently higher count than Nigeria.

The annual number of cases of child abductions from 2017 to 2020 is displayed in Figure 7. Nigeria's decline in the number of child abductions over this period brings it in line with Mali, South Sudan and the Central African Republic at the lower end of the comparison. Figures for the Democratic Republic of the Congo were consistently higher than for Nigeria over the same period. For Somalia they were significantly higher, with 5,831 verified cases of child abduction across the four years against 489 in Nigeria.

In 2017, Nigeria had nearly as many cases of killing and maiming of children as Somalia (Figure 8). However, while figures for Somalia indicate fluctuation at this high level over the four-year period, figures for Nigeria show a year-on-year decline. By 2020, Nigeria's number of cases (124) was more in line with that in other comparator countries, excluding Somalia.

Figure 6: Comparison of grave violations cases in Nigeria vs. selected countries, 2017–2020

Source: United Nations Security Council, 2020 and 2022

Figure 7: Comparison of child abduction cases in Nigeria vs. selected countries, 2017–2020
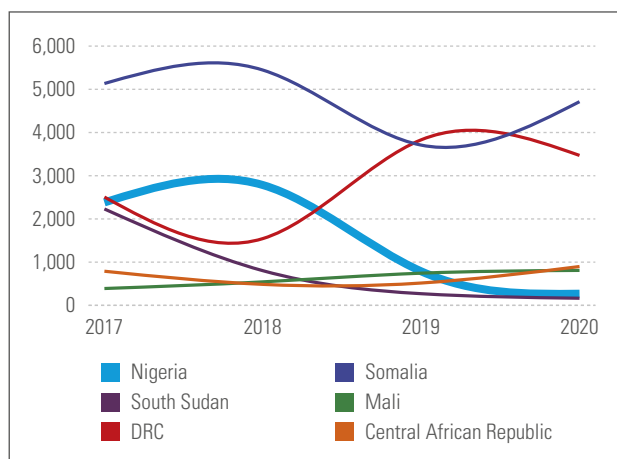
Source: United Nations Security Council, 2020 and 2022

Figure 8: Comparison of child killing or maiming cases in Nigeria vs. selected countries, 2017–2020
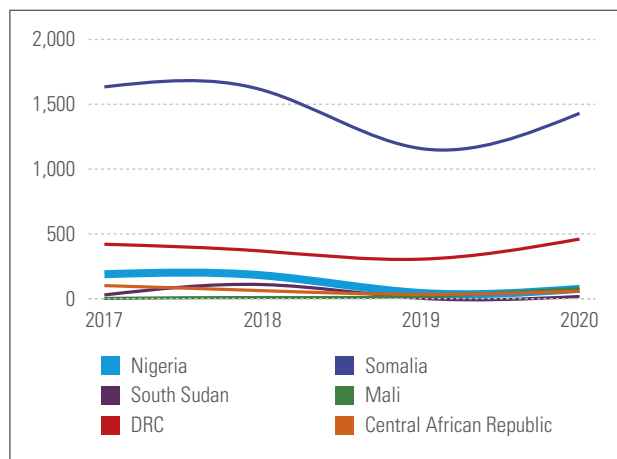
Source: United Nations Security Council, 2020 and 2022

Figure 9: Comparison of rape or sexual-violence-against-children cases in Nigeria vs. selected countries, 2017–2020
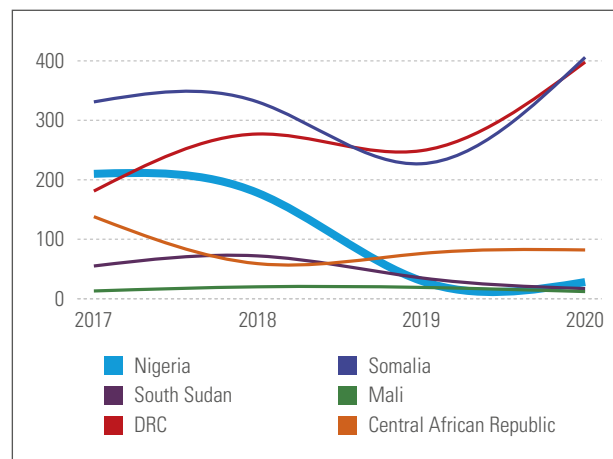
Source: United Nations Security Council, 2020 and 2022
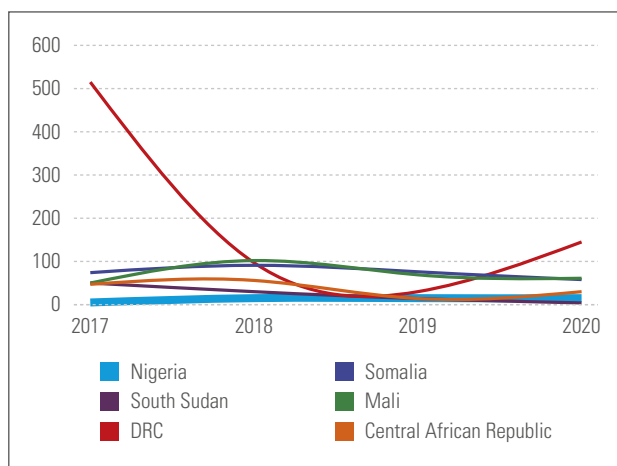
Source: United Nations Security Council, 2020 and 2022

Note: In 2017, there were 515 verified attacks on schools and hospitals in the Democratic Republic of the Congo, but, in order to make the graph easily readable, this data has not been included in the graph.

The cross-country comparison of rape or sexual violence against children is reported in Figure 9. The trends here are similar to those seen for total grave violations in Figure 6. Figure 10 compares countries on attacks on schools and hospitals. Nigeria had considerably fewer verified incidents than many of the comparator countries (United Nations Security Council, 2020 and 2022).

1.3   Voices of children in North East Nigeria

Whether children in Nigeria are the direct targets or collateral victims, they are caught up in the conflict and consequently face violence and insecurity. The grave violations of their rights perpetrated by parties to the conflict have an adverse impact on their capacity to learn, work, build meaningful relationships and contribute to the development of their communities and country.

Borno State had the lowest literacy rates in the country, with only 35 per cent of female adolescents

and 46 per cent of male adolescents in this state considered literate (Center for International Earth Science Information Network, 2014). Education deprivation in North East Nigeria is driven by various factors, including economic barriers and sociocultural norms and practices that discourage attendance in formal education, with implications especially for girls. Education is a critical component in enabling children returning to their communities from the custody of armed groups to successfully transition into normal civilian life. It also helps prepare them for future opportunities.

"I feel a huge relief and excitement to be back in school after a long time in the captivity of armed groups and also in military administrative custody. It was an experience I do not even wish for my worst enemy. But now I am ready to pursue my dreams again."

– Bulama's[3] village in North East Nigeria was occupied by armed groups in 2014 and no one was allowed to leave. After the military liberated the community, Bulama and other children were kept in custody for three years. He was 11 years old at the time. With the support of UNICEF and the Borno State government, Bulama was released and provided with reintegration support.

Despite Nigeria having ratified the Optional Protocol to the Convention on the Rights of the Child on the Involvement of Children in Armed Conflict in 2012 (UNODC, 2017), according to the United Nations Office on Drugs and Crime (UNODC), it is estimated that armed groups have recruited about 8,000 children since 2009 (UNODC, 2017). Due to the difficulties associated with collecting reliable data, it is likely that these figures are underestimated.

"My brothers, mum and I were abducted by a friend of my late father. He was a member of an armed group and we lived with them for six years. My mother died in captivity. But I am happy that my

> " *Education is a critical component in enabling children returning to their communities from the custody of armed groups to successfully transition into normal civilian life.*

[3] Not the child's real name. Children's names have been changed throughout to protect their identity.

brothers and I were rescued and reunited with our uncle by UNICEF and the Yobe State government in North East Nigeria. Now, I live my life normally. I am even fasting to thank God for the rescue."

– Abdul, 17, and his younger brothers, 13 and 15, were reunited with their uncle and are enrolled in school.

Girls and women who have been abducted by armed groups become victims of rape and forced marriage during captivity, and then have to deal with stigmatization and possible rejection by their families and communities upon their release.

"My parents rejected me. They said I planned it. I was devastated and had to leave my community because of the shame and stigma. I wish it never happened, especially that I could not identify the perpetrator and so he could not be caught and punished. But now that I have my baby, I would like to enrol in school, support my son and make a name for myself."

– Amina is an internally displaced girl in Damaturu, North East Nigeria, who was raped in 2021 when she was 15 years old. UNICEF provided Amina with a dignity kit as well as psychosocial and legal support, and also supported her with vocational skills. She will soon be enrolled in school.

Since the conflict started in North East Nigeria some 13 years ago, JAS, commonly known as Boko Haram, which means 'Western education is forbidden' in the local Hausa language, has destroyed schools and abducted children and teachers. Most of these schools have not reopened because of extensive damage or ongoing insecurity. Nigerian authorities have made a commitment to make schools safer and more resilient to attack. To this end, UNICEF has lent its support to the implementation of the Safe Schools Declaration in Nigeria. This global intergovernmental initiative aims to strengthen the protection of children and education in conflict areas.

"After the attack, I went home. I was too afraid and decided not to go back. I told my parents I would never go back to school. Before the attack, I was so passionate to study and achieve my dream [of being a lawyer]. But now, this experience completely demoralized me. I told my father that I will never go back because of Boko Haram threats and what I saw that night. I cannot go back to face the same thing again."

– Hauwa M. was a 16-year-old student in 2014 when JAS attacked the Federal Government College of Buni Yadi in Yobe State.

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2 Economic analysis

2.1   Introduction

The previous section documented the grave violations suffered by children, and more generally the intensity of violence associated with the conflict. These are deeply distressing in and of themselves. Moreover, these impacts have wider economic consequences. In conjunction with disruptions to economic activity and physical infrastructure, they create a brake on economic growth. The wider costs of conflict are the lost development opportunities that might have been realized, had there been peace.

The analysis is therefore, a counterfactual one. It compares the reality, which is characterized by conflict, with a hypothetical reality, which is conflict free. The economic challenge is to measure the counterfactual. By measuring the counterfactual, the difference between a peace scenario and a conflict scenario can be captured to estimate the cost of the conflict. This approach has been followed in various studies of conflict (Abadie and Gardeazabal, 2003; Frontier Economics and World Vision, 2021). For this study of Nigeria, the challenge was to find a methodology that could reflect the specifics of the conflict in the country, notably grave violations against children, and capture more general measures of conflict intensity that have the potential to significantly affect economic growth.

2.2 Econometric approach

A cross-country panel econometric model was used to measure the effect of conflict intensity on levels of GDP.[4] This approach draws on the wide set of conflicts that have been observed since 1990 and estimates how much lower, on average, is GDP in a country at a time it experiences, or is in the aftermath of, a conflict. Intensity is measured in terms of the number of deaths and people displaced,[5] and thus allows 'scaled' measures of impact to be applied.

This approach is important in the context of Nigeria, where the most direct impacts of the conflict occur only in a part of the country. Given its size and the other economic factors at play, other empirical approaches may struggle to find discernible impacts. By contrast, an econometric methodology uses all the evidence available and generates plausible impacts for a conflict in a large country. In particular, it makes it possible to take into account the economic impacts of indicators (deaths, displacement) that reflect core violations of the rights of people. This in turn sets up the model to take into account the long-term impact of grave violations against children.

A particular challenge is modelling persistence, i.e., the longer-term effects of conflict. Countries take time to recover from conflict, and to capture this, some measure of the ongoing effect is needed. While it is possible to use numerical past levels of violence, these do not generate very reliable results because the year-on-year economic trajectories that follow previous instances of violence show considerable variation. The strongest signal available to capture the ongoing effects of conflict is provided by statistics on the number of people displaced by the conflict. This is intuitive, as, firstly, it measures the impacts as felt by people who face difficult decisions as to whether it is safe to return home or to continue in limbo. Where a conflict is fully resolved, there would not be any people still displaced by it. Secondly, the longer-term effects of conflict will reflect specific impacts on children. By depriving children of education, and access to health and nutrition, conflict will reduce the long-term productive potential of the country, and thus lead to a narrowing of future development options.

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4 The possibility of an intra-country analysis drawing on data at the state level within Nigeria was also explored. However, a decision (based on data quality and an interest in capturing the effects of the conflict on Nigeria as a whole) was made to use a cross-country approach.

5 A range of different intensity measures were tested, including alternative definitions of conflict-related deaths and displaced populations. Typically, such measures of intensity are highly correlated. Within an econometric model, it is only possible to include a limited number of variables. In line with standard practice, the variables selected were those with the most consistent effects. (See Section A.2 of Annex A for more information.)

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Figure 11: Selected conflict variables for Nigeria
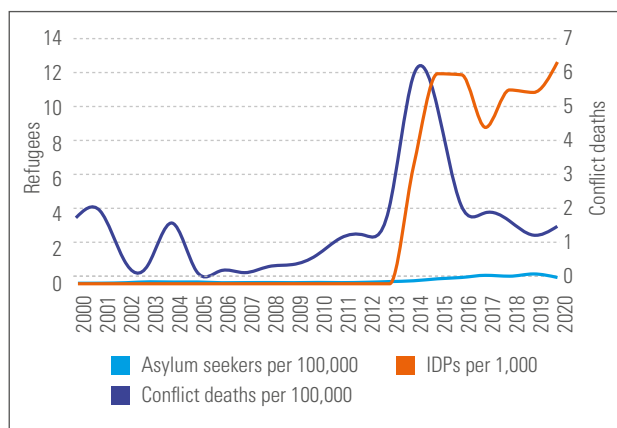
Source: UNHCR, 2022; Uppsala Universitet, 2022.

Note: Conflict variables are not necessarily all attributable to North East Nigeria.

Figure 12: Modelled GDP impact trajectories
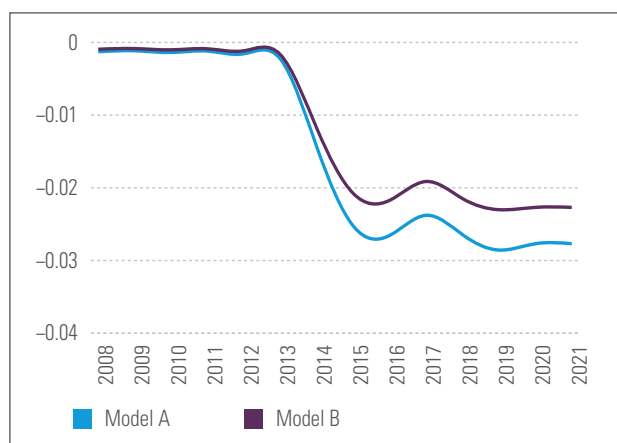
Source: Frontier Economics analysis of IMF, 2021; UNHCR, 2022; Uppsala Universitet, 2022; World Bank, n.d.

2.3 Economic impacts

In order to estimate the economic impacts of conflict, the following three conflict-intensity measures were selected: number of internally displaced persons, number of asylum seekers and conflict deaths. All three of these measures are likely to affect economic activity by reducing worker productivity and the number of people available to work. As observed in Section 2.2 and Annex 2, measures of displacement provide the strongest signal. In line with this, two alternative variants of the model were opted for: Model A, which reports economic impacts using internally-displaced persons and asylum seekers as the conflict indicator, and Model B that adds the number of conflict-related deaths to these two measures. Grave violations against children do not feature directly in Models A or B at

Table 1: Impacts in billions of US dollars per year

| Year	Annual		Cumulative	
	Model A	Model B	Model A	Model B
2008	-0.4	-0.3	-0.4	-0.3
2009	-0.4	-0.3	-0.8	-0.6
2010	-0.5	-0.4	-1.4	-1.0
2011	-0.5	-0.4	-1.9	-1.4
2012	-0.7	-0.5	-2.6	-1.9
2013	-1.1	-0.8	-3.6	-2.7
2014	-7.1	-5.8	-10.7	-8.5
2015	-13.5	-11.0	-24.2	-19.5
2016	-14.5	-11.8	-38.8	-31.4
2017	-12.8	-10.2	-51.5	-41.6
2018	-14.4	-11.6	-65.9	-53.2
2019	-15.8	-12.7	-81.7	-65.9
2020	-15.7	-12.8	-97.4	-78.7
2021	-15.4	-12.6	-112.8	-91.2

Note: Figures do not sum due to rounding.

this stage although in the particular context of Nigeria they would likely be correlated with the measures of conflict intensity. Grave violations are considered more explicitly in the analysis in Sections 2.4 and 2.5 where their long-term effects and the prospects of recovery from conflict are discussed.

Before computing the economic impacts, it is worth recapping on the conflict timeline through the lens of these variables. Figure 11 shows a gradual ramping up of conflict-related deaths from 2008, peaking in 2014–2015, at which point there is a step up in numbers of internally displaced persons (IDPs). There was also a growing number of asylum seekers in the same period. The IDP numbers suggest that even though the conflict has reduced in direct intensity from the peak years (in terms of deaths per year), it is still having a persistent effect with ongoing displacement and disruption. On the basis of the model results, this means the impacts will be ongoing.

The overall impact estimates are computed by multiplying these variables with the coefficients from the econometric model. The impact trajectory is reflected in Figure 12. It shows a sharp step down in GDP levels as a result of the heavy violence of

2014–2015, from which there has been no recovery. By definition of the econometric specification, this pattern follows the recorded refugee data.

The impacts can be expressed in dollar terms by multiplying against US$ GDP. The historical impacts are reported in Table 1, which shows annual impacts reaching in the region of US$12–16 billion per annum and cumulative impacts reaching around US$100 billion by 2021.

2.4 Grave violations and impacts on human capital

The above approach raises the question of what sort of recovery would take place once a conflict ceases. It is realistic to think that human capital damage resulting from a severe and prolonged conflict could cause ongoing and longer-lasting impacts. This could occur through impeded education and health, particularly in the case of children. These impacts are the result of grave violations, and the economic cost that accompanies them is a reflection of the depleting effects of such violations on human capital.

The effects on human capital explored in the economic growth literature indicates clear long-term effects of education and health on economic growth. The general approach in the literature is to estimate that if education provision is X per cent lower, then average GDP will be Y per cent lower. Such long-term effects are estimated over many years.

The effects of the conflict on human capital in North East Nigeria can be computed by multiplying the impact coefficients derived from the literature by estimates of the damage to human capital, with the impact expressed in terms of level of GDP. The approach taken by the research team was to assume that the economy will converge to this lower path rather than to GDP levels associated with a state of non-conflict.

2.4.1 Education

The targeting of education facilities during the conflict in Nigeria is well documented. Attacks have included the burning and destruction of infrastructure; attacks education personnel, including the killing and maiming of teachers and students; abduction of children; and detonation of improvised explosive devices on school premises (United Nations Security Council, 2020).

Figure 13: School enrolment in Nigeria, 2012–2018
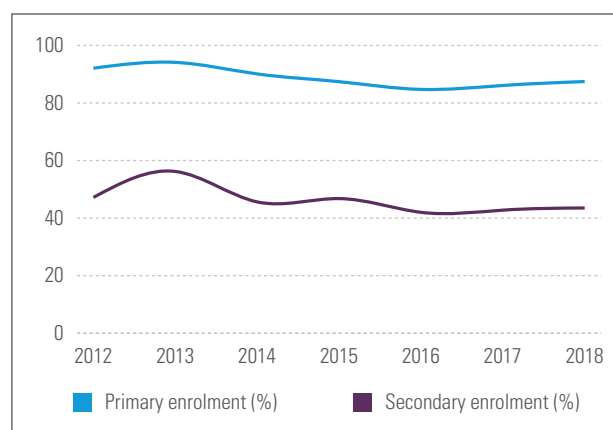
Source: World Bank, n.d.

Finding suitable measures to capture the effect of the conflict on either education or health was challenging. Dealing first with education, there were issues with availability of local-level enrolment statistics that could show the impact of the conflict at the regional level. Instead, national-level data were used, in part because this information is more readily available but also because it better allows the effect of the conflict on human capital at the national level to be demonstrated. From this, it was possible to estimate the effect of reduced human capital via lower-school enrolment on GDP growth.

In line with the approach in the literature, the study focused on educational enrolment. In the case of Nigeria, the central assumption in assessing the impact of the conflict on human capital through the education channel is that the reduction in enrolment at primary and secondary level from 2013 onwards is attributable to the conflict. Figure 13 displays this trend in lower-school enrolment in Nigeria, illustrating that from 2013 to 2018 (i.e., the most recent World Bank World Development Indicators data), enrolment in primary education fell by 6.66 per cent and in secondary education by 12.69 per cent (World Bank, n.d.).

The impact coefficients used in this study were drawn from estimates in the literature, particularly Barro's estimate that a 1 percentage point increase in primary (secondary) school enrolment in 1960 is associated with a 0.025 (0.030) percentage point increase in per capita growth in 1985 (Barro, 1991).

The results give the estimated impact of reduced primary enrolment on per capita growth as -0.167 percentage points. For secondary education, the estimated impact is -0.381 percentage points. This

yields a combined impact of reduced human capital via lower educational enrolment at -0.547 percentage points on per capita GDP growth. The effect of this is that if the conflict were to end today, the Nigerian economy would converge to an activity level that is 0.547 percentage points below what it might have been, had the conflict never occurred. This long-term level effect will persist year on year. It reflects the depletion of human capital as a result of the conflict and represents the economic cost to Nigeria of the scars of war carried by her children into the future.

It should be noted that this is likely to be a conservative estimate of the impact because the measure of educational enrolment may not fully capture changes in school attendance as a result of the conflict. For example, children may well be enrolled at a school, but they will miss out on education if the school is closed, or they stay away from school for a period of time due to conflict (for example, the closure for one month of a school in Dapchi in February 2018 following the abduction of school children (United Nations Security Council, 2020)). This will lower human capital in the long run and further constrain economic growth.

2.4.2 Health

Poor health has a severe detrimental effect on human capital and could have sizeable effects on productivity.

In turn, this will translate into lower overall economic growth per capita as well as the obvious negative effects on individual well-being and happiness.

There have been numerous adverse health outcomes in Nigeria as a result of conflict. JAS activity has been associated with increased child mortality, undernutrition of children, worsening of maternal health-care access, psychological trauma and suppressed rates of vaccination (UNDP, 2020).

The conflict has contributed towards famine, which has been characterized by extreme levels of food insecurity, malnutrition and exposure to disease (UNDP, 2020). Previous studies have put the conflict-attributable effect on child malnourishment in the BAY states at 21.5 per cent in 2020 (UNDP, 2020) (meaning that in a no-conflict scenario, child malnourishment in the region would be 21.5 per cent lower by 2020). These effects can also be seen in the recent national-level data presented in Figure 14 (page 20). Since 2015, the prevalence of both severe and moderate or severe food insecurity has increased sharply in Nigeria as a whole, such that by 2019, 21.4 per cent of the population experienced severe food insecurity.

The adverse health effects arising from the conflict are difficult to translate into estimates of overall lags in economic growth. This is due in

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Figure 14: Prevalence of food insecurity in Nigeria (percentage of population), 2015–2019
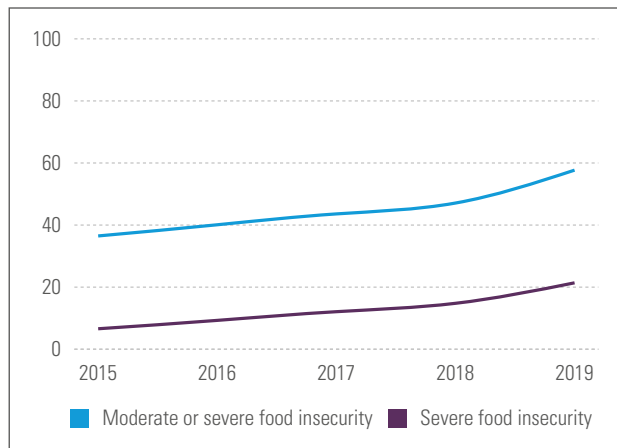
Source: World Bank, n.d.

part to difficulties in isolating the effects of health and education on human capital (they tend to be highly correlated). In addition, there is a risk of double counting should a similar methodology be implemented to the one used for education and the percentage point impacts added together for an overall human capital effect of conflict.

2.5 Future impacts

In the model used in this study, the ongoing cost of the conflict is captured mainly through the number of displaced refugees, with some further persistent effects from conflict deaths incurred. If a conflict and its disruption continue, the refugee displacement will continue and similar economic impacts will gradually accrue over time.

By way of illustration, a situation in which the conflict gradually winds down is modelled through a linear decline of the displaced refugee population by 10 per cent per year, with resolution occurring over a 10-year period. The cumulative impacts are plotted in Figure 15 (page 21). As can be seen, the annual losses are heaviest during the plateau period, hitting US$100 billion around 2021. They then gently taper off, and by 2030 there are no further losses, although the cumulative losses will be in the region of US$150–200 billion. Also shown are variants A' and B' in which human capital effects, resulting from lost education and health, are incorporated. These variants show slightly heavier cumulative impacts, which will continue once the conflict has

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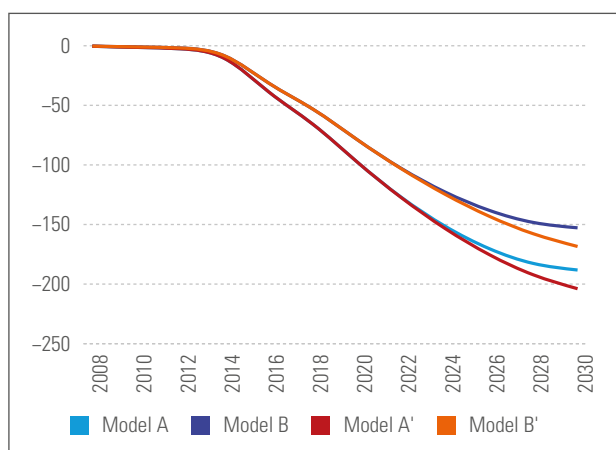
Source: Frontier Economics analysis of IMF, 2021; UNHCR, 2022; Uppsala Universitet, 2022; World Bank, n.d.

been resolved. In these scenarios the economy returns to a slightly lower level, – 0.55 per cent lower than in Models A and B. Cumulative losses from the effects on human capital would be worth approximately US$15 billion by 2030.

2.6   Conclusions

Estimating the economic cost of the conflict in Nigeria is challenging because the range of country-specific factors that affect Nigeria's growth path, including commodity price fluctuations, external shocks such as the COVID-19 pandemic, and policy factors, need to be taken into account. In addition, the specific characteristics of the conflict, notably its regional focus and effects on children and youth through grave violations, need to be considered.

These challenges were addressed by using a model that specifically accounts for the effects of violence-related variables on economic growth once country-specific characteristics are accounted for. This model also captured the insight that, even when conflicts are regional in focus, spillover effects lead to nationwide impacts. Lastly, the issue of long-term impacts of grave violations was addressed by estimating the impacts of depleted human capital.

The results show that the cost of the conflict to date to Nigeria as a whole is around US$100 billion. This is significant, given the nature of the conflict (as compared, say, to large-scale civil wars such as in Syria, for example). Even if, relatively optimistically, it is assumed that conflict would cease today, lags in recovery mean that costs would continue to accumulate. Similarly, on the assumption that no-conflict growth would be reached within 10 years, Nigeria would still face additional costs to the tune of US$150–200 billion.

The results underscore the importance of treating the conflict as a nationwide impediment to development and not simply as one that affects a particular region or people or groups. More specifically, swift interventions to stop violence and grave violations would have significant development pay-offs that are likely to be several orders of magnitude greater than the cost of such interventions. The results are conservative because the costs are measured against a relatively modest counterfactual baseline: conflict is absent from the counterfactual, but no assumptions have been made that other factors (external shocks, governance) that constrain growth have been dealt with. To the extent that a more ambitious counterfactual could assume that these are addressed, the cost of the present conflict would be further amplified by virtue of the gap between the present reality and the counterfactual being larger.

The results also underscore the indivisibility of human rights, and particularly the rights of children. The loss of personal liberties and security are intertwined with a loss of education and access to health. The combination of these violations generates long-term detrimental impacts on those who are the object of such violations, and on society as a whole.

The results show that the cost of the conflict to date to Nigeria as a whole is around US$100 billion. This is significant, given the nature of the conflict.

3 Recommendations

Drawing on the findings of the report, and broader work in this area, UNICEF supports the following recommendations.

1. **Grave violations against children's rights:** Ensure perpetrators of grave violations of children's rights are held accountable and strengthen advocacy efforts and awareness among non-state armed groups to cease grave violations of children's rights.

2. **Disarmament, demobilization and reintegration (DDR) programme:** Government of Nigeria, in collaboration with development partners, to support the current DDR programme and to ensure that children's best interests are upheld and those children exiting armed groups are provided with sufficient, appropriate care and protection.

3. **Prevention of recruitment:** Invest in prevention efforts to thwart the recruitment drive by non-state armed groups. Strengthening prevention efforts is critical and this requires increased government presence in remote areas, which should translate into more security, provision of alternative livelihoods, respect for human rights and protection, and access to basic and quality services such as health care, education and potable water.

4. **Financing safe schools:** Nigerian authorities have made a commitment to make schools safer and more resilient to attack, with international donors supporting the government in implementing the Safe Schools Declaration and creating safe learning communities.

5. **Financial commitment to the protection of children against violence, abuse, exploitation and neglect:** Collaborate with donors to step up funding for sustained and long-term protection and reintegration services for children affected by armed conflict, and ensure increased equitable access to quality gender-responsive child protection services for vulnerable girls and boys.

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Annex A: Technical annex

A.1 Choice of approach

The overall approach was to compare observed GDP patterns with a counterfactual estimate of what GDP would have been in the absence of conflict, with the difference between the two interpreted as the impact of the conflict. This can be done a number of ways:

- A forecasting approach uses the growth trajectories from other countries and assumes these would be observed for the country of study, thus generating the counterfactual. One way to do this is by using a 'Synthetic Control Method' approach, which assigns weights to countries with similar characteristics to build a comparator index. Another approach is a cross-country growth model, in which year-on-year growth rates are predicted as a function of country characteristics. In the case of Nigeria, it would be assumed that the country would have grown at these forecast rates had it not experienced conflict.

- An impact coefficient approach estimates the average effect of a conflict on the level of GDP. It says that a conflict of a certain level of intensity results in GDP being X per cent lower than would otherwise be the case. It therefore provides a direct measure of the impact, with the counterfactual given by subtracting these impacts from the observed GDP trajectory. For example, one could use direct conflict-related deaths per head of population as a measure of intensity, find the average effect of this variable on GDP using cross-country data, and use this to compute the GDP impact for Nigeria.

- A broad range of other approaches appears in the literature. For example, the Synthetic Control Method has been widely used to look at the impact of events such as the German reunification, the Basque conflict and an array of other conflicts. Frontier Economics has previously used a growth-forecasting model to estimate a non-conflict growth trajectory for Syria.

A key scoping question was whether the analysis would be best done at state level (i.e., subnational

Figure 16: GDP trajectories for Nigeria and potential comparators
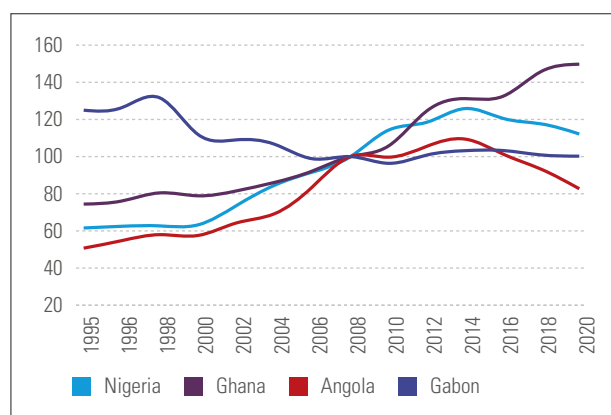
Source: IMF, 2021

Note: GDP per capita at constant prices.

region) or at cross-country level. State-level approaches have the advantage of controlling for national-level effects. That is, if both conflict and non-conflict states undergo common trends, these can be subsumed into the counterfactual. However, state-level data for Nigeria are sparse and even estimates of state-level GDP are challenging to derive. For example, the United Nations Development Programme (UNDP) analysis relied upon night-time light emissions as a proxy for state-level GDP (UNDP, 2020), but these are unlikely to provide a sufficiently strong signal for use in an econometric model.

Implicit in the forecasting approach is the assumption that any difference between observed economic data and the counterfactual should be attributed to the conflict. In order to work well, the counterfactual needs to capture non-conflict economic drivers that are common to Nigeria and similar countries. During initial exploratory work (Figure 16), it became apparent that potentially relevant comparator countries had quite different growth trajectories and would not provide a sufficiently reliable counterfactual.

A further issue to consider is that forecast-based approaches are more appropriate where the impact of the conflict is large relative to the effects of other shocks. If this is not the case, there is a risk of wrongly attributing the effects of such shocks to

the conflict. In the context of Nigeria, the conflict in the North East, while catastrophic in affected and neighbouring areas, has a direct impact on only a small proportion of the country. Given the many factors that may be occurring simultaneously, it would be difficult to use a national forecast-based approach to derive a reliable counterfactual. Even if the conflict affected GDP by 10 per cent, attributing it to the conflict is difficult since changes of that magnitude have occurred in other years.

Given the challenges of using a forecast-based approach, this study employs an impact coefficient approach. This approach makes maximum use of the available data, drawing on experience from other countries to infer the average effect of conflict intensity on GDP. The intuition here is that more intense conflicts, relative to the size of the affected economy, will have a greater impact. This allows for the use of observed effects of larger conflicts – with these effects being more reliably discerned – and for assuming that smaller conflicts have proportionally smaller impacts, whereas estimating them directly (as per the forecasting approach) is unlikely to be successful.

A.2   Methodology

For the analysis, a cross-country panel data-set running from 1990 to 2020 was used. The effects on GDP per capita[6] were estimated for country *g* in year *t*, written as:

$$Y\_gt = b0 + b1Country\_g + b2Time\_t + b3WDI\_gt + b4Conflict\_gt + u\_gt$$

The variables are explained as follows:
- *Country* is a vector of country-level fixed effects, to account for long-term differences between countries' income levels;
- *Time* is a vector of annual fixed effects, to account for average patterns in year-on-year growth;
- *WDI (World Development Indicators)* is a vector of time-varying indicators drawn from the World Bank's World Development Indicators, to show the onward impact of

factors such as industrialization on economic output; and
- *Conflict* is a vector of conflict variables taken from the UNHCR and Uppsala conflict databases.

The overall structure of the model is that there are persistent differences in the income levels of countries and that these countries respond commonly to economic shocks that occur over time. Beyond this, there are long-term effects through the development indicators, and conflict can cause the economy to be smaller, both during and after the conflict period.

The choice of variables included in the model reflects standard econometric model selection criteria, including the conceptual basis for including variables, tests of statistical significance and explanatory power.[7]

A.2.1 Variable selection methodology

Some considerations around how conflict is best measured are considered here.

The Uppsala Conflict Database can be used to derive measures of the number of conflict-attributed deaths arising in a country each year, with attribution to the specific conflict (there may be several affecting a country). This allows various measures to be derived. For this study, it was considered appropriate to scale the number of conflict deaths by head of population, as a conflict causing 1,000 deaths would likely have a larger impact on GDP in percentage terms if concentrated in a small country of 1 million people than if occurring in a country of 100 million. Therefore, a scaled measure of conflict deaths per head was used, which was supported by it having stronger explanatory power than an unscaled measure.

As observed elsewhere in the literature, conflicts have a long-standing impact that gradually diminishes over time. This is because physical capital is destroyed, human capital is harmed, services and supply chains are disrupted, and activity does not return to pre-conflict levels the moment that hostilities cease. The impact felt by a country will depend not only on the conflict intensity in that particular year but also on the experience of previous years. This persistence is difficult to model. Some of the modelling options considered for this study are outlined below.

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6   This is done in logarithm terms and the effects of variables are expressed in percentages. GDP is expressed in constant per capita terms.

7   The model draws on measures such as the Akaike Information Criterion and Schwarz Information Criterion, which seek to maximize fit of the model traded off against the number of parameters used. These criteria prioritize a model with strong predictive power and few parameters, i.e., accurate but parsimonious.

- **Modelling persistence through the dependent variable**, which means that if GDP is 1 per cent lower in year t, it will be 0.9 per cent lower in year $t+1$ and 0.81 per cent lower in year $t+2$, etc. In practice, this does not give plausible impact trajectories, with a slow onset of impact and very persistent effects. The underlying cause of this is that the persistence variable will reflect the whole range of long-term economic trends, and these do not necessarily capture the dynamics of the impact of a specific conflict, which may not have these particular properties.
- **Directly estimating a 'decay curve'** with separate terms for deaths that occurred 1, 2, … t years previously. This introduces many additional parameters into the model and delivers unreliable results.
- **Using a moving average measure** with successive years carrying less weight, so that deaths 1 year ago carry a weight of 1 and deaths 10 years ago carry a weight of 0.1. This is a more parsimonious version of the decay curve and is supported by the model selection criteria. The research team found that a 10-year linear declining measure works the best.

However, a stronger measure of the ongoing and persistent effects of conflict is provided by the number of refugees displaced by a conflict. This has the advantage of being a 'stock' variable that persists through time, rather than a 'flow' variable, such as deaths, which relates only to a particular year. This has a clear intuitive interpretation, as a large number of displaced people is indicative of ongoing strife and difficult conditions in which people are unable to resume normal life in their previous homes. One can compare a situation where a short sharp conflict was rapidly resolved and people returned home with one where tensions remained and people remained displaced. Both situations may have arisen from a similar number of conflict-driven deaths, but the latter case would have much more persistent effects.

Under this approach both the number of IDPs and the number of asylum seekers are relevant because they have larger effects than the moving average conflict deaths variable. This is because refugee numbers give a direct and accurate measure of conflict overhang, whereas the effect of previous deaths is much more varied (a preceding conflict of a given magnitude might resolve quickly or slowly).

Results were run for two variants of the model: Model A using IDP and asylum seeker variables, and Model B, which added the extra variable of moving average of conflict deaths. The model also includes country-fixed effects, year-fixed effects, sectoral mix variables, and controls for population density, gross capital and natural resource rents as potential drivers of economic growth. The model is estimated for 134 countries going back to 1990 in the case of Model A, or back to 2000 in the case of Model B (as conflict-intensity data does not go as far back as the other variables).

Results for Model A and Model B are reported in Table 2 (page 26), with separate columns for the coefficient, t-statistic and p-value, which provide measures of statistical significance. In Model A, the IDP and asylum-seeker variables both have negative and statistically significant correlations with GDP. When the conflict-deaths variable is added, the IDP and asylum-seeker variables become smaller and reduced in statistical significance while the conflict-deaths variable also has a negative and statistically significant effect. This is consistent with the three conflict intensity variables being highly correlated with each other. Goodness-of-fit is given by the R-squared, indicating that 47 per cent of variation within a country is explained in Model A and 54 per cent in Model B. However, the measures are not necessarily comparable as Model B is estimated over a shorter time period, where the effect of drivers and amount of volatility may be different. In terms of magnitude, the models give broadly similar results with respect to impact of conflict.

The results suggest that for each 1 per cent of the population displaced as IDPs, GDP per capita is between 1.4–1.6 per cent lower, and for each 1 per cent that are asylum seekers (symptomatic of more extreme expulsionary circumstances), GDP is 13–18 per cent lower. The majority of impact comes through the IDP variable. Although the variables show different degrees of empirical robustness, it is not appropriate to attribute precisely 'which' of these drives the effect, as they are all correlated with each other, making their respective effects difficult to discern.

A.2.2 Computing impacts

Economic impacts were computed in percentage terms by combining the regression coefficients with the conflict variables. So, for example, consider the economic impact under Model B for the year 2016.

	Model A			Model B		
	Coefficient	T-stat	P-value	Coefficient	T-stat	P-value
IDPs per head	-1.67	-2.07	0.04	-1.41	-1.51	0.13
Asylum seekers per head	-18.40	-1.72	0.09	-13.55	-1.21	0.23
Conflict deaths moving average				-0.000068	-2.67	0.01
Agriculture share of output	-0.86	-2.55	0.01	-0.95	-2.78	0.01
Manufacturing share of output	0.17	0.26	0.80	-0.25	-0.66	0.51
Log population density	-0.28	-1.23	0.22	-0.45	-3.55	0.00
Gross capital formation	0.0021	0.77	0.44	0.0033	2.17	0.03
Natural resources rents	0.0003	0.13	0.90	0.0006	0.26	0.80
Constant	10.04	10.42	0.00	10.79	21.18	0.00
Country fixed effects	Included			Included		
Year fixed effects	Included			Included		
R-squared (within)	0.47			0.54		
Number of observations	4,036			2,899		
Number of countries	134			134		

(0.00036 asylum seekers * -13.5 = -0.005) + (0.012 IDPs * -1.4 = -0.016) + (14 death index * -6.8e-05 = -0.001) = -0.005 -0.016 – 0.001 = -2.1 per cent

This indicates that GDP per capita was 2.1 per cent below what it would have been if there had been no conflict.

A.2.3 Grave violations and human capital

Grave violations against children can impact human capital formation in years to come. In this report we estimate how the impact on health and school enrolment affect long-term economic growth. There are numerous previous studies that estimate the impact of education on long-term economic growth. Two of the studies that particularly influenced the approach adopted in this research project are detailed here. Firstly, Sala-i-Martin, Doppelhofer and Miller's paper (2004) includes life expectancy in number of years and primary school enrolment rate. Their estimated effects of education and health are averaged across a multitude of model specifications, providing a robust estimate. In their paper, an additional year of life expectancy raises the growth rate by 0.088 percentage points.

Secondly, Barro (1991) provides an early analysis of the positive association between both primary and secondary education and economic growth. In the study, Barro examines the determinants of average growth in a cross section of 98 countries between 1960 and 1985. Education is measured by primary and secondary school enrolment rates in 1960. These variables, constructed from United Nations' data, measure the number of students enrolled in the designated grade levels relative to the total population of the corresponding age group, and seek to measure the total human capital of a country's workforce. Other variables that are expected to influence economic growth are controlled for, including starting levels of GDP, public and private investment, and measures of political instability.

Barro's results suggest a positive relationship between both primary and secondary education, and per capita growth rates (all else equal). As previously detailed, this suggests that a 1 percentage point increase in primary (secondary) school enrolment in 1960 is associated with a 0.025 (0.030) percentage point increase in per capita growth in 1985. It is these estimates that were used in this study to estimate the impact of enrolment in Nigerian schools on long-term economic growth.
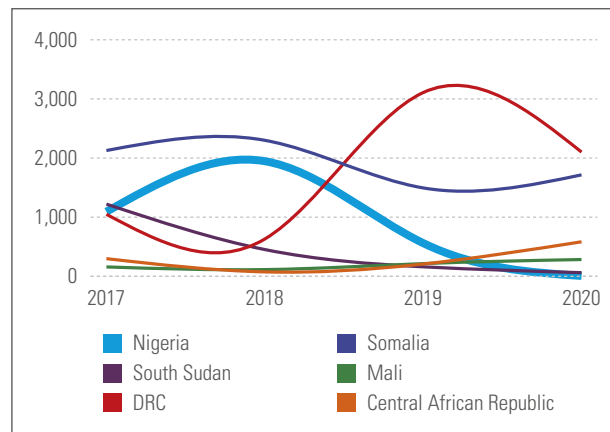
Annex B: Grave violations

Figure 17: Recruitment or use of children in Nigeria, 2017–2021
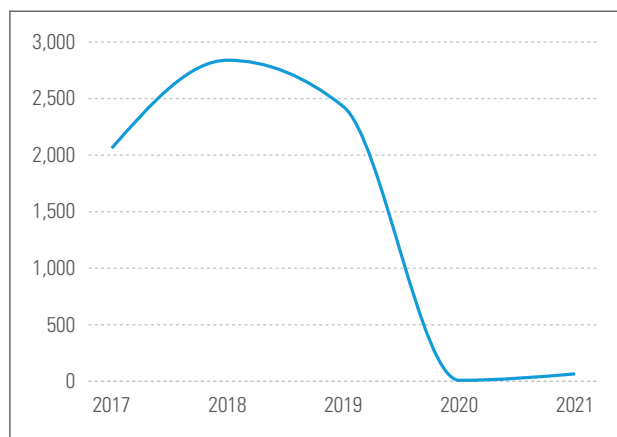
Source: United Nations Security Council, 2020 and 2022

Figure 19: Cases of recruitment or use of children in Nigeria, assessed against cross-country comparators, 2017–2020
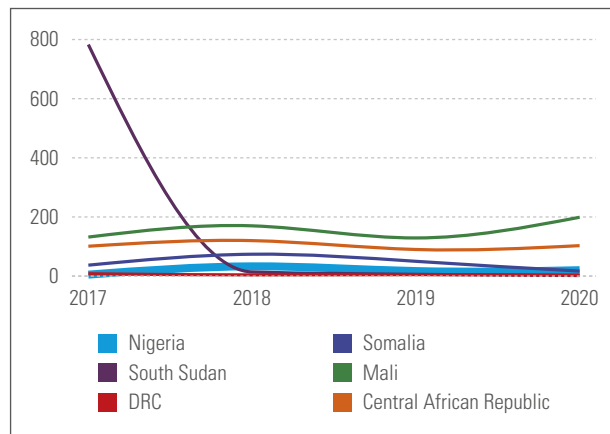

Source: United Nations Security Council, 2020 and 2022

Figure 18: Denial of humanitarian access (number of incidents) in Nigeria, 2017–2021
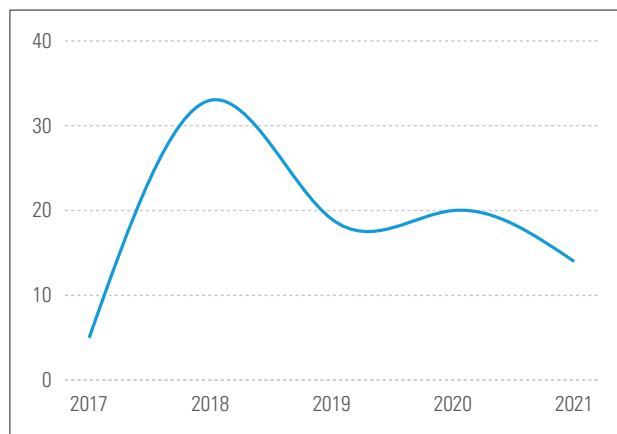
Source: United Nations Security Council, 2020 and 2022

Figure 20: Denial of humanitarian access (incidents) in Nigeria, assessed against cross-country comparators, 2017–2020

Source: United Nations Security Council, 2020 and 2022

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