Experts Report on Reparations

for

The International Court of Justice

* * *

Case Concerning Armed Activities on the Territory of the Congo

The Democratic Republic of the Congo v. Uganda

19 December 2020

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Introduction

1. This report presents expert opinions regarding estimates of reparations owed to the Democratic Republic of the Congo by Uganda for the injury caused as a result of the breach by Uganda of its international obligations between 1998 and 2003, as determined by the International Court of Justice in its 19 December 2005 Judgment.

Terms of Reference

2. Under the Terms of Reference (TOR) for this report, damages fall into three categories as described below
:

2.1 **I. Loss of human life**

(a) Based on the evidence available in the case file and documents publicly available, particularly the United Nations Reports mentioned in the 2005 Judgment, what is the global estimate of the lives lost among the civilian population (broken down by manner of death) due to the armed conflict on the territory of the Democratic Republic of the Congo in the relevant period?

(b) What was, according to the prevailing practice in the Democratic Republic of the Congo in terms of loss of human life during the period in question, the scale of compensation due for the loss of individual human life?

2.2 **II. Loss of natural resources**

(a) Based on the evidence available in the case file and documents publicly available, particularly the United Nations Reports mentioned in the 2005 Judgment, what is the approximate quantity of natural resources, such as gold, diamond, coltan and timber, unlawfully exploited during the occupation by Ugandan armed forces of the district of Ituri in the relevant period?

(b) Based on the answer to the question above, what is the valuation of the damage suffered by the Democratic Republic of the Congo for the unlawful exploitation of natural resources, such as gold, diamond, coltan and timber, during the occupation by Ugandan armed forces of the district of Ituri?

(c) Based on the evidence available in the case file and documents publicly available, particularly the United Nations Reports mentioned in the 2005 Judgment, what is the approximate quantity of natural resources, such as gold, diamond, coltan and timber, plundered and exploited by Ugandan armed forces in the Democratic Republic of the Congo, except for the district of Ituri, and what is the valuation of those resources?

2.3 **III. Property damage**

(a) Based on the evidence available in the case file and documents publicly available, particularly the United Nations Reports mentioned in the 2005 Judgment, what is the approximate number and type of properties damaged or destroyed by Ugandan armed forces in the relevant period in the district of Ituri and in June 2000 in Kisangani?

(b) What is the approximate cost of rebuilding the kind of schools, hospitals and private dwellings destroyed in the district of Ituri and in Kisangani?

Appointment of independent experts

3. Four independent experts were appointed by Order of the Court for the purposes of determining reparations:

4. **Dr Debarati Guha Sapir** (PhD, Epidemiology) is from India where she studied at the University of Calcutta. She completed her post graduate studies at the Schools of Public Health of Johns Hopkins University, Baltimore and the Université de Louvain medical faculty. She became Director of the Centre for Research for Epidemiology of Disasters (CRED) University of Louvain in 1994 and Professor in 1996. She has specialised on public health and epidemiology in humanitarian settings following natural disasters and civil conflict, often focusing on issues related to mortality and disease control. Debarati is widely published in respected scientific journals including The Lancet, Science Nature scientific reports as well as in the international press. She founded two unique global data bases on conflicts (CEDAT) and disasters (EMDAT) which underpins some of the important international reports such those by the IPCC and UN. She won the Peter Safar Award for Disaster Medicine from the World Association of Disaster and Emergency Medicine in 2000 and is member of the Royal Academy of Medicine of Belgium.

5. **Dr Michael Nest** (PhD, Politics) is a consultant focusing on governance and anticorruption issues in the natural resources sector, including extensive research on 'coltan' (tantalite), advising Central African governments on improving governance over mineral supply chains, and improving regulation of legal artisanal and small-scale mining. Past clients include OECD, GIZ, Transparency International, U4 Anti-Corruption Resource Center, Timor-Leste's Anti-Corruption Agency, Ghana's Environmental Protection Agency, and the Independent Commission Against Corruption in Sydney, Australia. His PhD focused on how mining interests shaped politics in the DRC during the war from 1998 to 2003.

6. **Mr Geoffrey Senogles** (FCA, BA Hons) is a Welsh Chartered Accountant who is a partner in Senogles & Co, Chartered Accountants, Switzerland. He regularly acts as a quantum expert witness in international arbitrations and has testified on around 50 occasions in court and before tribunals and overall, has acted in many hundreds of individual cases. Since 1995, he has acted for claimants, respondents and also as a tribunal-appointed expert. After qualifying in the early-1990s while in practice in United Kingdom, he moved to Geneva to work on staff at the United Nations Compensation Commission between 2000 and 2003. Details on the firm are available at: www.senogles.com

7. **Dr Henrik Urdal** (PhD, Political Science) is Director and Research Professor at the Peace Research Institute Oslo (PRIO). He is a former Research Fellow with the International Security Program at Harvard Kennedy School. Urdal's work on the impact of demographic and environmental change on armed conflict, and on the demographic consequences of armed conflict has been published in leading academic journals. He has been a consultant for organizations like the World Bank, United Nations, and USAID. Urdal has worked extensively on global trends in armed conflict as past Director for the PRIO Conflict Trends project.

Structure of this document

8. This document contains four reports, each one presenting an expert opinion regarding reparation estimates on the topics described in the terms of reference. Each report is distinct, with a separate author and author signature on the final page.

9. However, footnotes, paragraph numbers and page numbers run consecutively throughout this entire combined document and are not distinct to each report.

   9.1 Report 1 (Henrik Urdal) estimates loss of life in terms of conflict-related direct deaths, including both intentional killings of civilians and civilians who were unintended victims of violence. Deaths of military personnel are not included as they were not part the TOR.

   9.2 Report 2 (Debarati Guha-Sapir) estimates civilian deaths in excess to normal mortality rates that can be attributed to the conflict. It does not include intentional (direct or indirect) civilian deaths (these are addressed in Report 1).

   9.3 Report 3 (Geoffrey Senogles) estimates the quantum of recommended reparation amounts for human deaths, as well as damage to, and looting of, property.

   9.4 Report 4 (Michael Nest) estimates reparations related to exploitation of natural resources.

Summary of estimated damages

10. **Table A** is a summary of estimated reparations. Details on the numbers of direct deaths, intentional (1a) and direct deaths, collateral (1b) can be found in Report 1; with detailed numbers of excess civilian deaths and associated reparation calculations found in Report 2; the reparation figures shown for other violence, property damage and looting are in Report 3; and the reparation figures shown for exploitation of natural resources are in Report 4.

Table A: Summary of estimated reparations, USD

	Ituri	Outside Ituri	Total
1(a). Direct deaths, intentional	130,230,000.0	206,580,000.0	336,810,000.0
1(b). Direct deaths, collateral	21,420,000.0	30,120,000.0	51,540,000.0
2. Excess civilian deaths	5,860,020,000.0	68,521,605,000.0	74,381,625,000.0
3. Other violence, property damage and looting	24,866,906.0	115,257,956.0	140,124,862.0
4. Exploitation of natural resources	38,986,151.6	16,823,389.6	55,809,541.2
Total	**6,075,523,057.6**	**68,890,386,345.6**	**74,965,909,403.2**

11. The Court's findings as to reparation totals in respect of lines 1(a), 1(b) and 2 (in Table A above) will be calculated by the Court by adopting their own findings as to the appropriate numbers of deaths or other acts of violence and then multiplying each figure by the relevant recommended individual dollar amount, as found by the Court, and taken from Table B below.

12. For the avoidance of any doubt, we highlight that it remains entirely for the Court to make its own legal findings on these matters and hence the Court will derive its own computations of any awards of reparations at its own discretion. The figures we present in this report are for consideration by the Court in the context of its own legal findings.

Table B: Estimated recommended reparations per person, per event or act.

Event or Act	Amount, USD
A) Human lives lost	
Deaths/injuries resulting from acts of violence deliberately targeted at civilian populations	30,000
Deaths/injuries not resulting from violence targeted at civilian populations but rather, as collateral victims	15,000
B) Injuries and mutilations	
Injury resulting from acts of violence deliberately targeted at civilian populations	
Based on Congolese court awards:	
- *Serious injury*	3,500
- *Minor injury*	150
Based on Congolese ordinary courts:	
- *Minor injury*	100
Injury not resulting from violence targeted at civilian populations but as collateral victims	
Based on Congolese court awards:	
- *Ituri: serious injury*	3,500
- *Ituri: minor injury*	150
Based on Congolese ordinary courts:	
- *Eastern Congo, Ituri, Kisangani: minor*	100
C) Incidences of rape	
Based on Congolese court awards:	
("Simple" is the term used by DRC courts)* - *"Simple" rape**	5,000
- *Aggravated rape*	5,000
D) Child soldiers	
Based on a figure deemed reasonable by DRC:	10,000
E) Population flight and displacement	
Based on figures deemed reasonable by DRC:	
- *Ituri*	300
- *Eastern Congo and Kisangani*	100

Report 1
Loss of Life: Conflict Deaths

Dr. Henrik Urdal

(Oslo, 19th December 2020)

Summary of loss: quantity and value

13. In accordance with the court order dated 12 October 2020, this report provides '...an expert opinion [...] regarding [...] the loss of human life (in particular, the global estimate of the lives lost among the civilian population due to armed conflict on the territory of the DRC and the scale of compensation due'. This section of the report deals exclusively with lives lost as a direct result of the armed conflict, and covers armed conflict events that took place in the Democratic Republic of the Congo between 1 August, 1998 and 2 June, 2003.

14. Investigating direct conflict deaths based on the authoritative conflict data collected by the Uppsala Conflict Data Program (UCDP), the report finds that a total of **28,981** individuals lost their lives in armed conflict events in the Democratic Republic of the Congo during this time period. Out of this total number of direct deaths, **14,663** were civilians. Of these civilian victims, **11,227** were killed as a result of deliberately targeted violence and **3,436** were civilian collateral victims. The estimated total value of civilian lives lost amounts to **USD 388,350,000**.

Methodological approach and sources

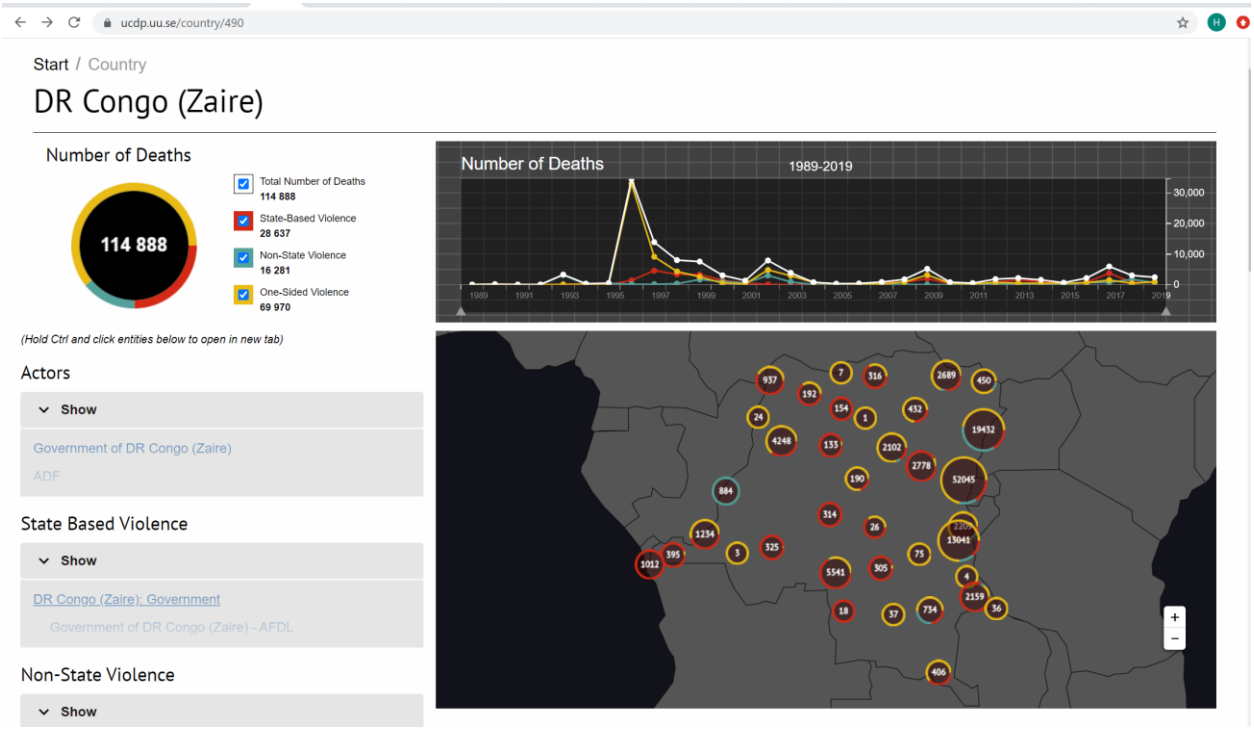
17. Data on armed conflict events form the basis for this report and are collected from the publicly available source the Uppsala Conflict Data Program, UCDP (https://ucdp.uu.se/). UCDP is hosted by the University of Uppsala Department of Peace and Conflict Research (DPCR) and is an independent observatory and collector of armed conflict data globally. It is one of the most trusted sources of armed conflict data in academia as well as the policy domain, as measured both by the number of citations to the data in academic works, and references in key policy reports by international organizations like the UNDP and the World Bank.

18. The UCDP collects data on three types of organized violence, which all apply to armed activity in the DRC and are in the following collectively understood as armed activity: **state-based conflict** (conflict involving the use of armed force between two organised armed groups of which at least one is the government of a state), **non-state conflict** (conflict involving the use of armed force between two organised armed groups, neither of which is the government of a state), and **one-sided violence** (the deliberate use of armed force by the government of a state or by a formally organised group against civilians). For an armed conflict to be registered in the database it needs to have passed the minimum threshold of at least 25 battle-related deaths in a calendar year (this could be either military or civilian deaths, killed as a direct result of armed violence). For definitions of the various types of armed conflict and of battle-related deaths, see Appendix 2.

19. Specifically, this report utilizes the so-called UCDP Georeferenced Events Dataset (UCDP-GED). This dataset encompasses all three conflict types described above and contains individual events within each conflict that are spatially and temporally defined. Note that the three types of armed violence are mutually exclusive, an event can only be coded in one category. Each event – defined as an instance of organized violence with at least one fatality – comes with information on actors, dyad, conflict, geographic location and coordinates, as well as the specific dates on which the violence took place and fatality estimates (Sundberg & Melander, 2013: 524). For a more comprehensive definition of armed conflict events, see Appendix 3.

20. A representation of these data is provided in Figure 1, in which each circle indicates the number of conflict deaths by geographical location. Note that Figure 1 displays data points that have, for presentational purposes, been aggregated to a higher geographical level than the individual event data points actually represent (these events all have a specific location down to the village level), and that the figure displays conflict deaths for the entire temporal domain of the dataset (1989-2019). In contrast, the analysis in this report is based exclusively on data from the period 1 August, 1998 through 2 June, 2003.

Figure 1.1: Armed conflict deaths in the Democratic Republic of the Congo, 1989-2019



Battle deaths estimates

21. The UCDP GED provides three levels of estimates for deaths for each event (for details see the UCDP-GED codebook, Croicu & Sundberg 2016). These estimates represent an uncertainty interval ranging from a 'low estimate', which provides the most conservative, or cautious, estimate of deaths that is identified in the sources used; a 'best estimate' containing what is considered to be the most reliable estimate of deaths identified in the sources; and a 'high estimate', representing the highest *reliable* estimate of deaths identified in the relevant sources. Even the 'high estimate' is considered to be a moderate assessment as the UCDP specifically avoids including unreasonable claims in the high estimate of fatalities. Generally, UCDP fatality numbers are conservative. In this report, UCDP 'best estimates' are used for all calculations of lives lost.

Civilian casualties

22. Furthermore, battle deaths can either relate to members of armed groups taking part in combat between warring parties, or violence against civilians. Civilian deaths can exist in all three

categories of violence (Croicu & Sundberg 2016: 27). In the categories state-based and non-state violence, civilian deaths are considered 'collateral' mortality, meaning that victims are accidentally killed in the fighting between the warring parties. On the contrary, one-sided violence represents the targeted killing of civilians.

Data collection procedures

23. The UCDP data collection procedures involve the use human coders that manually mine written sources (Sundberg & Melander, 2013: 525). The process is done in a "two-pass" system, first by consulting newswire sources for the entire globe, specifically Reuters News, Agence France Presse (English language version), Associated Press, Xinhua (English language version), and BBC Monitoring. On the basis of findings from this 'first-pass' newswire, local and specialized sources are consulted in order to code the full range of events. This second-pass level includes NGO reports, case studies, truth commission reports, historical archives as well as other specialized sources of information.

24. Data quality in the coding of specific events is further ensured through a procedure in which the coder first runs through a checklist of consistency and streamlining tests. Following that procedure, a project manager performs similar tests, as well as controls of the geocoding through a set routine of visualization. Third, algorithms in PHP and Python are run on the data to check consistency across unique conflict IDs, coordinates, fatality counts, and other information. These procedures generally ensure high data reliability.

Data availability and limitations

25. While the UCDP armed conflict data meet the highest academic standards, there are important limitations. First and foremost, relying on written secondary sources, and primarily newswires, there is a considerable potential for media and urban biases. As noted in the UCDP codebook (Croicu & Sundberg 2016: 12) 'media reporting is not consistent across time or space […]. Changing managerial focuses, different organizational structures (such as field office locations), as well as different resource distributions and allocations (such as, for example, the restructuring of BBC Monitoring in the early 2010s) make media reporting quality and quantity vastly different over various periods and over different areas.'

26. The news organizations also follow different reporting practises, which have changed over time. Specifically, in some geographical contexts during particular time periods, reporting may have taken the form of summary reports covering larger areas over a longer time period, which may hamper the ability of coders to accurately identify specific events. These limitations may be particularly challenging when studying variation in patterns across many countries over a long period of time, but are considered less of a problem when studying one country during a limited time period, such as the DRC over the 1998-2003 period. However, unequal access of reporters and other independent observers in various parts of the country during various periods of the armed conflict is likely to have led to the underreporting of armed activity that could have qualified for inclusion in the UCDP GED event database.

27. Furthermore, there are inherent limitations resulting from the way that the UCDP coding scheme is constructed. Specifically, the dataset does not include all possible instances of armed

activity that may be considered of interest to this case resulting from three key delimiting factors. First, the dataset only includes events associated with armed conflicts in which at least 25 battle deaths have occurred within a calendar year. This implies that low-intensity violent conflicts that do not meet this intensity criterion will not be included. However, when a conflict has passed this threshold in a given year and thus is included in the dataset, all armed activity events with at least one battle death occurring in preceding years will be included, also in years in which the conflict in question does not pass the 25 battle deaths threshold.

28. Second, the insistence that actors engaged in armed conflict shall be organized and identifiable implies that conflicts leading to a significant number of deaths, but where one or more of the involved armed groups display a low degree of organization for instance by not having a formally declared name, may not be included in the armed conflict dataset. Third, the dataset only contains events in which it is possible to establish that there have been fatalities. Events for which casualty estimates cannot be established are by definition not included.

Key assumptions

29. Biases and strict inclusion criteria discussed above make it more likely that there are deaths related to relevant armed activities in the DRC in the period 1 August, 1998 through 2 June, 2003 that are not included in the aggregate number of deaths presented in this report, than the opposite theoretical possibility of an overestimation of casualties. However, I have no data allowing for an assessment of what this potential underestimation of direct conflict deaths may amount to. Note that while the UCDP does provide a 'high estimate', this estimate is reflecting uncertainties in the number of casualties in the reports forming the basis for the coding of specific events. This 'high estimate' is hence not taking into account possible sources of undercounting stemming from the non-registration of potentially relevant events and should for that reason also be considered a moderate estimate of direct deaths.

30. The factors discussed above together suggest that all UCDP estimates, and specifically the 'best estimates' forming the basis for all estimates in this report, can be assumed to be conservative, or cautious estimates.

31. Furthermore, I have no information of the demographic characteristics of those killed directly in armed conflict. We can assume based on knowledge about the armed organizations and on mortality statistics from other conflict settings that the vast majority of deaths among actors in armed activities as are men, with the largest age group being around 20-30 years. For the civilians killed directly in armed activities, I have no general knowledge about their demographic characteristics.

32. Direct conflict deaths are separated between members of armed groups who lose their life in the fighting ('military deaths') and lives lost among the civilian population not taking part directly in the armed activities ('civilian deaths'). We are assuming that civilians killed in 'state-based conflicts' and in 'non-state conflicts' are collateral damage, however it is possible that some civilians killed in such events may also have been directly targeted during the fighting. As such, 'targeted civilian deaths' may be underestimated. All civilians killed in 'one-sided violence' are considered 'targeted civilian deaths'.

33. In the coding of deaths in armed conflicts, information may not always allow for a precise coding of whether deaths are occur among 'civilians' or 'military'. This could result from the source not being sufficiently detailed, but it could also reflect an ambiguity in the distinction between 'military' and 'civilian'. In particular, young men of 'military age' may in some contexts be considered legitimate military targets even when they are not directly involved in the fighting, nor wearing uniform or bearing arms. While we are unable to separate empirically between these two sources, a substantial number of deaths are recorded as 'unknown' on the civil/military distinction. Information on civilian vs military deaths is only coded by the UCDP for 'best estimates', and not for 'low estimates and 'high estimates'.

34. Numbers of conflict deaths are not broken down on conflict actor in the following analysis.

Conflict deaths: Direct conflict mortality

35. Table 1 includes all deaths recorded for all types of armed conflict ('state-based', 'non-state' and 'one-sided') within the territory of the Democratic Republic of the Congo for the entire period of 1st August 1998 through 2nd June 2003. The best estimate for total direct conflict deaths recorded by the UCDP for this period is 28,981 (with uncertainty ranging from a 'low estimate' of 27,817 deaths to a 'high estimate' of 50,836. A total of 603 events are recorded having at least one person killed in the DRC during this time period.

36. Out of the 28,981 direct deaths, 14,663 deaths occurred among civilians, while 6,494 deaths occurred among armed actors and are defined as 'military deaths'. For a total of 7,824 deaths we do not have information on whether the victims are civilian or military.

Table 1.1: Best estimate of direct conflict deaths by year in the Democratic Republic of the Congo, 1st August 1998 through 2nd June 2003

Year	Civilian deaths	Military deaths	Unknown	Total
1998	3,729	2,117	1,048	6,894
1999	3,462	2,130	1,953	7,545
2000	702	1,218	1,132	3,052
2001	474	66	801	1,341
2002	4,584	925	2,399	7,908
2003	1,712	38	491	2,241
Total	**14,663**	**6,494**	**7,824**	**28,981**

37. Table 2 displays that of the 14,663 civilian deaths in the whole of the DRC 1st August 1998 through 2nd June 2003, 11,227 were targeted civilian deaths. The number of targeted civilian deaths for the Ituri province separately during the same period is 4,341. Civilians victims defined as collateral damage total 3,436 for the DRC as a whole, and to 1,428 for the Ituri province. A total of 111 events are recorded having at least one person killed in the Ituri province during this time period.

Table 1.2 Civilian deaths categorized as 'targeted civilians' and 'collateral damage':

Category of civilian deaths	Geographic domain	
	All DRC	Ituri province
Targeted civilian deaths	11,227	4,341
Collateral victims	3,436	1,428

38. As shown in Table 3, in Ituri province during the period, a total of 10,398 people were recorded killed in direct battle, of which 5,769 were civilians, 1,036 were military, and 3,593 were 'unknown'. The estimate for total number of killed in the Ituri province range from 10,1770 (low estimate) to 14,752 (high estimate).

39. A total of 23 events across the DRC are recorded as having involved troops of the Government of Uganda as one of the actors. The majority of these events (20) took place in the province of North Kivu. In these events, a total of 211 people were reported killed, of which 179 were military deaths (total for all sides of the conflict, of which 3 were reported to be Ugandan soldiers). A total of 32 civilian deaths are reported across these 23 events.

Table 1.3 Best estimate of direct conflict deaths in Ituri province and in conflict events involving troops of the Government of Uganda (in the whole of the DRC), 1st August 1998 through 2nd June 2003

	Ituri province	Conflicts involving troops of the Government of Uganda
Civilian deaths	5,769	32
Military deaths	1,036	179
Unknown	3,593	0
Total	10,398	211

Compensation amount for the loss of lives

40. Based on the recommended per capita compensation from the table in paragraph 100, Report 3, and the estimated number of civilians killed as a result of deliberately targeted violence (11,227) and the number of civilian collateral victims (3,436), the total estimated value of civilian lives lost amount to USD 388,350,000 (USD 336,810,000 and USD 51,540,000 respectively).

Appendices

Appendix 1.1: Sources cited

Sundberg, Ralph & Erik Melander (2013) 'Introducing the UCDP Georeferenced Event Dataset', *Journal of Peace Research* 50(4): 523-532.

Croicu, Mihai & Ralph Sundberg (2016) 'UCDP GED Codebook version 5.0'. Department of Peace and Conflict Research, Uppsala University. https://ucdp.uu.se/downloads/ged/ucdp-ged-50-codebook.pdf

Appendix 1.2: Definitions and categories of armed conflict

For further UCDP definitions please confer the "Definitions" section of the UCDP web page available at http://www.pcr.uu.se/research/ucdp/definitions/

State-based armed conflict

A state-based armed conflict is a contested incompatibility (the stated - in writing or verbally - generally incompatible positions) 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.

Non-state conflict

The use of armed force between two organised armed groups, neither of which is the government of a state, which results in at least 25 battle-related deaths in a year.

One-sided violence

The deliberate use of armed force by the government of a state or by a formally organised group against civilians which results in at least 25 deaths in a year.

Note that extrajudicial killings in government facilities are excluded from this definition.

Battle-related deaths

Counted as battle-related deaths is the use of armed force between warring parties in a conflict dyad, be it state-based or non-state, resulting in deaths.

Comment

Typically, battle-related deaths occur in what can be described as "normal" warfare involving the armed forces of the warring parties. This includes traditional battlefield fighting, guerrilla activities (e.g. hit-and-run attacks / ambushes) and all kinds of bombardments of military units, cities and villages etc. The targets are usually the military itself and its installations, or state institutions and state representatives, but there is often substantial collateral damage in the form of civilians killed in crossfire, indiscriminate bombings etc. All deaths - military as well as civilian - incurred in such situations, are counted as battle-related deaths.

The general rule for counting battle-related deaths is moderation. All battle-related deaths are based on each coder's analysis of the particular conflict. Each battle-related death has to be verified in one way or another. All figures are disaggregated as much as possible. All figures that are not trustworthy are disregarded as much as possible in the coding process. Sometimes there are situations when there is lack of information on disaggregated battle-related deaths. When this occurs, the coder may rely on sources that provide already calculated figures either for some particular incidents, or for total number of deaths in the conflict. The UCDP incorporates such death figures for particular incidents and for an entire armed conflict if they are coherent with the definition. If they are not, or if there is no independent verification of the figure, it cannot be accepted.

Appendix 1.3: Definition of Armed Conflict Event

An incident where armed force was used by an organised actor against another organized actor, or against civilians, resulting in at least 1 direct death at a specific location and a specific date". These are the specific elements of the definition:

1) Armed force: use of arms in order to promote the parties' general position in the conflict, resulting in deaths.

   - arms: any material means e.g. manufactured weapons but also sticks, stones, fire, water etc.

2) Organized actor: a government of an independent state, a formally organized group or an informally organized group according to UCDP criteria:

   a. Government of an independent state: The party controlling the capital of a state.

   b. Formally organized group: Any non-governmental group of people having announced a name for their group and using armed force against a government (state-based), another similarly formalized group (non-state conflict) or unorganized civilians (one-sided violence). The focus is on armed conflict involving consciously conducted and planned political campaigns rather than spontaneous violence.

   c. Informally organized groups: Any group without an announced name, but which uses armed force against another similarly organized group (non-state conflict), where the violent activity indicates a clear pattern of violent incidents that are connected and in which both groups use armed force against the other

3) Direct death: a death relating to either combat between warring parties or violence against civilians. UCDP GED provides three estimates for deaths for each event, thus creating an uncertainty interval:

   - a low estimate, containing the most conservative estimate of deaths that is identified in the source material;

   - a best estimate, containing the most reliable estimate of deaths identified in the source material;

   - a high estimate, containing the highest reliable estimate of deaths identified in the source material. Note that UCDP attempts to distinguish and not include unreasonable claims in the high estimate of fatalities, and tends to be highly conservative when counting fatalities. In order for an event to exist, at least one dead needs to be registered in the high, best or low estimate.

4) Specific location: a name and one pair of latitude and longitude coordinates that relate to the geographical information specified in the source material.

5) Specific date: a specified time period during which armed interactions cause at least 1 fatality. The normal temporal unit to which an event can be related is a 24- hour day starting at midnight.

   - In some cases it is impossible, based on the source material, to reduce the specific date to a single day as reporting only refers to wider time spans (multipledays) or information on the exact day is not clear. For these events, a wider time span is provided through the use of the date_start, date_end and date_prec variables.

Appendix 1.4: Signature of expert

Signature of expert

This report has been prepared in accordance with the terms of reference set out by the International Court of Justice by Henrik Urdal on 19 December 2020:

Signed:

Report 2
Conflict Related Excess Deaths

Professor (Em.) Debarati Guha-Sapir

(Brussels, 15th December 2020)

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Conflict History

41. Armed activities in Ituri and the Eastern provinces played a significant role in notching up civilian casualties. Since August 1998, major events occurred frequently in that region and at least six Security Council (SC) or other UN resolutions were filed related to the fighting until 2003. By November 1999, Security Council resolution S/RES/1279 established an UN Peace Keeping Mission in the Democratic Republic of Congo (MONUC) in the country. Since then, UN Security Council and UN Commission for Human Rights deployed three fact-finding missions (May 2000, May 2001, and May 2003). Widespread violations of basic human rights are documented from Eastern Congo, especially in Ituri. For example, a detailed report from Human Rights Watch [1] , which described "estimated 3 000 civilians are brutally massacred when rival militias clashed in the hospital town of Nyankunde, Ituri district. The event marked the largest massacre of the Second Congo War. Annex 1 presents a detailed timeline of the conflict.

Evidence on mortality presented by DR Congo

42. There are three key concepts that guide the estimations of mortality in conflicts and which underlie the Democratic Republic of the Congo memorial calculations. Deaths in conflicts are often separated into three relevant groupings: direct deaths, indirect deaths, and excess deaths. Deaths that are due to active and direct armed hostilities often referred to as **"direct deaths"**. These include deaths of combatants and civilians who have been targeted or deliberate killings of villagers and other civilians in efforts that are part of conflict strategies such as terrorising, driving away or exacting retribution. The second group are **"indirect deaths"** which are those due to absence of essential health care such as emergency obstetrics, vaccination, and access to markets, or inability to sustain basic livelihood activities. **Excess deaths** are deaths observed in a specific period that are over and above those that could be expected in that period. These estimations depend on baselines and base populations that are used.

43. DR Congo provided a Memorial of the Democratic Republic of the Congo entitled the *Case Concerning Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda), Second Phase, Question of Reparation.* The following summarises the parts of the document that is relevant to this section. The DR Congo Memorial makes reference to three mortality studies undertaken by the International Rescue Committee (IRC), second undertaken by B. Coghlan et al. (2006), and by the Association pour le Development de la Recherche Appliquée en Sciences Sociales (ADRASS)(Grey literature report - Lambert and Lohle-Tart).

[1] https://www.hrw.org/news/2009/08/21/dr-congo-chronology#_Failed_Peace_Efforts)

44. The IRC and Coghlan studies estimate that 3.9 million deaths occurred between 1998 and 2003 in the Democratic Republic of Congo. Most deaths were from preventable and/or treatable diseases. Coghlan et al (2006)'s *Lancet* article "Mortality in the Democratic Republic of Congo: a nationwide survey" used data from 19 500 households to yield a crude mortality rate of 2.1 deaths per 1000 per month. They calculated their death rate based on a 16-month recall period where they asked the households to report all deaths in the household for the recall period, which they then extrapolated back to 1998. Coghlan's crude death rate estimate is 40% higher (2.1) than the average crude death rate for the sub-Saharan Africa region, which is 1.5 deaths per 1000 per month.

45. In contrast to the results presented by Coghlan et al, ADRASS[2] estimated 200 000 deaths due to conflict. This estimate is nearly 20 times lower than Coghlan's and was generated by ADRASS demographers Lambert and Lohle-Tart using census data projections from 1984 – 2005 and UN figures.

46. The evidence from DR Congo recognises the challenges in accurately estimating the numbers of deaths due to the conflict and assigning attributable responsibilities:

    "It is extremely difficult, not to say impossible, to determine accurately the number of victims and the scale of the material damage arising from Uganda's invasion of a significant part of DRC's territory." (DR Congo memorial section 2.49, Page 48)

    "Examination of records drawn up by the Congolese mission of inquiry does not enable an exact figure to be determined either. The documents do enable precise identification of a number of victims, but they merely illustrate examples of the injuries suffered and by no means do they purport to be exhaustive." (DR Congo memorial 2.61, page 49)

    "In order to overcome these difficulties, another approach may be followed involving consultation of scientific studies in the fields of epidemiology and demography which have examined the excess mortality caused by conflict. Such studies allow all the deaths caused by the war in DRC between 1998 and 2003 to be taken into account. These deaths are not just those which result from hostilities or atrocities. They may also have other causes, such as lack of medical care due to healthcare systems being plunged into chaos, for example. The assessments of the number of excess deaths are made using extremely sophisticated calculation models, based on projection curves and a range of data. At this stage, however, the focus will be on the results obtained, rather than the details of the methods and procedures employed by the studies in question." (DR Congo memorial Section 2.62, Page 49)

47. These are legitimate concerns, widely acknowledged by the academic and research community for this and other civil conflicts. Given these estimates, the DR Congo memorial retained a conservative 10% of the approximately 4.0 million excess deaths (400 000 victims). This position was articulated, saying:

[2] http://adrass.net/WordPress/wp-content/uploads/2010/12/ Surmortalite_en_RDC_1998_ 2004.pdf

"Given the caution which should be observed within judicial proceedings, the DRC considers it reasonable, in this context, to rely on a minimum estimate of 400,000 victims, that is, one tenth of the IRC figure which emerges from studies published in the most renowned scientific journals, including The Lancet."." (DR Congo Memorial, section 2.70, page 51)

48. They attributed 45% of these deaths (180 000) to armed action related to Ugandan incursion and "deemed a consequence of the invasion of a substantial part of Congolese territory by Uganda." Combined with the 2000 Congolese armed forces deaths estimated from survivor interviews and administrative documents, the total number of lives for which reparations are sought by DR Congo is 182 000.

    "There were also the soldiers and officers of the Congolese armed forces (FAC) who died in the fighting with the Ugandan army or the rebel movements that it supported. The DRC discussed the estimated 2 000 deaths in the FAC in Chapter 2 of this Memorial" (DR Congo Memorial, section 7.14, page 185)

49. While the specific details of the methods and reasoning behind these numbers are not readily available, it is understood that they were reached through analysis of in-country data collection (interviews and document review) and international research findings. I note that Coghlan estimates exclude a population of about 5 million due to insecurity and these are where death rates could plausibly be higher, and hence lead to an underestimate of the excess deaths.

50. For Ituri specifically, the Congo Memorial estimated a total of 60 000 excess deaths with 67% of those deaths attributable to deliberate violence toward civilians. The remaining third of deaths are attributed to deterioration of infrastructure and widespread insecurity. For example, they observe that of over half the operating health centres were closed (212/400), no surgeons were available, and humanitarian aid was essentially absent. The estimate of 60 000 comes from the UN Secretary General's *Second Special Report on MONUC'*s and only reflects incidences where the Special Rapporteur and/or other delegations were able to access the area or interview survivors and witnesses. The reparations sought for deaths and injuries in the memorial are presented in Table 1.

Table 2.1: Reparations sought for deaths and injuries presented in the Memorial

Province / category	Notes	Monetary valuation in USD	Total deaths	Compensation in USD ('000)
Ituri – additional	Deaths attributable to the breach of Uganda's obligations as the occupying power of Ituri from 1998 to 2003; this does not include deaths resulting from deliberate attacks against civilians	18 913	20 000	378 260
Ituri – direct violence	Average sum of the monetary value awarded by Congolese courts to families of victims of intl war crimes	34 000	40 000	1 360 000
Kisangani (1999-2000)	Victims of the fighting between Ugandan and Rwandan forces	18 913	920	17 399
Other regions	Subtract Ituri deaths – 40 000 deaths attributable to direct acts of violence against civilians and 20 000 in other circumstances – and 920 from Kisangani)	18 913	119 080	2 252 160
Congolese armed forces	Died in fighting with the Ugandan army or the Ugandan supported rebel movements	18 913	2 000	37 826
Total deaths for which compensation is sought		---	182 000	4 045 646

My estimations (based on publicly available surveys)

51. To reiterate, from my understanding, the numbers of dead due to armed hostilities in the Memorial Translation are derived from a combination of in-country data collection – including but not limited to interviews and document review – and international research findings. I have made estimates for the death tolls that are comparable to the ones presented by the Congo Memorial but using a larger collection of publicly available mortality surveys. The main aim is to compare my death estimations to theirs and set out the limitations of both.

Background

52. DR Congo has experienced armed conflict on many fronts since the beginning of 1996. There are civil unrests and refugee flows on the frontiers with Central African Republic (CAR), Angola, and Burundi as well as wars with Uganda and Rwanda. The country also dealt with mass internal

displacement where villagers move under duress to other parts of the country in order to survive. Cumulatively, 3.6 million were displaced in 2003[3] .

53. Most often these internally displaced have very high rates of mortality compared to refugees who, having crossed an international border, have easier access to international aid. International aid is particularly important given that DR Congo was one of the least developed countries in the world, ranking 152 out of 174 in the Human Development Index in 1998[4].

54. Apart from direct violence, other acute events influence the death tolls in a country undergoing conflict. Two such events are epidemics and disasters. DRC is plagued by frequent and deadly epidemics, and seven major outbreaks were notified to the World Health Organisation during the conflict period. Three of these were cholera (*V. Cholerae El Tor* strain) and one Marburg haemorrhagic fever epidemic. Marburg, a filovirus of the same family as Ebola, has an exceptionally high case fatality rate. For the 1998 – 2000 epidemic, the case fatality rate was 83%, translating to 83 fatalities out of every 100 cases. During the Second Congo War, there may have been other epidemics, few of which may have been notified given that surveillance systems in conflict-affected regions were rendered non-functional.

Methodological Overview

55. Estimations for excess mortality between 1998 – 2003 were made using data from 38 mortality surveys, which were in the public domain (see 3.2.1). These were readily available in Conflict Survey Repository – CEDAT which collects conflict mortality surveys from online sources, controls them for quality, accuracy and completeness and enters the results into a database (Annex 2: Methodology for entry into CEDAT Repository). A Bayesian hierarchical model was used as the most stable statistical technique given the paucity of publicly available data. These calculated estimates were then compared against a baseline value representing the mortality that could be expected, had the conflict not occurred.

56. Excess mortality is a useful concept that captures both those who died as a direct consequence of armed violence but also those who were unable to obtain essential life-saving health services such as emergency obstetrics, key vaccinations, or access fields for family food sustenance. Direct combat deaths are analysed by Henrik Urdal (PRIO) in a separate section and is only presented as a part of our total excess death estimations based on data from UCDP (PRIO) source. The excess mortality values are presented by Ituri, [5] Eastern Region[6] and the country as whole, based on the following formula:

$$Excess\ deaths = (observed\ or\ calculated\ deaths\ in\ conflict\ period) - (expected\ deaths\ without\ conflict).$$

[3] (https://www.brookings.edu/wp-content/uploads/2016/07/The-International-Response-to-Internal-Displacement-in-the-DRC-December-2014.pdf.

[4] http://hdr.undp.org/sites/default/files/reports/261/hdr_2000_en.pdf

[5] During the war 1998-2003 Orientale existed as Uele, Kibali-Ituri and Haut-Congo. Orientale Province was reconstituted in 1966 from the amalgamation of the Uele, Kibali-Ituri and Haut-Congo provinces. But was broken up again into the current day provinces in 2015.

[6] Bas-Uele, Haut-Katanga, Haut-Lomami, Haut-Uele, Ituri, Bas-Congo, Lualaba, Maniema, Nord Kivu, Nord-Ubangi, Sud-Kivu, Tanganyika and Tshopo.

Data sources

57. There were four main sources for the surveys. A nation-wide mortality survey in early 2004 by Coghlan et al. collected numbers of deaths from households over past recall over 16 months preceding the time of the survey (April – July 2004). They then extrapolated back to August 1998 and estimated excess deaths at about 3.5 million using a baseline average mortality rate of the Sub-Saharan Africa of 1.2/1000/year. Les Roberts and The International Refugee Commission also undertook three mortality surveys, one in June 2000, a second one in 2001 and the third one in 2002. Additionally, Van Herp et al (MSF-Belgium) conducted mortality surveys in this period.

58. The following information was extracted from the surveys for the analyses: deaths, crude death rates, recall period, and sample sizes. I approximated the person-months covered by each survey as the product of the recall period and sample sizes. The response variable was the number of deaths (events), and the different levels of exposure (person-months) used in the various surveys was included as the offset variable. All rates were converted to 1000/month. All surveys specified the region in which they were undertaken and were separated into Eastern and Western regions to maintain compatibility with the study by Coghlan – the main source for the evidence provided by DR Congo Memorial. Annex 3 lists the surveys and main characteristics.

Model specifications

59. Faced with paucity of mortality data and no systematic civil registration system for deaths during those years, a Bayesian approach was used to calculate how many deaths may occurred in the conflict period. The model separately estimates pooled crude death rates (CDR) from 38 surveys - 22 surveys in the Eastern Region, 16 in the Western region, and 38 nation-wide. The model accounts for all parameter uncertainties and additionally, uses information from other surveys to improve the estimate. [7,8,9] Accordingly, the Posterior CDR (in table 2) is the combined death rate from other surveys (known as prior and in our case follows a normal distribution) and the likelihood (number of deaths which follows a Poisson distribution) to obtain one pooled CDR value.

60. The following formula was used to obtain the **excess mortality**:

$$Excess\ deaths = \frac{(PCDR - BCDR)}{1\,000} \times recall\ period \times median\ population \quad (1)$$

Which is essentially described as (deaths estimated from the different surveys during the conflict period minus the deaths expected if the pre-conflict baseline applied in this period) multiplied by the (recall period of the survey) multiplied by the (median population of the region).Details are available in Annex 4: Notes on Bayesian Methodology.

Baselines and base populations

61. Excess mortality calculations are delicate exercises, and two factors are key determinants of the final result – baselines and base populations. The **baseline** provides the number of deaths we can expect in the absence of civil war and reflects deaths due to rampant illnesses, hunger and other

[7] Coghlan B, Brennan RJ, Ngoy P, Dofara D, Otto B, Clements M, et al. Mortality in the Democratic Republic of Congo: a nationwide survey. Lancet. 2006;367(9504):44-51.
[8] Lesaffre E LA. Bayesian biostatistics. London: John Wiley; 2012.
[9] Sutton AJ, Abrams KR. Bayesian methods in meta-analysis and evidence synthesis. Stat Methods Med Res. 2001;10(4):277-303

causes that are simply the result of structural poverty and not due to the conflict. The higher the baseline value, the lower the excess deaths will be and vice versa. The baseline needs to be justified as the appropriate choice. The CDR in DR Congo reported by UNICEF in 1997 was 14/1000 per annum translates to 1.2/1000/month was chosen as the baseline for this analysis.[10] Although many surveys use the average Sub-Saharan death rate (1.5/1000/month) as a baseline rate, in this case, it is best to take a baseline that is closest to the population under study. The UNICEF estimate is appropriate as it reflects mortality rates from the country itself (rather than a continental average) and from a period that just precedes the hostilities.

62. **Base population** is the other key determinant of excess mortality. The bigger the base population is, the higher the absolute number of excess deaths will be. We obtained the *median population* for DR Congo using yearly population projections of the World Bank based on the 1984 Census. It was assumed that the yearly population growth is the same across the provinces and estimated the monthly population from 1987 to 2003. The base population was calculated as the monthly median population.

Results

63. In DR Congo as a whole, we would expect about 3.5 million deaths over 1998 – 2003 based on the UNICEF Crude Death Rate (CDR) of 1.2 for a median population of nearly 50 million, or about 700 000 deaths/year had there not been conflicts within the country. Instead, our point estimate of total deaths in DR Congo in this 5-year conflict period is 8.5 million or 1.4 million per year and **nearly 5 million deaths** in excess to what we may have expected. As a modelled estimate, I can say with 95% confidence that a minimum of 3.2 million excess deaths may have resulted in this period due to armed conflict (Table 2 and Figure 1).

64. Deaths in Eastern Congo, including Ituri, accounted for most of the national excess mortality - about 3.7 million, or over 70% of the total. As no surveys specific to **Ituri were available,** the death rates of the Eastern region were applied to a smaller Ituri base population to obtain excess deaths at just over 400 000.

3.3.1 Applying Memorial percent shares for comparability

65. To make our estimates roughly comparable to those presented by Congo, we can apply some of the percentages that they have used in the Memorial. The Congo memorial used 10% of the 4 million Coghlan excess death estimate to arrive at 400 000. They then attributed 45% of 400 000 or 180 000 deaths as the responsibility of Uganda and Uganda-supported forces. To this 2000 deaths among the Congolese forces were added for a total of 182 000 deaths attributable to Uganda and eligible for compensation. Our total excess deaths for DR Congo and Ituri include deaths of combatants, as the soldiers would not have died, had there been no conflict and therefore are part of the excess death estimation.

66. Applying these proportions to my modelled estimate of total excess deaths in DR Congo (4 987 756 deaths over 5 years) (Table 2), comparable numbers of deaths for attribution to Uganda are **224 500** excess deaths for the entire country **attributable to Uganda compared to 182 000 estimated by DR Congo (green highlight**. Similarly, for Ituri, we arrive at 74 000 excess deaths compared to Congo Memorial estimate of 60 000 deaths attributable to Ugandan and allied forces (blue highlight).

[10] https://www.unicef.org/sowc99/ sowc99e.pdf

Table 2.2: Population and mortality indicators in Ituri, Eastern DRC, and DRC, 1998-2003, and comparison of final indicators with the DRC Memorial

Indicator	Ituri	Eastern	DRC	DRC Mem
Median population	2 833 460	26 232 742	49 734 520	
Posterior CDR (no. deaths /1000/month)	3.640399	3.640399	2.9290967	
Expected deaths*	197 209	1 825 799	3 461 523	
Observed deaths	598 266	5 538 864	8 449 279	
Total excess deaths	**401 057**	**3 713 065**	**4 987 756**	
[CLs](mil)	[0.23, 0.62]	[2.1,5.7]	[3.2,7.1]	
Direct excess deaths	10 389	22 935	28 981	
Indirect civilian excess deaths	**390 668**	**3 690 130**	**4 958 775**	
Using DRC coefficients from the Memorial				
45 % of 10% = 4.5% of total excess deaths attributed to Ugandan Armed action	18048	167088	224449	182 000[a]
33% (60000/182000) of DRC	73994	Not applicable	Not applicable	60000[a]

*Based on pre-conflict baseline, 1.2/1000/month. CDR: Crude Death Rate; CLs: Confidence Levels, DRC: Democratic Republic of the Congo. [a] ref: section 2.71 and 7.14

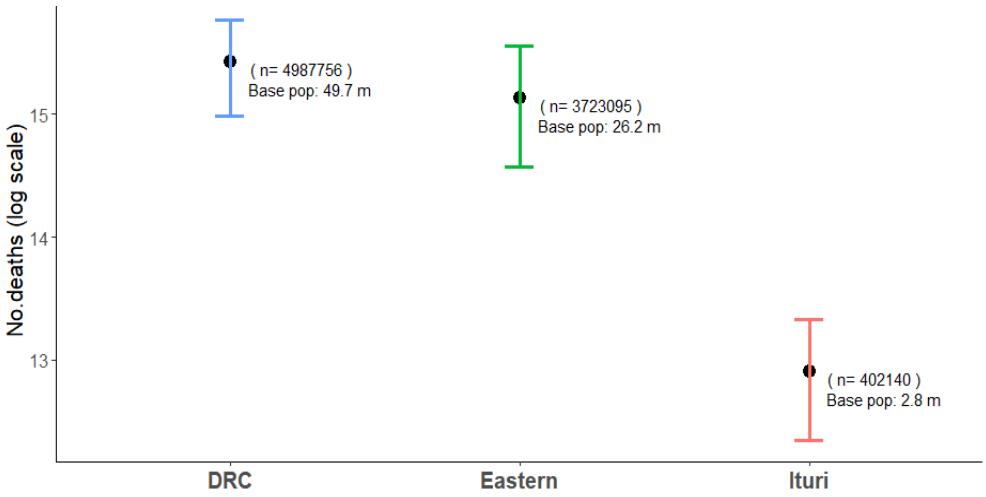


Figure 2.1: Number of deaths in Ituri, Eastern region, and DRC, with confidence interval.

3.3.2 Regional considerations

67. The highest death rates (over 4 deaths/month/1000) are concentrated in the Eastern Region, where civil war was raging in this period (Figure 4). Two of the highest were in Kalemia, a port town on Lake Tanganyika and distribution centre for high value minerals such as zinc, cobalt, and tin with CDR of 10/1000/month, and Moba also on Lake Tanganyika and part of the Triangle of Death with 11/1000/month. In Nov. 2000, the Congolese Rally for Democracy-Goma (RCD-Goma) and the Rwandan Patriotic Army (RPA) forces fought in Moba, a small village of 26 000 inhabitants where families lived by fishing and farming, and exploited gold mines in that zone. According to

our statistics, there were about 300 dead every month during the conflict in Moba and about 1600 per month in Kalemia. Although most of the provinces with high excess mortality rates were in the Eastern region, Equateur Province in the Western region proves to be an exception. A survey conducted in Basankusu reported a CMR of over 8/1000/month, which is particularly high in comparison to other Western provinces. Basankusu was situated on the frontlines between the Western and Eastern parts of the country where conflict spilled over, devastating the town in August 2000. The high death rate here may be driven by the extraordinarily high child death rate of 6.6 per 10 000 per day.

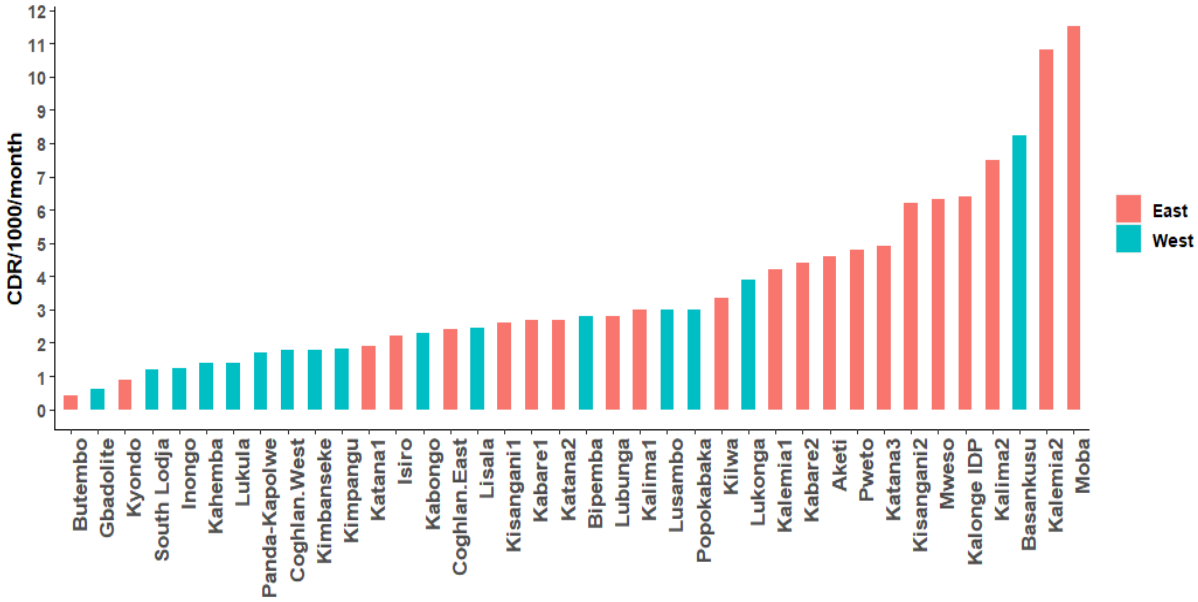


Figure 2.2: Reported CDR by survey location

Annex 2 provides an overview of each survey included in our analyses and specifies the setting of each survey.

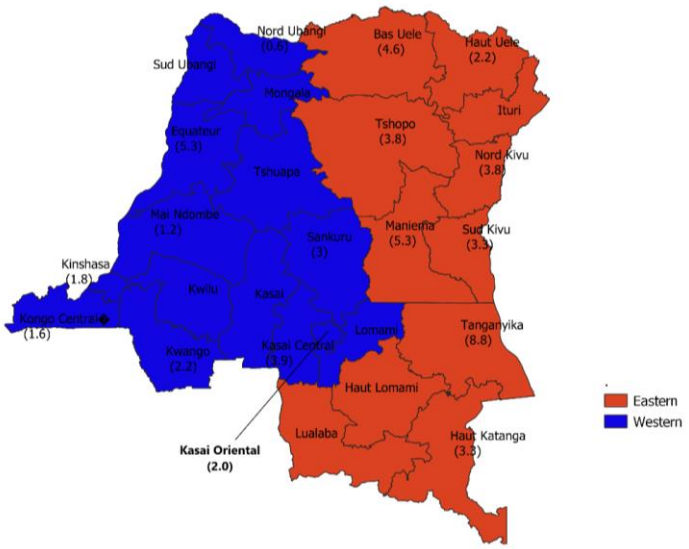


Figure 2.3: Distribution of crude death rate, by province**, from available surveys with mortality recall period between 1998 and 2003*

* not all current provinces provided public information on death rates.

** provinces identified according to the current administrative divisions

3.3.3 Demographic distribution of deaths

68. Finally, in recent years, the conflict death burden is increasingly carried by the civilian population and less so by the combatants. Our results agree with the DR Congo Memorial with respect to this aspect. Historically, armed combatants accounted for the majority of the casualties in wars compared to civilian victims. Since WW2, this ratio shifted to civilian death rates increasing and as civil conflicts increased, eventually civilian death rates were nearly twice that of soldiers (Figure 4).

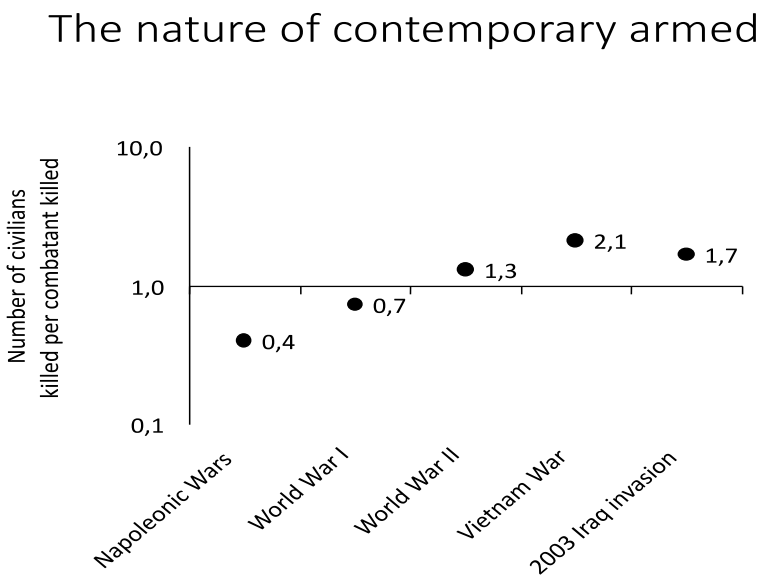


Figure 2.4: Ratio of civilians killed per combatant killed in five historic wars

69. Here in the DR Congo, the share of direct battle related deaths is vanishingly small. They are deaths of armed combatants, consequences of violence such as by massacres, shootings, wholesale execution of civilians, or large scale burning of settlements and is described in greater detail in the section on combat deaths by Henrik Urdal. By far the majority perish from other less direct causes such as conflict induced hunger or disease.

70. Most of the civilian direct deaths are likely to be women and children simply because they represent by far, the majority of the population (current demographic trends imply that about 70 – 80% of the sub-Saharan Africa population are women and children) and hence mostly). Hence, they are the most exposed. Second, women with small children are unable, in most circumstances, to flee rapidly or far enough away to survive killing attacks. The lion's share of the excess deaths is due to indirect causes including collapse of the health facilities, uncontrolled disease especially among children, lack of emergency and obstetric care, breakdown of food supply chains and lack of access to fields[11,12,13]. The war in Congo and in Ituri is unlikely to present patterns that are different from those described above. By far the largest burden of the nearly 5 million excess

[11] https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-020-01708-5

[12] Armed conflict and child mortality in Africa: a geospatial analysis, Zachary Wagner , Sam Heft-Neal , Zulfiqar A Bhutta , Robert E Black , Marshall Burke, Eran Bendavid

[13] War or health: a four-decade armed conflict in Iraq Riyadh K Lafta [1], Maha A Al-Nuaimi https://pubmed.ncbi.nlm.nih.gov/31597450/

deaths 3.7 million excess deaths is centred in the Eastern region and 400 000 in Ituri will have been carried by these non-combatant sub-groups (Figure 5).

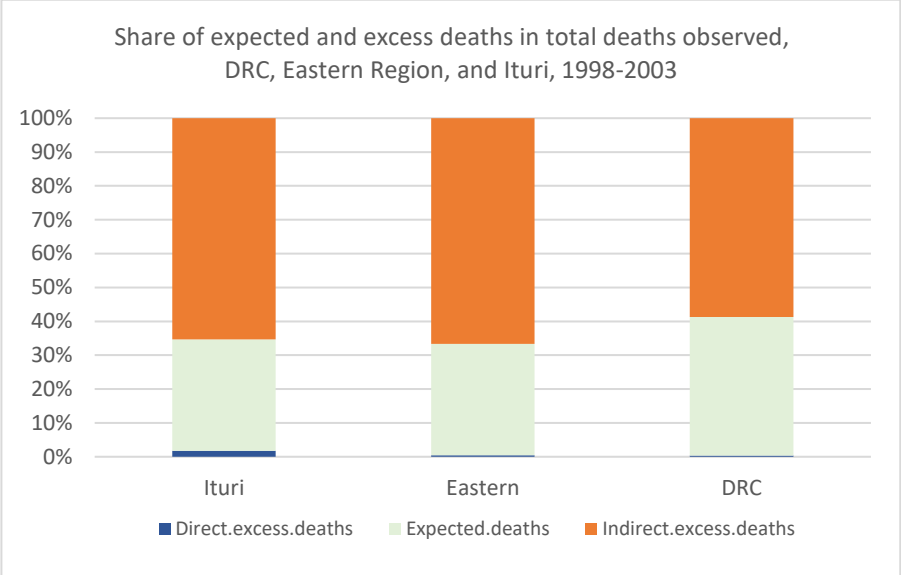


Figure 5: Share of expected, indirect and direct excess deaths within total observed deaths, DRC, Eastern Region, and Ituri, 1998-2003

Conclusions

71. The mortality estimations were based on 38 surveys undertaken in the period between 1998 – 2003. I estimate the death tolls in DR Congo between 1998 – 2003 that can be attributed to the conflict to be 401 057 in Ituri, 3 713 065 in Eastern region and 4 987 756 for the country as a whole. These estimates are slightly higher than those presented by the Congo Memorial but not significantly different. The difference may be due to the 5 million inhabitants in high insecurity zones who were excluded from the sample of the Coghlan et al study. In conclusion I estimate the excess indirect civilian due to the conflict to be 4 958 775. This figure does not include direct military or targeted civilian deaths. The unit costs per life for indirect civilian life lost is USD 15 000 as per estimation of Geoffrey Senogles.

Appendix 2.1: Timeline of relevant events in Eastern Congo 1998-2003

DATE	INCIDENT
August 1998	Ugandan armies invade Congo, backing the Congolese rebel group formed to oust Kabila
1999	100 miners killed in collapse attributed to UPDF pressures to expedite gold extraction
29 - 30 May 1999	Burned down villages and burned alive elderly and women in the village of Loda
20 June 1999	25+ people killed in attack on Dhendro by Hema militias and UPDF soldiers
June - Dec 1999	Lendu civilians and Hema killed in attacks
June - Dec 1999	Tens of Hema-Gegere's killed in Libi and Fataki
6 Aug 1999	Deployment of 90 military observers to DRC **S/RES/1258**
14 Sept 1999	Several hundred civilians in Bahema-Nord community killed; victims buried in mass graves
14 Sept 1999	Several tens of civilians, including 15 minors and a number of women killed in Fataki
July 1999	100+ Hema civilians killed in Musekere using machetes and edged weapons
August 1999	Ceasefire signed in Lusaka, Zambia but ignored by rebels
30 Nov 1999	Established UN Mission in DRC (MONUC) **S/RES/1279**
1 Dec 1999	200 + civilians killed in hostilities between UPDF and Hema militias over control of Bambou and its mines; bodies were mutilated, and the town looted; bodies thrown into River Chari
Jan 2000	Several hundred Hema killed with edged weapons
24 Feb 2000	Authorised the expansion of MONUS to consist of 5537 military personnel **S/RES/1291**
26 Apr 2000	10 deaths, Lendu civilians, killed by Hema militias and UPDF troops
June 2000	Uganda and Rwanda battle in Kisangani, killing roughly 700 individuals; UN concludes the 2 armies committed war crimes and calls on Uganda and Rwanda to pay reparations
June 2000	IRC's 1st mortality survey reports 1.7 million+ have died in the east since 1998 due to the war
11 May 2000	Security Council mission to the DRC on 4-8 May 2000 **S/2000/416**
January 2001	President Laurent Kabila killed in Kinshasa; son Joseph assumes power
9 - 18 Jan 2001	Hema killed ~60 people, including Lendu and Ngiti civilians in Kotoni and Irumu
19 Jan 2001	Between 200-250 Lendu, Ngiti, Nande, Bira ethnic groups killed in Bunia
3 Feb 2001	105 killed by Hema militias and UPDF troops
May 2001	Updated survey from IRC finds death toll increased to 2.5 million
29 May 2001	Security Council mission to the Great Lakes region, **S/2001/521**
Jan 2002	35 Lendu civilians killed in Kobu; mass displacement of villagers into forest

Feb 2002	Inter-Congolese rebel groups sign an agreement, but Rwandan-backed rebels are excluded
26 Jan 2002	100 Lendu killed in a forest after being chased from the village of Datule
9 Feb-24 Apr 2002	Local NGO reported 2 867 civilian deaths; mass killings occurred on 10 Feb 2002 (173 killed), 15 Feb 2002 (120 killed), 21 Feb 2002 (220 killed), 14 Mar 2002, 29 Mar 2002 (109 killed)
11 May 2002	46 reported deaths in village of Walu from eyewitness accounts
13 May 2002	Security Council mission to the Great Lakes region, 2002 **S/2002/537**
June 2002	At least 27 Lendu people killed in village of Buba in Walendu Pitsi by UPDF
12 June 2002	Lendu civilians killed; 100 Hema civilians killed in revenge
16 Jul 2002	Report of the joint fact-finding mission on the situation in Kisangani presented to the Council by the High Commissioner for Human Rights **S/2002/764**
9 Aug 2002	Tens of civilians killed in Komanda, mostly Hema civilians
Aug 2002	110+ people killed in and around Bunia
14 - 19 Aug 2002	50 civilians killed in attack on Komanda
28 Aug 2002	Lack of Ugandan intervention in targeted attack on town of Mabanga resulted in 16+ deaths
31 Aug 2002	At least 14 civilians killed in Songolo
September 2002	Estimated 3000 civilians brutally massacred when militias clash in Nyankunde in Ituri district
11 Oct 2002	320 bodies buried with 69 of them identified
20 Oct 2002	At least 10 Lendu killed
12 - 29 Oct 2002	At least 173 Nande and Pygmy civilians killed around Mambasa
24 Oct 2002	Dozens killed in Walendu Bindi community
5 Nov 2002	14 civilians killed in a night-time attack, including women; tied up and killed with machetes
20 Nov 2002	Roughly 200 civilians killed in Mongbwalu after mortar attacks
4 Dec 2002	Peace agreements with DRC's neighbours & MONUC **S/RES/1445**
24 Jan 2003	Noted with concern the links between conflict and natural resources in DRC and renewed the mandate of the Panel of Experts on illegal exploitation of natural resources **S/RES/1457**
24 Feb 2003	Roughly 260 persons killed with 173 under the age of 18, an additional 70 people missing
4 Mar 2003	Roughly 168 persons killed in attack on UPC military position in Mandro
6 Mar 2003	Civilians killed in Bunia
10 Mar 2003	At least 100 people killed, many of whom were women and children
20 Mar 2003	Condemned massacre and other systematic violations of International Humanitarian Law and human rights perpetrated in DRC: in particular, sexual violence against women and girls in warfare **S/RES/1468**
April 2003	IRC reports that the death toll of Congolese civilians since 1998 has risen to 3.3 million

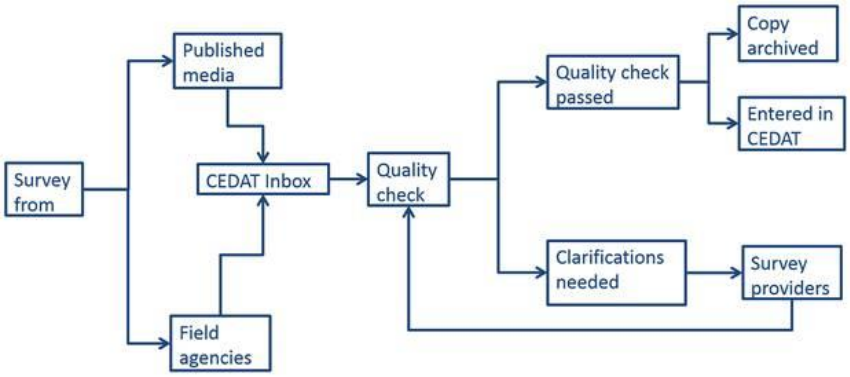
3 April 2003	408 civilian deaths reported, 80 serious injuries
27 May 2003	Second special report for the Secretary-General on MONUC (**S/2003/566**)
30 May 2003	Authorised Interim Emergency Multinational Force deployment (IEMF) **S/RES/1484**
June 2003	European troops are deployed to Ituri to protect civilians from fighting between rival ethnic militias following Uganda's withdrawal, support to UN peacekeepers in Bunia

References: HRW – DR Congo Chronology (2009); Security Council Resolutions - UN; Secretary-General's Reports - UN; Human Rights Council Documents - UN; Selected Other Documents – UN; Case Concerning Armed Activities on the Territory of the Congo - ICJ

Appendix 2.2: Methodology for entry into CEDAT Repository.

72. Evidence has become central for humanitarian decision making, as it is now commonly agreed that aid must be provided solely in proportion to the needs and on the basis of needs assessments. Still, reliable epidemiological data from conflict-affected communities are difficult to acquire in time for effective decisions, as existing health information systems progressively lose functionality with the onset of conflicts.

73. In the last decade, health and nutrition humanitarian agencies have made substantial progress in collecting quality data using small-scale surveys. In 2002, a group of academics, non-governmental organizations, and UN agencies launched the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology. Since then, field agencies have conducted thousands of surveys. Although the contribution of each survey by itself is limited by its small sample and the impossibility to extrapolate results to national level, their aggregation can provide a more stable view of both trends and distributions in a larger region. These surveys are compiled by, the Centre for Research on the Epidemiology of Disasters (CRED) – Université Catholique de Louvain of from online searches either from journals or posted by the field agencies. The process of entering a survey that is eligible is presented in Figure 1 below.



74. The surveys are controlled for quality using a standard checklist system (fig.2)* which is applied to each survey.

Source: The Complex Emergency Database: A Global Repository of Small-Scale Surveys on Nutrition, Health and Mortality, Chiara Altare and Debarati Guha-Sapir, Plos One, October 21, 2014 https://doi.org/10.1371/journal.pone.0109022

**Quality control check list Figure 2 is at the end*

Pre-survey preparation and planning

Objective of the survey
1) Nutrition
2) Mortality
3) Vaccination

Population
4) Type of population stated
5) Total population in area surveyed stated

Location
6) Geographical area of the survey stated
7) Area excluded from sampling frame listed

Time period
8) Survey dates are stated ((dd-)mm-yyyy)

Translation
9) Language of the questionnaire is stated
10) Language of the interview is stated

Questionnaire/tool
11) Pre-testing of questionnaire stated
12) Use of local event calendar stated

Training
13) Training arrangement stated

Informed consent
14) Informed consent to participate in the survey mentioned

Methods

Sampling design
17-19 only if cluster sampling, ↘ 19 for other sampling designs
15) Type of sampling design stated
16) Rationale for sampling design explained
17) State if PPS was used
18) Nr of clusters (cluster x children) *for nutrition* ____ x ____
(cluster x hh) *for mortality* ____ x ____

Final stage
20 only if mortality module included, otherwise ↘ 21
19) State final stage sampling
20) State if HH without U5 were included
21) Stated whether sample size was increased to account for non-response?

Household
23 only if nutrition/vaccination module included, otherwise ↘ 24
22) State definition of HH
23) State selection of U5 in the HH *for nut/vacc*
24) HH selection in a compound is explained
25) Procedure for choosing respondent stated
26) Procedure for re-visiting absent hh stated

Sample size precision
27-29 only if nutrition module included, ↘ 30 ; 30-32 only if mortality module included, otherwise ↘ 33
27) Expected GAM: ____ Stated why?
28) Expected Deff for GAM: ____ Stated why?
29) Desired precision for GAM: ____ Stated why?
30) Expected CMR: ____ Stated why?
31) Expected Deff for CMR: ____ Stated why?
32) Desired precision for CMR: ____ Stated why?

Nutrition survey
33-37 only if nutrition module included, otherwise ↘ 38
33) GAM includes bilateral oedema
34) Inclusion criteria in terms of age or height described?
35) Weight and height smallest rounding unit described?
36) Cut-off for measuring children lying or standing stated?
37) Questionnaire is provided in Appendix

Methods (Ctd)

Mortality survey
38-41 only if mortality module included, ↘ otherwise 42
38) Recall period stated
39) Denominator calculation indicated
40) Census method indicated
41) Questionnaire is provided in Appendix

Results

Analysis
42) Name, version of the software and statistical procedure stated

Nutritional Indicators
43-50 only if nutrition module included, otherwise ↘ 51
Definition: 43) Prevalence of GAM based on Weight for Height Z-scores reported?
44) Type of growth ref. used (WHO or NCHS) stated?
Precision: 45) Confidence interval [____ ; ____]
46) Design effect: ____
47) Plausibility checks mentioned
48) Definition of flags stated
49) Flags exclusion from analysis described?
50) Sample size of 6-59 months: ____

Mortality indicators
51-60 only if mortality module included, otherwise ↘ 61
Definition: 51) CMR expressed as death per 10,000/day, 1,000/month or 1,000/year
Precision: 52) Confidence interval [____ ; ____]
53) Design effect: ____

Demographic indicators
54) Births: ____ 55) Deaths: ____
56) Persons joined: ____ 57) Pers. left: ____
58) Population at the time of the survey: ____
59) Number of households: ____
60) Number of U5 (0-59 months): ____

Vaccination indicators
61 - 64 only if vaccination module included, otherwise ↘ 65
61) Measles-Containing Vaccine (MCV) coverage by card and history
62) Confidence interval [____ ; ____]
63) Age range for inclusion in analysis stated?
64) Number of children in the analysis: ____

Discussion

Limitation and bias
66-68 only if cluster sampling, ↘ 68 only if replacement was made, otherwise ↘ 69
65) % non response: ____
66) % inaccessible clusters: ____
67) Final number of clusters: ____
68) Replacement method stated?
69) Potential bias described?

Comparison of results
70) Results are compared to a reference

Interpretation of results
71) Recommendations are given

WHO Collaborating Centre for Research on the Epidemiology of Disasters CRED

CE-DAT Completeness Checklist Version June 2010

Developed in collaboration with the CE-DAT Expert Group: Oleg Bilukha, Alessandro Colombo, Richard Garfield, Colleen Mone Hardy, Jon Pedersen, Paul Spiegel and Michel Van Herp.

Appendix 2.3. List of surveys and their characteristics

Survey no.	CDR	Year	Location	Province	N
36[1]	11.5	2000	East	Tanganyika	1212
1[1]	10.8	2001	East	Tanganyika	2204
7[3]	8.2	2001	West	Equateur	11532
2[1]	7.5	2001	East	Maniema	1958
35[1]	6.4	2000	East	North Kivu	1330
20[2]	6.3	2002	East	North Kivu	1066
17[2]	6.2	2002	East	Orientale	1902
3[1]	4.9	2001	East	South Kivu	1802
16[2]	4.8	2002	East	North Kivu	1119
19[2]	4.6	2002	East	Bas-Uele	1345
4[1]	4.4	2001	East	South Kivu	1778
13[2]	4.2	2002	East	Tanganyika	1372
25[2]	3.9	2002	West	Kasai-Central	1161
10[3]	3.3	2001	West	Katanga	5077
6[1]	3.0	2001	West	Sankuru	1288
18[2]	3.0	2002	East	Maniema	1712
23[2]	3.0	2002	West	Kwango	1064
5[1]	2.8	2001	East	Tshopo	2317
26[2]	2.8	2001	West	Kasai-Orientale	1199
33[1]	2.7	2000	East	South Kivu	1273
34[1]	2.7	2000	East	South Kivu	1219
32[1]	2.6	2000	East	Orientale	2305
37[4]	2.4	2004	East	Eastern region	82646
8[3]	2.4	2001	West	Equateur	8331
27[2]	2.3	2002	West	Katanga	1381
21[2]	2.2	2002	East	Haut-Uele	1309
12[2]	1.9	2002	East	South Kivu	1323
22[2]	1.8	2002	West	Kinshasa	1523
38[4]	1.8	2004	West	Western region	36732
9[3]	1.8	2001	West	Bas Congo	4491
28[2]	1.7	2002	West	Katanga	1019
24[2]	1.4	2002	West	Kongo	1232
30[2]	1.4	2002	West	Kwango	1278
29[2]	1.2	2002	West	Kasia-Orientale	1653
11[3]	1.2	2002	West	Bandundu	6172
15[2]	0.9	2002	East	North Kivu	895
31[2]	0.6	2001	West	Equateur	1407
14[2]	0.4	2002	East	North Kivu	1373

Sources: [1] Roberts L. Mortality in eastern DRC: results from five mortality surveys. New York: International Rescue Committee, 2000. Roberts L, Belyadoumi F, Cobey L, et al. Mortality in the eastern Democratic Republic of Congo: results from 11 mortality surveys. New York: International Rescue Committee, 2001

[2] Roberts L, Zantop M. Elevated mortality associated with armed conflict–Democratic Republic of Congo, 2002. CDC Morbidity and Mortality Weekly Report 2003; 52: 469-71

[3] Van Herp M, Parqué V, Rackley E, Ford N. Mortality, violence and lack of access to healthcare in the Democratic Republic of Congo. Disasters. 2003;27(2):141-53.

[4] Coghlan B, Brennan RJ, Ngoy P, et al. Mortality in the Democratic Republic of Congo: a nationwide survey. Lancet 2006; 367:

Appendix 2.4: Bayesian methodology

75. I constructed a hierarchical Bayesian model to estimate separately a pooled CDR for the Eastern (22 surveys) Western region (16 surveys) and nation-wide (38 surveys). This Bayesian approach accounts for all parameter uncertainties and in addition, borrows strength from other surveys to improve the estimate[14,15,16]. So the Posterior CDR (in table 2) is the pooled value of information from other surveys (we assume that our prior information follows a normal distribution and the likelihood which is number of deaths follows a Poisson distribution) to obtain one pooled CDR value.

76. To obtain the **excess mortality** we used the following formula:

$$Excess\ mortality = \frac{(PCDR - BCDR)}{1\,000} \times recall\ period \times median\ population \qquad (1)$$

77. Where $PCDR$ the posterior crude death rate per 1000 per month and $BCDR$ is the Baseline crude death rate per 1000 per month. The number of deaths, y_i ($i = 1,2 \dots, n$), was modelled using a Poisson distribution (see equations below), where is the number of surveys. In this analysis n takes the value 22 (surveys conducted in provinces in Eastern DRC) or 16 (surveys conducted in provinces in Western DRC). In statistical notation

$$y_i = Poisson\ (lambda_i) \qquad (2)$$

$$\log(lambda_i) = theta_i + \log(pd_i) \qquad (3)$$

78. Where y_i is the observed number of deaths in survey i and pd_i is the person-months in survey i. The log-transformed observed number of deaths is assumed to follow a normal distribution (equation 2). The parameter of interest, $theta_i \sim Normal(\ alpha, beta\ )$ where $alpha$ is the common posterior crude death rate and $beta$ is the between-survey variance. Furthermore, I assign a non-informative normal prior to $alpha \sim Normal(0,0.000001)$ and non-informative gamma prior $beta \sim gamma(0.001,0.001)$.

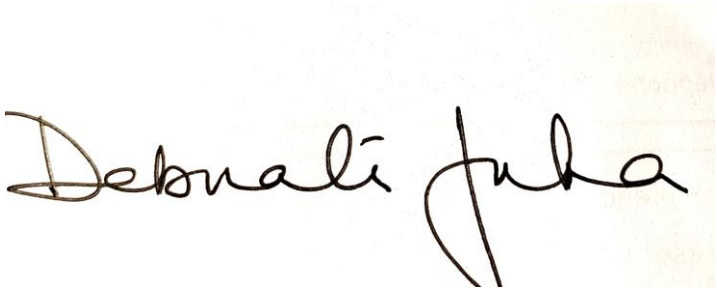
79. I used Gibbs sampler to simulate draws from the posterior distribution of the Poisson model, I ran 1000 000 iterations with a burn-in length of 500 000 using three Markov Chain Monte Carlo (MCMC) with different initial starting values. I checked the convergence of my estimate by visual inspection of the trace plots.

[14] Coghlan B, Brennan RJ, Ngoy P, Dofara D, Otto B, Clements M, et al. Mortality in the Democratic Republic of Congo: a nationwide survey. Lancet. 2006;367(9504):44-51.
[15] Lesaffre E LA. Bayesian biostatistics. London: John Wiley; 2012.
[16] Sutton AJ, Abrams KR. Bayesian methods in meta-analysis and evidence synthesis. Stat Methods Med Res. 2001;10(4):277-303

Appendix 2.5: Signature of Expert

Signature of expert

This report has been prepared in accordance with the terms of reference set out by the International Court of Justice by Debarati Guha Sapir on 19 December 2020:



Signed:

Report 3

Quantum Recommended Amounts: Human Lives and Property Damage

Geoffrey Senogles

(Nyon, 19th December 2020)

SECTION: Injury to persons

80. In their Memorial[17], the DRC asserts five claim categories for losses in respect of non-pecuniary losses caused by *injury to persons*.

81. These five claim categories and their amounts are summarised in the table below:

	DRC Memorial paras.	**Claim amount USD**
A) Human lives lost	*7.11-7.15*	4,045,646,000
B) Injuries and mutilations	*7.16-7.21*	54,464,000
C) Incidences of rape	*7.22-7.25*	33,458,000
D) Child soldiers	*7.26-7.28*	30,000,000
E) Population flight and displacement	*7.29-7.32*	186,853,800
		4,350,421,800[18]

82. In this section, for the assistance of the Court I cover each claim category firstly by providing a synopsis of the basis and evidence provided for the amounts claimed, before secondly going on to provide my opinion on recommended amounts of compensation. I regard it as appropriate to set out and comment on, at least briefly, the ways in which the DRC claim amounts have been derived.

A) Human lives lost – CLAIM: USD 4,045,646,000

83. The majority of the DRC claim value in respect of the overall injury to persons, is made up of the category human lives lost. This category represent 92% of the Injury to Persons total[19].

84. The DRC makes claims for lives lost or injuries suffered in two categories, based on two differentiated causes of death or injury. These are as follows:

a. Deaths or injuries resulting from **acts of violence deliberately targeted** at civilian populations[20];

b. Deaths/injuries **not** resulting from violence targeted at civilian populations but, rather, as **collateral victims**[21].

85. The more aggravated circumstances of an alleged deliberate targetting of civilians, leads the DRC to attach a higher monetary amount on the individual claim for each death/injury so caused, when compared to the analagous individual amount in the (somewhat) less grevious circumstances where a civilian was killed or injured even though not specifically targetted in the

[17] DRC Memorial, paras. 7.05-7.32
[18] I note that the total claim figure stated in the DRC Memorial appears to arithmetically inaccurate (overstated). Total claim for Injury to Persons is stated at **USD 4,409,108,839** [DRC Memorial, para 7.64].
[19] Calculated as: USD 4,045,646,000 / USD 4,350,421,800 = 92%.
[20] DRC Memorial, para. 7.08.
[21] DRC Memorial, para. 7.09.

attack.

86. The DRC's claim computations are based on the following individual amounts:

86.1 Deaths/injuries resulting from **acts of violence deliberately targeted** at civilian populations:

- a flat rate based on Congolese court awards.
- an individual claim amount of USD 34,000[22].

86.2 Deaths/injuries not resulting from violence targeted at civilian populations but rather, **as collateral victims**:

- a flat rate based on future earning potential
- an individual claim amount of USD 18,913[23].

87. Supporting evidence provided by the DRC for the USD 34,000 claimed amount is stated to be in the two documents (available in the annexes in their original French only) that record written judgements of two Congolese military courts. Thus, those documents would be expected to evidence the stated range of court awarded compensation amounts; stated as ranging between USD 5,000 and USD 100,000[24]. One of these court documents was published in Kinshasa but refers to actions in Ituri[25] and the other court is located in Bunia[26].

88. My review of the two documents reveals that neither of the extracts provided is complete and neither contains the amounts of compensation awarded by the two courts. Hence, it is not clear to me how these documents evidence, as they are asserted to do, the amount of USD 34,000 per individual and it therefore follows that, in my opinion, the individual flat rate amount claimed has not been supported by clear documentary evidence. Thus, I have no evidentiary basis in the record on which to measure the extent to which this figure is robust, reliable and reasonable.

89. As to the flat rate individual amount of USD 18,913 (above) claimed in respect of deaths/injuries of relevant collateral victims[27], this figure is derived by the DRC using an averaging methodology assuming that each such victim has incurred a loss of future income earnings equivalent to the average Congolese person, of average life expectancy, of average earning capacity and opportunity, of average age (27 years) within the cohort of victims according to the victim identification forms completed and filed.

90. In principle, this methodology is not unreasonable but its application in this instance contains several mattters of detail that are open to question.

[22] DRC Memorial, para. 7.12.
[23] DRC Memorial, para. 7.09.
[24] DRC Memorial, paras. 7.11-7.12.
[25] DRC Responses to questions of the Court, Annexe 10.1.
[26] DRC Responses to questions of the Court, Annexe 10.2.
[27] Collateral victims who were located in Ituri (DRC Memorial, paras 7.30 and 3.41), in Kisangani (paras. 7.24 and 4.47) and elsewhere in Eastern Congo (paras. 7.24 and 2.83).

91. For instance, the following comments can be made:

    91.1 The victim identification forms made available in the DRC evidence, do not facilitate a comprehensive review with which to assess the accuracy of the asserted average age of relevant victims (i.e. only those 'collateral victims) at 27 years[28].

    91.2 Whilst the Canadian database of the University of Sherbrooke does support the Congolese average life expectancy age of 52.11 years as adopted by the DRC, my review of the database does not provide clear support for USD 753.20 which is asserted by DRC as being the country's GDP[29] per head for the year 2015[30].

    91.3 Given that the Armed Activities relevant to this matter took place during the years 1998 to 2003, the DRC's rationale for adopting the year 2015 for the GDP per head data point is not beyond debate. While I understand that the DRC asserts 2015 on the basis that this was the particular year's level of (average) income that members of its population would aspire to, however, in my opinion, this is not a robust basis on which to assert losses of income that, continuing the averaging methodology adopted by the DRC, may have commenced from as early as 1998 (some 17 years prior to the year chosen by the DRC).

92. Based on the above brief synopsis of the DRC evidence in the record, together with my own assessments thereof, I am of the opinion that my recommended individual flat rate compensation amounts for consideration by the Court should not follow the flat rate amounts claimed, but instead should be built on an alternative basis; one that has been already adopted, implemented and paid out by a well-known, multi-billion dollar international mass claims programme.

93. The United Nations Compensation Commission (the "UNCC" or "Commission") was established in 1991 as an agency of the UN Security Council[31] with a mandate to accept, process, decide on and pay compensation to successful claimants who suffered losses as a result of the military hostlities and armed activities of Iraq's 1990/91 invasion and occupation of Kuwait[32]. The present report is not suitable for me to provide a detailed description of the Commission's work and decisions.[33]

94. The UNCC's mandate included accepting claims from individuals and corporate entities, and covering a wide scope of of losses; both pecuniary and non-pecuniary in nature[34]. Of most direct relevance to the present matter under review, were the UNCC's methodologies, decisions and awards of compensation in respect of losses attriubuted to injury to persons.

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[28] DRC Memorial, para. 7.09.
[29] Gross Domestic Product (or *Produit Interne Brut* [PIB] in French)
[30] DRC Memorial, para. 7.09.
[31] UN Security Council resolution 687 (1991): S/RES/687 (1991) 3 April 1991
[32] For comprehensive details of the Commission's structures and its work, including its awards and decisions, see: www.uncc.ch
[33] The author of this section, Geoffrey Senogles, worked on staff at the UNCC in Geneva between 2000 and 2003, and was engaged thereafter as an external independent consultant to continue advising Panels of Commissioners on their valuation decisions.
[34] In this way, there are similarities with the present matter before the Court.

95. To date, just short of USD 50 billion has been paid out by the United Nations Compensation Fund to over 1.5 million successful claimants[35].

96. The UNCC documented its decisions and made these freely available to all on the Commission's website. Of specific relevance to the DRC's claim for non-pecuniary losses suffered by individuals resulting from injury to persons, in late-1991 and early-1992 as part of establishing its own valuation methodologies, the UNCC helpfully set out its definitions of seven separate categories of mental pain and anguish, in the context of personal injury. These categories and their definitions are set out in full in UNCC Governing Council Decision no. 3, as follows[36]:

"Mental pain and anguish"

Compensation will be provided for pecuniary losses (including losses of income and medical expenses) resulting from mental pain and anguish. In addition, compensation will be provided for non-pecuniary injuries resulting from such mental pain and anguish as follows:

(a) A spouse, child or parent of the individual suffered death;

(b) The individual suffered serious personal injury involving dismemberment, permanent or temporary significant disfigurement, or permanent or temporary significant loss of use or limitation of use of a body organ, member, function or system;

(c) The individual suffered a sexual assault or aggravated assault or torture;

(d) The individual witnessed the intentional infliction of events described in subparagraphs (a), (b) or (c) on his or her spouse, child or parent;

(e) The individual was taken hostage or illegally detained for more than three days, or for a shorter period in circumstances indicating an imminent threat to his or her life;

(f) On account of a manifestly well-founded fear for one's life or of being taken hostage or illegally detained, the individual was forced to hide for more than three days; or

(g) The individual was deprived of all economic resources, such as to threaten seriously his or her survival and that of his or her spouse, children or parents, in cases where assistance from his or her Government or other sources has not been provided."[37]

97. Of these seven categories, I regard the following two as being comparable in general to the described claims associated with individuals' deaths or injuries, and hence may be found applicable as benchmarks for the Court's findings in this matter.

"3. (a) A spouse, child or parent of the individual suffered death;

---

[35] https://uncc.ch/summary-awards-and-current-status-payments showing a total of **USD 49,964,258,680** has been paid, up to and including the most recent quarterly payment made on 27 October 2020.

[36] I set this out in full here, to provide context, since these definitions will be returned to in later sections of this report.

[37] https://uncc.ch/sites/default/files/attachments/documents/S-AC.26-DEC%203%20%5B1991%5D.pdf UNCC Governing Council decision no. 3. S/AC.26/1991/3 - 23 October 1991

(b) The individual suffered serious personal injury involving dismemberment, permanent or temporary significant disfigurement, or permanent or temporary significant loss of use or limitation of use of a body organ, member, function or system;..." [38]

98. I note that the UNCC widened its definition of "serious personal injury" to include the following:

"*2. For purposes of recovery before the Compensation Commission, "serious personal injury" also includes instances of physical or mental injury arising from sexual assault, torture, aggravated physical assault, hostage-taking or illegal detention for more than three days or being forced to hide for more than three days on account of a manifestly well-founded fear for one's life or of being taken hostage or illegally detained*."[39]

99. In January 1992, the UNCC's Governing Council made its decision to ascribe monetary amounts to each of the seven categories of mental pain and anguish, as defined by themselves three months previously[40]. These compensation amounts were described in the decisions as *ceilings* rather than fixed amounts, but in practice represented a form of *tariff* figures for application in the Commission's mass claims processing programme.

100. The individual compensation amounts ascribed by the UNCC in this way to its defined categories A and B were as follows:

"***CATEGORY A:***
A spouse, child or parent of the individual suffered death.
- USD 15,000 ceiling per claimant;
- USD 30,000 ceiling per family unit.

CATEGORY B:
The individual suffered serious personal injury involving dismemberment, permanent or temporary significant disfigurement, or permanent or temporary significant loss of use or limitation of use of a body organ, member, function or system.

- USD 15,000 ceiling for dismemberment, permanent significant disfigurement, or permanent loss of use or permanent limitation of use of a body organ, member, function or system;
- USD 5,000 ceiling for temporary significant disfigurement or temporary significant loss of use or limitation of use of a body organ, member, function or system. "[41]

My recommendations to the Court

101. Using the abovementioned UNCC jurisprudence as a methodological basis and a benchmark, my recommended flat rate compensation amounts in respect of "Human lives lost" are developed in the following paragraphs.

102. I am of opinion that the UNCC findings on non-pecuniary loss mental pain and anguish are applicable to and useful in formulating recommended flat rate individual compensation

[38] Ibid
[39] Ibid
[40] For full details, see UNCC Governing Council decision no. 8 – dated 27 January 1992: S/AC.26/1992/8 https://uncc.ch/sites/default/files/attachments/S-AC.26-DEC%208%20%5B1992%5D.pdf
[41] Ibid

amounts in the armed activities context found in the present case.

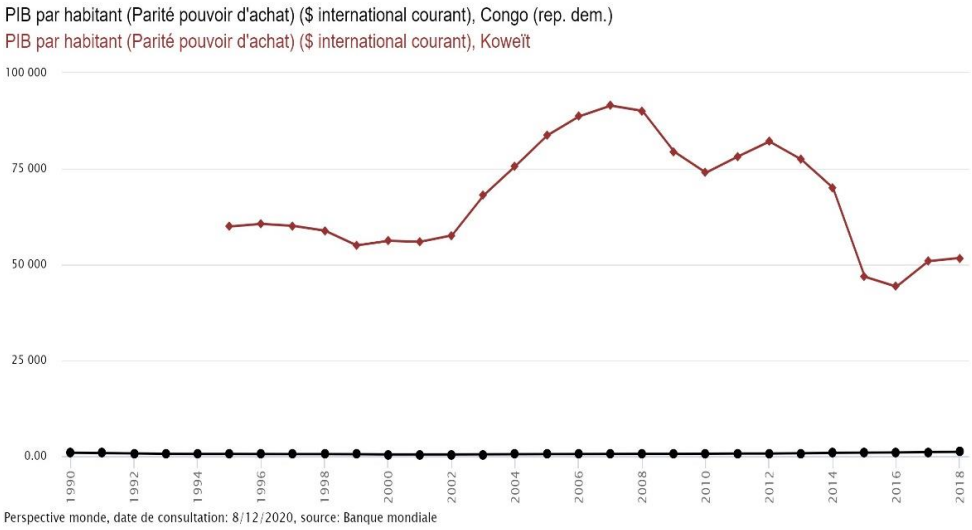
103. By way of reminder, the DRC's individual claim amount for deaths/injuries caused by deliberate targetting of civilian populations is USD 34,000 applicable to actions taking place between 1998 and 2003.

104. A comparator individual compensation figure awarded by the UNCC, in its Governing Council decison 8 category A, was USD 30,000 (decided in 1992).

105. The two following counter-balancing factors should be considered in any assessment of the applicability of the UNCC award of USD 30,000 to the circumstances of the present case:

105.1 An argument could be made for this figure to be increased by some inflationary adjustment to take into account the time value of money over the approximate 10-year period between 1992 and the period of Armed Activities[42]; and.

105.2 As a counterbalance, it should be recalled that the USD 30,000 individual amount was found to be appropriate in the context of deaths and injuries caused by military activities in Kuwait, a country whose residents on average enjoy a level of GDP per head far in excess of that of the DRC's residents, as illustrated in the following chart, created by the University of Sherbrooke global database, known as "Perspective Monde"[43]:



[42] As defined in the present case; mid-1998 to mid-2003

[43] I note that the University of Sherbrooke data for GDP per head for Kuwait is not available for years prior to 1995. However, for general comparative purposes according to the Sherbrooke database, Kuwait's GDP per head between say, 1995 and 2002 stayed in a narrow range between USD 54,987 and USD 60,591 (at purchasing power parity in current international US dollars). International Monetary Fund database figures which are available for periods even prior to 1990, show that Kuwait's GDP per head in 1990 was approximately USD 24,500 (at purchasing power parity in current international US dollars): Source: IMF database online at: https://www.imf.org/en/Publications/WEO/weo-database/2018/April/weo-report?c=443,&s=PPPPC,&sy=1988&ey=2018&ssm=0&scsm=1&scc=0&ssd=1&ssc=0&sic=0&sort=country&ds=.&br=1

106. Based on my above analysis, and taking both of the counter-balancing factors into account, I am of the opinion that **USD 30,000** is a reasonable figure with a precedent for its use in analagous circumstances and thus can be recommended for the Court's consideration for application to each individual death/injury found to have been caused by the deliberate targetting of civilian victims.

107. Similarly, the DRC's individual claim amount for deaths/injuries suffered by non-targetted civilian populations or 'collateral victims' in 1998-2003 is USD 18,913; and is based on a methodology of assuming an average victims' future earning capacity, that averaged the victims' age at death, and that used the DRC's asserted figure for GDP per head in 2015[44].

108. A comparator amount awarded by the UNCC, in its Governing Council decison 8 category B, was USD 15,000 (decided in 1992). In my view, the same two counter-balancing adjustments could potentially have been considered but these can reasonably seen to be neutral overall.

109. Based on my above analysis, and taking both counter-balancing issues into account, I am of the opinion that **USD 15,000** is a reasonable and reasoned figure to recommend for the Court's consideration for application to each individual death/injury for collateral victims.

110. In summary, my recommended amounts are shown alongside the claimed amounts in the table below:

	Claimed amount	Recommended amount
Deaths/injuries resulting from acts of violence deliberately targeted at civilian populations	USD 34,000	USD 30,000
Deaths/injuries not resulting from violence targeted at civilian populations but rather, as collateral victims	USD 18,913	USD 15,000

B) Injuries and mutilations – CLAIM: USD 54,464,000

111. The DRC asserts claims for injuries suffered in two categories, broadly similar to those distinguishing circumstances in the previous claim line item, as follows:

111.1 Injuries resulting from **acts of violence deliberately targeted** at civilian populations[45];
111.2 Injuries resulting from violence against civilian populations as **collateral victims**[46].

112. Although both causes are without doubt harrowing, the more aggravated circumstances of an alleged deliberate targetting of civilians, leads the DRC to attach a higher monetary amount on the individual claim for each death/injury so caused, when compared to the analagous individual amount in the (somewhat) less grevious circumstances where a civilian was killed or injured even though not specifically targetted in the attack.

[44] To reiterate, I have been unable to verify the asserted figure of USD 753.20 for DRC's GDP per head in 2015 from the University of Sherbrooke's database cited by DRC as its source, i.e. www.perspective.usherbrooke.ca
[45] DRC Memorial, paras. 7.17-7.18.
[46] DRC Memorial, para. 7.19.

113. The DRC's claim computations are based on the following individual amounts:

113.1 Injuries resulting from **acts of violence deliberately targeted** at civilian populations:

- flat rates are based on Congolese court awards.
- individual claim amounts of USD 3,500 for a serious injury or USD150 for a minor injury[47]

113.2 Injuries resulting from violence against civilian populations as **collateral victims:**

- a flat rate based on Congolese ordinary court awards.
- for minor injuries, an individual claim amount of USD 100[48].

114. No supporting evidence is provided by the DRC for the USD 3,500 claimed amount that is stated to be based on judgements of Congolese courts for serious injuries. The relevant court awards are stated to range from USD 550 to USD 5,000, with the average being USD 3,500[49]. In the absence of the court documents, I have no evidentiary basis on which to assess this claim figure. I therefore will rely on the jurisprudence of the UNCC.

115. In this way, as quoted above, I rely upon the UNCC category B definition and its award amounts in respect of personal injury, as follows:

> ***"CATEGORY B:***
> *The individual suffered serious personal injury involving dismemberment, permanent or temporary significant disfigurement, or permanent or temporary significant loss of use or limitation of use of a body organ, member, function or system.*
>
> *- USD 15,000 ceiling for dismemberment, permanent significant disfigurement, or permanent loss of use or permanent limitation of use of a body organ, member, function or system;*
> *- USD 5,000 ceiling for temporary significant disfigurement or temporary significant loss of use or limitation of use of a body organ, member, function or system*. "[50]

116. In my opinion the DRC's claimed amount of USD 3,500 for injuries can reasonably be benchmarked against the lower of the above two grades of injury – with a UNCC award amount of USD 5,000 - and hence it follows that the claimed amount of USD 3,500 can be recommended as reasonable.

117. The other two (relatively) minor injury claim amounts are asserted by the DRC without evidence that would have substantiated them as being derived from various Congolese court judgements but, due to their nominal values, my opinion is they that can be recommended without any need for adjustment.

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[47] DRC Memorial, para. 7.17.
[48] DRC Memorial, para. 7.19.
[49] DRC Memorial, paras. 7.17-7.18.
[50] UNCC Governing Council decision no. 8 – dated 27 January 1992: S/AC.26/1992/8

My recommendations to the Court

In summary, my recommended amounts are shown alongside the claimed amounts in the table below:

	Claimed amount	Recommended amount
Injury resulting from acts of violence deliberately targeted at civilian populations		
Based on Congolese court awards:		
- Serious injury	USD 3,500	USD 3,500
- Minor injury	USD 150	USD 150
Based on Congolese ordinary courts:		
- Minor injury	USD 100	USD 100
Injury not resulting from violence targeted at civilian populations but as collateral victims		
Based on Congolese court awards:		
- Ituri: serious injury	USD 3,500	USD 3,500
- Ituri: minor injury	USD 150	USD 150
Based on Congolese ordinary courts:		
- Eastern Congo, Ituri, Kisangani: minor	USD 100	USD 100

C) Incidences of rape – CLAIM: USD 33,458,000

118. The DRC asserts claims for rape injuries suffered in two categories, as follows[51]:

118.1 "Simple" rape[52];
118.2 Aggravated rape.

119. The DRC's claim computations are based on the following individual amounts:

119.1 Injuries resulting from "simple" rape:
- flat rate of USD 12,600 based on Congolese court awards[53].

119.2 Injuries resulting from aggravated rape:
- a flat rate of USD 23,200 based on Congolese court awards[54].

120. Given the described circumstances of the incidences of rape, it is unsurprising and reasonable that no documentary evidence is provided on an individual basis. In my review of the victim identification forms, I note that victims indicated positively where appropriate.

121. I note however that in its responses to questions of the Court, the DRC provided contradictory information to the amounts claimed and outlined above by stating that the Congolese court

[51] DRC Memorial, paras. 7.08 and 7.22.
[52] The term "simple" is the DRC's own chosen terminology. I do not condone its use in relation to alleged rape.
[53] DRC Memorial, para. 7.23.
[54] DRC Memorial, para. 7.23.

awarded USD 5,000 in respect of rape injuries.

122. It is therefore the case that there is no supporting court evidence from the DRC for the USD 12,600 and USD 23,200 claimed amounts stated to be based on judgements of Congolese courts. In the absence of the court documents, I have no evidentiary basis on which to assess these claim figures. I therefore will rely on the jurisprudence of the UNCC.

123. In this way, as quoted above, I rely upon the UNCC category C definition and its awarded amount in respect of sexual assualt or aggravated assault, as follows:

> *"**CATEGORY C:***
> *The individual suffered sexual assault or aggravated assault or torture.*
> *USD 5,000 ceiling per incident."*[55]

124. Using the abovementioned UNCC jurisprudence as a methodological basis and a benchmark, and noting that the DRC stated that its courst have also awarded this same figure in rape cases, my recommended amount for rape is a flat rate of USD 5,000.

My recommendation to the Court

125. My recommended flat rate amount is shown alongside the claimed amounts in the table below:

	Claimed amount	**Recommended amount**
Based on Congolese court awards:		
- "Simple" rape	USD 12,600	USD 5,000
- Aggravated rape	USD 23,200	USD 5,000

D) Child soldiers – CLAIM: USD 30,000,000

126. The DRC claims compensation in respect of trauma of children being torn from their families and their loss of education and life chances[56].

127. The DRC's claim is not based on evidence of loss, but rather is asserted for each individual affected in an amount that the DRC deems reasonable, at USD 12,000[57].

128. I note that in its responses to questions of the Court, did not provide any further information regarding this claim item.[58]

129. Given the circumstances of each child soldier, in my opinion it is no unreasonable that no documentary evidence is provided on an individual basis.

[55] UNCC Governing Council decision no. 8 – dated 27 January 1992: S/AC.26/1992/8
[56] DRC Memorial, paras. 7.26-7.28.
[57] DRC Memorial, para. 7.27.
[58] DRC Responses to questions of the Court, question 10.

130. It is the case that there is no supporting quantum evidence from the DRC for the USD 12,000 individual[59]. In the absence of the court documents, I have no evidentiary basis on which to assess these claim figures and will therefore rely on the jurisprudence of the UNCC.

131. In this way, I rely upon UNCC category E definition and its awarded amount by way of an analagous trauma caused by being detained and being in imminent threat to life, as follows:

> *"**CATEGORY E:***
> *The individual was taken hostage or illegally detained for more than three days, or for a shorter period in circumstances indicating an imminent threat to his or her life.*
> *USD 1,500 per claimant for being taken hostage or illegally detained for more than three days, or for a shorter period in circumstances indicating an imminent threat to life;*
> *USD 100 per day for each day detained in Iraq or Kuwait beyond three;*
> *Ceiling of USD 10,000 per claimant."*[60]

132. Using the abovementioned UNCC jurisprudence as a basis and a benchmark, my recommended amount for trauma caused to a child soldier is a flat rate of USD 10,000.

My recommendation to the Court

My recommended flat rate amount is shown alongside the claim amount below:

	Claimed amount	**Recommended amount**
Claim amount deemed reasonable by the DRC:		
- Child soldier	USD 12,000	USD 10,000

E) Population flight and displacement – CLAIM: USD 186,853,800

133. The DRC claims compensation in respect of harm and trauma caused to individuals as a result of being forced to flee from home due to armed hostilities[61].

134. The DRC's claim computations are based on flat rates applied in the following cases, based on location and military units involved:

134.1 In Ituri, due to Ugandan breaches:
- a flat rate of USD 300[62].

134.2 In Kisangani, plus Eastern Congo (outside Ituri)**:**
- a flat rate of USD 100[63].

135. No supporting evidence is provided by the DRC for these two flat rates claimed.

136. Given the described circumstances of the civilians' flight into the forest and other surrounding areas seeking physical safety, it is in my opinion unsurprising and quite reasonable that no

[59] DRC Memorial, paras. 7.28 and 3.36.
[60] UNCC Governing Council decision no. 8 – dated 27 January 1992: S/AC.26/1992/8
[61] DRC Memorial, paras. 7.29-7.30.
[62] DRC Memorial, para. 7.30.
[63] DRC Memorial, para. 7.31.

documentary evidence has been provided by the DRC on an individual basis. In my review of the original French language victim identification forms submitted, I note that individuals indicated positively where appropriate (*fuite dans le foret*).

137. I note with interest that the DRC refers to UNCC compensation awards as benchmarks in respect of civilians being forced to flee due to military hostilities[64]. By way of comparison, UNCC awards for population flight and displacement started at a lump sum of USD 1,500, increasing by a daily rate of USD 50, and with a ceiling set at USD 5,000 per individual. With these benchmarks in mind, the flat rate amounts claimed by the DRC can be seen in some relevant context.

138. The DRC's claim is not based on evidence of loss, not unreasonably in my opinion, but rather is asserted for each individual affected in flat rate amounts that the DRC deems reasonable, at USD 300 and USD 100.

138.1 My opinion is that the two flat rates claimed by the DRC for this category of loss are seen to be not unreasonable at USD 300 and USD 100.

My recommendation to the Court

My recommended amounts are shown alongside the claimed amounts below:

	Claimed amount	**Recommended amount**
Based on Congolese court awards:		
- Ituri, due to Ugandan breaches:	USD 300	USD 300
- Kisangani and Eastern Congo (outside Ituri):	USD 100	USD 100

[64] DRC Memorial, para. 3.24.

Summary of recommended amounts

139. In summary, for each category my recommended amounts are shown alongside the claimed amounts in the table below:

	Claimed amount	Recommended amount
A) Human lives lost		
Deaths/injuries resulting from acts of violence deliberately targeted at civilian populations	USD 34,000	USD 30,000
Deaths/injuries not resulting from violence targeted at civilian populations but rather, as collateral victims	USD 18,913	USD 15,000
B) Injuries and mutilations		
Injury resulting from acts of violence deliberately targeted at civilian populations		
Based on Congolese court awards:		
- Serious injury	USD 3,500	USD 3,500
- Minor injury	USD 150	USD 150
Based on Congolese ordinary courts:		
- Minor injury	USD 100	USD 100
Injury not resulting from violence targeted at civilian populations but as collateral victims		
Based on Congolese court awards:		
- Ituri: serious injury	USD 3,500	USD 3,500
- Ituri: minor injury	USD 150	USD 150
Based on Congolese ordinary courts:		
- Eastern Congo, Ituri, Kisangani: minor	USD 100	USD 100
C) Incidences of rape		
Based on Congolese court awards:		
- "Simple" rape	USD 12,600	USD 5,000
- Aggravated rape	USD 23,200	USD 5,000
D) Child soldiers		
Based on a figure deemed reasonable by DRC:	USD 12,000	USD 10,000
E) Population flight and displacement		
Based on figures deemed reasonable by DRC:		
- Ituri	USD 300	USD 300
- Eastern Congo and Kisangani	USD 100	USD 100

SECTION: Property damage

140. In their Memorial[65], the DRC presents claims for losses to property organised according to the geographical location and the nature of properties relevant.

141. The two geographical areas adopted by the DRC, along with the component claims for each area, can be summarised in the table below (with references to the DRC Memorial)[66]:

Compensation for damage to property:		*7.33-7.53*		
(A) Property in Ituri				
Destruction of dwellings		*7.35-7.37*	12.956.200	
Destruction of infrastructure		*7.38-.7.42*	21.250.000	
Looting		*7.43*	7.318.413	
	[Arithmetically accurate in Memorial: USD 41,524,613 in para 7.43]			**41.524.613**
(B) Property in Kisangani and rest of Ugandan-occupied territory		*7.45-7.51*		
Property in named locations:	Kisangani	*7.46*	17.323.998	
	Beni	*7.46*	5.526.527	
	Butembo	*7.46*	2.680.000	
	Gemena	*7.46*	97.550	
			25.628.075	
Property of la Société Nationale d'Electricité		*7.47*	97.412.090	
Property of Congolese armed forces		*7.48*	69.417.192	
	[Amount stated in Memorial: USD 198,447,357 in para 7.49]			**192.457.357**
	[Amount stated in Memorial: USD 239,971,970 in para 7.64]			**233.981.970**

A) Property in Ituri – CLAIM: USD 41,524,613[67]

142. The DRC Memorial shows that the claim for Property Damage losses in Ituri fall into three categories, as summarised below:

	DRC Memorial paras.	**Claim amount USD**
Destruction of dwellings	*7.35-7.37*	12,956,200
Destruction of infrastructure	*7.38-7.42*	21,250,000
Looting	*7.43*	7,318,413
		41,524,613[68]

Destruction of dwellings

[65] DRC Memorial, paras. 7.33-7.53
[66] In this table I show instances of apparent arithmetic inaccuracy with some figures in the DRC Memorial.
[67] As restated to correct the arithmetic in the DRC Memorial.
[68] As restated.

143. The claim for destruction of dwellings (in Ituri)[69] is calculated in a systematic way, using a methodology or formula which while being intuitive, by using a *broad brush* approach by categorising the properties into (only) three grades and adopting a round-sum replacement cost for each grade, almost inevitably leaves the resulting computations subject to uncertainty and a lack of precision due to the absence of granular detail or evidence in respect of each individual property.

144. At the outset of this section, I can make my view clear that given the prevailing context of the Armed Activities having caused the civil disturbances in general, and specifically the physical destruction to such significant numbers of properties[70] – the vast majority of which are designated by the DRC as having been "light"[71] or basic structures mainly in rural areas - it is understandable (and in my view, not unreasonable) for the damages claim in respect of thousands of individual properties to have been formulated in such a way.

145. The following step-by-step description shows how the claim amount was derived:

Destruction of dwellings (Ituri)

DRC designates three grades of dwellings; basic, medium and luxury.
A replacement cost basis is used, with the following claim amount for each grade:

Basic	USD 300	*[para 7.35]*
Medium	USD 5,000	
Luxury	USD 10,000	

The claim amount is built up based on the destruction of **8,693 dwellings** in Ituri (para. 3.45):

	[para 3.45c]		*[para 3.45c]*		
Basic	80%	x	8,693	=	6,954
Medium	15%	x	8,693	=	1,304
Luxury	5%	x	8,693	=	435

To which the claimed replacement cost is applied, deriving the total claim amount:

Basic	6,954	x	USD 300	=	USD 2,086,200
Medium	1,304	x	USD 5,000	=	USD 6,520,000
Luxury	435	x	USD 10,000	=	USD 4,350,000
					USD 12,956,200

146. According to its paragraph 3.45(c), the DRC Memorial cites analysis of the tabulated results of its own investigations conducted in Ituri as the source and basis for the total number of

[69] DRC Memorial, paras. 3.42-3.46
[70] For example, as described in DRC Memorial, paras. 3.42-3.44
[71] As officially translated into English from the original French term *légère* used by the DRC.

dwellings destroyed as being 8,693[72].

147. In the same paragraph, the Memorial goes on to break down the total figure into the three grades of dwellings using its 80%, 15% and 5% percentages shown above[73]. The basis for these chosen percentages is not evidenced, but rather that it is stated that "... *DRC considers it reasonable to break the figure down into the following categories of destroyed buildings:* ..."[74]

148. My review of the original language Annexe 1.3 reveals a different total number of properties destoyed in Ituri (13,609) and also a different pattern for the split between their designated grades, as follows[75]:

Basic	98%	13,384
Medium	1%	199
Luxury	1% *(de minimis)*	26

149. The replacement cost figures (USD 300, USD 5,000 and USD 10,000) are not evidenced and are not explained in the DRC Memorial[76].

150. My desk research into potential property replacement costs reveals no useful data. A UN Habitat field report (2015) from a sustainable basic construction project in Eastern DRC provided useful building ideas and recommendations, but no cost data[77].

151. That said, in my opinion the claimed replacement costs asserted by the DRC are not unreasonable in their amounts, particularly given that the overwhelming majority of the properties are being valued for claim purposes at USD 300 each.

152. Accordingly, based on my analysis of the available evidence as described above, my recommended amount can be calculated as follows:

Basic	13,384	x	USD 300	=	USD 4,015,200
Medium	199	x	USD 5,000	=	USD 995,000
Luxury	26	x	USD 10,000	=	USD 260,000
					USD 5,270,200

My recommendation to the Court

My recommended amounts are shown alongside the claimed amounts below:

[72] This figure is cited to the DRC Memorial, Annexe 1.3 (the memorial citation reads as follows in its footnote 316: *"Result of using the software created by the DRC for the present proceedings (by entering "Ituri" and "Destruction of property")."*

[73] DRC Memorial, para. 7.35.

[74] DRC Memorial, paras. 3.45 (c).

[75] Source: DRC Memorial, Annexe 1.3, page 3, « Liste biens perdus et leurs fréquences ITURI.pdf », line items no. 118 [habitation de luxe, 26], no. 119 [habitation légère, 13384], no. 120 [habitation moyenne, 199].

[76] DRC Memorial, para. 7.35.

[77] UN Habitat, Nairobi, website: https://unhabitat.org/sites/default/files/download-manager-files/Sustainable_Housing_Reconstruction_in_the_Eastern_Democratic_Republic_of_Congo.pdf

	Claimed amount	Recommended amount
Destruction of dwellings		
- Basic	USD 2,086,200	USD 4,015,200
- Medium	USD 6,520,000	USD 995,000
- Luxury	USD 4,350,000	USD 260,000
	USD 12,956,200	**USD 5,270,200**

Destruction of infrastructure

153. The claim for destruction of infrastructure is calculated in a similar way as for dwellings (above), in that the DRC adopt an approach which does not provide granular details in evidence for each of the various built structures claimed for[78].

154. The infrastructure claim can be summarised as follows:

Schools[79]	200	x	USD 75,000	=	USD 15,000,000
Clinics[80]	50	x	USD 75,000	=	USD 3,750,000
Administrative[81]	50	x	USD 50,000	=	USD 2,500,000
					USD 21,250,000

155. The figure for the number of schools destroyed can be verified to a report of the Secretary General of the United Nations on the MONUC mission, dated 27 May 2003[82].

156. The figures for both clinics and adminsitrative buildings are DRC estimates. That they are round sums, as in the case of dwellings (above), inevitably makes them subject to uncertainties due to an absence of detail or evidence in respect of each individual property.

157. No evidence is provided in respect of any of the round sum values for any of the types of infrastructure buildings. Due to a complete lack of any basis, rationale or evidence provided by DRC in this regard, in my opinion the values claimed should be reduced by an evidentiary discount factor of 25% by way of seeking to take account of the inherent uncertainty in the way this claim has been put forward.

158. Accordingly, based on my analysis and opinion of the available evidence and assertions of the DRC as described above, my recommended amounts can be calculated as follows:

Schools[83]	200	x	USD 56,250	=	USD 11,250,000
Clinics[84]	50	x	USD 56,250	=	USD 2,812,500
Administrative[85]	50	x	USD 37,500	=	USD 1,875,000
					USD 15,937,500

[78] DRC Memorial, paras. 3.45 (a) and Annexe 3.6, para. 10.
[79] DRC Memorial, para. 7.39.
[80] DRC Memorial, para. 7.40.
[81] DRC Memorial, para. 7.41.
[82] DRC Memorial, para. 7.41.
[83] DRC Memorial, para. 7.39.
[84] DRC Memorial, para. 7.40.
[85] DRC Memorial, para. 7.41.

My recommendation to the Court

159. My recommended amounts are shown below, alongside the claimed amounts:

	Claimed amount	Recommended amount
Destruction of infrastructure		
- Schools	USD 15,000,000	USD 11,250,000
- Clinics	USD 3,750,000	USD 2,812,500
- Administrative	USD 2,500,000	USD 1,875,000
	USD 21,250,000	**USD 15,937,500**

Looting

160. DRC's claim in respect of losses arising from the looting of property is asserted in the amount of **USD 7,318,413[86].** Although several harrowing events are described in the DRC Memorial[87] and supported by reports in its annexes, this amount claimed for pecuniary loss is not well supported by evidence.

161. There is no breakdown of the claimed figure, even though the DRC Memorial states that the total figure was derived from records generated by its own investigators visiting affected regions of the country[88].

162. Given this absence of clarity or breakdown of evidence, I have no practicable evidentiary basis on which to assess the claim amount put forward. In these unfortunate circumstances which creates unavoidable uncertainties as to the extent and the value of moveable assets which was lost in the looting of properties, I am of the opinion that an evidentiary discount factor of 50% should be applied in deriving a compensation award.

163. Applying this evidentiary discount factor of 50% would derive a recommended amount of compensation of USD 3,659,206.

My recommendation to the Court

164. My recommended amount is shown below, alongside the claimed amount:

	Claimed amount	Recommended amount
Looting	**USD 7,318,413**	**USD 3,659,206**

[86] DRC Memorial, para. 7.43.
[87] DRC Memorial, para. 3.47 and, for instance, Annexe 1.06 (in its para. 73).
[88] DRC Memorial, para. 7.43.

Summary of recommended amounts -
Property Damage (Ituri)

165. In summary, for each category my recommended amounts are shown alongside the claimed amounts in the table below:

	Claimed amount	Recommended amount
Destruction of dwellings		
- Basic	USD 2,086,200	USD 4,015,200
- Medium	USD 6,520,000	USD 995,000
- Luxury	USD 4,350,000	USD 260,000
	USD 12,956,200	**USD 5,270,200**
Destruction of infrastructure		
- Schools	USD 15,000,000	USD 11,250,000
- Clinics	USD 3,750,000	USD 2,812,500
- Administrative	USD 2,500,000	USD 1,875,000
	USD 21,250,000	**USD 15,937,500**
Looting	**USD 7,318,413**	**USD 3,659,206**
Total - Property Damage (Ituri)	**USD 41,524,613**	**USD 24,866,906**

B) Property in Kisangani and Ugandan occupied territory –
CLAIM: USD 192,457,357

166. The DRC Memorial shows that the claim for Property Damage losses in Kisangani fall into three categories, as summarised below:

	DRC Memorial paras.	Claim amount USD
Property in four named locations	*7.46*	25,628,075
Property of la Société Nationale d'Electricité	*7.47*	97,412,090
Property of Congolese armed forces	*7.48*	69,417,192
		192,457,357

Property losses in four named towns

167. The claim for property lost in the following four named locations is described in some detail in the DRC Memorial, across various sections of the document[89] and in several annexes.

[89] DRC Memorial, for instance in paras. 4.22-4.26; 4.30-4.32; 4.48-4.54; 4.60 (list) and 7.45-7.46.

168. I can summarise the claimed amounts in the following table:

	DRC Memorial Annexes.	**Claim amount USD**
Kisangani	*4.03_F.pdf*	17,323,998
Beni	*2.04bis_F.pdf*	5,526,527
Butembo	*2.04ter_F.pdf*	2,680,000
Gemena	*2.04quater_F.pdf*	97,550
		25,628,075

169. I have reviewed the well organised lists of property losses produced from declarations by individuals that are available for Beni, Butembo and Gemena and I have been able to carry out manual additions deriving figures that closely approximate the figures presented above. The figures supported by the lists in the DRC Annexes are as follows:

a. Beni USD 5,551,427[90]
b. Butembo USD 2,680,030[91]
c. Gemena USD 86,380[92]

170. The challenges faced in the process of DRC investigators being able to collate and detail losses, given the prevailing circumstances, are not underestimated. The evidentiary basis is commendable but is not, in my opinion, complete, fully detailed or supported by documentation on the assets' market values or historic costs – even though, I recognised that setting such an evidentiary threshold may have been unachievable in the prevailing circumstances.

171. However, to take into account these abovementioned evidentiary shortcomings, and hence to recognise the risk of overstatement in the claim, I am of the view that an evidentiary discount factor of 25% should be applied to the evidenced amounts when calculating my recommended amounts (below) in respect of Beni, Butembo and Gemena.

172. In respect of Kisangani, the presentation and organisation of the available evidence by DRC is less clear and less satisfactory. I have reviewed the annexe cited by the DRC[93] and note two deficiencies - it appears to be incomplete and provides no systematic breakdown of component claim amounts building up to the total amount is provided. While the document lists many instances of described losses, no support for figures can be clearly seen. It is not unreasonable for the Court to have expected DRC to assume and achieve the burden of collating and presenting a fully particularised breakdown of component claim amounts from all of the various third-party source documents cited, which would have

[90] DRC Memorial, Annexe 2.04bis_F.pdf, page 94
[91] DRC Memorial, Annexe 2.04ter_F.pdf, page 32
[92] DRC Memorial, Annexe 2.04quater_F.pdf, page 6
[93] DRC Memorial, Annexe 4.03_F.pdf

allowed for a clearer and more robust claim to be assessed by the Court.

173. To take account of the evidentiary and presentational issues identified, and hence an associated risk of overstatement in the claimed figures, I apply an evidentiary discount factor of 40% in deriving my recommended amount in respect of Kisangani.

My recommendation to the Court

174. In summary, for each named location recommended amounts are shown alongside the claimed amounts below:

	Claimed amount	**Recommended amount**
Kisangani[94]	USD 17,323,998	USD 10,394,399
Beni[95]	USD 5,526,527	USD 4,163,570
Butembo[96]	USD 2,680,000	USD 2,010,022
Gemena[97]	USD 97,550	USD 64,785
	USD 25,628,075	**USD 16,632,776**

Property of la Société Nationale d'Electricité SA ("SNEL")[98]

175. The SNEL claim for losses is supported by a 17-page report dated 31 May 2016[99] prepared by a nine-member committee of company employees[100], which on 9 June 2016 was sent to the Congolese President, the Prime Minister and other cabinet ministers.

176. On page 4 of their report, SNEL provides a table that breaks down seven categories of losses claimed, across three Congolese provinces, as follows:

[94] Recommended amount is: USD 17,323,998 (claimed) x 60%
[95] Recommended amount is: USD 5,551,427 (evidenced) x 75%
[96] Recommended amount is: USD 2,680,030 (evidenced) x 75%
[97] Recommended amount is: USD 86,380 (evidenced) x 75%
[98] DRC Memorial, para. 7.47.
[99] DRC Memorial, Annexe 4.26 (available only in the original French language)
[100] As identified by name and job title on page 15 of the SNEL report.

	Libellé	Nord Equateur (USD)	Nord Kivu (USD)	Province Orientale(USD)	Total Général (USD)
	Pillage des Centrales thermiques ou hydroélectrique	11 913 275,92	1 224 200,00	10 763 283,94	**23 900 759,86**
	Destruction des postes MT/MT et cabines MT/BT	5 182 263,70	569 010,00	3 494 513,50	**9 245 787,20**
	Dégâts subis par les réseaux MT , BT et EP	10 772 785,00	461 398,60	4 629 968,76	**15 864 152,44**
	Manque à gagner sur les ventes	195 341,36		6 348 610,64	**6 543 952,00**
	Dégâts sur bâtiments administratifs et résidence SNEL	2 795 436,45	174 000,00	9 286 463,06	**12 255 899,51**
	Dégâts et forfait humains	16 560 504,28		10 603 034,83	**27 163 539,11**
	Autres préjudices	1 788 000,00		650 000,00	**2 438 000,00**
	TOTAL GENERAL	**49 207 606,71**	**2 428 608,60**	**45 775 874,73**	**97 412 090,04**

Province	**Claim amount USD**
North Equateur	49,207,607
North Kivu	2,428,608
Orientale	45,775,875
	97,412,090

177. I have reviewed the subordinate tables within the SNEL report and note several of the tables' totals do not agree (i.e reconcile) with the summary table shown in the image above. This is an unfortunate error and a matter of detail that the DRC can, in my opinion, reasonably have been expected to rectify before submission of their claim.

178. Other observations on the SNEL report include the following:

a. The SNEL committee laid out a list of challenges they faced in fulfilling their mandate of identifying, valuing and evidencing all relevant losses of their company – a list which appears reasonable given my understanding of the prevailing circumstances including the time elapsed between date of the Armed Activities in 1998-2003 and the date of the SNEL report in 2016.

b. The valuation metholodogy adoped by SNEL is that of (new) replacement cost, even though many assets destroyed or lost were identified as haveing been aged at vthe time. Accordingly, in my opinion it would have been more appropriate for the DRC and SNEL to present this claim using a 'depreciated replacement cost' approach.

c. Included within the claim figures are the cost of new replacement equipment along with ancillary service costs to install.

d. No annexes containing underlying details or evidence appear to have been referenced by, or attached to, the SNEL report.

e. Included within the list of asset loss categories is a claim for USD 6,543,953 for **loss of revenues** by two of SNEL's isolated hydroelectric centres located in Kisangani and Gbadolite. I note a methodological overstatement in the calculations. SNEL have claimed for an 8-year period of war ("1998-2005") which goes beyond the findings of the Court in its December 2005 judgement. Hence, this claim amount needs to be reduced from eight to five years (before any other evidentiary factor is applied). The resulting claim would be reduced from USD 6,543,953 to **USD 4,089,970** (a reduction of USD 2,453,983).

179. Thus, based on a review of the evidence provided for this claim element, I am of the opinion that SNEL has prepared and submitted a report which seeks to systematically evaluate its own losses. Whilst this is extremely useful, the report suffers from certain evidentiary deficiencies in its efforts to substantiate SNEL's claim. The report provides no detailed back-up calculations or underlying evidence supporting the various replacement costs or services claimed. Also, the adoption of a 'new for old' replacement cost approach requires to be adjusted for since, as SNEL acknowledge, much of the equipment destroyed was already old and heavily used. In addition, the overstatement in the loss of revenue claim item must be adjusted for, but leads to an inference that other claim components may also contain overstatements.

180. In summary, to the adjusted claim figures an evidentiary discount factor of 40% should be applied so as to recognise and take into account the abovementioned scope limitations, methodological overstatements and other evidentiary gaps. Based on this, the resulting recommended amount is calculated to be USD 56,974,865.

My recommendation to the Court

181. My recommended amount is shown below, alongside the claimed amount:

	Claimed amount	**Recommended amount**
SNEL SA	**USD 97,412,090**	**USD 56,974,865**

Property of the Congolese Military Forces[101]

182. The military forces' claim for losses is supported by a two-page summary dated 31 August 2016[102], stamped and signed by a General in the Congolese Army[103].

183. The document lists 16 categories of arms, munitions, armoured vehicles and ships. The majority of the line items are given a unit "value"[104] and 9 of those unit costs can be agreed to the second page of the document which lists unit costs (couts) for 27 military items. No other evidence in support has been seen.

184. Notable high value items included in the list of lost military assets include:

a. Two ships (each one valued at over USD 21 million);
b. 400 tonnes of materiel and munitions (valued at USD 30,000/tonne, making a total claim value of USD 12 million); and
c. 800 tonnes of munitions (valued at 10,000/tonne, making a total claim value of USD 8 million).

185. The above three asset categories amount to USD 68,350,000 which represents over 98% of the total military assets' claim.

186. Given the materiality of these three line items, I would have expected to see documentary support that could have included:

a. Evidence in supporting for the events that caused the loss of each vessel, including the type, age and identifying name of each vessel ;
b. Evidence supporting the vessels' claimed unit value/cost of USD 21,375,000; and
c. Evidence for the unit value/cost of each tonne of munitions.

187. In the absence of further details it has not proved possible for me to independently verify the claimed loss of these significant (and potentially individually identifiable) military assets' or indeed, their unit values.

188. Taking the above analysis into account, I am of the opinion that signiificant evidentiary gaps remain – gaps that the DRC should reasonably have foreseen and rectified in advance of submitting their claim to the Court. I am therefore left with being required to use an evidentiary discount factor to reflect the uncertainties and the potential for overstatement. In this respect, I adopt an evidentiary discount factor of 40% which results in a recommended amount of USD 41,650,315.

[101] DRC Memorial, para. 7.48 and chapter 2.
[102] DRC Memorial, Annexe 7.04 (available only in the original French language)
[103] DRC Memorial, Annexe 7.04, page 2, General Damas Kabulo.
[104] It is noted that the French term *valeur* is used rather than, for instance *cout* (cost).

My recommendation to the Court

189. My recommended amount is shown below, alongside the claimed amount:

	Claimed amount	Recommended amount
Property of the Congolese Military Forces	**USD 69,417,192**	**USD 41,650,315**

Summary of recommended amounts

190. In summary, for each category recommended amounts are shown alongside the claimed amounts in the table below:

	Claimed amount	Recommended amount
Property in four named locations	USD 25,628,075	USD 16,632,776
Property of la Société Nationale d'Electricité	USD 97,412,090	USD 56,974,865
Property of Congolese armed forces	USD 69,417,192	USD 41,650,315
	USD 192,457,357	**USD 115,257,956**

Appendix 3.1: Signature of Expert

Signature of expert

This report has been prepared in accordance with the terms of reference set out by the International Court of Justice by Geoffrey Senogles on 19 December 2020:

Signed:_____

Report 4
Exploitation of Natural Resources

Dr. Michael Nest

(Montreal, 19th December 2020)

Table of Contents

List of Figures, Maps and Tables

1. Introduction

191. The ICJ provided terms of reference (TOR) to guide this report - see **Annex 1**.

192. In keeping with these TOR, this report focuses on *the subset of quantity and value that was "illegally exploited"* in the Ugandan area of influence (UAI) in the territory of the Democratic Republic of the Congo (DRC) between 1998 and 2003. Amounts for the entire DRC were obtained only if needed to derive estimates of quantity and value of resources relevant to the UAI, including in Ituri and outside Ituri ('non-Ituri').

193. The activity of exploiting value from resources was defined as falling into two categories:

193.1 In the UAI outside Ituri (in non-Ituri) when undertaken by UPDF personnel only. This means any exploitation by, for example, personnel of the Mouvement de Libération du Congo (MLC), is excluded from this report.

193.2 Within Ituri when undertaken by any and all armed forces and any affiliated administrative personnel, including both UPDF and Congolese.

194. The period of "6 August 1998 to 2 June 2003" stated in the TOR was interpreted as comprising 58 months including the entire month of August 1998, until the end-May 2003. I.e., only the last five months of 1998 and only the first five months of 2003. The years of 1998 and 2003 in tables in this report represent only calculations for these five-month periods and not the whole year.

195. The estimated total quantity of each resource produced is in Table 1. All quantities are in kilograms, except diamonds which are in carats.

196. The estimated total value each resource before any exploitation by personnel is **$401,174,017** in 2020 US dollars[105], of which $141,229,808 (35%) is in Ituri and $259,944,211 (65%) is in non-Ituri (see Table 3).

197. The total estimated value of exploitation activities by personnel in the UAI is **$55,809,542**, which includes $38,986,151 (70% of value extracted) in Ituri, and $16,823,390 in non-Ituri (30% of value extracted). These data are in Table 4.

198. Detailed tables showing calculations used to arrive at estimates for value for each resource exploited in the UAI, including Ituri and non-Ituri, are at **Annex 5: Calculations of value**.

199. Numbers were not rounded: Data in this report appear precise because calculations were used that produced precise amounts, e.g., percentages of whole figures or annual prices to two decimal places. Instead of rounding numbers to the nearest thousand, which would be the standard approach to avoid the perception of precision, the full numbers are presented for transparency about the calculations. Rounding in the case of resources valuable in small quantities, such as gold and diamonds, could also cause an unreasonable loss or gain for one of the Parties of several million dollars.

[105] All dollar amounts used in this report are United States dollars (USD).

1.1 Selection of resources for consideration

200. The TOR specified a requirement to identify "…the approximate quantity of natural resources, such as gold, diamond, coltan and timber, unlawfully exploited during the occupation by Ugandan armed forces …". This report includes three additional resources - tin (cassiterite), tungsten (wolframite) and coffee - for the following reasons:

200.1 Gold, diamonds, coltan and timber were identified as *examples* of resources ("such as"). These four were therefore not considered to be an exclusive list.

200.2 Cassiterite (tin ore) extracted in DRC, is often found in the same ore body as niobium-tantalite (coltan). A report on tin mining in eastern DRC noted "Generally, in the mines of the region cassiterite, coltan and ferro-oxides coexist in the same mineral and are separated manually, using pans and sifting" (Johnson and Tegera 2005: 49). There is no good reason to *include* coltan in this report but *exclude* tin.

200.3 Scholarship on production and value of natural resources during 1998-2003, including publications at **Annex 2: References** consulted for this report, typically include analyses of what is known as the '3Ts': tin, tantalite and tungsten, as well as gold and diamonds. Excluding tin and tungsten given the attention paid to these resources would be an error due to intense interest in these minerals and their connection to conflict in DRC.

200.4 In regard to coffee, UNPE (2001a; 2001b; 2002a; 2002b) and MONUC (2004) specifically include coffee in their reports, including some limited data on exports from DRC into Uganda. Neglecting coffee, in my view, would be an error.

201. This report estimates that limited value was exploited from tin and tungsten. However, given public interest in these resources they have been included in order to flag their relative insignificance as sources of value exploited by personnel in either Ituri or non-Ituri.

2. Approach to estimating quantity and value

202. Estimating the quantity and value of selected resources involved eight basic steps:

202.1 Identifying the distribution of resources within UAI.

202.2 Estimating the distribution of each resource between Ituri and non-Ituri in the form of a percentage.

202.3 Estimating the quantity of resources produced.

202.4 Estimating the percentage of value extracted by different methods of exploitation.

202.5 Estimating an appropriate price per unit (kilogram or carat) for each resource.

202.6 Estimating value exploited from these resources by personnel.

202.7 Adjusting the value of exploitation into 2020 USD to reflect current prices.

202.8 Estimating value of each resources exploited in Ituri and non-Ituri.

203. Exploiting value was understood in three ways:

203.1 Theft

203.2 Value extracted in the form of fees and licences

203.3 Value extracted in the form of taxes on trade and exports

204. Specific instances of theft, taxation or payments of fees and licences are described in case file and other documents. However, complete information necessary to estimate exploited value during such incidents was missing in virtually all cases, e.g., quantity, value, location or approximate date. (Date has a significant bearing on price as prices fluctuated between August 1998 and June 2003, in some cases substantially, such as for coltan).

205. Furthermore, it was assumed that every such incident that ever occurred within the UAI during the time period was not documented or made available in the case file documents. Therefore, the totality of quantity and value exploited was assumed to extend beyond documented instances of theft, taxation or payments for fees and licences.

206. Although some data about exploitation of value were available in case file documents, much of the required data was absent. The incompleteness of data meant other sources of information had to be relied on to inform estimates about resource distribution and quantities, including maps of deposits, anecdotal descriptions of resource distribution from field observations in THE DRC, or production data had to combined from several sources.

207. Specific sources of information used to estimate quantity and value are mentioned in notes to tables in **Annex 5: Calculations of Value**.

3. Quantity of resources produced and geographic distribution

208. There were several challenges in estimating quantities of resources and their distribution between the UAI and outside the UAI, as well as Ituri and non-Ituri:

208.1 Available data are incomplete and it was often unclear what portion of production came from UAI.

208.2 Production in the early to mid-1990s was significantly affected by tumultuous conditions, so it cannot be considered as a baseline.

208.3 Production during 1998-2003 was interrupted by conflict, general breakdown of infrastructure and disruption of commerce, complicating efforts to estimate probable production based on pre-conflict data.

208.4 Significant production of all seven resources occurred using artisanal small-scale means, meaning production and trade was often not recorded.

208.5 There was significant smuggling of all seven resources which meant this portion of trade was missing from trade data and challenging to quantify.

3.1 Impact of conflict on production

209. The impact of conflict on production within the UAI from 1998 to 2003 varied for each resource:

Gold 210. Industrial production collapsed in non-Government-held areas, where the bulk of THE DRC's gold is found. However, artisanal production probably increased, propelled by armed groups' financial imperative to obtain revenue. (HRW, 2005; Johnson and Tegera, 2005; Mthembu-Salter 2015a; OHCHR, 2003)

Diamonds 211. Industrial extraction has historically been confined to Government-held areas, not relevant to this report. In non-Government-held areas, artisanal production of diamonds probably had a modest increase due to armed groups' financial imperative to obtain revenue. (DIAR, 2005; Dietrich, 2002; GAO, 2002; Goreux, 2001)

Coltan 212. Industrial production in non-Government-held areas had ceased prior to conflict in 1998-2003. The conflict coincided with greatly increased global demand for tantalite, causing a boom in prices and artisanal production. (International Alert, 2010; IPIS, 2002; Johnson and Tegera, 2002; Le Billon and Hocquard, 2007; Nest, 2011; Raeymaekers, 2002; Redmond, 2001).

Tin 213. Industrial production had ceased but artisanal production increased during the conflict due to cassiterite being frequently found in the same ore-bearing body as tantalite-niobium (miners for one often ended up extracting the other as well) and due to a surge in global demand for tin from 2003. Cassiterite production probably increased gradually during the period, then exponentially at the end. (Global Witness, 2005; International Alert, 2010; Johnson and Tegera, 2002; Nest, 2011)

Tungsten 214. Industrial production had ceased. Artisanal production in non-Government-held areas probably increased significantly but from a low base. (International Alert, 2010)

Timber 215. Conflict caused major commercial production to crash throughout THE DRC. Timber harvesting was restricted to timber stocks relatively close to Kinshasa or to the eastern border in non-Government-held areas, with cutting almost exclusively by artisanal means. Informal production in non-Government-held areas probably increased due to reduced controls over commercial concessions. (Baker et al, 2003; Chatham House, 2020; Counsell 2006; Megevand 2013; Umunay 2011).

Coffee 216. Commercial production throughout DRDC crashed. Artisanal production continued in non-Government-held areas, but probably declined overall. (ICO, 2020; Kamungele, 2013; Wilkins, 2019).

3.1.1 Impact on opportunities for exploitation in Kisangani

217. Conflict affected the relationship between Uganda and Rwanda and their respective THE DRC allies in the form of contested influence over Kisangani, a key strategic city with two airfields in Orientale Province. The Porter Commission (2002: 121-122) noted: "Evidence shows that Kisangani, though not a diamond producing area in itself, was the basis of

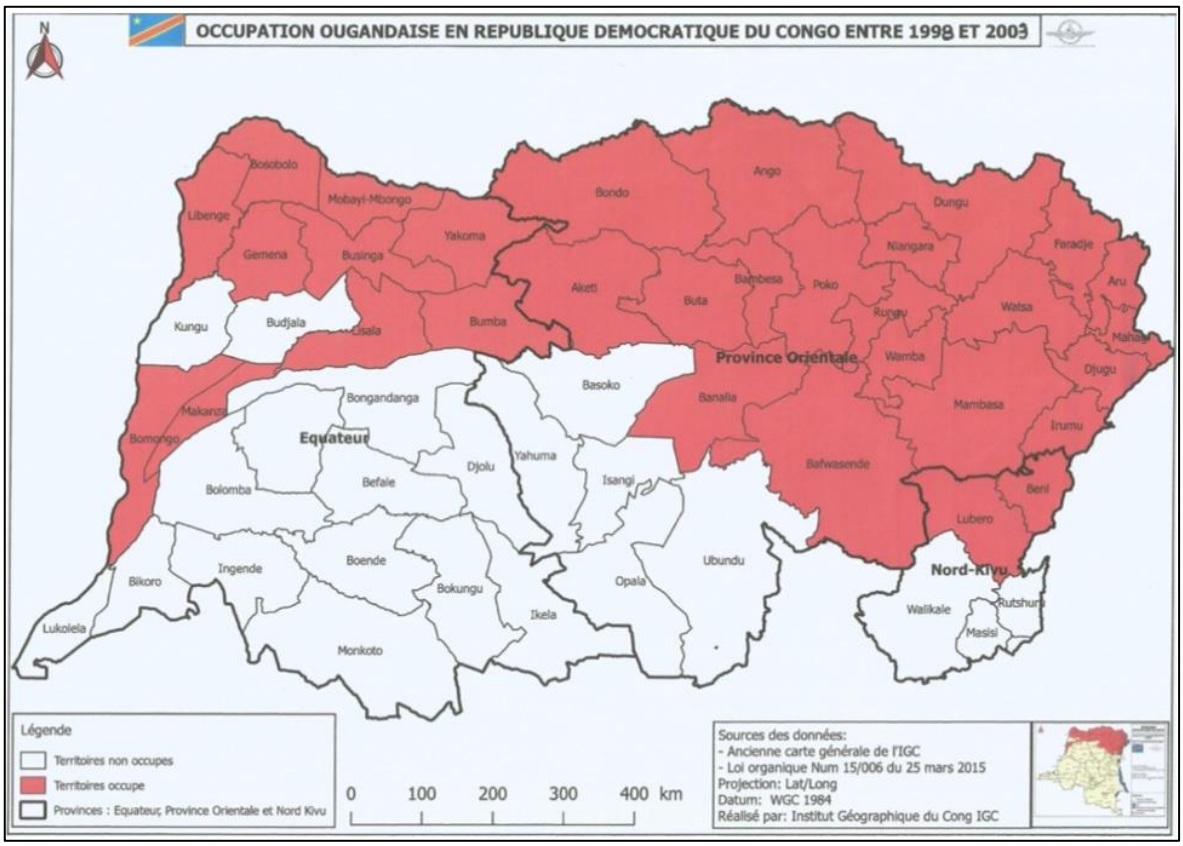
collection and distribution. It was also Victoria [company's] base". The Victoria Company was a company connected to UPDF General Kazini that traded in "diamonds, gold and coffee" (Porter Commission 2002: 82).

218. In June 2000, after several violent clashes between Rwandan and Ugandan troops over 1999 and 2000, and "Although it maintained control of most diamond producing regions, the UPDF was defeated by the [Rwandan Patriotic Army] in the city itself" (ICG 2000b: 8-9). UPDF personnel remained stationed 12kms away at a nearby airport.

219. Loss of influence in Kisangani meant UPDF personnel had reduced opportunities to exploit value from resources traded there (Baker et al 2003; HRW 2001; ICG 2000a; ICG 2000b; Porter Commission). Ugandan loss of influence is factored into calculations about quantity and value exploited from gold and diamonds, as is explained in notes in **Annex 5: Calculations of Value**.

220. Map 1 was submitted by the DRC Party (2016: §9.27) to show the geographic distribution of UPDF personnel (the shaded area). The distribution of UPDF personnel was not comprehensive, consistent or constant within the shaded area. I.e., UPDF personnel were not everywhere all the time, with the same level of strength, within the shaded area. The map is, nevertheless, a useful tool to match to reports of resource distribution.

Map 4.1: The DRC Party's map of Ugandan occupation, 1998-2003



Source: DRC Memorial 2016: §9.27

3.2 Estimating resource quantities in Ugandan Area of Influence

221. Information about resources produced in UAI falls into two categories: (a) formal production that is recorded, and (b) production that escapes most records, typically because it is produced in the informal sector and is smuggled out of the country. This report takes both types of production and trade into account.

222. Where national data for resources were not available or appeared too unreliable, export and/or import data for countries trading in the DRC resources were used to estimate probable production within the UAI. For example, there are ComTrade data of countries reporting imports of tin, coltan, tungsten, coffee and sawn wood (timber) from the DRC (data recorded by importers was used because DRC export data in ComTrade is so incomplete). Such data were used as a 'proxy' for DRC production.

223. Given what is known about the location of each resource (derived from a mix of case file and other documents), an estimate was then made to understand what percentage of these imported resources probably came from UAI. These calculations are explained in notes to tables in Annex 5.

224. Table 1 shows estimated quantities of resources for the entire the DRC (where these could be obtained) and for the UAI, including both Ituri and non-Ituri.

Table 4.1: Est. of quantity of resources produced, 1998-2003

	DRC	UAI		Ituri		Non-Ituri	
	Quantity	Quantity	% of DRC	Quantity	% of UAI	Quantity	% of UAI
Gold, kgs	39,896	22,106	55.4	9,949	45	12,158	55
Diamonds, carats	96,372,668	4,260,627	4.4	213,031	5	4,047,596	95
Coltan, kgs	?	84,082	?	4,204	5	79,878	95
Tin, kgs	?	890,428	?	44,521	5	845,907	95
Tungsten, kgs	?	330,825	?	16,541	5	314,284	95
Timber, kgs	?	89,369,380	?	44,684,690	50	44,684,690	50
Coffee, kgs	?	43,779,341	?	13,133,802	30	30,645,539	70

225. For both gold and diamonds there are national production data that could be used to make estimates for UAI when combined with information about the location of resources. These data were the most reliable available for these resources.

226. For other resources, ComTrade import and export data was used to estimate production in UAI. The commodity codes used for ComTrade database searches are in **Annex 3**.

227. Unrecorded and smuggled production was significant for all seven resources:

227.1 OHCHR (2003: 363) states "A large part of the gold produced in Ituri was exported through Uganda, then re-exported *as if it had been produced domestically* – a similar model to that used for diamond exports". [Emphasis added]

227.2 The Porter Commission notes:

227.2.1 "There is no doubt in our minds that diamonds are being smuggled and falsely declared as sourced in Uganda" (p.114).

227.2.2 UPDF officer, General Kazini, was "an active supporter in the Democratic Republic of the Congo of Victoria, an organization engaged in smuggling diamonds through Uganda" (p.122).

227.2.3 "On the 31st of December 1998 General Kazini messaged Major Kagezi, saying that his soldiers and detach commanders were writing chits for gold mining and smuggling and instructing him to stop this immediately" (p.19), indicating some UPDF personnel's involvement in smuggling.

227.2.4 One witness from Arum told the Commission that "…10 to 20 trucks a day were transporting timber from Congo to Uganda without paying taxes. The trucks use 20 feeder roads and join the main road after the customs post. While the Commission thought that the number of daily trucks was exaggerated, there was no doubt that smuggling of timber at that point was actually taking place … There was clear evidence from a Congolese who lives near the border in the Democratic Republic of Congo of daily smuggling of timber over the border to Uganda" (p.153).

227.3 Baker et al (2003) writing about 'conflict timber' in the DRC argues:

227.3.1 "…despite strong global demand for high-quality tropical timber, as a commodity it: requires more skills and more expensive equipment to harvest; and has a much lower weight-to-value ratio, and is often both difficult to transport (especially if transportation infrastructure is dilapidated, as in the DRC) and to conceal. Smuggling is thus not an attractive option; instead, collusive arrangements have to be organized with government officials (customs officers, border guards, etc.) to avoid formal controls. Collusive arrangements often depend on bribes, and these drive up transaction costs associated with the operation" (p.14).

227.3.2 Thus Baker et al argue that it is not smuggling in the form of timber "unseen" by officials that was occurring between the DRC and neighbouring countries. Rather, the "smuggling" involved collusion with officials, especially border officials, to ensure timber is trafficked into neighbouring countries such as Uganda without being recorded. Officials extract a portion of the timber's value in the form of bribes.

228 Estimates of informal production and trade were taken from publications that contained estimates, such as PAC (2004) for diamonds, Mthembu-Salter (2015) for gold and Umunay (2011) for timber.

229 For other resources, the gap between Uganda's production of a resource and the quantity of its exports was identified. When there were more exports than production it was assumed this 'surplus' was originated in the DRC. The DRC was assumed to be the source, rather than neighbouring countries, due to reports of Ugandan involvement in certain resources and the small probability of a resource originating from countries other than the DRC (or Uganda itself, depending on the resource). The Porter Commission noted resources originating in the DRC being imported by other countries via Uganda: "…most of the resources flown or driven out of the Democratic Republic of Congo appear to have transited Uganda, rather than to have been exported to Uganda…" (p.85).

230 Where potential non-DRC sources for Ugandan exports exist and the origin of the resource can be clearly confined to a subset of countries - such as coltan, tin and tungsten from Rwanda or Burundi - these quantities were subtracted from Ugandan export data (as is explained in notes to **Annex 5: Calculations of Value**).

3.2.1 Rationale for estimates of distribution

231. Below is an explanation of the sources of data, other estimates for informal unrecorded production or trade, and assumptions made to estimate the proportion of resources in: the Government-held area v. non-Government-held area (where this was necessary); within latter what proportion was in the UAI v. the non-UAI (where this was necessary); and within the UAI what proportion was in Ituri v. non-Ituri:

Gold

232. National data on formal production of gold is taken from USGS *Minerals Yearbook: Gold*.

233. Data on informal artisanal production is based on Mthembu-Salter's estimate (2015a) of 10-15 metric tonnes nationally (not just UAI), which also references an International Peace Information Service (IPIS) artisanal estimate for Orientale only of 16.5mt, as well as an estimate of annual trade in artisanal gold through Kisangani and Bunia of 5.40mt. IPIS (2013: 13) estimated gold production for Ituri of about 2,000 kgs per year (presumably based on research around 2012-2013, so almost a decade after 2003). IPIS's figure is around 14-20% of Mthembu-Salter's national estimate, which is in keeping with the latter in terms of geographic distribution of production across the DRC.

234. Mthembu-Salter's estimate of national artisanal production of approximately 15mt in the mid-2010s was reduced by two-thirds to reflect the probable situation in 1998-2003, i.e., 5,000 kg annual national artisanal production (artisanal production grew significantly after 2003). The lower end of HRW's (2005: 55) estimate of 1,000-3,000 kgs of gold leaving the "Mongbwalu area" each month in 2004, is in keeping with this estimate of 5,000 kg per year.

235. For both formal and informal production, 80% of national production was assumed to come from the non-government-held area (both UAI and non-UAI) due Orientale's known history as the DRC's major gold-producing area (DRC 2016; HRW 2003; HRW 2005; ICG 2000a; ICG 2000b; 2004; International Alert 2010; IPIS 2003; OHCHR 2003; Spittaels and Hilgert 2010). 75% of non-government-held formal and artisanal production was then estimated to be in UAI to June 2000 and then 70% from July 2000 (from when Ugandan influence in Kisangani was diminished).

236. Estimates for informal production for Uganda (see Annex 5, Table A4.5.1.3) were based on Hinton (2012: 7). Informal production, along with formal production, was taken into account in calculating what proportion of Uganda's gold exports are likely to have originated domestically compared to from the DRC. Hinton's estimate of informal production was 1,210 kg for 2008. The quantity of informal production was assumed to be lower for 1998-2003 because, as Hinton notes, there was an expansion in the informal

gold sector in Uganda in the mid-2000s. The estimate for informal production was therefore reduced to 1,000 kgs per year for the 1998-2003 period.

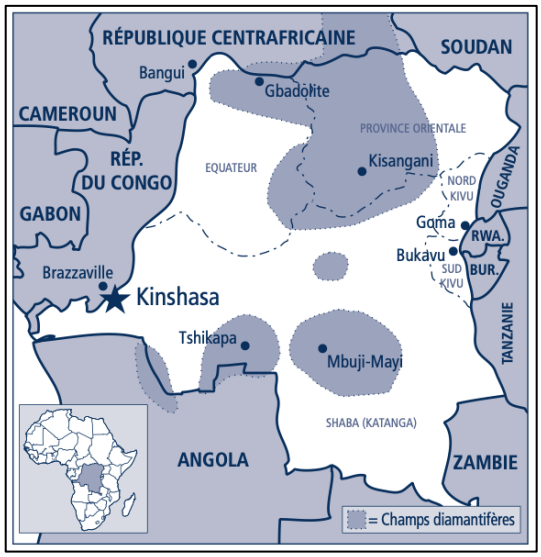
Diamonds

237. Estimated industrial and artisanal production is taken from PAC (2004). These data include industrial diamonds, such as produced by the parastatal company MIBA in government-held territory, which are not relevant to artisanal production in UAI.

238. Production in Equateur and Orientale was based on PAC (2004) using Dietrich's (2002: 2) estimate of 10% of production coming from these two provinces. (With the exception of Lubero and Beni districts in northern North Kivu for which there are few, if any, reports of diamond production 1998-2003, the rest of UAI was in Equateur and Orientale). Dietrich's estimate was then reduced to 9% (i.e., a reduction of 10%) to allow for a margin of error in his original estimate.

239. Of combined formal and artisanal production in Equateur and Orientale, 70% was estimated to be in UAI to June 2000 (when Uganda shared influence in Kisangani) based on reports of diamond mining and trading, and maps of deposits (see, for example, Map 2). UAI's share was reduced from 70% to 35% from July 2000. Kisangani's significance was in the opportunities it created for exploitation of value through levying fees, licences or taxes, or demands for exclusive sales agreements on traders which forced them to accept prices below free market rates (GAO 2002; Goreux 2001; ICG 2000a; ICG 2000b).

Map 4.2: Diamondiferous areas in the DRC



Source: Dietrich, Monnaie Forte, 2002, p.5

Coltan, Tin and Tungsten

240. Estimates for informal production - the only method of production relevant in the UAI 1998-2003 - for these three resources all followed the same steps. First, DRC domestic production (USGS) was subtracted from ComTrade data of imports from trading partners to identify any gap in unrecorded production. Because known production of coltan, tin and tungsten in the DRC 1998-2003 was overwhelmingly in non-government-held territory, 95%

of production was assumed to be from this area. Because there are few reports of these three resources being produced in UAI (most was in North and South Kivu or Maniema), only 5% of non-government-held production was assumed to be from UAI (i.e., the overwhelming majority was in the Rwandan area of influence, within the non-Government-held area).

241. Second, Ugandan domestic production (taken from USGS) was subtracted from declared imports by Ugandan trading partners to identify any surplus exports that are likely to have originated in the DRC.

242. Third, imports from countries in the region that do not produce any of these minerals were then identified. A portion of imports was estimated to have originated in the DRC and passed through Uganda (this percentage is noted in Tables in Annex 5; it varies according to country). Intra-African trade was excluded other than trade specifically with the DRC.

Timber

243. Production is of two types: that for which there was reporting (based on ComTrade reports of exports from importers of DRC timber) and that for which there is no data - informal production and trade (based on Umunay 2011). Data for formal production is, in fact, available from the International Tropical Timber Organization (ITTO), but these data are apparently sourced from DRC central government officials. Due to the conflict 1998-2003, such officials would not have known either production or export levels relevant to the UAI. This report therefore uses ComTrade import data instead.

244. Because the distribution of harvestable and transportable timber 1998-2003 was predominantly in the non-Government-held area, it was assumed 80% of reported (formal) timber exports came from here. It was then assumed that 50% of timber in this area came from the UAI (based on harvestable forests, proximity to the Ugandan border, and a road network that remained open facilitating exports during this period).

245. Umunay estimated in 2011 (8 years after 2003) that informal sawn wood exported from the DRC to Uganda, Kenya and Rwanda totalled around 70,000,000 kgs (100,000m^3) annually. This figure, presumably based on 2010-11 activity, is too high for 1998-2003 due to war and degraded infrastructure. Furthermore, informal DRC exports to Kenya may have originated in UAI creating opportunities for personnel there to extract value, but they may also have passed through Rwanda.

246. This report assumes 60% of Umunay's estimate of informal (unrecorded) timber passed through Uganda (42m kgs), based on timber harvesting areas in proximity to Uganda and the number of border crossings that could facilitate informal trade compared to Rwanda. This report then took then took 20% of 42m kgs to reflect probable levels of informal exports in 1998-2003. That is, this report estimates informal timber production in UAI was 8,400,000 kgs per year (12% of Umunay's total original estimate from 2011).

Coffee

247. Production was estimated from ComTrade reports of imports of DRC coffee.

248. Because the distribution of harvestable and transportable coffee 1998-2003 was predominantly in the non-Government-held area, it was assumed 80% of

reported coffee exports on ComTrade came from UAI. It was then assumed that 50% of this coffee came from the non-Government-held area (based on history of producing areas, proximity to the Ugandan border, and a road network that remained open during this period).

249. Informal smuggled quantities of coffee entering Uganda from DRC were estimated by subtracting both (a) Ugandan exportable production (taken from International Coffee Organization) and (b) declared Ugandan imports of coffee from the DRC, Kenya, Rwanda and Burundi (taken from ComTrade), from recorded imports of coffee by Uganda's trading partners (taken from ComTrade). Positive amounts indicate left over, un-exported, production. Negative amounts (which occurred in 1999 and 2003) mean Uganda exported more than it produced raising the question as to the origin of this coffee. As green coffee beans can be stored for one year, the years where exports are surplus to production were 'discounted' by an amount equal to 50% of the previous full year's production surplus, to allow for some coffee being stored for 12 months before export the following year.

250. ComTrade data were used over ICO data for exports (from the DRC, Uganda and other countries) because they were deemed more reliable as linked to a specific trading partner with a specific value per year for that partner. ICO data were, however, used to estimate exportable production for Uganda - but not for the DRC because of the uncertainty around whether any authority in the DRC 1998-2003 was capable of collecting accurate data on coffee production. ICO data are also used for price comparison as shown in Fig.3.

3.3 Distribution of resource production: Ituri v. non-Ituri

251. Distribution of the selected resources within UAI across Ituri and non-Ituri varies greatly. Below is a summary of information and sources used to make the estimated distributions in Table 1:

Gold

252. In UAI outside Ituri, gold is produced around Beni in northern North Kivu (International Alert 2010: 18); around Durba and Watsa in Haut-Uélé, including Kilo-Moto mine (DRC 2016: 119; HRW 2003: 12, 15; OHCHR 2003: 358; UNPE 2001a: §57, §59;); and around Bondo in Equateur (UNPE 2001a: §59). Butembo (North Kivu) is a centre for trading gold (HRW 2005: 55).

253. In Ituri there is extensive gold production in the area lying northwest of Bunia through to Mongbwalu and Kilo-Moto in Haut-Uélé (HRW 2005: 24, 34; HRW 2003: 23; Johnson and Tegera 2007: 75; MONUC 2004, 8; UNPE 2001a; International Alert 2010: 20). Bunia is a center for trading gold (OECD 2015a) as is Ariwara (HRW 2005: 104; MONUC 2004: 38).

254. Around 45% of gold production in UAI probably came from Ituri, and around 55% from non-Ituri.

Diamonds

255. In UAI outside Ituri, diamonds are reportedly produced in northern North Kivu, Tshopo and Haut-Uélé as follows: in northern North Kivu, including near Butembo and Lubero (Raeymaekers 2002: 21; International Alert 2010: 18); in or in proximity to Bafsawende, Banalia, Basoko, Buta, Kisangani, Opala and

Isangi in Tshopo (Raeymaekers 2002: 13, 17; DRC 2016: 125); and around Isiro, Dungu and Watsa in Haut-Uélé (Raeymaekers 2002: 13). Kisangani was a major trading centre for diamonds and Isiro (Haut-Uélé) a minor trading centre (DIAR 2005: 10).

256. Ituri has some diamond production northwest of Bunia (HRW 2003: 12; DRC 2016: 125), and Ariwara is a centre for trading diamonds (MONUC 2004: 38).

257. Around 5% of diamond production in UAI probably came from Ituri, and around 95% from non-Ituri.

Coltan

258. In the UAI outside Ituri in northern North Kivu, tantalite-niobium is produced in Beni-Lubero territories (HRW 2001; Porter Commission 2002: 182; OHCHR 2003: 355), and in Orientale (UNPE 2002a: §108). Beni and Butembo in northern North Kivu are major trading centers for coltan (Johnson and Tegera 2005: 27; Raeymaekers 2002: 21).

259. HRW (2003: 12) has a reference to coltan production in Ituri but provides no detail. IPIS (2013: 13) states "There is hardly any recorded tin, tantalum or tungsten mining in Ituri. The artisanal mining sector revolves almost entirely around the exploitation of gold". "Hardly any" suggests there may have been very minor quantities produced, but no further information is provided. The IPIS Interactive Minerals Map[106] indicates coltan mines in northern North Kivu very close to, or even on, the border with Ituri from 2009. Thus, it is possible there were some pre-2009 coltan mines in Ituri, but given there was no specific information these were disregarded for the purposes of this report.

260. Probably all tantalite-niobium mined in UAI came from outside Ituri, but some trade occurred through Ituri. For the purposes of this report, and taking likely transit trade through Ituri into account, 95% of coltan was allocated to non-Ituri and 5% to Ituri.

Tin

261. In UAI outside Ituri, there is reported cassiterite production in Beni-Lubero territories in North Kivu (International Alert 2010: 18; Garrett 2008: 12). UNPE (2001a: §53) reports exports of cassiterite into Uganda through Mpondwe and 'Bundbujyo' (this may a reference to the Bujerere crossing in Bundibugyo District, Uganda), and Garrett (2008: 35) reports exports from the DRC into Uganda via Ishasha and Bunagana border crossings in North Kivu, neither one part of UAI (Johnson and Tegera 2007: 26). It is unclear where cassiterite passing through these crossings originates.

262. There are no reports of cassiterite production in Ituri, although it may have been mined in conjunction with coltan from some deposits. Probably 100% of cassiterite production was outside Ituri, but some trade occurred through Ituri. For the purposes of this report, and taking likely transit trade through Ituri into account, 95% of cassiterite was allocated to non-Ituri and 5% to Ituri.

[106] https://ipisresearch.be/mapping/webmapping/drcongo/v5/#-1.4045201543864891/28.801971434596567/5.774660859437679/2/1/1.9.20,2.157bpc

Tungsten

263. In the UAI outside Ituri, there is a report of wolframite deposits in Lubero northwest of Butembo (Spittaels and Hilgert 2013: 10). It is not entirely clear if these were mined for the whole 1998-2003 period, but it is clear that significant quantities of wolframite were exported from Uganda (in excess of Ugandan production). It is therefore probable there were operational wolframite mines within the UAI.

264. There are no reports of wolframite production in Ituri, but some trade in this resource occurred through Ituri. For the purposes of this report, and taking likely transit trade through Ituri into account, 95% of coltan was allocated to non-Ituri and 5% to Ituri.

Timber

265. In UAI outside Ituri, timber is harvested around Tshopo (Orientale), parts of Equateur, and northern North Kivu (Baker et al 2003: 22, 38, 65-66; Chatham House 2020; Counsell 2006: 8-9; Megevand 2013: 30; UNPE 2001a). There are reports of exports into Uganda across Orientale's and North Kivu's land borders, including timber processed at Mangina near Beni, North Kivu (Baker et al 2003: 57, 66-67; UNPE 2001b: §48). Given distance and transport networks, it is unlikely any timber from Equateur, and only timber from eastern parts of Orientale, went to Uganda.

266. Ituri produces timber and the town of Ariwara is a timber trading centre (Baker et al 2003: 51; Chatham House 2020; HRW 2003: 12; MONUC 2004: 8; Umanay 2011; UNPE 2002a: §116).

267. Around 50% of timber production was probably in Ituri and 50% in non-Ituri.

Coffee

268. In UAI outside Ituri, coffee is produced in North Kivu, Orientale and Equateur, with reports of export into Uganda (Porter Commission 2002: 18; UNPE 2001a: §102; Wilkins 2009: 5). Given distance and transport networks, it is unlikely much coffee from Equateur made its way to Uganda.

269. In Ituri there is some coffee production (MONUC 2004: 8; Wilkins 2009: 5).

270. Around 30% per cent of coffee in UAI probably came from Ituri, and around 70% from outside Ituri in eastern Orientale and northern North Kivu.

4. Resources Prices

271. Estimating the value of resources before exploitation by personnel involved three steps:

271.1 Identifying base annual average prices for 1998-2003 (either an international price or a price specifically identified as relevant to the DRC, such as ComTrade data for imports from the DRC).

271.2 Discounting base prices by an appropriate amount to reflect probable prices relevant for producers, traders and exporters in UAI. This report calls this the 'adopted price'.

271.3 Adjusting adopted prices into 2020 USD by 'inflating' them using a standard rate.

272. The value of resources change year-on-year due to price fluctuations. For example, gold in 2003 was about 30% more expensive than in 1999, and coltan had peak prices from November 2000 to February 2001 that were ten times prices in 1998. Thus, rather than take an average price for the entire 58 month period, an average annual price for each year was adopted to obtain a more accurate figure (a monthly price would be even more accurate, but these are impossible to ascertain for the full 1998-2003 from ComTrade data).

273. Estimates of value were based on prices at likely points of opportunity for exploitation, including personnel's contact with producers, small traders, large traders, and exporters. This means that value is not based on global prices for a commodity, nor simply on the price that producer may have received. Value is based on an average price from the multiple points of contact along the supply chain prior to export.

274. Table 2 shows the price used for each commodity and year, including the base price, the price estimated to be relevant within the DRC and the 'inflation' factor to estimate value in 2020 USD.

Table 4.2: Annual average resource prices, by year*
** Price is per kilogram except for diamonds, which is per carat*

	1998	1999	2000	2001	2002	2003
Gold base price	9,455.20	8,956.22	8,973.26	8,714.13	9,956.43	11,680.99
Adopted price (35% less)	6,145.88	5,821.54	5,832.62	5,664.18	6,471.68	7,592.64
Diamond base price	18.59	12.55	14.34	18.79	19.33	27.43
Adopted price (35% less)	12.09	8.16	9.32	12.21	12.56	17.83
Niobium-Tantalite base price	12.98	47.90	114.62	86.73	47.24	14.11
Adopted price (35% less)	8.44	31.14	74.50	55.07	30.71	9.17
Cassiterite base price	3.27	2.31	2.82	3.12	3.10	6.35
Adopted price (35% less)	2.12	1.50	1.83	2.03	2.02	4.12
Wolframite base price	2.48	2.00	3.49	3.34	2.87	3.66
Adopted price (35% less)	1.61	1.30	2.27	2.17	1.86	2.38
Timber base price	0.67	0.67	0.52	0.62	0.52	0.64
Adopted price (35% less)	0.44	0.44	0.35	0.40	0.34	0.42
Coffee base price	2.04	1.71	1.42	1.18	1.04	1.06
Adopted price (35% less)	1.33	1.11	0.92	0.77	0.68	0.69
Inflator to est. 2020 USD (adopted for all)	*x 1.60*	*x 1.56*	*x 1.51*	*x 1.47*	*x 1.45*	*x 1.41*

275. Resource tables in **Annex 5: Calculations of Value** note the source of prices and any discounting to reflect probable prices within the DRC. However, below is an explanation of the estimates used and comparisons with other prices where sufficient data were available to do this.

Gold

276. Estimates are based on annual average international prices provided by the World Gold Council online database (https://www.gold.org/goldhub/data/gold-prices), which were 'discounted' 35% to reflect probable prices within the DRC at points of opportunity for exploitation.

277. Price comparison: HRW (2005), interviewing the leader of the Nationalist and Integrationist Front (FNI) in October 2003 (after the period relevant to this report), reported him calculating he would "make about $50,000 from the sale of five kilograms of gold" (p.55). This amount is only 20% less than world gold price for that month ($12,181 pkg), but the miners and traders upstream from the FNI leader would have received prices within a range around the 35% discounted gold used in this report.

Diamonds

278. Estimates are based on the average export price per carat for artisanal production only (only artisanal production is relevant to UAI) provided in PAC (2004: 2-3). The price adopted for estimates was then 'discounted' 35% to reflect probable prices within the DRC across the range of points of opportunity for exploitation, i.e., production, small traders, larger traders, and exporters. Prices vary for gem diamonds (which are expensive) compared to industrial diamonds (which are much cheaper). PAC's data do not differentiate between each kind of diamond, so the estimated price obtained is an average across gem and industrial stones. Because it is not possible to know the portion of diamonds from UAI that was gem or industrial, using an average was the best approach.

279. Price comparison: There are very few price observations around value per carat. However, Johnson and Tegera (2005: 97), presumably doing their research around 2004 (after the 1998-2003 period), note "Emaxon buys MIBA diamonds for only $13.40 per carat, *less than the price paid to artisanal miners*" [emphasis added]. Indeed, this report's price for 2003 (the year closest to their research) is $17.83, so more than MIBA's price in keeping with Johnson and Tegera's observation.

Coltan

280. Estimates are based on an average of all price observations[107] for each year (1998-2003) available from UN ComTrade's (https://comtrade.un.org) records for niobium-tantalite imports and exports involving East and Central African producers. This price was then discounted by 35% to better reflect probable prices at points of opportunities for exploitation in the DRC.

281. Price comparison: Johnson and Tegera (2005: 37) quote a mine manager stating "In 2000 and 2001 business was good and we managed to sell a kilo of coltan for up to $150". Given prices on the international spot market peaked in December 2000 at almost $600/kg, such prices at the mine 'gate' are likely, as is this report's annual adopted *average* price for 2000 of $74.50 within the DRC (prices soared as the year progressed). They also note prices in August 2003 (*after* the period of interest) of "$14.4/kg for 30% grade coltan and $16.8 for 35% grade" (p.31). These are higher than this report's adopted 2003 average price of $9.15/kg, but given the latter is an average and the price continued to fall that year it is probably reasonable.

[107] An *average of price observations* (i.e., separate trades in coltan by different countries within a single year) was used rather simply the average price (total value divided by total quantity) for each year. This is because the latter can be grossly influenced by a very large quantity involving a single trading partner, when what is needed is information about the range of prices that can then be used to estimate a probable average price.

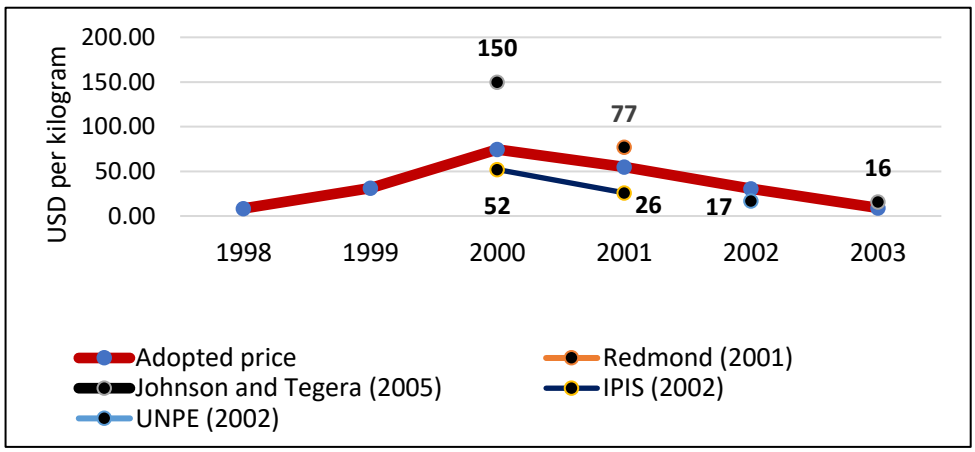
282. Redmond (2001: 11-12) writing in May 2001 when prices were falling after the price spike in late 2000/early 2001, notes a DRC trader who bought coltan from miners "at $12 per kilogram". Redmond also publishes a list of prices from a buyer in Kigali, Rwanda, based on tantalite concentrate (prices were converted from pounds in the original into kilogram): 10% Ta at $44/kg; 16% Ta at $110/kg; 18% Ta at $132/kg; and 20% Ta at $165/kg. The adopted price used in this report for 2001 of $55.07 falls into the lower end of this category (ore around 10-16% concentrate).

283. IPIS (2002: 11) documents two consignments of tantalite ore sold in December 2000 by RCD-Goma's trading monopoly, SOMIGL, that had prices of $52.2/kg and $51.5/kg. These prices are lower than adopted for this report, but the consignments were very large (each 30mt) which might have meant a lower price per kilogram and I also do not know the percentage of concentrate which is critical in determining price. The same report notes a consignment with 22.5% concentrate from August 2001 priced at $8.50/kg. This appears very price, notwithstanding the decline in prices throughout 2001. It cannot be reconciled with this report's adopted prices, unless it was deliberately undervalued for reasons of evading import duties.

284. Johnson and Tegera (2002: 9) refer to "trading posts" buying coltan in late 2001 with 40% tantalite concentrate at $26/kg. This is less than this report's adopted annual average for 2001 of $55.07/kg but not far off 2002's price of $30.71. As Johnson and Tegera's reference is to the price paid by trading posts and not exporters' buying or sales prices, this report's adopted prices are probably reasonable.

285. UNPE (2002a: §109) interviewed in Kampala in March 2002 a co-owner of coltan trading firm La Conmet, who said "their purchase price for coltan with a 30 per cent tantalum content was $10 per kilogram and sold it on at a price of $17 per kilogram". This price is lower than the adopted price used in this report for 2002, which is almost double. Fig. 1 compares the adopted price with price observations mentioned.

Fig. 4.1: Comparison of coltan prices



286. On balance, given that miners received lower prices than traders (in keeping with both Redmond's and UNPE's observations); given that prices

in Rwanda would be higher than inside the DRC (relevant to Redmond's report); given that anecdotal reports of prices described here fall not too far from either side of this report's adopted prices (although there is a lack of price observations for comparison 1998-1999), the adopted prices are reasonable.

Tin

287. Estimates were calculated using the same method as for coltan.

288. Price comparison: Garrett (2008: 13) writing about North and South Kivu, notes export grade cassiterite with a content of around 65% on the world market fetched "…USD3,800 [per tonne] at the start of the new millennium", or $3.80/kg - "new millennium" was assumed to mean 2000-2001. This is about double this report's adopted price of $1.83 for 2000 and not quite double that for 2001 ($2.03/kg), i.e., this report's prices are on the low side in comparison.

289. Johnson and Tegera (2005: 53) note "at the height of the boom" (2003-2004) traders in Walikale (North Kivu) paid $2.50 per kilogram. This is substantially less than the adopted price for 2003 ($4.12), but =it is for traders purchasing from miners - a price always lower than anything further along the value chain.

290. Notwithstanding being different to these two observations, this report's adopted prices are likely to be reasonable for the *average* prices received by miners, small and larger traders, and exporters for these years.

Tungsten

291. Estimates were calculated using the same method as for coltan.

292. Price comparison: No reports of prices from the relevant period for production and trade in the DRC were available for comparison with this report's adopted prices.

Timber

293. Price estimates are based on International Tropical Timber Organization's database for export prices per unit (m^3) of non-coniferous tropical sawn wood at https://www.itto.int/biennal_review/?mode=searchdata. ITTO prices are in cubic metres and were converted into USD per kg ($1m^3$ = 700 kg), then discounted 35%.

294. Price comparison: Baker et al (2003: 68) estimates timber prices (which were converted from m^3 into per kg) for each of the relevant years as follows: 1998 (0.50/kg), 1999 (0.47/kg), 2000 (0.58/kg), 2001 (0.58/kg), 2002 (0.29/kg), and 2003 (0.36/kg). Baker et al base their estimate on market rates for DRC-origin timber in Burundi for 1998 to 2001, and in Rwanda for 2002 to 2003, and then reducing them by half.

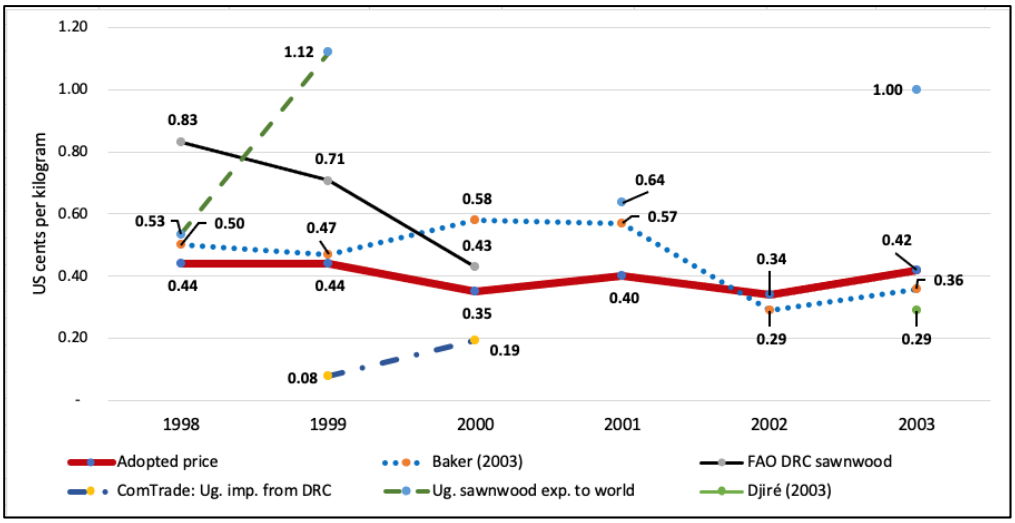
295. Baker et al's estimates are 6%-67% higher than this report's adopted prices for 1998-2001, but 14% lower for 2002-2003. This report's prices for 1998-1998 and 2002-2003 are reasonable given they fall within Baker et al's overall range for the period.

296. The markedly lower estimates used in this report for 2000 and 2001 are a bit concerning but, given the focus on Uganda as the key market (not Burundi), and given that "Congo timber is cheaper in [this] market because

it is usually cut by chain saws, which are not allowed in Uganda" (Porter Commission 2002: 55) they are probably within the range of reasonable.

297. Fig. 2 is a graph comparing price observations from six sources: this report's adopted price (based on ITTO), Baker et al's (2003) prices, the Food & Agricultural Organisation's (FAO) sawn wood price, ComTrade's price observations for Ugandan imports of sawn wood from the DRC, ComTrade's price observations for Ugandan exports of sawn wood to the world, and Djiré (2003).

Fig. 4.2: Comparison of sawn wood prices



298. Fig. 2 shows that this report's adopted price is at the low end of price observations for 1998 and 2001, around the middle of the observations for 1999, 2000 and 2003, and the highest of two observations for 2002. On balance, there is confidence the adopted prices are reasonable.

Coffee

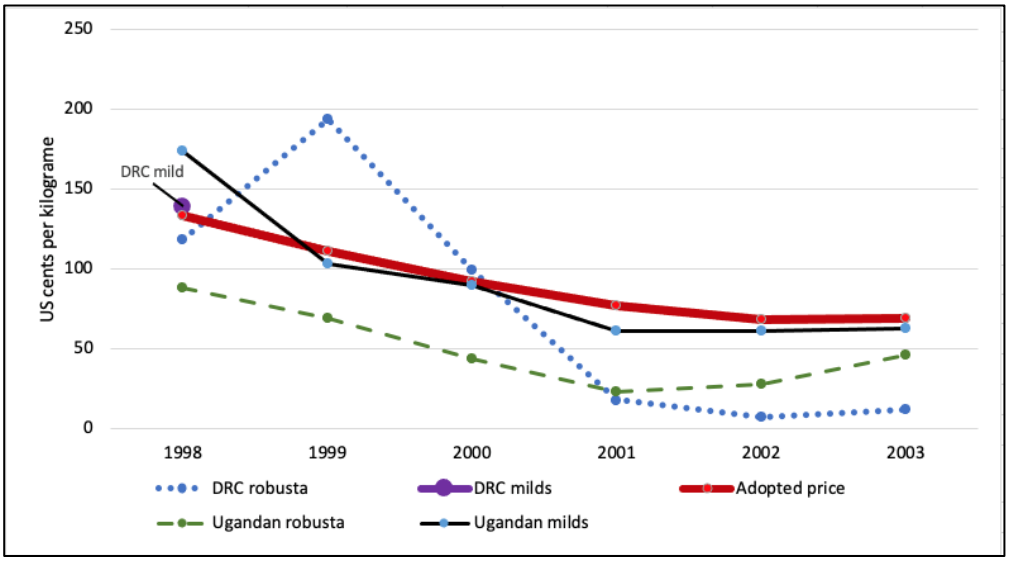
299. Estimates are based on an average of all price observations for each year (1998-2003) available from UN ComTrade's (https://comtrade.un.org) records for imports of coffee from the DRC. This price was then discounted by 35% to better reflect probable prices at range of points of opportunities for exploitation in the DRC, and is this report's adopted price.

300. The DRC produces two types of coffee: milds (more expensive) and robusta (cheaper). It is not possible to tell from ComTrade data the proportion of milds and robusta for each year. ComTrade was, nevertheless, used instead of ICO 'Prices to Growers' for two reasons. First, the latter had a DRC milds price observation only for 1998. This meant an average with robusta could not established 1999-2003 (an average would have been an obvious price to adopt if it could be calculated). Second, ICO's 'Prices to Growers' is for producers - not others further along the value chain, such as traders and exporters, who are highly relevant to this report because they constitute opportunities for personnel to extract value.

301. Price comparison: This report's adopted prices were compared with the International Coffee Organization's (ICO) 'Prices to Growers' Historical Data on the Global Coffee Trade, for DRC and Uganda robusta 1998-2003, the

single observation for DRC mild (1998), and Uganda milds 1998-2003 (http://www.ico.org/new_historical.asp). Fig. 3 is a graph of these prices.

Fig. 4.3: Comparison of coffee prices



302. Fig. 3 shows the adopted price is consistently higher than Ugandan robusta 1998-2003, and about the same as Uganda milds 1999-2003. The adopted price is significantly *lower* than DRC robusta for 1999 - a difference that cannot be reconciled - but *higher* than DRC robusta 2001-2003 (which should be expected given the latter is for producers only).

303. On balance, notwithstanding the anomaly of 1999, and given the absence of prices for DRC milds 1999-2003, the adopted price is probably reasonable.

304. Table 3 shows the estimated total value of production for each resource during the entire August 1998 to end-May 2003 period, in 2020 USD, including distribution between Ituri and non-Ituri, after applying the prices listed in Table 2.

Table 4.3: Resource production in 2020 US dollars before value exploited

	Total UAI	Ituri		Non-Ituri	
		USD	% of UAI	USD	% of UAI
Gold	201,817,503	90,817,876	45	110,999,627	55
Diamonds	70,531,967	3,526,598	5	67,005,369	95
Coltan	4,385,250	219,263	5	4,165,988	95
Tin	3,009,245	150,462	5	2,858,783	95
Tungsten	959,380	47,969	5	911,411	95
Timber	51,632,189	25,816,095	50	25,816,095	50
Coffee	68,838,483	20,651,545	30	48,186,938	70
Total	**$ 401,174,017**	**$ 141,229,808**		**$ 259,944,211**	

5. Estimating the Exploitation of Value

305. Table 4 shows the total estimated value extracted by personnel, and disaggregation for this amount by resource for Ituri and non-Ituri.

Table 4.4: Est. value exploited by personnel: UAI, Ituri and non-Ituri

	Ituri		Non-Ituri		Total UAI	
	2020 USD	% share	2020 USD	% share	2020 USD	% share
Gold	33,012,298.1	84.7	9,834,566.9	58.5	42,846,865.0	76.8
Diamonds	1,013,897.0	2.6	5,025,402.6	29.9	6,039,299.7	10.8
Coltan	63,038.0	0.2	312,449.1	1.9	375,487.0	0.7
Tin	43,257.9	0.1	214,408.7	1.3	257,666.6	0.5
Tungsten	13,791.1	0.0	68,355.8	0.4	82,146.9	0.1
Timber	2,793,301.4	7.2	645,402.4	3.8	3,438,703.8	6.2
Coffee	2,046,568.1	5.2	722,804.1	4.3	2,769,372.2	5.0
Total	**38,986,151.6**	**100**	**16,823,389.6**	**100.1**	**55,809,541.2**	**100.1**

306. The estimates in Table 4 were calculated using assumptions about the *methods* of exploiting value. This report categorises the extraction of value from resources into three different methods:

306.1 Theft

306.2 Fees and licences, including permission to extract, trade or export a resource

306.3 Tax(es) on the value of sales or exports

307. UNPE (2002b: §47) notes this variety of methods using its own phraseology in a comment about the state of the economy in the UAI: "Excessive taxes, revenue siphoning, seizure of local resources, forced requisitioning of assets and deepening control over general trade by foreign and local military, with or without the collusion of commercial operators, have paralysed local economies".

308. This section outlines evidence that each method occurred in Ituri and non-Ituri, and explains how the extraction of value was calculated.

309. Table 5 shows the estimated rates of extracting value used in this report for (a) theft - expressed as a proxy tax); (b) fees and licences - expressed as a proxy tax; and (c) a tax on value, such as sales or exports. Explanations for the rates are in the table.

Table 4.5: Est. of proxy taxes on theft and fees & licences, and tax on profits as percentages

	A. Proxy Tax: Theft		B. Proxy Tax: Fees and Licences		C. Tax on Value: Sales and Exports		Total Tax Rate (A+B+C)	
	Ituri	Non-Ituri	Ituri	Non-Ituri	Ituri	Non-Ituri	Ituri	Non-Ituri
Gold	5.0	2.0	5.0	2.0	28.0	5.0	38.0	9.0
Diamonds	5.0	0.5	5.0	2.0	20.0	5.0	30.0	7.5
Coltan	5.0	0.5	5.0	2.0	20.0	5.0	30.0	7.5
Tin	5.0	0.5	5.0	2.0	20.0	5.0	30.0	7.5
Tungsten	5.0	0.5	5.0	2.0	20.0	5.0	30.0	8.0
Timber	2.0	0.5	1.0	1.0	8.0	1.0	11.0	2.5
Coffee	1.0	0.0	1.0	0.5	8.0	1.0	10.0	2.0

5.1 Theft

310. In the UAI outside Ituri, there is evidence Congolese personnel stole resources. *These events are outside the TOR of this report.*

311. In regard to UPDF personnel in the UAI outside Ituri, there are some reported cases of theft:

    a. UNPE (2002a) describes a network of "high-ranking UPDF officers, private businessmen and selected rebel leaders/administrators" (§98) that generates revenue from, amongst other things "theft" (§100). It is assumed some of the theft involved natural resources.

    b. OHCHR (2003: 355-356) reports that UPDF soldiers "requisitioned gold" from the OKIMO plant at Durba, near Watsa in Haut-Uélé, Orientale.

    c. The DRC Party (2016, 114) states "On 23 May 2001, OKIMO's management again reported that illegal artisanal miners, overseen by Ugandan soldiers and the RCD-ML co-ordinator, were occupying the Durba mine [Haut-Uélé] and company infrastructure".

    d. UNPE (2001a; §34) reports that in August 1998 "General Kazini's soldiers absconded with stockpiles of timber belonging to the logging company Amex-bois, located in Bagboka". Bagboka is the airport approximately 11km east of Kisangani, Orientale, where UPDF was stationed. (The Porter Commission contests this example, noting shortly after the event Amex-bois continued to export timber to Uganda so clearly still had timber. However, the fact Amex-bois may have had all, or most, of its timber stolen does not necessarily mean it could not subsequently return to business.)

    e. Baker et al (2003: 28) reports that during the relevant period "a sawmill in Butembo was similarly looted of stocked lumber for export to either Uganda or Rwanda." It is not clear if the theft was by Congolese forces or UPDF personnel, but it is possible some UPDF personnel were involved given they had a significant presence in Butembo, northern North Kivu.

    f. A Congolese NGO, Le Société Civile Grand Nord, based in North Kivu, reported in June 2001 that "UPDF troops commit acts of looting, theft, rape, killings, massacres and arson in the villages. [Including] … complicity in trafficking in raw materials, fraudulent dealings in coffee, timber, papaine [papaya], etc. In all cases the UPDF military operate in collusion with Congolese rebel troops"[108]

    g. Porter Commission (2002: 197) notes "Looting, about which General Kazini clearly knew as he sent a radio message about it", adding "This commission is unable to exclude the possibility that individual soldiers of the UPDF were involved [in looting], or that they were supported by senior officers.

312. In Ituri, based on information in the case file and other documents it is probable there was a pattern of theft of resources by some UPDF personnel, as well as Congolese forces, similar to

[108] See DRC (2016), Memorial Annex E Vol. 2: 19.

what occurred outside Ituri. There are some specific reports of some UPDF personnel arranging, or engaging in, theft:

a. UNPE (2001a: §44) reports UPDF's General Kazini appointed Adele Lotsove to the position of chief administrator of Ituri to "facilitate looting activities" of natural resources in that area.

b. UNPE (2002a: §116) reports UPDF personnel Colonel Peter Karim and Colonel Otafiire helping to organise the raiding of tree plantations "…in the areas of Mahagi and Djugu [both Ituri] along the north-eastern border with Uganda". UNPE states this amounts to "illegal logging and fraudulent evacuation of wood", i.e., theft.

313. It is likely there was theft of resources in both Ituri and non-Ituri, although as a method of extracting value it was probably less common than levying fees and licences or taxing profits.

314. It is necessary to make an estimate for theft notwithstanding inconsistent and incomplete information about it or the high likelihood that theft extended beyond the examples mentioned above. A proxy tax rate for theft is estimated in Table 6 (data are the same as those in Table 5):

Table 4.6: Est. proxy tax rate for theft

Resource	Ituri (%)	Non-Ituri (%)
Gold	5.0	2.0
Diamonds	5.0	0.5
Coltan	5.0	0.5
Tin	5.0	0.5
Tungsten	5.0	0.5
Timber	2.0	0.5
Coffee	1.0	0.0

315. Below is the rationale for these estimates:

Gold

316. There is a specific reference to theft of gold, including by UPDF personnel (OHCHR 2003: 355-356). There is abundant gold in the UAI, there are many reports armed forces personnel were deliberately located in mining areas in order to extract value from gold, and there was an established network of mines that were being exploited during the period. All these factors created opportunities for theft.

317. Within Ituri all armed forces are likely to have stolen limited quantities of gold from producers and traders. Outside Ituri, it is probable some UPDF personnel engaged in limited theft of gold. However, in both areas the evidence suggests theft was a minor method of extracting value.

Diamonds

318. There are *general* references to theft of natural resources by armed forces (UNPE 2002a: §100; UNPE 2001a: §44), including in areas where diamonds are found and including Ituri. Given the preparedness of armed forces' personnel to steal gold, it should be assumed these personnel were also prepared to steal diamonds. However, diamonds are easy to hide and therefore harder to steal, and if one cannot identify a rough diamond it can be difficult to know what to steal. Outside Ituri, some UPDF personnel's theft of diamonds is likely to have been limited due to fewer opportunities and their concentration in gold-

producing areas, not diamond areas. In Ituri and non-Ituri the evidence suggests theft was a minor method of extracting value.

Coltan, Tin, Tungsten

319. Given reported theft of other minerals, it is likely there was also theft of coltan, tin and tungsten in Ituri by armed forces exploiting transit traffic and the export trade to Uganda. At least one Ugandan border post's records shows such trade (UNPE 2001a: §102).

320. Outside Ituri, there was confirmed production of coltan and tin in northern North Kivu. Deposits in Orientale were probably also exploited during the relevant period. Given reports of theft of other minerals, it is reasonable to assume some UPDF personnel stole minor quantities of these resources.

Timber

321. There are specific references to theft of timber (Baker et al 2003: 28; DRC 2016: 19), including by UPDF personnel (UNPE 2001a; §34; UNPE 2002a: §116). Timber is found across the UAI, including Ituri, but it is bulky making it difficult to transport. Even after 2003 timber production has remained small-scale (Baker et al 2003, Counsell 2006, Megevand 2013, Umunay 2011), meaning that with the exception of commercially accumulated stockpiles at the start of the 1998-2003 period, there probably only small quantities available in any one location, limiting quantities available for theft.

Coffee

322. There are references to theft of natural resources, including coffee, and including in coffee-growing areas in Ituri and non-Ituri. There is a specific reference from a Congolese NGO in North Kivu (DRC 2016: 19). However, Coffee is bulky and not very valuable in small quantities. During 1998-2003, coffee was produced by smallholders meaning there were fewer points of accumulation of large quantities. There were few incentives to steal coffee without an easy way of exporting it outside DRC or reselling it locally. Within Ituri all armed forces probably stole limited quantities of coffee. Outside Ituri, any theft of coffee by UPDF personnel was probably minor.

5.2 Fees & Licences

323. The table in **Annex 4: Reported taxes on natural resources** lists information about the level of fees, licences and taxes from the case file and other documents. This information informs this section and the next (*5.3. Tax on value of sales and exports*).

324. Given that many reported fees, licences and taxes are from outside the UAI, or within the UAI outside Ituri but only involving Congolese personnel, their usefulness for this report is to understand the likely *range* of taxes that were levied at various points in the production, trade and export value chain.

325. Observations about Annex 4:

325.1 Some time periods are outside the relevant period (Aug 1998 to end-May 2003).

325.2 Many references for are areas outside the UAI.

325.3 Most of the tax collecting entities reported do not appear to directly involve UPDF personnel

325.4 Tax rates for coltan and cassiterite appear to be broadly similar, but rates for gold and diamonds are quite different, i.e., there does not appear to have been a standard 'resource tax'

326. Assumptions based on Annex 4:

326.1 It was assumed that the references to 'minerals' meant coltan (tantalite-niobium) and cassiterite due to what is known about location.

326.2 UNPE (2001b: §44) states "The high combined taxes imposed by the RCD-Goma rebel group and RPA ultimately resulted in diamonds mined in this area being redirected to Kampala, where lower tax rates prevail". This passage suggests taxes *within* the UAI, at least for diamonds, were probably lower than those reported outside the UAI.

326.3 Taxes originally set by the RCD were the baseline on which the various subsequent RCD factions would have based their own tax rates, i.e., RCD-Goma, RCD-Kisangani, RCD-ML, RCD-National, and FLC (RCD-ML's temporary union with MLC).

327. Case file and other documents include examples where producers, traders and exporters of resources were charged fees and licences:

327.1 UNPE (2002a: §101) describes a network of "high-ranking UPDF officers, private businessmen and selected rebel leaders/administrators" (§98) that established "…authority in major urban and financial centres, such as Bunia [Ituri], Beni [North Kivu] and Butembo (North Kivu), where [the network] use the rebel administration as a public sector façade to generate revenue, specifically to collect taxes under various pretexts, including licensing fees for commercial operators, import and export duties and taxes on specific productions".

327.2 UNPE (2002a: §108), discussing coltan, states "Armed groups frequently identified with militias under the command of UPDF officers manage sites in remote locations where diggers pay a daily fee to exploit an area".

327.3 The Porter Commission (2002: 109) reports that around September 1999 Professor Wamba "appointed a Commission of soldiers to charge artisanal miners at Kilo-Moto about $15 worth of gold to go into the mine, and that the proceeds from that were about two to three hundred grams a month". That is, miners were charged an 'entrance fee' of $15 in the form of gold to mine. It is unclear whether the "soldiers" were UPDF personnel or RCD-ML forces.

327.4 ICG (2003: 5) reports RCD-ML leaders Mbusa Nyamwisi and Tibasiima Ateenyi ousted Jean-Pierre Bemba (leader, MLC) from Bunia in November 2001, after disagreements over several issues, including refusing to "accept being deprived by Bemba and [UPDF General] Kazini of the U.S.$100,000 levied on Congolese traders at the border posts of Kasindi and Mahagi [both North Kivu]".

328. There are also examples of RCD-Goma charging fees and licences, a practice that was likely to be continued by all RCD factions outside of areas controlled by RCD-Goma (i.e. in the UAI):

328.1 Licences "for trading in agricultural products increased fourfold" from September 2000 to March 2002 (UNPE 2002a: §89).

328.2 Circa 2000, 22% of profits from coltan mined in North Kivu and South Kivu, and collected by RCD-Goma, were spent on "licences and fees" (Le Billon and Hocquard 2007: 90).

328.3 RCD-Goma from Nov 2000 to April 2001 demanded a $40,000 annual fee from organisations and individuals wishing to export coltan from the DRC (Congo European Network, see DRC Memorial Annex E, Vol. 2: 15).

329. These examples are of Congolese organisations, not UPDF personnel. They are relevant to this report because of the high probability the methods described were also used in Ituri.

330. In the case file and other documents, different values for fees and licences were given for resources, in different locations, at different times, collected by different organisations and individuals, and demanded of different organisations and individuals. UNPE (2002a: §105) notes local commercial operators "…may be favoured with discounted tax payments deals, in the form of prefinancing arrangements, but tax payment for local operators is mandatory", i.e., tax rates could be brokered through negotiation between commercial entities and the authority demanding the tax.

331. To get around the difficulty of using inconsistent information from the examples documented to identify a global value for fees and licences, a proxy amount expressed as a rate of tax was estimated for the probable value of fees and licences. Because information was often from areas outside the UAI, assumptions had to be made about whether the cost of a fee or licence outside the UAI was likely to be similar to those *within* the UAI.

332. Although there was probably no coltan, tin and tungsten production in Ituri, it is likely there was some trade and export to Uganda through Ituri. A proxy tax for fees and licences was therefore estimated for these resources for Ituri (along with a proportion of quantity of these resources).

333. The proxy tax is assumed to include fees and licences paid by anyone involved in the value chain, such as miners, porters, small traders, large traders, and exporters. See Table 7 (these data are the same as those in Table 5).

Table 4.7: Est. proxy tax rate for value of fees and licences

Resource	Ituri (%)	Non-Ituri (%)
Gold	5.0	2.0
Diamonds	5.0	2.0
Coltan	5.0	2.0
Tin	5.0	2.0
Tungsten	5.0	2.0
Timber	1.0	1.0
Coffee	1.0	0.5

5.3 Tax on sales, exports and other value

334. There is evidence that tax rates on sales, exports and other value were (a) in place from August 1998, and (b) tax collection occurred systematically, if not evenly, throughout the UAI.

335. From August 1998 until the RCD started to fracture in early 1999, it maintained tax collection structures previously in place and "…never abolished current Congolese export and import duty rates and kept the 'système déclaratif' whereby traders were supposed to declare the exact

nature of their merchandise and pay a percentage of its value in tax; but in fact, controls were often lax or non-existent for certain traders" (Johnson and Tegera 2007: 18).

336. The Porter Commission (2002) concluded after talking to Congolese leaders of armed forces operating within the UAI and after hearing from Ugandan witnesses, that taxes on the sale or export of resources were systematically applied in both Ituri and non-Ituri:

336.1 "…taxation was at the root of funding for the [Congolese] movements, and one would expect every effort to be made to collect as much as possible, whether for personal gain, or to finance the movements" (p.77).

336.2 "…there is no doubt that both RCD and UPDF soldiers were imposing a gold tax" (p.197).

336.3 "There is no doubt that as a matter of practice "Security/Intelligence Funding" was imposed on RCD, businessmen and companies, or that General Kazini's regret was that his commanders were likely to take the money for themselves, rather than accounting to him" (p.199).

336.4 Victoria Company, which operated in the DRC, "deals in diamonds, gold and coffee which it purchases from Isiro, Bunia, Bumba, Bondo, Buta and Kisangani" and "pays taxes to MLC to back up what the Army Commander, Major General Kazini, terms 'the effort in the armed struggle'". In fact, Bunia is in Ituri, so any taxes paid there were most likely paid to RCD-ML or temporarily to the FLC (p.82).

336.5 In examining La Conmet company's export of coltan from Beni-Lubero territories in northern North Kivu in early 2000, the Porter Commission stated it obtained "receipts for taxes paid by the company to the Congolese authorities in respect of that export". RCD-Kisangani consituted the "Congolese authorities" at the time, and this example demonstrates that it was extracting taxes. While this example is from outside Ituri, it is probable similar practices were followed by RCD factions within Ituri (p.182).

336.6 The Porter Commission (2002: 55) also notes "Such documentation as this Commission has seen indicates that timber cut in the Democratic Republic of Congo is dutiable there on export, and that such duties are levied by the rebel authorities and paid".

337. Taking into account limitations on information and probable low and high tax rates as outlined in **Annex 4**, a rate of tax was estimated to enable calculation of value extracted from resources. Table 8 provides the rates of tax adopted for this report, as well as the range of tax noted in Annex 4 (the data are the same as those in Table 5):

Table 4.8: Tax range and adopted tax on value

Resource	Tax Range Reported (%) *(See Annex 4)*	Adopted Taxes on Value	
		Ituri (%)	Non-Ituri (%)
Gold	28-40	28.0	5.0
Diamonds	4-15	20.0	5.0
Coltan	5-40	20.0	5.0
Tin	5-50	20.0	5.0
Tungsten	n/a	20.0	5.0
Timber	6	8.0	1.0
Coffee	7	8.0	1.0

Gold

338. The tax on gold value in Ituri was made at the low end of the range because the range's minimum is far higher than for other resources, and it is not clear why gold would be so different to other resources. The high end of the range, while similar to the high end of the range for coltan and tin, is for 2010, seven years after the relevant period. 28% is a conservative confident estimate.

339. Outside Ituri there is evidence that many Congolese forces targeted efforts to exploit value on gold, so the rate of tax put in place by any group is likely to have been more than other resources. However, gold within areas where UPDF personnel were located was probably concentrated in the Kilo-Moto deposit extending into Haut-Uélé (e.g., around Durba) and around Bafsawende, with a few less significant (in terms of quantity and value) exceptions. For this reason, the funds extracted through a tax on value imposed by UPDF personnel is estimated to be low.

Diamonds

340. The tax on diamonds is estimated at 20% even though the reported taxes range from 4-15%, because the rate is unlikely to be less than minerals, which are higher than this range. There is no apparent reason for a tax on diamonds to be less than for gold, but there is also no evidence that it *was* the same as for gold. Thus, while the tax rate for diamonds may have been more, I cannot be sure. 20% is a conservative confident estimate.

Coltan, Tin, Tungsten

341. The tax on value for these three minerals was set at the same rate. This is reasonable given coltan and tin, were often found in the same deposit, and there is no reason to think that tungsten would have been taxed differently. The rate of 20% is a conservative confident estimate within the reported range. There is insufficient information from non-Ituri to estimate tax on value imposed by UPDF personnel at a rate different to gold and diamonds, so the rate has been fixed at the same level.

Timber

342. The reported tax on timber of 6% was only for exports from North Kivu in 2006 (Johnson and Tegera 2007) and does not include any other taxes on value. The working estimate was increased to 8% to include the probability that during the context of conflict from 1998-2003, other taxes on value were also levied, such as at the point of production, trade or while in transit.

Coffee

343. The reported tax on coffee of 7% was only for exports from North Kivu in 2006 (Johnson and Tegera 2007) and does not include any other taxes on value. The working estimate was increased to 8% to include the probability that during the context of conflict from 1998-2003, other taxes on value were also levied, such as at the point of production, trade or while in transit.

344. Table 9 shows the value in 2020 USD extracted by each method of exploitation for each resource, across Ituri and non-Ituri, I.e., it uses the data in Table 4 disaggregated by extraction method tax rate in Table 5. The calculations behind these amounts are in the tables in Annex 5.

Table 4.9: Value of exploitation disaggregated by method, Ituri and non-Ituri, 2020 USD

	Theft		Fees & Licences		Tax of Value		Total	
	Ituri	Non-Ituri	Ituri	Non-Ituri	Ituri	Non-Ituri	Ituri	Non-Ituri
Gold	4,540,894	2,219,993	4,313,849	2,175,593	24,157,555	5,438,982	33,012,298	9,834,567
Diamonds	176,330	335,027	167,513	1,340,107	670,054	3,350,268	1,013,897	5,025,403
Coltan	10,963	20,830	10,415	83,320	41,660	208,299	63,038	312,449
Tin	7,523	14,294	7,147	57,176	28,588	142,939	43,258	214,409
Tungsten	2,398	4,557	2,279	18,228	9,114	45,571	13,791	68,356
Timber	516,322	129,080	252,998	258,161	2,023,982	258,161	2,793,301	645,402
Coffee	206,515	0	204,450	240,935	1,635,602	481,869	2,046,568	722,804
Total	**5,460,945**	**2,723,781**	**4,958,651**	**4,173,520**	**28,566,555**	**9,926,089**	**38,986,151**	**16,823,390**

Annex 1: Terms of Reference

The ICJ provided the following terms of reference (TOR) to guide this report:

(1) An expert opinion shall be obtained, which will be entrusted to four independent experts appointed by Order of the Court after hearing the Parties.

(2) For the purposes of determining the reparation owed to the Democratic Republic of the Congo by Uganda for the injury caused as a result of the breach by Uganda of its international obligations, as determined by the Court in its 2005 Judgment, the Court continues to examine the full range of claims and defences to the heads of damage claimed by the Applicant. However, with respect to some of these heads of damage, namely, loss of human life, loss of natural resources and property damage, the Court considers it necessary to arrange for an expert opinion, in accordance with Article 67, paragraph 1, of its Rules. The terms of reference for the experts referred to in point (1) above will be as follows:

II. Loss of natural resources

(a) Based on the evidence available in the case file and documents publicly available, particularly the United Nations Reports mentioned in the 2005 Judgment, what is the approximate quantity of natural resources, such as gold, diamond, coltan and timber, unlawfully exploited during the occupation by Ugandan armed forces of the district of Ituri in the relevant period?

(b) Based on the answer to the question above, what is the valuation of the damage suffered by the Democratic Republic of the Congo for the unlawful exploitation of natural resources, such as gold, diamond, coltan and timber, during the occupation by Ugandan armed forces of the district of Ituri?

(c) Based on the evidence available in the case file and documents publicly available, particularly the United Nations Reports mentioned in the 2005 Judgment, what is the approximate quantity of natural resources, such as gold, diamond, coltan and timber, plundered and exploited by Ugandan armed forces in the Democratic Republic of the Congo, except for the district of Ituri, and what is the valuation of those resources?

(3) The references to the administrative divisions on the territory of the Democratic Republic of the Congo mentioned above should be understood as those that existed in the Democratic Republic of the Congo during the relevant period, i.e. between 6 August 1998 and 2 June 2003.

Annex 2: List of References

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Annex 3: Commodity codes

Searches on the UN ComTrade database used the following codes listed below.

Gold	710812 - Metals; gold, non-monetary, unwrought (but not powder).
Coltan	261590 - Niobium, Tantalum, vanadium ores and concentrates.
Tin	260900 - Tin ores and concentrates.
Tungsten	261100 - Tungsten ores and concentrates.
Timber	4407 - Wood sawn or chipped lengthwise, sliced, peeled, whether or not planed, sanded or finger jointed, of a thickness exceeding 6mm.
Coffee	090111 - Coffee; not roasted or decaffeinated.

In regard to **diamonds**, ComTrade data were not used to identify quantities or value likely to have been produced in UAI for two reasons:

- Data for weight both industrial and gem diamonds are absent in most cases, so quantity cannot be established for either kind of diamond; and
- Even though value is recorded, because weight is absent price per carat cannot be calculated and therefore could not be used to inform this report.

ComTrade codes for industrial and non-industrial diamonds are therefore not included because they were not used.

Annex 4: Reported taxes on natural resources

This table summarised reports of taxes on value, profits and exports in case file and other documents.

Resource/ Source	Rate Reported	Tax on what?	Collector	Period	Region
Gold (UNPE 2001a: §59)	1gram/day (approx. 28%)	Daily 'fee'	'Ugandan local commanders and some of the soldiers'	Late 1999?	Haut-Uélé/Ituri border area.
Gold (International Alert 2010: 43)	40%	Export value	Civilian Administration	2010	Ituri
Gold (Johnson and Tegera 2007: 94)	40% (30% OKIMO) (10% Prov.)	Tax on ore leaving mine	OKIMO royalties; Ituri Admin.	2006?	Ituri
Gold (Johnson and Tegera 2007: 94)	$1,392	Fees and licences to produce	All authorities	2006?	Ituri
Gold (Johnson and Tegera 2007: 87)	4.75%	Export taxes	All authorities	2006?	South Kivu
Gold (Johnson and Tegera 2007: 90)	$75,000	Export licence fee	Paid in Kinshasa	2006?	All DRC
Gold, industrial (Johnson and Tegera 2007: 24)	3%	Exports	OFIDA	2007?	North Kivu
Gold, artisanal (Johnson and Tegera 2007: 24)	1.5%	Exports	OFIDA	2007?	North Kivu
Diamonds (RPE 2001a: §127)	5%	Export value	'Congo Desk' Rwanda	1998-2001	Kisangani comptoirs
Diamonds (Johnson and Tegera 2005: 97)	4%	Value	DRC Government	2004	Nationwide
Diamonds (UNPE 2001b: §46.)	15%	Export value	Rwanda; RCD-Goma	2001	From the DRC
	(5%)	Export value	'Congo Desk', Rw	2001	From the DRC
	(10%)	Export value	'Rebel Admin.'	2001	From the DRC
Diamonds, industrial (Johnson and Tegera 2007: 24)	3%	Exports	OFIDA	2007?	North Kivu
Diamonds, artisanal (Johnson and Tegera 2007: 24)	1.5%	Exports	OFIDA	2007?	North Kivu
Coltan (IPIS, 2002: 10)	8%	Exports by comptoirs	RCD; RCD-Goma	1998-2000	South Kivu
	40%? ($10/kg)	Exports by SOMIGL	RCD-Goma	From Nov. 2000	South Kivu; North Kivu
Coltan (Le Billon and Hocquard, 2007)	7%	Profits	RCD-Goma	Circa 2000	South Kivu; North Kivu
	11%	Profits	'Armed Groups'	Circa 2000	South Kivu; North Kivu
	22%	Of profits spent on	RCD-Goma	Circa 2000	South Kivu; North Kivu

		'licences & Fees'			
Coltan (Johnson and Tegera 2005: 37)	11% total (7%) (2%) (2%)	Value ($10/kg reported)	All authorities Commune Zone 'Mining Division', Goma	2005	Mumba/Bibatama mine, North Kivu
Coltan (Johnson and Tegera 2002: 7)	$20,000 per month	Coltan exports from the DRC	RCD; RCD-Goma	1998-Nov 2000	South Kivu; North Kivu?
Coltan (Johnson and Tegera 2002: 7)	$1,124,970	Coltan (and cassiterite?)	SOMIGL to RCD	Dec 2000 alone	Rwandan area of influence
Coltan (Redmond 2001: 11)	$4/kg (approx. 17% tax)	Tax on exports by kilogram	Comptoirs to ? (RCD? RPA?)	April-May 2001	South Kivu; North Kivu
Coltan (Redmond 2001: 11)	$7.50/kg (approx. 32% tax)	Weekly fee to work in mines	Paid by miners to (1) military and (2) 'Chef de colline)	April-May 2001	Kahuzi-Biéga NP, South Kivu
Coltan (Congo European Network 2001)[109]	$6/kg (approx. 25% tax)	Export tax on value (plus $40,000 annual fee to export).	RCD-Goma	Nov 2000-April 2001	From the DRC
	$4/kg for more than 15mt (approx. 17% tax)	Export tax on consignments more than 15mt	RCD-Goma	Nov 2000-April 2001	From the DRC
Coltan (Johnson and Tegera 2005: 47)	Fixed royalty tax of $5,000	On coltan miners	RCD-Goma	Pre-2004	South Kivu; North Kivu
Coltan/cassiterite? (Johnson and Tegera 2005: 57)	$1-$1.50/kg (approx. 5%)	Value	'Military Forces'	1998-2005	Walikale Territory (Goma/Bukavu-Kisangani road)
'**Minerals'** (coltan/ cassiterite?) (International Alert 2010: 43)	15%	'Value' ($365/mt)	Civilian Admin. (b/w Bisie-Goma)	2010	Western North Kivu within Rwandan area of influcence
Cassiterite (Garrett 2008: 32)	10%	$4/kg + 10% of minerals carried	FARDC	2008	Bisie mine, western North Kivu
Cassiterite (Johnson and Tegera 2005: 47)	$2,500 fee	Imposed on traders	RCD	Pre-2004	South Kivu; North Kivu
Cassiterite (Johnson and Tegera 2005: 59)	50%	Quantity	RCD	2004	Bisie mine, North Kivu
Cassiterite, artisanal (Johnson and Tegera 2007: 24)	15%	Value	North Kivu authorities	2003	North Kivu

[109] Reported in DRC (2016) Memorial Annex E, Vol. 2, p.15.

Cassiterite, artisanal (Johnson and Tegera 2007: 24)	10%	Prod. kept by mine authorities.	North Kivu authorities	2003	North Kivu
Cassiterite, industrial (Johnson and Tegera 2007: 24)	10%	Taxed before leaving mine	North Kivu authorities in Mine (OFIDA)	2003	North Kivu
Timber (Johnson and Tegera 2007: 24)	6%	Export tax on untreated timber	North Kivu authorities	2003	North Kivu
Green coffee beans (Johnson and Tegera 2007: 60)	7%	"Total" export taxes	North Kivu authorities	2003	North Kivu

Annex 4.5: Calculations of Value

A4.5.1 Gold

Table A4.5.1.1: Quantity, kilograms **1998 and 2003 five months only*		**1998***	**1999**	**2000 (a)**		**2001**	**2002**	**2003***	**Total**
				(Jan-Jun)	**(Jul-Dec)**				
D. R. Congo - Production									
1	Formal production (b)	62.90	207.00	26.00	26.00	6,100.00	7,600.00	1,708.33	15,730.23
2	Assume 80% of L1 from non-Government area (c)	50.33	165.60	20.80	20.80	4,880.00	6,080.00	1,366.67	12,584.20
3	75% of L2 in UAI to June 2000; 70% in UAI from July 2000 (d)	37.75	124.20	15.60	14.56	3,416.00	4,256.00	956.67	8,820.78
4	Add est. national artisanal production (e)	2,083.33	5,000.00	2,500.00	2,500.00	5,000.00	5,000.00	2,083.33	24,166.66
5	80% of L4 in non-Govt held	1,666.67	4,000.00	2,000.00	2,000.00	4,000.00	4,000.00	1,666.67	19,333.34
6	75% of L6 in UAI to June 2000; 70% in UAI from July 2000 (d)	1,250.00	3,000.00	1,500.00	1,400.00	2,800.00	2,800.00	1,166.67	13,916.67
7	**Total Est. UAI Production (R3 + R6)**	**1,287.75**	**3,124.20**	**1,515.60**	**1,414.56**	**6,216.00**	**7,056.00**	**2,123.33**	**22,737.44**

a. 2000 is split into two six-month periods to reflect Uganda's loss of influence in Kisangani after June 2000. Loss of influence reduced the ability of UPDF personnel to extract value from gold in Kisangani.
b. Based on USGS data (most recent Yearbook)
c. See text for explanation.
d. Est. UAI share was 75% of non-government held area to June 2000, then 70% from July 2000.
e. See text for explanation. Base estimate used was 5,000 kg per year for the DRC revised accordingly for non-government-held area, then UAI.

Table A4.5.1.2: DRC Congo gold exports **1998 and 2003 five months only*	1998*	1999	2000 (a)		2001	2002	2003*	Total
			(Jan-Jun)	(Jul-Dec)				
D. R. Congo - Exports								
1 Formal exports (b)	419.58	241.56	412.50	412.50	887.00	527.00	1.25	2,901.39
2 Assume 80% of L1 from non-Govt area (c)	335.67	193.25	330.00	330.00	709.60	421.60	1.00	2,321.12
3 Est. formal exports from UAI: 75% of L2 to June 2000; 70% from July 2000 (d)	251.75	144.94	247.50	231.00	496.72	295.12	0.70	1,667.73
4 Est. UAI production from L7, Table A4.5.1.1	**1,287.75**	**3,124.20**	**1,515.60**	**1,414.56**	**6,216.00**	**7,056.00**	**2,123.33**	**22,737.44**
5 UAI production minus exports (L4 - L3), i.e., smuggled gold.	**1,036.00**	**2,979.26**	**1,268.10**	**1,183.56**	**5,719.28**	**6,760.88**	**2,122.63**	**22,069.71**

a. 2000 is split into two six month periods to reflect Uganda's loss of influence in Kisangani after June 2000.
b. Based on ComTrade import data for "All" reporters.
c. See text for explanation.
d. Est. UAI share was 75% of total non-government held area to June 2000, then 70% from July 2000.

Table A4.5.1.3: Uganda gold production and exports **1998 and 2003 five months only*	1998*	1999	2000	2001	2002	2003*	Total
Uganda - Production and Exports							
1 Formal production (a)	3.33	5.00	56.00	0.00	3.00	16.67	84.00
2 Est. artisanal production (b)	416.67	1,000.00	1,000.00	1,000.00	1,000.00	416.67	4,833.34
3 Est. total production (L1 + L2)	420.00	1,005.00	1,056.00	1,000.00	1,003.00	1,040.00	5,524.00
4 Formal exports (c)	936.25	4,231.00	5,297.00	6,161.00	7,117.00	1,449.17	25,191.42
5 Exports surplus to production: assume from UAI (L4 - L3) (d)	**516.25**	**3,226.00**	**3,241.00**	**5,161.00**	**6,114.00**	**1,015.83**	**19,274.08**

a. Based on USGS data (most recent Yearbook)
b. See text for explanation of 1,000 kg estimate per year.
c. Based on Uganda Bureau of Statistics data in Table 8.2 in *Case Concerning Armed Activities on the Territory of the Congo. Democratic Republic of the Congo v. Uganda. Counter-Memorial of Uganda on Reparations. Volume 1*. 6 February 2018 (Uganda).
d. Uganda exports excess to production assumed to be UAI-origin because during the 1998-2003 period: cross-border trade in gold between Uganda and either Rwanda or Burundi unlikely; Kenya produced and exported gold, but no reason for traders to bring DRC gold to export from Kenya if possible from Uganda; Central African Republic production unlikely to have transited through the DRC to Uganda; and Sudanese production unlikely to have been exported via Uganda.

Table A4.5.1.4: UAI smuggled gold v. Ugandan export 'surplus'. **1998 and 2003 5mth only*		**1998***	**1999**	**2000**	**2001**	**2002**	**2003***	**Total**
Comparison of UAI smuggled gold v. Uganda exports surplus to production (a)								
1	UAI smuggled gold (Table A4.5.1.2: L5)	1,036.00	2,979.26	2,451.66	5,719.28	6,760.88	2,122.63	22,069.71
2	Ugandan exports surplus to production (Table A4.5.1.3: L5)	516.25	3,226.00	3,241.00	5,161.00	6,114.00	1,015.83	19,274.08
3	**Take highest yearly est. from L1 or L2** (b)	1,036.00 (from DRC)	3,226.00 (from Ug.)	3,241.00 (from Ug.)	5,719.28 (from DRC)	6,760.88 (from DRC)	2,122.63 (from DRC)	22,105.79
4	**Est. quantity in UAI:**	**1,036.00**	**3,226.00**	**3,241.00**	**5,719.28**	**6,760.88**	**2,122.63**	**22,105.79**

a. The difference between DRC smuggled gold and Ugandan exports surplus to production is assumed to be that portion of gold from UAI that transitted through Uganda to the international market but was not captured in any statistics.

b. Because the difference between the DRC and Ugandan data cannot be reconciled, and given that both sets of data are based on conservative estimates of informal production and trade, it was reasonable to taken the highest yearly estimate from either L1 or L2 as the likely quantity smuggled from UAI into Uganda.

Gold: Value, USD

Table A4.5.1.5 **1998 and 2003 five months only*		1998*	1999	2000 (a)	2001	2002	2003*	Total
1	Est. quantity from UAI (b)	1,036.00	3,226.00	3,241.00	5,719.28	6,760.88	2,122.63	22,105.79
2	Est. price, USD per kg (c)	6,145.88	5,821.54	5,832.62	5,664.18	6,471.68	7,592.64	
3	Total (L1 x L2) (d)	6,367,132	18,780,298	18,903,518	32,395,057	43,754,248	16,116,398	136,316,651
4	To get 2020 USD multiply L3 by … (e)	1.60	1.56	1.51	1.47	1.45	1.41	
5	**Est. total value in 2020 USD (L3 x L4)**	**10,187,411**	**29,297,264**	**28,544,312**	**47,620,734**	**63,443,660**	**22,724,121**	**201,817,503**

a. Jan-Jun and Jul-Dec periods for 2000 have been merged back into a single year.
b. From L5 in Table A4.5.1.4.
c. Prices based on World Gold Council price database annual averages, accessed on 6 December 2020: From World Gold Council: https://www.gold.org/goldhub/data/gold-prices. Annual price was then reduced by 35% to better reflect probable price at points of opportunities for exploitation in the DRC. This base price and the original adopted price are shown in Table 2.
d. Total figures rounded-up (no cents included).
e. Rates taken from US Inflation Calculator, based on US Government CPI data published on October 13, 2020, which uses US Labor Dept Bureau of Labor Statistics data: https://www.usinflationcalculator.com.

Gold: Quantity and value distribution across Ituri and Non-Ituri, 2020 USD

	Table A4.5.1.6	Ituri (a)	%	Non-Ituri (a)	%	Total UAI
1	Quantity (kilograms)	9,948	45%	12,158	55%	22,106
2	**Base value of quantity** (b)	**90,817,876**	**45%**	**110,999,627**	**55%**	**201,817,504**
3	Est. value of Theft (c)	4,540,894	5.0%	2,219,993	2.0%	6,760,887
4	Est. Fees & Licences (d)	4,313,849	5.0%	2,175,593	2.0%	6,489,442
5	Est. of Taxes on Value (e)	24,157,555	28.0%	5,438,982	5.0%	29,596,537
6	**Total est. value of damages**	**$ 33,012,298**		**$ 9,834,568**		**$ 42,846,866**

a. See text for explanation of Ituri and non-Ituri share of quantity and value
b. From Total from L5 in previous table
c. See text for explanation of proxy 'theft tax'.
d. See text for explanation of proxy 'tax on fees and licences'.
e. See text for explanation of tax on value.

A4.5.2 Diamonds

Table A4.5.2.1: Quantity, carats **1998 and 2003 five months only*		**1998***	**1999**	**2000 (a)** (Jan-Jun)	**2000 (a)** (Jul-Dec)	**2001**	**2002**	**2003***	**Total**
D. R. Congo									
1	Est. DRC production (b)	10,833,333	20,101,999	7,950,000	7,950,000	16,902,001	21,802,002	10,833,333	96,372,668
2	Assume 9% of L1 from Equateur and Orientale (c)	975,000	1,809,180	715,500	715,500	1,521,180	1,962,180	975,000	8,673,540
3	70% of L2 in UAI to end June 2000 (d)	682,500	1,266,426	500,850					2,449,776
4	35% of L2 in UAI from July 2000 (d)				250,425	532,413	686,763	341,250	1,810,851
5	**Est. quantity in UAI (L3 + L4)**	**682,500**	**1,266,426**	**500,850**	**250,425**	**532,413**	**686,763**	**341,250**	**4,260,627**

a. 2000 is split into two six month periods to reflect Uganda's loss of influence in Kisangani after June 2000.
b. Based on PAC (Partenariat Afrique Canada), *Revue annuelle de l'industries des diamants: République Démocratique du Congo 2004*, Table 1. (Production data exclude Sengamines' production in government-held territory). https://impacttransform.org/wp-content/uploads/2017/09/RDC-2004.pdf.
c. Christian Dietrich in *Monnaie Forte: L'économie criminalisée des diamants dans la République démocratique du Congo et les pays voisins* (Ottawa: Partenariat Afrique Canada: 2) estimates that 10% of DRC diamond production is from Equateur and Orientale. To allow for a margin of error, this amount was 'discounted' by 10%. I.e., this report estimates 9% of national production occurred in these provinces.
d. See text for explanation

Diamonds: Value, USD

Table A4.5.2.2 **1998 and 2003 five months only*		1998*	1999	2000 (a) (Jan-Jun)	2000 (a) (Jul-Dec)	2001	2002	2003*	Total
D. R. Congo									
1	**Est. quantity in UAI (a)**	**682,500**	**1,266,426**	**500,850**	**250,425**	**532,413**	**686,763**	**341,250**	**4,260,627**
2	Est. price, USD per carat (b)	12.09	8.16	9.32	9.32	12.21	12.56	17.83	
3	Total (L1 x L2)	8,248,652	10,330,063	4,667,213	2,333,606	6,500,912	8,628,508	6,085,327	46,794,281
4	To get 2020 USD multiply L3 by … (c)	1.60	1.56	1.51	1.51	1.47	1.45	1.41	
5	**Est. total value in 2020 USD (L3 x L4)**	**13,197,844**	**16,114,898**	**7,047,491**	**3,523,746**	**9,556,341**	**12,511,336**	**8,580,311**	**70,531,967**

a. From L5 in previous table.
b. Est. based on an annual average price for diamonds produced artisanally (the method in Equateur and Orientale), calculated by dividing artisanal value by artisanal quantity in Tableau 1, PAC (Partenariat Afrique Canada), *Revue annuelle de l'industries des diamants: République Démocratique du Congo 2004*.
c. Rates taken from US Inflation Calculator, based on US Government CPI data published on October 13, 2020, which uses US Labor Dept Bureau of Labor Statistics data: https://www.usinflationcalculator.com.

Diamonds: Quantity and value distribution across Ituri and Non-Ituri, 2020 USD

Table A4.5.2.3		Ituri (a)	%	Non-Ituri (a)	%	Total UAI
1	Quantity (carats)	213,031	5%	4,047,596	95%	**4,260,627**
2	**Base value of quantity (b)**	**3,526,598**	**5%**	**67,005,369**	**95%**	**70,531,967**
3	Est. value of Theft (c)	176,330	5.0%	335,027	0.5%	511,357
4	Est. Fees & Licences (d)	167,513	5.0%	1,340,107	2.0%	1,507,620
5	Est. of taxes on Value (e)	670,054	20.0%	3,350,268	5.0%	4,020,322
6	**Total est. value of damages**	**$ 1,013,897**		**$ 5,025,402**		**$ 6,039,299**

a. See text for explanation of Ituri and non-Ituri share of quantity and value
b. From Total from L5 in previous table
c. See text for explanation of proxy 'theft tax'.
d. See text for explanation of proxy 'tax on fees and licences'.
e. See text for explanation of tax on value.

A4.5.3 Coltan

Table A4.5.3.1: Quantity, kilograms **1998 and 2003 five months only*	**1998***	**1999**	**2000**	**2001**	**2002**	**2003***	**Total**
Uganda							
1 Est. production (a)	0	0	3,000	11,000	6,000	6,667	26,667
2 Est. exports (b)	4,593	800	6,692	4,038	0	2,542	18,665
3 Exports surplus to production; assume from DRC (L1 - L2) (c)	4,593	800	3,692	(6,962)	(6,000)	(4,125)	(8,002)
D. R. Congo							
4 Est. DRC exports (d)	9,453	1,875	231,452	44,073	73,971	74,405	435,229
5 Est. 95% of L4 from non-Govt area (e)	8,980	1,781	219,879	41,869	70,272	70,685	413,466
6 Est. 5% of L5 from UAI (f)	449	89	10,994	2,093	3,514	3,534	20,673
Other probable exporters of DRC coltan							
7 Est. exports from Kenya (g)	0	0	0	22,078	60,903	17,748	100,729
8 Assume 50% of L7 via UAI (h)	0	0	0	11,039	30,452	8,874	50,365
9 Est. exports from Central African. Rep. (g)	0	0	0	0	9,909	0	9,909
10 Assume 100% of L9 via UAI (h)	0	0	0	0	9,909	0	9,909
11 Est. exports from Congo-Brazzaville (i)	73,086	0	0	0	0	0	73,086
12 Assume 33% of L11 via UAI (j)	24,362	0	0	0	0	0	24,362
13 Total est. additional (L8 + L10 +L12)	24,362	0	0	11,039	40,351	8,874	84,626
14 Est. quantity from UAI (L3 + L6 + L13)	**29,404**	**889**	**14,686**	**6,170**	**37,875**	**8,283**	**97,307**

a. Ugandan production from USGS (most recent Mineral Yearbook). USGS data for niobium and tantalum was combined for period of interest.
b. Based on either import or export data from ComTrade (no transaction was counted twice; different reporters for different years).
c. Uganda exports in excess of production assumed to be of DRC origin because the only other producers nearby were Rwanda and Burundi, and cross-border trade in coltan was unlikely 1998-2003. Zimbabwe also produced coltan from 2001, but this would not be exported via Uganda.
d. Based on either import or export data from ComTrade (no transaction was counted twice; different reporters for different years).
e. See text for explanation of estimate that 95% of coltan exports came from non-Government area.
f. See text for explanation of estimate that 5% of coltan production in non-Government area was in UAI.
g. Based on ComTrade. Kenya and Central African Republic did not produce coltan 1998-2003, so assumed these originated in the DRC.
h. We cannot know if Kenya and CAR exports originated in state-held or UAI areas, so assumed 50% only may have originated in UAI.
i. Congo-Brazzaville and its neighbours are not producers. Assumed, therefore, that ComTrade imports reported as from “Congo” were from the DRC.
j. Because I cannot know by what route Congo-Brazzaville exports left the DRC, I assumed 33% only passed via Uganda.

Coltan (Niobium-Tantalite): Value, USD

Table A4.5.3.2 **1998 and 2003 five months only*		**1998***	**1999**	**2000**	**2001**	**2002**	**2003***	**Total**
1	Est. quantity from UAI (a)	29,404	889	14,686	6,170	37,875	8,283	97,307
2	Est. price, USD per kg (b)	8.44	31.14	74.50	55.07	30.71	9.17	
3	Total (L1 x L2)	248,080	27,681	1,094,149	339,835	1,162,963	75,971	2,948,679
4	To get 2020 USD multiply L3 by … (c)	1.60	1.56	1.51	1.47	1.45	1.41	
5	**Est. total value in 2020 USD (L3 x L4)**	**396,929**	**43,182**	**1,652,165**	**499,558**	**1,686,296**	**107,120**	**4,385,250**

a. From L14 in previous table.
b. Initial price estimate based on an average of all price observations for each year (1998-2003) available from ComTrade records for niobium-tantalite imports and exports involving East and Central Africa. This price was then reduced by 35% to better reflect probable price at points of opportunities for exploitation in the DRC (always less than prices paid by international importers).
c. Rates taken from US Inflation Calculator, based on US Government CPI data published on October 13, 2020, which uses US Labor Dept Bureau of Labor Statistics data: https://www.usinflationcalculator.com.

Coltan (Niobium-Tantalite): Quantity and value distribution across Ituri and Non-Ituri, 2020 USD

Table A4.5.3.3		Ituri (a)	%	Non-Ituri (a)	%	Total UAI
1	Quantity (kgs)	4,204	5%	79,878	95%	84,082
2	**Base value of quantity (b)**	**219,263**	**5%**	**4,165,988**	**95%**	**4,385,250**
3	Est. value of Theft (c)	10,963	5.0%	20,830	0.5%	31,793
4	Est. Fees & Licences (d)	10,415	5.0%	83,320	2.0%	93,735
5	Est. of taxes on Value (e)	41,660	20.0%	208,299	5.0%	249,959
6	**Total est. value of damages**	**$ 63,038**		**$ 312,449**		**$ 375,487**

a. See text for explanation of Ituri and non-Ituri share of quantity and value
b. From Total from L5 in previous table
c. See text for explanation of proxy 'theft tax'.
d. See text for explanation of proxy 'tax on fees and licences'.
e. See text for explanation of tax on value.

A4.5.4 Tin

Table A4.5.4.1 **1998 and 2003 five months only*		1998*	1999	2000	2001	2002	2003*	Total
Uganda								
1	Est. production (a)	459	333	333	18,000	0	417	19,542
2	Est. exports (b)	0	0	0	46,897	1,500	4,175	52,572
3	Exports surplus to production; assume from DRC (L1 - L2) (c)	0	0	0	28,897	1,500	3,758	34,155
D. R. Congo								
4	Est. DRC exports (d)	161,015	192,750	278,761	2,823,640	413,840	328,428	4,198,434
5	Assume 95% of L4 from non-Govt area (e)	152,965	183,113	264,823	2,682,458	393,148	312,007	3,988,514
6	Assume 5% of L5 from UAI (f)	7,648	9,156	13,241	134,123	19,657	15,600	199,425
Other probable exporters of DRC cassiterite								
7	Est. exports from Tanzania (g)	0	0	0	0	10,000	5,592	15,592
8	Assume 50% of L7 via UAI (h)	0	0	0	0	5,000	2,796	7,796
9	Est. exports from Congo-Brazzaville (i)	102,708	225,000	462,743	412,029	351,174	393,500	1,947,154
10	Assume 33% of L9 via UAI (j)	34,236	75,000	154,248	137,343	122,058	133,963	656,848
11	Total est. additional from region (L8 + L10)	34,236	75,000	154,248	137,343	122,058	133,963	656,848
12	**Est. quantity from UAI (L3 + L6 + L11)**	**41,884**	**84,156**	**167,489**	**300,363**	**143,215**	**153,321**	**890,428**

a. Ugandan production 1998-2003 based on USGS data (most recent Yearbook) and UNPE for 1998 (2001b: Table 1).
b. Based on either import or export data from ComTrade (no transaction was counted twice; different reporters for different years).
c. Uganda exports excess to production assumed to be of DRC origin because the only producing countries nearby were DRC, Rwanda and Burundi and Ugandan trade in tin with these countries unlikely 1998-2003. Zimbabwe produced small quantities, but this would not be exported via Uganda.
d. Based on either import or export data from ComTrade (no transaction was counted twice; different reporters for different years).
e. See text for explanation of estimate that 95% of cassiterite production 1998-2003 was in non-Government area.
f. See text for explanation of estimate that 5% of cassiterite production in non-Government area was in UAI.
g. Based on ComTrade. Tanzania did not produce cassiterite 1998-2003. It was assumed its exports originated in the DRC.
h. We cannot know if Tanzanian exports originated in state-held or UAI areas, so assumed 50% may have originated in UAI.
i. Based on ComTrade. However, Congo-Brazzaville and its neighbours are not producers and it is too distant from DRC mines to be an export route, especially 1998-2003. Assumed, therefore, that imports reported as from “Congo” were actually from the DRC.
j. Because I cannot know by what route Congo-Brazzaville exports left the DRC, I assumed 33% passed via Uganda.

Tin (Cassiterite): Value, USD

Table A4.5.4.2 **1998 and 2003 five mnths only*		1998*	1999	2000	2001	2002	2003*	Total
1	Est. quantity from UAI (a)	**41,884**	**84,156**	**167,489**	**300,363**	**143,215**	**153,321**	**890,428**
2	Est. price, USD per kg (b)	2.12	1.50	1.83	2.03	2.02	4.12	
3	Total (L1 x L2)	88,905	126,347	306,847	609,436	289,024	632,341	2,052,900
4	To get 2020 USD multiply L3 by … (c)	1.60	1.56	1.51	1.47	1.45	1.41	
5	**Est. total value in 2020 USD (L3 x L4)**	**142,248**	**197,102**	**463,339**	**895,870**	**419,084**	**891,601**	**3,009,244**

a. From L12 in previous table.
b. Initial price estimate based on an average of all price observations for each year (1998-2003) available from ComTrade records for cassiterite imports and exports involving East and Central Africa. This price was then reduced by 35% to better reflect probable price at points of opportunities for exploitation in the DRC (always less than prices paid by international importers).
c. Rates taken from US Inflation Calculator, based on US Government CPI data published on October 13, 2020, which uses US Labor Dept Bureau of Labor Statistics data: https://www.usinflationcalculator.com.

Tin (Cassiterite): Quantity and value distribution across Ituri and Non-Ituri, 2020 USD

Table A4.5.4.3		Ituri (a)	%	Non-Ituri (a)	%	Total UAI
1	Quantity (kgs)	44,521	5%	845,907	95%	890,428
2	**Base value of quantity (b)**	**150,462**	**5%**	**2,858,783**	**95%**	**3,009,245**
3	Est. value of Theft (c)	7,523	5.0%	14,294	0.5%	21,817
4	Est. Fees & Licences (d)	7,147	5.0%	57,176	2.0%	64,323
5	Est. of taxes on Value (e)	28,588	20.0%	142,939	5.0%	171,527
6	**Total est. value of damages**	**$ 43,258**		**$ 214,409**		**$ 257,667**

a. See text for explanation of Ituri and non-Ituri share of quantity and value
b. From Total from L5 in previous table
c. See text for explanation of proxy 'theft tax'.
d. See text for explanation of proxy 'tax on fees and licences'.
e. See text for explanation of tax on value.

A4.5.5 Tungsten

Table A4.5.5.1 *1998 and 2003 five mnths only*		1998*	1999	2000	2001	2002	2003*	Total
Uganda								
1	Est. production (a)	0	0	0	17,000	16,000	417	33,417
2	Est. exports (b)	0	82,237	70,600	116,885	60,000	12,500	342,222
3	Exports surplus to production; assume from DRC (L1 - L2) (c)	0	82,237	70,600	99,885	44,000	12,083	308,805
D. R. Congo								
4	Est. DRC exports (d)	0	0	0	0	0	11,667	11,667
5	Assume 95% of L4 from non-Govt area (e)	0	0	0	0	0	11,084	11,084
6	Assume 5% of L5 from UAI (f)	0	0	0	0	0	3,675	3,879
Other probable exporters of DRC tungsten								
7	Est. exports from Kenya and Tanzania (g)	0	0	0	0	0	27,997	27,997
8	Assume 50% of L7 via UAI (h)	0	0	0	0	0	13,998	13,998
9	Est. exports from Congo-Brazzaville (i)	4,583	0	0	0	0	8,458	13,041
10	Assume 33% of L9 via UAI (j)	1,528	0	0	0	0	2,819	4,347
11	Total est. additional from region (L8 + L10)	1,528	0	0	0	0	16,817	18,345
12	**Est. quantity from UAI (L3 + L6 + L11)**	**1,528**	**82,237**	**70,600**	**99,885**	**44,000**	**32,575**	**330,825**

a. Ugandan production based on USGS data (most recent Yearbook)
b. Uganda exports based on ComTrade import data from "All" partners.
c. Uganda exports in excess of production were assumed to be of DRC origin because the only producing countries nearby were the DRC, Rwanda and a small quantity from Burundi in 2003, but cross-border trade in tungsten with Rwanda and Burundi was unlikely 1998-2003.
d. Based on either import or export data from ComTrade (no transaction was counted twice; different reporters for different years).
e. See text for explanation of estimate that 95% of tungsten production 1998-2003 was in non-Government area.
f. See text for explanation of estimate that 5% of tungsten production in non-Government area was in UAI.
g. Based on ComTrade. Kenya and Tanzania did not produce tungsten 1998-2003. It was assumed their exports originated in the DRC.
h. We cannot know if Kenyan and Tanzanian exports originated in state-held or UAI areas, so assumed 50% may have originated in UAI.
i. Based on ComTrade. However, Congo-Brazzaville and its neighbours are not producers and it is too distant from DRC mines to be an export route, especially 1998-2003. Assumed, therefore, that imports reported as from "Congo" were actually from the DRC.
j. Because I cannot know by what route Congo-Brazzaville exports left the DRC, I assumed 33% only passed via Uganda.

Tungsten: Value, USD

Table A4.5.5.2 **1998 and 2003 five months only*		1998*	1999	2000	2001	2002	2003*	Total
1	Est. quantity from UAI (a)	1,528	82,237	70,600	99,885	44,000	32,575	330,825
2	Est. price, USD per kg (b)	2.48	2.00	3.49	3.34	2.87	3.66	
3	Total (L1 x L2)	2,463	106,860	160,020	216,926	82,038	77,498	645,805
4	To get 2020 USD multiply L3 by … (c)	1.60	1.56	1.51	1.47	1.45	1.41	
5	**Est. total value in 2020 USD (L3 x L4)**	**3,940**	**166,701**	**241,630**	**318,881**	**118,956**	**109,273**	**959,381**

a. From L12 in previous table.
b. Initial price estimate based on an average of all price observations for each year (1998-2003) available from ComTrade records for tungsten imports and exports involving East and Central Africa. This price was then reduced by 35% to better reflect probable price at points of opportunities for exploitation in the DRC (always less than prices paid by international importers).
c. Rates taken from US Inflation Calculator, based on US Government CPI data published on October 13, 2020, which uses US Labor Dept Bureau of Labor Statistics data: https://www.usinflationcalculator.com.

Tungsten: Quantity and value distribution across Ituri and Non-Ituri, 2020 USD

Table A4.5.5.3		Ituri (a)	%	Non-Ituri (a)	%	Total UAI
1	Quantity (kgs)	16,541	5%	314,284	95%	330,825
2	**Base value of quantity (b)**	**47,969**	**5%**	**911,411**	**95%**	**959,380**
3	Est. value of Theft (c)	2,398	5.0%	4,557	0.5%	6,955
4	Est. Fees & Licences (d)	2,279	5.0%	18,228	2.0%	20,507
5	Est. of taxes on Value (e)	9,114	20.0%	45,571	5.0%	54,685
6	**Total est. value of damages**	**$ 13,791**		**$ 68,356**		**$ 82,147**

a. See text for explanation of Ituri and non-Ituri share of quantity and value
b. From Total from L5 in previous table
c. See text for explanation of proxy 'theft tax'.
d. See text for explanation of proxy 'tax on fees and licences'.
e. See text for explanation of tax on value.

A4.5.6 Timber

Table A4.5.6.1 **1998 and 2003 five months only*		1998*	1999	2000	2001	2002	2003*	Total
D. R. Congo								
1	Est. DRC exports (a)	20,023,126	8,825,283	50,622,170	10,144,661	17,493,130	14,555,837	121,664,207
2	Assume 80% of L1 from non-Govt area (b)	16,018,501	7,060,226	40,497,736	8,115,729	13,994,504	11,644,669	97,331,365
3	Assume 50% of non-Govt area is in UAI (c)	8,009,251	3,530,113	20,248,868	4,057,864	6,997,252	5,822,335	48,665,683
4	Est. informal exports from DRC to Uganda and via Uganda to Kenya (d)	3,500,000	8,400,000	8,400,000	8,400,000	8,400,000	3,500,000	40,600,000
5	Uganda re-exports; assume DRC-origin (e)	0	0	3,620	96,327	0	3,750	103,697
6	**Est. quantity from UAI (L3 + L4 + L5)**	**11,509,251**	**11,930,113**	**28,652,488**	**12,554,191**	**15,397,252**	**9,326,085**	**89,369,380**

a. DRC exports in kilograms based on ComTrade import data from "All" partners. 'Timber' was defined using commodity code "HS 4407: Wood sawn or chipped lengthwise, sliced, peeled, whether or not planed, sanded or finger jointed, or a thickness exceeding 6mm". I.e., sawnwood. ComTrade did not provide data for other wood which should be assumed have also left the DRC, such as industrial round logs, sawlogs or veneer logs, or other wood products. ComTrade has four options for timber weight: kilograms, cubic metres, litres and 'no quantity'. Where litres or no quantity were recorded, approximate weight in kilograms was obtained by using an average price per kilogram from all price observations for the relevant year.
b. See text for explanation of estimate that 80% of timber production 1998-2003 was in non-Government area.
c. See text for explanation of estimate that 50% of timber production in non-Government area was in UAI.
d. See text for explanation, but estimate based on Umunay (2011) which was revised down to 8,400,000 (12% of Umunay's estimate total) to reflect reduced informal exports during 1998-2003.
e. ComTrade has some data for Ugandan re-exports, i.e., it imported timber and then re-exported it. It was assumed this was from the DRC.

Timber: Value, USD

Table A4.5.6.2 **1998 and 2003 five months only*		1998*	1999	2000	2001	2002	2003*	Total
1	Est. quantity from UAI (a)	11,509,251	11,930,113	28,652,488	12,554,191	15,397,252	9,326,085	89,369,380
2	Est. price, USD per kg (b)	0.44	0.44	0.35	0.40	0.34	0.42	
3	Total (L1 x L2)	5,012,279	5,195,564	9,897,388	5,082,654	5,247,164	3,888,311	34,323,360
4	To get 2020 USD multiply L3 by … (c)	1.60	1.56	1.51	1.47	1.45	1.41	
5	**Est. total value in 2020 USD (L3 x L4)**	**8,019,646**	**8,105,080**	**14,945,056**	**7,471,501**	**7,608,387**	**5,482,519**	**51,632,189**

a. From L6 in previous table.
b. Prices taken from International Tropical Timber Organization's database: https://www.itto.int/biennal_review/?mode=searchdata. Searched for Sawn wood (NC) > Exports Unit Value for 1998-2003. Given price was in cubic metres, so converted into USD per kg. This price was then reduced by 35% to better reflect probable price at points of opportunities for exploitation in the DRC (always less than prices paid by international importers).
c. Rates taken from US Inflation Calculator, based on US Government CPI data published on October 13, 2020, which uses US Labor Dept Bureau of Labor Statistics data: https://www.usinflationcalculator.com.

Timber: Quantity and value distribution across Ituri and Non-Ituri, 2020 USD

Table A4.5.6.3		Ituri (a)	%	Non-Ituri (a)	%	Total UAI
1	Quantity (kgs)	44,684,690	50%	44,684,690	50%	89,369,380
2	**Base value of quantity (b)**	**25,816,095**	**50%**	**25,816,095**	**50%**	**51,632,190**
3	Est. value of Theft (c)	516,322	2.0%	129,080	0.5%	645,402
4	Est. Fees & Licences (d)	252,998	1.0%	258,161	1.0%	511,159
5	Est. of taxes on Value (e)	2,023,982	8.0%	258,161	1.0%	2,282,143
6	**Total est. value of damages**	**$ 2,793,302**		**$ 645,402**		**$ 3,438,704**

a. See text for explanation of Ituri and non-Ituri share of quantity and value.
b. From Total from L5 in previous table.
c. See text for explanation of proxy 'theft tax'.
d. See text for explanation of proxy 'tax on fees and licences'.
e. See text for explanation of tax on value.

A4.5.7 Coffee

Table A4.5.7.1 *1998 and 2003 five months only*		1998*	1999	2000	2001	2002	2003*	Total
D. R. Congo								
1	Est. DRC exports (a)	11,782,835	24,293,751	20,965,544	11,095,656	4,965,936	2,279,140	75,382,862
2	Est. 80% of L1 is from non-Govt area (b)	9,426,268	19,435,001	16,772,435	8,876,525	3,972,749	1,823,312	60,306,290
3	Est. 50% of L2 is from UAI (c)	4,713,134	9,717,500	8,386,218	4,438,262	1,986,374	911,656	30,153,144
Uganda								
4	Est. Ugandan exportable production (d)	82,612,500	180,390,000	180,060,000	188,280,000	173,010,000	65,225,000	869,577,500
5	Declared Ugandan imports from DRC (e)						3,078	3,078
6	Coffee available for export (L4 + L5)	82,612,500	180,390,000	180,060,000	188,280,000	173,010,000	65,228,078	869,580,578
7	Imports from Kenya, Rwanda, Burundi			203	1	223		427
8	Adjusted available coffee for export (L6 - L7) (f)	82,612,500	180,390,000	180,059,797	188,279,999	173,009,777	65,228,078	869,581,005
9	Recorded exports (g)	72,385,198	197,637,388	153,764,884	131,568,379	167,538,326	69,946,836	792,841,011
10	Available export coffee minus recorded exports (L9 - L8) (h)	10,227,303	(17,247,388)	26,295,116	56,711,621	5,471,674	(4,721,836)	76,736,490
11	Adjusted unexplained surplus exports (i)		12,133,737				1,492,460	13,626,197
12	**Est. quantity from UAI (L3 + L11)**	**4,713,134**	**21,851,237**	**8,386,218**	**4,438,262**	**1,986,374**	**2,404,116**	**43,779,341**

a. DRC exports based on ComTrade import data from "All" partners.
b. See text for explanation of estimate that 80% of coffee production 1998-2003 was in non-Government area.
c. See text for explanation of estimate that 50% of coffee production in non-Government area was in UAI.
d. Uganda's production of export coffee based on ICO data. See text for explanation.
e. Imports of DRC coffee could be re-exported so should be added to Uganda's production (but few data anyway).
f. Coffee from Kenya, Rwanda or Burundi could be re-exported, so were subtracted from Uganda's coffee available for export to ensure no confusion with coffee originating from the DRC (but very few data anyway).
g. Uganda's exports based on ComTrade import data from "All" partners.
h. Positive amounts indicate left over, un-exported, production. Negative amounts, shown in parentheses, mean Uganda exported more than it produced raising the question as to where this coffee came from.
i. Green coffee beans can be stored for one year. In 1999 and 2003, exports were greater than production. These years were 'discounted' by an amount equal to 50% of the previous year's production surplus, in case some coffee was stored for 12 months before export.

Coffee: Value, USD

Table A4.5.7.2 **1998 and 2003 five months only*		1998*	1999	2000	2001	2002	2003*	Total
1	Est. quantity from UAI (a)	4,713,134	21,851,237	8,386,218	4,438,262	1,986,374	2,404,116	43,779,341
2	Est. price to DRC growers, USD per kg (b)	1.33	1.11	0.92	0.77	0.68	0.69	
3	Total (L1 x L2)	6,268,468	24,254,873	7,715,320	3,417,462	1,350,735	1,658,840	44,665,698
4	To get 2020 USD multiply L3 by … (c)	1.60	1.56	1.51	1.47	1.45	1.41	
5	**Est. total value in 2020 USD (L3 x L4)**	**10,029,549**	**37,837,602**	**11,650,133**	**5,023,669**	**1,958,565**	**2,338,965**	**68,838,483**

a. From L12 in previous table.
b. Prices based on International Coffee Organization's "Prices to Growers" Historical Data on the Global Coffee Trade. http://www.ico.org/new_historical.asp
c. Rates taken from US Inflation Calculator, based on US Government CPI data published on October 13, 2020, which uses US Labor Dept Bureau of Labor Statistics data: https://www.usinflationcalculator.com

Coffee: Quantity and value distribution across Ituri and Non-Ituri, 2020 USD

Table A4.5.7.3		Ituri (a)	%	Non-Ituri (a)	%	Total UAI
1	Quantity (kgs)	13,133,802	30%	30,645,539	75%	43,779,341
2	**Base value of quantity (b)**	**20,651,545**	**30%**	**48,186,938**	**70%**	**68,838,483**
3	Est. value of Theft (c)	206,515	1.0%	0	0.0%	206,515
4	Est. Fees & Licences (d)	204,450	1.0%	240,935	0.0%	445,385
5	Est. of taxes on Value (e)	1,635,602	8.0%	481,869	1.0%	2,117,471
6	**Total est. value of damages**	**$ 2,046,568**		**$ 722,804**		**$ 2,769,372**

a. See text for explanation of Ituri and non-Ituri share of quantity and value
b. From Total from L5 in previous table
c. See text for explanation of proxy 'theft tax'.
d. See text for explanation of proxy 'tax on fees and licences'.
e. See text for explanation of tax on value.

Appendix 4.6: Signature of Expert

This report has been prepared in accordance with the terms of reference set out by the International Court of Justice by MICHAEL NEST on 19 December 2020:

Signed: