Estimation of People Living with HIV (PLHIV) affected by Humanitarian Disasters in 2016

Analysis for UNHCR.   Rod Bennett

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Background

UNHCR require the analysis carried out in 2015 on 2013 emergencies to be updated to 2016 emergencies, following the same methodology. Data collection for both analyses was from specialist public domain global databases. 5 selected countries were studied in more detail (deep dives) to check the general assumptions in the main, country level, analysis.

The objective of the analysis was to estimate the number of adults, children, adolescents, young adults and pregnant women living with HIV adversely affected by emergencies to the extent that diagnosis, care, treatment and adherence would be compromised.

Methodology

The databases and other sources accessed are:
a) UNHCR: Produces the Population Statistics Reference Database on internally displaced people (IDP), refugees, asylum seekers and other persons of concern in UN countries. UNHCR database also includes the demographic profile of populations of concern (POC), applied to the combined total of all the groups.
b) UNRWA: UN Relief and Works Agency for Palestinian Refugees (UNWRA) provides data on the refugees in Jordan, Lebanon, Syria, West Bank and Gaza strip.
c) IDP: The Internal Displacement Monitoring Centre (IDMC) maintains a database of IDP from natural disasters and conflicts.
d) Conflict barometer: Produced by the Heidelberg Institute for Research into Conflicts (HIIK) describing the scale (subnational administrative areas affected), intensity[1] and causes (political territorial, ideological, inter-state etc.) of conflicts. It does not provide numeric data on affected populations. Since conflict affected residents (CAR) are not included in any database, the geographic scope of each conflict is extracted from descriptions in the conflict barometer.
e) EM-DAT: The Centre for Research on the Epidemiology of Disasters (CRED) produces the Emergencies Database (EM-DAT) on affected residents and IDP arising from natural disasters. In 2016 this included 84 countries.

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[1] Intensity scale for conflicts – (1) Dispute, (2) Non-violent crisis, (3) Violent Crisis, (4) Limited war, (5) War
https://www.uni-heidelberg.de/md/politik/personal/croissant/personal/trinn_et_al_-_introducing_the_heidelberg_approach.pdf

f) Reliefweb: Maintained by the UN Office for the Coordination of Humanitarian Affairs (OCHA), Reliefweb provides data on affected residents and IDP arising from natural disasters. In 2016 this was 31 countries.

g) UN Population Division: World Population Prospects 2017 provided country population data in 5 year age groups. 2016 populations were interpolated between 2015 and 2017 and used to provide totals and subsets for children (0-14), adolescents (10-19), young adults (15-24) and adults (15+).

h) Wikipedia: Subnational populations for 1st and 2nd level administrative areas were taken from Wikipedia country profiles and applied to

i) CIA factbook: Country crude birth rates were used to provide estimates of numbers of pregnant women.

j) UNAIDS provided data on request on HIV prevalence ranges and treatment coverage rates for UN countries for adults, children, pregnant women and young people. Subnational data was available for 2 of the 5 the deep dive countries.

Assumptions:

1. The prevalence of HIV is the same in emergency affected populations as in the general population.
2. The prevalence of HIV in populations of concern may be affected by the prevalence in the host population.
3. Emergencies reported in different databases are referring to the same events and so are applied as ranges rather than cumulatively.

Inclusion criteria

The objective of the analysis is to assess the impact of humanitarian disasters on PLHIV in 2016. All the databases provided clear 2016 data for analysis. To have an impact on PLHIV, disasters must be sufficiently disruptive to prevent access to HIV testing, care, treatment and adherence. This clearly is the case for Refugees and IDP, so no adjustment is made to those numbers. The HIIK conflict scale is multi-dimensional using the number of deaths, displaced persons, the use of light or heavy weapons and the degree of destruction of infrastructure, accommodation, financial and social structures to determine the level of conflict. Since the scale is geographically specific (subnational areas) the level and locality could be used to estimate conflict affected residents. Conflict level 4 requires some use of heavy arms and massive destruction which was considered certain to have a significant impact on PLHIV. Conflicts of levels 1 to 3 were not considered likely to create those conditions and so only level 4 and 5 conflicts are included in the analysis. If a region suffered a single conflict it was assumed 50% of the population of that region would be affected. For regions with 2 conflicts this increased to 75% and for 3 or more it was 100% affected. The natural disasters covered by the database were those recorded by IDMC, and since they were severe enough to cause death and IDP they were considered likely to have caused disruption to HIV services.

Selection of deep dive countries

Out of the 31 UNAIDS Fast track countries (FTC), 22 had more than 10,000 affected PLHIV, of which 10 countries had more than 100,000 refugees including 6 from sub-Saharan Africa. Of these Nigeria, Cameroon and South Sudan were selected from West Africa and the Sahel, Democratic Republic of Congo from Central Africa and Kenya from East Africa. Nigeria has over 100,000 returnees and Cameroon is on the Nigerian border and affected by the war with Boko Haram in Nigeria's Borno State. Kenya was selected over Tanzania and Mozambique because the latter had no conflicts.

Overlaps

None of the databases are complete or completely accurate. There are significant differences in the countries for which there are reported data and the numbers reported in those countries. We assume that UNWRA is an addition to the UNHCR database. Elsewhere, where 2 databases report on disasters in the same country the 2 figures are used as upper and lower bounds to the range and an average used as the final estimate.

Data analysis

Country data from each database is entered and then adjusted to create high and low values for refugees and asylum seekers, CAR, IDP (natural disasters and conflicts), affected populations. The demographic profile of the affected populations is then calculated (children, adolescents, young adults, adults and pregnant women). HIV prevalence rates are applied to these affected populations to establish the numbers of PLHIV affected by the emergencies. Since there are high and low values for both affected populations and HIV prevalence rates, combining these gives a high-high and a low-low value for affected PLHIV. A sensitivity analysis showed this did not skew the overall result to a higher or lower value. Since refugee numbers generally include stock numbers (present in the camps or locality from previous years) there is a discussion as to whether their interaction with the local population will tend to change the prevalence rates from those of their country of origin towards the prevalence in the country of asylum. There is no definitive answer to this, so the calculations for PLHIV amongst refugees and asylum seekers used the prevalence rates from both the country of origin and country of asylum.

Results

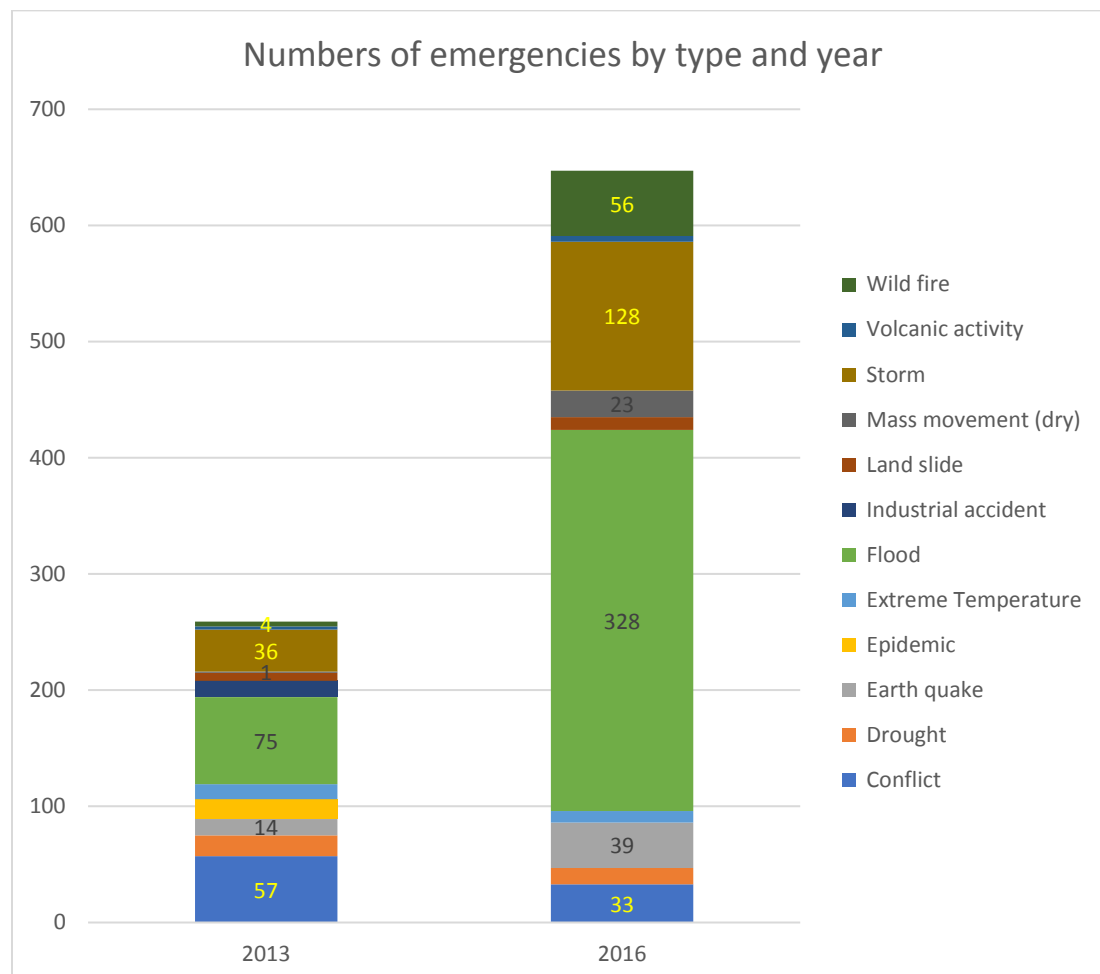The following bar graph show the distribution of disasters by type in 2013 and 2016.

Numbers of emergencies by type and year

Legend
Wild fire
Volcanic activity
Storm
Mass movement (dry)
Land slide
Industrial accident
Flood
Extreme Temperature
Epidemic
Earth quake
Drought
Conflict

2013 values: 57, 14, 75, 1, 36, 4
2016 values: 33, 39, 328, 23, 128, 56

Table 1: Summary of results by year

Measure	2013	2016
Total affected population (mill)	314	479
Adult PLHIV (mill)	1.54	2.41
No of emergencies	245	647
No of conflicts	57	33
Children LHIV	174,293	157,000
Young adults LHIV	n/a	281,000
Pregnant women LHIV	81,023	99,000
Adolescents LHIV	192,761	162,000

In 2013 the total affected population was 314 million, of which 1.54 million were adult PLHIV. These were from 245 emergencies in 237 countries, of which 57 were conflicts. China was affected by 8 emergencies, 4 countries had 5 and a further 7 had 4 emergencies.

In 2016 the comparable total affected population increased to 479 million, of which 2.41 million were adult PLHIV plus 157,000 children. These numbers include 281,000 young adults, 99,000 pregnant women, 162,000 adolescents. There were 647 emergencies in 169 countries of which 33 were conflicts. 60% of the emergencies were storms and floods. Indonesia was affected by 103 emergencies in the year, followed by China and USA with 54 and 43 respectively. Note that the reduction in children and adolescents LHIV is a direct result of the UNAIDS estimates which drop from a total in 2013 of 2.7 million to 1.7 million in 2016.

Table 2: Summary of regional distribution (2016)

Measure	Affected pop		Affected PLHIV		Treatment gap		
Region			(000)	% of world	(000)	World (%)	Region (%)
World	479.7	100	2,570	100	1,402	55	55
Sub Saharan Africa	105.5	22	1,900	73	1,114	79	59
MENA	96.6	20	46.7	1.8	40.4	3	86
E Europe &Cent. Asia	7.1	1.5	29.7	1.2	19.4	1.4	65
Asia & Pacific	143.8	30	193.6	8	94.1	7	49
Latin America	17.2	4	56.8	2	29.5	2	52
Caribbean	5.6	1.2	41.5	1.6	20.6	1.5	50
W &C Europe & N America	103.7	22	326.1	13	84.2	6	26

Sub-Saharan Africa has 22% of the affected population but 73% of the PLHIV (72-93% across the age categories). Asia and the Pacific and MENA are the next highest with 30% of the population and 8% of the PLHIV and 20% population and 1.8% of PLHIV respectively. The remainder each have less than 1% PLHIV.

The treatment gap globally for total PLHIV in affected populations is 55%. Within this the highest gaps are children and adolescents at 65% and 79% respectively, and the lowest is pregnant women at 43%. The highest gap for all PLHIV is in MENA at 87%, followed by Eastern Europe and Central Asia at 65%, then Sub-Saharan Africa, Latin America and Caribbean at 59%, 52% and 50% respectively. The lowest are Asia and the Pacific and Western and Central Europe and North America at 49% and 26% respectively.

Deep Dives

Cameroon

In 2016 Cameroon had a total population of 23 million and 828,000 PLHIV (prevalence rate of 3.60%)

Summary of findings from the main analysis

PLHIV

13,115 (10,324-16,606). Includes 8,796 (7,212-10,664) refugees, asylum seekers and returnees.

Emergencies

No natural disasters and no conflict were recorded in 2016. UNHCR records include 198,900 IDP, 378,700 refugees, and 24,400 returnees. 93,000 Nigerian refugees are in the Far North region, 259,000 refugees from Central African Republic of Cameroon are distributed between Adamawa, North and East regions. The residual refugees and IDP and returnees are distributed throughout the rest of Cameroon. IDMC recorded no backlog or new conflict IDP in 2016. The PLHIV calculation at the national level is therefore based on the populations of UNHCR POC.

Out of the 378,700 refugees around Cameroon (HIV prevalence 3.6%), 286,000 are from Central African Republic (HIV prevalence 4.02%) and 89,000 from Nigeria (HIV prevalence 2.8%). The POC are in 202 locations, 53 have over 1,000, 10 have over 10,000 and the Far North Province has 243,500 dispersed across it. As there is no subnational HIV prevalence data for Cameroon and 35% of POC are spread all over the country it is not possible to make any conclusions about the PLHIV estimates apart from noting that 60% of the POC are children. The prevalence rates for Nigeria, Central African Republic and Cameroon are similar, so it appears that the numbers of PLHIV by country of origin and country of refuge would be similar.

Conclusion

The detailed analysis of Cameroon at a subnational level, although hampered by lack of subnational HIV data, appears to confirm the findings of the national level analysis. The standout points are that all the emergency affected PLHIV in Cameroon are from UNHCR POC populations, and of those 60% are children (0-14). National averages of children for Cameroon, Central African Republic and Nigeria are 43-44%. The global UNHCR average is 54% and global resident population average is 25%. Since 96% of children affected by emergencies are in Sub Saharan Africa, in which 43% are children, and 5% of the total affected populations are UNHCR POC, this would increase the number of affected children PLHIV by 40% (43% to 60%) in Cameroon because all affected PLHIV are POC, but only 0.54% globally (43% to 54% of 5%) because only 5% of affected PLHIV are POC.

Democratic Republic of the Congo (DRC):

In 2016 the DRC had a total population of 77 million and 639,000 PLHIV (prevalence rate of 0.83%)

Summary of findings from the main analysis

PLHIV

135,197 (81,833-189,551). Includes 13,217 (10,855-15,652) refugees, asylum seekers and returnees.

Emergencies

The DRC suffered 7 floods, 1 storm, 1 wildfire and 4 conflicts. EM_DAT only recorded 2 floods and registered 2,600 affected and 10,000 homeless. IDP database recorded all the other emergencies with a total of 130,000 IDP, but no "affected but not displaced" populations. The IDP figure for one of the floods noted by EM-DAT was 10,000 homeless. Two of the floods made 47,400 and 54,200 homeless. The former was in a province suffering conflict. It is therefore likely that these figures are an underestimation of the impact of the disasters as it is unlikely there was no affected populations other than those displaced.

Globally there were 41 countries where182,000 IDP were registered but no disaster affected residents (DAR) were recorded. The global ratio of DAR : IDP was 8.51, implying around 1.5 million DAR are potentially excluded. This is only 0.07% of total DAR (231.8 million) so unlikely to significantly affect the overall assessment.

Of the 3.3 million POC in DRC spread over 99 sites, 2.8 million are in the main conflict areas. The 4 conflicts are between separate groups but occur in a limited area. North Kivu in particular having 3 conflicts in parallel, one of which is with the FDLR in Rwanda, and Ituri Province having two. These conflicts have been running since 1994, 1995, 2003 and 2013. The impact of the concentration and extended level 4 conflicts is likely to exacerbate the level of food insecurity.

The 453,301 refugees and asylum seekers in DRC in 2016 mainly came from 4 countries (Rwanda 50%, CAR 25%, South Sudan 17% and Burundi 8%; with prevalence rates of 3.02, 4.02, 2.36 and 1.20 respectively). Since the DRC prevalence rate is only 0.82%, it is probable the HIV prevalence in the refugees will remain at the level of their country of origin, although they may have had an impact on the local prevalence rate. Subnational HIV prevalence data were not available, so it is not possible to assess the extent to which this might have happened.

Conclusion

The detailed analysis of DRC at a subnational level, although hampered by lack of subnational HIV data, appears to confirm the findings of the national level analysis. The refugees appear to be in 10 camps along the borders of their countries of origin and so mostly remain in the conflict affected regions. DRC has the highest number of IDP in Africa.

Kenya

See map at end of the text for reference to counties

In 2016 Kenya had a total population of 47.8 million and 2.3 million PLHIV (prevalence rate of 4.89%)

Summary of findings from the main analysis

PLHIV

153,649 (110,672[2]-197,822). Includes 3,475 (2,771-4,309) refugees, asylum seekers and returnees.

Emergencies

Kenya suffered 1 conflict and 2 floods. EM_DAT records the floods with 10,000 affected, 1,000 displaced and 42 deaths occurring in Nairobi and along the Tana River which burst its banks in Mandera and Garissa. IDMC records country wide spring floods with 40,318 IDP and Reliefweb records 34,129 IDP and 16 deaths. Neither record the number of affected people. EM-DAT also records a drought affecting 300,000 people.

The cross-border fighting between Government forces and the overspill of the marauding Somali el-Shabab occurred in Mandera and Garissa Provinces affecting 1 mill and 600,000 residents respectively.

Half of the 495,000 POC in Kenya are housed in the four Dabaab refugee camps in Garissa for Somali refugees, a further 150,000 are in the Kakuma camp near the South Sudan border and 67,000 in Nairobi. Somalia, South Sudan and the Respective Kenya counties housing the camps all have relatively low HIV prevalence, and so the use of country of origin HIV rates is appropriate. Although the camps are longstanding, interaction with locals is unlikely to make a significant difference to the numbers of PLHIV.

Conclusion

Except for the floods in Nairobi, none of the emergencies impacted populations where the HIV prevalence is highest - 11.6% in Nairobi and 11.2% in the Nyanza counties on the Lake Victoria coast (Busia and Migori through to Kericho and Bomet). Kenya national prevalence is 4.96% and the North East as low as 0.3%. The national estimates of affected PLHIV are therefore probably high for Kenya, counterbalanced to a certain extent by the undercounting of affected populations in the emergency areas.

Map of Kenya showing Counties

Nigeria

See map at end of text for reference to States

In 2016 Nigeria had a total population of 183 million and 5.1 million PLHIV (prevalence rate of 2.8%)

Summary of findings from the main analysis

PLHIV

757,1856 (332,905-1,183,102). Includes 19,319 (12,944-27,330) refugees, asylum seekers and returnees (almost entirely returnees).

Emergencies

Nigeria suffered 9 floods and 3 conflicts. EM-DAT records 1 flood and 1 storm with 12,000 homeless and 12,000 affected. IDMC records 9 floods in different states with a total of 77,733 IDP. Since IDMC don't record affected populations, they are probably significantly under reported in Nigeria.

The 3 conflicts in Nigeria in 2016 were:

Northerners vs Southerners. It is unclear exactly where and to what extent this conflict occurred. In the absence of data, the national level estimate does not include numbers for this conflict. The conflict started in 1960 and escalated briefly from level 3 to 4 in 2016. Most of the violence occurred in Rivers state (6.6 million population), with sporadic incidents in adjacent Bayelsa state (2.5 million population) and Kano (12 million population) and Jigawa (5 million population) states in the north. Given the sporadic nature of the violence and the brief period in 2016 this was a level 4 conflict, the adverse impact on PLHIV is likely to be restricted to Rivers State.

Farmers vs Pastoralists: This conflict has also been running since 1960. The Limited war has affected populations in 11 states and assuming it adversely impacts 50% of the population, the total affected population would be 26 million.

Boko Haram: This level 5 conflict has been running in several states since 2003. In 2016 it was focused almost entirely in Borno State. The fighting has been intense and a significant proportion of the state (approximately 50%) was inaccessible to outsiders. It can only be assumed the impact was on the entire 5.5 million population.

The national estimate was for 36.5 million conflict affected residents. This more detailed analysis indicates the total is likely to be at least 34.5 million CAR.

Conclusion

The detailed analysis of Nigeria appears to confirm the national level analysis concerning the residents affected by natural disasters and conflicts despite the absence of IDMC data on conflict IDP.

Map of Nigeria showing states for reference
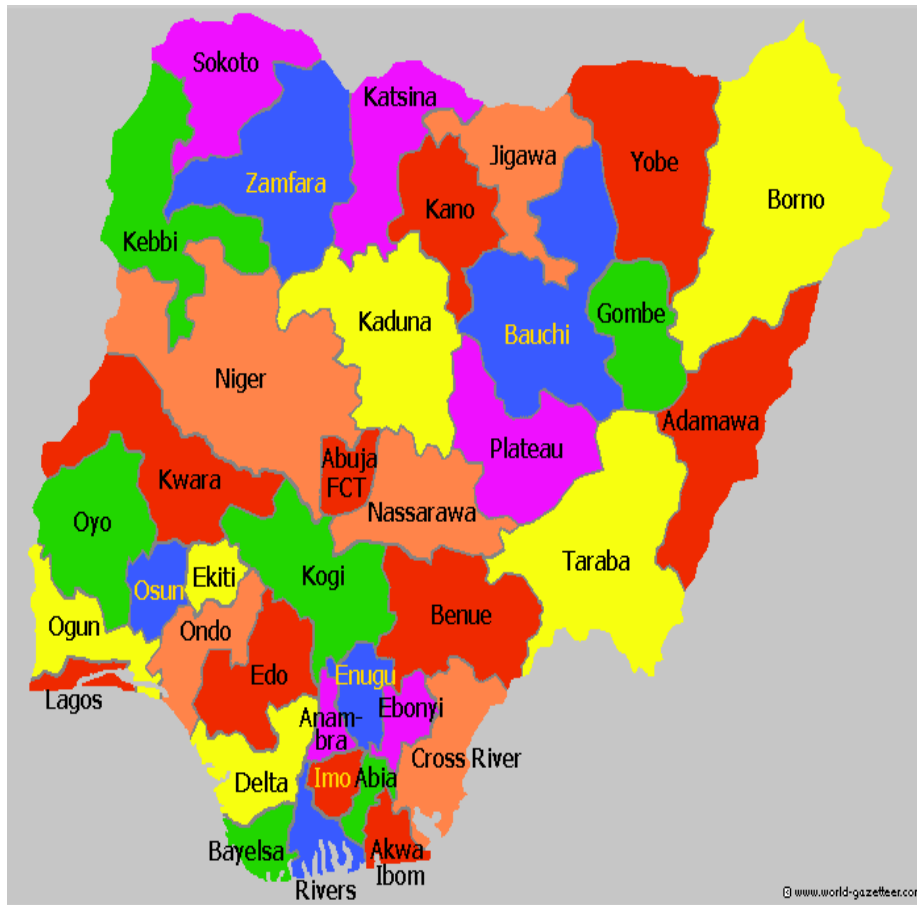
South Sudan

In 2016 South Sudan had a total population of 12 million and 283,000 PLHIV (prevalence rate of 2.36%)

Summary of findings from the main analysis

PLHIV

145,651 (90,120-203,462). Includes 18,526 (13,281-25,048) refugees, asylum seekers and returnees (almost entirely returnees).

Emergencies

South Sudan suffered one level 5 conflict, one drought and 1 flood. A second tribal conflict was mostly level 2 and 3 but briefly became level 5 in April and June. These events were not considered to be long or widespread enough to impact PLHIV care and treatment. EM-DAT records 3.6 million and 22,000 affected for the drought and flood respectively, but no IDP. IDMC has no recorded IDP for natural disasters or conflicts in 2016 (except a stock conflict in Sudan Abyei, the special administrative area between Sudan and South Sudan).

The national estimate of affected populations (3.6-4.9 million in natural disasters from EM_DAT and FSIN respectively plus 3.5-5.2 million in conflicts) includes considerable duplication. Both the conflicts and the drought occurred in Northern Bhar el Ghazal, Unity, Central Equatoria and Upper Nile, so the populations affected are probably more or less the same.

Conclusion

The combination of widespread drought and conflict in the same counties in South Sudan has created double counting in the national estimate. Of the 14 countries with recorded droughts, only Kenya and South Sudan had conflicts. In Kenya they were not in the same counties. The deep dives into the 4 other countries did not indicate other causes of double counting.

Discussion

In 2013, natural disasters accounted for 31.8% of the affected populations, which increased to 40.1% in 2016. This shift was accompanied by an increase in numbers of natural disasters (188 to 498) and a decrease in number of conflicts (57 to 33). The highest recorded number of victims[3] (deaths and affected people) was 671 million (428 disasters) in 2002. The highest number of disasters was 438 recorded in 2005. The lowest were 81 million affected and 224 disasters (1997 and 1992 respectively). Although well below the 2002 figures, the number of disasters in 2016 is the highest and the affected number second highest since 1990. The rise in numbers of affected people also raises the number of affected PLHIV, but whereas the treatment gap has reduced from 68% to 54% globally, it has only reduced from 81% to 79% in Sub-Saharan Africa. The predominance of PLHIV remains in Sub-Saharan Africa, down from 80% in 2013 to 71% in 2016.

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[3] 2013 Annual Disaster Statistical Review. UCL (1990 to 2013)