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THE TRIPLE BURDEN: HOW CLIMATE CHANGE AND ARMED CONFLICT UNDERMINE HEALTHY AGEING IN SUB-SAHARAN AFRICA

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ABSTRACT

This narrative review examines the interlocking pathways by which climate change and armed conflict threaten each of the four action areas of the World Health Organisation's Decade of Healthy Ageing across Sub-Saharan Africa, where the population aged 60 and over is projected to nearly triple by 2050. Methods: Peer-reviewed literature, grey literature from United Nations agencies, HelpAge International reports, Africa Centre for Strategic Studies analyses, and Africa-specific public-health data published between 2010 and 2025 were synthesised. The Central Sahel, northern Ethiopia, and northern Mozambique form three case-study regions where climate and conflict have converged on older communities. Results: Five co-occurring mechanisms are identified: population displacement and elder abandonment; heat exposure intersecting with conflict-disrupted chronic disease care; agricultural shocks driving protein-energy malnutrition and sarcopenia; cumulative trauma compounded by the breakdown of mourning; and the loss of intergenerational adaptive knowledge. Older adults are the age group most affected, yet receive less than 1 per cent of humanitarian funding. Conclusion: The triple burden is multiplicative, not additive. Age-disaggregated data, inclusion in National Adaptation Plans, climate- and conflict-resilient chronic disease care, and recognition of elders as custodians of adaptive knowledge are required.

KEYWORDS: healthy ageing; climate change; armed conflict; Sub-Saharan Africa; humanitarian gerontology; Sahel; non-communicable diseases; intergenerational knowledge; WHO Decade of Healthy Ageing.

1. INTRODUCTION

Sub-Saharan Africa is often described as the world's youngest region, with a median age below 20 years. Yet beneath this youthful demographic surface, a quieter and rarely discussed transition is taking shape. The number of people aged 60 years and older in Sub-Saharan Africa is projected to rise from approximately 55 million in 2024 to more than 150 million by 2050 – an almost threefold increase that will outpace the rate of population ageing observed in any other world region [2] (Figure 1). This transition is unfolding in a context uniquely hostile to the goal of healthy ageing: rapid and intensifying climate change and a dense map of protracted armed conflicts that now affect more than a quarter of the region's countries [6, 16].

The World Health Organisation's Decade of Healthy Ageing (2021–2030) defines healthy ageing as the process of developing and maintaining the functional ability that enables wellbeing in older age [1]. Functional ability is not merely the absence of disease; it depends on the dynamic interaction between the individual's intrinsic capacity and the environments – physical, social, and political – they inhabit. In stable, well-resourced settings, the determinants of functional ability are well known: access to nutrition, regular medical care, safe housing, social connection, freedom from violence, and a predictable physical environment. In Sub-Saharan Africa, all of these determinants are now subject to compounded stress.

The literature on climate and health in Africa has expanded rapidly over the past decade [7, 28]. Still, it remains overwhelmingly focused on maternal and child health, on infectious disease vectors, and on workforce productivity. Older adults appear in these analyses, if at all, as a residual category. Conversely, the literature on armed conflict and health in Africa concentrates on acute mortality, on sexual and gender-based violence, on the health of children born during conflict, and on the destruction of health infrastructure. Older adults are again under-represented, despite emerging evidence that they suffer disproportionately high mortality and morbidity in displacement settings [32, 37].

This paper argues that the convergence of three forces – population ageing, climate change, and armed conflict – produces a triple burden. The burden is not additive but multiplicative: each force amplifies the harm of the others, and their interaction generates pathways of vulnerability that are invisible when each is studied in isolation. Section 2 establishes the demographic, climatic, and conflict backdrop, drawing on UN, IPCC, and ACLED data.

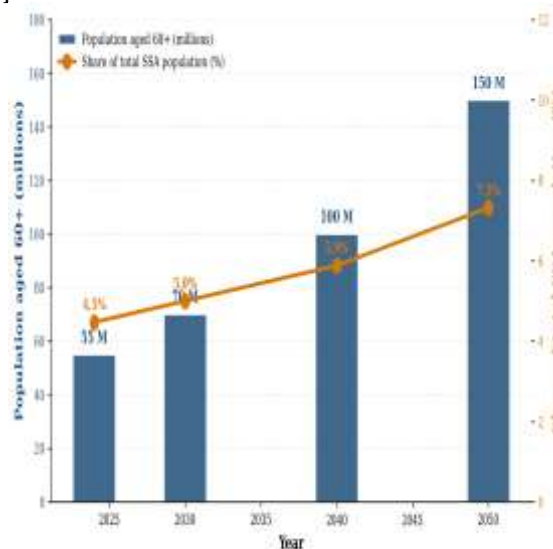
Section 3 develops the conceptual framework presented in Figure 3 and details five intersecting mechanisms, summarised in Table 1. Section 4 presents three regional case studies (compared in Table 2). Section 5 discusses the policy implications, maps them to mechanisms in Table 3, and outlines a research agenda. Section 6 concludes.

2. Background: A Region in Transition

2.1 The demographic backdrop

Sub-Saharan Africa's population ageing is being driven by two convergent forces: declining fertility, particularly in southern and eastern Africa, and gradual improvements in adult mortality [2]. As Figure 1 illustrates, while older adults will remain a modest share of the regional total – rising from approximately 4.5 per cent in 2024 to about 7.3 per cent by 2050 – the absolute numbers are striking. Nigeria alone is projected to host more than 25 million older adults by mid-century. Ethiopia, the Democratic Republic of Congo, and Tanzania will each cross the 10 million threshold [2, 29]. These older populations are concentrated in rural areas and informal urban settlements, and are disproportionately among women, who typically outlive men by 4 to 6 years across the region.

Figure 1. Projected growth of the older adult population in Sub-Saharan Africa, 2024–2050.



Source: Author's calculations based on UN DESA, World Population Prospects 2024 (medium variant) [2].

Crucially, ageing in Sub-Saharan Africa is occurring under conditions fundamentally different from those that accompanied population ageing in Europe, North America, or East Asia. Most older Africans never accumulated formal pension

entitlements [26], never had continuous access to primary healthcare, and reach later life carrying a substantial cumulative load of untreated chronic disease [8]. Multimorbidity is the norm rather than the exception by age 60, and the predominant model of care for older adults remains familial and informal. This model is itself fragile, and the forces examined in this paper are precisely those that accelerate its collapse.

2.2 The climate backdrop

Africa contributes less than 4 per cent of global greenhouse gas emissions, yet bears a disproportionate share of climate harms [3]. The IPCC Sixth Assessment Report concludes with high confidence that the rate of surface temperature increase in Africa has been more rapid than the global average [22]. West Africa's average annual and seasonal surface temperatures have risen by 1–3°C since the mid-1970s, with the most pronounced increases observed in the Sahara and the Sahel [20]. Modelling published by United Nations agencies indicates that Sahel temperatures are projected to rise approximately 1.5 times faster than the global mean [18].

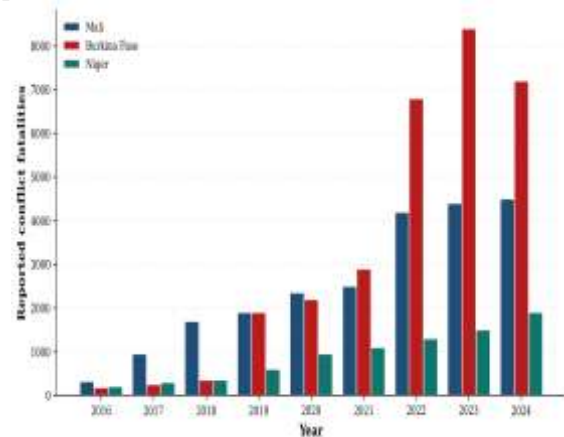
These changes translate into specific health-relevant exposures. Heatwaves that previously occurred once a decade now occur annually in much of the Sahel [20]. Crop yields for staple cereals such as maize and sorghum have declined or stagnated in regions where they were already marginal, with a 1.5°C warming scenario projected to reduce production of many African crops [24]. Vector-borne diseases – malaria in particular, but also dengue, chikungunya, and Rift Valley fever – are expanding their geographic and seasonal range. Water scarcity is intensifying in pastoralist zones [24], with knock-on effects for both human nutrition and the livestock that underwrite rural household economies.

2.3 The conflict backdrop

Contemporary armed conflict in Sub-Saharan Africa is more geographically dispersed, more protracted, and more closely tied to environmental stress than at any point in the post-independence era. The Central Sahel—Mali, Burkina Faso, and Niger—has seen an almost tenfold increase in conflict-related deaths since 2016 (Figure 2), driven by jihadist insurgencies, intercommunal violence over land and water, and the collapse of state authority across vast pastoralist areas [14, 15, 33]. In 2023, deaths from political violence in the central Sahel increased by 38 per cent [15]. Over the last decade, the Africa Centre for Strategic Studies suggests that over 150,000

deaths have been attributed to militant Islamist groups across the continent [10].

Figure 2. Reported annual conflict fatalities in Mali, Burkina Faso, and Niger, 2016–2024 (ACLED categories: battles, violence against civilians, explosions/remote violence).



Source: Author's compilation from ACLED data as reported in OECD (2024) and the ACLED Conflict Watchlist 2024 [14, 15, 16].

The Lake Chad Basin remains affected by Boko Haram and its splinter factions. The eastern Democratic Republic of Congo continues to host more than a hundred armed groups. The Tigray war in northern Ethiopia (2020–2022) produced one of the largest hunger crises of the twenty-first century [17, 19]. Sudan's war, which erupted in 2023, has displaced more than ten million people [9]. Northern Mozambique's Cabo Delgado insurgency continues to compound the destruction left by Cyclones Idai and Kenneth [21, 23].

Several of these conflicts overlap geographically and chronologically with regions of acute climate stress. This is not a coincidence. The literature on climate and conflict – once dominated by deterministic claims of climate causation – has matured into a more nuanced position: climate change rarely causes conflict directly, but acts as a threat multiplier in contexts of pre-existing fragility, marginalisation, and weak governance [5]. For older adults living in these contexts, the distinction between climate-driven and conflict-driven harm is largely academic. Their wells run dry, and their grandchildren are recruited into militias in the same season.

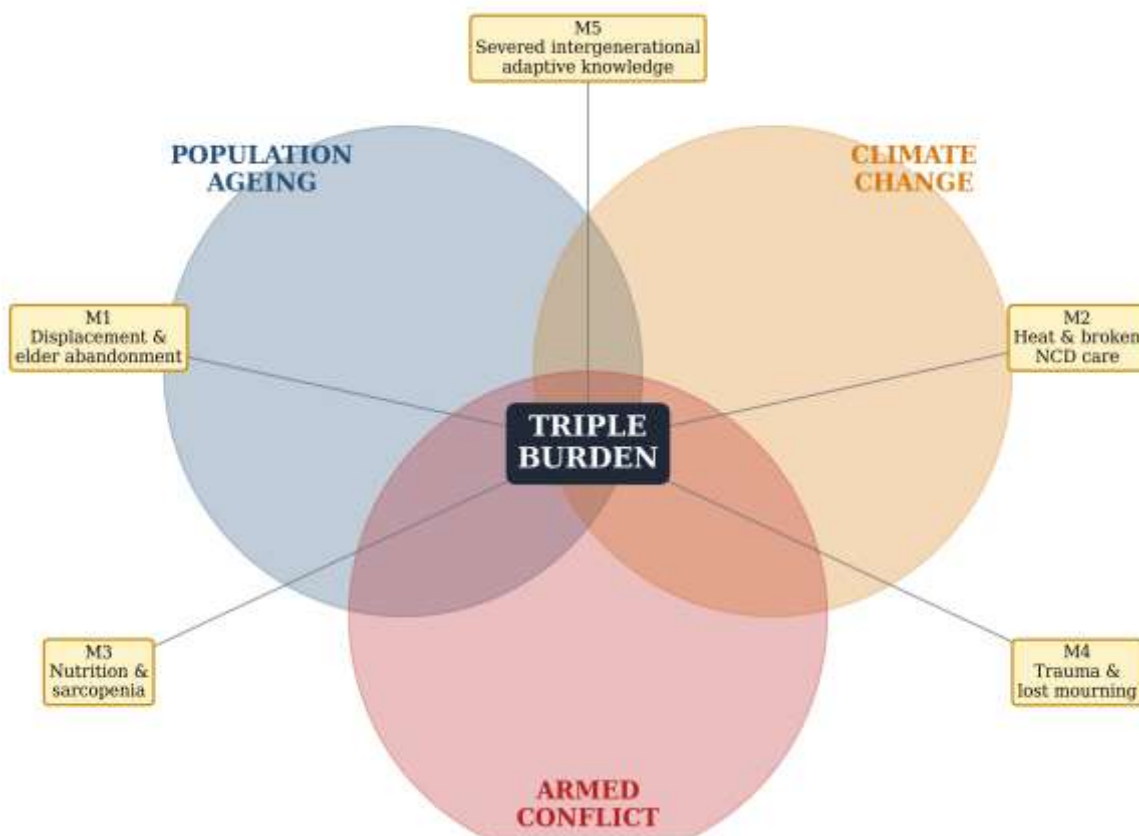
3. THE TRIPLE BURDEN: A CONCEPTUAL FRAMEWORK

This review proposes that the convergence of population ageing, climate change, and armed conflict creates a distinctive constellation of harms

that no single force can explain. Figure 3 depicts the three forces as overlapping fields, with the older adult positioned at their intersection. Five

mechanisms (M1–M5) operate at this intersection and are summarised in Table 1; detailed exposition follows in the subsections that follow.

Figure 3. Conceptual framework of the Triple Burden. The convergence of population ageing, climate change, and armed conflict generates five intersecting mechanisms (M1–M5) that compromise healthy ageing in Sub-Saharan Africa.



Source: Author's construction.

Table 1. Five intersecting mechanisms of the triple burden, with primary exposures and clinical/social outcomes.

M1	Displacement and elder abandonment	Selective out-migration of younger kin; collapse of remittances and care	Stranded elders in depopulated villages; loss of caregivers; market collapse
M2	Heat and broken NCD care	Rising heat; supply-chain disruption; clinic closures	Excess cardiovascular, renal, and respiratory mortality from unmanaged disease
M3	Nutritional insecurity and sarcopenia	Climate-driven crop loss; conflict market disruption; inappropriate rations	Protein-energy malnutrition; muscle wasting; falls; impaired immunity
M4	Cumulative trauma and lost mourning	Repeated exposure to violence and loss; disrupted funerary rituals	Depression, PTSD, and complicated grief are largely untreated by humanitarian services
M5	Severed intergenerational adaptive knowledge	Elder mortality and displacement: spatial separation from younger kin	Loss of indigenous climate and food-system knowledge; reduced community resilience

Source: Author's construction.

3.1 Mechanism 1 (M1): Displacement and elder abandonment

When a household chooses—or is forced—to abandon its land, the calculus of who shifts and who

remains is shaped by mobility, dependency, and attachment to place. Qualitative evidence consistently shows that older adults are disproportionately likely to remain behind across the Sahel and the Horn [32, 35]. There are multiple reasons for that: physical frailty means that the journey is dangerous; older adults often refuse to abandon ancestral land, livestock, or graves; younger relatives believe – often accurately – that older bodies are less likely to survive the conditions of displacement camps; and in some contexts, cultural norms cast remaining behind as the dignified choice. The result is the hollowing out of villages. In some villages across central Mali, Burkina Faso, and northern Niger, fieldworkers describe settlements comprising almost exclusively older women, with younger adults having fled, been killed, or joined armed groups [15, 16]. Those who are left have experienced a domino effect of deprivations: the absence of caregivers, the absence of remittances from distant relatives, the collapse of local markets, the abandonment of nearby health facilities, and a severe experience of the violence and environmental shocks that fuelled the displacement in the first place.

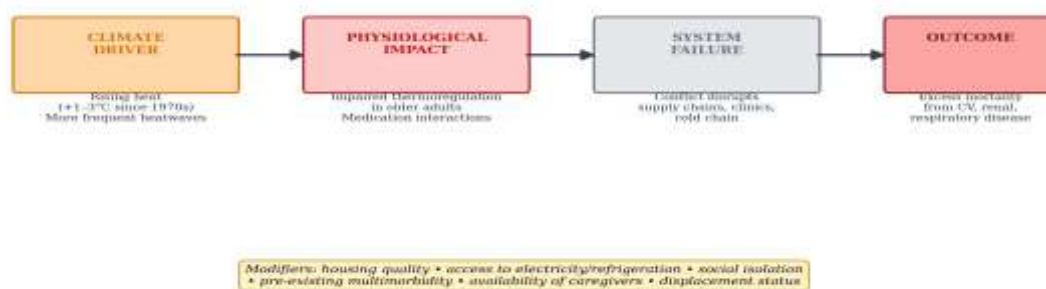
Notably, by the end of 2023, some 10 million

people aged 60 and over were living as refugees, representing 8 per cent of the 118 million displaced people worldwide – a number that has nearly doubled since 2014 [4, 9] (Figure 4A).

3.2 Mechanism 2 (M2): Heat, chronic disease, and broken care continuity

In Sub-Saharan Africa, the present cohort of older adults bears a substantial epidemiological-transition burden, including hypertension, type 2 diabetes, chronic kidney disease, chronic obstructive pulmonary disease, and post-stroke disability [8]. The burden of these conditions is managed through access to medications, frequent checkups, and a stable physical environment. Climate and conflict shocks can damage all three. As Figure 5 illustrates, conflict-driven health-system failure can convert a routinely manageable physiological stress into excess heat-related mortality.

Figure 5. Pathway from heat exposure to excess mortality among older adults in Sub-Saharan Africa, showing the compounding effect of conflict-driven health system failure.



Source: Author's construction, synthesising the IPCC AR6 Africa chapter, the WHO/AFRO heat brief, and Lancet Countdown findings [3, 7, 28].

Conflict severs the supply chain. Pharmacies are looted. Health workers flee, and cold-chain logistics collapse [19]. A diabetic 70-year-old in a village in northern Burkina Faso may have managed her condition for years on metformin obtained at a district health centre that no longer functions. The result is preventable mortality from conditions that were, until recently, well-controlled.

3.3 Mechanism 3 (M3): Nutritional insecurity and sarcopenia

Older adults have higher protein needs and fewer resources, a dynamic that is poorly complemented by cereal-dominant diets produced under food stress. Climate-driven crop failures [24] and conflict-driven

disruptions of market dynamics place older people at greater risk of protein-energy malnutrition than any other age group [11, 12]. The clinical consequence is sarcopenia, the gradual loss of skeletal muscle mass and strength [12], with downstream impairment of mobility, balance, immune response, and recovery from acute illness. In displacement camps, food rations are calibrated for an average adult and rarely include the higher-quality protein, micronutrients, or texture-modified options that older adults often require. Edentulism is common in this population and renders hard rations effectively inedible. Older adults from camps in the Horn and Sahel have significantly higher rates of unintentional weight loss and lower hand grip strength than younger adults

living in the same camps [4].

3.4 Mechanism 4 (M4): Cumulative trauma and the collapse of mourning

Older adults in conflict zones are not first-time witnesses to violence. Many have lived through earlier wars, earlier droughts, and earlier cycles of displacement. The psychological literature on cumulative trauma suggests that repeated exposure does not generate immunity; rather, each successive shock arrives in a system already depleted of coping reserves [13]. A WHO meta-analysis estimated that approximately one in five people in conflict-affected populations live with depression, anxiety, post-traumatic stress, bipolar disorder, or schizophrenia [13] – yet older adults remain largely unidentified and untreated by humanitarian mental health programmes that prioritise children and women of reproductive age.

Compounding this is the erosion of mourning practices. Across most of Sub-Saharan Africa, the rituals surrounding death – communal gatherings, extended visiting, specific funerary practices – are central to grief resolution and the social standing of the bereaved. Conflict and displacement disrupt these rituals: bodies cannot be retrieved, gatherings are unsafe, religious specialists have fled, and the ritual calendar collapses [14, 36]. The accumulation of unmourned losses among older adults is arguably an under-recognised mental health emergency.

3.5 Mechanism 5 (M5): The severing of intergenerational adaptive knowledge

Older adults in rural Sub-Saharan Africa are repositories of climate adaptation knowledge: which crop varieties tolerate which patterns of drought, which wild plants are edible in famine years, which seasonal indicators predict rainfall onset, which water sources persist during the longest dry seasons [15]. This knowledge is largely oral, geographically specific, and transmitted through sustained intergenerational interaction during agricultural and pastoral practice. When older adults die, are displaced, or are physically separated from younger generations, this knowledge is lost. The loss is not registered in any standard development indicator, but it represents a measurable decline in community adaptive capacity. Communities that have lost their elders relearn, often through failed harvests or missed warnings, what was previously common knowledge. In a region where formal climate services remain thin, the elder is – quite literally – the climate service. The triple burden, therefore, consumes not only the older adult but the

community's capacity to adapt to the very forces threatening it.

4. REGIONAL CASE STUDIES

To move from framework to evidence, three regional contexts are examined in which the triple burden is acute and where, although fragmentary, data allow a partial reconstruction of older adults' experiences. The principal features of each context are summarised comparatively in Table 2.

4.1 The Central Sahel: Mali, Burkina Faso, Niger

The Central Sahel is the paradigmatic site of climate–conflict convergence. Average temperatures have risen approximately 1.5 times faster than the global mean [18]. Rainfall has become more erratic [22]. The ecological transformation, as well as the closure of transhumance corridors due to insecurity, has put pressure on pastoralist livelihoods that are traditionally accustomed to seasonal mobility. As Figure 2 shows, conflict-related deaths in Mali, Burkina Faso, and Niger have risen sharply since 2016, with a particularly acute escalation in Burkina Faso reaching more than 8,000 dead in 2023 and a partial recession in 2024 [14, 15, 16, 33]. Accumulated displacements in the region now exceed 3.5 million, although these figures are likely conservative given the deteriorating data environment under the region's military juntas [10]. Older persons in the Central Sahel are subjected to an almost textbook manifestation of the triple burden. Field accounts from humanitarian groups detail those in villages where the over-60 population has remained after forced displacement, relying on dwindling cereal stocks and infrequent aid streams that often escape their reach as safe corridors for aid are not available. Heat burden continues to climb: recorded heatwaves in 2024 have led to excess mortality among elders in Mali and Burkina Faso. Conflict-affected districts are not fully functioning, and health facilities are non-operational – several hundred were closed or partially functioning at the time of writing [16]. Hypertension and diabetes – which were already common – are mostly unmanaged.

4.2 Northern Ethiopia: The Tigray war and the drought that followed

The Tigray war (November 2020 to November 2022) produced one of the most devastating humanitarian crises of the twenty-first century, with credible estimates of conflict-related excess mortality in the hundreds of thousands [17]. The war coincided with one of the worst droughts in the Horn of Africa for 40 years [33]. For older Tigrayans, the

simultaneity of these shocks proved catastrophic. Post-2022 surveys reported unusually high mortality among older adults, especially men, with untreated chronic disease, food deprivation, and direct violence being the leading causes [17, 19]. During the war, the Tigrayan health system fell apart: drug supplies ceased to be available; dialysis services stopped; oncology care disappeared; and community-based primary care was suspended [19] – older adults with previously managed illnesses died of preventable causes. Drought layered on top of this collapse meant that recovery, when it began in 2023, commenced from an extraordinarily depleted baseline. Restoring functional ability among surviving older adults is now a multi-year undertaking.

4.3 Northern Mozambique: Cyclones and insurgency in Cabo Delgado

Cabo Delgado in northern Mozambique is an example of the compounded impact of climate disasters and armed conflict within a single province. Cyclones Idai and Kenneth (2019) were among the most powerful tropical storms ever recorded in the southwestern Indian Ocean [23]. Reconstruction had scarcely started when an Islamist insurgency hit in 2020, resulting in the displacement of close to a million people and rendering large parts of the province inaccessible to government services and humanitarian agencies [21]. Older coastal Makonde and Mwani residents – many of them women, many widowed – found themselves doubly displaced: first by cyclone destruction, then by conflict. Reception centres and informal settlements around Pemba and Metuge are overcrowded, hot, and poorly served by health facilities. Reports from local civil society describe older adults living in shelters made from salvaged materials, with no access to medication for hypertension or diabetes, no protein-rich foods, and limited contact with the kinship networks that previously sustained them [4, 21]. The conflict has also disrupted fishing – a culturally and nutritionally central activity – removing a key dietary protein source for older adults.

4.4 Comparative summary

Table 2 summarises the principal triple-burden features of the three case studies.

Table 2. Comparative profile of the triple burden in three Sub-Saharan African contexts.

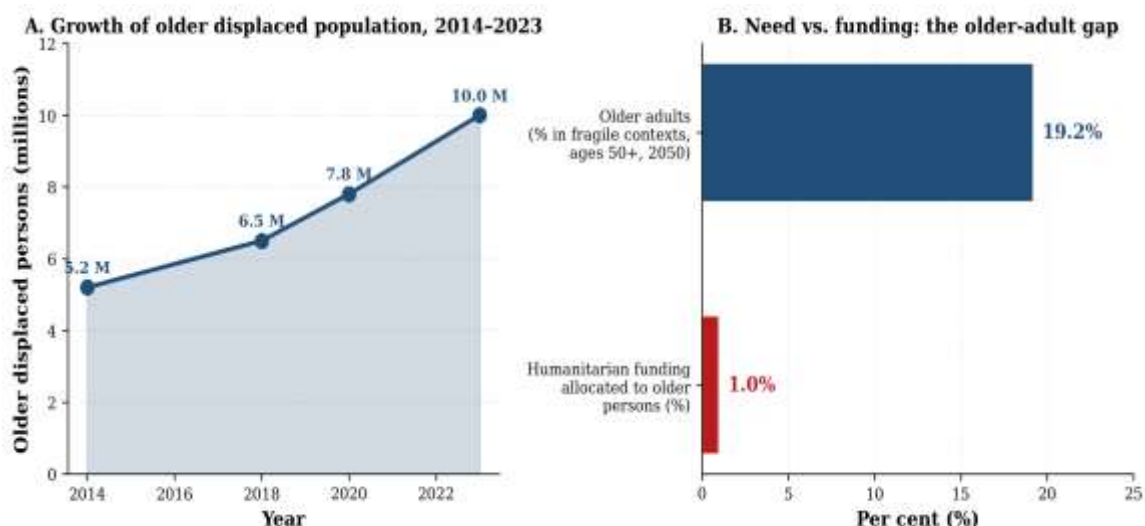
Dominant climate stressor	Heat extremes; rainfall variability; desertification [18, 20]	Recurrent drought (Horn of Africa) [27, 33]	Tropical cyclones; coastal flooding [23, 30]
Dominant conflict driver	Jihadist insurgency; intercommunal violence [10, 15]	Civil war (Tigray, 2020–2022) [17]	Islamist insurgency (Cabo Delgado) [21]
Estimated displacement	>3.5 million regionally [10]	>2 million during war [17]	>1 million in Cabo Delgado [21]
Primary harm to older adults	Abandonment in depopulated villages; heat morbidity	Mass mortality from disrupted chronic disease care	Double displacement; loss of fishing-based protein
Key data gap	Mortality among elders who remained behind	Cause-specific mortality during the blockade	Mental health and complicated grief
Existing protective factor	Strong intergenerational obligation norms	Religious institutions provide some continuity	Strong matrilineal kinship networks

Source: Author's compilation from cited references.

4.5 Older persons in humanitarian crises: scale and funding gap

The experience captured in the case studies is not idiosyncratic. Globally, the population of older displaced persons is rising rapidly, while funding remains starkly mismatched to need. Figure 4 illustrates this gap. Panel A shows that the number of older displaced persons globally has nearly doubled since 2014, reaching approximately 10 million by 2023 [4, 9]. Panel B contrasts the projected share of the population aged 50 and over in fragile contexts in 2050 (19.2 per cent) [4] with the proportion of humanitarian funding allocated to older persons (less than 1 per cent) [32]. This funding-to-need ratio is, by any reasonable standard, a humanitarian protection failure.

Figure 4. Older persons in humanitarian crises. Panel A: growth in older displaced persons globally, 2014–2023. Panel B: projected share of population aged 50+ in fragile contexts (2050) versus share of humanitarian funding allocated to older persons.



Source: Author's compilation from UNHCR Global Trends 2023 [9]; HelpAge International (2024) [4]; UNHCR (2021) [34].

5. DISCUSSION: TOWARDS A POLICY RESPONSE

As the case studies and supporting data demonstrate, although older adults experience the triple burden through clear, identifiable pathways (Table 1; Figures 3 and 5), they remain largely invisible to the policy contexts that govern climate adaptation, humanitarian response, and ageing in Sub-Saharan Africa (Figure 4B). This invisibility is not benign. It creates tangible, quantifiable, and preventable death and suffering. Six policy directions are proposed, mapped against the mechanisms of the triple burden in Table 3.

5.1 Age-disaggregated humanitarian data

The most fundamental step is also the most ignored. Most humanitarian assessments in the region collect data with an upper age category of 50+ or 60+, treating older adults as an undifferentiated mass [34]. This aggregation masks substantial variation within the older population – between, for instance, an active 62-year-old farmer and a frail 85-year-old widow. Standardised collection of fine-grained age data, sex-disaggregated, with linked functional ability assessments such as the Washington Group Short Set on Functioning [31], would transform the evidence base.

5.2 Inclusion of older adults in National Adaptation Plans

Of the National Adaptation Plans submitted by Sub-Saharan African countries to the UNFCCC, fewer than a third make any substantive reference to older adults. When older adults are mentioned, they

are typically described as a vulnerable group in passing, with no specific adaptation actions assigned to them. National Adaptation Plans should be revised to include explicit older-adult components: heat-action plans calibrated to the physiology of ageing [7, 28], climate-resilient continuity-of-care protocols for the chronic diseases that predominate in later life, and recognition of older adults as both vulnerable and as holders of adaptive expertise [15]. Translating this principle into practice requires concrete implementation pathways at three levels. At the governance level, ministries of environment should be required to consult ministries of health, social welfare, and gender as standing partners in NAP drafting, and to include representative organisations of older persons (such as national HelpAge affiliates and Older People's Associations) in stakeholder consultations from problem-framing through to monitoring. At the operational level, each NAP priority sector – water, agriculture, health, urban planning, disaster risk management – should incorporate at least one age-sensitive indicator (for example, the proportion of cooling centres accessible to mobility-impaired older adults, or the share of climate-resilient seed varieties suited to small-plot subsistence farming common among older women). Locally led adaptation funds should ring-fence a defined share of resources for community projects co-designed with older adults. At the measurement level, NAP progress reports should disaggregate beneficiary data by age (including the 60+, 70+ and 80+ bands) and by functional ability using the Washington Group Short Set [31], so that older adults cannot be reabsorbed into a generic “vulnerable groups” category. The African Union's Protocol on

the Rights of Older Persons [27], where ratified, provides a regional legal anchor that can be invoked to legitimise these requirements.

5.3 Climate- and conflict-resilient chronic disease care

The dominant model of chronic disease care in the region – district-level facilities dispensing monthly medication – is fragile under both climate and conflict shocks (Figure 5). Pilot programmes using community health workers to dispense longer supplies of medication, mobile clinics that can re-route around insecure areas, heat-stable formulations, and digital follow-up via mobile phones offer a more resilient template [8]. Their scale-up should be a regional priority.

5.4 Protection of pension and social protection systems

Where social pensions do exist (e.g., Lesotho, Eswatini, Botswana, Mauritius, Zanzibar, and parts of Kenya and South Africa), they are protective against the triple burden [26]. Even modest – and predictable – cash transfers to older adults reduce food insecurity, support medication purchases, and preserve household autonomy during crises. Social pension coverage should be extended to conflict-affected areas where banking infrastructure may be absent (mobile money is a partial solution). It should be reframed as a means of climate adaptation and humanitarian protection (not just social policy) [27].

5.5 Recognition of elder knowledge in disaster risk reduction

Disaster risk reduction frameworks, including the Sendai Framework [25], formally recognise the value of indigenous and local knowledge but operationalise this recognition unevenly. Concrete steps include documenting elder climate knowledge before it is lost [15]; including older adults in community-level early warning systems; and actively facilitating intergenerational knowledge transmission in displacement settings, where it is otherwise especially likely to be severed. Community-based resilience practices already operating across Sub-Saharan Africa offer practical templates that can be strengthened rather than replaced. Pastoralist communities in the Sahel use long-established seasonal indicators – bird migration timing, the flowering of specific trees, soil moisture cues read by elders – to anticipate rainfall onset and adjust herd movement; in the Horn of Africa, Borana and Somali elders apply the *uchu* and *abba gada* systems of rangeland governance and

drought-response decision-making; and Makonde and Mwani elders in coastal Mozambique retain detailed knowledge of cyclone-resistant housing techniques, mangrove-based shoreline protection, and famine-period wild foods. Indigenous coping mechanisms such as livestock destocking before drought, reciprocal grain-storage arrangements between households, communal seed banks, and rotational fallowing have demonstrable protective effects but receive little explicit support from humanitarian or adaptation programming. Practical entry points include: (i) compensating elders as paid knowledge-holders within community-based adaptation projects, rather than treating them as passive beneficiaries; (ii) embedding intergenerational learning circles in schools and farmer field schools so that local ecological knowledge is transmitted before displacement or mortality erases it; (iii) recognising customary institutions (village councils, age-grade associations, traditional healers, women's savings groups) as legitimate partners in early-warning and post-disaster recovery; and (iv) translating climate services and humanitarian information into local languages and oral formats accessible to older adults with limited literacy. These practices are not nostalgic; they are operationally testable, low-cost, and frequently more legitimate in the communities concerned than externally imposed interventions [4, 25, 27].

5.6 A research agenda

The empirical foundation of the triple burden is uneven. Prioritised research questions include: cause-specific mortality among older persons living in active conflict zones; the trajectory of control of chronic diseases during and after combined climate-and-conflict shocks; the occurrence and impact of complicated grief among older displaced populations [38]; and the speed of loss of indigenous adaptation knowledge. Methodologies must be suited to insecure settings, combining remote sensing with mobile-phone surveys, partnering with local researchers, and giving explicit ethical attention to older participants who may be unable to consent or attend study sites in person.

5.7 Policy summary

Table 3 maps the six policy directions developed above to the mechanisms of the triple burden and to the institutional actors best placed to lead implementation.

Table 3. Mapping of policy directions to triple-burden mechanisms and lead institutional actors.

Age-disaggregated humanitarian data with functional ability metrics [31]	All five mechanisms (foundational)	UN OCHA; national statistical offices; HelpAge International
Inclusion of older adults in National Adaptation Plans	M2 (heat exposure); M5 (loss of adaptive knowledge)	Ministries of environment; UNFCCC focal points
Climate- and conflict-resilient chronic disease care	M2 (disrupted continuity of NCD care)	Ministries of health, WHO, and ICRC
Expansion and protection of social pensions [26]	M1 (abandonment); M3 (nutritional insecurity)	Ministries of social welfare, ILO, and World Bank
Recognition of elder knowledge in DRR [25]	M5 (loss of intergenerational adaptive knowledge)	UNDRR; African Union; civil society
Mental health programming inclusive of older adults [13]	M4 (cumulative trauma; collapse of mourning)	WHO, humanitarian mental health actors

Source: Author's construction.

5.8 Limitations of this review

This narrative review has several limitations. It synthesises a heterogeneous and partial evidence base, much of which is grey literature produced under operational rather than research conditions. The case studies are illustrative rather than systematically sampled. A quantitative meta-analysis was not conducted, nor would the available data support one. The data presented here are drawn from multiple sources for aggregate analysis and are not definitive; they should instead be interpreted as indicative. Voices of older adults themselves are

largely absent from the sources drawn on for this review, a methodological gap that reflects the broader pattern of their exclusion. Future work should privilege qualitative and participatory methods that centre older adults' own narratives.

5.9. Conclusion

Sub-Saharan Africa is both ageing and becoming more exposed. The convergence of population ageing, climate change, and armed conflict produces a triple burden (Figure 3) that no single sector – health, climate, humanitarian, social protection – can address alone. The mechanisms through which this burden operates are specific, identifiable, and in principle modifiable: displacement and abandonment, heat-disrupted chronic disease care, nutritional insecurity, cumulative trauma, and the loss of intergenerational adaptive knowledge (Table 1). The policy response is not mysterious; it is mapped, mechanism by mechanism, in Table 3. The cost of inaction is measured not only in the avoidable deaths of older Africans but also in the long-term erosion of community adaptive capacity in the region most exposed to climate change. Recognising older adults as a constituency with specific needs and specific contributions is a necessary condition for any credible regional climate adaptation, humanitarian, or healthy ageing agenda. The Decade of Healthy Ageing cannot succeed in Sub-Saharan Africa without addressing the climate and conflict environments in which African elders are now ageing. Equally, regional climate and humanitarian responses cannot succeed if they continue to overlook the older adults who already bear so much of the cost.

Declarations

Funding: This research received no specific grant from any funding agency.

Conflicts of interest: The author declares no conflicts of interest.

Ethical approval: Not applicable. This narrative review is based on previously published literature and publicly available reports; no primary human subjects research was conducted.

Data availability: All sources cited are publicly available through the references provided. The data underlying Figures 1, 2, and 4 were compiled from the UN DESA World Population Prospects 2024, ACLED published reports, UNHCR Global Trends, and HelpAge International publications, as cited.

Author contributions: The author was solely responsible for all aspects of the work, including conceptualisation, methodology, investigation, formal analysis, data curation, visualisation, writing of the original draft, review and editing, and project administration.

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List of Figures and Tables

Figure 1. Projected growth of the older adult population in Sub-Saharan Africa, 2024–2050. Source: UN DESA, World Population Prospects 2024 [2].

Figure 2. Reported annual conflict fatalities in Mali, Burkina Faso, and Niger, 2016–2024. Source: ACLED

data as compiled in OECD (2024) and ACLED Conflict Watchlist [14, 15, 16].

Figure 3. Conceptual framework of the Triple Burden. Source: Author's construction.

Figure 4. Older persons in humanitarian crises: scale and funding gap. Source: Author's compilation from UNHCR Global Trends 2023 [9]; HelpAge International [4, 32]; UNHCR (2021) [34].

Figure 5. Pathway from heat exposure to excess mortality among older adults. Source: Author's construction, synthesising IPCC AR6 [3], the WHO/AFRO heat brief [28], and the Lancet Countdown [7].

Table 1. Five intersecting mechanisms of the triple burden. Source: Author's construction.

Table 2. Comparative profile of the triple burden in three Sub-Saharan African contexts. Source: Author's compilation from cited references.

Table 3. Mapping of policy directions to triple-burden mechanisms and lead institutional actors. Source: Author's construction.

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