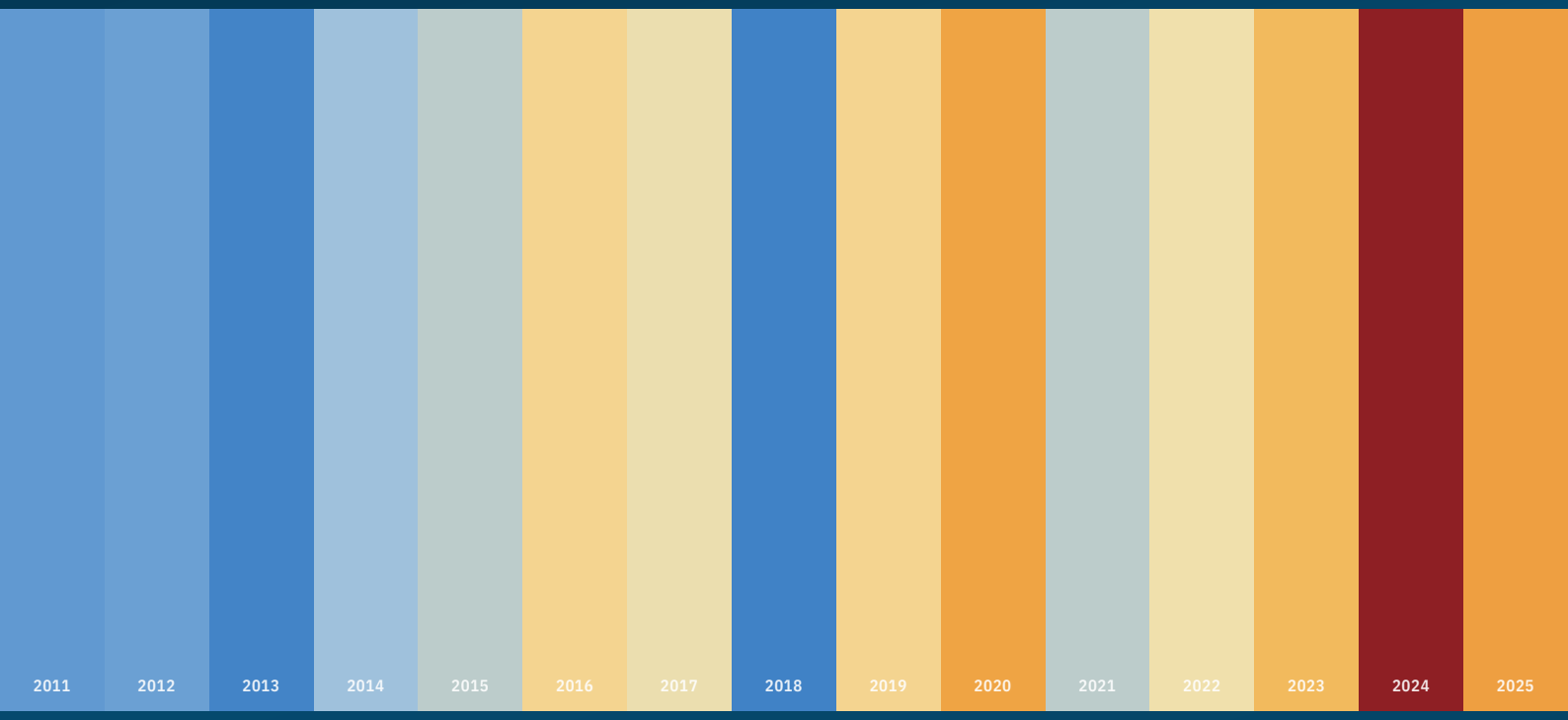
SHM HUMANITARIAN RESEARCH AND ANALYSIS
SHM-CLIMATE-HEAT-2026-11

SHM HUMANITARIAN CLIMATE RESEARCH REPORT

LIVING UNDER EXTREME HEAT

The Current Living Conditions of Internally Displaced People in Somalia



Each stripe is one year of Somalia's annual mean surface temperature, 2011 (left) to 2025 (right), ranging from 26.42°C to 27.62°C. Source: ERA5 / Copernicus, processed by Our World in Data.

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Climate risk • Displacement • Shelter • Water • Health • Protection

NAVIGATION

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ABBREVIATIONS

CCKP Climate Change Knowledge Portal · **CMIP6** Coupled Model Intercomparison Project Phase 6 · **DTM** Displacement Tracking Matrix · **ERA5** ECMWF fifth-generation atmospheric reanalysis · **HNRP** Humanitarian Needs and Response Plan · **IDP** Internally Displaced Person · **MSNA** Multi-Sectoral Needs Assessment · **OCHA** United Nations Office for the Coordination of Humanitarian Affairs · **SHM** Somali Humanitarian Magazine · **SI** Shelter Inadequacy · **SNBS** Somali National Bureau of Statistics · **WASH** Water, Sanitation and Hygiene · **WHO** World Health Organization

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SHM also extends its gratitude to national and international institutions, humanitarian organisations and development partners for their cooperation, institutional contributions and valuable research resources.

Finally, we recognise the importance of Somali communities and internally displaced people whose experiences inspire this research and its commitment to humanitarian protection and advocacy.

RESEARCH AND STATISTICAL CONVENTIONS

Source-reported statistics reproduce values from the cited organisation. SHM calculations are derived from identified source inputs. Climate projections are modelled multi-year outcomes. SHM planning scenarios are illustrative coverage assumptions and are not measured heat-illness counts. The report distinguishes the national IDP population from the smaller assessed household samples.

KEY FINDINGS

ES Executive summary

3.3 M
internally displaced people in Somalia, HNRP 2026

4.8 M
people in need of humanitarian assistance

1,151
respondents across 15 districts, April 2026 MSNA

69.0%
households with inadequate shelter

54.8%
households reporting water shortages

46.7%
access to safe drinking water

Somalia's internally displaced population faces extreme heat within a wider humanitarian environment shaped by recurrent drought, water insecurity, fragile shelter, crowded settlements, high living costs and uneven access to health services. Heat is not simply an environmental hazard. For displaced households, it is experienced through the roof above a sleeping space, the temperature inside a shelter during the afternoon, the distance to drinking water, the cost of replacing water, the availability of shade, and the ability to reach a clinic or safe communal space.

The 2026 Humanitarian Needs and Response Plan identifies approximately 3.3 million internally displaced people in Somalia and 4.8 million people in need of humanitarian assistance. IOM's Displacement Tracking Matrix presents the same 3.3 million IDP planning figure for HNRP 2026. These are national population-context figures, not counts of people diagnosed with heat illness. [1,2]

SHM's analysis of the April 2026 Multi-Sectoral Needs Assessment (MSNA) provides direct evidence of the living environment in 15 assessed districts. The assessment interviewed 1,151 respondents; 86% of households were in IDP settlements and 14% in host-community settlements. Women represented 78% of respondents. Across the assessed districts, SHM's sample-weighted calculations indicate that 69.0% of households reported inadequate shelter, 55.9% reported overcrowding, and 54.8% reported water shortages. Access to safe drinking water averaged 46.7%. [3]

Disaggregation in the same assessment shows the depth of disadvantage among displaced households. The sample-weighted share of IDP households classified as having inadequate shelter was 76.5%, compared with 58.3% among host-community households. Access to safe water among IDP households averaged 40.5%, compared with 52.7% among host households. These are SHM calculations from district-level percentages and sample sizes; they describe the assessed districts, not every IDP household in Somalia. [3]

Climate evidence indicates a persistent warming signal. The ERA5-based annual mean surface-temperature series reproduced by Our World in Data shows Somalia's annual mean increasing from 26.53°C in 2011 to 27.11°C in 2025, an endpoint increase of 0.58°C. The hottest year in the 2011–2025 series was 2024 at 27.62°C; 2025 cooled relative to 2024, illustrating that annual variation does not invalidate the longer-term trend. SHM's linear regression estimates a trend of approximately 0.051°C per year, or 0.515°C per decade, over this 15-observation series. [4]

The World Bank Climate Change Knowledge Portal's CMIP6 projections indicate that Somalia's country-average number of days with maximum temperature at or above 35°C rises from a modelled historical reference of 77.9 days per year (1995–2014) to 93.4–102.4 days per year for 2040–2059, depending on emissions scenario. These are modelled 20-year averages, not observations for a particular year or camp. [5]

SHM's central finding is that high heat hazard combines with high shelter and water vulnerability. In the assessed MSNA districts, Afgooye, Kahda, Qansaxdhere, Adale and Garasbaley emerge as priority locations under SHM's screening proxy, which averages shelter inadequacy, water shortage and health-service access deficit. This proxy identifies settlement vulnerability, not measured local temperature. It should guide the next stage of geospatial and field assessment.

SHM recommends heat-safe shelter upgrades, reliable and affordable drinking water, shaded and accessible cooling spaces, heat-health surveillance, mobile outreach, protection-sensitive water and sanitation facilities, and inclusion of women, older people and persons with disabilities in site-level planning. A five-year temperature trend continuation is included as a planning sensitivity analysis, while climate-model projections are used for the longer-term hot-day outlook.

PRIORITY DISTRICTS UNDER SHM'S SCREENING PROXY

Afgooye 71.5 **Qansaxdhere 69.8** **Adale 67.7** **Kahda 65.8** **Garasbaley 65.3**

The proxy averages shelter inadequacy, water shortage and health-service access deficit. It identifies settlement vulnerability, not measured local temperature.

CONTEXT

01 Introduction and humanitarian context

For displaced households, heat is experienced through...

- roof above a sleeping space
- temperature inside a shelter in the afternoon
- distance to drinking water
- cost of replacing water
- availability of shade
- ability to reach a clinic or safe communal space

> *Heat vulnerability is therefore not determined by temperature alone. It is produced by the interaction of the hazard with exposure, sensitivity and adaptive capacity.*

Somalia's humanitarian context is characterised by repeated climate shocks, armed conflict, protracted displacement and limited household capacity to recover between crises. Displacement is frequently rural-to-urban, with families moving toward towns in search of water, food, health care, security and income. In many urban and peri-urban locations, however, new arrivals settle in informal sites where land tenure is insecure, infrastructure is limited and shelter is constructed from materials available at the time of arrival. The resulting living environment can intensify exposure to high temperatures.

Extreme heat affects the body through a combination of air temperature, humidity, radiant heat, wind, physical activity and duration of exposure. The same outdoor temperature can create very different levels of risk depending on whether a household has a shaded roof, cross-ventilation, safe water, electricity, a nearby clinic or a cool public building. Heat vulnerability is therefore not determined by temperature alone. It is produced by the interaction of the hazard with exposure, sensitivity and adaptive capacity.

The 2026 HNRP identifies 3.3 million IDPs and notes that displacement sites and urban hubs including Baydhaba, Daynile, Kahda, Hargeysa, Gaalkacyo and Bossaso are centres of vulnerability where access to water, food and health care is fragile. The HNRP also describes extreme temperatures of 35–40°C in affected areas and water-system stress. [1]

The April 2026 MSNA adds settlement-level evidence. It describes makeshift shelters, overcrowding, water shortages, inadequate sanitation and uneven access to health services. An observation recorded in Elberde described shelters with visible structural damage that left them vulnerable to extreme heat and flooding. This is important direct evidence that the condition of shelter is not merely a comfort issue; it is part of the physical protection environment. [3]

Heat also intersects with the burden of care. Women and girls may spend extended periods collecting water, preparing food and caring for children in poorly ventilated shelters. Older people and persons with disabilities may have difficulty reaching water points or shaded spaces. Infants and young children depend on caregivers to recognise heat stress and move them to safer environments. These unequal capacities mean that the same heat event can have unequal consequences within a single settlement.

This report places current IDP living conditions at the centre of the analysis. Climate trends and projections are used to establish the hazard context, while humanitarian assessments and displacement surveys are used to examine shelter, water, health and protection conditions. The report does not treat all displaced people as equally exposed; it identifies where the combination of heat hazard and settlement vulnerability requires priority action.

3.3 M
IDPs identified by the 2026 HNRP

35–40°C
extreme temperatures described in affected areas, HNRP 2026

6
named hotspot locations: Baydhaba, Daynile, Kahda, Hargeysa, Gaalkacyo, Bossaso

RESEARCH DESIGN

02 Research problem, objectives and questions

The central research problem is the growing overlap between extreme heat and inadequate living conditions in Somalia's displacement settings. While temperature datasets and climate projections describe the national heat hazard, humanitarian assessments document shelter inadequacy, overcrowding, water scarcity and limited access to services. These evidence streams are rarely analysed together.

As a result, heat exposure among IDPs can remain hidden within broader shelter, WASH, health and protection statistics.

The report's overall objective is to analyse how extreme heat affects the current living conditions, health, safety and survival of internally displaced people in Somalia, and to identify practical interventions that reduce exposure and strengthen preparedness.

FOUR RESEARCH OBJECTIVES

1

Analyse Somalia's historical temperature conditions from 2011 to 2025, include available 2026 year-to-date indicators, and examine projected changes in hot-day frequency over the next five years and longer climate horizons.

OBJECTIVE 1

2

Examine the living conditions of IDPs, including shelter quality, ventilation, shade, overcrowding, water access, sanitation, health-care access and availability of cooling facilities.

OBJECTIVE 2

3

Analyse the distinct risks and barriers affecting women, pregnant and breastfeeding mothers, infants, children, older people, persons with disabilities and people with chronic health conditions.

OBJECTIVE 3

4

Assess household coping mechanisms and the gaps in humanitarian assistance, climate adaptation, protection and essential services.

OBJECTIVE 4

FOUR RESEARCH QUESTIONS

Q1

Research question 1 asks how temperature trends and extreme heat events have changed over the past 15 years and which geographic areas have been most affected.

Q2

Research question 2 examines current shelter and service conditions and the degree to which they expose households to heat.

Q3

Research question 3 considers health and protection effects among vulnerable groups.

Q4

Research question 4 investigates coping practices and response gaps.

HUMANITARIAN PROTECTION PERSPECTIVE

The report applies a humanitarian protection perspective. It considers heat exposure as a risk to health, dignity, privacy, safety, access to water and the ability to maintain daily life. It also examines the extent to which existing humanitarian systems recognise heat as a cross-sector issue rather than a standalone seasonal concern.

APPROACH

03 Methodology and analytical framework

15
annual observations, 2011–2025

1,151
respondents, 12–22 April 2026

15
districts assessed in the MSNA

75–78
respondents per district sample

0.0515
°C per year, OLS trend (R^2 ≈ 0.55)

The research uses a structured desk-based synthesis of climate datasets, climate-model projections, humanitarian plans, displacement monitoring, household assessments and peer-reviewed literature. The principal sources are the Copernicus ERA5 dataset as processed by Our World in Data; World Bank Climate Change Knowledge Portal projections; OCHA's Somalia HNRP 2026; IOM DTM Somalia; UNHCR displacement monitoring; the April 2026 MSNA by SOS Children's Villages in Somalia; the 2022 Somalia Displacement Phone Survey published by the World Bank–UNHCR Joint Data Center; and 2026 national statistical publications. [1–8]

The 2011–2025 annual temperature series contains 15 complete annual observations. It measures annual mean surface air temperature at two metres above the ground, spatially aggregated over Somalia's land area using ERA5 monthly averaged data. The series is not a weather-station record and does not provide annual maximum and minimum temperature values.

The 2026 Mogadishu September observation is reported separately as a monthly, point-location indicator and is not combined with national annual values. [4,9]

SHM calculated an ordinary least-squares linear trend using the 2011–2025 annual mean series. The regression slope is 0.0515°C per year (approximately 0.515°C per decade), with R^2 of approximately 0.55. This is a descriptive statistical trend for the selected period. It is not a causal attribution model and is not a substitute for a climate-model projection.

Humanitarian living-condition statistics are drawn from the April 2026 MSNA. The survey interviewed 1,151 respondents across 15 districts between 12 and 22 April 2026. The report states that 86% of households were in IDP settlements and 14% in host-community settlements. District sample sizes ranged from 75 to 78. SHM calculated weighted averages using district sample sizes as weights. These calculations are limited to the districts and sample represented by the MSNA. [3]

ANALYTICAL FRAMEWORK: FOUR CONNECTED DIMENSIONS

Hazard
temperature and heat-event indicators

Exposure
people, shelters and time spent in hot environments

Sensitivity
age, pregnancy, disability, chronic illness and nutrition

Adaptive capacity
water, shade, ventilation, cooling, health services, income and mobility

The analytical framework follows four connected dimensions: hazard (temperature and heat-event indicators); exposure (people, shelters and time spent in hot environments); sensitivity (age, pregnancy, disability, chronic illness and nutrition); and adaptive capacity (water, shade, ventilation, cooling, health services, income and mobility).

The framework recognises that a national temperature average cannot measure indoor temperature in an IDP shelter.

SHM developed a district-level Heat Vulnerability Screening Proxy by averaging three MSNA indicators: inadequate shelter, reported water shortage and health-service access deficit (100 minus reported access). Each component is expressed as a percentage from 0 to 100 and receives equal weight.

The proxy ranks underlying settlement vulnerability; it does not measure local heat intensity or predict heat illness.

All statistics are labelled according to their evidence status: source-reported values, SHM calculations, climate-model projections or planning scenarios. Heat-related illness and mortality are only reported where a source explicitly attributes the outcome to heat. General illness rates are not reclassified as heat illness.

HAZARD CONTEXT

04 Somalia's heat and climate-risk profile

35–40°C	US$12–15	80%	50	77.9
extreme temperatures reported in affected areas, HNRP 2026	per 200-litre barrel of water, Puntland (cited context)	of berkads dried up, Puntland (cited context)	boreholes in Hirshabelle requiring urgent rehabilitation	days a year ≥ 35°C, CMIP6 modelled reference 1995–2014

Puntland and Hirshabelle values are specific humanitarian observations from the HNRP and should not be interpreted as national averages. [1] The 77.9-day figure is a model simulation of the past, not an observed count. [5]

Somalia's climate is hot for much of the year, with strong regional and seasonal differences. Inland and northern areas can experience very high daytime temperatures and large daily temperature ranges, while coastal locations may experience greater humidity and reduced night-time cooling. Central and southern areas face a combination of high temperatures, drought exposure and seasonal rainfall variability. These patterns matter for IDP settlements because local thermal conditions depend on geography, shelter design, land cover, settlement density and access to water.

The 2026 HNRP reports extreme temperatures of 35–40°C in affected areas. It links extreme heat to faster water loss, depleted rangelands and reduced availability of water points. The plan documents severe water stress in Puntland, including reported water prices of US$12–15 per 200-litre barrel and 80% of berkads dried up in the cited context; it also identifies 50 boreholes in Hirshabelle requiring urgent rehabilitation. These are specific humanitarian observations and should not be interpreted as national averages. [1]

Heat risk has both daytime and night-time dimensions. Very hot afternoons increase direct heat stress, especially for people working outdoors or collecting water.

Hot nights can prevent the body and shelter from cooling down, leaving people exposed across successive days. For shelters with low ventilation and high solar absorption, indoor conditions may remain uncomfortable after sunset even when outdoor temperatures begin to fall.

Climate risk is also connected to drought. High temperatures increase evaporation and can accelerate the depletion of shallow water sources, soil moisture and pasture. When drought reduces household livelihoods, families may migrate to displacement sites where shelter and services are already strained. The relationship is not one-directional: heat can worsen drought impacts, while displacement can reduce the household resources available to cope with heat.

The World Bank climate-risk assessment projects a strong increase in very hot days in Somalia. A separate CMIP6 summary of the World Bank Climate Change Knowledge Portal estimates a country-average 77.9 days per year with maximum temperatures of at least 35°C in the 1995–2014 modelled historical reference period. This indicator is a model simulation of the past, not an observed count from weather stations. [5]

A SINGLE ANNUAL MEAN CANNOT CAPTURE DANGEROUS HEAT

Somalia's heat-risk profile should therefore be assessed using multiple indicators: daily maximum temperature, daily minimum temperature, hot-night frequency, heat index, consecutive hot days and local water stress. A single annual mean temperature cannot capture the intensity or duration of dangerous heat events.

Daily maximum temperature | Daily minimum temperature | Hot-night frequency | Heat index | Consecutive hot days | Local water stress

CLIMATE RECORD

05 Historical temperature analysis, 2011–2025

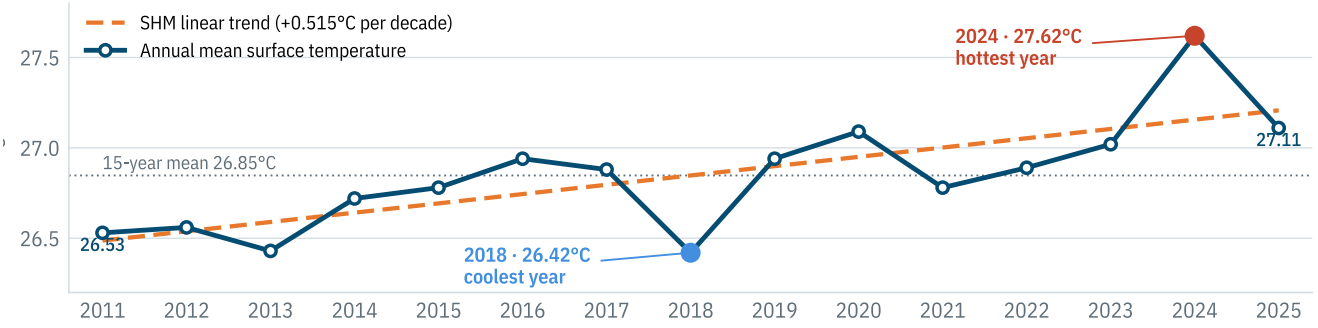


Figure 1. Somalia annual mean surface temperature, 2011–2025. Source: ERA5/Copernicus data as processed by Our World in Data; SHM trend line. [4]

Year	Annual mean °C	Change °C
2011	26.53	—
2012	26.56	+0.03
2013	26.43	-0.13
2014	26.72	+0.29
2015	26.78	+0.06
2016	26.94	+0.16
2017	26.88	-0.06
2018	26.42	-0.46

Year	Annual mean °C	Change °C
2019	26.94	+0.52
2020	27.09	+0.15
2021	26.78	-0.31
2022	26.89	+0.11
2023	27.02	+0.13
2024	27.62	+0.60
2025	27.11	-0.51

+0.58°C
endpoint increase, 2011 to 2025

27.62°C
hottest year: 2024

0.515°C
per decade, SHM trend; $R^2 \approx 0.55$

26.9°C
Mogadishu, Sept 2026; normal 25.9°C

Table 1. Annual mean surface temperature for Somalia. Unit: °C. Source: ERA5 monthly averaged data, processed by Our World in Data; annual values reproduced in the Geo Factbook series. [4]

The ERA5-based annual mean surface-temperature series provides a consistent national measure for comparing Somalia's temperature conditions over 2011–2025. The annual values are 26.53°C in 2011, 26.56°C in 2012, 26.43°C in 2013, 26.72°C in 2014, 26.78°C in 2015, 26.94°C in 2016, 26.88°C in 2017, 26.42°C in 2018, 26.94°C in 2019, 27.09°C in 2020, 26.78°C in 2021, 26.89°C in 2022, 27.02°C in 2023, 27.62°C in 2024 and 27.11°C in 2025. [4]

Between 2011 and 2025, the annual mean increased by 0.58°C. The endpoint difference is calculated as 27.11°C minus 26.53°C. The relative percentage difference is approximately 2.19%, although temperature change is more appropriately expressed in degrees Celsius rather than as a percentage. The 15-year mean of the annual values is approximately 26.85°C.

2024 was the hottest year in the 2011–2025 series at 27.62°C. 2018 was the coolest year at 26.42°C. The 2025 value of 27.11°C was 0.51°C below 2024. This decline illustrates year-to-year variability; it does not erase the positive fitted trend over the full period.

SHM's ordinary least-squares regression estimates a slope of 0.0515°C per year, equivalent to approximately 0.515°C per decade.

The model R^2 is approximately 0.55, indicating that the fitted linear trend accounts for about 55% of the variation in the 15 annual observations. This is a descriptive trend and should not be interpreted as a guarantee that every future year will be warmer.

The annual mean series does not itself provide annual maximum or minimum temperatures. To examine extremes, SHM uses a separate indicator: days per year with maximum temperature at or above 35°C. The World Bank/CMIP6 modelled historical baseline is 77.9 days per year for 1995–2014. This indicator is a modelled climate statistic and is not directly comparable to the ERA5 annual mean series. [5]

2026 is treated as year-to-date. NASA POWER-derived data for Mogadishu show a September 2026 monthly mean temperature of 26.9°C, one degree above the 1991–2020 September normal of 25.9°C and the warmest September in the 1981–2026 comparison for the capital. This is a city-specific monthly value, not a national annual mean. [9]

Table 1 presents the annual series. Figure 1 shows the observed/reanalysis series and fitted trend. The findings support a warming signal across the period while also showing substantial annual fluctuations. This is the correct basis for discussing climate change without claiming a uniform year-by-year increase.

OUTLOOK

06 Five-year temperature outlook and heat-event projections

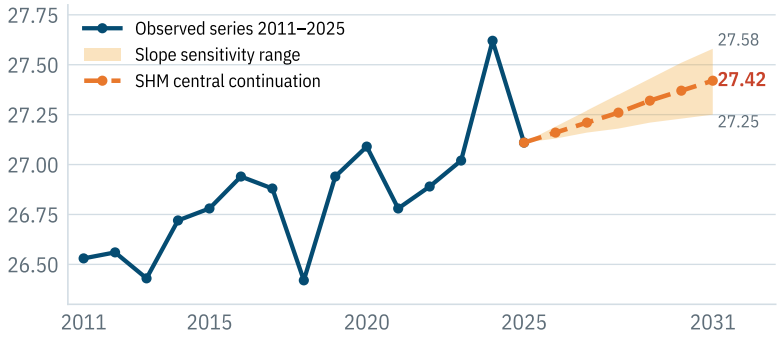


Figure 2. Illustrative temperature trend continuation, 2026–2031. Source: SHM regression on 2011–2025 ERA5/OWID series. [4]

Table 2. SHM trend continuation. The sensitivity envelope reflects the estimated slope range, not a full climate forecast interval.

Year	Central °C	Slope sensitivity °C
2026	27.16	27.13–27.19
2027	27.21	27.16–27.27
2028	27.26	27.18–27.35
2029	27.32	27.21–27.43
2030	27.37	27.23–27.51
2031	27.42	27.25–27.58

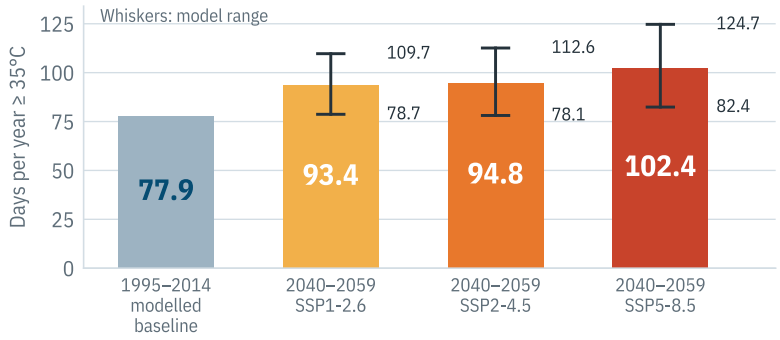


Figure 3. Modelled annual hot-day frequency. Source: World Bank CCKP CMIP6 ensemble; 1995–2014 is a modelled historical baseline. [5]

Increase in the projected median versus the 77.9-day modelled baseline

SSP1-2.6	+15.5 days	+19.9%
SSP2-4.5	+16.9 days	+21.7%
SSP5-8.5	+24.5 days	+31.5%

Comparisons between multi-year model periods, not annual changes from one observed year to another.

SHM's five-year outlook uses a simple linear continuation of the 2011–2025 annual mean temperature trend. The starting value is the 2025 annual mean of 27.11°C and the annual increment is the fitted regression slope of 0.0515°C. Under this continuation, the indicative central values are approximately 27.16°C in 2026, 27.21°C in 2027, 27.26°C in 2028, 27.31°C in 2029, 27.37°C in 2030 and 27.42°C in 2031.

The slope sensitivity range from the fitted regression is approximately 0.024–0.079°C per year. Applying these slope bounds to the 2025 starting value gives a 2031 sensitivity range of approximately 27.25–27.58°C. This range reflects uncertainty in the fitted historical slope only; it is not a full prediction interval and does not account for future climate variability, model structural uncertainty or emissions pathways.

The five-year trend continuation should be interpreted as a planning signal rather than a precise forecast of annual temperature. It indicates the direction and approximate scale implied by the recent historical series if its fitted trend continued.

Climate projections from CMIP6 provide a stronger basis for understanding changes in extreme-heat frequency over longer multi-decadal periods.

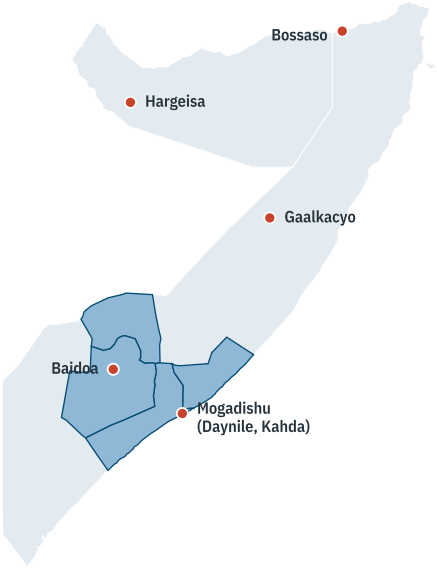
The World Bank CCKP CMIP6 ensemble estimates 77.9 days per year with maximum temperature at or above 35°C for the 1995–2014 historical model simulation. For 2040–2059, the median rises to 93.4 days under SSP1-2.6, 94.8 days under SSP2-4.5 and 102.4 days under SSP5-8.5. The model ranges are 78.7–109.7, 78.1–112.6 and 82.4–124.7 days respectively. [5]

Compared with the historical model baseline of 77.9 days, the projected median increase is 15.5 days under SSP1-2.6, 16.9 days under SSP2-4.5 and 24.5 days under SSP5-8.5. These correspond to increases of approximately 19.9%, 21.7% and 31.5%. They are comparisons between multi-year model periods, not annual changes from one observed year to another.

The five-year outlook for humanitarian planning should focus less on predicting the exact temperature in a particular year and more on preparing settlements for more frequent hot days, hot nights and prolonged heat exposure. Heat alerts, water continuity, shelter upgrades and health-service readiness should be established as recurring preparedness measures.

WHERE RISK CONCENTRATES

07 Geographic heat exposure and displacement hotspots



Map 1. Regions covered by the April 2026 MSNA (shaded) and urban hubs named as vulnerability hotspots in the HNRP 2026 (dots). Source: Natural Earth boundaries; SHM. District-level proxy scores are not mapped because settlement coordinates were not part of the analysis; see the second-stage geographic analysis recommended below. [1,3]

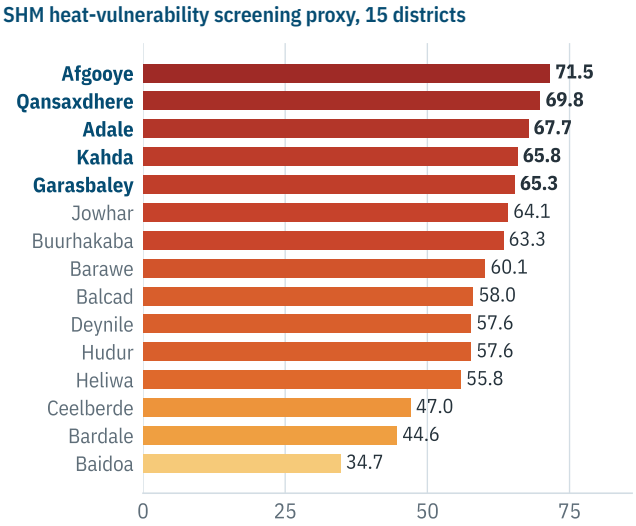


Figure 4. SHM heat-vulnerability screening proxy. It measures settlement vulnerability, not local temperature. Source: SHM calculations from April 2026 MSNA. [3]

Somalia's geographic heat exposure is uneven. Inland and central areas are more exposed to very high daytime temperatures, while coastal areas face a combination of heat and humidity. The World Bank climate-risk materials identify central Somalia as a region of particular concern for very hot days. The national hot-day average is not a substitute for district-specific measurement, and the same hazard value should not be assigned to every region. [5,6]

The 2026 HNRP identifies Baydhaba, Daynile, Kahda, Hargeysa, Gaalkacyo and Bossaso among urban hubs and displacement sites where water, food and health access are fragile. The 2024 World Bank–UNHCR displacement report found that 90% of IDPs in settlements in its survey were in settlement settings and that 66% of the IDP-in-settlement sample was located in Banadir and 34% in South West State. This is a survey sample distribution from 2022, not a current national population map. [1,7]

The April 2026 MSNA covers 15 districts across Banadir, Middle Shabelle, Lower Shabelle, Bakool and Bay. It includes urban IDP hubs and rural/peri-urban locations such as Afgooye, Kahda, Daynile, Heliwa, Baidoa, Hudur, Jowhar, Barawe and Qansaxdhere.

These districts provide a practical basis for prioritising site-level heat assessments because the MSNA reports shelter, water and health-service conditions in the same assessment. [3]

SHM's Heat Vulnerability Screening Proxy ranks districts using the mean of three indicators: inadequate shelter, water shortage and health-service access deficit. Afgooye scores 71.5, Qansaxdhere 69.8, Adale 67.7, Kahda 65.8 and Garasbaley 65.3. Jowhar and Buurhakaba also score above 63. These values identify the strongest overlap of underlying settlement vulnerability in the assessed sample.

The proxy is not a heat hazard map. It does not contain local temperature measurements. Its value is to identify where poor shelter, water shortages and weak access to health care overlap, making these districts priority candidates for temperature monitoring and heat-response planning.

Urban IDP settlements require attention to dense shelter arrangements, exposed roofs, limited vegetation, crowded water points, water prices and the availability of shaded public facilities. Rural displacement locations require attention to longer travel distances, fewer health facilities, limited electricity, the functionality of boreholes and the ability of older people or persons with disabilities to reach services.

SHM recommends that a second-stage geographic analysis overlay gridded daily temperature data, settlement coordinates, verified IDP populations, shelter characteristics, water-point functionality and health-facility access. That combined map would allow a defensible district- and site-level heat exposure estimate.

POPULATION CONTEXT

08 IDP population and potential heat exposure

Illustrative programme coverage of the 3.3 million IDP reference population

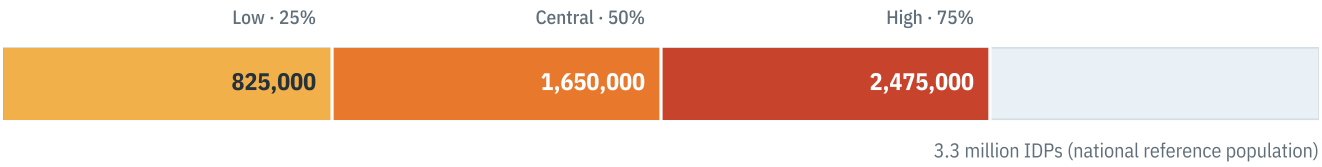


Figure 5. Planning scenarios describe potential programme reach, not confirmed counts of people experiencing heat illness. [1,2]

Table 3. IDP heat-protection programme coverage scenarios

Coverage scenario	Assumed share of 3.3m IDPs	Potential programme reach
Low coverage	25%	825,000
Central coverage	50%	1,650,000
High coverage	75%	2,475,000

Figure 6. Average household size, 2022 Somalia Displacement Phone Survey [7]



IOM's DTM Somalia portal reports 3.3 million IDPs under the 2026 Humanitarian Needs and Response Plan context. OCHA's HNRP also identifies 3.3 million internally displaced people. This is the most current national population-context figure used in this report. [1,2]

The full 3.3 million IDP population lives within Somalia's national climate-risk environment. However, the exact number exposed to dangerous indoor temperatures cannot be calculated from the national IDP total alone. Exposure depends on where people live, the daily local temperature, shelter type, indoor ventilation, shade, water availability and time spent in hot environments.

To support programme planning, SHM models three illustrative population-coverage scenarios using the 3.3 million IDP baseline. A 25% coverage scenario corresponds to 825,000 people; a 50% scenario corresponds to 1.65 million; and a 75% scenario corresponds to 2.475 million.

These figures describe potential programme reach under different levels of coverage, not confirmed counts of people experiencing heat illness.

The national CMIP6 model baseline of 77.9 days per year with maximum temperatures of at least 35°C provides a country-level indicator of frequent hot-day conditions. The 2040–2059 projections of 93.4–102.4 days indicate a greater future heat burden. These country-level values are not population-weighted and do not mean every IDP site experiences the same number of hot days. [5]

IDP settlement conditions increase the importance of measuring indoor exposure. The 2022 Somalia Displacement Phone Survey found average household size of 8.7 people for IDPs in settlements, compared with 6.6 in host communities. It also found that children under 18 represented 60% of the IDP-in-settlement sample. Larger household sizes and a high child share can increase demand for sleeping space, water and cooling within small shelters. [7]

SITE-LEVEL EXPOSURE CALCULATION RECOMMENDED BY SHM

Population exposed = Σ (verified settlement population × share of households whose shelters exceed a defined indoor temperature threshold or lack minimum heat-protection features)

SHM recommends that future exposure estimates use a site-level calculation: population exposed = sum of the verified population in each settlement multiplied by the proportion of households whose shelters exceed a defined indoor temperature threshold or lack minimum heat-protection features.

The denominator must be a dated settlement population estimate, and indoor temperature thresholds must be selected with public-health specialists.

Until this spatial analysis is completed, the report uses the 3.3 million national IDP figure as the population requiring heat-risk planning and uses scenario coverage figures to illustrate programme scale. It does not convert the whole IDP population into a count of heat-illness cases.

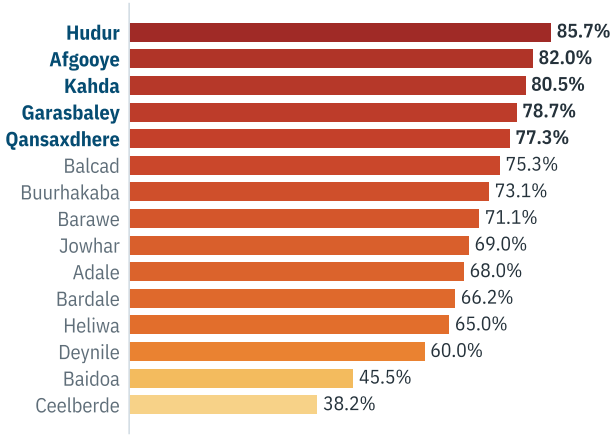
SHELTER

09 Current shelter conditions and indoor heat exposure

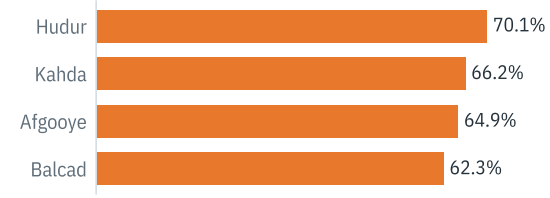
Table 4. Shelter indicators, April 2026 MSNA (SHM weighted estimates) [3]

69.0%	55.9%	76.5%	58.3%
Inadequate shelter, all surveyed households	Overcrowding, all surveyed households	Inadequate shelter, IDP households	Inadequate shelter, host households
15-district MSNA sample	15-district MSNA sample	District-level IDP subgroup indicator	District-level host subgroup indicator

Inadequate shelter by district (%)



Overcrowding, highest districts (%)



Inadequate shelter, IDP vs host households (%)

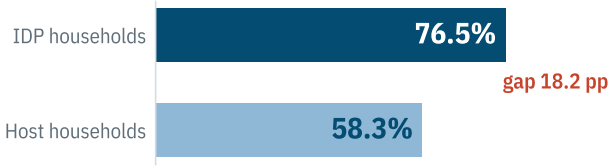


Figure 7a. Source: SHM calculations from April 2026 MSNA. [3]

Shelter conditions are one of the strongest pathways through which outdoor heat becomes a daily household hazard. In many displacement sites, shelters are temporary and assembled from plastic sheeting, tarpaulins, fabric, timber, mud, sticks and corrugated metal. These materials vary in thermal performance. Dark roofs can absorb solar radiation; thin walls may offer little insulation; low ceilings can trap warm air; and inadequate ventilation can limit heat removal.

The April 2026 MSNA provides direct evidence of widespread inadequate shelter. Across the 15 assessed districts, SHM's sample-weighted calculation finds 69.0% of households reporting inadequate shelter and 55.9% reporting overcrowding. The IDP-specific shelter inadequacy measure averages 76.5%, compared with 58.3% among host households. The gap is approximately 18.2 percentage points. [3]

The district findings are particularly severe in Hudur (85.7% inadequate shelter), Afgooye (82.0%), Kahda (80.5%), Garasbaley (78.7%) and Qansaxdhere (77.3%).

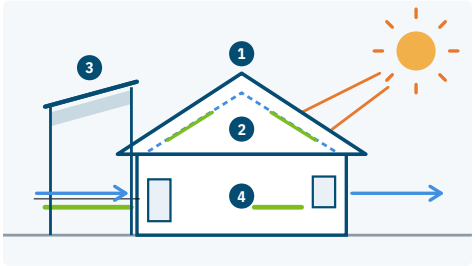
The IDP-specific inadequacy figure reaches 90% in Afgooye and Hudur, and 88% in Garasbaley and Kahda. These figures describe the MSNA's district sample and the assessment's shelter indicator; they are not a national estimate of heat-insulating shelter materials. [3]

The MSNA includes an observation from Elberde that shelters showed visible structural damage and were vulnerable to extreme heat and flooding. Participants in Berdale also described materials that could not withstand the elements. These observations reinforce the quantitative finding that shelter inadequacy is widespread in assessed locations. [3]

Overcrowding intensifies indoor heat exposure. The MSNA reports overcrowding in 70.1% of households in Hudur, 66.2% in Kahda, 64.9% in Afgooye and 62.3% in Balcad. The 2022 phone survey's average household size of 8.7 people among IDPs in settlements provides additional context for the pressure on limited sleeping space. [3,7]

Heat-safe shelter upgrades should include reflective or light-coloured roof coverings where technically appropriate, external shade, ventilated roof spaces, cross-ventilation, safe openings, and durable locally available materials. Design must also preserve privacy, security, fire safety, wind resistance and disability access. The best solution is not simply a more expensive shelter; it is a structure that reduces heat gain while remaining safe, affordable and maintainable.

Features of a heat-safe shelter (schematic, not to scale)



1. Reflective or light-coloured roof covering
2. Ventilated roof space
3. External shade
4. Cross-ventilation and safe openings

WATER

10 Water scarcity, rural exposure and WASH conditions

Table 5. Water and WASH indicators, April 2026 MSNA (SHM weighted estimates) [3]

54.8%	46.7%	40.5%	52.7%
Households reporting water shortages	Households with safe drinking water access	IDP households with safe water access	Host households with safe water access

Households reporting water shortages by district (%)

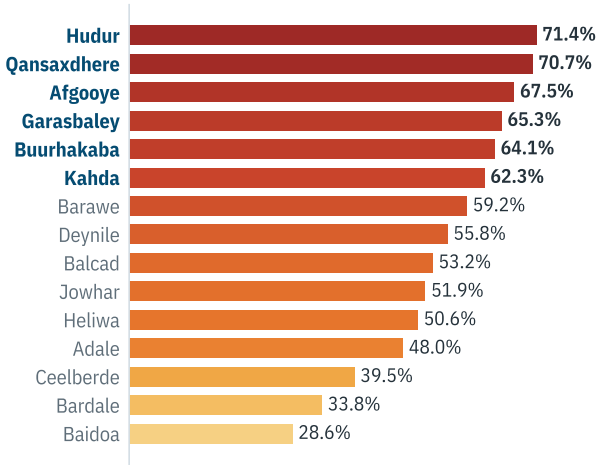
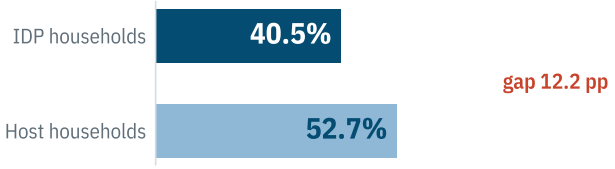


Figure 8a. Source: SHM calculations from April 2026 MSNA. [3]

Safe water access, IDP vs host households (%)



WATER PRICE IN THE CITED PUNTLAND CONTEXT [1]

US$12–15 per 200-litre barrel

US$0.06–0.075 per litre (SHM calculation)

Illustrates affordability pressure; not a national water tariff.

> *"Some days we can't even afford to buy any."*
> Mother of five, Kahda · Radio Ergo, April 2026 [10]

Water is essential to heat protection. It supports hydration, food preparation, hygiene and basic cooling. During hot periods, households need reliable access to sufficient safe water. When water points are distant, expensive, intermittent or contaminated, families may reduce consumption, spend longer outdoors collecting water or divert money from food and health care to buy water.

The April 2026 MSNA found major water-access gaps. SHM's sample-weighted calculation across the 15 districts indicates that 54.8% of households reported water shortages and only 46.7% had access to safe drinking water. IDP households had an average safe-water access figure of 40.5%, compared with 52.7% among host households, a gap of 12.2 percentage points. [3]

Water shortages were highest in Hudur (71.4%), Qansaxdhere (70.7%), Afgooye (67.5%), Garasbaley (65.3%), Buurhakaba (64.1%) and Kahda (62.3%). Access to safe drinking water was particularly low in Afgooye (32.5%), Hudur (37.7%), Qansaxdhere (36.0%) and Garasbaley (37.3%). These district-level figures demonstrate that water scarcity is not uniform and that some displacement-affected locations face a particularly severe deficit. [3]

The 2026 HNRP describes extreme temperatures of 35–40°C in affected areas and reports high water prices in Puntland, with a 200-litre barrel costing US$12–15 in the cited context.

SHM calculates the equivalent price as US$0.06–0.075 per litre. This simple conversion illustrates the affordability pressure but should not be interpreted as a national water tariff. [1]

Rural and peri-urban displacement sites may face longer journeys to water points and health facilities, fewer functioning boreholes and less reliable electricity. Women and children may carry a disproportionate share of water collection. People with mobility impairments may be unable to queue or travel to distant water points without assistance. A water point that exists but is non-functional, unaffordable or inaccessible does not constitute effective access.

Radio Ergo's April 2026 reporting from Kahda documented a mother of five describing the household's inability to afford water. She stated: "Some days we can't even afford to buy any." The account was about water affordability and hygiene, not a clinical heat incident, but it illustrates the household-level constraint that makes heat protection more difficult. [10]

Priority WASH actions include repairing boreholes, monitoring water-point functionality, tracking prices and queue times, providing accessible collection points, using targeted water vouchers where markets function, and maintaining emergency water supply during acute shortages. Shaded waiting areas and accessible routes should be standard features of water-point rehabilitation.

HEALTH

11 Health impacts and health-service access

Table 6. Health indicators, April 2026 MSNA (SHM weighted estimates) [3]

60.9%	47.3%	41%
Households reporting illness in previous two weeks	Households reporting access to health services	of IDP households in settlements with a sick member accessed medical services (2022)
general illness, not heat-related illness		36% accessed medicine [7]

Households reporting access to health services (%)

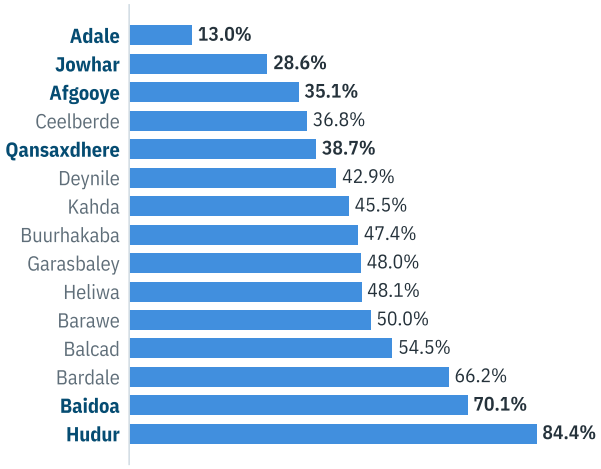


Figure 9a. Access = 100 – health-access deficit. Source: SHM calculations from April 2026 MSNA. [3]

Households reporting illness in the previous two weeks, highest districts (%)



Heat-health preparedness should include

- ✓ Training for community health workers and clinic staff
- ✓ A standard recording code for suspected heat illness
- ✓ Safe drinking water at health facilities
- ✓ Shaded waiting areas
- ✓ Basic cooling supplies
- ✓ Clear referral pathways for suspected heatstroke
- ✓ Heat-risk counselling in maternal, child-health, nutrition and chronic-disease services

DATA GAP

Published data reviewed for this report do not provide a national count of heat-related hospital admissions or deaths among Somali IDPs. Mortality and illness figures from general humanitarian assessments cannot be attributed to heat unless the cause is explicitly documented. SHM recommends that heat-related morbidity and mortality be incorporated into routine health surveillance and disaggregated by age, sex, pregnancy status, disability and location.

Extreme heat can cause dehydration, heat cramps, heat exhaustion and heatstroke. It can worsen existing cardiovascular, respiratory and kidney conditions and may increase health risks for people who work outdoors, have chronic illness, are pregnant, are very young or are older. The level of risk depends on the temperature, humidity, duration of exposure, hydration, shelter conditions, medication and speed of access to medical care.

The April 2026 MSNA documents a substantial general illness burden in assessed districts. SHM's sample-weighted calculation indicates that 60.9% of households reported at least one member experiencing illness during the two weeks preceding the survey. The highest district values were Heliwa (88.3%), Kahda (83.1%) and Afgooye (76.6%). These are general illness indicators and must not be interpreted as heat-related illness rates. [3]

Health-service access is uneven. SHM's sample-weighted average for access to health services across the assessed districts is 47.3%.

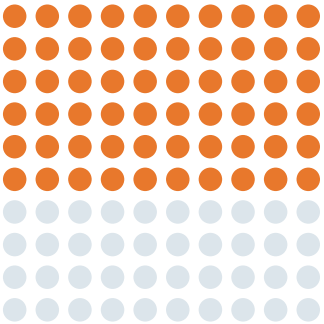
Access was reported at 13.0% in Adale, 28.6% in Jowhar, 35.1% in Afgooye and 38.7% in Qansaxdhere, while Hudur reported 84.4% and Baidoa 70.1%. This disparity means that households in some high-vulnerability locations may face greater difficulty obtaining care during heat emergencies. [3]

The 2022 Somalia Displacement Phone Survey found that among IDP households in settlements whose members had fallen sick, 41% accessed medical services and 36% accessed medicine. This older survey provides evidence of access barriers among displaced populations, but it should not be treated as a current 2026 estimate. [7]

Heat-health preparedness should include training for community health workers and clinic staff, a standard recording code for suspected heat illness, safe drinking water at health facilities, shaded waiting areas, basic cooling supplies and clear referral pathways for suspected heatstroke. Clinics should integrate heat-risk counselling into maternal, child-health, nutrition and chronic-disease services.

VULNERABLE GROUPS

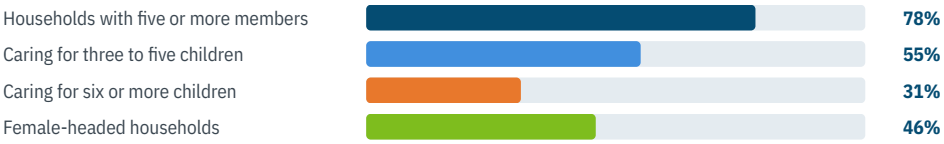
12 Women, pregnancy, infants and children



60 in 100

IDPs in settlements were children under 18 in the 2022 displacement phone survey sample (57% for IDPs outside settlements). [7]

Caregiving and household pressure, April 2026 MSNA sample [3]



Women and girls can experience heat exposure through several overlapping roles: caregiving, water collection, cooking, household cleaning, informal work and travel to sanitation or health facilities. Where shelters are small and poorly ventilated, women may spend much of the day in hot indoor spaces while caring for children. Limited access to safe water can make hydration and hygiene difficult, especially for pregnant and breastfeeding mothers.

Pregnant women may face additional physiological demands during hot conditions. Heat exposure can be particularly difficult where rest, nutrition, safe drinking water and timely maternal care are limited. Breastfeeding mothers need access to drinking water and shaded rest spaces.

The report does not estimate the number of pregnant or breastfeeding IDPs exposed to heat because the available national datasets reviewed do not provide a compatible heat-exposure denominator.

Infants and young children depend on adults to recognise thirst, provide fluids, reduce clothing layers appropriately, move them into shade and seek care when symptoms appear. Children under five are also more vulnerable to the combined effects of heat, diarrhoeal disease, malnutrition and inadequate water and sanitation. The 2022 displacement phone survey found that children under 18 represented 60% of IDPs in settlements and 57% of IDPs outside settlements in its sample. [7]

The April 2026 MSNA found that 78% of surveyed households had five or more members, while 55% cared for three to five children and 31% cared for six or more children. The sample also included 46% female-headed households. These figures illustrate the caregiving and household-space pressures in the assessed locations. [3]

DESIGN PRINCIPLES FOR WOMEN'S PARTICIPATION

Women's participation should be central to the design of heat response. Safe water points, shaded rest areas and cooling spaces should be located close enough to reduce long journeys and should provide privacy, lighting, secure access and accessible sanitation. Maternal and child health services should include heat counselling and maintain outreach during extreme heat alerts.

CHILDREN: WHEN TO ACT

Identify children who are unusually weak, dizzy, confused or unable to drink.

Unusually weak · Dizzy · Confused · Unable to drink

Children's heat protection should include shaded play and learning spaces, water access at schools and child-friendly centres, caregiver information and procedures for identifying children who are unusually weak, dizzy, confused or unable to drink.

Schools and temporary learning spaces should consider roof materials, ventilation and scheduling during the hottest hours.

VULNERABLE GROUPS

13 Older people and persons with disabilities

20%
of the IDP-in-settlement sample reported disability, 2022 survey
14% for IDPs outside settlements [7]

16%
persons with disabilities in the HNRP 2026 people-in-need caseload
overall caseload, not IDP-specific [1]

5%
older people in the HNRP 2026 people-in-need caseload
overall caseload, not IDP-specific [1]

Older people may be more vulnerable to heat because of changes in temperature regulation, chronic illness, medication use, reduced mobility or dependence on caregivers. People living alone may have limited support to collect water, move to a shaded space or reach a clinic. In displacement sites, poor pathways, crowded shelters and distant facilities can make these barriers more severe.

Persons with disabilities face additional obstacles that are often invisible in national temperature data. Wheelchair users may be unable to reach communal cooling areas where paths are sandy or uneven. People with visual impairments may not receive written heat warnings. People with hearing impairments may miss audio-only alerts. Some people with intellectual or psychosocial disabilities may need accessible communication and trusted support.

People who depend on electricity for essential devices may face further risk during power interruptions.

The World Bank–UNHCR Joint Data Center's 2022 displacement phone survey reported disability among 20% of the IDP-in-settlement sample and 14% of the IDP-out-of-settlement sample. These figures refer to the survey's disability measure and should not be directly treated as current population prevalence. They nevertheless demonstrate that disability inclusion is a material requirement for displacement programming. [7]

The 2026 HNRP reports persons with disabilities as 16% and older people as 5% of its overall people-in-need caseload. These are overall humanitarian caseload proportions, not IDP-specific heat-exposure estimates. They provide a planning signal for inclusive humanitarian design. [1]

Distribute heat alerts through five channels

- Audio
- Visual
- Text
- Sign language
- Community outreach

Cooling spaces should offer

- ✓ Step-free access
- ✓ Seating
- ✓ Accessible toilets
- ✓ Shade
- ✓ Safe routes

Heat alerts should be distributed through audio, visual, text, sign-language and community outreach channels. Cooling spaces should provide step-free access, seating, accessible toilets, shade and safe routes. Water distribution systems should allow assistance for people who cannot queue or carry containers.

Community check-in systems should be voluntary, consent-based and designed to protect privacy.

Organisations of persons with disabilities and older people's associations should participate in settlement heat planning, site inspections, monitoring and procurement decisions. Inclusion should be measured through practical indicators such as the percentage of cooling facilities that meet accessibility standards and the proportion of heat alerts delivered through accessible formats.

LIVED EXPERIENCE

14 Household coping mechanisms and lived experience

Coping practices reported across displacement settings

Seeking shade · Opening shelter sides · Sleeping outdoors · Reducing physical activity · Adjusting cooking times · Sharing water · Using fans where electricity is available · Staying with relatives

Sleeping outside

May reduce indoor heat but can increase exposure to insecurity, mosquitoes, dust, privacy violations and sexual harassment.

Opening shelter walls

May improve airflow but can compromise safety.

Sharing a single fan or water container

May provide temporary relief but does not replace reliable infrastructure.

> *"Some days we can't even afford to buy any."*
>
> Mother of five describing water affordability, Kahda · Radio Ergo, April 2026 [10]

Households cope with high temperatures through a combination of behavioural, social and material strategies. These may include seeking shade, opening shelter sides, moving sleeping arrangements outdoors, reducing physical activity, adjusting cooking times, sharing water, using fans where electricity is available, or staying with relatives. In displacement settings, these options are constrained by privacy, security, land tenure, crowding, cost and the availability of water.

Water scarcity can force households to choose between drinking, cooking, washing and purchasing other essentials. The April 2026 MSNA reports that households in Deynile face high food and water costs and that families may have to prioritise water or food. This economic trade-off has direct implications for heat adaptation: a family that cannot afford sufficient water has fewer options to maintain hydration and hygiene during hot periods. [3]

Women and children may spend additional time collecting water, sometimes travelling to distant sources.

The MSNA records reports of child labour linked to water collection and income generation. These activities can increase time spent outdoors and disrupt schooling, while caregivers may have less time to monitor young children during extreme heat. [3]

Household coping should not be mistaken for adequate protection. Sleeping outside may reduce indoor heat but can increase exposure to insecurity, mosquitoes, dust, privacy violations and sexual harassment. Opening shelter walls may improve airflow but can compromise safety. Sharing a single fan or water container may provide temporary relief but does not replace reliable infrastructure.

Radio Ergo's April 2026 reporting from Kahda provides a direct account of water affordability pressure among displaced families. A mother of five described days when her family could not afford to buy water. The account illustrates the lived constraints that shape household adaptation, even though the report did not document a heat illness case. [10]

QUESTIONS FUTURE SITE SURVEYS SHOULD ANSWER

1. Where families sleep during hot nights
2. Whether shelters are opened or modified
3. How much water is available per person
4. How far households travel to collect water
5. Whether older people or persons with disabilities can access shade and cooling

SHM recommends that future site surveys document coping practices alongside indoor temperature and water data.

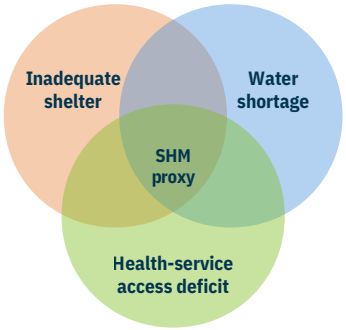
RESPONSE GAPS

15 Humanitarian assistance, protection and institutional gaps

Heat is not consistently visible as a cross-sector concern

	What is typically measured	What stays invisible
Shelter	Structural adequacy	**Indoor temperature**
WASH	Number of water points	**Affordability, queue time and distance during hot periods**
Health	General illness	**A heat-specific classification**
Protection	Mobility and safety barriers	**Link to heat alerts or cooling access**

Where gaps overlap



Heat risk cuts across several humanitarian sectors but is not consistently visible as a separate planning concern. Shelter programmes may measure structural adequacy without measuring indoor temperature. WASH programmes may count water points without recording affordability, queue time or distance during hot periods. Health services may record general illness without a heat-specific classification. Protection monitoring may identify mobility and safety barriers without linking them to heat alerts or cooling access.

The 2026 HNRP identifies high needs in health, WASH, food security, shelter and nutrition, and highlights fragile services and water-system challenges. It identifies 3.3 million IDPs and names several displacement-hosting urban centres as vulnerability hotspots. [1]

The April 2026 MSNA shows that shelter, water and health gaps overlap. Districts with high inadequate-shelter rates also report water shortages and limited health access.

SHM's screening proxy makes this overlap visible by combining the three indicators. This integrated view is more useful for heat preparedness than treating each sector separately.

Protection concerns arise when cooling spaces are distant, unsafe or inaccessible. Women and girls may avoid facilities that lack privacy or lighting. Older people may be unable to reach facilities without assistance. Persons with disabilities may be excluded by physical barriers or inaccessible communication. Children may be left in hot shelters when caregivers must travel for water or work.

Local NGOs are often close to displacement communities and can support heat-risk communication, household checks, water-point monitoring, referral and feedback mechanisms. However, local organisations need predictable funding, technical guidance, transport, data access and coordination authority. Heat preparedness should be included in local NGO response plans and municipal contingency planning.

RELATED SHM PUBLICATION

SHM's earlier publication, Anticipated Flood Displacement in Somalia (SHM-FLOOD-2026-10), examined how climate hazards can interact with displacement and essential-service pressures. The present report extends that multi-hazard approach to extreme heat and the everyday conditions of IDP shelters. The two reports should be read as complementary SHM analysis, not as a single dataset. [11]

ANALYSIS

16 SHM statistical analysis and district screening

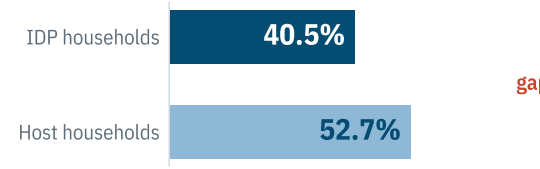
Table 7. District screening proxy, 15 districts assessed in April 2026. Values are percentages except the composite score. [3]

District	Shelter inadequacy	Water shortage	Health access deficit	Proxy score
Afgooye	82.0	67.5	64.9	71.5
Qansaxdhere	77.3	70.7	61.3	69.8
Adale	68.0	48.0	87.0	67.7
Kahda	80.5	62.3	54.5	65.8
Garasbaley	78.7	65.3	52.0	65.3
Jowhar	69.0	51.9	71.4	64.1
Buurhakaba	73.1	64.1	52.6	63.3
Barawe	71.1	59.2	50.0	60.1
Balcad	75.3	53.2	45.5	58.0
Deynile	60.0	55.8	57.1	57.6
Hudur	85.7	71.4	15.6	57.6
Heliwa	65.0	50.6	51.9	55.8
Ceelberde	38.2	39.5	63.2	47.0
Bardale	66.2	33.8	33.8	44.6
Baidoa	45.5	28.6	29.9	34.7

IDP vs host households · inadequate shelter



IDP vs host households · safe water access



SHM calculations, 15-district MSNA sample. Gaps: 18.2 and 12.2 percentage points.

1,151
MSNA respondents

86%
of households in IDP settlements

HEAT VULNERABILITY SCREENING PROXY

HVP = (SI + WS + HAD) ÷ 3

SI = inadequate shelter · WS = water shortage · HAD = health-service access deficit (100 – access). Equal weights; score 0–100. Not a temperature measurement or a validated predictor of heat illness.

SHM's statistical contribution is the integration of climate indicators with current humanitarian living-condition data. The temperature series indicates a positive trend in national annual mean surface temperature over 2011–2025. Climate-model projections indicate increasing hot-day frequency. The 2026 MSNA provides evidence of inadequate shelter, overcrowding, water shortages and health-service access deficits in 15 assessed districts.

Across the 1,151 MSNA respondents, 86% of households were in IDP settlements. Using district sample sizes as weights, SHM calculated 69.0% inadequate shelter, 55.9% overcrowding, 54.8% water shortages and 46.7% access to safe drinking water. These calculations summarise the district-level survey results and do not represent a national household prevalence estimate.

IDP-specific indicators show a larger shelter and water disadvantage. The weighted average IDP shelter inadequacy indicator was 76.5%, compared with 58.3% among host households.

IDP safe-water access averaged 40.5%, compared with 52.7% among host households. The differences are 18.2 and 12.2 percentage points respectively.

The highest proxy scores are Afgooye 71.5, Qansaxdhere 69.8, Adale 67.7, Kahda 65.8 and Garasbaley 65.3. The scores indicate a high overlap of shelter, water and health-service vulnerability. They are not a temperature measurement, a clinical risk score or a validated predictor of heat illness. Their purpose is to guide the next stage of site-level heat monitoring.

The proxy should be recalculated when updated site data become available. A future version should add local daily heat hazard, indoor temperature, humidity, shelter roof type, shade coverage, household population and distance to water and health services. A spatially weighted model would allow SHM to estimate the number of people living in sites with combined high heat hazard and high settlement vulnerability.

PLANNING

17 Five-year scenarios and exposure planning

Recommended 2027–2031 preparedness pathway

2027	2028	2029	2030	2031
Establish heat alerts, site mapping and pilot shelter measurements	Expand heat-safe shelter upgrades and accessible cooling spaces	Integrate heat-health surveillance and WASH reliability indicators into routine reporting	Scale district-level risk mapping and climate-resilient infrastructure	Institutionalise heat protection within national displacement and disaster-risk frameworks

27.42°C
central continuation by 2031, from 27.11°C in 2025
sensitivity range 27.25–27.58°C

825,000
people reached at 25% coverage

1.65 M
people reached at 50% coverage

2.475 M
people reached at 75% coverage

93.4–102.4
modelled hot days a year, 2040–2059 (baseline 77.9)

Coverage figures are programme scenarios, not confirmed counts of people already suffering from heat exposure. Temperature values are a statistical continuation of the recent trend, not an official climate projection. [4,5]

SHM's five-year temperature continuation uses the 2011–2025 regression slope of 0.0515°C per year, anchored to the 2025 annual mean of 27.11°C. The central continuation reaches approximately 27.42°C by 2031. Applying the lower and upper regression-slope sensitivity values gives approximately 27.25–27.58°C by 2031. This is a statistical continuation of the recent trend, not a substitute for official climate projections.

For programme planning, SHM uses the 3.3 million IDP population as the national reference population and models three levels of heat-protection coverage. A 25% coverage scenario reaches 825,000 people; a 50% scenario reaches 1.65 million; and a 75% scenario reaches 2.475 million. These are programme coverage scenarios and should not be described as confirmed numbers of people already suffering from heat exposure.

The CMIP6 model projection provides a longer-term signal for hot-day frequency. The median number of days with maximum temperature at or above 35°C rises from 77.9 in the 1995–2014 historical model simulation to 93.4–102.4 days in 2040–2059 across the three selected emissions scenarios. This represents approximately 15.5–24.5 additional hot days per year in the modelled period. [5]

An operational heat-response scenario should combine the climate signal with site vulnerability. For example, a district with high shelter inadequacy and water shortage should receive priority for roof improvements, water continuity, shaded spaces and health outreach even if its precise temperature ranking is not yet available. Once gridded climate and site population data are joined, SHM can calculate the number of residents living in high-hazard cells.

SHM recommends a 2027–2031 preparedness pathway. In 2027, establish heat alerts, site mapping and pilot shelter measurements. In 2028, expand heat-safe shelter upgrades and accessible cooling spaces. In 2029, integrate heat-health surveillance and WASH reliability indicators into routine reporting. In 2030, scale district-level risk mapping and climate-resilient infrastructure. By 2031, institutionalise heat protection within national displacement and disaster-risk frameworks.

These scenarios are designed to support budgeting and operational decisions. They should be updated annually as climate data, IDP site populations, household surveys and health surveillance improve.

ACTION

18 Recommendations and implementation framework

Table 8. Implementation framework and monitoring indicators

Priority action	Lead actors	Timeframe	Monitoring indicator
Heat alerts and warnings	SoDMA, meteorological and health authorities	Immediate	Sites receiving accessible alerts
Heat-safe shelter upgrades	Shelter Cluster, local NGOs, municipalities	0–12 months	Shelters meeting shade/ventilation criteria
Water continuity and affordability	WASH Cluster, water authorities, NGOs	Immediate–12 months	Water-point functionality and collection time
Accessible shaded spaces	Municipalities, CCCM, OPDs, women's groups	0–6 months	Accessible shaded spaces per priority site
Heat-health surveillance	Health authorities, WHO, clinics	0–12 months	Heat illness consultations recorded
Local preparedness finance	Donors, authorities, local NGOs	Annual cycle	Dedicated heat-risk budget lines

1 Establish a national heat-health and displacement early-warning system

The Federal Government, Somali Disaster Management Agency, meteorological services, health authorities and humanitarian partners should define heat-alert thresholds and publish accessible warnings for displacement sites. Alerts should combine temperature, humidity, duration and forecast confidence.

2 Introduce heat-safe shelter standards for IDP sites

Shelter partners should assess roof materials, shade, ventilation, overcrowding and indoor temperature. Priority upgrades should include reflective roofing, external shade, ventilated roof designs, safe openings and durable locally available materials. Standards should include fire safety, wind resistance, privacy and disability access.

3 Guarantee safe and affordable water during extreme heat

WASH actors and local authorities should monitor water-point functionality, prices, queue times, water quality and collection distance. Borehole rehabilitation, water vouchers and emergency supply should be targeted to high-vulnerability districts and designed for older people and persons with disabilities.

4 Create accessible shaded rest and cooling spaces

Municipalities, camp committees and local NGOs should identify safe public locations near high-density settlements. Facilities should provide shade, seating, drinking water, accessible toilets, safeguarding arrangements and clear operating hours. Mechanical cooling should be used selectively where reliable power and maintenance are available.

5 Strengthen heat-health services

Health authorities and partners should train frontline workers to recognise dehydration, heat exhaustion and heatstroke; introduce consistent reporting categories; ensure referral transport; and integrate heat counselling into maternal, child-health, nutrition and chronic-disease services.

6 Protect women, children, older people and persons with disabilities

Community heat plans should include accessible alerts, voluntary check-in arrangements, safe water collection, nearby rest areas and continuity of essential medicines and assistive devices. Women's groups and organisations of persons with disabilities should participate in design and monitoring.

7 Finance local preparedness

Donors should include heat-risk reduction in shelter, WASH, health and protection budgets. Local NGOs should receive timely funding for site monitoring, community communication, minor shelter upgrades, water access and referral support.

MONITORING

Implementation should be monitored through indicators such as the number of sites with heat-response plans; percentage of assessed shelters meeting minimum ventilation and shade criteria; household water collection time; water-point functionality; number of trained health workers; number of heat-related consultations; and percentage of cooling spaces meeting accessibility standards.

CONCLUSION

19 Conclusion

Climate
Positive temperature trend over 2011–2025 and rising modelled hot-day frequency

Living conditions
High rates of inadequate shelter, overcrowding and water shortage across 15 assessed districts

People
Children, pregnant and breast-feeding women, older people and persons with disabilities face distinct risks

Action
Heat alerts, safe shelter, accessible water, shaded spaces, trained health workers and locally led monitoring

> *Heat resilience should therefore be treated as a minimum component of safe and dignified living conditions for displaced communities in Somalia.*

Extreme heat is a humanitarian living-conditions issue for Somalia's internally displaced people. The national climate record shows a positive temperature trend over 2011–2025, while climate-model projections indicate a substantial increase in the annual number of days with maximum temperature at or above 35°C. The 2026 Mogadishu September indicator also shows a month that was one degree warmer than its 1991–2020 normal. These indicators establish a clear need for heat preparedness.

The current living environment magnifies that hazard. The April 2026 MSNA documents high rates of inadequate shelter, overcrowding and water shortage across 15 assessed districts. SHM's calculations show that IDP households in the assessed sample experience higher shelter inadequacy and lower safe-water access than host households. These gaps reduce the ability of displaced families to protect themselves during periods of extreme heat.

Children, pregnant and breastfeeding women, older people and persons with disabilities face distinct risks. They may be more sensitive to heat, have greater care needs or face practical barriers to reaching water, shade, cooling facilities and health services. A response that does not account for these differences will leave some households unprotected even when general services are available.

Somalia's heat response should not depend only on emergency distributions after a heat event. It requires routine measures: heat alerts, safe shelter design, accessible water, shaded communal spaces, trained health workers, disability-inclusive outreach and locally led monitoring. These actions should be integrated into existing humanitarian coordination and durable-solutions planning.

SHM concludes that adequate shelter, safe water and access to health services are fundamental elements of heat protection. Improving these conditions will reduce multiple humanitarian risks at once, including heat exposure, disease, protection threats and repeated displacement. Heat resilience should therefore be treated as a minimum component of safe and dignified living conditions for displaced communities in Somalia.

KEY EVIDENCE AT A GLANCE

+0.58°C
annual mean temperature, 2011 to 2025

93.4–102.4
modelled hot days a year, 2040–2059 (baseline 77.9)

69.0%
households with inadequate shelter

54.8%
households reporting water shortages

46.7%
access to safe drinking water

SOURCES

20 References and technical annex

References are listed below using APA-style institutional citations. All figures in the report are attributed to the source producer or identified as SHM calculations. The temperature dataset and the MSNA district tables are the principal quantitative inputs for SHM's original analysis.

TECHNICAL ANNEX

A Annual temperature series

The 2011–2025 annual mean surface temperature values are 26.53, 26.56, 26.43, 26.72, 26.78, 26.94, 26.88, 26.42, 26.94, 27.09, 26.78, 26.89, 27.02, 27.62 and 27.11°C respectively. Source: ERA5 monthly averaged data as processed by Our World in Data. [4]

B Trend model

OLS specification: $T(y) = \alpha + \beta y + \varepsilon$. The estimated β is 0.05146°C per year; decadal trend = 10β = 0.5146°C per decade; $R^2 = 0.553$. Five-year continuation is anchored to the 2025 observed value and uses the fitted slope. Sensitivity range uses the approximate 95% confidence interval of the slope and is not a full forecast interval.

C SHM district proxy

HVP = (inadequate shelter % + water shortage % + health access deficit %) / 3. Health access deficit = 100 − health service access %. District data are from the April 2026 MSNA. Scores are a screening proxy for settlement vulnerability and do not measure local heat intensity.

D Heat exposure measurement protocol

Select representative shelter types in priority districts; install calibrated indoor temperature and humidity loggers; record outdoor temperature and humidity from a nearby reliable source; measure at 15–30 minute intervals for at least seven consecutive days during hot periods; document roof/wall materials, shade, ventilation, occupancy and household water access; collect age-, sex- and disability-disaggregated service access data with consent.

E Suggested next research phase

Conduct structured household surveys and key informant interviews in Kahda, Afgooye, Baidoa, Beletweyne, Jowhar and selected rural settlements. Combine household questionnaires, indoor temperature monitoring, water-point functionality checks, clinic surveillance and participatory interviews. Obtain informed consent and protect sensitive personal data.

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GEOGRAPHIC SCOPE
Somalia, with district-level analysis for locations covered by the April 2026 MSNA.

HISTORICAL CLIMATE ANALYSIS
2011–2025 complete annual series; 2026 year-to-date indicators presented separately.

FORECAST HORIZON
2027–2031 statistical trend continuation, with longer-term CMIP6 climate projections.

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SHM

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