Afghanistan

SHOCK MONITORING INDEX - THRESHOLDS REFINEMENT

November 2025

REACH Informing more effective humanitarian action

Picture credit for cover photo:
Aftermath of the earthquake in Ghazi Abad village, Nurgal district, Kunar province, Afghanistan.
Photo: UNICEF/UNI859098/Meerzad
United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), 2025

About REACH

REACH facilitates the development of information tools and products that enhance the capacity of aid actors to make evidence-based decisions in emergency, recovery and development contexts. The methodologies used by REACH include primary data collection and in-depth analysis, and all activities are conducted through inter-agency aid coordination mechanisms. REACH is a joint initiative of IMPACT Initiatives, ACTED and the United Nations Institute for Training and Research - Operational Satellite Applications Program (UNITAR-UNOSAT). For more information, please visit our website. You can contact us directly at: geneva@reach-initiative.org.

SUMMARY

Afghanistan continues to face a complex humanitarian crisis driven by protracted conflict, economic instability, natural hazards, disease outbreaks, and large-scale displacement. The cumulative impact of these shocks has eroded community resilience and placed millions of Afghans in need of humanitarian assistance. In this context, the ability to detect, monitor, and analyze shocks in a timely and consistent manner remains essential to guide effective response planning and resource allocation. Recognizing this need, the Shock Monitoring Index (SMI) was developed to provide an evidence-based mechanism to monitor evolving shocks across the country and to better inform humanitarian decision-making.

There has been a demand to identify information gaps related to the sensitivity and accuracy of the thresholds used to classify shock severity. To address this, REACH, in collaboration with WFP, initiated a threshold sensitivity review to evaluate and refine the SMI's analytical framework.

The review revealed several areas where indicator thresholds needed recalibration. Some indicators, particularly within the Market and Disease Outbreak pillars, showed reduced sensitivity after prolonged crisis periods, causing them to overlook meaningful month-to-month shifts. Conversely, select Conflict/Violence indicators tended to overstate the severity of minor fluctuations due to low fixed thresholds, most notably in districts with consistently low incident counts. Natural hazard indicators, especially in drought and earthquake pillars have been revised while flooding indicators which derived from MSRAF data, were found largely robust, requiring no adjustment.

Key refinements introduced through this review aim to improve sensitivity of the system. Adjustments include revising fixed thresholds for civilian-targeting and battle-related incidents, refining price-based shock detection for food basket and ToT indicators and applying previous month checks. These changes enhance SMI's ability to capture both acute spikes and sustained stressors, strengthening its value as an operational early-warning and prioritization tool.

Overall, the revised thresholds improve alignment with observed shock patterns and ensure more reliable identification of emerging risks. These enhancements support the Humanitarian Needs and Response Plan (HNRP) by offering clearer evidence for geographic targeting, and severity ranking.

CONTENTS

List of Acronyms

AWD: Acute Watery Diarrhea
ACLED: Armed Conflict Location and Event Data
CCHF: Crimean-Congo Hemorrhagic Fever
CHIRPS: The Climate Hazards Group InfraRed Precipitation with Station data
JMMI: Jointly Market Monitoring Initiative
MMI: Modified Mercalli Intensity
MoPH: Ministry of Public Health
MSRAF: Multi-Sectoral Rapid Assessment Form
NDVI: Normalized Difference Vegetation Index
OCHA: Office for the Coordination of Humanitarian Affairs
SMI: Shock Monitoring Index
SPI: Standard Precipitation Index
SWE: Snow Water Equivalent
VAM: Vulnerability Analysis and Mapping
VCI: Vegetable Condition Index
WFP: World Food Program
WHO: World Health Organization
WoAA: Whole of Afghanistan Assessment

Geographical Classifications

Region: Smaller unit than Admin 0, contains several provinces (Admin 1).
Province: Primary administrative division in Afghanistan. Overall Afghanistan is divided into 34 provinces. According to OCHA administrative division, provinces are equal to Admin 1 level.
District: Sub province administrative division. Afghanistan is divided into 401 districts/admin2 units according to OCHA.

List of Figures, Tables and Maps

Figures:

Tables:

INTRODUCTION

Afghanistan is currently facing one of the world's most severe and protracted humanitarian crises, driven by the combined effects of conflict, political instability, economic collapse, and recurrent natural disasters. As of 2025, an estimated 22.9 million people (over half of the population) require humanitarian assistance,[1] while more than 5.7 million remain displaced internally and across borders.[2]

The crisis is further exacerbated by frequent shocks. According to the 2025 Whole of Afghanistan Assessment (WoAA), 85% of households reported exposure to at least one disruptive event, with drought (64%), extreme temperature events (28%), and flooding being the most common. These natural hazards contribute to the deterioration of food security, reliance on emergency livelihood coping strategies, and limited access to essential services such as water and healthcare.[3]

Afghanistan's frequent exposure to a wide range of shocks, compounded by its challenging socio-economic context, requires coordinated monitoring and response mechanisms. REACH and WFP established Shock Monitoring System (SMI) in 2023, a comprehensive analytical framework designed to systematically monitor, detect, and analyze shocks across five key pillars: Conflict/Violence, Market, Natural Hazards, Displacement, and Disease Outbreaks. SMI integrates multiple data sources, including remote sensing, open-source datasets, and humanitarian assessments, to generate monthly, district-level updates on the occurrence and severity of shocks. By standardizing indicators and thresholds across pillars, the SMI serves as monitoring tool for early warning and supports the Humanitarian Needs and Response Plan (HNRP) in data-driven prioritization and response planning.

The objective of this assessment was to evaluate the current SMI thresholds to enhance the detection and interpretation of varying shock severity levels across Afghanistan. Funded by the WFP, the assessment was conducted by REACH, ensuring that findings would complement existing monitoring exercises and support evidence-based decision-making.

[1] OCHA – Humanitarian Needs and Response Plan Afghanistan 2025: Link
[2] UNICEF – Afghanistan Delivery Summary – November 2024: Link
[3] Whole of Afghanistan Assessment (WoAA) – August 2025

METHODOLOGY

Geographical scope

The analysis covered all districts of Afghanistan where the Shock Monitoring Index has been active since its launch in April 2023. SMI systematically monitors shocks at the district level, enabling nationwide coverage with disaggregated geographic detail. This ensured that both rural and urban communities were included in the review.

As this study relied primarily on secondary data sources, no direct household or community sampling was undertaken. Instead, the population of interest included all districts monitored under the SMI framework. To validate and contextualize findings, complementary datasets were purposively selected, including the Multi-Sectoral Rapid Assessment Form (MSRAF) and OCHA natural disaster reports. While this approach ensured broad coverage and consistency, reliance on secondary sources also introduced potential biases, particularly where reporting was incomplete or uneven across provinces.

The study used the SMI as its primary dataset, which tracks both the occurrence and severity of shocks across five pillars:

- Conflict
- Disease outbreak
- Displacement
- Natural hazards
- Market

Data collection methods

Since all data have been extracted through secondary data review (SDR), no primary data collection was conducted as part of this assessment.

Analysis

The core analytical activity was a sensitivity analysis of the SMI thresholds. This involved:

- Reviewing historical shock data captured by the SMI.
- Comparing shock magnitudes and impacts reported in secondary datasets (e.g., MSRAF, OCHA).
- Assessing the alignment between SMI thresholds and real-world outcomes.

This process allowed the team to evaluate whether current thresholds adequately capture the severity of shocks and to propose adjustments where gaps were identified.

Challenges and Limitations

Several challenges were encountered during the study:

- Reliance on secondary data: the accuracy of findings depended on the availability and quality of external datasets, which varied across provinces/districts and shock types.
- Reporting gaps: incomplete or delayed reporting of certain shocks, particularly in hard-to-reach areas, may have affected trend analysis.
- Threshold comparability: differences in how external datasets define severity sometimes made direct comparison with SMI thresholds difficult.

FINDINGS

Conflict/Violence Pillar

SMI monitors conflict as one of the 5 shock pillars. Conflict through the decades has affected communities' primary needs, caused vast displacement, and led to thousands of fatalities and injuries.

District-level conflict data was obtained through the Armed Conflict Location and Event Data Project (ACLED). The conflict development and violence trends for each month were measured against annual trends to monitor any sudden or extreme rise of conflict-related shocks in each district. The indicators under the conflict pillar are number of violence-related incidents, number of battle-related incidents, number of civilian targeting-related incidents, and number of fatalities.

In order to improve the SMI's ability to more precisely detect and categorize various shock severities, the current thresholds have been reviewed.

(a) Conflict

The conflict indicator measures the monthly count of violence incidents. These incidents include all types of explosions/remote violence, violence against civilians, and battles. Four distinct severities were defined for this indicator:

Table 1: Conflict indicator thresholds

Indicator	Source	Severity	Old Threshold	New Threshold
Violence-related incidents	**ACLED**	**Very High**	Monthly incidents >= yearly average + 3 Standard deviations and minimum of 10 incidents	Monthly incidents >= yearly average + 3 Standard deviations and minimum of 10 incidents
		High	Monthly incidents >= yearly average + 2 Standard deviations and minimum of 10 incidents	Monthly incidents >= yearly average + 2 Standard deviations and minimum of 8 incidents
		Moderate	Monthly incidents >= yearly average + 1 Standard deviation	Monthly incidents >= yearly average + 1 Standard deviation
		No Shock	Monthly incidents < yearly average + 1 Standard deviation	Monthly incidents < yearly average + 1 Standard deviation

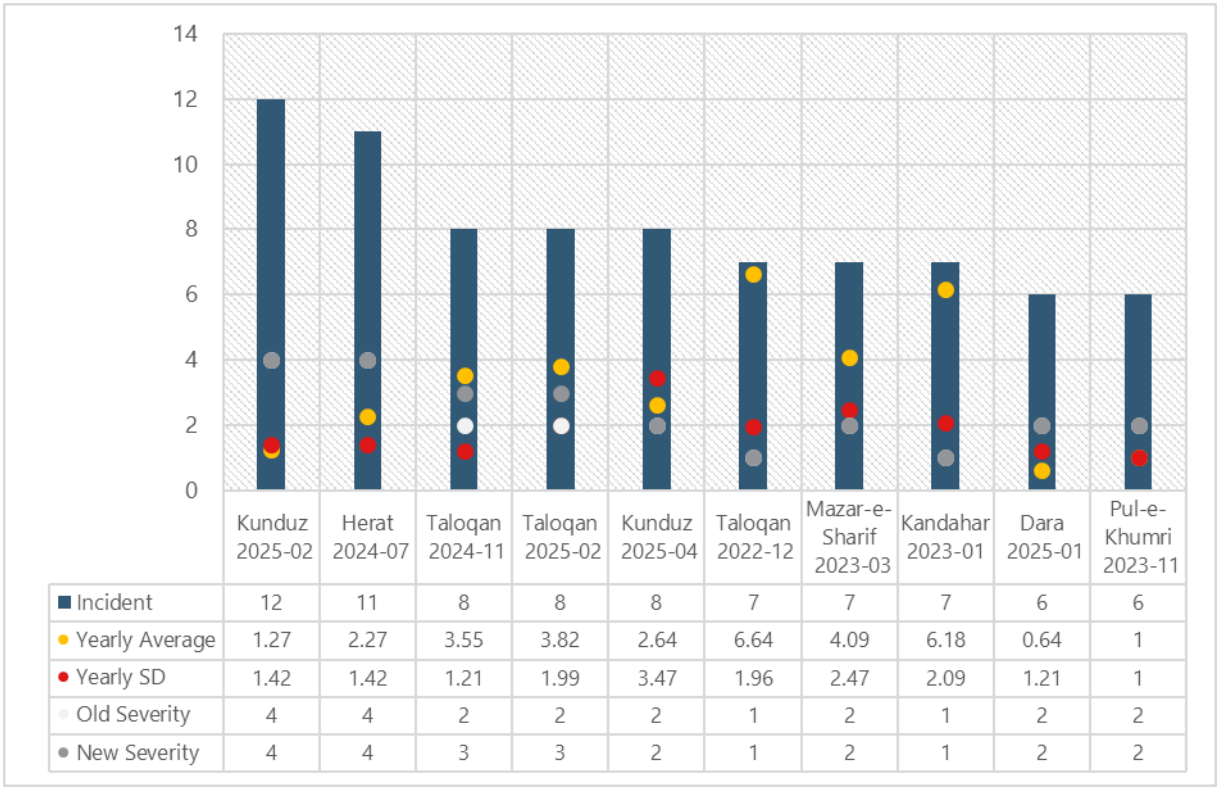
The current thresholds examine the number of incidents occurring in relation to the yearly mean and standard deviation. In addition, the thresholds for high and very high severity levels consider a fixed number of 10 incidents.

Adjustment: The current spike detection approach relies on the yearly average and standard deviation. This method is effective at flagging values that fall outside the expected range. However,

this has certain limitations. For example, if a large number of incidents occur during the analysis period, both the mean and standard deviation increase. As a result, the thresholds become more normalized, making it harder to detect new spikes in subsequent months.

In order to make the thresholds more sensitive in districts affected by a higher number of shocks, the severity 3 threshold was adjusted to "monthly incidents more than yearly average + 2 standard deviations with minimum of 8." As shown in *Figure 1*, the "*New Severity*" represents the updated severity levels after adjusting the fixed threshold values.

Figure 1: Old and new severity levels in districts with a high number of conflict incidents



	Kunduz 2025-02	Herat 2024-07	Taloqan 2024-11	Taloqan 2025-02	Kunduz 2025-04	Taloqan 2022-12	Mazar-e-Sharif 2023-03	Kandahar 2023-01	Dara 2025-01	Pul-e-Khumri 2023-11
Incident	12	11	8	8	8	7	7	7	6	6
Yearly Average	1.27	2.27	3.55	3.82	2.64	6.64	4.09	6.18	0.64	1
Yearly SD	1.42	1.42	1.21	1.99	3.47	1.96	2.47	2.09	1.21	1
Old Severity	4	4	2	2	2	1	2	1	2	2
New Severity	4	4	3	3	2	1	2	1	2	2

(b) Battles

The battle indicator derived from the ACLED dataset was designed to measure the monthly count of battle incidents**.** Four distinct severities were defined for this indicator:

Table 2: Battle indicator severity thresholds

Indicator	Source	Severity	Old Threshold	New Threshold
Battle-related incidents	**ACLED**	**Very High**	Monthly incidents >= yearly average + 3 Standard deviations and minimum of 3 incidents	Monthly incidents >= yearly average + 3 Standard deviations and minimum of 5 incidents
		High	Monthly incidents >= yearly average + 2 Standard deviations and minimum of 2 incidents	Monthly incidents >= yearly average + 2 Standard deviations and minimum of 4 incidents

		Moderate	Monthly incidents >= yearly average + 1 Standard deviation	Monthly incidents >= yearly average + 1 Standard deviation
		No Shock	Monthly incidents < yearly average + 1 Standard deviation	Monthly incidents < yearly average + 1 Standard deviation

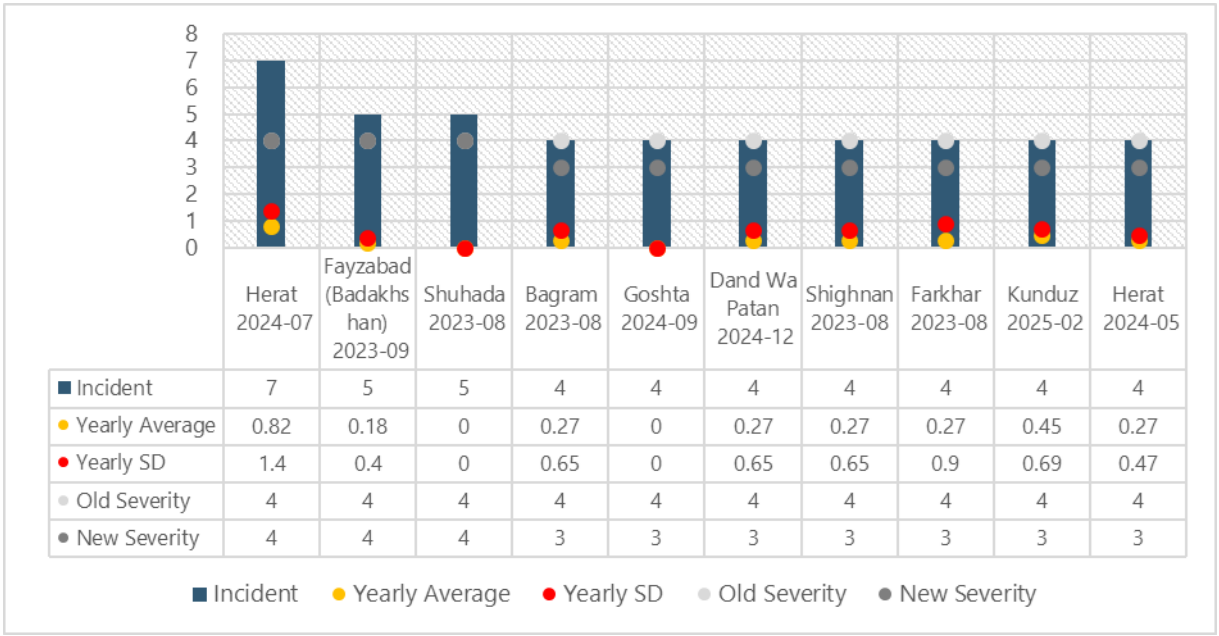
As with the conflict indicator, the battles indicator also relies on yearly mean and standard deviation for determining shock severities.

By analyzing different districts, the fixed number used in the thresholds appears to be too low, leading to the triggering of higher severity levels in cases that do not represent major spikes. For example, in Bagram district of Parwan province, the number of cases is 2-3 times above the yearly mean plus standard deviation, while the actual monthly number of cases remains very low. Despite this, the district is classified as high severity, even though it does not reflect a major increase in incidents. Similarly, in Kunduz district, a small number of incidents resulted in high severity classification: in December 2024, just two cases led to a severity level of 3, and in February 2025, four cases were categorized as severity level 4.

Adjustment: Given concerns about the low fixed number for thresholds, revisions have been made. Going forward, a minimum of five cases will be required to trigger severity level 4 and a minimum of four cases for severity level 3.

As shown in *Figure 2*, the "*New Severity*" represents the updated severity levels after adjusting the fixed threshold values.

Figure 2: Old and new severity levels in districts with a high number of battle incidents



	Herat 2024-07	Fayzabad (Badakhshan) 2023-09	Shuhada 2023-08	Bagram 2023-08	Goshta 2024-09	Dand Wa Patan 2024-12	Shighnan 2023-08	Farkhar 2023-08	Kunduz 2025-02	Herat 2024-05
Incident	7	5	5	4	4	4	4	4	4	4
Yearly Average	0.82	0.18	0	0.27	0	0.27	0.27	0.27	0.45	0.27
Yearly SD	1.4	0.4	0	0.65	0	0.65	0.65	0.9	0.69	0.47
Old Severity	4	4	4	4	4	4	4	4	4	4
New Severity	4	4	4	3	3	3	3	3	3	3

(c) Civilian Targeting

Another key indicator under the Conflict/Violence pillar is the number of incidents, specifically targeting civilians. This measure draws on all forms of violence recorded in the ACLED dataset where civilian targeting is identified. The thresholds established for this indicator are presented in *Table 3*. As with other indicators under the Conflict/Violence pillar, the civilian targeting indicator applies the yearly average and standard deviation to determine shock severity levels.

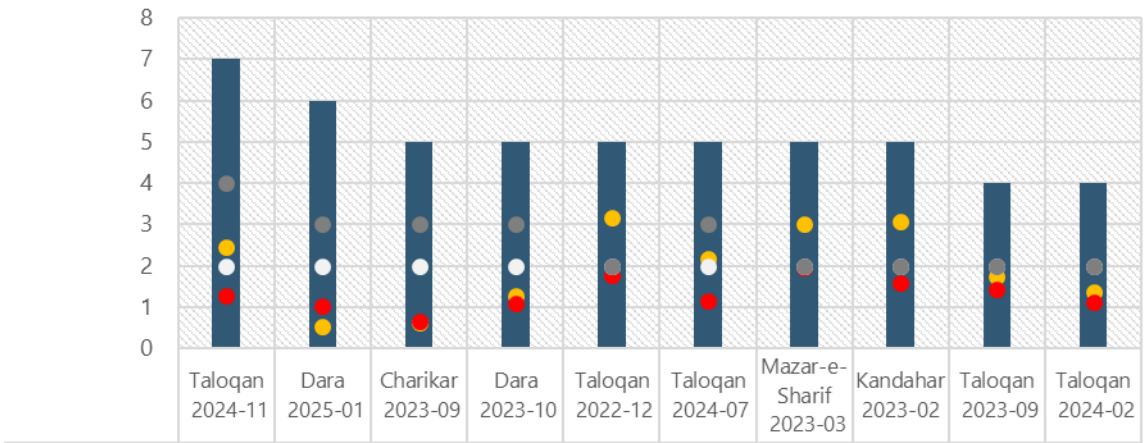
Table 3: Civilian targeting indicator thresholds

Indicator	Source	Severity	Old Threshold	New Threshold
Civilian Targeting-related incidents	**ACLED**	**Very High**	Monthly incidents >= yearly average + 3 Standard deviations and minimum of 10 incidents	Monthly incidents >= yearly average + 3 Standard deviations and minimum of 7 incidents
		High	Monthly incidents >= yearly average + 2 Standard deviations and minimum of 10 incidents	Monthly incidents >= yearly average + 2 Standard deviations and minimum of 5 incidents
		Moderate	Monthly incidents >= yearly average + 1 Standard deviation	Monthly incidents >= yearly average + 1 Standard deviation
		No Shock	Monthly incidents < yearly average + 1 Standard deviation	Monthly incidents < yearly average + 1 Standard deviation

A review of the SMI data shows that the fixed number set in the thresholds is relatively high. Given the sensitivity of this indicator, even a small number of incidents may represent a serious protection risk for affected communities, potentially leading to greater consequences. For instance, Taloqan district in Takhar province, with seven recorded incidents, is classified at moderate severity, as is Dara district in Panjshir province, with six incidents. These classifications suggest that the current thresholds may underestimate the protection risks associated with relatively low but highly impactful levels of violence against civilians.

Adjustment: As a result, the minimum threshold for very high severity was set at seven incidents, while the threshold for high severity was set at five incidents. The *"New Severity"* column in *Figure 3* presents the reclassified severity levels following the application of these revised thresholds.

Figure 3: Old and new severity levels in districts with a high number of incidents involving violence against civilians



	Taloqan 2024-11	Dara 2025-01	Charikar 2023-09	Dara 2023-10	Taloqan 2022-12	Taloqan 2024-07	Mazar-e-Sharif 2023-03	Kandahar 2023-02	Taloqan 2023-09	Taloqan 2024-02
Incident	7	6	5	5	5	5	5	5	4	4
Yearly Average	2.45	0.55	0.64	1.27	3.18	2.18	3	3.09	1.73	1.36
Yearly SD	1.29	1.04	0.67	1.1	1.78	1.17	1.95	1.58	1.42	1.12
Old Severity	2	2	2	2	2	2	2	2	2	2
New Severity	4	3	3	3	2	3	2	2	2	2

(d) Fatalities

The fourth indicator under the Conflict/Violence pillar of the SMI is fatalities, which monitors the number of casualties reported for each incident based on the ACLED data. The thresholds for this indicator, as with other Conflict/Violence indicators, are calculated using the yearly average and standard deviation, as shown in *Table 4*.

Table 4: Fatalities/Casualties indicator thresholds

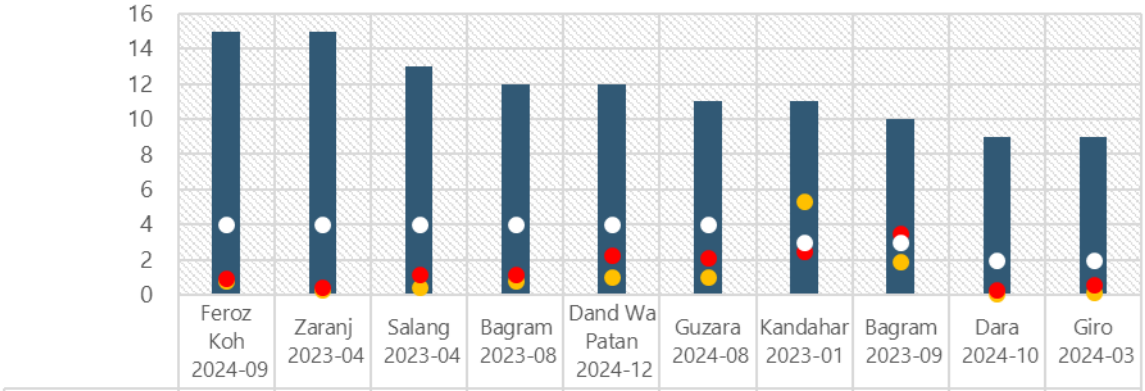
Indicator	Source	Severity	Ranking/Thresholds
Fatalities	**ACLED**	**Very High**	Monthly incidents >= yearly average + 3 Standard deviations and minimum of 10 incidents
		High	Monthly incidents >= yearly average + 2 Standard deviations and minimum of 10 incidents
		Moderate	Monthly incidents >= yearly average + 1 Standard deviation
		No Shock	Monthly incidents < yearly average + 1 Standard deviation

Applying yearly averages together with standard deviations has proven effective in classifying higher fatality counts into higher severity levels. Hotspot analysis indicates that most areas with elevated severities correspond to relatively low yearly means, suggesting that casualty figures were concentrated in specific months. This demonstrates the system's sensitivity in detecting sudden spikes in fatalities.

However, following August 2021, incident reporting patterns and recorded fatality incidents changed, with lower counts observed in the data used for this analysis. As such, the system was deliberately designed to remain sensitive to the current security context.

No adjustment: Overall, the existing thresholds for this indicator remain appropriate, and no revisions are recommended at this stage.

Figure 4: Old and new severity levels in districts with a high number of fatalities



	Feroz Koh 2024-09	Zaranj 2023-04	Salang 2023-04	Bagram 2023-08	Dand Wa Patan 2024-12	Guzara 2024-08	Kandahar 2023-01	Bagram 2023-09	Dara 2024-10	Giro 2024-03
Incident	15	15	13	12	12	11	11	10	9	9
Yearly Average	0.82	0.27	0.45	0.82	1	1	5.36	1.91	0.09	0.18
Yearly SD	0.98	0.47	1.21	1.17	2.24	2.1	2.5	3.53	0.3	0.6
Severity	4	4	4	4	4	4	3	3	2	2

Market Pillar

Market dynamics play a critical role in shaping humanitarian needs in Afghanistan, where households rely heavily on markets for access to food and essential goods. Prolonged economic decline, combined with recurrent shocks such as drought, floods, and conflict, have disrupted supply chains and driven volatility in prices of staple commodities. High levels of unemployment and reduced income opportunities further limit people's purchasing power, leaving large segments of the population vulnerable to food insecurity. In this context, monitoring market trends is essential for understanding the extent to which shocks affect both availability and affordability of basic goods.

The Market pillar of the SMI was designed to systematically track fluctuations in food prices, wage-to-food purchasing power, and pastoral terms of trade. These indicators highlight the economic pressures faced across rural and urban settings, where even small shifts in prices or wages can have major consequences on needs.

(a) Food Basket Evolution

The Food Basket Evolution indicator was designed to monitor fluctuations in the prices of basic food commodities in local markets. This reflects changes in the cost of a minimum in-kind food basket, representing the essential items required to meet a household's basic dietary needs. The primary data sources for this indicator are the REACH Joint Market Monitoring Initiative (JMMI) and the WFP Vulnerability Analysis and Mapping (VAM) datasets.

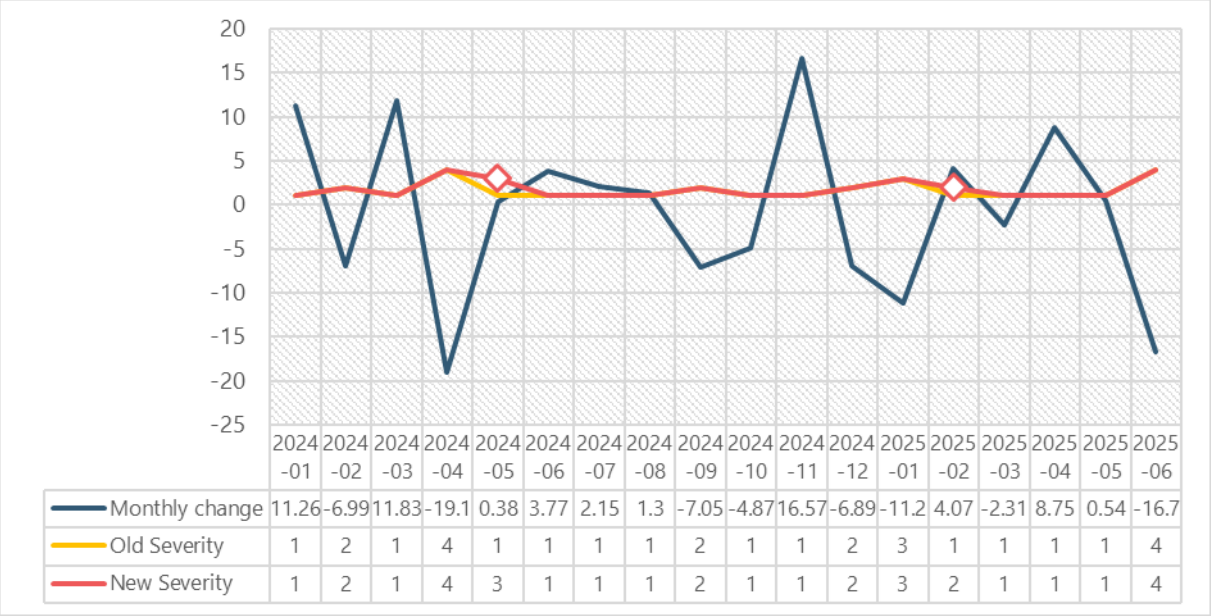
The in-kind food basket is defined by WFP as follows:
Food Basket = (100 kg Wheat Flour) + (9.1 L Vegetable Oil) + (12.5 kg Pulses) + Salt.
The current thresholds effectively capture major price fluctuations. However, one key limitation is its inability to detect sustained high price levels when the month-over-month change is minimal or zero. This can result in underestimating the severity of ongoing price pressures following a major spike. For example, if a district records a 10% price increase compared to the previous month, it is classified as severity 3. However, in the following month, if prices remain stable (0% increase), the area is classified as severity 1. This approach fails to capture the fact that prices are still 10% higher overall compared to month earlier, even though no new increase occurred.

Table 5: Food basket evolution indicator thresholds

Indicator	Source	Severity	Old Threshold	New Threshold
Food Basket Evolution	**REACH JMMI/WFP VAM**	**Very High**	Monthly change >= 15%	Monthly change >= 15%
		High	Monthly change >= 10%	Monthly change >= 10% OR (Monthly change >= -5% AND Previous month change >= 15%)
		Moderate	Monthly change >= 5%	Monthly change >= 5% OR (Monthly >= -5% AND Previous month change >= 10%)
		No Shock	Monthly change < 5%	Monthly change < 5%

Adjustment: To address this, it is recommended to incorporate the previous month when the current month's change is minimal. This approach will help flag cases where high prices persist, even without further monthly increases between two months.

Figure 5: Old and new food basket evolution severities for Karukh district of Hirat province



	2024-01	2024-02	2024-03	2024-04	2024-05	2024-06	2024-07	2024-08	2024-09	2024-10	2024-11	2024-12	2025-01	2025-02	2025-03	2025-04	2025-05	2025-06
Monthly change	11.26	-6.99	11.83	-19.1	0.38	3.77	2.15	1.3	-7.05	-4.87	16.57	-6.89	-11.2	4.07	-2.31	8.75	0.54	-16.7
Old Severity	1	2	1	4	1	1	1	1	2	1	1	2	3	1	1	1	1	4
New Severity	1	2	1	4	3	1	1	1	2	1	1	2	3	2	1	1	1	4

(b) Casual Labor Terms of Trade

The casual labor ToT indicator measures the amount of food basket that can be purchased with a casual laborer's monthly income, using WFP VAM data as the primary source.

Severity thresholds are based on the percentage change in the ToT compared to the previous month, with higher negative changes reflecting increased vulnerability and potential food insecurity.
The current thresholds for this indicator are as follows:

Table 6: Casual labor ToT indicator thresholds

Indicator	Source	Severity	Old Threshold	New Threshold
Casual Labor ToT	**WFP VAM**	**Very High**	Monthly change <= -30%	ToT <= 30% OR (ToT <= 50% AND Monthly change[4] <= -25%)
		High	Monthly change <= -20%	(ToT <= 50% AND Monthly change > -25%) OR (ToT <= 80% AND Monthly change <= -25%)
		Moderate	Monthly change <= -10%	ToT <= 80% AND Monthly change > -25%
		No Shock	Monthly change > -10%	ToT > 80%

Following the hotspot and data review, a key limitation observed with the existing month-to-month thresholds was their tendency to overstate severity in periods where ToT ratio increased or fluctuated moderately. For example, even temporary month-to-month declines triggered high severity scores, while longer phases of persistently low ToT ratio were not always adequately captured. This created misalignment between the actual situation and the classified severity.

As an example, in Badakhshan province, under the current thresholds, December 2024 is classified as Severity 1 due to recording a 0% change in ToT ratio compared to the previous month. However, the ratio remained chronically low at only 25%, highlighting a severe and protracted affordability crisis that the thresholds failed to capture adequately.

Table 7: Casual labor ToT and the % of monthly changes for Badakhshan province

Province	Province Code	Casual Labor ToT	Casual Labor ToT (previous month)	Monthly Change	Month
Badakhshan	AF17	60.76%	56.52%	7.5%	2025-06
Badakhshan	AF17	56.52%	51.91%	8.9%	2025-05
Badakhshan	AF17	51.91%	29.00%	79.0%	2025-04
Badakhshan	AF17	29.00%	18.98%	52.8%	2025-03
Badakhshan	AF17	18.98%			2025-02
Badakhshan	AF17		25.43%		2025-01

[4] Percentage (%) of change in ToT compared to previous month

Badakhshan	AF17	25.43%	25.43%	0.0%	2024-12
Badakhshan	AF17	25.43%	25.90%	-1.8%	2024-11
Badakhshan	AF17	25.90%	26.43%	-2.0%	2024-10
Badakhshan	AF17	26.43%	26.37%	0.2%	2024-09
Badakhshan	AF17	26.37%	25.82%	2.2%	2024-08
Badakhshan	AF17	25.82%	25.67%	0.6%	2024-07
Badakhshan	AF17	25.67%	25.31%	1.4%	2024-06
Badakhshan	AF17	25.31%	25.46%	-0.6%	2024-05
Badakhshan	AF17	25.46%	25.28%	0.7%	2024-04

Adjustment: To address this, the proposed approach combines absolute ToT ratio thresholds with monthly change. This hybrid method allows the system to capture both the structural vulnerability of living with chronically low ToT ratio and the acute shocks reflected in sharp monthly declines, offering a more reliable picture of stress condition. Under this system, severity is categorized more meaningfully:

Table 8: New thresholds for casual labor ToT

Casual Labor ToT	Monthly Change > -25%	Monthly Change <= -25%
> 80%	Severity 1	Severity 1
50% - 80%	Severity 2	Severity 3
30% - 50%	Severity 3	Severity 4
< 30%	Severity 4	Severity 4

(c) Pastoral Terms of Trade

The Pastoral Terms of Trade, derived from WFP VAM market data, is designed to track how many kilograms of wheat can be purchased from the sale of a one-year-old live female sheep. This indicator, under the Market pillar of the SMI, reflects shifts in livestock-to-cereal exchange values and provides an important measure of market dynamics affecting pastoral communities.

Severity classification for this indicator is determined by the month-to-month percentage change, with four distinct thresholds as follows:

Table 9: Pastoral ToT Indicator Threshold Table

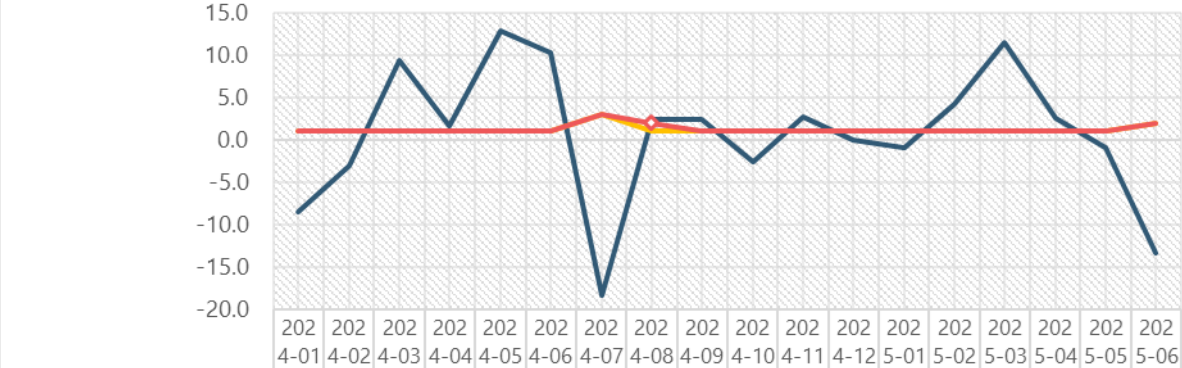
Indicator	Source	Severity	Old Threshold	New Threshold
Pastoral ToT	**WFP VAM**	**Very High**	Monthly change <= -27%	Monthly change <= -27%
		High	Monthly change <= -18%	Monthly change <= - 18% OR (Monthly change <= 5% AND Previous Month change <= -27%)
		Moderate	Monthly change <= -9%	Monthly change <= -9% OR Monthly change <= 5% AND Previous month change <= -18%

		No Shock	Monthly change > -9%	Monthly change > -9%

Similar to the Food Basket Evolution indicator, the Pastoral Terms of Trade indicator faces a comparable limitation, its inability to capture sustained declines when monthly changes are minimal or near zero.

Adjustment: To address this issue, thresholds should consider both the current and previous month's changes. For instance, in Faryab province, a 2.3% increase was recorded in August 2024, which under the previous thresholds would be classified as severity 1. However, this classification overlooks the -18% decrease observed in the preceding month. Under the revised thresholds, this cumulative decline would now be classified as severity 2, more accurately reflecting the ongoing deterioration in pastoral ToT conditions.

Figure 6: Old and new pastoral ToT severities in Faryab province



	2024-01	2024-02	2024-03	2024-04	2024-05	2024-06	2024-07	2024-08	2024-09	2024-10	2024-11	2024-12	2025-01	2025-02	2025-03	2025-04	2025-05	2025-06
Monthly Change	-8.4	-3.1	9.4	1.7	12.8	10.3	-18.3	2.4	2.5	-2.6	2.7	0.0	-0.8	4.2	11.5	2.6	-0.9	-13.3
Old Severity	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	2
New Severity	1	1	1	1	1	1	3	2	1	1	1	1	1	1	1	1	1	2

Disease Outbreaks

Recurrent disease outbreaks remain a critical challenge in Afghanistan's humanitarian landscape, where decades of conflict, underinvestment in public health, and widespread poverty have severely undermined the health system. Limited access to clean water and sanitation, poor vaccination coverage, and frequent population movements due to displacement create fertile ground for the rapid spread of communicable diseases. Outbreaks of measles, acute watery diarrhea (AWD), and Crimean-Congo Hemorrhagic Fever (CCHF) have been repeatedly recorded in recent years.

The Disease Outbreaks pillar of the SMI provides a structured framework for tracking and categorizing these recurrent health shocks, by systematically monitoring trends in AWD with dehydration, measles, and CCHF via the WHO Outbreak Dashboard for Afghanistan.

(a) Acute Watery Diarrhea (AWD) with Dehydration

The Acute Watery Diarrhea (AWD) with dehydration indicator monitors spikes in AWD cases with dehydration, particularly in the context of long-term trends and seasonal variations. Given that AWD is considered a seasonal and endemic disease in Afghanistan, a more tailored and statistically grounded approach is required for its classification. As recommended by the Ministry of Public Health (MoPH),

such diseases should be monitored using statistical thresholds based on the mean and standard deviation of reported cases over time. This ensures timely detection of anomalies that may indicate the onset of an alert or outbreak phase.

The thresholds used for this indicator follow the MoPH's case definitions and outbreak detection guidance,[5] and are structured across four severity levels as follows:

Table 10: Acute Watery Diarrhea (AWD) with dehydration indicator thresholds

Indicator	Source	Severity	Ranking/Thresholds
Acute Watery Diarrhea (AWD) with Dehydration	**WHO outbreak dashboard for Afghanistan**	**Very High**	Monthly cases >= yearly average + 3 Standard deviations and minimum of 10 incidents
		High	Monthly cases >= yearly average + 2 Standard deviations and minimum of 10 incidents
		Moderate	Monthly cases >= yearly average + 1 Standard deviation
		No Shock	Monthly cases < yearly average + 1 Standard deviation

In assessing the effectiveness of the current classification thresholds for the AWD with dehydration indicator, a detailed review of historical outbreak data from 2023 onward was conducted across several districts. While alternative models such as Z-score based classification, moving average anomaly detection, and population-based case rate thresholds were explored, the outcomes demonstrated a high level of similarity to the existing threshold system. This convergence validates the structure currently in place.

Importantly, the MoPH of Afghanistan explicitly recommends the use of statistical thresholds, specifically mean and SD-based calculations, for detecting and flagging trends in seasonal or endemic disease.

No adjustment: Given that AWD is classified as a seasonal and endemic health threat, retaining the current methodology is both technically sound and in full compliance with national disease surveillance protocols. Therefore, the existing classification thresholds remain appropriate and will be upheld in the revised monitoring framework.

(b) Measles

The Measles indicator is also derived from the WHO Outbreak Dashboard. Measles is a highly contagious viral disease that disproportionately affects children, especially in areas with limited vaccination coverage and weak healthcare access.

[5] MoPH's case definition & alert/outbreak thresholds: Link

Severity for this indicator is determined using the mean and standard deviation approach, similar to the methodology applied for the AWD with dehydration indicator. This method enables the detection of major spikes in reported cases and ensures that unusual outbreaks are flagged for timely response.

The thresholds applied for this indicator are as follows:

Table 11: Measles indicator thresholds

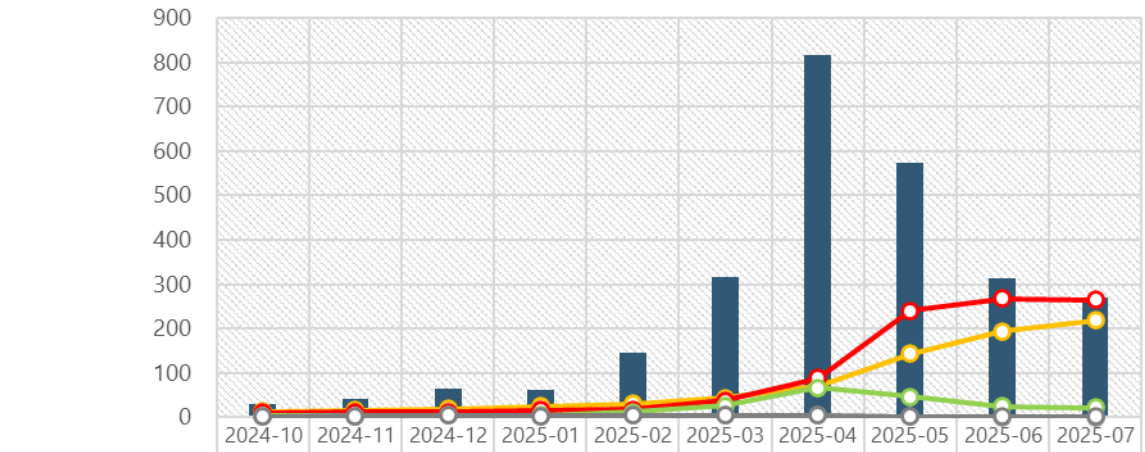
Indicator	Source	Severity	Old Threshold	New Threshold
Measles	**WHO outbreak dashboard for Afghanistan**	**Very High**	Monthly cases >= yearly average + 3 Standard deviations and minimum of 10 incidents	Monthly cases >= yearly average + 3 Standard deviations and minimum of 10 incidents
		High	Monthly cases >= yearly average + 2 Standard deviations and minimum of 10 incidents	Monthly cases >= yearly average + 2 Standard deviations and minimum of 10 incidents
		Moderate	Monthly cases >= yearly average + 1 Standard deviation	(Monthly cases >= yearly average + 1 Standard deviation) OR cases per 10,000 >= 3.0
		No Shock	Monthly cases < yearly average + 1 Standard deviation	Monthly cases < yearly average + 1 Standard deviation

Following the review, the application of a *mean + standard deviation* approach proved effective in detecting sudden spikes of measles cases, particularly during the onset and peak of outbreaks. It successfully classified large surges as high severity events, providing timely signals of epidemic activity. However, the system showed important limitations: as case counts rose sharply, the rolling mean and standard deviation also inflated, which reduced sensitivity in subsequent months. This resulted in the under-classification of extended outbreak phases, even when absolute caseloads remained high.

For instance, in Fayzabad district of Badakhshan province, 312 cases were reported in June 2025 and 271 in July 2025, yet both months were classified as severity 1, clearly underestimating the seriousness of the situation.

Adjustment: To address this limitation, a hybrid approach was introduced by adding an attack rate floor of ≥3.0 per 10,000 population to the severity 2 category. This adjustment ensures that sustained high transmission is not downgraded to "no shock" levels, thereby improving the continuity and reliability of outbreak detection. *Figure 7* shows the old and new severities for the measles indicator in Fayzabad district in Badakhshan province.

Figure 7: Old and new measles severities in Fayzabad district of Badakhshan province



	2024-10	2024-11	2024-12	2025-01	2025-02	2025-03	2025-04	2025-05	2025-06	2025-07
Cases	31	41	64	63	145	315	816	574	312	271
Yearly Average	13.09	15.91	19.64	25.27	30.82	43.27	70.64	142.82	193.36	219
Yearly SD	11.16	11.43	12.37	16.85	18.39	37.67	88.85	239.75	267.78	264.05
case_per_10K	2.54	3.36	5.24	5.16	11.87	25.78	66.77	46.97	25.53	22.18
Old Severity	2	3	4	3	4	4	4	2	1	1
New Severity	2	3	4	3	4	4	4	2	2	2

(c) Crimean-Congo Hemorrhagic Fever (CCHF)

The Crimean-Congo Hemorrhagic Fever (CCHF) indicator also utilizes data from the WHO Outbreak Dashboard to monitor major spikes cases. CCHF is a viral disease transmitted primarily through tick bites or contact with infected livestock and is associated with a high fatality rate. In Afghanistan, where agriculture and animal husbandry form a significant part of rural livelihoods, communities are particularly vulnerable to outbreaks.

Severity for this indicator is determined using the mean and standard deviation approach, which allows the system to detect unusual increases in reported cases. The thresholds are as follows:

Table 12: CCHF indicator thresholds

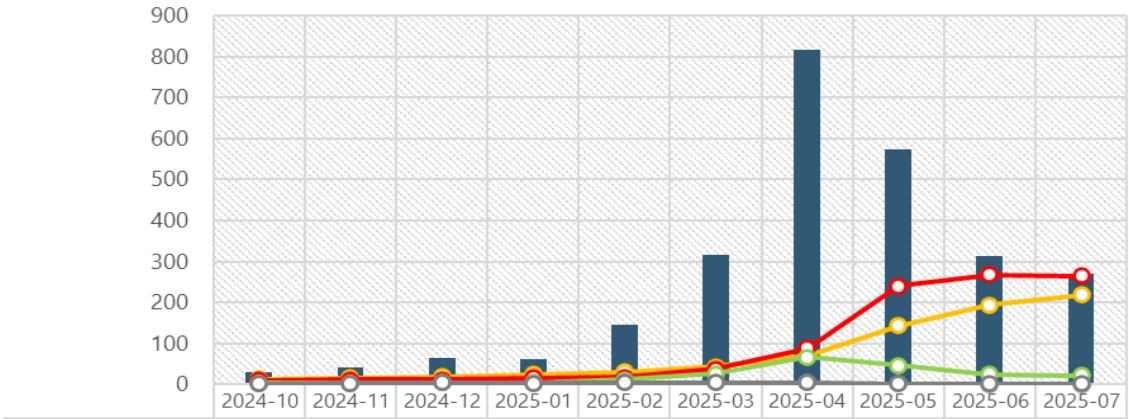
Indicator	Source	Severity	Old Threshold	New Threshold
Crimean-Congo Hemorrhagic Fever (CCHF)	**WHO outbreak dashboard for Afghanistan**	**Very High**	Monthly cases >= yearly average + 3 Standard deviations and minimum of 10 incidents	Monthly cases >= yearly average + 3 Standard deviations and minimum of 10 incidents
		High	Monthly cases >= yearly average + 2 Standard deviations and minimum of 10 incidents	Monthly cases >= yearly average + 2 Standard deviations and minimum of 10 incidents
		Moderate	Monthly cases >= yearly average + 1 Standard deviation	(Monthly cases >= yearly average + 1 Standard deviation) OR cases per 100,000 >= 2.0

		No Shock	Monthly cases < yearly average + 1 Standard deviation	Monthly cases < yearly average + 1 Standard deviation

The application of the severity classification framework to CCHF revealed that the system is capable of detecting major outbreak events, such as the sharp peaks in different areas. The use of mean and standard deviation effectively captured large, abrupt increases in cases. However, in districts with a very low baseline case count, the rolling mean and standard deviation can be inflated by previous peaks, reducing the system's sensitivity in subsequent months. This led to under-classification of moderate increase that may still warrant closer public health attention.

Adjustment: An attack threshold (≥2 per 100,000 population) was added in order to enhance the indicator's sensitivity to smaller but epidemiologically meaningful increases that would otherwise have been underestimated. Overall, this hybrid approach with attack rate appears more reliable than the *mean + standard deviation* approach alone.

Figure 8: Old and new CCHF severities in Mahmood Raqi district in Kapisa province



	2024-10	2024-11	2024-12	2025-01	2025-02	2025-03	2025-04	2025-05	2025-06	2025-07
Cases	31	41	64	63	145	315	816	574	312	271
Yearly Average	13.09	15.91	19.64	25.27	30.82	43.27	70.64	142.82	193.36	219
Yearly SD	11.16	11.43	12.37	16.85	18.39	37.67	88.85	239.75	267.78	264.05
case_per_10K	2.54	3.36	5.24	5.16	11.87	25.78	66.77	46.97	25.53	22.18
Old Severity	2	3	4	3	4	4	4	2	1	1
New Severity	2	3	4	3	4	4	4	2	2	2

Displacement

(a) Cross-Border Returnees (Pakistan & Iran)

Drawing on data collected through the IOM-Border Consortium, the cross-border returnee indicator plays a critical role in monitoring the total number of households returning to Afghanistan from Pakistan and Iran.

Historically, the severity classification for this indicator has been based solely on absolute household counts, without accounting for population size or context of the receiving area. As a result, the existing

thresholds may not accurately reflect the relative impact of returnee flows in different districts, particularly where population sizes vary significantly.
The current set of thresholds are as follows:

Table 13: Cross-Border returnee indicator thresholds

Indicator	Source	Severity	Old Thresholds	New Thresholds
Cross Border Returnee (Pakistan – Iran)	**IOM-Border Consortium**	**Very High**	Returnee households >= 300HH	*Pop_Ratio ≥ 1.0% AND ≥ 100 returnee households*
		High	Returnee households >= 100HH	*Pop_Ratio ≥ 0.3% AND ≥ 30 returnee households*
		Moderate	Returnee households >= 30HH	*Pop_Ratio ≥ 0.05%*
		No Shock	Returnee households < 30HH	*Pop_Ratio < 0.05%*

In assessing the effectiveness of the existing displacement severity thresholds, a key challenge was the inability of the original system to account for differences in population size across districts. The previous model relied solely on absolute returnee household count, which often led to over- or underestimating shock severity, particularly in districts with either very large or very small populations.

To address this, two alternative approaches were explored: (1) a percentage-based model, using the returnee-to-population ratio, and (2) a hybrid model, combining both absolute household count and population-relative ratio.

Table 14: Alternative thresholds based on population ratio and fixed number of returnee households

Severity	New Thresholds (Population Ratio)	New Thresholds (Hybrid)
Very High	*Pop_Ratio >= 1%*	*Pop_Ratio ≥ 1.0% AND ≥ 100 returnee households*
High	*Pop_Ratio >= 0.3%*	*Pop_Ratio ≥ 0.3% AND ≥ 30 returnee households*
Moderate	*Pop_Ratio >= 0.05%*	*Pop_Ratio ≥ 0.05%*
Low	*Pop_Ratio < 0.05%*	*Pop_Ratio < 0.05%*

While the percentage-only model improved sensitivity in smaller districts, it introduced issues where very small numbers of returnees (e.g., fewer than 10 households) could be classified as high-severity shocks due solely to low population denominators. This made the results difficult to justify and explain.

The hybrid threshold model, which applies minimum absolute household thresholds alongside relative population impact (%), emerged as the most balanced and contextually appropriate solution. It ensures that severity classifications are proportional to district size, small returnee numbers do not trigger exaggerated severity, and the outputs remain intuitive and explainable in both analytical and field reporting contexts.

Adjustment: The thresholds from the hybrid model, which apply minimum absolute household counts alongside relative population impact, should replace the existing thresholds as it provides a more accurate reflection of displacement severity while maintaining interpretability across stakeholders.

(b) Forced Eviction

This indicator is derived from reported cases of forced evictions provided by the CCCM Working Group. Forced eviction events exacerbate humanitarian needs by displacing vulnerable households and increasing their exposure to protection risks. As such, this indicator serves as an important measure for monitoring involuntary displacement at the district level.

Severity classification for this indicator is based on absolute household counts, with the corresponding thresholds presented in *Table 15*.

Table 15: Forced Eviction indicator thresholds

Indicator	Source	Severity	Thresholds
Forced Eviction	**CCCM**	**Very High**	Evicted households >= 150HH
		High	Evicted households >= 100HH
		Moderate	Evicted households >= 50HH
		No Shock	Evicted households < 50HH

It is important to note, however, that no recent data has been received from the source. In the event of a prolonged data suspension, there may be a need to reconsider or remove this indicator from future monitoring.

No adjustment: The current thresholds for this indicator remain unchanged, and no revisions are recommended at this stage.

Natural Hazards

Drought

The drought sub-pillar in the SMI monitors drought shock levels through various indicators derived from remote sensing data. These indicators are categorized into three types of droughts: meteorological, hydrological, and agricultural.

For this study, drought indicators and their thresholds were evaluated in districts where drought-affected families were reported through field data collection. The field data was collected via the Multisectoral Rapid Assessment Form (MSRAF) in 2018 and 2023.

(a) Meteorological Drought

Meteorological drought in SMI contains two indicators:

1. Accumulated Precipitation 6 Month:
2. Standard Precipitation Index 3 months (SPI-3)

(i) Accumulated Precipitation (6-Months)

This indicator measures the total precipitation received during the most recent six months, compared to the long-term historical mean for the same period. A reduction in precipitation over this period is a strong signal of meteorological drought.

Previously, precipitation accumulated from the first of December until the assessment date was used as an indicator. However, because this measure always started on December 1, it lost precision when assessments occurred later in the year. For this reason, it was replaced with a rolling 6-month timeframe, which offers greater accuracy.

Alongside the revised timeframe, thresholds were updated based on a 20-year review of precipitation patterns and their correlation with reported drought impacts. Historical data shows that values close to the long-term mean reflect near-normal conditions, and even small reductions can indicate emerging drought. Accordingly, thresholds were adjusted so that precipitation levels below 98% of the long-term average are now classified as drought conditions.

Table 16: Accumulated precipitation indicator thresholds

Indicator	Source	Severity	Old Threshold	New Threshold
Accumulated Precipitation (6-Months)	**CHIRPS**	**Very High**	precipitation < 50% of long-term average	precipitation < 75% of long-term average
		High	precipitation 50% - 75% of long-term average	precipitation 75% - 89% of long-term average
		Moderate	precipitation 76% - 90% of long-term average	precipitation 90% - 97% of long-term average
		No Shock	precipitation > 90% of long-term average	precipitation >= 98% of long-term average

Based on evaluations during the drought years of 2011, 2018, and 2023, the updated thresholds proved more sensitive. Under the old system, the indicator rarely reached level 4, even during severe droughts. Based on review of precipitation data against drought incidents since 2000, it has been found that in the Afghanistan context, precipitation values lower than the long-term mean, regardless of its magnitude, triggers drought. However, the drought severity is correlated to the magnitude of variation from the long-term mean.

Adjustment: The accumulated precipitation indicator was revised from a fixed period (December 1 to assessment date) to a rolling 6-month window to improve temporal accuracy. Thresholds were recalibrated using 20 years of historical data and validated against major drought years (2011, 2018, 2023). The updated thresholds now classify any precipitation below 98% of the long-term mean as drought conditions, making the indicator more sensitive to early meteorological drought signals.

Table 17: Old and new accumulated precipitation severities

District	Affected Families by Drought	Drought incident year	Accumulated precipitation vs long-term average	Old threshold severity	New thresholds severity
Delaram (Nimroz)	576	2023	63%	High (3)	Very High (4)
Bamiyan (Bamiyan	4,012	2018	106%	Minimal (1)	Minimal (1)
Injil Herat	21,161	2018	87%	Moderate (2)	High (3)
Dara-e-Suf Payin	5000	2023	70%	High (3)	Very High (4)

(ii) Standard Precipitation Index (SPI-3)

The 3-month Standard Precipitation Index is used to monitor meteorological drought. SPI Thresholds for SMI were recently reviewed after completion of comparative drought analysis report.[6] The updated thresholds made it more sensitive for Afghanistan's climate compared to the global thresholds defined by organizations such as UN-SPIDER and World Meteorological Organization (WMO). Despite these refinements, SPI-3 still struggles to capture drought severity in mountainous districts in which the precipitation regime changes across small distances. To mitigate this limitation, the 6-month accumulated precipitation indicator was included under meteorological drought monitoring in SMI.

Table 18: SPI 3 indicator values and thresholds

District	Affected Families by Drought	Drought incident year	SPI-3 Value	Severity	Thresholds
Delaram (Nimroz)	576	2023	-0.87	3	**4 (Very High):** SPI <= -1 **3 (High):** -1 < SPI <= -0.5 **2 (Moderate):** -0.5 < SPI <= -0.2 **1 (No Shock):** SPI > -0.2
Injil (Herat)	21,161	2018	-0.6	3	
Dara-e- Suf-e-Payin (Samangan)	5,000	2023	-1.1	4	
Bamiyan (Bamiyan)	7,889	2018	-0.22	2	

No Adjustment: SPI thresholds retained with no further modifications, complemented by inclusion of 6-month accumulated precipitation to address spatial variability in mountainous areas.

(b) Hydrological Drought

Hydrological drought monitoring in SMI contains 4 indicators, which generally measure longer-term precipitation and snow conditions. Prolonged deficits in precipitation can trigger lack of surface and ground water; in addition, snow melting is the main source of flowing water through rivers in Afghanistan. Therefore, to monitor the impact of drought on availability of water, the following indicators are included:

1. Accumulated precipitation 12 months
2. Standard precipitation 24 months
3. Snow water equivalent (SWE) variation from long term meaning.
4. Number of days Snow depletion earlier than mean depletion date.

(i) Accumulated Precipitation (12-Month) & SPI-24

[6] Comparative Drought

This indicator calculates precipitation anomalies over the past 12 months, benchmarked against the historical mean (2000–2025). It complements the SPI-24, which is also used for hydrological drought monitoring.

Previously, the SPI-12 indicator was used beside SPI-24 under hydrological drought. Instead of SPI-12, accumulated precipitation has been added. The main reason for this change is that SPI indicators show limited precision for mostly mountainous parts of the country. Therefore, to mitigate its impact, accumulated precipitation was included.

The table below displays the indicator test on the 4 affected districts by drought:

Table 19: Accumulated precipitation and SPI 24 thresholds and values

District	Affected Families by Drought	Drought incident year	SPI 24 value	Accumulated Precipitation 12 value	SPI 24 Thresholds	SPI 24 Severity	Accumulated Precipitation Threshold	Accumulated Precipitation 12 Severity
Injil (Herat)	21,161	2018	1.56	80%	**4 (Very High):** SPI <= -1 **3 (High):** -1 < SPI <= -0.5 **2 (Moderate):** -0.5 < SPI <= -0.2 **1 (No Shock):** SPI > -0.2	1	**4 (Very High):** precipitation < 75% of long-term average **3 (High):** precipitation 75% - 89% of long-term average **2 (Moderate):** precipitation 90% - 97% of long-term average **1 (No Shock):** precipitation > = 98% of long-term average	2
Delaram (Nimroz)	576	2023	-1.18	75%		4		3
Dara-e-Suf Payin	5,000	2023	-1.43	92%		4		2
Bamiyan (Bamiyan)	4,012	2018	1.22	100%		1		1

Adjustment: SPI-12 replaced with 12-month accumulated precipitation to improve accuracy of hydrological drought monitoring, particularly in mountainous regions.

(ii) Snow Water Equivalent (SWE)

This indicator monitors the total snow water equivalent of the assessed month against its long-term historical mean. Testing in drought-affected areas confirmed good alignment with reported field conditions, suggesting SWE is a reliable measure for drought detection.

Table 20: SWE thresholds and values

District	Families Affected by Drought	Drought Incident year	% of SWE vs historical mean (2000-2024)	Severity	Thresholds
Delaram (Nimroz)	576	2023	28%	4	**4 (Very High):** SWE < 50% of long-term average **3 (High):** SWE 50% - 69% of long-term average **2 (Moderate):** SWE 70% - 89% long term average **1 (No Shock):** SWE ≥ 90% long term average
Dara-e- Suf-e- Payin (Samangan)	5000	2023	63%	3	
Bamiyan (Bamiyan)	4,012	2018	44%	4	
Injil (Herat)	21,161	2018	67%	3	

No Adjustment: Snow water equivalent (SWE) thresholds retained with no further modifications.

(iii) Snow Depletion

Snow depletion measures how many days earlier snowpack reaches near-depletion compared to the historical average.
Testing in affected districts demonstrated that this indicator is useful for identifying drought-linked changes in snowmelt dynamics. Therefore, we decided to keep the current thresholds without any further changes.

Near depletion Calculation formula:
Near Depletion Threshold=MinLT+0.10×(MaxLT−MinLT)
Where:

- Min_{LT}= Long-term average minimum
- Max_{LT}= Long-term average maximum

Table 21: Snow depletion thresholds and values

District	Families Affected by Drought	Drought Incident year	% of SWE vs historical mean (2000-2024)	Severity	Thresholds
Delaram (Nimroz)	576	2023	35	4	**4 (Very High):** Snow depletion occurs 7 or more weeks ahead of the long-term average. **3 (High):** 5-6 weeks ahead of the near depletion date. **2 (Moderate):** 3-4 weeks ahead of near depletion date. **1 (No Shock):** less than equal 2 weeks ahead of the near depletion date.
Dara-e- Suf-e-Payin (Samangan)	5000	2023	0	1	
Bamiyan (Bamiyan)	4,012	2018	0	1	
Injil (Herat)	21,161	2018	18	2	

No Adjustment: Snow depletion thresholds retained with no further modifications.

(c) Agricultural Drought

Agricultural drought monitoring in SMI contains two indicators:

1. Vegetation Condition Index
2. Heatwaves

(i) Vegetation Condition Index (VCI)- Near Harvest Season

Previously, standard vegetation index (SVI)[7] has been used for monitoring vegetation health and conditions but based on the review of the indicator and thresholds, SVI was found to be less sensitive for detecting drought in comparison to VCI[8]. VCI index based on comparing current month NDVI against NDVI variation from 2000, demonstrated better sensitivity and alignment with observed field conditions. Comparative testing during drought years showed that VCI more accurately reflected agricultural stress, confirming it as a stronger measure than SVI.
In addition, vegetation monitoring was previously conducted throughout all 12 months of the year. To reduce misinterpretation during non-productive seasons, the monitoring period has now been limited to the three months preceding the harvest. This adjustment ensures that vegetation conditions are assessed during the most relevant period for agricultural productivity.

Table 22: VCI thresholds and values

District	Families Affected by Drought	Drought Incident year	SVI Value	SVI Thresholds	SVI Severity	VCI Values	VCI Severity	VCI Severity

[7] SVI : UNSPIDER - https://www.un-spider.org/node/11416
[8] VCI : UNSPIDER - https://un-spider.org/advisory-support/recommended-practices/recommended-practice-drought-monitoring-using-vegetation

Injil (Herat)	21,161	2018	-0.4	**4 (Very High):** SVI <= -1.5 **3 (High):** -1.5 < SVI <= -1 **2 (Moderate):** -1 < SVI <= -0.5 **1 (No Shock):** SVI > -0.5	1	16%	**4 (Very High):** VCI <=30% **3 (High):** 30% < VCI <= 50% **2 (Moderate):** 50% < VCI<= 70% **1 (No Shock)** VCI >70%	4
Delaram (Nimroz)	576	2023	0.08		1	55%		2
Dara-e-Suf Payin	5,000	2023	0.14		1	34%		3
Bamiyan (Bamiyan)	4,012	2018	-0.45		1	48%		3

Adjustment: SVI replaced with VCI to improve drought sensitivity and alignment with field conditions; vegetation monitoring period restricted to the three months before harvest to ensure assessments focus on productive seasons.

(ii) Heatwaves

Heatwave monitoring, defined as three or more consecutive days above the average 24-year maximum temperature threshold, is being used for agricultural drought detection. Reviews of drought events in 2018 and 2023 showed this indicator produced acceptable results, though it is less sensitive in colder districts (Bamiyan and Dara-e-Suf-e-Payin in the below table).

Table 23: Heatwaves thresholds and values

District	Families Affected by Drought	Drought Incident year	Number of days above max historical mean temperature (2000-2024)	Severity	Thresholds
Delaram (Nimroz)	576	2023	7	3	**4 (Very High):** More than 8 consecutive days where the maximum temperature is higher than the long-term maximum and ≥ 30°C. **3 (High):** 6-8 consecutive days where the maximum temperature is higher than the long-term maximum and ≥ 30°C.
Dara-e- Suf-e- Payin (Samangan)	5000	2023	1	1	

Bamiyan (Bamiyan)	4,012	2018	0	1	**2 (Moderate):** 3-5 consecutive days when the maximum temperature is higher than the long-term maximum and ≥ 30°C. **1 (No Shock):** Less than 3 consecutive days where the maximum temperature is higher than the long-term maximum and ≥ 30°C.
Injil (Herat)	21,161	2018	9	4	

No Adjustment: Heatwaves thresholds retained with no further modifications.

(d) Flooding

(i) Number of human casualties.

This indicator tracks the number of human casualties (fatalities and injuries) resulting from flooding events, based on data collected through the MSRAF survey. Four severity levels are defined for this indicator:

Table 24: Number of human casualties indicator thresholds

Indicator	Source	Severity	Thresholds
Number of human casualties	**MSRAF**	**Very High**	Human casualties >= 18 individuals
		High	Human casualties >= 5 individuals
		Moderate	Human casualties >= 1 individuals
		No Shock	Human casualties = 0 individual

Based on the current evidence and reports from multiple flooding events, the existing thresholds remain appropriate, and no adjustments are recommended at this stage.

No Adjustment: Thresholds remained with no further modifications for this indicator.

(ii) Agriculture land damaged (Jeribs[9])

This indicator classifies the extent of agricultural land destroyed as a result of flooding. It serves as a key measure for assessing the impact of natural shocks on cropland, based on data collected through the MSRAF survey. Four distinct severity levels are defined for this indicator:

Table 25: Agricultural land damaged (Jeribs) indicator thresholds

Indicator	Source	Severity	Thresholds
	MSRAF	**Very High**	Agricultural land damaged >= 2000 Jerib

[9] 1 Hectar = 5 Jeribs, 1 Jerib = 200 km^2

Number of agriculture land damaged (Jeribs)		**High**	Agricultural land damaged >= 200 Jerib
		Moderate	Agricultural land damaged >= 1 Jerib
		No Shock	Agricultural land damaged = 0 Jerib

Based on the current evidence and reports from multiple flooding events, the existing thresholds remain appropriate, and no adjustments are recommended at this stage.

No Adjustment: Thresholds remained with no further modifications for this indicator.

(iii) Number of livestock lost

This indicator monitors the number of livestock lost because of flooding events, based on data collected through the MSRAF survey. It provides key insights into the impact of natural shocks on household livelihoods and economic stability. Four distinct severity levels are defined for this indicator:

Table 26: Number of livestock lost indicator thresholds

Indicator	Source	Severity	Thresholds
Number of livestock lost	**MSRAF**	**Very High**	lost livestock >= 375
		High	lost livestock >= 100
		Moderate	lost livestock >= 1
		No Shock	lost livestock = 0

Based on the current evidence and reports from multiple flooding events, the existing thresholds remain appropriate, and no adjustments are recommended at this stage.

No Adjustment: Thresholds remained with no further modifications for this indicator.

(iv) Number of shelters destroyed

This indicator tracks the total number of shelters destroyed during flooding events, based on data collected through the MSRAF survey. Four distinct severity levels are defined for this indicator:

Table 27: Number of shelters destroyed indicator thresholds

Indicator	Source	Severity	Thresholds
Number of shelters destroyed	**MSRAF**	**Very High**	Destroyed shelters >= 125
		High	Destroyed shelters >= 35
		Moderate	Destroyed shelters >= 1
		No Shock	Destroyed shelters = 0

Based on the current evidence and reports from multiple flooding events, the existing thresholds remain appropriate, and no adjustments are recommended at this stage.

No Adjustment: Thresholds remained with no further modifications for this indicator.

(e) Earthquake

Afghanistan is located in a highly seismically active region and has experienced several devastating earthquakes in recent decades, resulting in significant loss of life, injuries, and widespread destruction of shelters and infrastructure. To systematically monitor earthquake-related shocks alongside other natural hazards, earthquakes have been incorporated as a sub-pillar under the Natural Hazard Shocks framework.

The monitoring of earthquake shocks is conducted through a monthly review of events recorded by the USGS Earthquake Explorer.[10] The severity of each shock is classified based on the Modified Mercalli Intensity (MMI) scale, which reflects the perceived shaking intensity and potential impacts on populations and infrastructure.

As part of this study, past earthquake events and their impacts in Afghanistan were reviewed in order to refine the thresholds used in the SMI. Based on this analysis, adjustments were made to the thresholds to make them more sensitive and precise, ensuring that the indicator more accurately reflects both the occurrence of earthquakes and their potential humanitarian consequences.

A review of historical earthquake data for Afghanistan since **1818** shows that casualties (deaths and injuries) have occurred in **MMI III** and above events.[11] The distribution of reported deaths and injuries by MMI is summarized below:

Table 28: Earthquake MMIs and their death and injuries records in Afghanistan

Earthquake Mercalli Intensity	Deaths (sum)	Injuries (sum)
III	6	9
IV	52	37
V	130	627
VI	3,072	11,422

This analysis highlights that:

- Casualties are recorded from MMI III, meaning even low-intensity earthquakes can have humanitarian impacts in Afghanistan's context of vulnerable infrastructure and settlement patterns.
- The largest concentration of deaths and injuries occurred at MMI VI–VIII, which aligns with destructive to very severe shaking.

Table 29: Old and new earthquake thresholds

Severity	Old Thresholds	New Thresholds
Very High	MMI >= VI	MMI >= VI
High	V <= MMI < VI	V <= MMI < VI
Moderate	IV <= MMI < V	III <= MMI < V
No Shock	MMI < IV	MMI<III

Adjustment: Earthquake thresholds were recalibrated based on historical impact analysis, with sensitivity increased to capture humanitarian consequences starting from MMI III. This adjustment ensures that even lower-intensity earthquakes, which can still cause casualties and damage in Afghanistan's fragile infrastructure context, are adequately reflected in the SMI severity classification.

[10] USGS Earthquake catalogue: https://earthquake.usgs.gov/earthquakes/search/
[11] List of earthquakes in Afghanistan: https://en.wikipedia.org/wiki/List_of_earthquakes_in_Afghanistan

(f) Winter Shocks

In SMI, two winter-related shocks are monitored during the winter months:

1. Cold Waves
2. Snow Cover (Winter Isolation).

(i) Cold Waves

According to the WMO, a cold wave is defined as a period of marked and unusual cold weather, characterized by a sharp and significant drop in near-surface air temperatures (maximum, minimum, and daily average) over a large area, persisting below certain thresholds for at least two consecutive days during the cold season.[12]

Based on the above definition, the required number of consecutive days experiencing unusual cold weather has been revised from 3 days in the previous threshold to 2 days in the updated one. In addition, adjustments were made to the severity measurement. The old thresholds, which relied heavily on a fixed value of –30 °C, were found to be oversensitive in already cold districts while failing to adequately capture shocks in generally warmer areas of the country. To address this, the updated thresholds introduce an additional condition that makes the indicator more sensitive to cold waves in typically warmer districts, ensuring a more accurate reflection of their impact nationwide.

Table 30: Cold wave's old thresholds vs new thresholds

Severity	Old Thresholds	New Thresholds
Very High	Daily minimum temperature for 3 or more consecutive days is less than -1.8 standard deviations and below -30 °C	Daily minimum temperature for 2 or more consecutive days is less than -2 standard deviations and below -30 °C OR Daily minimum temperature for 2 or more consecutive days is less than -3 standard deviations and below -15 °C
High	Daily minimum temperature for 3 or more consecutive days is less than -1.8 standard deviations and below -15 °C	Daily minimum temperature for 2 or more consecutive days is less than -3 standard deviations and below -10 °C.
Moderate	Daily minimum temperature for 3 or more consecutive days is less than -1.8 standard deviations	Daily minimum temperature for three or more consecutive days is less than equal -3 standard deviations
No Shock	Daily minimum temperature for 3 or more consecutive days is more than equal -1.8 standard deviations	Daily minimum temperature for 2 or more consecutive days is more than -3 standard deviations

Adjustment: The minimum duration for cold wave classification was reduced from 3 to 2 consecutive days to align with WMO standards. Severity thresholds were recalibrated to balance sensitivity across Afghanistan's diverse climates, reducing oversensitivity in chronically cold districts and enhancing detection of cold wave impacts in typically warmer areas.

[12] UNDRR Cold wave: https://www.undrr.org/understanding-disaster-risk/terminology/hips/mh0502

(ii) Snow Cover (Winter Isolation)

This indicator monitors whether communities are affected by possible Winter isolation due to continuous snowfall. The thresholds were informed by NOAA's National Weather Service, which defines heavy snowfall as 6 inches (15 cm) or more within 12 hours, or 8 inches (20 cm) or more within 24 hours. These thresholds have been slightly adapted to the Afghanistan context.
Based on adapted thresholds, a community was defined as isolated when snow depth reached or exceeded 15 cm, with an additional increase of more than 15 cm within a 24-hour period. The baseline threshold of 15 cm was determined through technical discussions and locally informed knowledge, reflecting the intuitive understanding that this depth of snow (15cm) is sufficient to block vehicle movements in many communities. As snow accumulation continues, it increasingly restricts transport by animals and even movement on foot, thereby reinforcing Communities to isolation.

Table 31: Snow cover (winter isolation) thresholds

Severity	Thresholds
Very High	When the snow depth is >= 15cm, any further increase of > 15 cm within 24 hours.
High	When the snow depth is >= 15cm, any further increase of up to (6 – 14) cm within 24 hours
Moderate	When the snow depth is >= 15cm any further increase of up to 5 cm within 24 hours.
No Shock	The snow depth does not reach 15 cm at any point during the entire month.

No Adjustment: winter isolation thresholds retained with no further modifications.

CONCLUSION

This assessment was undertaken to evaluate and refine the Shock Monitoring Index (SMI) thresholds in Afghanistan, where recurrent conflict, displacement, disease outbreaks, market volatility, and natural hazards continue to drive acute vulnerabilities. The SMI, launched in 2023 by REACH and WFP, was designed to provide systematic, district-level monitoring of such shocks; this review has tested whether its thresholds adequately capture evolving risks, and identified where adjustments are needed to improve accuracy and sensitivity.

Findings confirm that while the SMI framework remains technically sound, several limitations in its existing thresholds risk under- or overestimating shocks. For example, in the Conflict/Violence pillar, reliance on fixed numbers diluted the sensitivity of spike detection in some districts while exaggerating trends in others. Market monitoring thresholds were shown to effectively capture sudden fluctuations but failed to reflect longer periods of price pressures and chronically low purchasing power. For disease outbreaks, mean and standard deviation approaches flagged new spikes but struggled to account for sustained high caseloads. Similarly, the Displacement pillar's use of absolute returnee counts misrepresented shock levels across districts of varying population sizes. Additionally, in the Natural Hazard pillar, several indicators which could not effectively reflect shocks have been replaced with new indicators, and the thresholds were reviewed. More specifically, changes were made to the agricultural drought indicator, earthquake indicator thresholds, and cold wave indicators.

These findings will improve the SMI system's ability to identify shock-affected communities and further monitor potential shock-driven needs in the country with more precision.

By revising thresholds across pillars, introducing hybrid models, population-relative ratios, and cumulative approaches, the assessment demonstrates how the SMI can more accurately reflect Afghanistan's shock dynamics. The refined system is better positioned to detect both acute shocks and protracted stress conditions.

This assessment strengthens the SMI's role as a critical tool for humanitarian prioritization, planning, and decision-making. By aligning thresholds more closely with Afghanistan's complex realities, it provides partners with a sharper lens for anticipating needs, prioritizing responses, and protecting communities most at risk. Looking forward, continuous testing, integration of new datasets, and field-level validation will be essential to sustain relevance and accuracy. In this way, the SMI can continue to evolve as both a technical instrument and a practical enabler of more timely and effective humanitarian action in Afghanistan.

ANNEXES

Annex 1: Data Analysis Plan

Table 32: Conflict indicators new thresholds

Conflict/Violence Pillar			
Indicator	**Source**	**Ranking**	**Rational**
Violence-related incidents	**ACLED**	**4 (Very High):** Monthly incidents >= yearly average + 3 Standard deviations and minimum of 10 incidents	This indicator measures the monthly number of violence-related incidents, encompassing all types of battles, explosions or remote violence, and violence against civilians. Violence-related incidents represent a widespread shock that substantially disrupts communities' access to essential needs, causes population displacement, and results in fatalities and injuries.
		3 (High): Monthly incidents >= yearly average + 2 Standard deviations and minimum of 8 incidents	
		2 (Moderate): Monthly incidents >= yearly average + 1 Standard deviation	
		1 (No Shock): Monthly incidents < yearly average + 1 Standard deviation	
Battle-related incidents	**ACLED**	**4 (Very High):** Monthly incidents >= yearly average + 3 Standard deviations and minimum of 5 incidents	This indicator measures the monthly number of battle-related incidents. Battles, characterized by high-intensity and concentrated armed clashes, typically cause immediate and widespread disruptions to communities' access to essential needs and services. Compared to other forms of violence, battles tend to produce more severe humanitarian impacts,
		3 (High): Monthly incidents >= yearly average + 2 Standard deviations and minimum of 4 incidents	
		2 (Moderate): Monthly incidents >= yearly average + 1 Standard deviation	

		1 (No Shock): Monthly incidents < yearly average + 1 Standard deviation	including displacement and damage to critical infrastructure.
Civilian Targeting-related incidents	**ACLED**	**4 (Very High):** Monthly incidents >= yearly average + 3 Standard deviations and minimum of 7 incidents	This indicator measures the number of incidents targeting civilians. Such incidents pose a serious protection risk for affected communities and can escalate into severe humanitarian consequences, including displacement, trauma, and loss of life.
		3 (High): Monthly incidents >= yearly average + 2 Standard deviations and minimum of 5 incidents	
		2 (Moderate): Monthly incidents >= yearly average + 1 Standard deviation	
		1 (No Shock): Monthly incidents < yearly average + 1 Standard deviation	
Fatalities	**ACLED**	**4 (Very High):** Monthly incidents >= yearly average + 3 Standard deviations and minimum of 10 incidents	This indicator measures the number of casualties resulting from all violence-related incidents monthly. It directly reflects the human impact and severity of conflict/ violence-related shocks.
		3 (High): Monthly incidents >= yearly average + 2 Standard deviations and minimum of 10 incidents	
		2 (Moderate): Monthly incidents >= yearly average + 1 Standard deviation	
		1 (No Shock): Monthly incidents < yearly average + 1 Standard deviation	

Table 33: Market indicators new thresholds

Market Pillar

Indicator	Source	Ranking	Rational
Food Basket Evolution	**REACH JMMI/WFP VAM**	**4 (Very High):** Monthly change >= 15%	This indicator monitors the monthly evolution of the in-kind food basket. Fluctuations in the prices of food basket items directly affect households' nutritional status and overall food security. Increases in food prices reduce purchasing power and often compel families to adopt negative coping mechanisms, such as accumulating debt or reducing meal quality and quantity.
		3 (High): Monthly change >= 10% OR (Monthly change >= -5% AND Previous month change >= 15%)	
		2 (Moderate): Monthly change >= 5% OR (Monthly >= -5% AND Previous month change >= 10%)	
		1 (No Shock): Monthly change < 5%	
Casual Labor ToT	**WFP VAM**	**4 (Very High):** ToT[13] <= 30% OR (ToT <= 50% AND Monthly change[14] <= -25%)	This indicator tracks the purchasing power of unskilled casual laborers by comparing their daily wage to the cost of a minimum food basket. This indicator serves as a key proxy for economic access to food. A decline in the casual labor terms of trade indicates reduced affordability of essential food items, heightening vulnerability to food insecurity and deepening reliance on negative coping strategies such as borrowing or asset depletion.
		3 (High): (ToT <= 50% AND Monthly change > -25%) OR (ToT <= 80% AND Monthly change <= -25%)	
		2 (Moderate): ToT <= 80% AND Monthly change > -25%	
		1 (No Shock): ToT > 80%	

[13] casual labor ToT
[14] % of change in ToT compared to previous month

Pastoral ToT	**WFP VAM**	**4 (Very High):** Monthly change <= -27%	This indicator monitors the purchasing power of pastoral households by measuring the quantity of wheat (in kilograms) that can be purchased through the sale of a one-year-old live female sheep. It reflects the economic well-being of livestock-dependent communities and their capacity to access food in times of market stress. Fluctuations in Pastoral ToT serve as an early warning of deteriorating food security and livelihood resilience. A decline in this ratio indicates that pastoralists must sell more livestock to purchase the same amount of food, signaling increased vulnerability and potential erosion of household assets.
		3 (High): Monthly change <= - 18% OR (Monthly change <= 5% AND Previous Month change <= - 27%)	
		2 (Moderate): Monthly change <= -9% OR Monthly change <= 5% AND Previous month change <= -18%	
		1 (No Shock): Monthly change > -9%	

Table 34: Disease outbreak indicators thresholds

Disease Outbreak Pillar			
Indicator	**Source**	**Ranking**	**Rational**
Acute Watery Diarrhea (AWD) with Dehydration	**WHO outbreak dashboard for Afghanistan**	**4 (Very High):** Monthly cases >= yearly average + 3 Standard deviations and minimum of 10 incidents	This indicator tracks monthly reported cases of Acute Watery Diarrhea (AWD) with dehydration and serves as a critical early warning of deteriorating WASH conditions and increased cholera transmission risk. A rise in AWD with dehydration cases signals the urgent need for public health interventions, enhanced water quality monitoring, and targeted hygiene
		3 (High): Monthly cases >= yearly average + 2 Standard deviations and minimum of 10 incidents	
		2 (Moderate): Monthly cases >= yearly average + 1 Standard deviation	

		1 (No Shock): Monthly cases < yearly average + 1 Standard deviation	promotion to prevent further spread and reduce mortality.
Measles	**WHO outbreak dashboard for Afghanistan**	**4 (Very High):** Monthly cases >= yearly average + 3 Standard deviations and minimum of 10 incidents	This indicator tracks monthly reported measles cases to monitor potential outbreak trends. Measles is a highly contagious viral disease that disproportionately affects children in areas with low vaccination coverage. Rising cases signal immunity gaps and the need for urgent vaccination and health response measures.
		3 (High): Monthly cases >= yearly average + 2 Standard deviations and minimum of 10 incidents	
		2 (Moderate): (Monthly cases >= yearly average + 1 Standard deviation) OR cases per 10,000 >= 3.0	
		1 (No Shock): Monthly cases < yearly average + 1 Standard deviation	
Crimean-Congo Hemorrhagic Fever (CCHF)	**WHO outbreak dashboard for Afghanistan**	**4 (Very High):** Monthly cases >= yearly average + 3 Standard deviations and minimum of 10 incidents	This indicator tracks monthly reported cases of CCHF, a severe viral disease with a high fatality rate. Increases in CCHF cases signal a heightened public health risk, often leading to rapid transmission in communities with limited health services. Such outbreaks can overwhelm local health systems and cause widespread fear and disruption, underscoring the urgent need for timely detection and response.
		3 (High): Monthly cases >= yearly average + 2 Standard deviations and minimum of 10 incidents	
		2 (Moderate): (Monthly cases >= yearly average + 1 Standard deviation) OR cases per 100,000 >= 2.0	
		1 (No Shock): Monthly cases < yearly average + 1 Standard deviation	

Table 35: Displacement indicators new thresholds

Displacement Pillar			
Indicator	**Source**	**Ranking**	**Rational**
Cross Border Returnee (Pakistan & Iran)	**IOM-Border Consortium**	**4 (Very High):** Returnee households per population >= 1.0% AND Total number of returnee households are equal or above 100HH	This indicator tracks the number of cross-border returnee households from Iran and Pakistan each month. Return movements from these neighboring countries are a key humanitarian concern, as many returnee households arrive with limited resources and face immediate needs for food, shelter, and livelihood opportunities. Large-scale or sudden influxes can place additional strain on host communities.
		3 (High): Returnee households per population >= 0.3% AND Total number of returnee households are equal or above 30HH	
		2 (Moderate): Returnee households per population >= 0.05%	
		1 (No Shock): Returnee households per population < 0.05%	
Forced evictions	**CCCM Working Group**	**4 (Very High):** Total number of evicted households are equal or above 150HH	This indicator monitors reported cases of forced evictions. These events exacerbate humanitarian needs by increasing exposure to protection risks, deepening poverty, and reducing access to basic services.
		3 (High): Total number of evicted households are equal or above 100HH	
		2 (Moderate): Total number of evicted households are equal or above 50HH	
		1 (No Shock): Total number of evicted households are below 50HH.	

Table 36: Drought indicator new thresholds

Meteorological Drought Sub-pillar			
Indicator	**Source**	**Ranking**	**Rational**
Accumulated Precipitation of recent 6 months	CHIRPS	**4 (Very High):** precipitation < 75% of long-term average	This indicator measures the total precipitation received during the most recent six months, comparing it to the long-term historical mean for the same period. A reduction in precipitation over this period is a strong signal of meteorological drought.
		3 (High): precipitation 75% - 89% of long-term average	
		2 (Moderate): precipitation 90% - 97% of long-term average	
		1 (No Shock): precipitation >= 98% of long-term average	
3 months Standard Precipitation Index	CHIRPS	**4 (Very High):** SPI <= -1	This indicator provides an overview of the deviation of precipitation over a period of 3 months from the long-term trends for the same time period, the SPI-3 provides a seasonal estimation of precipitation and reflects short and medium-terms moisture conditions.
		3 (High): -1 < SPI <= -0.5	
		2 (Moderate): -0.5 < SPI <= -0.2	
		1 (No Shock): SPI > -0.2	
Hydrological Drought Sub-pillar			
24 months Standard Precipitation Index	CHIRPS	**4 (Very High):** SPI <= -1	This indicator provides an overview of longer-term precipitation deviations from the historical mean for the same period. By measuring precipitation over the past 24 months, it can indicate hydrological drought conditions and overall water availability.
		3 (High): -1 < SPI <= -0.5	
		2 (Moderate): -0.5 < SPI <= -0.2	
		1 (No Shock): SPI > -0.2	
		4 (Very High): precipitation < 75% of long-term average	This indicator calculates total precipitation anomalies over the past 12 months,

Accumulated Precipitation (12-months)	CHIRPS	**3 (High):** precipitation 75% - 89% of long-term average **2 (Moderate):** precipitation 90% - 97% of long-term average **1 (No Shock):** precipitation > = 98% of long-term average	benchmarked against the historical mean (2000–2025). It complements the SPI-24, which is also used for hydrological drought monitoring.
Lower than average monthly snowpack	Era5 / FEWS NET	**4 (Very High):** SWE < 50% of long-term average **3 (High):** SWE 50% - 69% of long-term average **2 (Moderate):** SWE 70% - 89% long term average **1 (No Shock):** SWE ≥ 90% long term average	This indicator monitors snow water equivalent at the river basin level. Lower than average snowpack during the winter months can translate into limited run-off and negatively impact downstream water bodies as well as the availability of water for hygiene, consumption and/or irrigated agriculture.
Early snowpack depletion	FEWSNET Early Warning Explorer	**4 (Very High):** Snow depletion occurs 7 or more weeks ahead of the long-term average. **3 (High):** 5-6 weeks ahead of the near depletion date. **2 (Moderate):** 3-4 weeks ahead of near depletion date. **1 (No Shock):** less than equal 2 weeks ahead of the near depletion date.	This indicator measures snow depletion trend compared to average depletion pattern. At the river basin level, a rapidly depleting snowpack can lead to a lack of water to sustain irrigated agriculture in the months leading up to the harvest period.
Agricultural Drought Sub-pillar			

Heat Wave	ERA5	**4 (Very High)** More than 8 consecutive days where the maximum temperature is higher than the long-term maximum and ≥ 30°C.	In addition to potential direct loss of life due to extreme temperatures, periods of extreme heat can put additional strain on water resources as well as lead to crops or livestock loss.
		3 (High): 6-8 consecutive days where the maximum temperature is higher than the long-term maximum and ≥ 30°C.	
		2 (Moderate): 3-5 consecutive days when the maximum temperature is higher than the long-term maximum and ≥ 30°C.	
		1 (No Shock): Less than 3 consecutive days where the maximum temperature is higher than the long-term maximum and ≥ 30°C.	
Vegetation condition index for pre harvest months	MODIS	**4 (Very High):** VCI <= 30%	This indicator measures the vegetation condition of irrigated agriculture areas for 2 months prior to harvest time. The Vegetation Condition Index (VCI) measures how current vegetation greenness compares to its historical range, highlighting whether plants are experiencing stress. It is important for assessing agricultural drought.
		3 (High): 30% < VCI <= 50%	
		2 (Moderate): 50% < VCI<= 70%	
		1 (No Shock): VCI >70%	

Table 37: Drought indicator weights based on seasonal calendar

Indicators	Weights based on seasonal calendar											
	Winter			**Spring**			**Summer**			**Autumn**		
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov

Meteorological Drought												
Accumulated Precipitation (6-months)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
3 months Standard Precipitation Index (SPI)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Hydrological Drought												
Accumulated Precipitation (12-months)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
24 months Standard Precipitation Index (SPI)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5
Lower than average monthly snowpack	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Early snowpack depletion	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	0	0
Agricultural Drought												
Vegetation condition index (VCI)	1	1	1	1	0.8	0.8	0.8	0.8	0.8	0.8	1	1
Heat Wave	0	0	0	0	0.2	0.2	0.2	0.2	0.2	0.2	0	0

Table 38: Flooding, earthquake, and winter condition indicators thresholds

Flooding Sub-pillar			
Indicator	**Source**	**Ranking**	**Rational**
Number of human casualties	MSRAF	**4 (Very High):** Human casualties >= 18 individuals	This indicator tracks the number of human casualties both fatalities and injuries because of flooding events. Flood-related casualties
		3 (High): Human casualties >= 5 individuals	

		2 (Moderate): Human casualties >= 1 individuals **1 (No Shock):** Human casualties = 0 individual	reflect the immediate human impact of natural hazards, highlighting the severity of the event and the vulnerability of affected communities.
Agricultural land damaged (Jeribs)	MSRAF	**4 (Very High):** Agricultural land damaged >= 2000 Jerib **3 (High):** Agricultural land damaged >= 200 Jerib **2 (Moderate):** Agricultural land damaged >= 1 Jerib **1 (No Shock):** Agricultural land damaged = 0 Jerib	This indicator tracks the extent of agricultural land damaged by flooding events. Flood-related damage to farmland reflects the immediate impact on livelihoods, food production, and economic stability of affected communities.
Number of livestock lost	MSRAF	**4 (Very High):** lost livestock >= 375 **3 (High):** lost livestock >= 100 **2 (Moderate):** lost livestock >= 1 **1 (No Shock):** lost livestock = 0	This indicator monitors the number of livestock lost due to flooding events. Loss of livestock represents a direct impact on household livelihoods, income, and food security, underscoring the severity of the flood.
Number of shelters destroyed	MSRAF	**4 (Very High):** Destroyed shelters >= 125 **3 (High):** Destroyed shelters >= 35 **2 (Moderate):** Destroyed shelters >= 1 **1 (No Shock):** Destroyed shelters = 0	This indicator tracks the total number of shelters fully destroyed during flooding events. Shelter loss reflects the immediate humanitarian impact, exposing affected households to protection risks, displacement, and increased vulnerability to further shocks.

Winter Condition Sub-pillar			
Cold Wave[15]	ERA5 / FLDAS	**4 (Very High)**: Daily minimum temperature for 2 or more consecutive days is less than -2 standard deviations and below -30 °C **OR** Daily minimum temperature for 2 or more consecutive days is less than -3 standard deviations and below -15 °C	This indicator monitors extreme reductions in daily temperatures compared to the long-term average (2000–2025). Winter cold waves can result in human loss of life, livestock deaths, and damage to stored food supplies, further undermining communities' ability to access food.
		3 (High): Daily minimum temperature for 2 or more consecutive days is less than -3 standard deviations and below -10 °C.	
		2 (Moderate): Daily minimum temperature for 2 or more consecutive days is less than equal -3 standard deviations	
		1 (No Shock): Daily minimum temperature for 2 or more consecutive days is more than -3 standard deviations	
Snow Cover (Winter Isolation)[16]	ERA5 / FLDAS	**4 (Very High):** When the snow depth at settlements is >= 15cm, any further increase of > 15 cm within 24 hours.	This indicator monitors sudden increases in snow depth that may restrict communities' movement. In Afghanistan, heavy snowfall combined with mountainous terrain often limits mobility, reducing access to basic needs and negatively affecting overall living conditions.
		3 (High): When the snow depth at settlements is >= 15cm, any further increase of up to (6 – 14) cm within 24 hours.	

[15] WMO, https://www.undrr.org/understanding-disaster-risk/terminology/hips/mh0502
[16] NOAA, Heavy snowfall https://forecast.weather.gov/glossary.php?word=heavy+snow

		2 (Moderate): When the snow depth at settlements is >= 15cm any further increase of up to 5 cm within 24 hours.	
		1 (No Shock): The snow depth at settlements does not reach 15 cm at any point during the entire month.	
Earthquake Sub-Pillar			
Mercalli Intensity Scale	USGS	**4 (Very High):** MMI >= VI	Earthquakes in Afghanistan, particularly over the past decade, have had devastating impacts on affected communities. To capture and monitor seismic events of varying magnitudes, this indicator is included in the SMI.
		3 (High): VI > MMI >= V	
		2 (Moderate): V > MMI >= III	
		1 (No Shock): < III	

Table 39: Winter condition indicator's weights based on seasonal calendar

Indicators	**Weights based on seasonal calendar**											
	Winter			**Spring**			**Summer**			**Autumn**		
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Cold Wave	0.7	0.6	0.6	0.6	Null	Null	Null	Null	Null	Null	Null	Null
Snow Cover (Winter Isolation)	0.3	0.4	0.4	0.4	Null	Null	Null	Null	Null	Null	Null	Null