

Khost Earthquake Damage Assessment July 2022

Presentation of Key Findings to ES/NFI Cluster Kabul, Afghanistan, August 2022

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CONTEXT

A 5.9 magnitude earthquake struck the south-eastern region of Afghanistan on 22 June 2022, causing widespread destruction, disruption to services, and loss of life, to an already highly vulnerable population across Khost, Paktika and Paktya provinces.

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OBJECTIVES

 Understand the overall scope and impact of the damage

 Inform advocacy and targeting for shelter repair and rebuilding





Assessment Scope and Methodology

Sampling Methodology

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Households

- 1130 HHs interviews
- Representative findings with 95% confidence and 7% margin of error
- Approach 1: Stratified by (MMI)* impact shake zones (4.5+)
- *Approach 2:* Stratified by district: Barmal, Giyan, Spera, Tani

Infrastructure Services

- 112 Health and 380 education facilities assessed, identified on the basis of the respective clusters' lists
- **33 Markets**: identified by participatory mapping undertaken under previous REACH assessments** in the area

* Modified Mercalli Intensity

Humanitarian Situation
 Monitoring, REACH



HOUSEHOLDS

KEY SERVICES



MARKETS

1,130 Households 112 Health Centres

interviewed on their shelters, the extent of damage, access to services, and demographics

380 Schools

assessed on levels of damage and functionality

33 Markets

were assessed on levels of functionality, price changes, and damage to shops

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ASSESSED AFFECTED AREA, BY MODIFIED MERCALLI INTENSITY (MMI) IMPACT, JULY 2022



For HHs, the entire assessment area (MMI 4.5 and above) was assessed by MMI range or, "shake zone." Additional, "top up" interviews were conducted to provide additional representative HH information for Tani, Spera, Giyan, and Barmal districts. All known services in the assessment area were covered.



ASSESSMENT AREA

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ASSESSMENT TIMELINE

RESEARCH DESIGN

In collaboration with the ES-NFI cluster 25th June – 2nd July

DATA COLLECTION

26 Enumerators managed by 1 Sr. Field Officer 02 – 20 July

DATA ANALYSIS

Analysed with R Studio 2nd – 26th July





Key Findings

Key findings are presented in the sections divided by subject.

Key Findings Organization



Household Findings

Education Facility Findings

Slides 18-20

Slides 10-17



Health Centre Findings

Slides 21-23



Market Findings

Slides 24-26



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Key Findings

Household Findings

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DAMAGE LEVEL AND GROUND ELEVATION

Reported shelter damage in MMI 4.5-6.5 affected areas, July 2022.



Damaged shelters and terrain by shake intensity

No.	Shake intensity(MMI)	Severe damage & destroyed shelter	Building built on elevated ground (side or top of hill or mountain)
1	MMI 6 – 6.5	54%	94%
2	MMI 5-5.9	20%	51%
3	MMI 4.5-4.9	7%	25%
	MMI 4.5-6.5	14%	37%
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Map of household damage, by MMI range



Shelter damage was higher closer to the epicenter. However, more granular analysis found shelter damage to be most closely associated with the elevation of the ground it was constructed on, with sloped land more closely associated with severely damaged or destroyed shelters. The total area represents approximately 96,000 HHs in the affected area.



HOUSEHOLD BUILDING DAMAGE

Shelter damage by districts

No. Districts	Completely destroyed	Severe damage	Moderate damage	Minor damage	No damage
1 Barmal	4%	14%	36%	16%	30%
2 Giyan	9%	36%	39%	16%	0%
3 Spera	28%	31%	32%	7%	1%
4 Tani	2%	6%	34%	30%	28%

Damaged shelters and elevation, by district

No.	Districts	Severe damage and destroyed shelters	Building built on Non- flat grounds (Hill or mountain side or on top)
1	Barmal	18%	63%
2	Giyan	44%	81%
3	Spera	59%	95%
4	Tani	8%	34%

Map of household damage, by district



District-level analysis found similar damage patterns, where more mountainous districts reporting higher levels of destroyed shelters, regardless of distance to the epicenter.





Household Shelter Damage Level

HOUSEHOLD SHELTER DAMAGE LEVEL

Overall, REACH found over 51,000 HHs to be in need of shelter replacement or repair based on the overall damage to the shelter. Between 301K and 387K HHs reported moderate, severe or completely destroyed shelters, similar to the original 362K People in Need (PiN) caseload reported in the original earthquake response plan.

HEAVILY DAMAGED SHELTERS

Approximate Households numbers

13,000

% of sampled households, by reported shelter damage type



LIGHTLY DAMAGED SHELTERS

Approximate Households numbers **48,000**

% of sampled households, by reported shelter damage type



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REPAIRING of HOUSEHOLD SHELTER STATUS

Status of HH shelter repairs following earthquake





No repairs are needed



Repairs are needed but have not started

At the time of data collection, nearly all households who needed to repair their shelters had not yet been able to start their repairs. Most HHs reported that walls were the most likely part of their shelter to be damaged, increasingly the likely hood of damage to the entire structure.

Part of HH shelter in need of repair following the earthquake



Part of HH shelter in need of repair following the earthquake, by district

Districts	Roof	Walls	Foundation	Door and Window
Barmal	14%	54%	18%	14%
Giyan	24%	72%	2%	0%
Spera	27%	37%	32%	3%
Tani	20%	65%	2%	11%
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Repair Limitations

Repairs were limited due to two main factors: 1) The high cost of labour and materials in markets, and 2) Most of building materials from destroyed buildings were not reusable for reconstruction, and HHs would likely require additional support to rebuild their shelters.

■ No

Material Cost

HH reporting if repairs were needed but have not been started or completed:

Cannnot afford material costs	93%
Cannot afford labour costs	90%
Lack of available materials for shelter repair	43%
Shelter material sources is too expensive	19%
shelter material sources are too far away	15%
Lack of available labour	5%

Reusable Materials

HH reporting if debris from destroyed shelters could be reused for reconstruction:



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Electricity Services

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Household main reported source of electricity



Reported damage to source of electricity, by district

Districts	Damage of private electrical network	No damage
Barmal	29%	64%
Giyan	58%	40%
Spera	42%	53%
Tani	24%	74%

Household reported damage to source of electricity



Most HHs in the affected area have access to electricity for part of the day through the use of HH solar panels. Nearly 1/3 of HHs reported that their solar panels had been damaged by the earthquake; this proportion was much higher in districts reporting higher proportions of heavily damaged shelters.



WASH **Services**

Damaged latrine

water

42%

Eunctional latrine



latrines were destroyed, highlighting major WASH concerns.

Water sources tended to be public sources, either handpumps or dug wells. While over 40% of water sources were damaged, most were still functional. While overall, very few latrines were damaged, in more affected districts, like Giyan District, most

sources

Handpump Spring, well Piped water Handpump (pumped or kariz -- public (pumped well) - public unprotected well) private

16%

Household main reported damage to latrine

Household main reported source of



Household reported damage to source of water



Household main reported damage to latrine, by district



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Key Findings

Education Facility Findings

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DAMAGE TO EDUCATION FACILITIES

While a large minority of schools reported minor damage, very few schools reported severe damage or complete destruction. Damaged schools tended to be located in specific areas, representing specific pockets of need. Damage was higher in districts farther away from the epicentre, suggesting the distance to the epicentre was not a good predictor of damage to services.

Education facilities damage level



Reported damaged schools following the earthquake*



*damage could be at any level: minor, moderate, severe, or completely destroyed.





FUNCTIONALITY OF EDUCATION SERVICES

Education facilities reported to have had available infrastructure (desks, whiteboards, etc.) affected by the earthquake

□ Infrastructure have not been affected

Infrastructure have been affected



Education facilities reported to have had available classroom materials (books, pens, etc.) affected by the earthquake

Don't Know

□ School materials not affected

School materials have been affected



Education services saw a minimal overall decline in service functionality, concentrated in specific locations.

Change in Classrooms:

Average number of classrooms before earthquake:

Average number of classrooms after earthquake:

9.8 97%

10.1

% of classrooms still functional:

Change in Teachers:

Average number of teachers before earthquake:

Average number of teachers after earthquake:

% of teachers still working:

11 10.7 97% REACH Informing

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Key Findings

Health Centre Findings

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Health facilities

Very few health facilities had been damaged, and none were reported to be destroyed. Damage tended to be light, and very few Health Centres reported that their functionality had been impeded by the earthquake.

Health facilities by reported damage



Reported Damage level of health facilities by district



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Health facilities

% of health centres by amount of damaged equipment following the earthquake



% health centres by reported functionality following the earthquake

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Health facilities by top three concerns



In addition to low levels of reported damage, the earthquake was reported to have had very little impact on the equipment and functionality of health centres. However, health centres were reported to lack basic medicine, qualified staff, and sufficient equipment, due to a longer term neglect of adequate services in the region.





Key Findings

Market Findings

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Markets

Most districts only had 1-2 major markets, while some, like Spera and Barmal, did not report any. Very few shops were reported to be damaged, and even where they were KI reported them to still be functional.

% of functional shops in all markets, by district



Functional shop

p
Non-functional shop

% of damaged shops in all markets by district





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Markets

% of markets where availability of food items has changed following the earthquake

Total	72%	28%	
Giyan o	% 100%		
Gurbuz	50%	50%	
Mandozayi	71%	29%	
Matun (khost)	100%	0%	
Nadir shah kot	100%	0%	
Nika	100%	0%	
Tani	78%	22%	
Urgun	100%	0%	
Ziruk o ʻ	% 100%		

Food item availability NOT changed
 Food item availability changed

Of markets where the availability of food changed, % of markets reporting that its availability had declined:



Ma Nac

Changes in the availability of goods vary from market to market. However, overall, the availability of NFIs, including shelter materials, has declined in the affected area.

% of markets where availability of NFIs has changed following the earthquake

Total	69%	31%
	l	
Giyan	100%	
Gurbuz	50%	50%
Mandozayi	64%	36%
tun (khost)	100%	
lir shah kot	100%	
Nika	100%	
Tani	78%	22%
Urgun	100%	
Ziruk	100%	

Non-Food Item availability NOT changedNon-Food Item availability changed

Of markets where the availability of NFIs changed, % of markets reporting that their availability had declined:

70%

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Conclusions

Key conclusions

DAMAGE IMPACT

14% of HHs (ca. 13.000 HH) had severely damaged or completely destroyed shelters; a further 50% (ca. 48.000) had **minor or** moderately damaged shelters in need of repair. Only 13% of HHs reported that shelter materials from destroyed could be reused in rebuilding, and 93% could not afford new materials, suggesting that HHs may need external support to rebuild.

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ELEVATION

More severely damaged or collapsed shelters were found in districts where they tended to be constructed on hillsides, particularly Spera (82%) and Giyan district (54%), compared to those constructed on flat or levelled ground, highlighting the importance of building location for reconstruction efforts.

KEY SERVICES

Few schools (4%) or Health centres (2%) were found to be severely damaged or destroyed, maintaining most of their ability to function. Nonetheless, health centers were reported to suffer from a lack of necessary materials and staff, linked to a larger neglect of services.

MARKETS

Major markets were reported to be open and functional, and goods were available. However, 70% of markets reported Non-Food Items to be scarcer since the earthquake.







Next Steps

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Next Steps

- Better understanding of market functionality and availability of shelter materials for the reconstruction phase
- In-depth technical assessment of the damage and expert planning of the reconstruction phase
- Understanding of the EQ impact in the broader area, beyond the districts the most impacted (focus of the response to date)

CONTACTS

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Thank you for your attention!



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ANNEX 1

Explanation of shelter damage scoring methodology

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Shelter Damage Index

Questions on the overall level of damage was asked towards the walls, roof, floor, and foundation of the shelters on a 0 (no damage) to 4 (completely destroyed) scale. Scores were then averaged to produce a final score aligned with the EMS-98* damage classifications, below. Due to the importance of walls in determining overall shelter damage, the final score could not be below that of the walls.

Shelter damage at each level means:

Damage Category	Index Score	Damage Description
No Damage	0	No visible damage to the building observed
Minor damage	0.1-1	Small cracks but structurally sound
Moderate damage	1.1-2	Large cracks or missing pieces, but still support building
Severe damage	2.1-3	Partly collapsed, may no longer support building
Completely destroyed	3.1-4	Completely collapsed

*European Macroseismic Scale (EMS)-98 is a standard of classifying damaged shelters on a 5-point scale of damage.

