Web Application Terms of Reference

REG2501

Mudflow/Flooding Anticipatory Action Tool, Kyrgyzstan & Tajikistan

11.03.2025
Version 1.0

IMPACT Initiatives

1. Summary

Country of intervention	Kyrgyzstan, Tajikistan
Mandating Body/ Agency	*KGZ: Ministry of Emergency Services (MoES), OCHA* *TJK: Committee of Emergency Services and Civil Defense (CoES), OCHA*
Project Code	*05BHY*
Development Timeframe *Add planned deadlines*	Deadline for initial functioning product: 31 March 2025 (can be modified afterwards but we need something working based on this).
General Objective	Develop working dashboard that updates on a regular, monthly basis showing areas in Kyrgyzstan and Tajikistan at-risk to mudflows and flooding.
Data Sources	**Secondary Data:** National Statistical Committee of the Kyrgyz Republic - Statistics of the Kyrgyz Republic Agency on statistics under the President of the Republic of Tajikistan GLOFAS Medium range Flood Summary (1-30 days) **Primary Data:** IMPACT Data Collection of Local Self Government Vulnerability

Application Type		Webmap	X	Dashboard		Story map		Other:

Platform	IMPACT Online Platform

Audience & dissemination
*Specify **who** will the web product inform and **how** you will disseminate to inform the audience*

	Audience type	**Specific actors**	**Dissemination**
X	Operational	*Acted* *START Network Partners (Mercy Corps, WHH)*	□ General Product Mailing (e.g. mail to NGO consortium; HCT participants; Donors) X Cluster Mailing (Education, Shelter and WASH) and presentation of findings at next cluster meeting X Presentation of findings (e.g. at HCT meeting; Cluster meeting) □ Website Dissemination
X	Programmatic		
X	Strategic	*KGZ: DRCU Members, MoES* *TJK: REACT Members, CoES*	
	Other		

				(Relief Web & REACH Resource Centre)
Access		Public		
	X	Password Protected		
		Internal		
		Other		

2. Background & Rationale

From 2024-2025, IMPACT will conduct a multi-hazard Area-Based Risk Assessment (ABRA) of different major hazards in 5 districts of Sughd Region of Tajikistan (Bobojon Ghafurov, Jabbor Rasulov, Spitamin, Konibodom, Isfara), and 2 districts of the Batken Region of Kyrgyzstan (Leylek, Batken). In total, these districts account for 50 Local Self Governments (LSG) units, called Jamoats, in Tajikistan, and 21 LSGs, called Ayil Aimaks, in Kyrgyzstan. A full table of this, by district, is shown below:

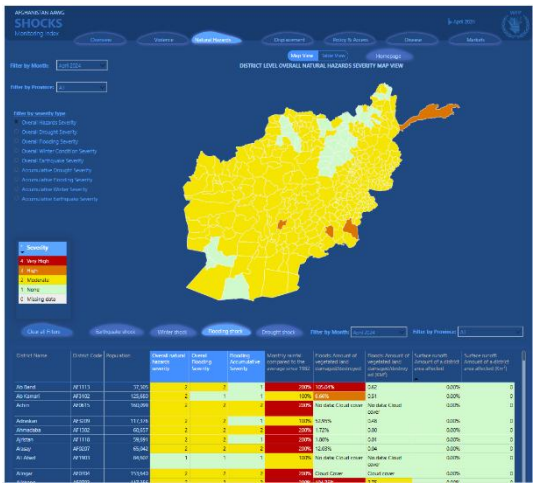
OID	Country	Region	District	# of LSGs	Total LSGs per region
1	Kyrgyzstan	Batken	Batken	10	21
2			Leylek	11	
4	Tajikistan	Sughd	Isfara	13	50
5			Konibodom	7	
6			B. Ghafurov	17	
7			J. Rasulov	6	
8			Spitamin	7	

Building on this, IMPACT received funding from the global START Network to build an interactive dashboard using the data from the Area Based Risk Assessment to create an anticipatory action tool to provide a forecast for areas at risk of mudflows/flooding in the assessed LSGs.This would use the Europoean Commissions' GLOFAS data to provide regular forcasted flood hazard data, along with IMPACT's data collected from the communities on vulnerabilty. The final product would provide the likley risk faced by different communities to mudflow/flooding risk over the coming month, to help raise alerts and conduct anticipatory action appeals for flooding and mudflow risk in vulnerable communities.

3. Core Components of the Web Application

The Dashboard should be an interactive dashboard featuring a map and table of LSGs. It should be in a similar format to the Afghanistan AIMWG shocks monitoring index, accessible here: REACH AFG SMI

A screenshot of the dashboard is shown below:



The dashboard should be broken up so there is a Kyrgyzstan and Tajikistan page. The same 5 categories should be used, but only for flooding, and will be updated on a monthly basis.

The following forumlas will be used:

$$Flood\ risk = Hazard\ Exposure * Susceptibility * Vulnerability$$

Where:

$$Hazard\ Exposure = GLOFAS\ Medium\ Range\ Flood\ Summary$$

$$Susceptibility = \frac{2 * Population\ in\ Flood\ exposed\ zones + 1 * Agriculture\ land\ in\ Flood\ exposed\ zones}{2}$$

$$Vulnerability = \frac{1 * LSG\ Coping\ Capacity + 1 * LSG\ Adaptive\ Capacity + 1\ LSG\ Susceptibility}{2}$$

4. Technical Specifications

4. 1: Type and number of products required

	Type of Web App	***Platform***	***Hosted by***
	Web Map		
X	Interactive Dashboard	Power BI API	IMPACT (tentative). KGZ: To be moved to DRCU platform (MoES) TJK: To be moved to REACT plaform (OCHA or AKAH)
	Story Map		
	Other		

4. 2: Explain choice

All Disaster Risk Managmeent work in Tajikistan and Kyrgyzstan needs to support the exisiting Disaster Risk Management Coordination structures, lead by the government emergency service (MoES in Kyrgyzstan and CoES in Tajikistan). In Kyrgyzstan, the DRCU is centralized under MoES, and coordinates closely with UN and humanitarian agencies working on DRM work. While not yet decided, the final location for the dashboard is likely to be on MoES's website. In Tajikistan, the REACT is more independent, and CoES allows OCHA to manage most of the REACT processes themselves. In this case, OCHA and AKAH are working to establish a data management platform. While not decided yet, this will either be on an platform developed by AKAH or will be Humanitarianresponse.info if OCHA manages the process.

Until these coordination decisions are decided by DRCU and REACT, IMPACT will host the dashboard on its own platform.

5. Data

5.1 List of indicators or layers

Indicator/layer	*Source*	*Link to layer / URL*	*Update frequency*
Hazard Prevalence	GLOFAS Medium range Flood Summary (1-30 days) GLOFAS Medium range Flood Summary (1-3 days) GLOFAS Medium range Flood Summary (4-10 days) Flood Summary (11-30 days)	https://confluence.ecmwf.int/display/CEMS/GloFAS+Hydrological+Products+Overview	Monthly
Hazard Exposure	Flood model – identify areas of population and farmland that are susceptible	IMPACT GIS Remote Sensing Analysis (attached)	Never
Hazard Exposure	Population statistics (total population within range of flood model area)	KGZ: National Statistical Committee of the Kyrgyz Republic - Statistics of the Kyrgyz Republic TJK: Agency on statistics under the President of the Republic of Tajikistan (attached)	Never
Hazard Exposure	Farmland (total population within range of flood model area)	(attached)	Never
Vulnerability	Coping Capacity	IMPACT ABRA Assessment (attached)	Never
Vulnerability	Adaptive Capacity	IMPACT ABRA Assessment (attached)	Never
Admin Boundaries	Official ADM boudnaries for LSG level	IMPACT ABRA Assessment (attached)	Never

The GLOFAS Data has 9 Separate categories, which will be aggregated in the following way:

GLOFAS Category	**Dashboard Category**
Dark purple: 20+year probability exceeds 75%	Very High Hazard Prevalence
Medium purple: 20+-year probability between 50-75%	
Light purple: 20+-year probability between 30-50%	
Dark red: 5-20-year probability is below 30% and 5-year probability exceeds 75%	High Hazard Prevalence

Medium red: 5-20-year probability is below 30% and 5-year probability is between 50-75%	
Light red: 5-20-year probability is below 30% and 5-year probability is between 30-50%	
Dark yellow: 2-5-year probability is below 30% and 2-year probability exceeds 75%	Moderate Hazard Prevalence
Medium yellow: 2-5-year probability is below 30% and 2-year probability is between 50-75%	
Light yellow: 2-5-year probability is below 30% and 2-year probability is between 30-50%	

The IMPACT TJK and KGZ team will submit an excel table with the information to add on a common, normalized scale for each indicator. The hazard indicator will be updated on a monthly basis to provide regular updates on the projected risk for different Local Self Government (LSG) areas.

The following Formula has been computed for each LSG using these metrics:

$$Mudflow\ Risk_{LSG} = Hazard\ Exposure_{LSG}\ x\ Vulnerability_{LSG}$$

Where:

$$Vulnerability_{LSG} = Susceptibility_{LSG} * Coping\ Capacity_{LSG} * Adaptive\ Capacity_{LSG}$$

5.2 Data checklist

		Yes	***No***
1)	Data set checked by HQ data unit?		X
2)	Analysis checked by HQ data unit?		X
3)	Planned data visualization correlates to analysis checked by HQ data unit?		X
4)	Are there additional calculations/aggregations in the dashboard?* (Please note that it is not recommended. Calculations and analysis should be done beforehand and integrated into the dashboard, not the other way around- Even sum or count should be done) **If yes, make sure the corresponding files (dataset, R script, etc.) are shared along with the dashboard so that the RD can do some spotchecks*		X

5.3 Data protection measures

6. Management arrangements and work plan

6.1. Roles and Responsibilities, Organogram

Table 2: Description of roles and responsibilities

Task Description	*Responsible*	*Accountable*	*Consulted*	*Informed*
Primary Developer*	GIS Support (GVA)	GIS Support (GVA)	GIS Manager (TJK)	Regional Coordinator (GVA)
Secondary Developer*	GIS Support (GVA)	GIS Support (GVA)	GIS Manager (TJK)	Regional Coordinator (GVA)
Flood Model, GIS Data	GIS Manager (TJK)	GIS Manager (TJK)	GIS Support (GVA)	Regional Coordinator (GVA)
Vulnerability Data, Population Data	Assessmet Officers (KGZ & TJK)	Country Coordinator (REG)	GIS Support (GVA)	Regional Coordinator (GVA)

***required.** Secondary developer should be identified at the outset and be in a position to complete the task in the event that the primary developer cannot.

Responsible: *the person(s) who execute the task*

Accountable: *the person who validate the completion of the task and is accountable of the final output or milestone*

Consulted: *the person(s) who must be consulted when the task is implemented*

Informed: *the person(s) who need to be informed when the task is completed*

6.2. Resources: HR, Logistic and Financial

6.3. Work plan

7. Risks & Assumptions

Table 3 : List of risks and mitigating action

Risk	*Mitigation Measure*
Primary developer not available to complete development.	Surge candidate must be identified.
Statistical data is not obtained in time for the project due date.	Rely on IMPACT primary data collected and publically available statistical data.

8. Monitoring and Evaluation

Please complete the M&E Plan column in the table and use the corresponding Tools in the Monitoring & Evaluation matrix to implement the plan during the research cycle.

Table 4 : Monitoring and evaluation targets

IMPACT Objective	External M&E Indicator	Internal M&E Indicator	Focal point	Tool	Will indicator be tracked?
Humanitarian stakeholders are accessing IMPACT products	Number of humanitarian organisations accessing IMPACT services/products Number of individuals accessing IMPACT services/products	# of visits to x webmap/x dashboard	Country request to HQ	User_log	X Yes: Google Analytics/Matomo
IMPACT activities contribute to better program implementation and coordination of the humanitarian response	Number of humanitarian organisations utilizing IMPACT services/products	# references in HPC documents (HNO, SRP, Flash appeals, Cluster/sector strategies)	Country team	Reference_log	N/A
		# references in single agency documents			Yes: MoES, DRCU, United Nations updates.
Humanitarian stakeholders are using IMPACT products	Humanitarian actors use IMPACT evidence/products as a basis for decision making, aid planning and delivery Number of humanitarian documents (HNO, HRP, cluster/agency strategic plans, etc.) directly	Perceived relevance of IMPACT country-programs	Country team	Usage_Feedback *and* Usage_Survey template	*[Outline here the usage survey to be implemented for this application,* log feedback received by partners during bilateral/multi-lateral meetings, emails, etc. Feedback can inserted under 1 or more of the proposed categories, in line with the feedback received.
		Perceived usefulness and influence of IMPACT outputs			Usage survey with partners

	informed by IMPACT products	Recommendations to strengthen IMPACT programs			
		Perceived capacity of IMPACT staff			
		Perceived quality of outputs/programs			
		Recommendations to strengthen IMPACT programs			
Humanitarian stakeholders are engaged in IMPACT programs throughout the research cycle	Number and/or percentage of humanitarian organizations directly contributing to IMPACT programs *(providing resources, participating to presentations, etc.)*	# of organisations providing resources (i.e.staff, vehicles, meeting space, budget, etc.) for activity implementation	Country team	Engagement _log	□ Yes
		# of organisations/clusters inputting in research design and joint analysis			X Yes
		# of organisations/clusters attending briefings on findings;			X Yes