

iCARE Innovation Fund

Satellite and AI-Driven Climate Resilience Tool for Bhutan

Monthly Progress Report

Prepared by Geoneon

1. Project Information

Project Title:	Satellite and AI-Driven Climate Resilience Tool for Bhutan
Project Code:	WBCAR
Partner Organisation:	Department of Local Governance and Disaster Management
Reporting Period:	1 st August 2024 - 31 st August 2024
Date of Submission:	05/09/2024
Contact Name:	Roxane Bandini-Maeder
Contact Position:	CEO
Contact Email Address:	roxane@geoneon.com
Contact Telephone Number:	+61417052557
Status of project progress in this reporting period	<input type="checkbox"/> Significant delay <input type="checkbox"/> Delay <input checked="" type="checkbox"/> On Track
Report sign Off	<input checked="" type="checkbox"/> I have reviewed all the information provided for each section including number of beneficiaries. The information provided for each section of the report is complete. Name: Roxane Bandini-Maeder Designation: CEO

2. Key Achievements

1. Geospatial Tool Progress

- **EVI Integration:** Enhanced Vegetation Index added to improve the weighting of low-density vs. high-density trees, specifically for tree density with high-resolution imagery.
- **WorldClim Climate Layer:** Climate data integrated into the model, where high precipitation negatively affects severity scores, applicable only to the tree layer.
- **Input Weighting Change:** The inclusion of the climate layer has led to adjustments in input weighting, following Parkes et al.
- **Daylight Map Enhancement:** Buildings and roads data from Daylight Map Distribution, including OSM, Microsoft buildings, and additional data, have been utilized and improved, including building heights.
- **DEM Layer Fix:** Switched to using SRTM for topographic input (30m resampled to 10m); CartoDEM was discarded due to line artifacts.
- **Exposure Calculation Change:** Exposure now calculated using the mean of a 100m buffer, with non-vegetation areas set to zero severity.
- **Exposure Fix:** Imagery now uses a country boundary buffered by 500m for correct exposure calculation, fixing an issue where data was previously set to "nodata" on the boundary, leading to incorrect exposure values.

2. ADPC Mission Support

- Coordinate with DLGDM and DoFPS to meet with ADPC Delegation.

3. Implementation Progress

Activity Title	Last Month Progress	Current Month Progress	Activities, and Events, planned for the subsequent month
Activity 1.1.1: Consultation between DLGDM and Geoneon to identify Key Stakeholders and engage with them via a letter of Engagement (January 2024 – February 2024)	Activity Progress: 100% - Completed Non-Applicable - activity completed.	Activity Progress: 100% - Completed Non-Applicable - activity completed.	Non-Applicable - activity completed.
Activity 1.2.1: Development of consultation plan, feedback form, execution of beneficiaries consultation workshops and report outlining findings and data analysis of gender diversity attendance. (January 2024 – March 2024)	Activity Progress: 100% - Completed Activity Progress: 100% - Completed Non-Applicable - activity completed.	On going of execution of Consultation Plan	On going of execution of Consultation Plan
Activity 2.1.1: Source existing data and analysis of data gaps and pipeline development. (January 2024 – June 2024)	Activity Progress: 100% - Completed Non-Applicable - activity completed.	Activity Progress: 100% Completed	Non-Applicable - activity completed.
Activity 2.2.1 Material Creation and Design (April 2024 – June 2024)	Activity Progress: 100% - Completed Non-Applicable - activity completed.	Activity Progress: 100% Completed	Non-Applicable - activity completed.
Activity 4.1.1 Collecting feedback (July 2024 - November 2024)	Activity Progress: 40% Completed: <ul style="list-style-type: none"> Dissemination of the geospatial tool for testing phase to four stakeholders governmental and non-governmental. 	Activity Progress: 60% Completed: <ul style="list-style-type: none"> Received feedbacks about geospatial tool. In progress: <ul style="list-style-type: none"> Collect feedback. 	On-line technical stakeholder engagement meeting to collect further feedbacks and present new features of the geospatial tool.

	In progress: Collect feedback.		
Activity 4.2.2: Development of consultation plan, feedback form, interviews, teaching material, execution of capacity enhancement workshops and report outlining findings and data analysis of gender diversity attendance (November 2024 – 15 th January 2025)	Activity Progress: 10% In Progress: <ul style="list-style-type: none"> List of key stakeholders participating at the capacity building Development of stakeholder consultation plan 	Activity Progress: 30% In Progress: <ul style="list-style-type: none"> Design capacity building activities Preliminary dates chosen. 	<ul style="list-style-type: none"> Agree on dates Finalise plan capacity building Design question for survey
Activity 4.3.1 Finalisation of tool (November 2024 – 15 th January 2025)	Activity Progress: 10% Start to package into software.	Activity Progress: 60% In Progress: <ul style="list-style-type: none"> Integration of features from feedbacks. Testing features before finalisation of software packaging. 	<ul style="list-style-type: none"> Present new features Continuing packaging geospatial tool into software Update platform.
Activity 4.4.1 Recommendation report (September 2024 – 15 th January 2025)	No started	Activity in progress: 20% In Progress: <ul style="list-style-type: none"> Structure of recommendation report Draft few recommendations 	<ul style="list-style-type: none"> Draft recommendations into reports

4. Results Framework Indicators Progress

PDO 1 Indicator Description: Government agencies and Citizens who have access to climate-resilient solutions tested or access to the results of the climate resilient solutions under the project (Number)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Government Agencies	0	N/A	0	5
Male citizen	0	N/A	0	1000
Female citizen	0	N/A	0	1000
Date		1 st of August	31 st of August	
Comments	This will be reflected at the end of project			
Output Indicators 1: Number of people trained (online) (by sex, country, topic, year, participant category):				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Participants	0	15	15	4
Male including in participants	0	14	14	2
Female including in participants	0	1	1	2
Date		1 st of August	31 st of August	
Comments				
Output Indicators 2: Number of people trained during the Capacity Enhancement Workshop Number of knowledge products provided (by type of product, theme, country)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Participants	0	0	0	10
Female including in participants	0	0	0	>30%
Date		1 st of August	31 st of August	
Comments	This will be reflected at the end of the project			
Output Indicators 3: Number of knowledge products provided (by type of product, theme, country)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Total Products:	0	4	4	5

Open-source Geospatial Tool	0	1	1	1
Beneficiaries Engagement Workshop and Finding Reports.	0	1	1	1
Training Material for the Open-Source Tool	0	1	1	1
Capacity Enhancement workshop	0	0	0	1
Training material on the use of satellite imageries, AI and data fusion. This training is important to make sure end-user understand the tool.	0	1	1	1
Date		1 st of August	31 st of August	
Comments				

Output Indicators 4: Number of people provided with knowledge products (by recipient category, type of knowledge product, country, theme)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Open-source Geospatial Tool	0	0	4	10
Beneficiaries Engagement Workshop and Finding Reports.	0	32	32	20
Training Material for the Open-Source tool	0	0	4	10
Capacity Enhancement workshop	0	0	0	10
Training material on the use of satellite imageries, AI and data fusion. This training is important to make sure end-user understand the tool.	0	23	23	10
Date		1 st of August	31 st of August	
Comments				

Output Indicators 5: Number of events supported (by type, year, theme, country)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Facebook and LinkedIn Posts	0	6	7	6
Press release	0	2	2	2
Stakeholder engagement workshop	0	3	3	2
Conferences	0	0	0	1
Blog Post (Additional)	0	1	1	0
Date		1 st of August	31 st of August	
Comments				
Output Indicators 6: Number of people participating in supported events (by participant category, sex, year, theme, country)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Reactions of Facebook and LinkedIn Posts	0	Total:226 reactions 25 comments 19 reposts	Total:263 reactions 26 comments 26 reposts	20
News agency of press release	0	1	1	1
Participants of stakeholder engagement workshop	0	24	24	10
Participants of conferences	0	N/A	N/A	20
Date		1 st of August	31 st of August	
Comments	We notice an increase of engagement of people in Bhutan on social media			
INDICATORS SPECIFICALLY RELATED TO PROJECT				
Outcome 1 Indicator Description: Enhanced stakeholder engagement and Needs Identification				
Number of stakeholders engaged	0	37	37	10
Hazards identification	0	1	1	3
Indicators identification	0	1	1	2
Critical infrastructure types identification	0	3	3	3
Date		1 st of August	31 st of August	
Comments	Please note that a request was made by stakeholder to focus on one hazard but country wide instead of multi hazard in one district. That aligns with the urgency of having a wildfire exposure index. More stakeholder engagements have been undertaken as execution of stakeholder engagement plan.			

Output 1.1 Indicator Description: Number and diversity of stakeholders engaged				
Number of government officials engaged	0	15	15	10
Female including in the government officials engaged	0	30%	30%	>30%
Date		1 st of August	31 st of August	
Comments	Women in government agencies are less represented than man.			
Outcome 2 Indicator Description: Number of geospatial tool which is functional and ready to be tested				
Functional tools	0	0	1	1
Relevant hazards	0	1	1	3
Relevant infrastructures	0	3	3	3
Date		1 st of August	31 st of August	
Comments	Please note that a request was made by stakeholder to focus on one hazard but country wide instead of multi hazard in one district.			
Output 2.1 Indicator Description: Number of people accessing the first open-source tool				
Number of people accessing	0	4	4	4
Date		1 st of August	31 st of August	
Comments				
Output 2.2 Indicator Description: Number of people with training manual delivered				
Number of people delivered	0	4	4	4
Date		1 st of August	31 st of August	
Comments	.			
Outcome 3 Indicator Description: Capacity Building and tool testing				
Number of government agencies	0	10	10	5
Government officials including in agencies	0	10	10	10
Female including in government officials	0	0	0	>30%
Number of male citizens accessing the results	0	0	0	1000
Number of female citizens accessing the results	0	0	0	1000
Date		1 st of August	31 st of August	
Comments	It will be reflected at the end of Phase 3.			

Output 3.1 Indicator Description: Number of people accessing the first open-source tool				
Number of people trained online prior testing test	0	0	0	4
Number of people testing the tool	0	0	4	4
Date		1 st of August	31 st of August	
Comments	It will be reflected at the beginning of Phase 3.			
Output 3.2 Indicator Description: A trained cohort of stakeholders capable of using and disseminating knowledge about the tool, promoting gender-balanced capacity building in the local context.				
Number of trained users, disaggregated by gender	0	0	0	10
Female including trained users	0	0	0	>30%
Number of people delivered with knowledge product	0	0	0	10
Femail including in people delivered	0	0	0	>30%
Date		1 st of August	31 st of August	
Comments	It will be reflected at the end of Phase 3.			
Output 3.3 Indicator Description: Tool refinement based on feedback				
Address relevant feedback	0	0	0	>70%
Date		1 st of August	31 st of August	
Comments	It will be reflected at the end of Phase 3.			
Output 3.4 Indicator Description: Number of strategic recommendations made				
Strategic recommendations	0	0	0	5
Date		1 st of August	31 st of August	
Comments	It will be reflected at the end of Phase 3.			

5. Challenges, Lessons Learned and Way Forward

Challenges

No significant challenges have been encountered this month.

Integration of climate data: few available climate data were tested to integrate the most accurate and relevant for the context of Bhutan.

Integration of data from government agencies: type of vegetation provided by agencies were dated and coarse.

Lessons Learned

Effective Communication: We have experienced good communication and support from ADPC and key stakeholders. This has been critical in identifying and addressing additional project needs.

Way Forward

Partner Collaboration: Continue to foster open lines of communication and collaboration with all partners involved in the project. Possibility to develop MoUs.

Expectation Management: Maintain ongoing expectations management with stakeholders to ensure alignment and transparency regarding project developments and timelines.

Presentation of new results: presentation of new results to key stakeholders.

Packaging tool in a software: packaging tool in a software for user-friendly application.

Preparing community Survey; drafting question for surveying community.

Preparing stakeholder capacity building: preparing material and logistic for capacity building.

Annexures:

Linkedin Post:

<https://www.linkedin.com/feed/update/urn:li:activity:7227480525341384704>

Updated tool: [Bhutan Home \(geoneon.com\)](http://geoneon.com)

Glossary

Project Title	means	Exact and full name of the project as defined in the Sub Grant Agreement
Project Code	means	A five-digit code assigned by ADPC
Partner Organization	means	The lead agency(ies) responsible for the implementation of the project
Key Achievements	means	The actual outcome or impact of your work, such as reaching a PDO, or outcome or output defined in the final and agreed Results Framework.
Implementation Progress	means	Implementation progress means the steps or actions taken to achieve the PDO or outcomes or outputs. In this case it would be the list of activities defined in the final and approved work plan
Challenges	means	The most significant and persistent areas of risk that affect the project's ability to achieve its objectives. Challenges could be related to managing the Sub Grant, sustaining development gains, coordinating with stakeholders, and implementing core management functions. Please also discuss the solutions to mitigate these risks.
Lessons Learned	means	Lessons learned are contextual or operational information that may affect planning and future performance. They highlight the insights gained from the activity's implementation practices and progress, such as staff feedback, stakeholder interviews, data analysis, and success stories. They also include any changes required by or support requested from ADPC or partners.



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