



## Reducing Climate Change-induced Risks and Vulnerabilities of GLOF



Department of Disaster Management and Department of Energy field visit for raising awareness and education in the GLOF vulnerable communities on the automatic Early Warning System (EWS).

28<sup>th</sup> September – 1<sup>st</sup> October 2011

Sahar N Kirmani  
Environment Intern

## Introduction

A field visit, with the Department of Disaster Management (DDM) and Department of Energy (DOE), was conducted between 28<sup>th</sup> September to 1<sup>st</sup> October, 2011, as part of the project "Reducing Climate Change-induced Risks and Vulnerabilities of GLOF in Punakha-Wangdue and Chamkhar valleys". The visit included awareness and education of the Wangdue Dzongkhag officials and community members covering outcome 3 of the project.

## Awareness Activities

During the end of 2010/2011, flood warning sirens, automatic weather stations (AWS) and automatic water level stations (AWLS) were installed in Lunana and the Wangdue/Punakha valley. Hazard zonation of the area, using GLOF hazard maps created by the Department of Geology and the University of Vienna, Austria, in 2002, was also completed during May 2010 with high (red), medium (yellow) and safe areas (blue) demarcated on the ground with iron pegs. Each community residing within the high/medium risk areas were informed and shown the safe evacuation areas.

Field visits in the Wangdue district involved presentations by the DDM and DOE on the overall objective, specific outcomes and background of the project. The DDM identified high risk hazard zones and 38 safe evacuation sites and routes for communities in the red zone.

The DOE presented technical information on the hardware and software components of the automatic EWS and how data from this system is transferred, stored and accessed at the flood warning control station in Wangduephodrang, which is manned 24hrs a day. In addition, the interaction of each EWS component (siren, AWS, AWLS and data loggers) was explained in terms of parameters measured, frequency of measurements, threshold levels for lakes and rivers, siren activation and manual operation of sirens through the control station.

The DDM and DOE presented to the Wangduephodrang Dzongkhag, including the Deputy Governor; the Royal Bhutan Army, including soldiers; Bajo Higher Secondary School; the Punatsangchhu Hydroelectric Power Authority, with representative from India; and the Basochhu Hydroelectric Power Plant. Five local communities were also visited with participation from local villagers and sub-block leaders. Along with the presentations, posters were displayed and information brochures on hazards were handed out.

Questions were raised on the operations of sirens, the possibility of other causes leading to flooding, for example, the increased flow from tributaries feeding into the larger river, and the possible limitation of contacting the DDM once sirens are activated due to congestion of the telecom services. The DDM is currently collaborating with Siemens India on developing a master plan to overcome telecom congestion issues.

## Flood Warning Control Station

The control station was visited and a demonstration of the Siren Status and Control Interface (only accessible by the control station) and the Bhutan GLOF Web Application was given. The web application will be provided to select authorities that may benefit from the data and analysis functionalities provided on all the sirens and sensors. It can be accessed with authentication on <http://119.2.119.46/glof/tw>.



Figure 1. Flood Warning Control Station in Wangduephodrang.

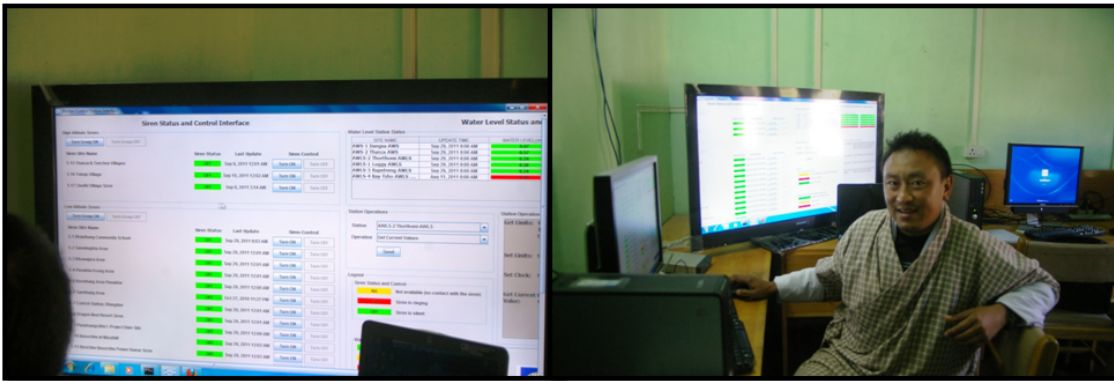


Figure 2. Siren Status and Control Interface operated by the Deputy Project Manager, DOE.

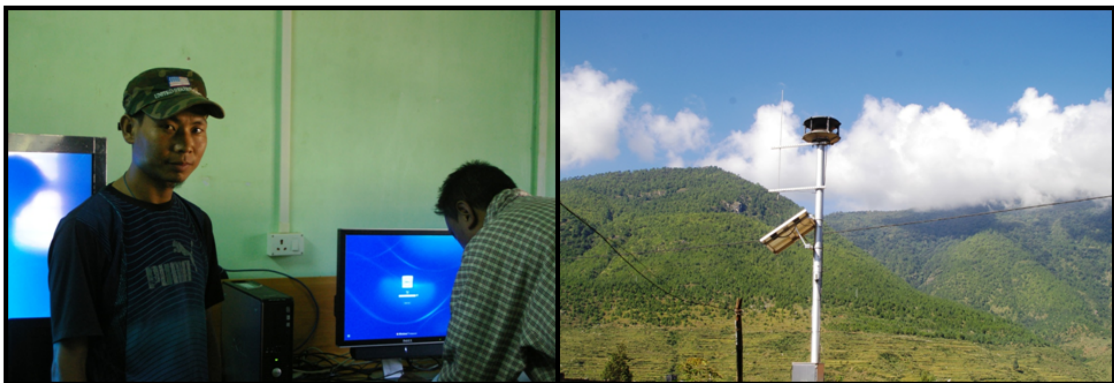


Figure 3. Control station technician and siren in front of control station.





Figure 4. Ministers and Deputy Governor of Wangduephodrang Dzongkhag.



Figure 5. Local leader and community members from Bajothang community.



Figure 6. Project Manager, DDM and Deputy Project Manager, DOE, presenting to the Bajothang community





Figure 7. Presenting to the Bajo Higher Secondary School.



Figure 8. New town development of Bajothang Community.



Figure 9. Participants of the Punatsangchhu Hydroelectric Power Authority, Lobesa.



Figure 10. Location of the Punatsangchhu Dam and siren site.



Figure 11. Basochhu Hydropower Plant site.



Figure 12. Participants of the Basochhu Hydropower Plant and a poster of General Disaster Preparedness Plan.



Programme			
Date	Time	Program	Venue
28 <sup>th</sup> Sep.2011		Arrive Wangdue	
29 <sup>th</sup> Sep. 2011	09:30 - 11:00 a.m.	Program with Dzongkhag Officials, Representatives from Regional Offices (RSTA, BAFRA, BPC, Telecom etc...) RBP, Hospitals, and Monk Body	Dzongkhag DYT Hall
	11:30 - 13:00 p.m.	Program with Royal Bhutan Army (if possible and required)	RBA, Tencholing
	14:00 – 15:30 p.m.	Program with community of Bajothang community (including representative from town and resort)	Bajo Higher Secondary School
	15:30 – 17:00 p.m.	Program with staff and students of Bajo Higher Secondary School	School
30 <sup>th</sup> Sep. 2011	11:30 - 13:00 p.m.	Program with Punatsangchhu HPA	PHPA
	14:00 – 15:30 p.m.	Basochhu/Rurichhu Hydropower Plant	BasoChuu
	16:00 – 17:30 p.m.	Basochhu/Rurichhu Communities	To be decided by the Dzongkhag



1 <sup>st</sup> October 2011	09:00 -11:00 a.m.	Communities between Jairi-Kamichu, Kamichu RNR, BHU, Gewog Officials	
	12:00 – 13:00 p.m.	Meeting with community in Changchey, Tsirang	
	14:30 – 17:00 p.m.	Program with community in Sunkosh Dobani	
1 <sup>st</sup> October 2011		Back to Thimphu	