

UNITED NATIONS DEVELOPMENT PROGRAM



*Empowered lives.
Resilient nations.*

**Reducing Climate Change-induced Risks and Vulnerabilities from
Glacial Lake Outburst Floods in the Punakha-Wangdue and
Chamkhar Valleys**

**Annual Report 2012
Submitted to Austrian Coordination Office
Thimphu, Bhutan**

1. Project progress in 2012

2012-allocation from ADA

During the fourth year of implementation, funds from LDCF, RGoB and the Austrian co-financing component have been used. From ADA a total contribution of USD 193,798.45 was received for 2012 and there was also carry over fund of USD 52,680 from 2011. Therefore the total ADA fund for 2012 was USD 246,478.45 of which USD 225,487.84 was spent. As per the final CDR there should be a balance of USD 20,990.6 available for 2013, however only USD 13,339 has been authorized. A balance of USD 7,463 has already been approved but the contribution has not been received (details in financial report). The above expenditure was mainly used to implement the activities under outcome 2: *Reduced risks of GLOF from Thorthormi Lake through an artificial lake level management system* and outcome 4: *Learning, evaluation and adaptive management-lessons documented*.

Key achievements in 2012

Outcome 1: Improved national, regional, and local capacities to prevent climate change-induced GLOF disasters in the Punakha-Wangdue and Chamkhar Valleys

The DM bill was reviewed by both houses of the parliament and it was enacted in the last session of the parliament on 27th February 2013, which will significantly strengthen the DRR activities in Bhutan. The Bill is an effort to decentralize disaster management activities and to empower the nodal institutions at all levels with the legal status to implement disaster reduction strategies more effectively. The Bill also envisages delegation of authority and resources at all level for disaster management.

The National Disaster Risk Management (NDRM) framework 2006 was reviewed in line with DM bill 2011 and also based on lessons learnt from the recent disasters that devastated the nation. NDRMF (2006) has served as the key policy document in preparedness, mitigation and response activities in areas of disaster management. However, with changing policies and needs as well as with the adoption of the Disaster Management Bill, it was important and necessary to revise the NDRMF document to align with the provisions of the DM Bill and incorporate other important policy issues. The new institutional re-structuring within the government and experiences of the recent past disasters also demands to incorporate changing priorities in the document.

The Department of Disaster Management (DDM), MoHCA with technical support from UNDP formulated the Dzongkhag Disaster Planning Guidelines to guide and to assist Dzongkhags (Districts) in preparation of their disaster management plans. The Hazard, Vulnerability and Recourse Mapping and CBDRM Planning template completed in 105 Chiwogs (Villages) in Punakha, Wangdue & Bumthang Dzongkhags.

The ToT for Safe School Initiative Program/Workshop on Disaster Preparedness and Response for Safe School was conducted for schools under Wangdue Dzongkhag from 19-24 December 2012 and trained around 65 principals and teachers. The school children are most vulnerable to the effect of disaster. In order to address this issue, the DDM carried out series of activities to educate and raise awareness on disaster risk reduction in schools. The “**Workshop on Disaster Preparedness and Response for Safe School**” aimed at building capacity of teachers on broad spectrum of preparedness planning and testing of preparedness through evacuation drills was conducted in several Dzongkhags.

Outcome 2: Reduced risks of GLOF from Thorthormi Lake through an artificial lake level management system

The lowering of lakes has been completed for the main lake (Thorthormi) as well as for two subsidiary lakes. The main lake was lowered by 1.36 meters by Sep 2012 bringing the total lake surface reduction to

5.04 meters against the project target of 5 meters. From July-Sep 2012, 229 workers including 123 army personnel were engaged to complete the lake lowering activity. Without the assistance from the army it would have been difficult to achieve the target.

DDM with technical support from DGM had carried out the hazard zones demarcation and identification of safe GLOF evacuation sites from Khagtang to Jalikhar along Chamkhar Chu in Bumthang. Around 28 evacuation sites were identified starting from Khagtang to Jalikhar in Bumthang Dzongkhag. The evacuation sites were identified wherever there are high risks from GLOF to the dwellers near Chamkhar River. Iron pillars were installed for the demarcated hazard zone points and safe evacuation sites. Public awareness on GLOF hazard zonation and safe GLOF evacuation sites were also conducted.

Outcome 3: Reduced human and material losses in vulnerable communities in the Punakha-Wangdue Valley through GLOF early warning systems

The installation of the automatic EWS was completed in 2011. The automatic EWS comprised of 17 sirens, 4 automatic water level stations and 3 automatic weather stations that have been successfully installed and are fully functional. The EWS control center is operational 24 hours a day, which provides real time data on GLOF related information. A team from DHMS lead by Director visited Lunana project sites in July 2012 along with DDM staff and conducted education and awareness on GLOF EWS and impending disaster risks from GLOF for communities of Lunana and on automatic GLOF EWS. More than 141 people from 4 villages of Lunana (i.e. Thanza, Tenchey, Tshoju and Lhedhi), Lunana Community Primary School and Tshoju ECR attended the awareness campaign. The objective of the awareness program was to sensitize and orient communities in the vulnerable areas and other stakeholders on the impending disaster risks, in particular from GLOF.

The DDM in collaboration with DHMS, Dzongkhag and Gewog Administrations conducted the GLOF Evacuation mock drills by activating sirens (*for Early Warning*) installed in different vulnerable communities along the Punatsangchu Valley from 24 October 2012 to 1 November 2012 so that in the event of GLOF communities will be prepared for appropriate response. The GLOF evacuation mock drills were conducted to ensure fast, organized and smooth evacuation during emergencies and also to test the functionality and effectiveness of GLOF EWS that were installed in the valley. People from the vulnerable communities including school teachers, students, monks from Punakha Dzong and Shedra, government officials from the Dzongkhag and local functionaries also took part in drill on GLOF EWS.

The Standard Operating Procedure (SOP) for GLOF EWS was also formulated which details the functioning of the EWS.

Outcome 4: Enhanced learning, evaluation and adaptive management

The International GLOF Conference was successfully convened from 5-7 December 2012 in Paro, Bhutan. More than 70 participants attended the conference. To make the experience sharing from the GLOF project more meaningful there were participants from Nepal, India, Pakistan and various universities and research institutes from Japan, US, Austria and Norway. As part of the conference, a field excursion to the GLOF prone areas in Wangdue valley as well as visit to the GLOF EWS control room in Wangdue, where the participants were introduced on the mechanism of the GLOF Early Warning System and sirens.

An independent Technical Review and Social Impact Assessment of the project was completed and presented to the Project Board by the consultants. The report was launched during the International GLOF Conference where a separate presentation was made during the conference to highlight the findings of the independent review to share with the participants.

A Standard Operating Procedure (SOP) on GLOF EWS was prepared by DHMS which serves as a manual for the Operation and Maintenance of the EWS system, which was also launched during the International GLOF Conference.

2. Project management

Project management including coordination, benefitting from the implementations of recommendations of the Mid-Term Review conducted in 2011. Quarterly coordination meetings are held every quarter among all implementing partners (DDM, DGM, DoE) and UNDP. The Project Board also continues to play a strong role by providing guidance and oversight for project implementation. Two Project Board meetings were held in February and June 2012.

3. Project reports and publication materials, 2012

- Annual Work Plan 2012
- UNDP and other stakeholders visited EWS control room and other facilities related to GLOF risk management (February 2012)
- 11th Project Board Meeting convened in Punakha (February 2012)
- 12th Project Board Meeting held in Thimphu (June 2012)
- GLOF financial review (November 2012, updated 8th January 2013)
- Technical review and social impact assessment, Reducing Climate Change-Induced Risks and Vulnerabilities from Glacial Lake Outburst Floods in the Punakha, Wangdue and Chamkhar Valleys, (December 2012)
- Standard Operating Procedure for GLOF EWS, DHMS, MoEA (December 2012)
- International GLOF Conference proceeding, UNDP (February 2013)

4. Conclusion

Except for some activities under the DDM component, most of the activities have been completed. However, there is a budget balance of approximately USD 5,75,000 from the project to implement some of the recommendations from the technical and social impact assessment of the project. The Project Board agreed on no cost extension of the project till the end of 2013. The annual work plan for 2013 is also finalized and signed where few additional activities have been approved by the PB to be implemented over 2013. While DDM will focus on community involvement on DRR from GLOF through various community programs and awareness, DHMS will expand the automatic weather stations in Mochu sub basin as per the recommendations from the Technical and Social Assessment of the Project. DGM will focus on the development of the geosciences database for the country.

5. Links

Project website: www.bhutanglofproject.gov.bt

http://www.undp-adaptation.org/projects/websites/index.php?option=com_content&task=view&id=308

Adaptation Learning Mechanism (updated October 2011 with links to factsheet, videos, photos):

<http://www.adaptationlearning.net/bhutan-reducing-climate-change-induced-risks-and-vulnerabilities-glacial-lake-outburst-floods-punakh>

UN-TV film-production "Tsunami from the Sky", 2010 (15 min) <http://www.youtube.com/watch?v=HxOz2v6HKQo>

GEF-Arrowheads film-production "Silent Tsunami", 2010 (11 min): <http://www.youtube.com/watch?v=BexXgQakves>

UNDP Bhutan footage "One Day on Earth Initiative", 2010 (7 min): <http://www.youtube.com/watch?v=spBIW1QhPaU>

Discovery channel documentary 'Himalayan Meltdown revealed' trailer (3 min):

<http://www.youtube.com/watch?v=J4pkE6JFurs>

6. Pictures from 2012



Outcome 1: Safe evacuation site for communities (DDM)



Outcome 3: Community familiarization on GLOF EWS system (DHMS)



Outcome 2: The Royal Bhutan Army at work in lake reduction (DGM)



Outcome 4: International GLOF Conference, 5-7 Dec 2012, Paro: Bhutan (UNDP)