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MINUTES

“Reducing Climate Change-induced Risks and Vulnerabilities from Glacial Lake Outburst Floods in the Punakha-Wangdi and Chamkhar Valleys”

DGM-UNDP/GEF 2nd Project Board Meeting

Date: 16th February, 2009

Location: Conference Hall, Department of Industry, Ministry of Economic Affairs' Compound, Thimphu

Introductory Remarks

The Director General (DG), Department of Geology and Mines (DGM), welcomed the Project Board (PB) members and stressed on the importance of the meeting.

The Project Director informed the Project Board that the 2nd TSAT meeting was held on 12th February 2009 where most of the issues regarding the mitigation work had been discussed. He also looked forward to the guidance and the recommendations of the board.

The Chairperson of Project Board, Dasho Sonam Tshering, Secretary, Ministry of Economic Affairs, welcomed the PB members and informed the board that this is the second PB meeting for DGM-UNDP/GEF Project on *“Reducing Climate Change-induced Risks and Vulnerabilities from Glacial Lake Outburst Floods in the Punakha-Wangdi and Chamkhar Valleys.”* The Hon'ble Chair highlighted the importance of the project in reducing risk to lives and properties and asked all the participants to provide inputs based on the issues tabled for discussion.

Subsequently, presentations were made by the following:

1. Engineering & Safety Plan for Thorthormi Mitigation work in Lunana by Mr. Karma Toep, Team Leader for the multi-disciplinary team.
2. Thorthormi Lake mitigation plans, issues and recommendations by Mr. Dowchu Drukpa, Sr. Geophysicist and Project Manager, Department of Geology and Mines.
3. Department of Disaster Management's component under the project by Ms. Sonam Deki, Asst. Programme Officer and Project Manager, Department of Disaster Management, Ministry of Home & Cultural Affairs.
4. Installation of GLOF Early Warning System in the Punakha-Wangdi Valley by Mr. Karma Drupchu, Hydro-met Services Division, Department of Energy, Ministry of Economic Affairs.

Signed by: 1. GNH Commission:

2. UNDP:

3. PB Chairman:

Discussions on project implementation issues

Issues related to the Department of Geology & Mines:

Environment Impact Assessment: On the issue of the EIA for the mitigation work, the Project Manager informed the Board that it would be submitted to the NEC by the end of the week for their endorsement. He also highlighted that the report will be shared with Jigme Dorji National Park for their inputs and suggestions. The Project Board endorsed the idea and instructed the PMU to complete procedures before taking up mitigation work.

Medical Certificate for recruitment of labourers: It was recommended that the medical certificate, which would be a pre-requisite for hiring of labours, should be done in an organized manner by the project team instead of leaving it up to the individuals to seek medical certificates. The Ministry of Health was requested to render necessary assistance in this regard. The Board instructed the PMU to coordinate with the Ministry of Health and organize this activity keeping in mind the convenience of everyone involved.

Labor Payment: As proposed by the PMU, the Board endorsed the proposal to establish a committee who will be responsible for disbursing labor payment for mitigation work. The Committee will also include a representative from Gasa Dzongkhag instead of a local leader. On the issue of whether full wages will be paid during the journey to and from Lunana the board instructed the PMU to look at possibilities of providing a lumpsum instead of full wage. In order to minimize risks associated with transportation of large sums of money, the PMU was asked to look into possibility of disbursing payments at the road head after completion of each phase of work.

Communication: the Project Board approved the DGM's proposal to buy communication sets for use by the Mitigation team during the time of the mitigation. The team was asked to ensure that the Satellite phones they procure have adequate facilities for battery recharge. On the need for a dedicated phone line in the DGM to communicate with the mitigation team, the DGM was asked to use the already existing lines. The Board also recommended arrangements to be made for a 24 hour communication line between the mitigation site and the project office in DGM, especially during the working months, so as to address potential exigencies during the mitigation work.

Issues requiring government's decisions:

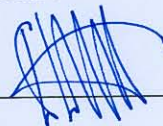
Poor quality of procured items: the PMU pointed out that the items distributed to the team that went to Lunana to review the Engineering and Safety Plan was of very poor quality and not of much use in such high altitude. The board suggested that PMU should include this issue in the presentation to be made to the government.

RGOB Financial year end and Mitigation work timing: On the issue of the RGOB year ending on 31st June and the mitigation work starting in May and continuing to the next financial year, which made it difficult for the project team to settle the accounts, the Project Manager, DGM was asked to come up with specific recommendations to solve the problem and the Project Board will follow it up with the Ministry of Finance. The Board also agreed that issues requiring government's approval and decisions should be presented separately to the Cabinet for their consideration.

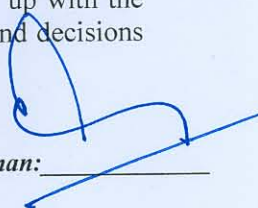
Signed by: 1. GNH Commission:



2. UNDP:



3. PB Chairman:



Award of work: The Project Management was asked to come up with specific recommendation on whether to award the mitigation work on wage basis or contract basis.

Security Personnel: The Project Management, DGM was instructed to find out whether to request RBA or RBP for deputing personnel to assist the project in maintaining law and order at the work site.

Provision of firewood, insurance and food items: The Project Board, based on the recommendation submitted by the PMU, endorsed the need to provide firewood, insurance and food items to the field personnel to entice more workers. Since the initial budget projections did not include budget for such activities, the Project Manager sought approval for use of the Austrian contribution to the project for such purposes. The DGM was asked to sort out this issue with the Austrian Coordination Office (ACO) and UNDP.

The Project Management Unit was asked to discuss with the RICBL, whether high altitude sickness is covered under the insurance scheme that was proposed. In addition since the proposal differentiated the payment to be received in case of death and injury for different class of people (RGoB representatives), it was suggested that insurance should be based on the nature and risk of the work and not as per positions. The PB was of the view that the assurance of Nu.30,000/- for the workers may not suffice, considering the nature of risk involved. The Project Management was also asked to look at how insurance schemes are agreed in other projects like TALA hydro-power project and propose a realistic scheme.

Issues related to the Department of Disaster Management:

Deviations from the work plan: The PM was asked to justify the deviations that had been made from the project plan. The PM clarified that the changes had been necessary since some of the activities were not relevant or cost effective and also time consuming. The board then approved the changes. However, the PMU was instructed to get the endorsement of the board for any future deviations from the initial project document.

Other issues: On the issue of the lack of time from the Dzongkhags, the Dasho Dzongdas were requested to provide full support and assistance to implement the activities in the dzongkhags. The DOE and the DGM were also asked to provide full support in the implementation of activities led by DDM.

Issues related to the Department of Energy:

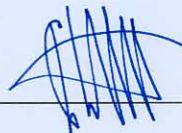
Transfer of output 3.2: the board approved transfer of output 3.2 from the DDM to the DOE since this output was more relevant to them.

Design of the EWS: the board stressed on the importance of having a very sound system design before tendering out the work. Once the design and the budget requirement are finalized, the DOE was asked to write to the PuantsangChu Project to support the budget gap. The DoE was also asked to expedite the process soon as it had implication on the implementation of other activities.

Signed by: 1. GNH Commission:



2. UNDP:



3. PB Chairman:



Key decisions:

- EIA to be submitted to NEC by end of the week.
- All issues requiring government decision to be put up to the Cabinet.
- DGM to discuss the use of Austrian contribution for firewood, insurance and food items with the ACO.
- All deviations or changes to be put up to the board for prior approval.
- DOE to come up with the EWS design.
- DGM to put up proposals for working modalities, insurance of field personnel, payment of wages, security and communication arrangements, etc.

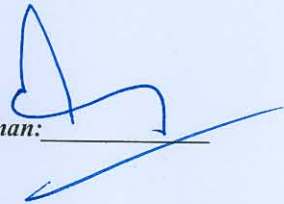
Signed by: 1. GNH Commission:



2. UNDP:



3. PB Chairman:



Attachments

1. List of Participants
2. Meeting Agenda
3. 1st PB Meeting Review and Recommendations for the Mitigation Work

Attachment 1

List of Participants

Sl. No.	Name	Designation/Agency	Email
1	Dasho Sonam Tshering (Chairperson)	Secretary, Ministry of Economic Affairs	sting@druknet.bt
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5	Dasho Dawala	Dzongdag, Punakha Dzongkhag	
6	Dasho Kinzang Wangdi	Dzongdag, Wangdue Dzongkhag	kinzangw@druknet.bt
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Attachment 2



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AGENDA FOR THE SECOND PROJECT BOARD MEETING

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

Venue: Department Industry Conference Hall

Date: Monday, February 16, 2009

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- | | | |
|---|-------------|--|
| 1 | 0930 | Arrival of participants |
| 2 | 0930-0940 | Welcome address by Mr. Dorji Wangda, Director General, DGM |
| 3 | 0940-0950 | Address by Mr. Yeshi Dorji, Project Director, DGM-UNDP/GEF Project |
| 3 | 0950 - 1000 | Address by Dasho Sonam Tshering, Secretary, MoEA (Chairperson) |
| 4 | 1000 - 1030 | Technical presentation on " Engineering and Safety Plan " for mitigation of the Thorthormi Lake by Karma Toeb, Team Leader, Multi-disciplinary team |
| 5 | 1030-1055 | Presentation on DGM-UNDP/GEF Project issues by Mr. Dowchu Dukpa, Project Manager, DGM-UNDP/GEF Project <ul style="list-style-type: none">• AWP 2009• Multi-disciplinary team member for the mitigation work• Review and recommendations: Transportation, communication, insurance, labor recruitment, food for work, etc• Environment Impact Assessment |
| 5 | 1055-1110 | Tea Break |
| 6 | 1110-1130 | Presentation by DDM, Ministry of Home Affairs |
| 7 | 1130-1150 | Presentation by DoE on GLOF early warning system |
| 8 | 1150-1250 | Discussions |
| 9 | 1250-0130 | Lunch |

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

**PB MEETING REVIEW, PROPOSALS AND
RECOMMENDATIONS: THORTHORMI
LAKE MITIGATION WORK**

Department of Geology and Mines
Ministry of Economic Affairs

FEBRUARY 2009

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

Review, Proposals and Recommendations: Thorthormi Lake Mitigation Work

1.0 Introduction

As per the minutes of the Project Board Meeting held on July 23, 2008, the Project Management has reviewed the following issues pertaining to implementation of the mitigation work at Thorthormi Lake which is scheduled to be carried out by May 2009. The Project Management is therefore submitting the following proposals/recommendations for endorsement by the Project Board members and approval by the board chairman.

2.0 Communication

The Project Management as per the last board meeting has reviewed the communication status for the project area in Lunana and the following are the proposals to provide adequate communication setup for smooth functioning of the mitigation project.

2.1 Present Communication Setup in the Project Area

Currently, Lunana is connected by a satellite (IRIDIUM) communication based in Lhadi which is located downstream of Thorthormi lake project area and takes about one day journey. This facility is being operated by the Bhutan Telecommunication. Besides that at Tenchey, which is about 30 minutes walk from the project area, the Department of Energy has installed a wireless and satellite (THUREYA) communication for the GLOF early warning system. Along the route, except for the satellite communication in Laya (also being run by the Bhutan Telecommunication), there is no communication setup between Laya and Lunana; it takes about 5 days from Laya to the first communication setup in Lunana.

2.2 Proposal for the Project

In order to have an independent and a reliable communication setup for the project, the Project Management is proposing the use of satellite telecommunication. We have learnt during our field work in Lunana this year and also sources from Bhutan Telecom and the Department of Energy that both THURAYA and IRIDIUM works perfectly alright with good signal quality in the project area terrain. Both IRIDIUM and THURAYA phone will serve our purpose; however, the former is much more expensive, and therefore, we are proposing the THURAYA satellite phone to be used for the project. Initially, the Flood Warning Unit's THURAYA set had few technical glitches which they said was defect with the charger. Now this has been fixed and the phone is working without any problem. The details of both the satellite communications as obtained from the Bhutan Telecom are shown below:

2.3 THURAYA Satellite

THURAYA is UAE based satellite communication and the local agent in Bhutan is the Bhutan Telecommunication Limited. Thuraya is known for its extended coverage to international roamers with **Zero Incoming Call Charges**. **THURAYA** Satellite Phone works on Satellite as well as GSM mode. The **THURAYA** also offers digital voice quality, with fax and data transfer facility and other value added services like multilingual Short Messaging Service (SMS), Voice Mail, Call Forwarding, Call Barring, call Conferencing and Closed User Group. Wherever, there is GSM signal coverage, it works on GSM mode but where GSM signal are unavailable, it transfers to Satellite mode giving uninterrupted coverage. Thuraya is an advanced geo-synchronous mobile satellite system providing access to satellite and GSM services from the same handset. With Thuraya, Spidersat makes free-roaming telecommunications a reality. The phone has a high degree of flexibility and convenience and transforms the way people keep in touch with business associates, customers, families and friends.

2.3.1 Cost Details

The following are the cost details as furnished by the Bhutan Telecom

Item	Cost
Thuraya SO-2510 Handset	\$800
Solar Charger	\$85
Pre-paid SIM card	\$99
Post-paid SIM card	\$300

For pre-paid users recharge bouchers valued \$39 are available with the Bhutan Telecom. However, for our purpose we propose post-paid SIM card since it may not be feasible to use pre-paid given the location of the project site. The call charge for THURAYA is Nu.72/minute.

2.4 IRIDIUM Satellite Phone

Based in Bethesda, Maryland, U.S.A., Iridium Satellite LLC, a privately held company, is the only provider of truly global satellite voice and data communications solutions with complete coverage of the entire Earth including oceans, airways and even Polar Regions. Iridium delivers reliable, secure, real-time, mission-critical communications services to and from areas where landlines and terrestrial-based wireless services are either unavailable or unreliable. The local distributor is the Bhutan Telecom Limited.

2.4.1 Cost Details

Item	Cost
Iridium 9505A Handset	USD 2,050.00
Rechargeable Battery	USD 130.00
Monthly Subscription Charges	USD 35.00
Post-paid SIM Card	USD 300.00

2.5 Analysis and Recommendation

Both IRIDIUM and THURAYA will serve our purpose of communicating between the field and Head Quarter in Thimphu. However, in terms of cost, IRIDIUM is going to cost almost 3 times more than THURAYA set. Therefore, the management is recommending to procure THURAYA phone.

In event of unseen technical problem with our communication, the project management will discuss and draw a memorandum of understanding with Flood Warning Unit, Department of Energy to avail their communication system as a back up service.

Besides satellite phone that will facilitate communication between field staff and the Head Quarter, Thimphu, the project management will process for procurement of at least seven wireless handsets (Motorola or other brands) to be used for communicating among the field personnel at site. At the Head Quarter, a dedicated telefax line will be installed to be used exclusively for the project.

2.6 Budget availability under the project

Approximately US\$ 12,500 (approximately Nu.500,000/-) is available under the DGM-UNDP/GEF GLOF Project to procure communication equipments. Annual budget of US\$ 1500/- has already been incorporated in the project document for covering communication expenses.

3.0 Proposal for Insurance

Approximately 300 workers and 20 government officials will be involved in the artificial lowering of Thorthormi Lake for the project duration (3 years starting from May 2009). As discussed during the first project board meeting, the project management has reviewed the insurance policy to be provided to the field personnel in accordance with the Labour Act 2007 and Rules and Regulations Governing Employers in Bhutan of the Ministry of Labour and Human Resources.

The **Labour Act 2007** under Chapter VI, Compensation and Benefits, No.96, specifically mentions that an employer shall compensate all his or her employees against:

- Death due to work accident or occupational diseases;
- Total permanent disablement;
- Temporary partial disablement.

Furthermore, the MoLHR's **Rules and Regulation Governing Employment Agencies in Bhutan** under Chapter 4, Responsibilities of an Employer, No. 10 (3) explicitly mentions that an employer:

- shall provide its employee with accident insurance coverage. A copy of the Insurance certificate shall be maintained for inspection by the Labour Inspectors

In view of the need to provide insurance for the workers as per the law of country, the project management has written to the Royal Insurance Cooperation of Bhutan Limited (RICBL) vide letter No.DGM/63C/2008/4368, dated December 23, 2008 and they have recommended the

Group Personnel Accident (GPA) insurance policy. The GPA or Personnel Accident Insurance is an insurance to render financial relief to the individual or his dependents in case of accidents, be it a simple or a grievous injury and / or even death. The accident under this policy must be a fortuitous event caused by an external visible and violent force. The extents of coverage or benefit are for death, and total/partial permanent/temporary disablement, loss of limb, loss of sight, etc. It also says that the rate applicable depends upon the type of benefit sought and occupation, which is defined in the proposal form.

The GPA insurance is based on the formula:

$$\text{Sum Insured} \times \text{Number of People} \times 0.298\%$$

For instance, if sum and number of people to be insured are Nu. 30,000/- and 300, respectively, then the premium to be deposited is Nu. 26,820/- for one year. Based on this, the project management is recommending following insurance coverage for the Thorthormi Lake mitigation project as follow.

3.1 Insurance proposal for RGoB Staff and workers

Sl. No.	RGoB Staff Position Level/workers	No. of persons	Proposed sum to be Assured	Premium to be deposited
1	EX/ES 1 to 3	1 to 2	200,000	1192
2	P1-P5	12	150,000	5364
3	S1-S5	4	100,000	1192
4	O1 and Below	3	50,000	497
5	workers	300	30,000	26,820
TOTAL Nu.				35,065

The total tentative premium to be deposited comes to Nu.35,065 for one year GPA insurance coverage for the entire mitigation team member.

3.2 Budget for Insurance

The budget provision to cover insurance was not envisaged during preparation of the project document and therefore was not reflected in the project budget. However, since it is mandatory to have all the field persons insured as per the law, the budget may have to be adjusted from Austrian co-financing of approximately US\$ 500,000/- for the artificial lowering of the Thorthormi Lake.

4.0 Food for work

Food for work was provided during the mitigation of the Raphstreng Tso at Lunana in the late 1990s. This is mainly because most of the workers come from outside Lunana which normally takes about 9-10 days to get to the project site. Therefore, practically it is not feasible for the workers to bring their own ration. Moreover, if ration is not provided by the project, it will be rather difficult to recruit the required number (about 300 workers) of work force for excavation of the Thorthormi Lake. For first year of the mitigation work at Thorthormi Lake, the World

Wildlife Fund (WWF) has contributed a sum of US\$30,000/- to cover expenses for basic food items such as rice, dal, chilly, oil, etc. However, from the second and third year, budget provision to cover the food for work has not been secured and this needs to be finalized at the earliest. The alternative is to pool budget from the Austrian contribution and from other heads under the GEF financing.

5.0 Emergency and Safety Arrangements

For emergency, a contingency budget of US\$ 34,500/- is incorporated in the project budget. In order to facilitate emergency response, the management will make pre-arrangements and sign a memorandum of understanding (MoU) with the Royal Bhutan Army (RBA) or Ministry of Foreign Affairs. Further, the project management will draw a line of communication with the relevant stakeholders in Gasa, Punakha, and Wangdue Dzongkhag and the Department of Disaster Management and Flood Warning Unit, Department of Energy in case of collapse of the moraine dam and artificial triggering of GLOF during the mitigation period. As suggested by the members during the last board meeting, the project management will provide small oxygen cylinders to be used during emergency. Waste disposal management at the project site and occupational health and safety arrangements for the workers involved in the mitigation work are detailed in the “technical report” of the “engineering and safety plan” carried out in 2008.

6.0 Transportation

Transportation arrangements will be facilitated through Gasa Dzongkhag. The project management has earlier requested Gasa Dzongkhag vide letter No. DGM/63C/2008/2023, dated July 31, 2008, to arrange a meeting between the management team, Gasa Dzongkhag and relevant local representatives on 3rd November 2008. However, since the dzongkhag officials were busy with preparation for the coronation and centenary celebration events during that time the meeting could not be conducted. Later the project management vide DGM/63C/2008/4297, dated December 4, 2008, again requested Gasa Dzongkhag to hold a meeting between the Dzongkhag and local representative and horse/yak contractors and discuss on key issues such as transportation mechanism and arrangements and transportation rates. Accordingly, Gasa Dzongkhag as per letter No. DAG/ADM-52/2008-09/1523, dated December 22, 2008, had informed us that the transportation meeting has been arranged and held on the 26th of December 2008. The outcome from the meeting will be intimated to the project management which will then be included in upcoming Project Board Meeting agenda for further deliberation and endorsement by the project board.

7.0 Other Issues

Other pertinent issue is the environmental impact at the project site as result of the mitigation work. During the Raphstreng Tso mitigation, workers used tree around the Bechung area as the main source of cooking fuel which had tremendous impact to the environment. Because of such adverse impact on the forest from the previous mitigation work, during the engineering and safety plan study this year, the local leaders and representative from Jigmi Dorji National Park (JDNP) raised the issue of cutting down of trees for firewood and its adverse impact on the fragile eco-

system in the project area. Moreover, from religious point of view, the local people were adamant on cutting down of Juniper trees at the camp site since they consider the Juniper trees as “*Dushing*”; and also as informed by the ranger from the park management the area is designated as community forest. In fact the local leaders have already discussed the issue during a Gewog meeting held in October 2008 and will be further deliberated at the Dzongkhag level. Subsequently, it has been discussed at the site that Gasa Dzogkhag will inform the project management on a solution to avoid the pertinent issue of deforestation at the project site. It is now envisaged that the project has to find an alternative source of fuel for cooking. The first alternative, as suggested by the ranger from the Jigmi Dorji National Park, is to bring firewood from Tshojo area which is about half day walking distance from the project site. The other alternative is to provide kerosene and stove to the workers involved in the mitigation work. Both options will have cost implication on project and this has been detailed as shown below:

7.1 Firewood collection from Tshojo area

At least about 30 workers would have to be engaged in collection of firewood from Tshojo and surrounding areas to supply firewood for the mitigation team. This works out to: Nu. 500/day/labour x 120 working days x 30 workers= Nu. **1,800,000**. On top of that if 30 persons from the proposed strength of 300 workers are engaged in collection of firewood, it will hamper work progress at mitigation site.

7.2 Kerosene and stove provision

For instance, if the project provides kerosene and stove for cooking purpose, the approximate cost of the fuel and transportation works out as shown below:

Cost of kerosene:

30 litres/person/month x Nu.13 x 350 personnel x 4 months= Nu. **546,000/-**

Cost of kerosene stove:

1 stove/3 person x Nu.1000 x 117 stoves = Nu. **117,000**

Transportation charges:

If 20 litres make one horse load, the total fuel to be transported will be approximately 2100 loads. This works out to 2100 loads x Nu. 200/day x 10 days = Nu. **4,200,000/-**. The total load from the kerosene stove, if 5 stoves make one load, comes to 24 loads and transportation charges comes to approximately Nu. 24 loads x Nu. 200/day x 10 days= Nu. 48000/-. Therefore, the total cost for transporting the kerosene and stove to the site comes to Nu. **4,248,000/-**. The over all cost for providing kerosene and stove for cooking purpose will impact the project by approximately Nu. (546,000 + 117,000 + 4,248,000) = Nu. **4,911,000/-**

7.3 Analysis and Recommendation

Pooling 30 workers from the proposed 300 labourers for the mitigation work to collect firewood from Tshojo area (which is about half day walking distance from the project area) will have

adverse impact on the completion of the project on time. Therefore, it is proposed here that 30 extra workers, besides the proposed 300 workers for the excavation work, should be recruited exclusively for collection of firewood. Recruitment of additional 30 workers is going to cost the project by about Nu. 1.8 million. On the other hand, if the project provides kerosene and stove to the mitigation team, this is going to impact the project by about Nu. 4.9 million which is over two and half times more expensive than the former option. Therefore, the project management recommends the option of recruiting additional 30 workers to collect firewood so that cutting down of trees at the project site can be prevented.

8.0 Total Budget for Thorthormi Lake Mitigation

The total approved budget for the Thorthormi Lake mitigation work is as tabulated below:

GEF (US\$)	WWF (US\$)	Austria (US\$)	Total Budget (US\$)	Remarks
2,238,012.00 (Nu.109.48 million) 1USD=Nu.46	30,000.00 (Nu. 1.38 million)	500,000.00 (Nu. 23 million)	2,768,012.00 (Nu. 133.86 million)	Approximately US\$ 90,000/- has been used in 2008 for procurement of equipments, working tools and for carrying out the “engineering and safety plan” study.

Out of total budget of about US\$ 2.77 million (Nu. 127.42 million), approximately US\$ 90,000 (Nu.4,140,000) has been used in the 2008 fiscal year to carry out the engineering and safety plan at Thorthormi Lake and procurement of working tools, equipments and field implements. The project now has fund balance of approximately US\$ 2.67 million (Nu. 122.82 million) for the 3 year excavation work for lowering the Thorthormi Lake level by 5 meters. This means that the project can afford to bear expenses up to approximately US\$ 892,000/- (Nu. 41.03 million) per year for the 3 year mitigation work.

Based on our estimate, in the first year (2009-2010), the mitigation work and other activities of DGM-UNDP/GEF GLOF Project will require about Nu. 36 million (~US\$ 789,250----as per 2009-2010 AWP). Accordingly, the expenditure for the second and third year has been estimated to be around Nu. 31 million (~US\$ 673,000/-) per year. So based on the current proposal and arrangements, the entire mitigation work is expected to cost the project around Nu. 99 million (~US\$ 2.14 million), leaving behind a balance budget of approximately Nu. 24 million (~US\$ 535,000). However, the mitigation of the Thorthormi Lake, as per the project document was planned for 4 years. The mitigation work should have started in 2008-2009 fiscal year and completed by 2011-2012. In the 2008-2009 fiscal year, because of time requirements for preparation of the mitigation work, the management could implement only the engineering and safety plan thereby reducing the time for the mitigation work to 3 years. Since the mitigation work has to be completed by 2012, we propose recruitment of additional labourers (about 400 including firewood collectors) to expedite the mitigation and complete the work within the stipulated time frame. The cost for employing additional workers can be met from the estimated balance budget mentioned above.