

Thorthormi Glacial Lake

Threat of glacial lake outburst flooding (GLOF) in Bhutan

Documentary: GLOF, Tashi Gets a Job
Bhutan/the Netherlands, 2009, 77 minutes

Film Director: Peter Jan van der Burgh
Producer: Henk de Jong
Production: TGMI, Bhutan
Bhutan+Partners, the Netherlands
VanderBurgh Films, the Netherlands
Camera: Tshering Gyeltshen
Sonam Loday
Peter Jan van der Burgh



Bhutan is one of the hot spots of environmental preservation on earth; 70% of its surface is covered with forest and the country hardly contributes to CO2 emissions. Nevertheless: Bhutan is facing the indisputable effects of global warming: melting ice is weakening the walls of the Himalayan glacial lakes. An outburst will have a devastating effect on the lives of thousands of people and animals and will destroy fertile arable land in the kingdom of Bhutan. An army of 370 farmers, students and workers will climb the Himalayan Mountains, so far the domicile of spirits, ghosts and animals, to turn faith and prevent the lakes from bursting.

GLOF, Tashi gets a job

Lake Thorthormi is situated up in the Himalayan Mountains close to the Chinese border. The walls of the lake are about to crack down. Geologists state that the natural dam walls between lake Thorthormi and lake Raphstreng are only 32.5 m thick at the crest and are getting thinner every year. The collapse of the walls separating both lakes will result in lake Thorthormi, flowing into lake Raphstreng. 53 million cubic metres of water will then flood the densely populated valleys of Central Bhutan. In 1994 a glacial lake outburst flooding of 18m cubic metres of water killed 22 people, destroyed harvests and washed away the Wangduephodrang bridge. The famous Punakha Dzong remained undamaged by miracle. The only way preventing a tragedy is dispatching an expedition of 370 man to the Thorthomi glacial lake to build a drainage installation and lower the water level of the lake by six meters. The workers will walk for two weeks with heavy equipment on yaks and horses through unpaved trails. At an altitude of 5.000 metres they face nature as it comes, hail storms, blazing ice-cold wind and temperatures below zero. Draining the water is done manually. Sleeping, eating, working happens under extreme conditions. The expedition leaves end of July 2009 for a three-months period of hard work. The expedition has to leave lake Thorthormi by the end of October, just before winter steps in and makes an end to every possible movement.

We will follow one of the workers, Tashi Dorji, an early school leaver, jobless, living by himself in the capital of Thimphu. The expedition may give him back his self-esteem and pride, while contributing to his country and creating better opportunities for his future. The travel, the work and the stay in the mountains however make it difficult to predict any outcome, failure or success.

A Bhutanese film team led by cameraman Tshering Gyeltshen, will follow Tashi and his mates on their trek to lake Thorthormi. PJ van der Burgh, a Dutch filmmaker will join in August. The film team will follow Tashi at his work and learn about his past and desires for the future. We experience how people fight the effects of global warming, trying to prevent an unseen flood disaster that may affect the lives of many and cause unprecedented environmental damage for Bhutan. Men pitted against the might of nature and potential natural disaster lurking imminently in the rugged mountains of a tiny kingdom the rest of the world has largely heard of. This is a story worth telling and sharing.



Raphstreng Tsho

Filmography – Documentaries

TGMI

- 2002 Wrote the script for A Walk for Health, a documentary on the 516 kilometre cross-country walk undertaken by the former Health Minister, Lyonpo Sangay Ngedup, and narrated it. The documentary, produced by the Ministry of Health, was screened at major international health gatherings and film festivals.
- 2005 Wrote, narrated, produced and directed For Whom the Bell Tolls a 25-minute documentary on primary schools in rural Bhutan
- 2006 Wrote, narrated, presented, produced and directed Democracy & Elections – the Bhutanese way” a 45-minute documentary on the concept of elections and democracy.
- 2007 Wrote, narrated, produced and directed 25 Years of Service to Children in Bhutan, a 30-minute documentary to commemorate Save the Children’s 25 years in Bhutan.

Bhutan+Partners

- 2002 Line production The Other Final, the prizewinning film of the alternative football world cup final between Bhutan and Montserrat,
- 2004 Line production The Female Archer of Bhutan, documentary about archery in Bhutan for Arte, Germany
- 2006 *Production* Rocking the Himalayan Kingdom – Bløf in Bhutan, *concert and documentary*
- 2008 Line production 3op Reis, Floortje Dessing in Bhutan for Llink television
- 2009 Production for the European market of Nazhoen Chharo, a feature film on urban youth gangs in the capital of Bhutan made by Dorji Wangchuck,

Van der Burgh Films

Since 1988: Production of numerous feature films, documentaries, Drama and TV series. Peter Jan van der Burgh was guest teacher at the Filmwerkstatt Münster, Kunst Hochschule in Cologne and Filmhochschule in Dortmund and Ludwigsburg. PJ van der Burgh teaches at the Willem de Kooning Academie in Rotterdam since 2003 and is a Coach/Producer for the Ruger Hauer Master Class since 2007.

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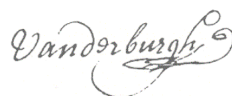
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The threat from Lake Thorthormi, Bhutan

Source: Kuensel Newspaper, January 27, 2009

Of the 14 risky glacial lakes in Lunana, Lake Thorthormi is on the brink of breaching its walls. Geology department say they are working on it. Lake Thorthormi is the largest glacial lakes in Bhutan, with a size of 3.42 sq. km, and thrice the dimension of Lake Lugge that burst in 1994. Geologists say the massive ice surrounding Lake Thorthormi is melting fast at 30-35 metres a year, and is filling up the lake quick. The natural dam holding the lake can stand only so much volume of water, say geologist. Lake Thorthormi feeds Punakha Pho Chhu and if it bursts, geologist say, it could inflict enormous damage downstream. Lake Lugge when it ruptured flooded villages on the way including Punakha town killing 21 people and uncountable livestock. Lake Thorthormi is thrice the size of Lake Lugge. A glacial expert, Dr Yeshe Dorji, of the geology department, said that measures were being planned for this year and beyond to reduce the water level of Lake Thorthormi and establish early warning system for the communities downstream. UNDP and European commission funded the mitigation works at US\$ 7.8 million. "Excavation works on Lake Thorthormi will begin by June this year but before that necessary equipments and rations would be transported to the glacial site," he said. But it was going to be an uphill battle. Pumps, to siphon off water from the lake, did not work properly and it was too heavy to transport machineries. It was also risky to utilize them as it could breach the glacial lake walls. All works had to be done manually with the help of tools such as spade, pickaxe and crowbars among others. Mitigation works had numerous problems such as sizes of boulders over 2m that could not be broken by sledgehammer or moved. There was also continuous seepages from the lakes which compelled people to work in freezing cold water. Frequent rains accompanied by cold breeze aggravated the problem. "The work output is reduced drastically as the labourers have to work with knee-deep water," said Dr Yeshe Dorji. "The yearly work was also limited from June till September as during the other months the passes to Lunana got blocked." Tools and rations had to be transported to the glacial site took almost 12 days uphill on foot. "Other countries unlike us could save time using huge choppers but for us is expensive to hire and there is risk due to climate conditions," said Karma Toeb of the geology department. Choppers suitable for such terrain cost US\$ 200,000 for a trip. Geology officials present during the recent workshop on GLOF Risk Mitigation said that mitigation measures were challenging and proper assessment on the barrier characteristics had to be carried out in order to avoid mishaps. "We don't want to trigger a GLOF by ourselves," said a project official. Moreover, engineering designs have to be modified to suit the terrain while the excavation is in progress and the hazard zonation carried out should be implemented so that the development activities are not exposed to disaster, they said. Meanwhile, scientists say the temperature in the Himalayan region was rising twice as fast as the global average and that the glaciers were in rapid retreat. "Himalayan glaciers are retreating at rates ranging from 10 to 60 m per year with many small glaciers already disappeared," said the vice president of Disaster Management Centre of Nepal, Bishal N Upreti, The Department of Disaster Management under Home Ministry has also carried out few 'non structural' measures like spreading awareness on disasters, setting up response mechanisms and establishing relief funds for disaster mitigation. A community study carried out along the Pochu Basin stated that Samdingkha town under Toewang gewog would be the most effected in case of a glacial flood. The town was badly hit during the 1994 Lake Lugge outburst. It has 15 households of about 300 people. Geology officials told Kuensel that the mitigation works had to be started before 2010, or else the situation could worsen.