

A Brief Overview of Fire Disaster Management in Bhutan

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Resumen

Breve panorámica de la gestión de los riesgos de incendios en Bhután

De todas las catástrofes naturales, los incendios se consideran una de las peores porque los daños que ocasionan en los bienes se suelen catalogar, por regla general, como irreparables.

En Bhután, se dan dos clases de incendios: los forestales y los que afectan a edificios. Los primeros plantean una auténtica problemática de salvaguarda del interés público, ya que las tres cuartas partes del territorio del país están cubiertas de bosques, y la quema de éstos acarrea pérdidas muy cuantiosas tanto en el plano ambiental como en el socioeconómico. Los segundos destruyen las viviendas, los monasterios, fortalezas, los templos, etc. Los edificios se queman con gran facilidad, habida cuenta de que sus materiales de construcción suelen ser frágiles (madera, etc.) y antiguos (en condiciones de extremo desecamiento, etc.). La lucha contra los incendios exige medidas de prevención adecuadas a las características ambientales del país, a fin de evitar costos suplementarios y daños irreparables ulteriores.

El Monasterio Tagtshang, sitio histórico y lugar de peregrinación de Bhután, fue devastado por el fuego en un solo día. Este incendio no sólo ha supuesto una pérdida del patrimonio arquitectónico, sino también la desaparición de pinturas y objetos religiosos pertenecientes al acervo cultural y espiritual del país desde el siglo VIII. Después de esta catástrofe, la población se ha percatado súbitamente de su desconocimiento de las riquezas históricas y espirituales de los sitios que forman el patrimonio cultural legado por los siglos pasados.

Résumé

Une brève vue d'ensemble de la gestion du risque incendie au Bhoutan

Parmi les catastrophes naturelles, le feu est sans aucun doute considéré comme l'un des plus grands "ennemis", puisqu'un bien endommagé par ce dernier est généralement classifié "irréparable".

Le Bhoutan identifie deux types de feux : les feux de forêts et les feux de bâtiments. Le premier cas, véritable enjeu d'intérêt public (les trois-quarts du territoire sont recouverts de forêts), entraîne de lourdes pertes tant sur le plan de l'environnement qu'au niveau économique et social. Le second détruit habitations, forteresses-monastères, temples, etc. Les bâtiments sont plus facilement inflammables en raison de la nature de leurs matériaux de construction souvent fragiles (bois, etc.) et anciens (dessèchement, etc.). La lutte contre le feu passe par des mesures de prévention adaptées aux

caractéristiques environnementales du pays afin d'éviter des coûts additionnels et des dommages irréversibles postérieurs.

Le monastère Tagtshang, lieu historique et de pèlerinage du Bhoutan a été dévasté par le feu en une journée. C'est une perte non seulement architecturale mais aussi de peintures religieuses et d'objets qui, depuis le VIII^e siècle faisait partie intégrante du patrimoine culturel religieux du pays. Après la catastrophe, la population a soudainement réalisé sa méconnaissance historique et spirituelle du site hérité du passé.

Introduction

This presentation outlines the current situation in fire disaster management and prevention measures followed in Bhutan and is based on a brief recent study. As in many other countries, there are several disaster factors in Bhutan, e.g. fire, earthquake, flood, landslide, and storms, with fire being the major enemy. The damage caused by flames is usually irreparable. Stolen and damaged goods can often be recovered and restored, but fire can eradicate priceless objects or entire buildings forever and in a remarkably short time.

Forest fires are a major problem for Bhutan with 72.5% of the country under forest cover and a series of fires breaking out in different parts of Bhutan every year, causing great loss to the kingdom, socially, economically and environmentally. The winter months in many parts provide perfect conditions to feed fires. When areas become dry and vulnerable, this life-destroying enemy gets out of control, invading the happy domains of flora and fauna at any moment.

Fires destroy edifices such as monastery-fortresses, buildings and houses, and a large number of monasteries and temples housing invaluable artefacts are scattered throughout the country, often in strategic places far beyond the reach of modern facilities. As all these structures are usually built of wooden materials which have dried and become brittle over the years, they are very vulnerable. In the event of fire there is little chance of survival for these venerated treasures. Tagtshang monastery, as we shall see below, was devastated by fire in April 1998, causing great loss to the country.

With the serious threat of fire every year, the Royal Government frequently holds training workshops on fire prevention to train fire personnel and raise awareness of the risk. With the limited resources available, prevention measures, emergency planning and safety exercises are held, with drills and tests. At present we are complacent and the task ahead is great indeed.

Causes of Fires

A study of the causes was undertaken by the Fire Department which found that building and house fires were largely attributable to:

- defective heating systems;
- unsafe handling of flammable liquids and gases;

- faulty electrical wiring;
- careless smoking;
- insufficient emphasis on prevention and responsibility;
- lack of application of available fire-protection engineering expertise;
- the increasing use of electrical installations which are potential sources of ignition;
- deliberate lighting of fires;
- negligence.

Forest fires were mostly attributed to:

- fires being made near or inside the forest;
- careless disposal of cigarette butts;
- children being allowed to play with fire;
- deliberate lighting of forest fires to clear land to graze cattle.

Either through negligence or malicious intent, people are responsible for 99% of forest fires in the country. The trend becomes serious in winter when young students home on vacation are encouraged to collect firewood from the forests.

Preparedness and Planning

The study reveals that while general training is offered, specific disaster preparedness or planning for disaster-prone sites have not been carried out either by individuals or the government. It is therefore highly advisable that fire-prone sites which house valuable property should have emergency and rescue plan preparedness procedures (scientific procedures) to cope with emergency situations in the event of fire so as to avoid major losses.

Construction is currently underway on the archive building, beneath the National Library of Bhutan. When completed, it will be the only building in the country equipped with modern technical installations, i.e. it will have fire and theft security alarms, will be designed to withstand pressure and earthquakes, with built-in protection for the archive records in the event of theft, fire or flood, and a stable temperature and relative humidity to be maintained on the premises.

The Cultural Property Division of the Department of Culture trains caretakers of monasteries all over the country to deal with disaster situations such as burglary, theft and fire. The training is mainly in forward planning and warning, awareness raising and training of monks, organisation for and management of disaster situations, including preparation of operational plans. This addresses the immediate concerns of the Government.

Prevention Measures

We know that certain types of disasters, such as floods, hurricanes, and earthquakes can sometimes be forecast, but destructive forces, such as fire and explosions, cannot be foreseen and avoided. However, by following preventive measures and immediately so, it may be possible to

avoid subsequent costly or fatal damage and prevent the disaster from turning into tragedy. Some of the Building/House Fire Prevention Measures we have followed in Bhutan are:

- electrical installations made to meet appropriate regulations and standards;
- issuing of public notices on the basic risks of fire;
- keeping surrounding areas clean and free from flammable materials;
- providing training in fire-fighting with the assistance of the local Fire Department;
- ensuring that everyone is aware of the primary response in the event of fire, that being to inform the Fire Department;
- installing fireproof (Methub) cabinets to protect valuable artefacts, e.g. in monasteries and temples.

One common task is to encourage everyone to help prevent forest fires which kill valuable flora and fauna and destroy the balance of the environment. Some of the forest fire prevention methods currently used in Bhutan are:

- fire-fighting training workshops for farmers, e.g. Dzongkhag (district) forestry sub-sectors, Geog (block) extension staff and territorial staff;
- designing fire prevention messages on signs and billboards for display in public areas and in fire-prone dzongkhags;
- producing and publishing fire-fighting training manuals, with technical assistance from fire experts (Australia: NSW, RFS) for distribution to all twenty dzongkhags and translation into dzongkha (the national language);
- producing jingles and messages to broadcast via Bhutan Broadcasting Services (BBS), television and *Kuensei* (national newspaper) during the fire season;
- designing and producing fire posters and pamphlets on fire prevention. being involved in study tours and training sessions outside the country;
- procuring fire-fighting tools/equipment for distribution to the dzongkhags for use;
- distributing approximately 45 radio-operated handsets to the District Forest Officers to help with reporting, patrolling and management.

Indigenous Fire-Fighting Methods

When fire occurs, a range of facilities may be needed to cope with the disasters. Although traditional items may not be as efficient as modern equipment, they can still be used to fight fires. Water can be poured on the flames using buckets or other containers; sand or soil can be thrown on the flames, in either a trail or sequence; sacks and cloths soaked in water can be used to beat the flames and reduce the intensity; leafy branches can also be used, and large groups of people and fire-fighting volunteers need to be called in.

These methods may only be helpful in the initial stages, for once the fire is out of control, they will be of little or no help at all. Modern equipment will therefore be needed, although this too will have advantages and disadvantages, depending on factors such as time and location.

Tagtshang Monastery: Devastated by Fire

Tagtshang monastery, a combination of history and sanctity, was founded in the 8th century by the great Indian Tantric Master Padmasambhava, and devastated by fire in April 1998. A nun who lived above the monastery was the first person to notice it. She called out, but the caretaker did not respond. The fire started in two different parts of the monastery complex at around 7 p.m. The flames did not spread for about half an hour, but the caretaker apparently made no attempt to save the precious religious artefacts in the temple, or even his personal belongings, with more than 100,000 Nu in cash.

Four men from the village below who were the first to reach Tagtshang said the heavy entrance door of the monastery was wide open, but they could not get inside because of the heat of the flames which had spread by then to all the temples. Other villagers joined them and, standing on the opposite side of the gorge, watched helplessly as the historic monastery was devoured by flames. The site was in a strategic position and had only one entrance which made any rescue efforts impossible.

After investigation, the Royal Bhutan Police suspected murder and arson in the Tagtshang fire. Evidence emerged showing that the caretaker had been killed and the monastery deliberately set on fire. The police found pieces of human bone believed to be the remains of the caretaker, by the door of his residence, at the top of a flight of stairs leading away from the monastery. The Royal Bhutan Police have announced a reward of 200 million Nu for any information leading to the arrest of the person or persons responsible for setting fire to Tagtshang monastery.

Many lessons have been learned from the Tagtshang experience, both human and spiritual, revealing profound dimensions to the tragedy. The loss will always haunt our memories, but the Tagtshang fire will be far more than a disaster for today's generation. The monastery itself was a remarkable feat of traditional Bhutanese architecture; we also mourn the loss of some religious paintings and artefacts which were part of our religious heritage. The flames devoured a small piece of Bhutanese history.

The tragedy has driven us to serious introspection. It has made many reflect deeply on our heritage and identity, and called for greater preparation and efforts. More efficient security systems are needed and greater manpower to fight such disasters. The Tagtshang fire showed that more than one or two caretakers were needed. There are also other monasteries needing more caretakers and proper fire security systems.

On reflection, the fire has woken up a large proportion of the Bhutan's younger generation, making them aware of the invaluable cultural and religious legacies we have, and also of the responsibility we have to safeguard them. Many Bhutanese citizens realised that they had never visited this holiest shrine. We had taken our rich cultural heritage for granted.

The Tagtshang tragedy serves as a vivid reminder of the importance of our spiritual heritage and also of our spiritual health. This might be a valuable lesson for a generation which has shown strong tendencies to go astray; it warns us that we must always be aware and alert, being vigilant at all times.

Concluding Remarks

In conclusion, I would stress that disaster can strike at any time. Emergency planning is therefore of paramount importance. There are a large number of outstanding monastery-fortresses and historic temples in Bhutan with virtually no fire security measures. Since fire is one of the major problems for Bhutan, we need to have security and emergency planning, and specifically adapted to Bhutanese traditional buildings and houses and the topography of the country so as to minimise loss of life and damage. We need to organise and facilitate timely and effective rescue, relief, and rehabilitation in the event of a disaster.

Many parts of Thimphu are rapidly filling up with houses, but precautions and insurance are not a priority. People say "There are more chances that my house will not catch fire, so why spend money on insurance?" The vast majority of Bhutanese are ignorant of the details of fire and other insurance policies, but even if they were aware, it might make no difference. No government property, for example, is insured.

Proper and adequate infrastructure and facilities or the lack thereof are the major fire disaster management issues. The chief hurdles include a shortage of technically trained personnel and proper financial resources needed to enforce adequate fire prevention measures.