Successful Flood Prevention Measures in Myanmar

Myanmar

Dyke failure has been prevented in Myanmar through the multi-level participation of state and local authorities in flood prevention measures, and by using the Myanmar traditional technique of protecting dykes called the dyke called "Yaing Khway." would be introduced. This technique prevented flooding during the monsoon season of 2004 in the Hinthada District of Ayeyawady Division, saving 5 million people and 500,000 acres of farmland from the ravages of flooding.

There are 26 townships in Ayeyawady Division, and Hinthada and neighbouring districts are located in the low-lying area of the Ayeyawady River. One of the major rivers of Myanmar, the Ayeyawady River starts in the northern part of the country, Kachin State, and flows south to the Andaman Sea on the Ayeyawady Coast. Floods usually occur in the low-lying regions traversed by the river, as the combined waters of tributaries and creeks cause the river water level to rise. Because of this, a 106-mile-long earthen dyke was built many years ago to prevent flooding in the Hinthada District. This dyke is regularly maintained and annually reinforced by the Department of Irrigation, Ministry of Agriculture and Irrigation, using heavy machinery--and not just human labor--to strengthen the embankment.

Floods occurred in Kachin State, the origin of the Ayeyawady River, and in Khamtee region, as the upper part of the Chindwin River overflowed its banks in July 2004. According to past experience, a flood in those regions causes the Ayeyawady River in Hinthada township to reach its danger level 7-10 days later, allowing local authorities and relevant departments to start flood preventive measures and the Department of Meteorology and Hydrology to issue water level information and daily rainfall data.

Under the guidance of the Ayeyawady Division Peace and Development Council, a total of 35,000 volunteers from local authorities, concerned departments, armed forces personnel, police departments, NGOs, students and members of local communities were mobilized to participate in flood prevention activities.

Those who participated in flood prevention worked on a rotation system. Four-member flood-monitoring teams were camped every 1/6th of a mile along the 106-mile-long dyke, and they had to work around the clock. Supervisory committees of different levels were also formed. Monitoring stations were equipped with modern communication equipment such as walkie-talkies, radios, and mobile phones, and loud speakers were prepared to issue warnings to the public at a moment’s notice.

The four members of each team were divided into two pairs who walked along the dyke in opposite directions from their camp and inspected the dyke every half hour. When they met the pairs from the neighboring camps, they turned back to their camp and checked the dyke again.

They checked for weaknesses in the dyke and for the formation of holes. Once these were found, they were immediately reported to the responsible person or expert.

The water level of the Ayeyawady River at Hinthada during the monsoon season of 2004 rose above the danger level, so flood patrols were carried out for one month. During that period, 261 holes were found along the 106-mile-long dyke. These holes had the potential to cause the dyke to fail, but they were controlled by Yaing Khway, a Myanmar traditional method of preserving dykes.

A Yaing Khway, or “small well”, is made of bamboo or mangrove poles, bamboo matting, and sand. The basic concept behind the Yaing Khway is to control the flow of water through a hole in a dyke by containing it inside a ring of bamboo matting and sand. This prevents water flowing through the hole from

pushing away soil and making the hole wider, causing the dyke to collapse.

A Yaing Khway is made by driving bamboo or mangrove poles into the ground around the hole in the dyke, forming a ring of sufficient diameter, and then laying bamboo matting inside the ring of poles. A second ring of bamboo or mangrove poles and bamboo matting is then constructed around the first one, and the area between the two rings is filled with the sand. The height of the poles and bamboo matting is determined by the height of the dyke and the location of the hole. In this way, the water flowing through the hole slowly rises inside the Yaing Khway until it reaches the level of the river, when it stops rising. The water is therefore controlled and does not continuously flow and erode the soil. A cross section of a Yaing Khway and a photograph are shown in Figs.1& 2.

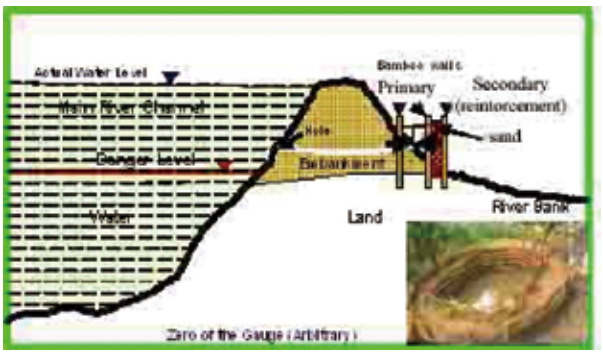

Fig.1 Cross Section of dyke and Yaing Khway, or “small well”

Fig.2 Dyke protected by a Yaing Khway

In 2004, flooding was successfully prevented in the Hinthada District by a combination of factors: good management, the active participation of local inhabitants and NGOs, and the effectiveness of the Myanmar traditional Yaing Khway method. During the 1991 monsoon season, the Hinthada dyke could not be maintained as it was in 2004. The dyke at Htain Ngu collapsed and flooding occurred throughout the area, affecting nine townships, 359,976 people and 260,147 acres of crop land. Based on the lessons and experience gained from that severe flood disaster, the people and local authorities of Hinthada district were able to make the necessary adjustments, and they have since had remarkable success over flooding.