



## An Annual Occurrence

In many parts of Asia, floods are part of the normal weather cycle and affect millions of people on an annual basis. Asians are used to recurrent floods and have adapted their lives to cope with such events. Their suffering should never be underestimated.

They pay a large price in days of lost employment, the damage to houses and property, loss of livestock, and destruction of crops. In many instances, they also pay dearly in terms of ill-health and, sometimes, they pay the ultimate price: loss of life.

## Flooding and The Poor

The vast majority of the millions of Asians affected annually by floods are the poor, with incomes of less than \$1 a day. The poor live where no one else will build and they often live with the certainty of annual flooding. Flooding gives them no opportunity to break out of the cycle of poverty. In addition, floods often cause marginally better-off people to descend into poverty as a result of flood-related losses.

## Tackling Floods: The Civil Engineering Approach

Floods have often been considered only in terms of the threat they present to people. A large amount of money has been spent building costly barriers to keep water inside the river channels and out of the way of people and infrastructure. In urban areas, there is a lot to be said for this approach.

Yet, total flood containment is neither realistic nor desirable. Too often, large-scale engineering projects and expensive flood control embankments have made the lives of the poor even harder, interfering with the ecosystems of wetlands and ensuring that if the large, high flood protection embankments are breached, death and destruction result. Furthermore, few river basin authorities have the resources to maintain them.

## The Benefits of Floods

Many communities have developed indigenous mechanisms not only to cope with flooding but reap the benefits from them.

In the People's Republic of China, people have chosen to live in areas subject to flooding for thousands of years, in order to benefit from the fertile soil of floodplains.

Today, about 840 million people (more than 66% of the population) live in flood-affected areas and these areas account for 80% of the country's gross domestic product. China is also seeing an increased focus on non-structural measures, such as flood damage insurance.

Floods that cover large parts of Bangladesh every year are essential to the farming system because they bring water and nutrients to regenerate soil fertility, replenish groundwater, and rejuvenate wetlands forming the natural breeding grounds of diverse aquatic plants, animals, and fish — so essential to the Bangladeshi diet.

In Viet Nam, farmers in the Mekong Delta provinces now plant the summer-autumn crop earlier to avoid floods and have developed new shrimp and fish breeding techniques suitable for flooded areas.

The challenge is to develop innovative flood management that sees a move from strategies based on 'crisis management' to more sustainable and long-term flood management strategies, which recognize the benefits of floods.

## Nonstructural Measures

A greater focus needs to be placed on nonstructural measures, such as

- further education and training of local communities to better mitigate flooding effects, by planting trees along embankments, constructing earth platforms close to flood-prone villages, or developing elevated houses;
- soil and water conservation projects to help reduce erosion and replenish groundwater reservoirs;
- restoration of wetlands as temporary flood storage areas;
- flood hazard mapping with land use and building controls in flood-prone areas;
- improved flood forecasting and flood warning systems, backed up by improved communication systems and community awareness programs;
- means of evacuating people and livestock from flooded areas;
- emergency flood shelters; flood proofing of houses and other essential infrastructure; and
- prevention of the spread of waterborne diseases; increased provision of safe drinking water supplies, food, and seed storage facilities above flood level; and the provision of emergency medical services and health insurance.