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Floods - A global problem that needs local solutions

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Floods are caused by excessive runoff generated mainly by excessive precipitation. Precipitation, which is one of the main processes of the hydrological cycle is dependent on the location as well as hydro-meteorological factors and are beyond the control of human beings. Floods have occurred since time immemorial. Yangtze River had flooded 1000 times in 2000 years. In the olden days, populations were small, their concentrations were sparse, and there were very little or no infrastructure facilities that could be affected by floods. Human beings possessed very little personal assets to worry about. Mobility was very easy. They were therefore able to adapt easily. The situation is quite different now. Global population, which in 1750 was 791 million has exponentially increased to the present level of about 6.8 billion. Of these about 50% live in Asia; about 37% in China and India alone.

The natural hydrological cycle has also changed significantly in many areas as a result of anthropogenic factors. Flood plains in many areas are no longer in their natural conditions, but rather densely populated and with added infrastructure that impede the natural flow of flood waters. Floods may be in the form of riverine, glacier lake outburst, estuarine, coastal, catastrophic, flash, mud and debris flow, and storm surges. The costs associated with floods include human casualties, physical damages to infrastructure, disruption and/or damage to water supply, spread of water-borne diseases, damages to crops and agriculture as well as economic damages and disruption to normal economic activities.

Floods also bring in benefits (Egyptians referred to the annual flooding of Nile the -gift of Nile-). They recharge the groundwater, bring in nutrients to flood plains thereby increasing the fertility of the soil, help to maintain the riverine ecosystem and enhance the floodplain biodiversity. Managing floods to minimize the costs and maximize the benefits is an issue of concern to all stakeholders. Although the costs as measured by the damages have in recent years increased globally (Of the 1,000 worst natural disasters in terms of the human cost that occurred during 1900-2006, floods accounted for 345), there is no unique solution to reverse the trend.

Each country has its own coping capacity, level of exposure, vulnerability, culture, system of governance and indigenous approaches to combat floods (In some cultures, a great flood is thought as an act of divine retribution by deities to destroy civilization). It is under these constraints that solutions need to be sought and could be implemented. A solution which works efficiently in one system may not make any headway in a different system. In this presentation, these and other related issues including some examples of contrasting approaches followed in certain countries and cultures to mitigate flood damages and maximize the benefits arising from floods will be addressed.

Keywords: Floods, Benefits, Cost, Disasters, coping capacity, vulnerability