

China flood havoc highlights poor urban planning

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Recent relentless flooding and mudslides in China have wiped away large blocks of homes and claimed thousands of lives. For example, a massive mudslide in August in Zhouqu county, Gansu Province, has claimed nearly 2000 lives (Xinhuanet, http://news.xinhuanet.com/english2010/china/2010-10/14/c_13557206.htm). Deteriorated soil erosion and climate change–derived torrential rains are usually blamed for such disasters (Qian and Zhu 2001; Liu and Diamond 2005). However, one more crucial factor is the lack of consideration of physical environment during urban expansion. It is apparent that the wisdom of “Design with Nature” which seeks the long-term balance between human and nature has not been seriously respected (McHarg 1971).

Currently, a massive urbanization movement is being implemented across China, and a large number of rural people are migrating to cities at an unprecedented pace (Qiu 2010; Liu et al. 2010). However, the urban planners emphasized only social and economic benefits and treated nature as if it does not exist. This is more prominent in western China where cloud-kissing mountainous areas are not suitable for living, and urbanization is carried out on narrow floodplains located on the foot of lofty mountains or the alluvial fans of ephemeral rivers. As a result, rapid urban expansion has occupied almost all the floodplains and alluvial fans, and the water pathways are strictly confined to an extraordinarily narrow channel (Fig. 1), which severely undermines the natural regime of fluvial systems. Water flow can easily exceed transport capacity of the narrowly contained channels, and the people living on the floodplains and alluvial fans are extremely vulnerable to floods and mudflows.

Increasing frequencies of abnormal rainfalls due to climate change (IPCC 2007), coupled with environmental degradation caused by anthropogenic activities, are likely to trigger more floods and mudslides in future in the mountain areas, which represent 70% of the entire country. Although Environmental Impact Assessment (EIA) has been mandatory for large infrastructure projects, natural hazard assessments are largely ignored. Therefore, natural hazard assessments of mountain cities are desperately needed, and more importantly, serious

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Fig. 1 Inundated city: floods overflowed constrained channel and flooded a large number of civilian buildings

physical environmental considerations must be a top priority in future urban planning to ensure the proper functioning of hydrological, geomorphologic, and ecological processes and to avoid falling into the same trap again.

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