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Flood and Drought Evaluation and Management

General Report for Question 87 of the 22nd ICOLD, June 2006, Barcelona

By Dr. Xiaotao Cheng

Dams and reservoirs play an important role in the modern flood control and drought mitigation systems all over the world. However it is the first ICOLD Congress in which Flood and Drought Evaluation and Management becomes a specific subject matter. Previous Questions have involved in many aspects of floods and risk analysis, but mainly contributed to the safety of dams themselves. The Question 87 indicates that dam authorities and owners nowadays should not only pay more attention to dam safety under changing flood and drought regime to tackle extreme hydrological events, but also play more active role in the practices of integrated flood and drought management in the river basin concerned.

The General Report of Question 87 includes a review of dam-related flood and drought management issues, such as the role of dams in flood and drought management, flood mitigation through improving operation rules of dams and by more advance flood forecasting system and emergency action plans, new technologies in evaluation and management of floods and droughts, and hydrological safety of dams involving criteria for design flood assessing and current trends in the formulation on new standards.

The contributions of Question 87 prompt us to recognize the role of dams in view of the whole basin involving not only hydrometeorological and engineering factors but also socio-economic and eco-systemic factors. The impacts of floods and droughts will be more significant on both human and natures under the stress of climate changes and unwise human activities. The ever-increasing population and rapid urbanization have been disturbing the weak balance between human and nature. Dams and reservoirs play important roles in creating a new balance with more benefits and reducing adverse impacts of floods and droughts. In the meantime, the dams and reservoirs should be planned and operated more carefully to avoid a vicious circle in interaction among regions and between man and nature.

It is the essentials of flood and drought risk management to modulate risk-related interests among communities and between man and nature by means of integrated measures of legislation, administration, economics, techniques, education, and engineering. The restrict conditions that dam construction and operation have to face will become more

rigors due to migration, environmentalist and so on. Such kind of the structural measure should not only be integrated with nonstructural measures such as advanced flood forecasting system, but also be promoted by means of nonstructural measures in juristic, financial, administrative, technical and educational aspects.

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