



The Smithsonian/NASA Astrophysics Data System



[Home](#) [Help](#) [Sitemap](#)

Managing River

Search

- Fulltext Article not available
- [Find Similar Articles](#)
- [Full record info](#)

Managing River Resources: A Case Study Of The Damodar River, India

[Bhattacharyya, K.](#)

American Geophysical Union, Fall Meeting 2008, abstract #H11E-0825

The Damodar River, a subsystem of the Ganga has always been a flood-prone river. Recorded flood history of the endemic flood prone river can be traced from 1730 onwards. People as well as governments through out the centuries have dealt with the caprices of this vital water resource using different strategies. At one level, the river has been controlled using structures such as embankments, weir, dams and barrage. In the post-independent period, a high powered organization known as the Damodar Valley Corporation (DVC), modeled on the Tennessee Valley Authority (TVA) came into existence on 7th July 1948. Since the completion of the reservoirs the Lower Damodar has become a 'reservoir channel' and is now identified by control structures or cultural features or man made indicators. Man-induced hydrographs below control points during post-dam period (1959-2007) show decreased monsoon discharge, and reduced peak discharge. In pre-dam period (1933-1956) return period of floods of bankfull stage of 7080 m³/s had a recurrence interval of 2 years. In post-dam period the return period for the bankfull stage has been increased to 14 years. The Damodar River peak discharge during pre-dam period for various return periods are much greater than the post-dam flows for the same return periods. Despite flood moderation by the DVC dams, floods visited the river demonstrating that the lower valley is still vulnerable to sudden floods. Contemporary riverbed consists of series of alluvial bars or islands, locally known as mana or char lands which are used as a resource base mostly by Bengali refugees. At another level, people have shown great resourcefulness in living with and adjusting to the floods and dams while living on the alluvial bars. People previously used river resources in the form of silt only but now the semi-fluid or flexible resource has been exploited into a permanent resource in the form of productive sandbars. Valuable long-term data from

multiple sources has been used in this study to track flow regime and sedimentation characteristics. Data from topographical maps, cadastral or mouza maps, and satellite images has been consolidated. Significant stress has been given on extensive and intensive field survey in order to assess human perception, adaptability and resource management in the sandbars or char lands. The Damodar River is located in West Bengal, India but the findings on the controlled Lower Damodar are not exclusive to this river. These findings may help in managing water resources in other regulated rivers in India or outside India. The primary objectives of this paper have been to trace the impact of control measures on discharge, sedimentation characteristics and consequent changes in the perception and adjustment of the riverbed occupiers to life with floods and dams. In this age of heightened environmental awareness, we all know that the survival of our civilization depends on rational and constructive maintenance and use of our river resources. The major challenge in the coming decade is to develop a holistic and sustainable river management system that will be environmentally accountable, socially acceptable and economically feasible. The primary issue to be addressed, therefore, is not whether dams are needed but how a river system is cared for in the presence of floods, dams and islanders. River resources should be treated as economic assets since ongoing economic development depends on a riverine regime that is ecologically sound. These worthwhile goals, however, will remain out of reach unless we have effective government policy and the legal structure to support it.

Keywords: 1625 Geomorphology and weathering (0790, 1824, 1825, 1826, 1886), 1834 Human impacts, 1856 River channels (0483, 0744), 1880 Water management (6334)



The ADS is Operated by the [Smithsonian Astrophysical Observatory](#) under [NASA](#) Grant NNX09AB39G