



PAKISTAN: FLOOD MANAGEMENT - RIVER CHENAB FROM MARALA TO KHANKI

1. **Location of the study:** Stretch between the Marala and Khanki barrages on the Chenab River - a major tributary of the Indus River – in Pakistan.
2. **Author(s):** Shaukat Ali Awan¹
3. **Brief description of flood management practice** ²

Heavy rainfall during the monsoon season in the upper drainage basin of the Chenab, combined with snow melt, causes flooding along the Chenab river – especially along the stretch between Marala and Khanki where numerous tributaries join the Chenab. Although severe flooding is reported to have taken place in the 1950s along the Indus, it was not considered a problem until population pressure and economic assets concentrated in the floodplain area increased. From the 1970s onwards, flooding in the area has resulted in extensive economic loss.

Flood management strategies adopted include structural measures such as dikes, levees, embankments and bypass channels, and non-structural measures like flood forecasting and warning. Considerable investment has been made to improve the existing flood forecasting and warning system. Primary responsibility for flood forecasting lies with the Flood Forecasting Division (FFD) of the Pakistan Meteorological Department.

The Federal Flood Commission (FFC), established in 1977, has played a major role in remodeling flood mitigation policy in Pakistan and is responsible for implementing the Flood Protection Sector Projects (FPSP I and II) initiated in Pakistan with assistance from the Asian Development Bank.

4. Key issues

- The emergence of the flood “problem” as investment and population density in floodplain areas increased
- The need for the free and unrestricted exchange of data between riparian states for effective flood forecasting

5. Relevance to the concept of IFM

Water cycle as a whole

Aspect 6 - Effective use of floodwater by maximizing positive aspects of floods
Groundwater/Surface water treated as linked resources in flood plains

Integration of land and water management

Aspect 2 - Land and water management
Aspect 3 - Laws and regulations for flood and water mgmt

Participatory approach

Aspect 5 - Stakeholder involvement in decision making

¹ Flood Forecasting Division, Pakistan Meteorological Department

² Complementary information is provided in a second case study of Pakistan recently submitted



Aspect 7 - Community-based approach
Aspect 9 – Effective linkage between existing institution

Integrated hazards impact mitigation

Early warnings and forecasts
Aspect 11 - Free and open exchange of data

6. Comments

- (i) Potential strong points of the case study
- Plans in place to improve the reliability of flood forecasting models
 - Classification of flood limits and the associated forecasting/alert plans
- (ii) Potential for practices mentioned to be transferred/applied to other regions with geophysical and socio-economic characteristics)

The flood forecasting system could be replicated in other countries facing similar problems with access to in-situ hydrological data. However, obtaining the necessary equipment and the availability of trained personnel to process the data and issue forecasts could be a problem if the country is unable to afford it or is not supported by external funding. The step-wise alert system can easily be replicated in other locations.