USA: *FLOOD MANAGEMENT – MISSISSIPPI RIVER*

1. Location of the study: Mississippi Basin, USA

2. Author(s): General Gerry Galloway[1]

3. Brief description of flood management practice

Floods have been part of the earliest recorded history of the Mississippi. Significant floods on the Mississippi result from regional rainfall and snowmelt events that cause slow rises on rivers and extend for days or weeks. Due to the influence of tributary flow – from major tributaries such as the Ohio, Missouri and Arkansas Rivers – the magnitude of flooding increases moving downstream from the headwaters to the mouth. Short, intense rainfall events can cause flash floods or quick rise and fall floods on the tributaries but do not normally affect the mainstem. It is reported that catastrophic flooding, causing millions of dollars of damage to property and agricultural land and affecting hundreds of thousands of people, occurred on the Mississippi in 1927, 1936, 1973 and 1993.

For over two centuries, structural measures dominated the US response to flooding. The principal, and frequently only, approach to flood damage reduction was the construction of levees. In the early 20th century, levees were augmented by channel work to speed floodwaters to their ultimate destinations. In the mid-1950s initial proposals were made for the use of non-structural measures to reduce flood damage. In 1969, the federal government instituted the National Flood Insurance Programme (NFIP), which combines subsidized flood insurance with requirements for participating communities to regulate land use in the floodplain. Although flood insurance has been available to floodplain residents since 1969, only 20-30% of those eligible participate in the insurance programme.

Until the last two decades, the emphasis on floodplains was directed towards providing protection for the floodplains against floods to enable the economic use of rich, flat and fertile alluvial lands for agriculture and development. More recently, there has been increased attention to moving unsuitable uses (homes and fields that frequently flood or whose protection is not economically justified) out of the floodplain and conversion of those lands to natural uses. Following a study of federal flood policy following the major flood of 1993, it was proposed that development in the floodplain should be avoided unless no alternative location existed and that when development was to take place, the first method of reducing potential damage should be the retention of rainwater in the location in which it falls through use of land treatment and natural and artificial reservoirs.

4. Key issues

- Low percentage of compliance with NFIP
- The need for comprehensive flood management plans for the Mississippi
- Relocation of land-use at risk to flooding

5. Relevance to the concept of IFM

The study covers the following aspects of IFM to varying extents:

[1] U.S. Army Corps of Engineers; International Joint Commission - Canada/USA

Integration of land and water management

Aspect 2 - Land and water management
Aspect 3 - Laws and regulations for flood and water management
Aspect 12 - Multi-functional solutions (engineered wetlands, water quality treatment, flood alleviation)
Integrated river basin management approach to flood management

Best mix of strategies

Aspect 10 - Best mix of structural and non-structural measures

Participatory approach

Aspect 5 - Stakeholder involvement in decision-making
Aspect 7 - Community-based approach
Aspect 9 – Effective linkage between existing institutions

Integrated hazards impact mitigation

Aspect 1 - Cross-sectoral integration of disaster management strategies
Flood plain maps and zoning
Early warnings and forecasts
Aspect 8 - Tools to support decision-making
Aspect 11 - Free and open exchange of data

6. Comments

(i) Potential strong points of the case study
- Plans for comprehensive watershed management
- The application of economic instruments for effective flood management

(ii) Potential for practices mentioned to be transferred/applied to other regions with geophysical and socio-economic characteristics)
- Flood insurance may be applied in countries with similar economic standing.
- Relocation of unsuitable land use could be carried out in sparsely populated countries in which there is plenty of alternative locations to carry out the same activity, however, would not be at all practical in densely populated regions of the world.