

Preparing for Future Floods

Analyzing Reconstruction Pathways from Past Floods Can Help

Hurricane Katrina, the storm surges it produced, and the subsequent levee failures caused unprecedented death and destruction over a 90,000-square-mile area in Louisiana, Mississippi, and Alabama. As the region continues to recover from the devastating flooding, it is important to recognize that such natural disasters will continue to occur throughout the world and that studying approaches to the reconstruction that followed previous flooding disasters may be a way to glean lessons for dealing with both the aftermath of Katrina and of future floods.

RAND Corporation researchers studied four floods that occurred since 1948—two in the United States (in Vanport, Oregon, in 1948; and in the Upper Mississippi River region in 1993)—and two outside the United States (in the province of Zeeland, the Netherlands, in 1953; and in the Yangtze River basin, China, in 1998). The four cases were examined in terms of the “cycle of restoration”—*anticipation* of a possible flood; the *actuality* of an event, from the awareness that the event is inevitable until the passing of the immediate crisis; and the *aftermath*, both the recuperation from the event and the decision about what changes must be made to better anticipate the next cycle.

The study reached several general observations that span the cycle of restoration:

- Attending to history leads to mitigating the potential damage of floods, even when major floods are few and far between. As for the Gulf Coast region, the 1993 Upper Mississippi River case shows that not following up on the lessons of past flooding leads to damage that could have been avoided.
- The critical concept of integrated water resource management policy—particularly its implication that flood control may include leaving otherwise valuable land unprotected to serve as a buffer—is necessary, but it may be difficult to accept. Increased development induced by structural barriers such as levees often adds to flooding risks.
- Clearly delineating roles and responsibilities for preparedness and response in advance produces better outcomes. When the various actors involved did not have well-defined and well-understood roles, the consequences of the disaster were magnified.

The study also found that in the aftermath of disaster—with its disruption of the status quo—it can be worthwhile to consider improvements to the social and physical infrastructure that go beyond flood control. Such improvements can offer opportunities for broader-based social and economic progress that might have been delayed or not happened at all in the absence of the crisis.

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This fact sheet is based on work done within the RAND Gulf States Policy Institute documented in *From Flood Control to Integrated Water Resource Management: Lessons for the Gulf Coast from Flooding in Other Places in the Last Sixty Years*, by James P. Kahan, Mengjie Wu, Sara Hajiamiri, and Debra Knopman, 2006, OP-164-RC (available at www.rand.org/pubs/occasional_papers/OP164/), 66 pages, \$20, ISBN: 978-0-8330-3984-2.

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