

Nature's squeeze - man's response

Distinctions between natural and not-so-natural disasters

By Sandra Postel, Global Water Policy Project

AMHERST, MASS. - Although it would appear that the unfathomable damage wrought by hurricane Katrina is due to an extraordinary act of nature, this limited perspective misses important lessons we had better learn this time:

Distinguishing a natural disaster from a human-induced one is getting more difficult. And we need to enlist nature's help, not assign it blame.

Storms, floods, earthquakes, and tidal waves are natural events, to be sure, but the degree to which they produce disaster is now often strongly influenced by human actions. By necessity or choice, more people are living along coastlines, in floodplains, and on fragile hillsides - zones that place them in harm's way. At the same time, the clearing of trees, filling of wetlands, engineering of rivers, and destruction of coral reefs and mangroves has frayed the natural safety nets that healthy ecosystems provide. Consequently, when a natural disaster strikes, the risks of catastrophic losses are higher.

Data collected by Munich Re, one of the world's largest reinsurance companies, show the loss of life and property due to natural disasters has been climbing for two decades. Worldwide economic losses from natural catastrophes during the past 10 years have totaled \$566.8 billion, exceeding the combined losses from 1950 through 1989. More than four times as many "great" natural catastrophes occurred during the 1990s as during the 1950s.

In the case of Katrina, the failure to adequately maintain and upgrade artificial levees to keep floodwaters out of New Orleans has emerged as an obvious human cause of the suffering. But so were decisions to allow coastal wetlands to be drained and filled for commercial development and to allow more than two dozen dams and thousands of miles of levees on the Mississippi River to sequester sediment that would otherwise replenish delta lands.

Coastal wetlands and barrier islands reduce the power of hurricanes and storm surges, a vital natural service largely missing when Katrina struck. Louisiana alone has lost more than 1.2 million acres of coastal lands since the 1930s. Whether blind to or dismissive of the risks, the Bush administration in 2003 effectively gutted the "no net loss" of wetlands policy initiated during the administration of the elder Bush.

Along with Katrina, other recent disasters suggest the value of nature's protective ecological infrastructure. Nearly 5,000 Haitians died and tens of thousands lost homes during tropical storms in May and September of 2004. Although tagged as

natural disasters, these tragedies were exacerbated by a distinctly human activity: the clearing of trees in the highlands. Destitute and lacking alternatives, Haiti's poor have cut down most of their trees for firewood and charcoal, thereby losing a valuable service provided by forested watersheds - the moderation of runoff and the prevention of massive mudslides. The very storms that devastated Haiti had far less impact on nearby Puerto Rico, where highland watersheds are forested.

Likewise, the Indian Ocean tsunami that struck coastal Asian nations last December unveiled yet another important piece of ecological architecture - the storm and wave protection afforded by mangroves and coral reefs. The tangled roots and dense vegetation of mangroves that thrive where salt water meets fresh water act like a shock absorber against storm and wave energy. Vast areas of these natural protective barriers - including half the coastal mangroves in Thailand - had been cleared for hotels, shrimp farms, and other commercial developments.

For the same reason people buy home insurance and life insurance - to avoid catastrophic loss - societies need to "buy" disaster insurance by investing in the protection of watersheds, floodplains, and wetlands.

Often these investments pay for themselves even in strict economic terms. For example, after the Great Midwest Flood of 1993, when the upper Mississippi and Missouri Rivers rose to record heights, researchers estimated that restoration of 13 million acres of wetlands in the upper Mississippi River basin, at a cost of \$2 billion to \$3 billion, would have absorbed enough floodwater to substantially reduce the \$16 billion to \$19 billion in flood damage.

We have little time to waste in acting on these lessons. Global warming and its anticipated effects on the hydrological cycle will make the robustness and resilience of nature's way of mitigating disasters all the more important, as tropical storms, seasonal flooding, and droughts increase in frequency and intensity.

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