

What went wrong? Was an early warning system in place?

A complete early warning system comprises four elements 1) prior risk knowledge, 2) monitoring and warning service, 3) dissemination of warnings, and 4) response capacity.

In the case of the Hurricane Katrina, a technical monitoring and warning was nearly perfect. The projected path was exact and the predicted windstorm and storm surge were very accurate too. The dissemination of warning was also excellent in a timely manner. Most people must have prior knowledge of the hurricane risk in the area as hurricanes frequently approach the region. Therefore, timely warning made about one million people evacuated from the region by Sunday.

It can be said that the problem lies in the fourth component – *Response Capability*, knowledge by people of how to react and capacity to do so. Despite mandatory evacuation order issued by authorities, many people did not evacuate the area. Those people are mainly socially vulnerable people who cannot afford to own a private vehicle or who lack in cash. They could not afford to evacuate. There was no public plan to use trains or some other form of mass transportation to evacuate those who could do by themselves. In New Orleans or Harrison County, Mississippi, many of those were inner city residents of African Americans. Among them, it is likely that the handicapped, children and the elderly, and maybe women might show higher death rates. When Katrina made landfall, badly maintained houses were quickly destroyed exposing the increased social vulnerability of poor communities. Their vulnerability was partly due to greed driven land use and laissez-faire location decisions in the past. Specialists have warned, for a long time, New Orleans, which is a city built partly below sea level and the thoughtless destruction of wetland was a natural disaster waiting to happen. Wetlands, along the edges of rivers and near the coast itself, are vital for absorbing and storing floodwaters. According to the US Geological Survey, Louisiana has lost 1,900 square miles of wetland in the past seven decades.

Flood water management planning and preparedness just for Category 3 hurricanes additionally worsen the situation. It has long been warned that the city may be hit by a big disaster. There was a plan of reinforcement of levees, but the federal budget cut did not allow doing so.

Katrina proved that disaster preparedness plan needs to be well established to secure populations when disasters occur. Early warning and contingency planning are only effective for people and communities through regular training and drills with their active participation.

Hurricane Katrina as well as the devastating floods in Romania, Bulgaria, Switzerland, Austria and Germany tells us that industrialized countries also have to be prepared for the worst. "We need to pay more attention to social vulnerability to hazards," says Salvano Briceño, director of the Secretariat for the International Strategy for Disaster Reduction. "People easily forget risks and they often see natural hazards as dangers that only threaten others," said Salvano Briceño. "Even countries that are well prepared can do better. There is always room for improvement."