Social and technological aspects in managing natural hazards.

M. C. Llasat (1) and F. Siccardi (2)

(1) Meteorological Hazards Analysis Team (GAMA), Department of Astronomy and Meteorology, University of Barcelona, Spain, (2) CIMA, University of Genoa

The natural catastrophe that have produced the major economic loss, before the Katrina event, was an earthquake [Munich Re Group, 2004] recorded on January 17, 1995, in Japan, that produced more than 6000 casualties and economic losses exceeding 100.000 US$ millions. The major number of casualties was also produced by an earthquake in Japan, on September 1, 1923, that produced more than 140000 victims. Going back through time, the earthquake recorded in China in 1556 produced 830000 casualties, quantity that was exceeded by the flood recorded in that country in 1887, with 900000 casualties. Although individual earthquakes and hurricanes are the hazards that usually produce the greatest losses, floods occur with such a frequency throughout the world that, in total, they are the disasters responsible of the major economic and human losses in the world. However, in the perception of the population at large, the idea of disaster is usually associated to earthquakes, hurricanes and so on; they have a poor perception about the danger due to floods. As a consequence of such a social drawback, subjective judgements of personal exposure to floods depend on age, education and social role. That's the reason why most flood prone areas around the planet still increase in population density and change the land use into urban, affecting the flood regime and flood risk.

The social response to such disasters by more conscious countries has been to build up Civil Protection organizations: the need of the citizens to be protected, from natural and industrial disasters, made, in Europe, US and Japan, the Civil Protection organizations to be established during the last decades of the past century. UE DG XVI makes efforts, presently, to comply with the rapid development of the Civil Protection in the countries of Southern Europe, trying to have the remaining ones keeping the pace of the leaders. FEMA failing to manage Katrina in New Orleans it's pushing United States to redesign their approach to both the prediction of ground effects and to the organization of the relief. Even Latin America countries are presently developing their state organizations, although with more accent on the relief then to the prediction and forecast. Asian and African countries do not presently perceive the need: emergency relief of the population affected by a disaster is there organized, if the term organization would apply, case by case, mainly with the help of international relief agencies.

It seems to us that the right of a person to be protected from the extremes, of climate,

of day by day weather, of ground motions, of infrastructures management, of industrial failures, is characteristic of a given level of development of the society: in our countries the right of the citizen to safely stay home, to safely work and travel everywhere in its country is presently acknowledged by the common law. In less developed countries, where the human life is still threatened by the insufficient satisfaction of basic needs, where diseases, malnutrition and limited access to safe water and air reduce sensibly the life expectancy, Civil Protection has no meaning, in the sense we understand it.

A modern Civil Protection, in a modern, post-industrial society, has two major tasks: the first one is sociological, in the sense that the new organization has to deeply intermingle with the existing social institutions of the country in order to get consensus on the restrictions of land use and other limitations; the second one is technological, in the sense that Civil Protection must make use of the most advanced and efficient tools to predict, forecast and observe the ground effects affecting people and its properties, in order to be perceived as much reliable as possible. Getting, also by this way, consensus on restrictions.

We will attempt to clearly discuss, in the following, not only successes but also failures, showing why, in some cases, the sociological task failed, and why, in some other cases, it failed the technological one.