



## The summer floods in Europe - A millennium flood?

*Using the 2002 floods in Europe as a case study, MunichRe raises questions such as 'is man to blame?' and 'can the effects of floods be reduced?' to highlight the important role of insurance industry in disaster reduction.*

MunichRe Group  
WKron@munichre.com  
www.munichre.com

In central Europe, the year 2002 will remain etched in people's memories as the year of catastrophic floods in the catchment of the Elbe. But one thing could be easily forgotten: although the Elbe area was the region most badly affected, there was massive flooding in many other regions of Europe too, with many parts of the Danube catchment suffering their worst floods for years. In June three people in Diedorf (western Bavaria) drowned in flash floods following severe thunderstorms; at the beginning of August well over 100 people were killed by sudden floodwaters raging down to the Russian Black Sea coast; at the end of August rainfall records were broken in the South of France (650mm in 24 hours in Anduze in the southern Rhône valley); and in November many places in northern Italy were submerged after incessant rainfall for several days.

### Is man to blame?

In August, central Europe experienced its worst floods for centuries. Nevertheless, floods of these dimensions occurred in the past and they will occur in the future as well. Their causes are the



The Czech Republic was severely ravaged by the flooding. Towns and villages across the country experienced large-scale damage to buildings and roads and thousands of people were evacuated to rescue centres.  
Photo: IFRC

subject of heated discussion. They are repeatedly attributed to sealing, river regulation, and the disappearance of natural flood retention areas. General and in part one-sided allegations do not bear critical examination. The causes are much more complicated. The following aspects all play a central role:

- A major proportion of the losses are due to a lack of care or awareness in the use of areas exposed to flooding. In this respect, mistakes have regularly been made and will continue to be made by owners and those responsible for communal planning.
- Flood control measures (dykes, flood detention basins) are always designed to cope with what is called a design event, a flood discharge based on a statistical occurrence or exceedance probability of typically once in 100 years. Situations in which the design event is exceeded (meaning, for example, a 200-year event) are encountered many times each year, and this applies to Germany too, but they are frequently no more than local or small-scale events. The Elbe floods were on such a large scale and so extreme, however, that normal dyke protection would not have been adequate.
- River restoration measures make sense and are very welcome; but their effectiveness in extreme cases is often overestimated or misrepresented. As a rule, they are incapable of preventing really catastrophic floods and in many cases will not even bring about any significant reduction. The volumes of water that amass in extreme events are simply too huge.



It is essential to note that the increase in flood damage in recent years and decades has been due by and large to the boom in the development of areas near bodies of water. Flood experts - including in particular those from the insurance industry - have for years been drawing attention to the dangers that ensue when the conversion of flood plains into housing and industrial areas is pursued to excess, and when the construction of dykes make the people that live and work there feel overly safe from major floods. The dangers persist even if in the course of time recurrent improvements have been made in forecasting, early warning, and flood control facilities. There is a residual risk - which in fact is increasing in absolute terms.

### **Is climate change to blame?**

Although it is very difficult to supply statistical proof of a significant upward trend as far as extreme weather conditions in Germany are concerned, there is no denying the fact that if the temperature rises, the atmosphere can absorb more water vapour, and this tends to result in larger amounts of rain. At the same time, the scientific community is now broadly in agreement that the observed global increase in temperature of some 0.7°C in the last one hundred years is largely attributable to human activity. Nevertheless, we are still at the beginning of a truly menacing development involving a global temperature increase this century of probably as much as 6°C. For this reason, the future costs – particularly those generated by weather catastrophes – might rise dramatically and put an enormous strain on national economies and insurance industries. The severe storms and rainfall in the summer of 2002 may be taken as an indication of what we might need to reckon with more frequently in a warmer climate. Munich Re will continue to meet these increasing challenges. First-class reinsurance protection and service will only be available, however, at prices and conditions that take account of the global increase in weather-related extreme events and the concentration of values. It will also be very important to introduce substantial deductibles.

The planning of future flood control facilities will have to take climate change into account. Different temperature and precipitation conditions probably will lead to the return periods of floods becoming shorter. For example, events that in the past occurred on average once in a hundred years could occur as ten-year events in the future. The use of optimized regional climate models and improved hydrological analyses may be expected to provide for greater certainty, which is essential for all designs of flood control structures.

### **Can the effects of floods be reduced?**

There is no denying that measures like surface sealing and river training and anthropogenic climate change can intensify floods. The influences that have been identified as being negative must be quickly reduced. But - with or without significant human intervention - extreme flood situations will continue to occur. This makes it all the more important to make optimum use of the opportunities already presented by disaster reduction, particularly in terms of land use management.

This means giving flood safety a higher priority than other aspects. Local interests must take second place to an integrated catchment-based management of water and other resources which embraces all interests in the assessment. Advantages that any one community or resident located beside a river may derive from particular measures should not burden society as a whole, be it in the form of state aid or private (compulsory) insurance. As it will not be possible to avoid building in risk zones completely even in the future and as, above all, settlements cannot be moved lock, stock, and barrel, technological flood control measures will continue to play an important role.

Another aspect that will be of central significance, however, is optimum preparation for catastrophe situations. This involves in particular establishing early-warning systems and setting up an emergency plan that works. Much loss and suffering could have been avoided if the instruments of disaster reduction had been implemented. For many years these have been called for by numerous initiatives that promote disaster management like the International Strategy for Disaster Reduction (ISDR). The insurance industry should continue to give these endeavours its pinpointed support and make them its own.

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