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Dr. Gerhard Berz is Head of the Geoscience Research Group of Munich Reinsurance, the world's largest reinsurance company.

After receiving his doctorate in meteorology and geophysics from the University of Cologne, he served as a professor at the University of Cologne and the University of Munich. He also worked for the German Weather Service.

Dr. Berz is a member of several international engineering and meteorological societies, and is a member of the Scientific Advisory Committee of the German National Committee for the International Decade for Natural Disaster Reduction.

Cost of Disasters: Areas of Cooperation with the Insurance Industry

Yearly losses from natural disasters will double by the end of the 90s if current trends persist. The cost of disasters is also rising sharply for the insurers. The insurance industry has extensive experience in disaster mitigation and preparedness. This experience can form the basis for partnerships with other industries, NGOs, government, media and scientific institutes.

Economic and insured losses from natural disasters have increased dramatically over the past few decades, and have been most pronounced over the past seven years.

If current trends persist, the annual loss amounts will double by the end of this decade, coming close to US$ 150 billion. Roughly one third will be insured. Even some individual "worst case" disasters may exceed the US$ 100 billion mark.

■ Roles for the insurance industry

In many insurance markets, natural hazards are covered by various types of household insurance as well as insurance for business and industry. This requires close analysis to correctly estimate premiums and potential. While insurers have promoted education and incentives to reduce man-made accidents, the industry needs to invest more effort into similar programmes for natural hazard mitigation and prevention.

Insurance has an appreciable influence on the behaviour of the public and that of industry with regard to preparedness and mitigation. By proper use of insurance instruments — especially deductibles — the insured can be motivated to take preventive measures. Following a disaster, the insurance industry provides prompt financial help and has, for the most part, an efficient loss settlement organization available for this purpose.

In the field of disaster preparedness, mitigation and relief, there are many areas of possible cooperation between the insurance industry and government, NGOs, scientific institutions, media and other industries.

These include:

- Mapping of hazard zones;
- Assessment of loss potentials for disaster scenarios;
- Recommendations for regulations or restrictions on land use;
- Recommendations for standard building regulations;
- Promotion and use of warning systems;
- Information, education and motivation of the public, industry and organizations;
- Analysis of disaster losses;
- Compilation of lists of competent institutions and experts.

The Billion-Dollar Insurance Losses from Natural Disasters

Rank	Year	Event	Area	Insured losses US$ m	Economic losses US$ m
13	1983	Hurricane "Alicia"	USA	1.275	1.650
6	1987	Winter gale	Western Europe	3.100	3.700
5	1989	Hurricane "Hugo"	Caribbean, USA	4.500	9.000
4	1990	Winterstorm "Daria"	Europe	5.100	6.800
12	1990	Winterstorm "Herta"	Europe	1.300	1.900
7	1990	Winterstorm "Vivian"	Europe	2.100	3.250
11	1990	Winterstorm "Wiebke"	Europe	1.300	2.250
2	1991	Taifun "Mireille"	Japan	5 200	6.000
9	1991	Forest fire	USA	1.700	2.000
1	1991	Hurricane "Andrew"	USA	20.000	30.000
10	1992	Hurricane "Iniki"	Hawaii	1.600	3.000
8	1993	Blizzard	USA	1.750	5.000
14	1993	Floods	USA	1.000	12 000
3	1994	Earthquake	USA	7.000	30.000

Before 1987, just one disaster cost over US$1 billion. Since 1987, 13 such disasters have occured.

■ The rising cost of natural disasters

Over the last ten years, major natural disasters have caused economic losses of more than US$ 200 billion and insured losses of some US$ 70 billion. Additional catastrophes of smaller dimensions at least double these loss amounts. Compared with the disaster losses in the 60s, the economic loss burden has increased fivefold discounting inflation. Insured losses have increased by a factor as high as 12. Extrapolation of the trend curves indicates that the loss burden will again double by the turn of the century *(see graph p. 58)*.

Individual natural disasters, like hurricane "Andrew," have cost as much as US$ 30 billion in economic damages, two-thirds of which was borne by the insurance industry *(see table above)*. These disasters have also demonstrated that the ultimate loss potential of such individual disasters already exceeds US$ 100 billion.

Where there was only one insured disaster loss exceeding US$1 billion before 1987, 13 such disasters have occurred since then.

Similar trends can be observed in the area of man-made disasters, where individual events have exceeded the US$ 1 billion mark only in recent years.

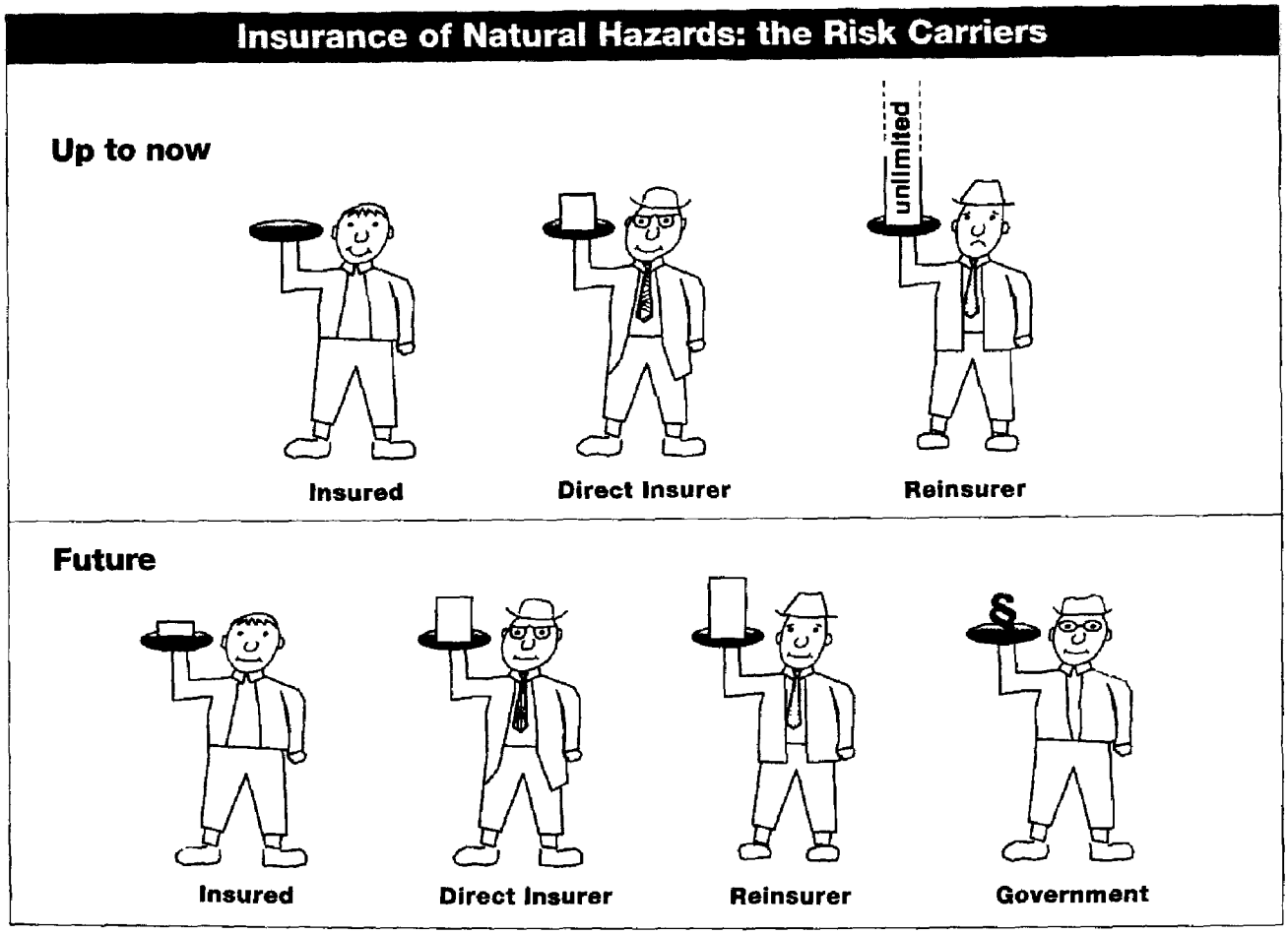
These obvious trends toward a new dimension of loss potentials are primarily caused by a rapidly growing concentration of people and property in urban areas, particularly in areas highly exposed to natural hazards such as coastal regions

■ Effects on the insurance industry

The disproportionate increase in insured losses is the result of growing insurance density (especially in highly exposed regions) and of steady expansion in the scope of the insurance cover. Losses due to natural hazards are covered by a wide range of insurance policies. These range from fire, homeowners, household and engineering insurance, to motor, hull, marine, aviation, health and life insurance.

The dramatic change in disaster losses is beginning to show a significant impact on the insurance industry. In the past, the availability of cover against natural hazards and other catastrophe risks was mainly a matter of the right price. Now it has become much more a question of capacity. The world reinsurance industry, which handles the global spread of catastrophe risks, has been strongly affected. It has absorbed a very high percentage of recent insured disaster losses: 98% in the 1985 Mexican earthquake; 99% in the 1988 Jamaican hurricane "Gilbert"; 65% in the 1990 European winterstorms; and nearly 50% in the 1992 hurricane "Andrew." The industry has realized the precariousness of providing unlimited proportional catastrophe coverage and is now switching over to limited non-proportional ("excess of loss") coverage.

In the long run, the shrinkage of insurance capacity will



produce a more homogeneous distribution of disaster risk amongst the four parties involved: insured, insurer, reinsurer and government. The insured and the insurer will retain a greater portion of the risk, as a consequence of increasing deductibles and retentions. The government will be increasingly obliged to act as a "reinsurer of the last resort" for loss potentials which exceed the capacity of insurance and reinsurance markets, or at least to honour the catastrophe reserves of the insurance industry with appropriate tax reductions.

■ Contributing to disaster preparedness and mitigation

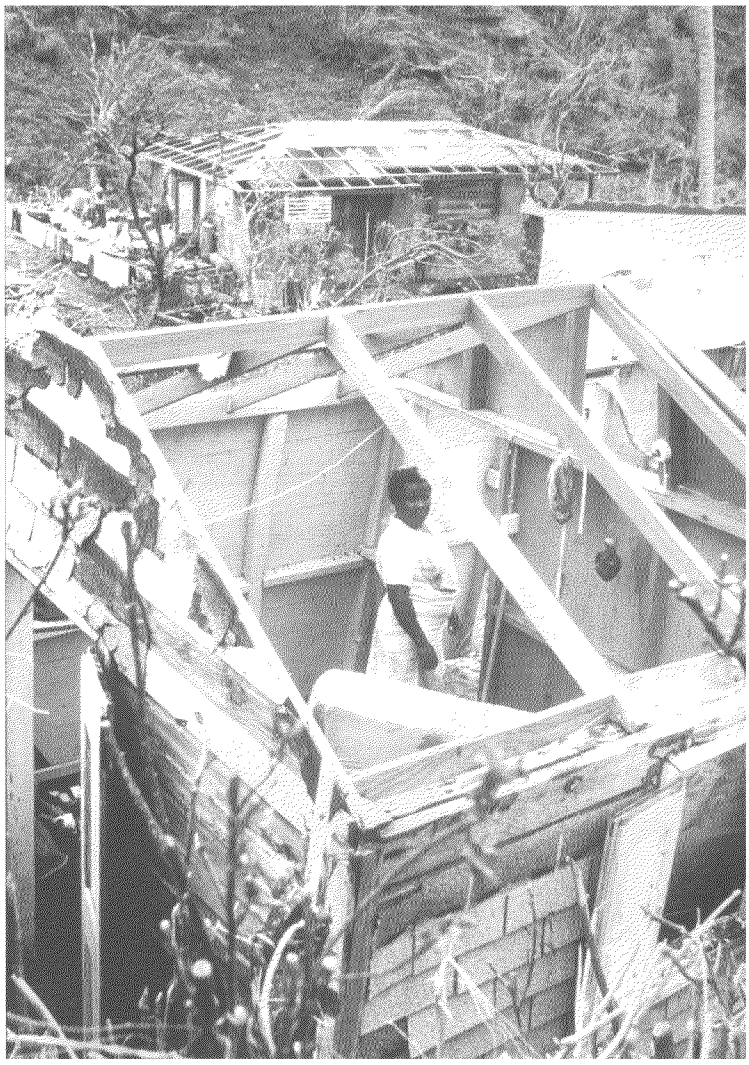
Insurance is by definition a form of disaster preparedness. It represents an important, if not decisive, prerequisite for many economic activities. Without insurance cover, engineering projects in highly exposed regions (e.g. off-shore installations in the North Sea, or power stations in earthquake zones) would be a sheer gamble with a high risk of failure that no business enterprise could take on.

Consequently, the insurance industry has always accompanied and promoted the development and application of modern technologies and the economic development of regions where the risk level is high or unknown. Often enough, these ventures have ended in the past — and still end today — with adverse results and sometimes in total loss. This makes it all the more important for the insurer to assess the risk situation as realistically as possible and to bring all available know-how to bear on the process. In so doing, he very often finds himself at the forefront of scientific and technological development.

Insurance protection bears the inherent hazard of the insured handing responsibility for the risk over to the insurer, whereupon he will dismiss the risk from his mind and consequently lose interest in taking any loss prevention measures.

The insurer must counteract this mode of thought and behaviour, and he can best do so by applying financial incentives. If he unloads part of the loss onto the insured by means of a substantial deductible or other form of "co-insurance," but at the same time rewards him with an equally substantial premium rebate, he can very effectively motivate the policyholder to prevent losses.

Furthermore, relatively modest deductibles reduce the number of loss cases eligible for settlement, because such disasters always entail a large — sometimes enormous —



Billion Dollar Disasters: A homeowner in Monserrat surveys the damage wrought by Hurricane Hugo (1989), one of several recent disasters to top the billion-dollar mark in economic losses.

Photo Carlos Gaggero PAHO/WHO

number of minor losses. This makes the process of loss settlement more efficient

In the past, loss settlement by insurers following major disaster events has almost always been outstandingly good, particularly in comparison with government aid programmes, which can be bureaucratic. Several factors contribute to this: because insurers are continuously confronted with loss claims in widely varying classes, the business demands an experienced and dynamic staff and efficient assignment planning. The insurers' efforts to settle claims for damages as fast as possible are based on two lessons of experience: "The quicker, the cheaper" and "Good loss settlement is the best advertisement."

Psychologically, too, it makes an appreciable difference to the injured party whether he can stand on a legal claim under his insurance contract or has to go to some authority, cap in hand, and is thus made to feel like a recipient of alms. Furthermore, prompt payment by the insurers helps the disaster victims to cope more effectively with the mental stresses of the disaster, since they are not condemned to idleness and apathy but can take the business of repair and reconstruction into their own hands

The insurance industry has at its disposal comprehensive worldwide loss experience which it uses not only in calculating premiums commensurate with the risk and in classifying hazard areas (known as rating zones), but also in tracing relationships between event intensity and loss intensity and estimating loss potentials from realistic disaster scenarios.

What is more, the insurance industry is known to have extensive information in the form of leaflets, brochures, films and television spots, with which it alerts the public to risks and draws attention to possible effective precautions. In the past, such information campaigns have concentrated on fire, accident and burglary prevention; efforts today are shifting more and