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Climate change and natural disasters: Economic impacts on developing countries and possible countermeasures.

The insurance industry all over the world noticed very early on that things were no longer as they had been in the past. Reinsurance companies in particular, which represent a sort of global early warning system on account of the fact that losses – especially those attributable to natural disasters – tend to pour into them like into a large collecting tank, making them particularly sensitive to any changes in the risk level, felt even in the early 1980s that something was changing very rapidly. On the basis of what we have experienced over the past 30 years, our concern is that we are now seeing the beginning of a development over which we have virtually no chance of gaining control. Be that as it may, we naturally must do all we can, in cooperation with all the different players involved, to tackle this development. Hurricane Katrina made it quite clear to us which direction the wind is blowing. We will be exposed to ever greater potential losses – in fact, the potential is already there; it is simply being realized more and more frequently.

I would first like to show you a few examples which illustrate the trend in losses incurred as a result of disasters. I have also brought along some charts: our world map of natural hazards, for example, which shows the distribution of major risks around the world, together with some other maps, including in the bottom right-hand corner a map highlighting the changes we may expect as a result of climate change (Chart 1). This map, as well as a lot of additional information, is also available on a CD which we are happy to hand out to anyone interested. You can really work interactively with this CD – you can zoom in on particular features, or access the different layers, so it offers quite a lot of possibilities. The statistics which we collate from all over the world and have analyzed are more comprehensive than anything else available in this "market". As you can see from the number of catastrophes recorded since 1980 alone – 15,000 events in all – there is an awful lot of work involved in collating and processing all this data worldwide (Chart 2). I am showing you this chart because in the right-hand corner you can see a section representing 15 % of all natural disasters worldwide – earthquakes, volcano eruptions, and tsunamis, i.e. dangers which have their origin in the earth's crust. From all that we hope and know, humans have no influence over such disasters. All the remaining 85% has its origin in the atmosphere. In other words, these are, broadly speaking, weather-related disasters, be they storms which cause flooding or other disasters such as landslides, for instance – after all, landslides are almost always triggered by heavy rainfall and, as such, can also be classified as weather-related disasters.

Earthquakes, volcanic eruptions and – especially since the disaster at Christmas 2004 – tsunamis are responsible to a disproportionately high extent for the 1.5 million deaths recorded during this period. Even so, around two thirds of this figure are also attributable to weather-related disasters, including drought. When we look at the losses, which total some US\$ 1.6 billion, 20 % is caused by earthquakes and other geophysical events, while 80 % is incurred by weather-related disasters. This ratio is even more extreme when we look at insured losses, which account for roughly a quarter of the total economic losses due to the fact that weather-related hazards tend

to be more covered by insurance, especially storm damage— accounting as you can see here for over 80 % of the total insured losses (Chart 3).

The global insurance density covers approximately 25 % of the total losses, though as you can imagine this coverage is spread extremely unequally across the world (Chart 5). There are countries like England where almost everything is insured, and there are countries like Bangladesh where almost nothing is insured. The poorer a country is, the lower its insurance density will be, because its people are generally unable to afford insurance. This is also illustrated in the next chart. First I'd like to show you a chart showing the distribution of major natural disasters since 1980 (Chart 4); obviously, this also covers a number of industrialized countries, like the US which has a large number of such disasters, as well as very many Third World countries which are affected by natural disasters. You can see here how the different countries are classified according to their level of economic development – the rich countries are shown in dark brown, the newly industrializing nations in a lighter shade of brown, and the poor countries and very poor countries in lighter color shades. Chart 5 shows once again the distribution of insurance density, which in countries with high income levels is extraordinarily wide. On the other hand, there is virtually no insurance at all in other countries, like Sub-Saharan Africa for instance, where there is very poor coverage against losses incurred as a result of any type of disaster.

This imbalance is also reflected in Chart 6, where we can see once again the distribution of disaster frequencies: recording over 40 % of the disasters, it is the rich countries which are hardest hit when we compare these four groups of countries (top left). However, if we then look at the number of deaths over on the right, we can see that the poor and very poor nations account for more than three-quarters of all deaths. As for the economic losses, shown bottom left, it is of course the rich countries again which with a 64 % share reveal particularly high loss figures, though it is important to note that a very high proportion of these losses is covered by insurance, unlike in the poor countries; of the insured losses, the proportion of the rich countries is as high as 95 %.

What really worried us right from the start was the fact that the incidence of weather-related disasters and their effects have increased very noticeably in the past decades (Chart 7). All you have to do is look at the factors which show how the number of disasters that have occurred in the past ten years has multiplied as compared with the 1960s: the absolute number of major weather-related disasters has risen almost three-fold, the economic losses – already adjusted to take account of inflation – have risen almost eight-fold, and the insured losses – also adjusted for inflation – have risen 26-fold.

In other words, the increases which we have been observing for many years are really very, very dramatic, and we have been wondering for a long time where the causes might lie. Many of the causes are obvious: larger populations, improved standards of living and a concentration of population, assets and property in cities. In my opinion, urban growth is a key factor in this development, especially since very many of the highly exposed settlements are situated in equally highly exposed regions. What is more, we are seeing that modern societies and technologies are increasingly vulnerable to natural hazards. Last but not least, the higher insurance density also plays a role which is reflected in the factors we have already looked at

As you will remember, we saw an eight-fold rise in economic losses and a 26-fold rise in insured losses.

Finally, another really important point to mention is the change in environmental conditions, and especially climate change, which I will talk about in just a minute. Obviously, we are feeling the effects of environmental changes on many levels, climate change being just one of the problems in this context, albeit a very important one. Let us take a look at a natural hazard risk index for mega-cities which we have published (Chart 9). The size of each circle indicates the overall risk; as you can see at once, Tokyo is immediately noticeable as having the greatest loss potential of any city worldwide. Then we have cities in the USA, among them San Francisco and Los Angeles in the context of earthquakes, of course, as well as many other cities, particularly in the Third World but also in Europe, which exhibit a high potential for damage – in most cases on account of their high level of vulnerability.

Climate change has been exacerbating the situation for many years, yet we are still seeing only the beginning of this development. We have already heard quite a bit about the subject this morning, and I don't want to go into too much detail, but it is clear that there are very rapid changes taking place in many areas. My impression is that we are all trying to calm ourselves down a bit at the moment, saying that we mustn't let the rise in temperature exceed two degrees by the end of the century if we don't want things to go down the tube completely. Nevertheless, in recent years I have come to feel that even these two "piffling" degrees by the century's end is already illusionary. We will only be able to achieve this target if we undertake incredible efforts which I do not believe are either feasible or realistic at the present time, especially not if – as I learnt this morning from you, Mr. Klepper – we still have large reserves of fossil fuels. Although this may be good news on the one hand, it is also very bad news for climate protection, because I have the impression that large swathes of mankind will not stop burning fossil fuels until the very last drop of oil, the last bubble of gas and the last lump of coal have been used up. The example of the Stone Age which came to an end before the stones ran out is not something we can hope for here. I have now become very pessimistic, because two degrees is no longer a realistic target, and I ask myself whether we have given serious enough consideration to the possibility that the rise in temperature by the end of the century might actually be five or six degrees, or even more, and which consequences this will have. I believe it is high time for us to study these possible scenarios and argue seriously on this basis rather than always trying to reassure each other that things won't get so bad after all. The insurance industry has of course studied this intensively, and has no interest in trying to play it all down. On the contrary, we have to give very serious thought to the changes which would occur in a worst-case scenario. If we do not make sufficient preparations in time, the industry's very existence will be at stake.

At the same time, the insurance industry has discovered a number of areas in which it can make an active contribution to climate protection, namely:

- by informing and educating and – as far as possible – financially motivating its customers, e.g. by restricting the extent of insurance cover;
- by developing climate-friendly insurance products (we haven't come up with much yet in this respect, so I'll move on swiftly to the next point);

- by conducting eco audits in environmental liability insurance (we haven't got very far with this yet, either);
- by promoting climate protection projects;
- by covering financial risks in emissions trading;
- by drawing up eco balance sheets for our own businesses and property
- and by taking environmental aspects into account in our investments

The last point would seem particularly important. The insurance business, and of course the entire finance industry, are involved in transactions worth hundreds of billions of dollars – if they can be gradually moved away from areas of industry which are damaging to the environment and into more environmentally-friendly areas, they could achieve a great deal. This is why former UNEP director Professor Klaus Töpfer used to always describe the finance industry as his most important ally because it is in a position to change the world if it really had a mind to and chose to channel its massive investments into other areas. Money is what makes the world go round, but I'm sure you can imagine how little willingness there is amongst investors today – given all the uncertainties on the capital markets – to take risks. Another possibility would be to consider sponsoring of climate protection projects. Insurance companies have discovered that this gives them particular credibility and that they also benefit from this themselves. After all, you should also sweep in front of your own front door, as the saying goes, and many insurance companies have started to draw up eco balance sheets for their own business operations and, more importantly, for their real estate and property. In all these areas they can genuinely contribute a lot to protecting the climate.

No matter what action is taken, however, we will be facing increasing dimensions of major losses, which is why it is more important than ever before to spread the risk across as many shoulders as possible (Chart 12). We need to get the state on board – so that the poor can be protected from these losses – but we also need populations who live in high risk areas where there is virtually no insurance cover, for example, to take their own precautions. In addition, people with insurance should also share a part of the risk because this will motivate them more to try to avoid the risks and contribute to protecting against losses. We also need the insurance and reinsurance companies, which unlike in the past are finding that they are more and more frequently reaching the limits of their capacity. We must then attempt to involve the capital market which has very large financial capacities but whose attitude is still relatively skeptical towards these risks.

A climate risk index has now been drawn up by German Watch (Chart 13), a German north-south organization which puts both the losses and the numbers of victims into context, relating them to gross national product and to the total population respectively. If you look at the period from 1995 to 2004, you will see that almost all of the ten hardest hit countries are in the Third World, with just one exception – France. This is because of the 2003 heat wave in France, which resulted in around 15,000 additional deaths. However, France was of course much better able to deal with this sort of disaster than any Third World country would be, so a direct comparison in this case is only possible to a limited extent. Naturally, we are well aware that the effects of climate change on Third World countries are far more serious because these countries simply do not have the financial means to cope with the effects or to make even semi-adequate provision for such disasters and contribute to climate protection. Thus it is all the more important for us to now try and

come up with some way to protect the countries of the Third World financially against the consequences of climate-related disasters.

One solution is the "micro insurance" scheme which is gradually becoming more widespread in some countries. The idea is to try to insure people against at least the most existential risks in a way which is affordable for even low-income households. This sort of cover involves insurance premiums in the order of just \$1 per month, though the level of cover is also low at around \$100; the insurance is based on very simple rules, and in some cases is sold like lottery tickets which can, for instance, also be passed on to other people. In other words, anyone can buy themselves a ticket which can be redeemed in the event of a claim. The system needs to be very simple because the main problem that insurance companies face with these micro insurance programs is the huge numbers of customers, creating a huge administrative workload which such low premiums cannot finance. This is why these programs need to be based on different rules. I have brought along a summary from a workshop which was held a year ago in Munich and aimed to launch this type of insurance scheme. However, we are still very much at the beginning.

I have a few more examples of types of insurance which make real sense: an educational insurance policy to cover children, for example, who lose their parents; a funeral policy, as this is something which can mean financial ruin for many families; and a really minimal health insurance policy from Bangladesh. These are just a few initial attempts that are being made in this area, yet there is still huge potential for further development.

My conclusions are as follows: the disasters and their effects will continue to increase dramatically, both in terms of their scope and their incidence. The global climate and other environmental changes will significantly raise these risks. The insurance industry has many instruments at its disposal – developed throughout the long period of its existence – to tackle these scenarios; it has the ability to improve the level of protection against climate change, while at the same time advancing climate protection – here in particular the industry has an important role to play. I believe that Hans-Joachim Schellnhuber, Director of the Potsdam Institute for Climate Impact Research (PIK), summed up the situation very succinctly when he said recently: "We have now reached a point where we must try to avoid what we can't control and at the same time control what we cannot avoid." Thank you very much.