

## Insurance industry has a broad role combating climate change

by Esko Kivisaari



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*In NFT 1/2007 Michael Holm and Vagn Østergaard wrote an article on climate change. They identified the challenge to Danish insurance companies as follows:*

- *to maintain sufficient storm reinsurance cover in reinsurance companies with good credit standing, and*
- *to search for possibilities to transfer insurance risk to the capital markets.*

*These are certainly important things to analyse. This being said, the insurance industry should also analyse whether it could and should have a broader role in questions related to climate change. The following is an attempt in that direction<sup>1</sup>.*

Anthropogenic climate change is among the most important phenomena we, our children and our grandchildren have to cope with. Few of the problems of the future will be as global as climate change. Nordic countries are small players in the game and Nordic insurance companies are still smaller. Is there some role in the process for insurers in general and Nordic insurers in particular? Or should we be realists and accept that the problem will or won't be solved without us?

Anthropogenic climate change will need large-scale political breakthroughs if mankind succeeds in mitigating it to tolerable levels. Insurers will certainly not solve the problem but they can provide a tiny part of the solution. This can include opportunities for insurance as such but it can also be an essential part of the social responsibility of the indus-

try. Additionally, activity in this area can improve the viability of insurance generally: along the lines of the Stern report published last autumn, the cost of no action can be huge compared to the cost of action.

Insurers have a role as carriers of risk on one hand and as investors on the other. In these areas insurers can have different roles in the prevention/mitigation phase and in the adaptation phase of climate change. Additionally, climate change and a changing risk landscape can mean challenges to insurance as such. I will try to address these issues in the following. Essential further reading is listed at the end of the article<sup>2</sup>.

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### **How to respond**

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Depending on the speed the world starts to restrict emissions of carbon dioxide and other greenhouse gases there will be a slower or faster growing need for alternative energy sources or carbon capture techniques. In many cases the techniques needed will represent new technology and will in many cases be in an experimental phase when production starts.

Commercial activities need financing and insurance cover. The problem here is that there is, by definition, less understanding of the risks involved in these activities. Therefore it might be easier to get financing and insurance cover for traditional energy production.

The challenge and also the opportunity for insurance companies seem to be to understand that also in this area we are entering a new era. Therefore insurance companies need to start developing their knowledge base to be able to offer financing and insurance cover on terms at least equal to new technologies.

It has already been said above that there are many uncertainties in new technology. Both in the role as an investor and as an insurer companies prefer situations where risk is at least predictable for the future. Society can make things easier in this area. If the framework in which the transition to new forms of energy production is made so that the rules governing this transition are understandable and as stable as possible, also insurance companies will find it easier to fulfil their role.

Insurers can participate in the transition also as investors in the markets for emission credits. To my understanding this has not happened so far to any larger extent. The basic problem in this area is the fact that the market is not functioning well and it is also very much dependent on political decisions (for example, what will happen after Kyoto). It is however highly probable that emission trading will continue after Kyoto and that the market will be substantially larger in the future. It is

therefore certainly worth while to start preparing to understand what the future role of insurers could be in emission markets.

### **How to survive**

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It can be said that extreme climate exists only until people have adapted themselves to the prevailing climate conditions. There are regions on the earth that are uninhabited as people have found them unsuitable. The same process will start with our anthropogenic climate change, although probably faster than in earlier climate changes.

The insurance industry is in the forefront in understanding what is happening. This is clearly seen in the fact that large reinsurers have been among the first ones to understand the fundamental changes that climate change will bring about. Direct insurers have been slower to react to this but they are becoming more and more alerted.

From the point of view of insurance I do not see its role only as a carrier of risks. Instead, we have a longer list of tasks for the industry where only in the end we arrive at the risk carrier role. Basically this stems from the fact that insurance can only compensate for economic losses and therefore a loss prevented is always better than a loss compensated. Traditionally this could be expressed in the idea that no economic compensation is enough when somebody dies. With respect to our current climate change we could maybe say that no economic compensation is enough if we manage to destroy our ecosystems irrevocably and deny future generations the possibility of enjoying them.

For the insurance industry the key elements should be the following:

- identification of risks (at least as long as they are not widely known)
- increasing risk awareness among those most concerned

- analysis of risks: where and how losses happen, what influences their probability and how they can qualitatively or even quantitatively be described
- risk prevention
- carrying of risks.

Then when we enter the actual carrying of the risks, we basically have the following steps for the industry:

- correct pricing
- retentions to promote loss prevention
- compensation limits
- surveillance of risk accumulation
- surveillance of reinsurance arrangements
- loss prevention
- exclusion of certain risks
- exclusion of certain geographical areas

In addition to the role as insurer it seems more and more clear that climate change will have a fairly strong influence on investments. If the economic effects due to climate change are even close to the results of the Stern review mentioned above and referred to below, insurers should take this into account in their long-term investment policies.

### **Who foots the bill?**

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From the 1980s, we have seen an upward trend in catastrophes seen for example from the statistics of large reinsurers. It is generally understood that this trend results from socio-economic factors and only a tiny part of it results from climate change. This upward trend puts stress on global insurance capacity. So far the market seems to have been able to generate insurance capacity to cover the risks. One can however wonder how long this can last especially if climate change brings about a still increasing number of catastrophes.

In order to ensure insurance capacity the industry should make sure that it handles its

business accordingly and that it further develops ways to securitize insurance risk. The latter is important as the volume of the world financial market is substantially larger than the insurance market.

Having said this it is realistic to accept the fact that there is a limit to how much risk can be handled by insurance. This could and should be then addressed as a political question: what risks are carried by individuals themselves and what risks are shouldered collectively in an arrangement where responsibility is assumed by the state. Also in this area climate change is such a global phenomenon that a single country can be too small an entity and international agreements may be necessary.

With respect to the role of the state it should however be questioned how extensive the role should be. The state is in many cases understood as a safety-net whereas the objective of insurance has traditionally been to give full compensation of the losses. This question will result in a political discussion and will have an effect on the insurance industry.

One big problem with climate is that the resulting losses can very often be highly correlated. This is clearly understood as regards storms and floods where an extensive geographical area is devastated simultaneously. This is certainly a challenge for the insurance industry as it usually likes to handle uncorrelated risks. On the other hand risk correlation might be one of the biggest reasons to make risk securitisation a reasonable way to carry risks.

Risk correlation is to some extent connected to adverse selection. Adverse selection means that only riskier customers, for example, people living in a region that is more vulnerable to floods than other regions, want to insure their risks. It is probable that private voluntary insurance cannot effectively handle all such situations. Therefore the industry should be open to discussions concerning the possibility to put in place statutory arrange-

ments. In these arrangements everybody must participate in the carrying of risks even when it is clear that only some of the policy-holders actually have a risk.

The possibility of compulsory arrangements brings about or at least strengthens the possibility of moral hazard. Moral hazard is always present to some extent when we have insurance cover and the methods of handling it are standard insurance practice. With respect to climate change we can however think that there is the risk of more extensive moral hazard that we can call political moral hazard. With this I mean basically the possibility that measures to prevent or mitigate climate change are not taken as it is thought that insurance will take care of the risks. To avoid this, the insurance industry should stress the fact that insurance means to a large extent loss prevention. Insurance cover is impossible if loss prevention is not taken into account for example in building regulations. On the other hand, as already said above, the insurance industry is in the forefront in encountering losses and its experience can be fruitfully utilised when safety regulations are elaborated.

### **Climate change science evolves**

Every now and then scepticism of varying degrees arises around the concept of the current climate change. It is true that there are many uncertainties in the understanding of it. On the other hand there is a growing scientific consensus that climate change is happening and, additionally, it is anthropogenic, that is, that humans are responsible for the phenomenon by emitting more and more greenhouse gases to the atmosphere.

Recently we have seen two extensive surveys come out which clarify the situation. The Stern review<sup>3</sup>, published last autumn, identifies the economic burden of different strategies as regards climate change. In a nutshell it states that:

*Using the results from formal economic models, the Review estimates that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more. In contrast, the costs of action – reducing greenhouse gas emissions to avoid the worst impacts of climate change – can be limited to around 1% of global GDP each year.*

The review has met with criticism and certainly the figures cannot be understood as a certainty. On the other hand, after the Stern review it is clear that there are substantial costs resulting from climate change and the costs of no action are higher than the costs of action.

This year has seen and will see more major studies published when the Intergovernmental Panel of Climate Change (IPCC) releases its fourth assessment report. The first part of the assessment report, already published, discusses the physical science basis<sup>4</sup>. It will be followed by two more reports during the year concerning, on one hand, impacts, adaptation and vulnerability and, on the other hand, mitigation of climate change. The first part now published gives strong support to the understanding that the current climate change is based on hard scientific evidence.

From the Nordic point of view the report identifies the following consequences:

- water logging,
- eutrophication of lakes and wetlands,
- increased coastal flooding and erosion,
- increased winter storm risk,
- reduced ski season, and
- severe fires in drained peatland.

### **Notes**

- <sup>1</sup> Most of what is said below is based on a seminar arranged in 2005 by the Actuarial Society of Finland where the writer tried to analyse the question from the point of view of insurance in general and of actuaries in particular.
- <sup>2</sup> John Houghton, *Global Warming, The Complete Briefing* 3<sup>rd</sup> ed., Cambridge University Press, Cambridge, 2004.
- William F. Ruddiman, *Earth's Climate, Past and Future*, W.H. Freeman and Company, New York, 2001.
- William James Burroughs, *Climate Change, A Multidisciplinary Approach*, Cambridge University Press, Cambridge, 2001.
- Jared Diamond, *Collapse – How Societies Choose to Fail or Survive*, Penguin Books, London, 2005.
- Economic Models of Climate Change, A Critique, Stephen J. DeCanio, Palgrave Macmillan, 2003, New York.
- The Finance of Climate Change, Kenny Tang (ed.), Risk Books, London, 2005.
- Weather catastrophes and climate change, Munich Re, 2005.
- Financial Risks of Climate Change, Association of British Insurers, Nick Starling (ed.), 2005.
- <sup>3</sup> [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/sternreview\\_index.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm)
- <sup>4</sup> <http://www.ipcc.ch/press/prwg2feb07.htm>
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