AIDA WORLD CONGRESS

PARIS 2010

CLIMATE CHANGE

QUESTIONNAIRE

Foreword

l. Climate change has been chosen as one of the topics for the AIDA World Congress to be held in Paris in 2010. Thank you for accepting to prepare a national report.

2. This subject is obviously one of great importance, and very much has already been written on it. For an AIDA World Congress, the focus should naturally be on the impact on the insurance sector, and more precisely on the impact on insurance law - a domain in which AIDA can make a significant contribution. When preparing your report, please stress the legal aspects (legislation, regulation, policies, clauses, legal nature of new products, etc...) - even though describing the context will always be necessary.

3. National reports will be particularly useful for such a subject where perceptions of the phenomenon may vary, and mainly, where the feared consequences of climate change can be widely different in the different regions of the world. Please see that your report gives the necessary information about the local context in which it is written (see part A of the questionnaire below).

4. The questionnaire is indicative. Try to cover all points you find relevant for your country, but do not hesitate to include additional information and comments in part C below

A. Your local context

In your country : Denmark

1. What is the degree of awareness of climate change and its consequences:

As a general comment, there are no official – or unofficial – indicators that allow any kind of measurement of awareness of climate change and its consequences. The following comments are based on a subjective assessment of the public debate and actions towards mitigation of climate change and its consequences.

- in the general public

Since Copenhagen, Denmark is hosting COP15, the United Nations Climate Change Conference [1)] in December 2009 and also hosted the annual trade policy conference on the 9th of May 2008 at the University of Copenhagen, where the focus was "WTO – trade and climate", awareness of climate change and its consequences is generally high also in the general public. It is clear that the media increasingly follow and report news relating to climate change and its consequences. In my opinion, it is also clear, however, that the public engagement is limited to the acceptable level of CO_2 emission – or the relative reduction thereof – and to a much lesser degree how the individual may assist in accomplishing that goal.

As a tool to help raise awareness and commitment a web-based calculator [2)] has been introduced that shows the size of the CO_2 emission relating to private households, how that CO_2 emission is generated from various appliances, heating, transportation etc. and how changes in behaviour may help reduce the individual family's CO_2 emission. As a further inducement it is possible to submit a personal commitment to reduce the CO_2 emission by 1 metric ton per year equal to 10 pct. of the average CO_2 emission per capita in Denmark and 15 pct. of the CO_2 emission that the private person controls. In July 2009 85,000 individuals had submitted such a commitment (1.5 pct. of the total Danish Population).

2009 has also introduced a program for public schools that supports the integration of climate change aspects into the everyday education. [3)]

The Danish Insurance Association has commissioned an opinion poll that investigated the general public's attitude towards Climate Change and especially the involvement of the insurance industry in addressing CO_2 emission issues and paying for the damages as a result of Climate Change or assisting in prevention thereof. The survey was conducted in September 2008 and a report has been prepared (in Danish) but not yet published. The draft report confirms that 9 out of 10 believe that

- Future Climate Changes will happen
- Climate Change is primarily man made
- The primary cause behind Climate Change is CO_2 emission
- We will experience more and more severe weather related damages in the future

1) See official COP15 website: http://www.cop15.dk/en

2) See www.1tm.dk (only Danish)

3) http://en.cop15.dk/denmark's+efforts/climate+education/climate+education+in+2009

Other findings that are significant are the following:

- It is generally expected that the insurance industry will (continue to) cover these Climate Change related damages
- Insurance premiums are expected to increase
- The main responsibility to curb the development and to prevent damages lies with the public authorities
- The business sector and to some extent also the general public are also responsible to reduce CO2 emission
- There is a profound readiness to make a personal effort to reduce CO2 emission
- The Insurance Sector is responsible to make the necessary tools available to help prevent damages
- The general public is prepared to use insurance products that support environmentally sustainable conduct

- in the business sector

A number of important businesses have made a public commitment to reduce the CO_2 emission by two percent each year until 2025. That rate of reduction will bring the absolute CO_2 emission to a level of 72.4 pct. compared to the 2009-level.

The Danish Ministry of Economic and Business Affairs has launched an initiative labeled the Climate Consortium Denmark [4)] as a public-private sector partnership, established in February 2008 in order to strengthen awareness of the competences and solutions of Danish businesses, industries and universities in the cleantech area, nationally as well as internationally.

Climate Consortium Denmark has two main purposes:

1) To create awareness of Danish climate solutions and technologies. Danish businesses, industries and universities offer strong competences and innovative solutions to the climate challenge, and it is the aim of the Climate Consortium to spread this message in Denmark and to the rest of the world.
2) To provide an overview and coordinate all business-related activities taking place from now and up to the Climate Change Conference in December 2009.

It is difficult to assess to what extent the business sector as such is engaged in programmes that supports awareness of climate change and its consequences. The main focus appears to be to what extent the cost of reducing CO_2 emission will be passed on to the business sector. Evidently a number of high profiled Danish businesses has also seized the opportunity to build on the momentum around the Danish roel as host for the COP15 to promote its business as a supporter of initiatives to reduce CO_2 emission.

- in the insurance industry

First it should be stated that the Danish Insurance Industry sees 3 areas where the insurance industry may be affected by the effects of Climate Change:

Rain damages

Windstorm damages

4) See http://en.cop15.dk/climate+consortium/about+climate+consortium

Flood damages

The first 2 mentioned events are insurance events that are today covered in normal property and contents policies. The third event, however, is not a normal insurance event in Danish policies. Instead Denmark created in 1991 a special protection against extremely high sea level caused by windstorm that is experienced in a specific location only every 20 – 25 years. All property and contents insurance policies contribute a fixed amount of DKK 20 (approx. 3 EURO) to a disaster fund that pays damages to affected homes and industrial buildings when a special Agency, the Storm Council, has determined that the incident should be classified as a storm surge covered by the act. The contribution of DKK 20 is not a risk related premium, and although the insurance sector handles the claims the individual insurance companies have no risk.

There is at present a discussion to extend the flood cover from pure sea water flood to include also flooding from inland waterways, lakes and wetlands where substantial damages have occurred in recent years. To a large extent they are not covered by individual insurances either when the flooding is not a direct result of cloudburst (rain damage).

The major players in the Danish Insurance Industry are certainly aware of some aspects of climate change and its consequences, in particular related to extreme rain and wind storm damages. Denmark has experienced more heavy rain fall in recent years causing both direct water damage and flooding due to insufficient sewer system. Increased ground water level is likely to add to the problem. Severe wind storm have become more frequent and maximum wind force has also increased affecting both number of damages and the extent of damages. The expected effects of flooding of coastal areas and from internal sea areas has not yet been surveyed. A programme has been initiated to comply with the EU flooding directive 2007/60/EC of 23 October 2007 (survey to be presented 2013 and risk mitigation plan December 2015).

The effects of increased temperatures are less clear although the Danish Insurance Industry does expect damages due to increased water level in the surrounding waters. Since Denmark is a relatively flat country with high concentration of populated areas close to the coast line large populated areas may be flooded in case of a relatively modest increase in sea water level in combination with high wind force.

Indirectly increased temperatures may also affect public health and allow the migration of new diseases into Denmark affecting the life and pension industry.

The Insurance industry does not work collectively to develop models to calculate the increased risk due to these factors since the better data and models will afford a competitive advantage. It is likely that smaller insurance companies do not have the expertise or resources or sufficient claims history to asses correctly the risks from the expected climate change. Such companies may learn from the reinsurance companies.

The Danish Insurance Association has agreed to conduct a pilot study together with 2 local municipalities to try to establish how Climate Change will affect those areas particularly regarding rainfall and increased groundwater level and the demands on sewer systems and other measures to prevent flooding.

The Danish Insurance sector organised a seminar in March 2009 to discuss Climate Change issues and a Nordic seminar: *Climate Change and Insurance* is scheduled in Copenhagen in September 2009.

I refer also to the Geneva Reports: Risk and Insurance Research and especially Report no. 2 / July 2009: The insurance industry and Climate Change. The Danish insurance Sector has participated in the work behind the report.

- in public authorities ?

The Danish Government has a long standing tradition as a frontrunner in support of initiatives that reduce CO_2 emission, both as a specific objective and as an indirect result of changing energy sources from fossil fuel related resources to renewable energy sources, mainly wind energy, but increasingly a wider variety of renewable energy sources. According to the present target the proportion of renewable energy in Denmark shall be increased to 20 pct. in 2011, and in 2020 the proportion is expected to be 30 pct. of the total energy consumption (compared to EU target 20 pct.). [5)]

The present Government refers to its target to reduce CO_2 emission by 21 pct. over the period 1990 to 2012 and predicts that this reduction will be achieved. Although the target is based on the KYOTO-Protocol and the EU resolution 2002/358/EC of 25 April 2002 it should be viewed as a political statement rather than a scientific fact, however, since it is doubtful what is compared when calculating the CO_2 emission levels in 1990 and 2012.

The Danish Government – supported by a unified Parliament – now support a commitment to reduce the present CO_2 emission by a further 30 pct. until 2050.

A majority of Danish local municipalities have made a commitment to each other and to the Danish Society for Nature Conservation to reduce the CO_2 emission by two percent each year until 2025 [6)]. As mentioned above that rate of reduction will bring the absolute CO_2 emission to a level of 72.4 pct. compared to the 2009-level.

2. Which are locally the main expected consequences of climate change (please specify : "not applicable", “medium risk", 'high risk")

floods (including flash floods)	Medium to high risk
rise of sea level	High risk. Estimated rise 0.15 – 0.75 cm over the next 75 – 90 years.
melting of ice, of snow	N/A – Low risk
avalanches	N/A
earthquakes	N/A
storms, tornadoes	Medium to high risk.
heat waves, draught, fires	Medium risk
spread of diseases	Medium to high risk. Unclear consequences.

5) See Danish Minister of Climate and Energy article: http://en.cop15.dk/climate+facts/research/17+per+cent+renewable+energy+%e2%80%93+and+on+the+way+up

6) See link to the the Danish Society for Nature Conservation website: http://www.dn.dk/Default.aspx?ID=4994

other adverse effects	-
any favourable consequences ?	Cost reductions due to warmer Winter climate

3. Which economic sectors, critical for your country, could be particularly affected

The following examples are taken from the website Climate Adaptation published by the Knowledge Centre for Climate Adaptation, part of the Danish Climate and Energy Ministry, see http://www.klimatilpasning.dk.

Fisheries Mainly negative	Fisheries will experience both positive and negative effects from rising temperatures. <u>Positive effects</u>: New species such as sole, sprat, sardines may move to warmer Danish waters. <u>Negative effects</u>: Higher sea temperatures may cause important fish such as cod and herring to migrate to colder areas. New species (shellfish) may invade Danish seas and defeat species that are less resistant. New species require new equipment. Higher temperatures require more effective conservation on fishing vessels. Higher temperatures will damage trout farming. More rain may bring more nutritive salt (fertilizer) to the sea. Sea plants take oxygen from the sea.
Agriculture Mostly neutral	Agriculture will experience both positive and negative effects from rising temperatures. <u>Positive effects</u>: Higher crop yield from longer season New crops possible Possible to grow a higher proportion of feed for the livestock More rain will improve crop growth and quality <u>Negative effects</u>: Bugs will become more widespread Crop diseases will benefit from milder winters Livestock diseases will benefit from milder winters Cultivated land will be flooded more frequently

	Weeds also grow more (marginal factor)
Forestry Mainly negative	In general forest trees are very adaptable to climate change and higher temperatures will benefit growth, but not necessarily quality. <u>Negative effects</u>: Rain comes at the wrong periods. More forceful windstorms damage conifer, especially pine trees. The proportion of trees naturally growing in Denmark must be increased although the yield take longer.
Energy Neutral, but planning required	As a general comment the battle against CO_2 emitting energy sources will affect the traditional energy sector negatively, either cost wise or restricting certain energy sectors. Since climate changes are expected to develop over a relatively long period the energy sector will be able to adapt to the changes and avoid unnecessary investments. <u>Positive effects</u>: New energy sources, such as renewable energy will offer new opportunities. Warmer temperature reduces heating requirement in winters, but accentuates the need for cooling in summers. District cooling may be an attractive and CO_2 efficient option. <u>Negative effects</u>: Flooding may damage the present distribution net. Wind storms may damage the remaining high voltage distribution net.
Industry Negative or neutral	Certain industries will experience higher costs from more CO_2 efficient energy sources and higher cooling costs. Some industries may have to relocate from areas threatened by flooding. Ports may need to construct new facilities to be able to operate when the sea level rises. Municipalities will need to improve flood protection by building or improving present levies and improving sewers. Government faces similar challenges regarding roads and railways.

Tourism Neutral or positive	Higher temperatures are likely to favour tourism. Positive effects: Warmer and drier summer periods will attract more tourists. Negative effects: Higher sea temperatures and more rain will favour alga and jellyfish (medusa) that affect the Danish beaches negatively.
Other	

4. Have some concrete measures already been taken or envisaged (other than in insurance sector - see B below)

- legislation, regulation

Nothing significant

- initiatives of economic agents

Nothing significant

- other

Planning in progress. Protection of electricity distribution net and improvement of sewer system is in progress.

5. How much is your country involved in international efforts and initiatives related to climate change

- Kyoto Protocol

As an EU member state Denmark has accepted the Kyoto Protocol – and more.

- International Strategy for Disaster reduction, Hyogo Framework

Denmark actively supports the ISDR and the Global Facility for Disaster Risk Reduction (GFDRR), both financially and with technical assistance.

- National Platforms

As an EU member state Denmark supports the programs and initiatives that have been launched by the EU.

It is fair to say, however, that Denmark considers itself a frontrunner in environmental areas, including Climate Change, and supports even higher targets than those than can

achieve global consensus.

As the host of COP15, the United Nations Climate Change Conference in December 2009 Denmark has also seized the opportunity to link into the international programmes and demonstrate what can be achieved by a single member as a contribution to the global target.

- Emission trading systems

As an EU member state Denmark participates in the Emission trading system. The trading of CO_2 quota is an important strategy to ensure cost efficient CO_2 emission.

- Others

More than average.

6. Please provide references to literature on climate change concerning your country

A general search for Danish literature on climate change shows very poor result.

Denmark basically links into the global climate change models and bases its initiatives in international projections and commitments.

Scientists and government agencies have produced a large number of articles, many of which are published on the internet.

Bjørn Lomborg published his book Cool It in 2007. He basically agrees that global warming is happening and to some extent man made but he believes that it is far too expensive to combat global warming through reduction of CO_2 emission. On the contrary humanity may be served better by spending the amount of money required by the Kyoto protocol alone in areas such as providing clean drinking water and combating poverty and diseases such as malaria. Although the magazine Esquire in 2008 named Bjørn Lomborg as one of the most influential people of the 21st Century his opinion has affected the fight against CO_2 emission as the number one priority.

Bjørn Lomborg's book offers an extensive list of international literature.

B. Climate change and insurance (please stress legal aspects)

1. Which are the lines of insurance that could be affected ?

Property	Flooding and windstorm damages likely to increase. Some insurance companies predict damages will increase 25 – 50 pct. whereas others expect that mitigating factors will keep claims level relatively steady !
Agriculture (crops, forestry, livestock)	No significant insurance implication except in forestry due to windstorm damages.
Buildings	See property.

Business interruption	Higher number of damages and more extensive damages also affect business interruption.
Others (specify)	??
Liability	Flooding due to insufficient sewer systems may result in liability for municipalities.
Transport, marine	Windstorm damages expected to increase in number and extent.
Life, health	Warmer climate may affect average life expectancy (fewer elderly people die from cold weather, whereas new diseases kill more people). Depending on the kind of insurance that may be negative or positive.

2. How are the risk linked to climate change to be defined

- Problems of interference of human and natural causes (e.g. building in an area prone to being flooded)

Insurance incidents are defined in the policies. The factors identified in the table above are not likely to offer difficulties as triggers simply because the frequency or impact is increased due to climate change.

General property and contents insurance in Denmark covers water damage from severe cloudburst, defined as more than 1 mm rainfall during 1 minute or 40 – 50 mm during 24 hours, causing water damage since normally constructed, unclogged and well maintained draining systems cannot drain the water.

On the other hand normal Danish property and contents insurances do not cover water damage from flooding from the sea, inlets, lakes, streams and wetlands. Flooding from the sea is covered, however, from storm surge, which is defined by the Storm Council (extremely high sea level caused by windstorm that is experienced in that location only every 20 – 25 years), see the comments in Section A 1. All property and contents insurance policies contribute 20 DKK to a state contingency fund that pays the claims. Since the creation in 1991 20 storm surges have been recognised and almost 7,000 claims paid with a total claims amount of 550 m DKK. [7)] There is a deductable of 5 – 10 pct. (minimum 5,000 – 10,000 DKK for each claim and consequential damages are not covered.

An example may illustrate the challenge to distinguish between cloudburst and flooding :

The same residential area south of Copenhagen was hit by heavy rainfall in August 2002 (100 mm over 3 hours) and July 2007 (20 mm over 3 hours and 60 mm in 24 hours, a total of 250 mm in 3 weeks, ⅓ of total average rainfall). In both cases extensive damage was caused by flooding since the sewer system from the 1960'ies was inadequate. There was no insurance cover and the municipality was not liable for negligence.

In recent years some insurance companies have offered protection also for damages

7) See claims statistics on http://www.stormraadet.dk/ (skadestatestik)

caused by rain that does not qualify as cloudburst and flooding as a result thereof. It is possible that also flooding from lakes, streams and wetlands may be covered, subject to individual underwriting

- Problems of causal links (e.g. increase of losses often due to a combination of factors / - natural, but also demographic and economic)

  It is a fact that all damages, also caused by the force of nature, have increased because residential and commercial buildings and constructions are now situated in more exposed areas (close to the coastline, in low areas etc.) and the values are higher. That in itself is a slow process, however, and may be taken into account through prudent underwriting and premium adjustment.

3. Insurers' measures of protection against excessive exposures

- Improvement of statistics	Yes. The challenge with statistics is the fact that the results trail behind and the interpretation is uncertain. An example is the highly diverse interpretation of the present development in property damage due to windstorms and rain, see B 1) above.
- Cartography of risks	Yes. There are tools that predict which areas are especially exposed to heavy rainfall and extreme windstorms. Flood areas and areas where groundwater level is likely to change are also in the process of being mapped and will be used as an underwriting tool.
- Raising risk awareness (communication campaigns, lobbying, ...)	Yes. Much is being done to increase awareness and prevention measures. Municipalities are urged to improve sewer systems and other disaster prevention methods (diverting water to open land).
- Prevention	Yes. Insurance companies are actively engaged in identifying prevention areas and suggesting prevention methods, often in partnership with specialist companies.
- Limits of indemnity	There is not yet special programmes that set a special limit for damages caused by force of nature. It may be used as a tool in the future.
- Deductibles	Normal deductibles apply also to damages caused by force of nature.
- Exclusions	Flooding from sea, lakes, streams and wetlands

	are excluded from normal property and content policies. Trees damaged by windfall are only covered in special cases (individual underwriting) but a state fund similar to the storm surge fund may cover planting of new trees.
- Premium increases	Individual underwriting and competition will determine how this tool will be used.
- Cancellations	It is unlikely that the Danish Insurance Industry will cancel property and contents policies altogether due to the increased risk from climate change.
- Withdrawals from markets	Not likely for this reason alone despite the fact that smaller companies may not have adequate risk assessment tools and for that reason added solvency requirements may induce them the withdraw from the market.
- Adaptation of reinsurance agreements (or develop under point 4 below	Yes. Depends on available reinsurance.
- Cover of climate risks on the financial market	Not considered likely.
(or develop under point 5 below)	
- others	??

3 a. Insurers' initiatives to develop «new products »

N.B. Climate change is seen as opening new opportunities by a growing number of insurers. Some examples are listed below, but they are far from exhaustive and new products keep appearing. Please investigate the situation in your country and provide as much information as possible (obtaining models of clauses and policies would be extremely valuable).

- New policies to cover the consequences of climate change
    - Coverage for producers of new energies (e.g. wind-mills)

      The Danish insurance market early on recognised the opportunity to develop special insurances that protect investors and financing partners that consider investment in wind mills. Adequate insurance is fundamental for the successful development of new products to protect against mechanical breakdown, product liability and business interruption.

      A similar challenge exists with earth heat equipment, will emerge and wave energy installations.

    - Liability of architects

      Normal professional liability insurances for architects and engineers will cover also liability from inadequate protection against foreseeable forces of nature. To a large

extent the liability depends on what is required in planning and building regulations. Extreme developments may influence their liability and insurance companies may introduce special policies that take future developments into account.

Only large or specialist insurance companies are likely to develop such products.

- D & O environmental liability

  Damages to the environment due to weather conditions do not seem to be part of the present insurance scenario. It is difficult to predict tom what extent insurance companies may manage to define an insurable risk in this area that offers an attractive protection at affordable prices.

- Micro-insurance products for developing countries

  N/A.

- Climate risk management services, expertise

  Large insurance companies and reinsurance companies with good risk assessment tools may well want to sell risk management services and expertise, possibly in cooperation with other service companies.

  History shows, however, that insurance companies guard their accumulated knowledge and are unlikely to share their tools and findings.

- New policies as incentives to reduce greenhouse gas emissions
  - "Pay as you drive" motor insurance

    The concept of “Pay as you drive” may be introduces as an alternative premium calculation method. It is unlikely, however, that the driving factor will be an incentive to reduce greenhouse gas emissions since the risk is not proportionate to the mileage whereas greenhouse gas emission is. The effect on greenhouse gas emission may be a selling factor, however, that induces a customer to choose that type of policy despite the cost, in combination with a subsidy from the insurance company that wishes to promote its business and appeal to the general public as an environmentally sustainable company.

  - "Energy saving", "Green-building" insurance

    The success of such insurances will probably depend on possible subsidies from the Government or organisations. The insurance industry is not likely to fund such subsidies, unless there is a proven risk reduction factor involved (avoiding open fires, stoves and burners, risk of electrical short-circuits) or a marketing effect as an environmentally sustainable company.

The survey mention in Section A 1 suggests that to some extent the general public is prepared to pay a higher premium for insurance products that support environmentally sustainable initiatives. It is also likely that the individual insurance company is prepared to support to some extent such products in order to gain a competitive advantage from the image building effects combined with general Corporate Social Responsibility issues.

- CO_2 storage

  There have been questions about the possibility to insure possible storage caverns where CO_2 emission products are stored to prevent pollution. There is both construction risk and liability for leakage involved. Such insurances may be required to allow such storage areas in the first place.

- Initiatives in the carbon market

  - Carbon credit insurance (covering failure to deliver emission rights)

    No known operators in this field in Denmark at the moment.

  - Options to buy carbon credits to offset emissions (vehicles)

    Does not seem to qualify as insurance products in Denmark.

- Others

  Specific policies and clauses are not available.

4. Reinsurance

In your country, what is the role of reinsurance companies with respect to the above problems ?

There are no active Danish based reinsurance companies operating in Denmark.

Foreign reinsurance companies are involved in the protections against and insurance of nature related damages since certain risks relating to disasters (heavy windstorms) require reinsurance where the terms dictated by the reinsurance companies are important. So far it has proven possible to buy sufficient reinsurance.

The latest windstorms in Denmark (December 1999 and January 2001) caused insured damages around 20 bn DKK each (close to 3bn EURO).

5. ART (Alternative Risk Transfer)

Have any of the following techniques developed in your country in connection with climate change

- derivatives	No
- Swaps	No
- Cat Bonds	Only as reinsurance
- Others ?	??

What is the legal nature of these different products ? Can they qualify as "insurance" ?

See above.

6. Cooperation or competition with public sector

What is the state of cooperation (or competition) between public authorities and the insurance sector in your country in issues related to climate change ?

Storm surge flood protection is administered by the insurance companies although the premium is paid to a state fund.

There is no apparent competition between the insurance sector and public authorities but no real cooperation either. It should be mentioned, however, that rescue in case of accidents of any kind that may endanger persons is handled by the public fire department. Its efforts may be supplemented by private service companies charged by the insurance companies to control the damages.

Are there specific public schemes concerning some of the risks involved ?

See above. (Flooding caused by storm surge and replanting of forests hit by storm fall).

C. Any additional information or comments

Since there will be a Nordic seminar in Copenhagen in September 2009 and the COP15 will be held in Copenhagen in December 2009 it is likely that the will be additional input available before the General Report is finished. I shall try to supplement this answer to the questionnaire with such input.

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