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Memorandum

To

Prof. M. Fontaine

Re.

AIDA World Congress 2010

Cc.

Prof. mr. J.H. Wansink

Mr. H. Londonck Sluijk

Introduction

For the purpose of the AIDA World Congress 2010 we hereby provide you with our national report regarding the effects of climate change on insurance law in the Netherlands. The sources we have consulted, consist of scientific publications, research reports and various websites. Furthermore, the secretary of the climate committee within the Dutch association of insurers (*Verbond van Verzekeraars*) has – in private capacity – contributed to this questionnaire. By way of conclusion, please note that the below answers are not subject to an exhaustive treatment.

Part A. Your local context

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

- in the general public:

From a national survey, conducted on behalf of the Ministry of Environment, it appears that climate change in relation to issues of national interest, is one of the population's biggest concerns. This is also shown by the fact that the media has expanded its focus on climate change.¹

- in the business sector:

In May 2007, the business sector, represented by three employers' federations (*LTO Nederland*², *VNO-NCW*³ and *MKB-Nederland*⁴)

¹ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, 2005, 117.

² *LTO Nederland* is the Dutch Organisation for Agriculture and Horticulture in the Netherlands.

³ *VNO-NCW*, the Confederation of Netherlands Industry and Employers, is the largest employers' organisation in the Netherlands.

⁴ *MKB Nederland* is a large and fast-growing business organisation that serves over 186,000 entrepreneurs through 135 trade organizations and 250 regional and local business associations in the Netherlands.

published a proposal to realise energy- and climate objectives in cooperation with the Dutch government. By offering the proposal to the government, the industry showed its willingness to come to an agreement on actions that should be taken to handle climate change.⁵ In November 2007 the three employers' federations and the Dutch Government finally signed the aforementioned (not legally enforceable) agreement (*Duurzaamheidsakkoord*). Following and based on this agreement, different sectors, such as the energy sector, the infrastructure sector, the industry sector and the agricultural sector, each concluded an agreement (*sectorakkoorden*) with the Dutch government on the handling of climate change in greater detail.

In November 2007, a company called Dutch Sustainability Research BV⁶ has written a report on climate change best-practice of a certain number of multinational corporations in different sectors such as Financials, Conglomerates/Appliances, Transportation and Oil & Gas.⁷

- **in the insurance industry:**

From the various new products the insurance industry has developed or is developing, it appears that this industry is aware of climate change and its consequences. Reference is made to Part B of this questionnaire. One insurer for example is a member of the board of the research program Climate for space (*Programma Klimaat voor Ruimte*). This program aims to provide the Dutch government as well as the business sector with an operational know how infrastructure that is tailored to the relationship between climate change, climate variability and the use of space.⁸

- **in public authorities:**

The Ministry of Housing, Spatial Planning and Environment, the Ministry of Economic Affairs and the Ministry of Agriculture, Nature and Food Quality have implemented various activities with respect to education, training and public awareness in their particular areas of responsibility.⁹

⁵ VNO-NCW, MKB-Nederland en LTO Nederland, *Nederland Gidsland? Als het maar slim gebeurt!*, May 2007, p. 2-5.

⁶ This company was established by two banks and a pension fund in 2002. See website www.bidnetwork.org/page/40869/en

⁷ H. Beck, *Report Climate Change and Benchmarking*, Institutional Relations Officer, Dutch Sustainability Research www.sustainalytics.com/resources/5/Climate_Change_and_Benchmarking.pdf

⁸ Achmea, *Maatschappelijk jaarverslag 2008* (Annual report on corporate social responsibility 2008), p. 44.

⁹ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 117.

Reference is also made to the different agreements on the handling of climate change the various sectors have concluded with the Dutch government (see above).

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

The highest risk for the Netherlands lies in the area of its water system, meaning sea level rise, floods and water deficiency in the summer.¹⁰

- **floods (including flash floods):**
Due to increased rainfall and the contribution of melt-water runoff from the Alps, flood risks of rivers are projected to increase.¹¹
- **rise of sea level:**
Rising sea level may increase the probability and intensity of storm surges which are the main cause of sea floods in the Netherlands.¹²
- **melting of ice, of snow, avalanches:** *not applicable.*
- **earthquakes:** *not applicable.*
- **storms, tornadoes:**
A slight increase of the highest day average wind velocity per annum and of severe storms in the north west of Europe is expected.¹³
- **heat waves, draught, fires:**
Long-lasting summer droughts will create an enlarged risk of forest fires.¹⁴
- **spread of diseases:**
The risk of plagues and diseases may increase. An increased risk of these diseases may particularly affect biological farms.¹⁵ Human health risks will increase as a result of increased flood risks, heat waves and the spread of infectious diseases.¹⁶ Significant effects of temperature rise

¹⁰ Milieu- en Natuurplanbureau, *Hoeveel warmer mag het worden*, undated, p. 30.

¹¹ W.J.W. Botzen and J.C.J.M. van den Bergh, *Insurance Against Climate Change and Flooding in the Netherlands: Present, Future, and Comparison with Other Countries*, Risk Analysis, (28,) 2, 2008, p. 416.

¹² W.J.W. Botzen and J.C.J.M. van den Bergh, *Insurance Against Climate Change and Flooding in the Netherlands: Present, Future, and Comparison with Other Countries*, Risk Analysis, (28,) 2, 2008, p. 416.

¹³ *Working together with water*, (Findings of the Delta Committee 2008), p. 26.

¹⁴ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 87.

¹⁵ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 87.

¹⁶ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 87.

might be an increase in Lyme disease, effects of air quality and allergies.¹⁷

- **other adverse effects:**

- land in the lower parts of the Netherlands is subsiding. It is expected that soil subsidence will average between 2 and 60 centimetres by 2050;¹⁸
- increased frequency of precipitation events;¹⁹
- increased sand deficit;²⁰
- due to the sea level rise and salt water moving up the rivers further inland finding its way into the ground, the sweet water supply will be at risk. This leads to two threats: salinity and a deficit of available sweet water;²¹
- temperature rise and changing circulation of air will lead to decreasing summer- and increasing winter water discharge.²²

- **any favourable consequences?**

- certain widely-occurring species of plants and animals can settle in new habitats in the Netherlands.²³ More sensitive species have a much greater chance of becoming extinct in the Netherlands. This will in all probability lead to less diversity of plants and animals in the Netherlands.²⁴
- positive effects for the agricultural sector are the higher average CO₂ concentration, higher temperature and a longer grow season.²⁵ Consequently, the market opportunities of agricultural sector might increase as a result of worsening circumstances in the south of Europe.²⁶

¹⁷ NEAA, *The effects of climate change in the Netherlands*, December 2005, p. 93.

¹⁸ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 86.

¹⁹ W.J.W. Botzen and J.C.J.M. van den Bergh, *Insurance Against Climate Change and Flooding in the Netherlands: Present, Future, and Comparison with Other Countries*, *Risk Analysis*, (28.) 2, 2008, p. 416.

²⁰ *Working together with water*, (Findings of the Delta Committee 2008), p. 26.

²¹ *Working together with water*, (Findings of the Delta Committee 2008), p. 27.

²² *Working together with water*, (Findings of the Delta Committee 2008), p. 26.

²³ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 87.

²⁴ NEAA, *The effects of climate change in the Netherlands*, December 2005, p. 9.

²⁵ NEAA, *The effects of climate change in the Netherlands*, December 2005, p. 9.

²⁶ NEAA, *The effects of climate change in the Netherlands*, December 2005, p. 9.

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

- **agriculture:**

This sector will be affected by the impact of salinity.²⁷ Also, as stated above, an increased risk of diseases may particularly affect biological farms. Agricultural activities will also be threatened as a result of groundwater becoming more brackish in the coastal area due to the sea level rise.²⁸ Nevertheless, agriculture is only a small part of the overall economy. Consequently, it is expected that the net effect on the Dutch economy is limited.

- **fisheries:**

Climate change causes increased stress on fisheries.²⁹ The quantity and composition of plankton – which is the basis of the food chains in the North Sea and Wadden Sea – is changing probably due to (among others) the warming up of the seawater. This leads to changes higher up in the food chain such as a low reproduction levels in fish. Also, fewer fish reach maturity.³⁰

- **forestry:**

On the one hand, the higher average CO₂ concentration, higher temperature and a longer grow season will lead to a higher growth of trees. On the other hand, on the mid long term (2050) a deficit in sweet water could occur which could endanger the provision of sweet water to the forestry.³¹

- **energy:**

According to the Energy Research Centre of the Netherlands (ECN) and the Netherlands Environmental Assessment Agency (MNP) the influence of the temperature increase has already lead to savings as a result of less

²⁷ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 87.

²⁸ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 87.

²⁹ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 87.

³⁰ NEAA, *The effects of climate change in the Netherlands*, December 2005, p. 53-61.

³¹ Which could for example have an impact on the production of trees in Boskoop, see report of Ministry of Waterways and Public Works (*Rijkswaterstaat*) and Deltares, *Beantwoording kennisvragen Deltacommissie*, September 2008, p. 9.

heating in household, industry and the glasshouse sector. However, it is likely that as a result of the need for extra cooling, any saving of energy in the future will to a high extent be compensated.³²

- **industry (which?):**

Power plants and certain industries as petrochemical and refining industries make use of surface water as cooling water. Higher surface-water temperatures as a result of climate change will cause serious shortage of cooling water for these industry sectors.³³ The traditional industries, such as the steel industry, will be particularly affected by regulations with regard to CO₂ emissions (and therefore indirectly affected by climate change).³⁴

- **tourism:**

On the one hand, the changing climate will attract more tourists to the Netherlands. On the other hand, climate change will lead to a sea level rise and, consequently, to decreased beaches and dunes. For that reason, climate change can be beneficial as well as detrimental to tourism in the coastal zones of the Netherlands. As regards areas throughout the Netherlands, these areas might benefit from climate change. Due to climate change, rivers will need to transport more water on an incidental basis. Also, as a result of the sea level rise, this water will experience more difficulty being discharged into the sea. Consequently, all over the Netherlands areas are being set up to store the extra water which will most likely be found suitable for recreation and water sport.³⁵

- **others?**

The transport sector could be affected due to an increase of weather extremes. An increase of warm extremes can lead to (amongst others) longer traffic jams. On the other hand, cold extremes will decrease to a limited extent. It is uncertain if this will lead to less iciness as iciness is not that dependent on extremely low temperatures. The possible economic and spatial consequences on the transport sector still need to be investigated. However, it is expected that the increase in transport costs as a consequence of climate change will remain limited.³⁶

³² NEAA, *The effects of climate change in the Netherlands*, December 2005, p. 53-61.

³³ NEAA, *The effects of climate change in the Netherlands*, December 2005, p. 88 and Memorandum Rijkswaterstaat, *Klimaatverandering en het gebruik van koelwater*, p. 1.

³⁴ B. Daniëls, *Transition Paths towards CO₂ Emission Reduction in the Steel Industry*, 2002, p. 187.

³⁵ NEAA, *The effects of climate change in the Netherlands*, December 2005, p. 88.

³⁶ NEAA, *The effects of climate change in the Netherlands*, December 2005, p. 87.

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

- legislation, regulation

Legislation regarding Climate Change in general:

The government is currently working on the Second Delta Act. This Second Delta Act is recommended by the Delta Committee (see "Initiatives of the government" hereafter) and will lay the foundation for the Delta Programme. This must in any case include provisions on the funding of the Delta Programme and on the Delta Director's tasks and authority.³⁷

Regulation and measures regarding Energy efficiency:

In September 2007, the Netherlands Energy Efficiency Action Plan (EEAP) was submitted to the European Commission.³⁸ This EEAP is the implementation of the requirement in article 14.1 of Directive 2006/32/EC of 5 April 2006 on energy end-use efficiency and energy services by the Netherlands. It contains a description of measures to improve the energy efficiency in the Netherlands that are planned to achieve the indicative targets for 2010 and 2016. The EEAP contains regulations, voluntary measures, taxes and subsidies, such as Energy Tax, Energy Investment Deduction, Building Decree and Energy Performance Standard (EPC), TELI subsidy scheme, Temporary subsidy scheme Buildings and CO2 reduction, Green Funds Scheme (*Groen Beleggen*), Expand green investment arrangements, More by Less (*Meer met Minder*) plan, Taskforce lighting, Covenant housing corporations and Heat distribution. In addition, the EEAP provides for the implementation of the Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy-using products. This directive is implemented by amendment of the Environmental Protection Act, the Energy Conservation (Appliances) Act and the Economic Offences Act. These acts contain minimum obligations companies must comply with, while additional efforts are agreed upon via the Long-term Agreements and the Benchmarking Agreement. The package for the transport sector contains measures, such as tax programmes, Energy labelling of cars, 'Eco driving' programme and Subsidy schemes.

³⁷ http://www.regering.nl/Actueel/Pers_en_nieuwsberichten/2008/september/12/Kabinet_werkt_aan_Deltawet.

³⁸ The Netherlands Energy Efficiency Action Plan, The Hague, 12 September 2007, see website

http://ec.europa.eu/energy/demand/legislation/doc/nceap/netherlands_nl.pdf.

Regulation and measures regarding CO2 reduction

See "Emission trading systems" hereafter.

Regulation and measures regarding non-CO2 reduction

In 1999, the Reduction Programme for non-CO2 reduction was set up and is expected to run until 2012. Its goal is to reduce Dutch emissions of the non-CO2 greenhouse gases to an average level of 33 Mtonne CO2 equivalents over the period 2008-2012 (see "National Platforms" hereafter).³⁹

- **Initiatives of economic agents**

Initiatives of the government

Second Delta Committee

A great part of the Netherlands is surrounded by water and many parts of the country lie below sea level.⁴⁰ The Netherlands has a long coastline, which mainly concerns the North Sea (*Noordzee*) coast and the Wadden Sea (*Waddenzee*). In addition, the IJsseldelta is a low-lying area that is threatened by floods from both the river IJssel and the Lake IJssel Lake (*IJsselmeer*). The river IJssel in the Netherlands is a major branch of the river Rhine, which discharges its flows to the IJssel Lake. The IJssel Lake was a former sea (*Zuiderzee*) that was closed off in 1932 by a big dam, the so-called Closure Dike (*Afsluitdijk*). Moreover, the south-western part of the country, the so-called South-western Delta has developed into a complex estuary of the rivers Rhine (*Rijn*), Meuse (*Maas*) and Scheldt (*Schelde*). After the flood disaster in 1953, the "First Delta Committee" was appointed which came up with a plan to strengthen the country's flood defences. The Delta Act, which was based on the committee's plan, was signed into law in 1957.⁴¹ Among other things, the Act contained a proposal to create several so-called "Deltaworks" (*Deltawerken*) in the southwest to shorten the coastlines, reducing the number of dikes that had to be raised. The Deltaworks system would include dams, sluices, locks, dikes, and storm surge barriers.

³⁹ VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, 2005, 47.

⁴⁰ For an illustration of the Dutch Delta: see figure 2 (Regional divisions used in the Delta Committee's report) in the Report of the Second Delta Committee, *Working together with water*, (Findings of the Delta Committee 2008), p. 16.

⁴¹ The Delta Act (*Deltawet*) was repealed 28 September 2005 (Parliamentary Papers I 2004/2005, 29747 and Bulletin of Acts and Decrees 2005, 275).

In September 2007, the Dutch government requested the Second Delta Committee, an independent committee, to give its advice on flood protection and flood risk management in the Netherlands for the next century, while keeping the country an attractive place to live, work and invest. The Delta Committee's chairman, Cees Veerman, presented the advice to the cabinet on 3 September 2008. The Delta Committee has made twelve recommendations to 'future proof' the Netherlands, even for the very long term, securing the country against flooding, assured of adequate fresh water, while remaining an attractive place to live.⁴²

Clean & Economical

In September 2007, the cabinet programme "Clean & Economical" (*Schoon & Zuinig*) was started. In this programme, the cabinet defined the ambitions for energy saving, sustainable energy and Carbon Capture and Storage (CCS). The programme is carried out by seven ministries.⁴³

- Initiatives of citizens

Citizens Consulting Committee

In 2006, the Ministry for Housing, Regional Development and the Environment (VROM) organised a Citizens Consulting Committee (*Burgerplatform*) to think about energy saving in private houses. The Committee made 36 recommendations.⁴⁴

- Initiatives of companies

Heat-proof residential areas

Together with four municipalities a firm of construction engineers is carrying out an experiment that aims to reduce the Urban Heat Island-effect by making neighbourhoods heat-resistant. It has been shown that climate change is leading to an increase in temperature and humidity, which can result in so-called 'heat-stress'. Therefore, this firm tries to find a way that reduces the temperatures rise in neighbourhoods during the day. For example, this firm states that an increase of 10% of public parks

⁴² The recommendations relate to the strengthening of dikes, plans for new urban development, areas outside the dikes, North Sea coast, Wadden Sea area, South-western Delta (Eastern and Western Scheldt and Krammer-Volkerak Zoommeer), the major rivers area, mouth of the river Rhine, Lake IJssel area and Political-administrative, legal and financial measures. www.deltacommissie.com/doc/twelve_recommendations.pdf.

⁴³ *Werkprogramma Schoon & Zuinig*, September 2007 www.vrom.nl/pagina.html?id=2706&sp=2&dn=7421. See www.cpb.nl/eng/pub/cpbreeksen/document/174/doc174_summary.pdf for an English summary of the economic consequences of this programme.

⁴⁴ The recommendations relate mainly to energy saving and focus on the energy label, awareness and financial and fiscal measures, see www.nederlandsevroutenraad.nl/docs/6.3_VROM_burgerplatform_adviezen.pdf.

and gardens leads to a decrease in temperature of 4 degrees Celsius.⁴⁵

- **Other initiatives**

Platform Communication on Climate Change (PCCC)

The Platform Communication on Climate Change (PCCC) was established by the Dutch climate research community to improve the quality, efficiency and effectiveness of the communication of Dutch climate research. PCCC is a collaborative venture by Netherlands Environmental Assessment Agency (PBL), Royal Dutch Meteorological Institute (KNMI), Climate Change and Biosphere centre (CCB) of the University Wageningen, the VU University Amsterdam, the Utrecht University and the Netherlands Organization for Scientific Research (NWO). It is supported by the Ministry of Housing, Spatial Planning and the Environment.

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

- **Kyoto Protocol**

The Netherlands ratified the Kyoto Protocol on 31 May 2002. The greenhouse gas emission reduction target for the Netherlands in the period 2008-2012 under the Kyoto Protocol is 8% less than greenhouse gas emissions in the base year. This reduction percentage is applicable to all member states of the European Union ("EU"). Within the EU, the joint reduction percentage was divided amongst the member states (European Council decision 2002/358/CE). For the Netherlands, this resulted in a 6% reduction percentage instead of 8%.⁴⁶

- **International Strategy for Disaster reduction, Hyogo Framework**

As a member of the United Nations, the Netherlands subscribes the Hyogo Framework for Action. On the Global Platform for Disaster Risk Reduction in 2009, the Netherlands made a statement in which it stated that it "*is committed to integrating Disaster Risk Reduction into its policies on development cooperation, climate change and humanitarian aid, thereby contributing to the implementation of the Hyogo Framework for Action*".⁴⁷ No national report however was submitted by the Netherlands.

⁴⁵ See <http://www.bouwwereld.nl/1017612/Nieuws/Inrichting-hittebestendige-woonwijken.htm>.

⁴⁶ VROM, *The Netherlands' Report on demonstrable progress under Article 3.2 of the Kyoto Protocol*, December 2005, p. 9.

⁴⁷ <http://www.preventionweb.net/english/policies/v.php?id=10001&cid=122>

- **National Platforms**

SenterNovem

SenterNovem is an agency of the Dutch Ministry of Economic Affairs which promotes sustainable development and innovation, both within the Netherlands and abroad. It aims to achieve tangible results that have a positive effect on the economy and on society as a whole.⁴⁸

Delta Alliance

Delta Alliance is an initiative to promote international cooperation of experts, water managers, other practitioners and their governments. It aims to raise awareness, share information and develop tools for sustainable development of low-lying areas in times of a changing world and a changing climate.⁴⁹

ROB International

The Dutch government has decided to contribute to the international knowledge exchange on the reduction of non-CO2 greenhouse gas emissions (NCGG emissions). One of the planned activities is to carry out an inventory of instruments to the reduction of NCGG emissions over time. The Non-CO2 Greenhouse Gas Reduction Programme (abbreviated as ROB in Dutch) has the responsibility to co-ordinate this international inventory. This programme is managed by the Dutch Ministry of Housing, Spatial Planning and the Environment and is implemented by SenterNovem, an agency of the Dutch Ministry of Economic Affairs.⁵⁰

- **Emission trading systems**

The EU emissions trading scheme formally began on the 1 January 2005 as prescribed by EU Directive 2003/87/EC.⁵¹ In order to implement this directive in Dutch legislation a new chapter on emissions trading was added to the Dutch Environmental Management Act. The system is a cap and trade system, which means that companies that lower their emissions can sell their allowances on the emission market to companies that need extra allowances. The directive required Member States to develop a National Allocation Plan (NAP) in which it indicates the manner in which

⁴⁸ <http://www.senternovem.nl/english/>

⁴⁹ <http://www.delta-alliance.org>

⁵⁰ <http://www.senternovem.nl/robinternational>

⁵¹ VROM, *The Netherlands' Report on demonstrable progress under Article 3.2 of the Kyoto Protocol*, December 2005, p. 12.

it intends to allocate the allowances to the individual installations. The Netherlands NAP 2005-2007 has been approved by the European Commission.⁵² The NAP 2008-2012 has been accepted by the European Commission on the condition that certain changes are made, including a reduction in the total number of proposed emission allowances. The approved annual allocation for the Netherlands is 85.8 million tonnes of CO₂ allowances.⁵³ In turn, the installations have to prepare a monitoring protocol which has to be approved by the Dutch Emissions Authority.⁵⁴

- **others?**

In addition to the abovementioned directive with regard to greenhouse gas emission, the European Union adopted a wide range of so-called Common and Coordinated Policies and Measures (for example, see our answer to question 4).

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

Reports and articles

- *Working together with water*, Findings of the Delta Committee 2008, http://www.deltacommissie.com/doc/deltareport_full.pdf;
- *The effects of climate change in the Netherlands*, Netherlands Environment Assessment Agency in collaboration with Royal Netherlands Meteorological Institute, Institute for Inland Water Management and Waste Water Treatment, National Institute for Coastal and Marine Management, Alterra, Wageningen University and Research Centre, Institute for Environmental Studies, Free University of Amsterdam and International Centre for Integrative Studies, University of Maastricht, December 2005, <http://www.rivm.nl/bibliotheek/rapporten/773001037.pdf>;
- VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, 2005;
- W.J.W. Botzen and J.C.J.M. van den Bergh, *Insurance Against Climate Change and Flooding in the Netherlands: Present, Future, and Comparison with Other Countries*, Risk Analysis, (28,) 2, 2008;

⁵² Commission Decision C(2004)2515/1 final.

⁵³ Commission Decision of 16 January 2007.

⁵⁴ See <http://www.broeikasgassen.nl> which gives access to monitoring reports, to official reports submitted by the Netherlands under the UNFCCC and the Kyoto Protocol and to the official review results of these reports by the UNFCCC.

- The Netherlands Energy Efficiency Action Plan, The Hague, 12 September 2007, http://ec.europa.eu/energy/demand/legislation/doc/neeap/netherlands_nl.pdf;
- VROM, *The Netherlands' Report on demonstrable progress under Article 3.2 of the Kyoto Protocol*, December 2005;
- J. Aerts, *Onzekerheid verzekerd*, (Inaugural speech at the Vrije Universiteit), 2009;
- W.J.W. Botzen en J.C.J.M. van den Bergh, *Verzekerd van of tegen klimaatverandering?*, Kwartaaltijdschrift Economie (2) 2008;
- NWO, *'What if... abrupt and extreme climate change?'*, October 2008: Exploring governmental and victim responsibilities in view of abrupt change in North-Western Europe.

Websites

- Website of Ministry of Housing, Spatial Planning and the Environment ("VROM"), <http://international.vrom.nl/>;
- Website of Delta Committee, <http://www.deltacommissie.com>;
- Website of SenterNovem, <http://www.senternovem.nl/english/>.

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

Flood insurance

Before answering the various questions in part B of this questionnaire, we draw attention to the fact that the highest risk for the Netherlands lies in the area of its water system, meaning sea level rise, floods and water deficiency in the summer.

Water damage as a result of extreme precipitation is to a certain extent covered by home and fire and theft insurances for private individuals.⁵⁵ Only 11% of Dutch insurers however offer these insurances to companies. The most extensive insurance policy covers all forms of water damage, but contains a clause which excludes flood damage.⁵⁶

⁵⁵ For example SNS Bank, Special Conditions Home Insurance (*Bijzondere voorwaarden Woonhuisverzekering*) which covers: "Damage as a result of rainfall, snowfall, hail or melt water occurred on location, that seeped unforeseen through the premises" and "Damage as a result of water that seeped unforeseen through the premises, in case this water exclusively seeped through as a result of a fierce local rainfall, which made the rain go out of its normal course". In addition it is stated: "Fierce local rainfall is understood to mean rainfall containing 40mm within 24 hours, 53 mm within 48 hours, or 67 mm within 72 hours, nearby or on the location where the damage has risen".

⁵⁶ J. Aerts, *Onzekerheid verzekerd*, (Inaugural speech at the Vrije Universiteit), 2009, p. 4.

Since the flood disaster that occurred in 1953 in the Netherlands, Dutch insurances do not provide cover against damage caused by floods. The issue concerning private flood insurances is the highly correlated risk of floods and the limited capacity of insurers to provide cover against the damage of great disasters. Many households and companies could be struck by a flood at the same time which would mean a huge financial loss for insurers as a result of which even they could become insolvent. Another problem is 'timing risk', being the risk that insurers all of a sudden have to deal with many claims before it has been able to gain sufficient financial capacity. Although acquiring reinsurance could be a solution for this problem, this would be expensive as a result of high financial losses international reinsurers have had to deal with after a number of great disasters in the last couple of years.⁵⁷

For a couple of years, there has been a Dutch insurer that offered an insurance product that provided cover against floods (the Risk Catastrophe policy, *Risico Catastrofe polis*). It provided cover against risks that are excluded in common insurance policies, *i.e.* bomb attacks, excavation of explosives, damage as a result of local cloudbursts, etc. However, the insurer stopped offering this insurance in 2007, mainly because of the introduction of the compensation scheme by the Dutch government in 1998, the Act on Compensation of Financial Losses due to Disasters and Serious Accidents (*Wet Tegemoetkoming Schade bij rampen en zware ongevallen*, the "Act").⁵⁸ This Act provides for coverage of damage resulting from sweet water floods, earthquakes or other disasters or severe accidents within the meaning of this Act that is not reasonably insurable.

However, this ex post compensation arrangement is subject to a lot of criticism, such as:

- The settlement and taxation of damage causes extra overhead costs for the government;
- The Act is, by it self, not applicable to damage resulting from disasters that occur in areas outside the dikes or to damage resulting for salt water floods. However, the Act can be declared applicable to disasters outside the (current) scope of the Act.
- The Act does not stimulate private individuals or companies to build differently.
- The Act does not send a price signal with respect to risk which influence the choice to settle somewhere and can influence risk-avoiding behaviour. The risk awareness of private individuals is low as a result of

⁵⁷ W.J.W. Botzen en J.C.J.M. van den Bergh, *Verzekerd van of tegen klimaatverandering?*, Kwartaaltijdschrift Economie (2) 2008, p. 229.

⁵⁸ J. Aerts, *Onzekerheid verzekerd*, (Inaugural speech at the Vrije Universiteit), 2009, p. 4-5.

the fact that "their risk" is not expressed in a premium.

- It is probable that there will be more claims under the Act as a result of climate change. Consequently, the Act will no longer be a incidental safety net but a common insurance against weather extremes.⁵⁹

Several committees have concluded that the non-insurability should be pushed back. Also, private individuals and companies should take more responsibility themselves and the information provision of the government should be more adequate. These considerations (amongst others) have lead to a study of the Advice Committee Water (*Advies Commissie Water*) which pointed out that the possibility should be explored to expand the insurability of the consequences of floods.⁶⁰ In 2006 a Taskforce Flood Insurability (*Taskforce Verzekerbaarheid Overstromingen*) was set up in which insurers and the government cooperate to explore these possibilities.⁶¹ To date of this national report, the results of this study, if any, are not publicly available yet.

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

All of the below.

- **Property**
 - Agriculture (crops, forestry, livestock):**
 - Buildings**
 - Business interruption**
 - Others (specify):** motor vehicles
- **Liability**
- **Transport, marine**
- **Life, health**

2. How are the risks linked to climate change to be defined?

The secretary of the climate committee of the Dutch association of insurers (*Verbond van Verzekeraars*) has given us a few examples of the risks, namely:

- **With respect to fire:**
 - Due to drought, the ground water level descends as a result of which it is harder to obtain fire extinguishing water. Consequently, competition between drinking-water and fire extinguishing water could arise;

⁵⁹ J. Aerts, *Onzekerheid verzekerd*, (Inaugural speech at the Vrije Universiteit), 2009, p. 5.

⁶⁰ J. Aerts, *Onzekerheid verzekerd*, (Inaugural speech at the Vrije Universiteit), 2009, p. 5.

⁶¹ VROM, *De hype voorbij: Klimaatverandering als structureel ruimtelijk vraagstuk*, 2007, p. 32.

- In the Netherlands the risk of forest fires occurring will increase.⁶²
- **With respect to motor vehicles:**
 - In case of sharp frost, the volume of car window damage increases. Consequently, if periods of sharp frost decrease, which is expected, the volume of car window damages will decrease;
 - Roads become slippery in the event of rainfall after very dry weather periods. Dry weather periods, as well as intensive rain showers will increase. Therefore, the problem in relation to unexpected slippery roads will occur more often in the future, as result of which the volume of motorbike insurance will increase.
- **With respect to agrarian products:**
 - Damage to agrarian products is expected to increase. If the crops are still young and a long period of dry weather occurs, the top layer of the crops might erode due to wind. Consequently the crops die. A chance of this happening is even greater after a heavy shower of rain after a long period of drought.
- **With respect to travel- and cancellation insurances:**
 - More damage is expected with respect to travel- and cancellation insurances. Due to forest fires in Southern Europe, planned holidays are cancelled.
- **With respect to flood and/or high water:**
 - Intensive rain showers occurring more often results in an increasing number of local floods.

3. Insurers' measures of protection against excessive exposures

As mentioned above (under flood insurance), insurers protect themselves against exposure to flood damage by inserting an exclusion of flood damage in the policy. Other excessive risks, such as earth quakes and volcanic eruptions are excluded as well.⁶³

⁶² VROM, *Fourth Netherlands' National Communication under the United Nations Framework Convention on Climate Change*, December 2005, p. 87.

⁶³ The SNS home insurance policy states: "next to the exclusions stated in the general conditions, damages caused by flood, earth quake and volcanic eruptions as defined in "further descriptions" is excluded as well". Reaal uses a Clauses Sheet snow pressure and horizontal water damage (Clausuleblad sneeuwdruk en horizontale waterschade) which states: "Damage that is not covered contains damage caused by water released by bursting of a dike or released by cracks, holes or other damages in the dike". Avero Achmea Special Conditions Home (Bijzondere voorwaarden Woonhuis) state that "Flooding as a result of collapsing, or flowing over, of dikes, quays, locks or other types of dams" is not covered. Moreover "It does not make any difference if the flooding is caused by a cause or a consequence that is covered by this insurance. This exception is not applicable on fire or explosion that is caused by the flooding, and flooding as a result of fierce local rainfall."

In addition, certain large insurers have been dealing with the consequences of climate change for a couple of years now. They for example finance a chair concerning climate change, but they have also done statistic research themselves with respect to the increase of hail as a result of the temperature rise. Recently the Dutch association of insurers (*Verbond van Verzekeraars*) has called a committee into life, which has immediately started a study concerning the relationship between precipitation and insured damage as well as the local differences in this respect. To date of this national report, the results of this study, if any, are not publicly available yet.

4. 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).

- Coverage for producers of new energies (e.g. wind-mills):

In June 2008 a project regarding the construction of 60 wind-mills close to the Dutch coast has been realised. In view of the specific risks that can arise during construction and thereafter, a new insurance policy has been invented. It is a policy⁶⁴ that covers the risks with respect to the wind-mill park during the two year construction period and the risks 10 years after construction, during operation. It is a combination of a marine-construction coverage and an all-risks operational offshore coverage. The insurer is not allowed to end the coverage prematurely.⁶⁵ Another insurer⁶⁶ offers insurance policies for (amongst others) environmental projects which, in short, covers all damages that is not covered by the deliverer (of for example a wind-mill) This insurer also offers insurance policy with respect to wind-mills. It covers body and exploitation damage. In addition a liability insurance can be taken out by the policyholder.⁶⁷ As regards body damage (*Casco schade*), the following damage (amongst others) is excluded:

- damage to electronic parts that demonstrably does not have a external cause;

⁶⁴ Offered by Delta Lloyd.

⁶⁵ www.q7wind.nl and Marsh, *Marsh extended*, Autumn 2007, p. 4-9;

⁶⁶ Paulowski, Muller & Partners.

⁶⁷ <http://www.pm-partners.nl>

- damage caused by standard company misuse, premature misuse and corrosion, erosion and other deterioration.
- Damage caused by floods or high water in areas one could have reasonably expected this damage due to experiences from the past or the geographical location. However, this exclusion is not applicable in the event that sufficient measures have been taken to prevent damage by high water.

As regards exploitation damage, the following damage (amongst others) is excluded:

- Exploitation loss that arises due to the insured not having enough financial means at its disposal (on time) to carry out the necessary repair activities or the regaining of damaged goods.
- contractual penalties or damages, either contractually or based on another ground.
- **“Pay as you drive” motor insurance:**
this concept was launched in the Netherlands in 2007. Insurers such as "Polisvoormij"⁶⁸ and "De Kilometerverzekering"⁶⁹ both offer a car insurance policy of which the premium is linked to the kilometres the policyholder has driven. Another insurer named "London Verzekeringen" is planning to launch the 'pay as you drive' insurance in 2010.⁷⁰ In other words, the "pay as you drive insurance" is a relatively new concept in the Netherlands.
- **“Energy saving”, “Green-building” insurance:**
"The green insurance" (*de Groene Verzekering*) is initiated by an insurer (Delta Lloyd) and the International Tree Fund. It is a car insurance that compensates the CO2 emission of a car by planting 7 new trees in Costa Rica every year. Furthermore, the premium a policyholder has to pay, is sustainably invested.⁷¹
- **"The Compensation Policy":**
Branche Benefits has developed the "Compensation Policy" (*de Compensatiepolis*) which aims to reward benefactors and members of good causes. This insurer takes over the current insurance of the policyholder and provides for coverage of the same level under a new insurance with a discount of 10% of the premium the policyholder used to pay. 1% of the premium will be donated by Branche Benefits to good causes, such as environmental organisations.⁷²

⁶⁸ www.polisvoormij.nl

⁶⁹ www.dekilometerverzekering.nl

⁷⁰ www.amweb.nl, Assurantiemagazine (AM) 2008, (18), 3 October 2008.

⁷¹ www.groeneverzekering.nl

⁷² www.branchebenefits.nl and www.compensatiepolis.nl/producten

- **Insurance against damage to crops:**

In 2004 two insurers started offering insurances providing cover against damage to crops as a result of extreme precipitation. These insurances are supported by the Ministry of Agriculture, Nature and Food Quality. When damage arises, the Ministry will double the amount of money already raised by the insurer consisting of paid premiums. The excess – amounting to 25% – is relatively high. However, in 2008 one of these insurers announced the number of policyholders had decreased to 50%. This decrease was caused by the maximum additional assessment policyholders had to pay due to the large-scale water damage that had occurred in 2007. Later on this insurer made public that, as of 2009, it has stopped offering and accepting these insurances. Due to the minor number of policyholders, it was not able to provide sufficient coverage against the risk of rain damage. In other words, it now appears only one insurer still offers insurances providing cover against damage to crops.

5. Reinsurance

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

We were informed by the Dutch Association of Insurers (*Verbond van Verzekeraars*) that reinsurers mainly serve as knowledge institutes for the insurers. Reinsurers have more experience because of their large-scale insurance.

6. ART (Alternative Risk Transfer)

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

At first it must be noted that a research carried out by DNB (*De Nederlandsche Bank*) in 2008, has shown that within the different types of alternative risk transfer, the use of insurance linked securities (insurance-related risks are transferred to the capital market) on the Dutch insurance market is still in its infancy.⁷³

- **Derivatives:**

A derivative is a financial instrument, that can contain different products, for example a catastrophe derivative or a catastrophe swap.⁷⁴ In the

⁷³ De Nederlandsche Bank N.V., *ZBO-verantwoording 2008*, Amsterdam 13 March 2008, p. 24.

⁷⁴ V. Bruggeman, *Capital market instruments for catastrophe risk financing*, 2007, p. 22-25.

Netherlands, weather derivatives are offered by banks (for example ABN AMRO⁷⁵ and Rabobank⁷⁶) and by insurers (for example Aon⁷⁷ and Interpolis).

The degree to which weather-dependent companies make use of such derivatives is limited. We found a few examples:

- 'Stichting Risicofonds Afbouw', a foundation which, inter alia, pays employers in order for them to pay their employees that are not able to work due to frost, had a contract with ABN concerning a weather derivative. However, because of recent changes in Dutch law concerning hold-ups due to frost, the foundation decided not to renew the contract in 2009.⁷⁸
- In the past, Aon, Interpolis and Rabobank Emmen contracted a zoo/amusement park (*Noorder Dierenpark*) concerning a weather derivative.⁷⁹

Legal qualification

In the past the discussion whether derivatives can be classified as an insurance has been substantiated both ways.⁸⁰ The International Swaps and Derivatives Association (ISDA) is very clear and do not classify a derivative as an insurance. The ISDA even added a phrase to their master agreement that states that a derivative is not an insurance.⁸¹

Dutch supervisory law explicitly distinguishes derivatives from insurance. By adapting the Dutch Financial Supervision Act (*Wet op het*

⁷⁵ ABN AMRO, *Meer mogelijk met weerderivaten*, December 2006. See also the ABN AMRO fact sheet in the report "From Principle to Action, An Analysis of the Financial Sector's Approach to Addressing Climate Change", by Paul Mudde and André Abadie. The report is a schedule to Parliamentary Papers II 2007/2008, 30535, 18.

⁷⁶ See http://overons.rabobank.com/content/mvo/producten_diensten/bedrijven/. Rabobank has a section that's taking care of weather derivatives. Its department is called Commodity & Weather Derivatives (Rabobank International) and focuses on the control of financial risks that organisations (and the government) can run into, cause of climate change.

⁷⁷ Aon is offering weather derivatives (swaps, forwards, bonds). They use a "weather risk finance" process, that enables Aon to find the best type of weather derivative. See www.aon.com/netherlands/risk-services/weerisico.sjp.

⁷⁸ Stichting Risicofonds Afbouw, 'Jaarverslag 2008', p. 7-8.

⁷⁹ www.aon.com: 'weerderivaten en weerverzekeringen'; www.nieuwsbank.nl/inp/2003/08/20/R079.htm

⁸⁰ C.P.M. van Houte, *Kredietderivaten; enige juridische en fiscale aspecten*, TVI 2003/4; M.G. van 't Westeinde, *Kredietderivaten en pensioenfondsen*, TvE 1999-3, p. 56-62.

⁸¹ C.P.M. van Houte, *Kredietderivaten; enige juridische en fiscale aspecten*, TVI 2003/4, p. 4.

financieel toezicht, Wft), the Dutch Parliament specifically added a phrase concerning the derivative which shows that the derivative cannot be classified as an insurance (article 1:1 Wft).⁸²

In the Dutch Civil Code (*Burgerlijk Wetboek*) it was not explicitly stated that the derivative does not qualify as an insurance. However, in our opinion a derivative does not qualify as an insurance for the following reasons:

- *insurable interest*

Pursuant to Dutch insurance law, an essential element to a nonlife insurance is the insurable interest on the part of the insured. A derivative however is not subject to the requirement of having an insured interest, the buyer of, for example, a weather derivative does not need to prove its weather dependence.

- *suffered damage*

Moreover, under Dutch law only suffered damage can in principle be compensated. A buyer of a weather derivative however does not have to prove its damage.

- *legal system*

The construction of a derivative bears a strong resemblance to the construction of a so-called life insurance (*sommenverzekering*), which is an insurance providing for payment of a capital sum (article 7:964 Dutch Civil Code). However, to date this insurance is only permitted for insuring the risk of damage suffered by a natural person. Since the legislator did not expand the scope of the life insurance, a derivative does not qualify as a life insurance either.⁸³

- **Swaps:** (see under derivatives)

- **Cat bonds:**

Catastrophe bonds are not used in the Netherlands. It is a known concept however and it might be used in the future. The fact that the Netherlands is familiar with cat bonds is shown by the Dutch Financial Supervision Act as the concept of a so-called special purpose vehicle that is set up particularly by an insurer or reinsurer is explicitly provided for (see below), as a result of the implementation of the Reinsurance Directive

⁸² E.P.M. Joosen, 'Toezicht op waarborg- en garantiefondsen', Tijdschrift voor financieel recht nr. 1/2, januari/februari 2007, p. 11; Kamerstukken II 2005/06, 29 708, nr. 41, p. 56.

⁸³ It must be noted though, that article 7:964 BW contains a phrase that shows that the government can set rules towards the application of this type insurance. This phrase offers the possibility that in the future the scope can be adapted.

(Directive 2005/68/EG). The Netherlands Organisation for Scientific Research (NWO) concluded that cat bonds (as much as weather derivatives) offer great opportunities in financing the negative consequences of particularly abrupt climate change.⁸⁴

Legal qualification

Although an insurer or reinsurer takes care of the formation of the special purpose vehicle, the special purpose vehicle⁸⁵ that accepts the (catastrophe) risks is not a direct insurer or reinsurer. Because in fact, not the special purpose vehicle but the investors run the insurance risks.⁸⁶ Furthermore, risks are financed by attracting funds from third parties and not by insurance premium. As the payment of premium is an essential aspect of an insurance, cat bonds do not qualify as insurances.⁸⁷

7. 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?

In issues related to climate change the division of roles between insurers, reinsurers and the government is controversial.⁸⁸ As mentioned above (under flood insurance) a Taskforce was set up, which illustrates the cooperation between the insurance sector and the public authorities. However, also competition between public authorities and the insurance sector is existing. As mentioned above (under flood insurance) an insurer stopped offering an insurance against flood in 2007, mainly because of the introduction of the compensation scheme by the Dutch government in 1998. In addition, the results of a research amongst 1100 households in the river area of the Netherlands show that between 53% and 55% of the households interviewed is prepared to take out an insurance against floods in the event that the government might compensate damages by

⁸⁴ NWO, 'What if... abrupt and extreme climate change?', October 2008.: Exploring governmental and victim responsibilities in view of abrupt change in North-Western Europe, p. 35.

⁸⁵ The entity which is set up, is also known as 'special purpose vehicle': C.W.M. Lieverse, 'Richtlijn herverzekering (I). Toezicht op herverzekeraars en entiteiten voor risicoacceptatie', *Tijdschrift voor financieel recht* nov/dec 2007, p. 337.

⁸⁶ G.R. Boshuizen, *De ware risicodragers*, *NTHR* 2009-3, p. 141.

⁸⁷ G.R. Boshuizen, *De ware risicodragers*, *NTHR* 2009-3, p. 141.

⁸⁸ Netherlands Organization for Scientific Research, Newsletter Environmental Research 'Gevolgen klimaatverandering niet langer onverzekerbaar', June 2008.

way of its existing public compensation scheme. The results show that – in the event that no public compensation scheme would exist – 63% of the households interviewed is prepared to take out an insurance against floods.⁸⁹

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

As mentioned above (under flood insurance), in 1998, the Act on Compensation of Financial Losses due to Disasters and Serious Accidents (*Wet Tegemoetkoming Schade bij rampen en zware ongevallen*, the "Act") was introduced.

C. Any additional information or comments *not applicable*

⁸⁹ J. Aerts, *Onzekeerheid verzekerd*, (Inaugural speech at the Vrije Universiteit), 2009, p. 8.