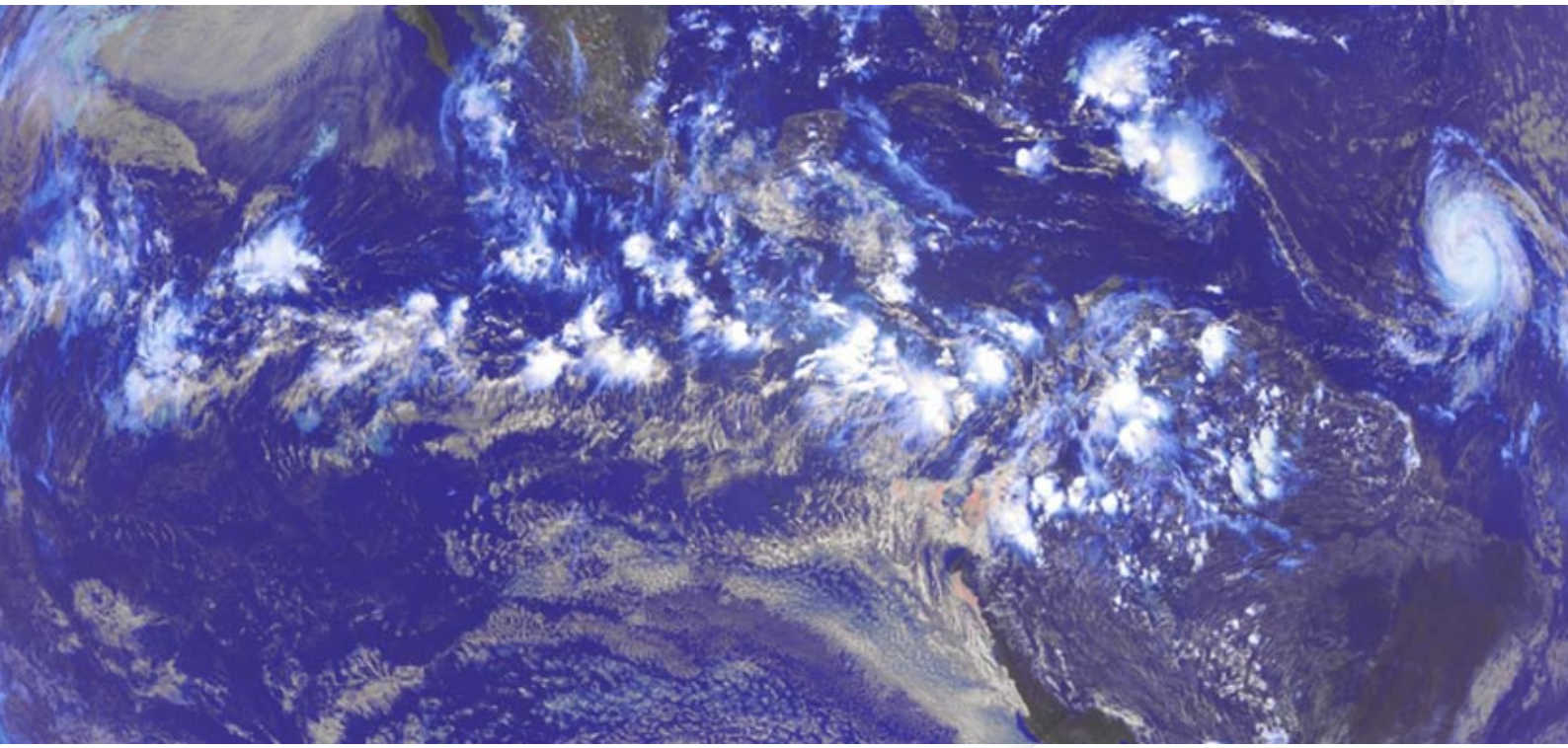
UNEP Finance Initiative
Innovative financing for sustainability

SBI SUSTAINABLE BUSINESS INSTITUTE

Advancing adaptation through climate information services

Results of a global survey on the information requirements of the financial sector



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Sustainable Business Institute (SBI) e.V.
Burgstraße 4
D-65375 Oestrich-Winkel
Tel: +49 (0) 6723 99 63-0
Fax: +49 (0) 6723 99 63-21
mailbox@sbi21.de
www.sbi21.org

UNEP Finance Initiative
International Environment House
15 Chemin des Anémones
CH-1219 Chatelaine, Geneva
Tel: +41 (0) 22 917 8178
Fax: +41 (0) 22 796 9240
fi@unep.org
www.unepfi.org

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Authors/Team

Sustainable Business Institute
Dr Paschen von Flotow
Dr Lutz Cleemann
Anke Hummel
Marco Ludolph

UNEP Finance Initiative
Paul Clements-Hunt, Head of Unit
Remco Fischer, Programme Officer
Jenny Lopez

Editorial assistance:
Peter Cole
Dr Andrew Dlugolecki
Barb Petruzzi

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Geostationary Operational Environmental Satellite 14 (GOES-14) is an earth observation satellite built for the US National Oceanic and Atmospheric Administration (NOAA) and NASA. Launched in June 2009, GOES-14 can perform climate studies, cryosphere detection and remote sensing, and is used to forecast storms and monitor weather conditions, ocean temperatures, land temperatures and moisture locations.

Foreword by the UNEP Finance Initiative Climate Change Working Group (CCWG)

In the past when businesses, governments or civil society spoke about action on climate change, they usually spoke about reducing greenhouse gas emissions. While the reasons for focusing on climate change mitigation are manifold and convincing, it appears true that the urgent need to seriously think about, and take action on, adapting to climate change has been somewhat neglected. The relationship between mitigation and adaptation should not be seen as a trade-off: We know with the highest degree of scientific certainty that if we do not seriously reduce global emissions soon, climate change will be too strong to adapt to; but we know also that, at this stage, the climate will change no matter what we do. While shifting towards low-carbon and resource-efficient economies, we therefore need to ensure by all means, that the economies we build are resilient to what will likely be the significant impacts and financial ramifications of a changing climate.

Shifting to climate-change resilient economies will not be achieved only by governments building dams, improved water systems, and similar large-scale infrastructure. As with the move to a green economy, effective adaptation, in a systemic sense, will only occur if the millions of dispersed business decisions taken every day start to account for climate change factors and impacts. Within the group of private sector decision-makers, representatives of the financial services sector – banks, investors and insurers – stand out in the commercial landscape essentially because of their ability to effectively influence business practice and emerging trends in the real economy: Their daily engagement with clients and investees of all types and sizes and across virtually all sectors of the economy shapes the current and future reality of production processes and services. As such, the financial services sector can be a powerful conduit towards economic systems that are better prepared for the challenges of climate change.

A financial services sector that understands climate change and pro-actively drives adaptation is not only in the highest interest of broader economic stability and the societal well-being it underpins; it is clear that it will increasingly be in the very interest of financial institutions themselves. Banks, investors, and insurers that get ahead of the curve in understanding and managing the risks linked with the physical impacts of climate change will build a strong competitive advantage relative to lagging competitors. The central role of financial institutions in advancing the climate resilience of societies is not only a matter of leverage and necessity, but also a matter of ability and expertise. Adapting to climate change boils down to identifying, quantifying, pricing, and mitigating the financial risks linked with climate change impacts: Risk management is and has always been core to the business of all financial institutions. The key point is that effective risk management requires appropriate information input on all parameters that are relevant for business as well as forecasts of the future development of such factors.

The aim of this study and its underlying survey was to determine, when it comes to the issue of a changing climate, precisely what the types of information input are that financial institutions require to put their risk management expertise at the service of broader adaptation and to provide a first assessment of the current provision to the sector with such information. We believe that this is a critical step in advancing a process, led by decision-makers in policy and industry, aimed at improving the provision of climate change information to financial institutions and its systematic integration into financial decision-making. We also hope that the clear results of this survey will be a wake-up call to those organisations that have to date failed to pay attention to this issue of utmost urgency – within the financial sector and beyond.

UNEP Finance Initiative and its Climate Change Working Group remain ready to continue gathering, formulating, and channelling international finance input into processes that will improve the consideration of climate change impacts into financial decision-making. The need for further work is vast. In particular, large gaps appear to remain in our ability to forecast the impacts of climate change at levels of high-enough geographic granularity. Therefore, the quality and accessibility of historic climate data needs to be enhanced and so does the accuracy of climate models as well as the capacity to translate climate information into financial interpretations. We look forward to supporting these explorations going forward.

Nick Robins
Head of the Climate Change Centre of Excellence, HSBC holdings plc;
Co-chair UNEP FI Climate Change Working Group

Mark Fulton
Managing Director, Global Head of Climate Change Investment Research, Deutsche Bank;
Co-chair UNEP FI Climate Change Working Group

January 2011

Foreword by Federal Ministry of Education and Research (BMBF), Germany

The work of the Federal Ministry of Education and Research (BMBF) in the area of global change research traditionally focuses on: The study of climate change and its consequences; research on the technological, economic and social options for climate protection and for adaptation to climate change; and the dissemination of the resulting knowledge. The BMBF is involved in collaborations with the research community, public institutions, and the private sector in Germany as well as on the international level.

The further development of regional climate models and forecasts, of models to assess the regional impact of climate change, and of information services forms an important basis for climate protection and for the development of efficient adaptation strategies. For this reason, the BMBF established the Climate Service Center (CSC) in Hamburg and is supporting the establishment and further development of similar institutions and networks across the world through international collaborations.

The study "Advancing Adaptation through CLIMATE INFORMATION SERVICES – Results of a global survey on the information requirements of the financial sector", which was carried out by the Sustainable Business Institute (SBI) and the United Nations Environment Programme Finance Initiative (UNEP FI), underlines the importance of developing climate information services in international networks. This will only be possible through cooperation between the research community, the finance industry, and other private- and public-sector institutions.

Insurers, banks, asset managers, and other stakeholders in the financial sector will need more and better climate information in future. They play an important role as partners in developing such systems, generating data, and interpreting and using the information. Their cooperation is needed when it comes to financing innovative solutions for climate protection, managing the consequences of climate change, and financing the adaptation to climate change.

That is why the BMBF initiated a research and dialogue process on this subject with the financial sector (organized in the "Climate Change Finance Forum"). The fact that this dialogue is now being extended to the international level through the collaboration with the UNEP Finance Initiative offers an excellent outlook.

Berlin/Bonn, January 2011

1 Executive summary

This study focuses on the information needs of the financial sector with respect to direct physical risks of climate change impacts. Clearly, there are many issues for the sector relating to mitigation (i.e. the control of greenhouse gas emissions). Mitigation continues to be the top priority. However, that is not the subject of this study. This survey focuses on the climate information requirements of the financial sector as part of their and their customers' adaptation strategies. The evidence comes from sixty financial service providers, through a survey conducted by the UNEP Finance Initiative, and the Sustainable Business Institute (SBI), Germany.

To be able to manage climatic risks affecting their business portfolios, financial institutions need information – in the form of predictions, analyses, and interpretation – that is relevant for their decisions. It needs to be appropriate to the duration of contracts, the regions where customers hold assets or undertake operations, and the hazards that are material to the operations of borrowers, investees, and the insured.

The key challenge for insurers and reinsurers in serving these demands and seizing these new opportunities lies in adequately identifying, quantifying, and pricing such risks amidst a dynamic environment. At the same time changing patterns of weather hazards also create new demand for risk transfer and can thus become a key business opportunity for the insurance sector, as they will provide space for new insurance markets and products.

A different situation holds for the credit and asset management branches. They are less familiar with climate change because the physical effects of climate change have not yet systematically turned into financially relevant consequences. Only just over one-quarter of lenders surveyed claim to "systematically always" integrate direct effects of climate change in their operations now. Direct risks like accumulation of risks, changing risk patterns, and increasing credit losses caused by physical impacts are expected to gain importance in the future (by about 80% of respondents).

The main findings of this survey are as follows:

- The majority of the survey participants expects that both direct as well as indirect risks related to climate change will increase and will be more relevant in the future for the financial sector.
- The highest importance regarding the significance of information is attached to the category "advice on reliability of predictions" (around 80% of the participants).
- The majority of respondents rated historical weather data nearly as important information as climate predictions.
- Overall, less than half of the respondents feel they are sufficiently well-informed. Just one-third feels "sufficiently informed" on climate change. Even for historical weather data, less than half (43%) feel adequately informed.
- Climate change predictions for the local and regional level and the time horizon of the next 10 to 30 years are not available or reliable enough for many purposes of the financial sector and the available information is not in a user-friendly state.
- The survey results show an immense information gap for continents with a high number of developing countries, but the demand for better climate information applies to all regions, not only those where the information infrastructure is less developed.

- The respondents require climate-impact information focussed on client sectors. Only one sector of 13 which the survey considered (healthcare) falls below 50% in terms of being regarded as very important, and for every sector there is a lack of information.
- Respondents favour a wide range of information in terms of content and media with respect to regions, sectors, and so forth.
- There is no unanimity between respondents, or even opinions in some cases, about the quality, timeliness, and value-for-money of current data provision. This might not only reflect the wide range of different information needs about the impact of climate change, but also the range of familiarity with these issues among the respondents.
- Most participants in the survey (62 out of 65) are willing to cooperate with data providers, research institutes, and other partners regarding the further development of different types of information services. Predominantly, the interest of insurers and reinsurers is higher than average.

From the results of the study it can be assumed that climate expertise is an emerging factor in competition and success within the financial sector. The need for applied research and information will lead to new information value chains with public and private partners.

This international survey has provided valuable indications of the information requirements of the finance sector on climate variability and climate change. In addition, these studies have yielded a number of key insights:

- Preferences about the format of improved information services
- General willingness of financial institutions to cooperate
- First indications regarding the roles of public and private actors
- Major knowledge gaps and directions for further action

2 Introduction

The commercial success of insurers, reinsurers, lenders, and asset managers relies on their ability to identify, quantify, and manage risks. It is, therefore, crucial for decision makers of the financial services industry to improve their understanding about the risks related to climate change as well as about the roles of the industry and best practice in climate change mitigation and adaptation. From a broader, societal perspective the financial services sector can serve as an effective conduit to foster awareness of climate change in most other sectors of the economy; it can indeed also act as a multiplier of knowledge and expertise.

The World Climate Conference 3 "Better climate information for a better future" has led to the "Global Framework for Climate Services" including a "Global Climate Observing System". The framework will link science-based predictions and information on climate change with the management of related risks and opportunities in order to support adaptation to climate change. The current report is a contribution towards the development of such climate information services and a respective framework.

This study aims to initiate a discussion on the information needs of the international financial services sector regarding the medium and long term physical impacts of climate change at local level. Their needs are surveyed on a worldwide basis – as well as across financial business lines. As such, this report is a step towards determining how such information needs could best be met.

For this purpose, the information needs and perceptions of financial institutions are examined separately according to the respective business field. The three categories analysed are: (i) insurers and reinsurers, (ii) lenders, and (iii) asset managers.

The report presents the results of an international survey undertaken by the Climate Change Working Group (CCWG) of the United Nations Environment Programme Finance Initiative (UNEP FI) and the Sustainable Business Institute (SBI) (see back cover for more information). This report is part of the project "Climate Change, Financial Markets and Innovation (CFI)", sponsored by the Federal Ministry of Education and Research (BMBF), Germany, and supported by the German "Climate Change Finance Forum" (for more information see page 21).

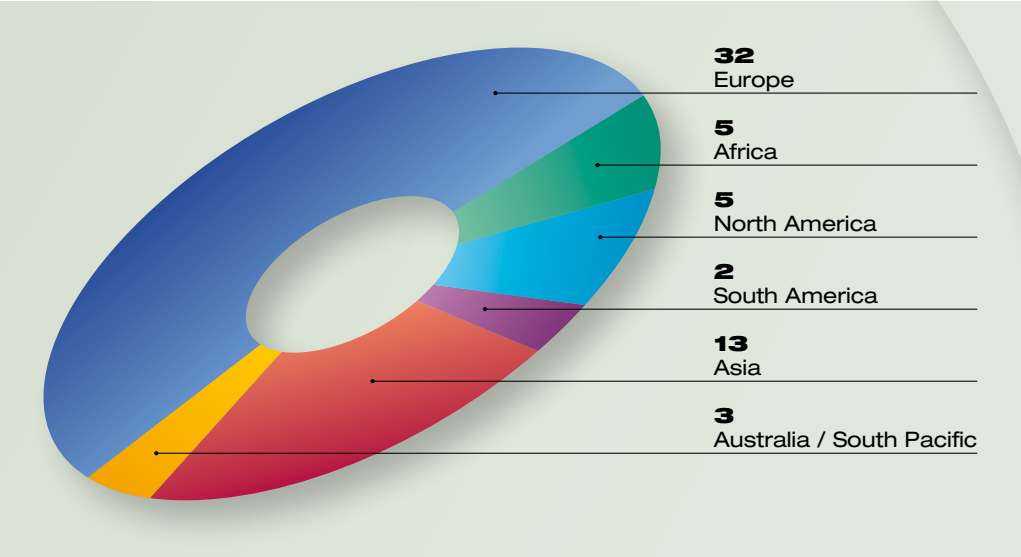
A total of 60 institutions from all continents (approximately one third of total UNEP FI member institutions), including developed as well as developing countries, responded to the questionnaire. (Several of these financial service providers operate worldwide). Some of them - institutions with activities in more than one of the business lines - completed more than one of the three sections. The resulting 65 responses are split as follows: Insurers and reinsurers (11 responses), lenders (35 responses), and asset managers (19 responses).[1] Most of the participating financial institutions are members of UNEP Finance Initiative.

The distribution of respondents among continents is shown in Figure 1. The survey was conducted during the period February through April 2010. In view of the exploratory nature of this exercise, quantitative analysis is not the main focus, but where appropriate, reference is made to the statistics of the survey. Importantly, the respondents were asked to comment wherever possible, not simply to 'check the boxes', and these comments are a valuable source of insights into the industry's perceptions and practices.

1. Total numbers may differ in some cases due to the fact that not every question of the survey was responded to by each of the participating financial institutions.

Figure 1

Regional make-up of survey respondents (based on HQ location)



The key findings of the survey are summarised in the following sections. The first part of the survey examined the extent to which financial service providers feel they are affected by the direct risks and physical impacts of climate change today, and how they expect that exposure to develop in the future. An investigation of the information needs of international financial service providers was conducted in the second part of the survey. The report concludes by raising some of the key issues in developing improved information systems.

3 Climate change: Affecting financial service providers differently

A changing climate will lead to changes in temperatures, increases in the frequencies and intensities of extreme weather events such as storms, heavy rainfall, hail, lightning, droughts and floods, as well as triggering slow-onset events like sea-level rise and desertification. These trends are already increasing the risk of economic losses. The international efforts of climate change mitigation will probably lessen these effects, but significant impacts from climate change are unavoidable.

This section sets out the views of financial institutions on the effects of climate change to date, and what they are doing about it. The respondents are already aware of certain types of climate change impacts and the resultant risks, both direct as well as indirect. The issue of water scarcity, for instance, was mentioned as an example of a direct risk by several of the participating institutions. Reputational risks, which are of indirect character, were referred to by several survey participants as well. These can materialise not just in a mitigation context – where a financial institution is seen as a polluter in light of the GHG emissions for which it is responsible – but also in an adaptation context where financial institutions might be seen as incapable of adapting to new and relevant circumstances such as changed weather patterns or shifting stakeholder expectations.

Nearly all survey participants share the expectation that both direct as well as indirect risks related to climate change will increase, and will be more material in the future and / or they recognise the need to extend risk assessment and due diligence practice to explicitly cover climate change related risks, including those generated by the physical impacts of climate change.

However, given the high degree of uncertainty concerning the possible physical impacts and economic consequences of climate change, survey participants are unsure about the nature and implications of how exactly climate change related risks will affect financial firms and their clients.

This uncertainty needs to be reduced which means that climate change induced changes have to be predicted as reliably as possible, so that the resultant impacts on economic actors can be analysed. On the basis of such information, financial institutions will be able to improve their risk identification, assessment and management systems.

Furthermore, predictions and analyses will have to be customised to the type, location, and customer base of the financial institution concerned. The individual financial branches differ significantly in terms of their types of risks (insurance, credit and investment risks) and time horizons (ranging from hours and days to years and decades), and accordingly, their information needs regarding climate change, also differ significantly. Survey respondents as well as their customers and investee companies operate in different regions of the world. The survey confirms that location plays an important role; not only with regards to the factual predictions required of physical climate change impacts at the local level, but also in terms of the subjective perception of climate change risks by companies. In part, this can be explained by differences in the extent to which climate change is already apparent in different parts of the world.

In the following sections, the main take-aways are presented in more detail for each of the business fields investigated: insurance (with reinsurance); lending; and asset management.

3.1 Insurance and reinsurance

Providing risk transfer products covering losses from natural disasters is a traditional business area for insurance companies. They are expert at identifying, quantifying, and pricing weather-related risks. However, despite this expertise, the insurance industry is facing new challenges as a result of shifting climate patterns, especially regarding variations in frequency, intensity, and regional occurrence of extreme weather events. Already insurers are recording variations which are quite different from historical experience and data (see Figure 2) – and they expect these changes will increase in future.

Eleven insurers from eight countries and three continents participated in this survey. They

- recorded an increase in weather-related damages (10), and expect these to increase (11)
- reported an accumulation of such risks (8), and expect accumulation risks to increase (9)
- expect risks to change (8), and anticipate these changes will accelerate in future (9)

What are the impacts of these developments and changes on the insurance industry?

- Already, insurers have recorded a demand for additional risk transfer (or risk absorption) capacity (7) and they expect that this demand will continue to grow (10)

- Amendments to insurance products are happening (7) or will become unavoidable (11)
- They are developing new insurance products (9) or plan to do so in future (11)

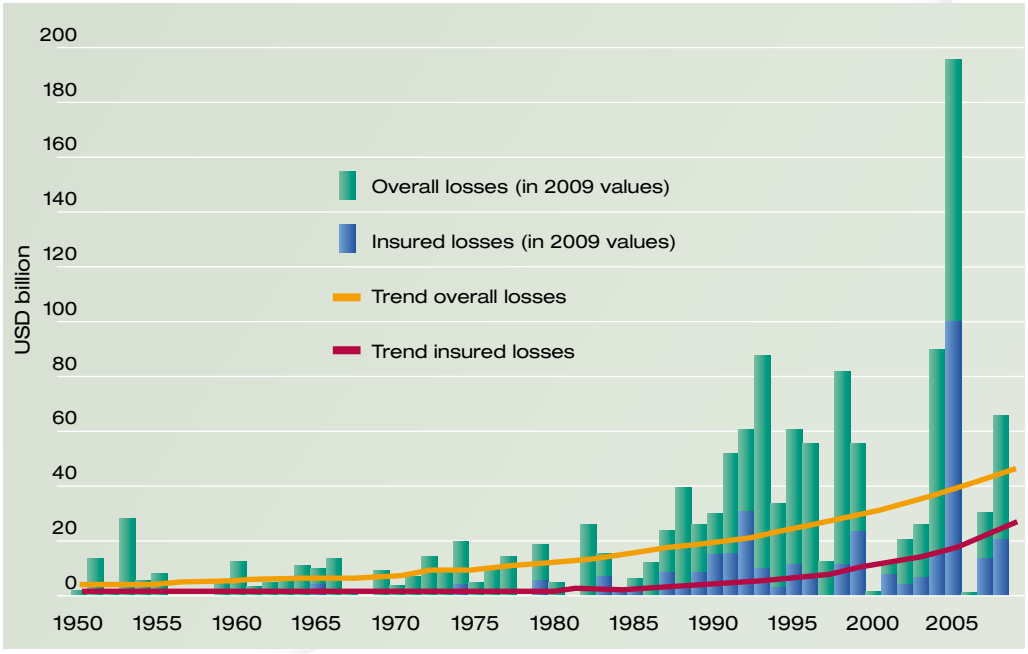
The response of insurers and reinsurers to climate change – modifying insurance products and developing new ones – is still at an early stage, but the survey highlights that the insurance industry is taking a systematic and proactive stance. Therefore, it is likely that business development and strategy in the insurance industry will increasingly be influenced by climate change-related factors.

Changing and increasing weather-related risks are also an opportunity for the insurance sector as they will provide space for new insurance markets and products. The key challenge for insurers and reinsurers in seizing these new opportunities lies in adequately identifying, quantifying, and pricing such risks amidst a dynamic environment.

How an individual insurance company will be affected by climate change depends on its unique circumstances, including factors such as the location, type and structure of its customer base (for a more detailed consideration of these factors, refer to section 4).

Figure 2

Overall losses and insured losses – absolute values and long-term trends of major weather-related catastrophes 1950-2009
Source: Munich Re 2009



3.2 Lending

Lenders provide finance to households, public agencies, individual firms or specific projects. Credit risk assessment and due diligence are core elements of conventional lending. However, the identification and management of new, direct as well as indirect, climate-change-related risks that are often complex as well as uncertain, are not traditional competences found in banks. Indeed, as the survey revealed from comments, often lenders rely upon insurers to accept these risks on their behalf.

Regarding direct climate-change-induced risks, less than half of the 35 lending institutions that participated in this survey feel that "already today" their credit transactions are affected by:

- An accumulation of risks (17 out of 35)
- Changing risk patterns (15 out of 35), and
- Increased credit losses due to direct, physical effects of climate change (12 out of 35)

However, about 80% (28 of 35) feel they will be more important in the future. It must be noted that there is some confusion as to the definition of 'direct risks' with some respondents including carbon-related issues in their comments. This is indicative of the lenders' preoccupation with emissions policy, rather than climate impacts.

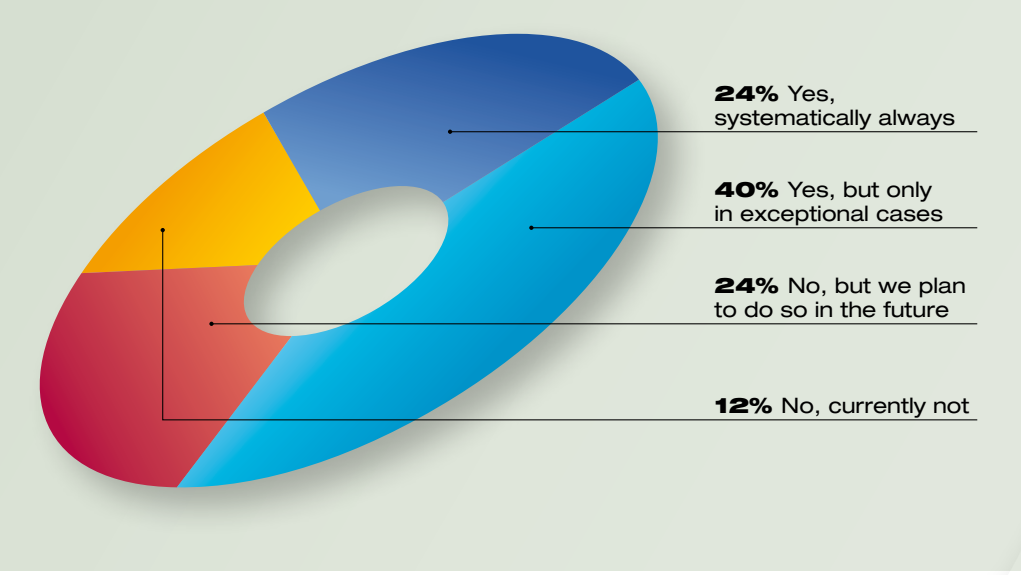
As many as two-thirds of the participants see reputational risks linked with climate change as "relevant today" (25 out of 35). As with direct risks, 80% (28 of 35) expect this kind of risk to gain importance in the future.

Strong agreement (far more than two-thirds) also exists regarding the need to modify and/or extend credit risk assessment practice to address those risks – now, not just in future. A minority considers that the direct and indirect risks of climate change "will not be more relevant in the future" or that they "don't know" (6 or less of the 35 participating institutions for each of the risk categories).

On the issue of integrating climate change into due diligence and risk management procedures, about one-quarter of the participants claim to "systematically always" integrate direct, physical effects of climate change already, more than one-third does, "but only in exceptional cases", and another quarter plans "to do so in the future." A minority (4 out of 34 respondents) answered "currently not" (see Figure 3 below).

Figure 3

Lenders' current practice on treating climate change as a risk factor



In addition to the climate change impacts on credit transactions, lenders were asked about the risk exposure of their own operations (e.g., regarding effects on own buildings, infrastructure, employees etc.). Half of the survey participants feel this is material (17 out of 35). About the same number expect an increasing direct exposure in the future. This question was only addressed to lenders because, in contrast to insurers and asset managers, they usually posses a dense network of branch offices.

These results highlight the awareness among lenders of the potential risks of climate change; direct and indirect, as well as through client exposure and 'own estate'. Many institutions have already started adapting to and mitigating such risks with appropriate strategies or measures, e.g. formulating policies and response plans. Awareness-raising among stakeholders was also identified as an important step. At the same time, it should be noted that even among lenders, understanding is sometimes lacking; a minority of respondents appear to confuse climate change impacts with emissions policy.

3.3 Asset management

Asset managers that buy securities linked with listed companies (usually in the form of shares and bonds, often of multinationals) cannot really analyse the physical risks of the multiple individual locations that a listed company operates in. Therefore, analysts and asset managers in these markets rely on highly aggregated information, or self-reporting by companies.

Asked about the integration of direct effects of climate change when conducting due diligence and stock picking processes in active portfolio management, seven out of the 19 asset managers answered: "Yes, systematically always". A further nine replied "Yes, but only in exceptional cases". One of the three asset managers not considering direct impacts at the moment is planning to do so in future.

There is little difference in the consideration of either direct or indirect risks of climate change among the 19 asset managers, as observed with lenders. They are either already incorporating these indirect risks systematically (8), in exceptional cases (8), or planning to do so in the future (3).

Some of the participating asset managers incorporate the sustainability performance or environmental impact of a firm in their investment process. However, aspects of climate change are usually just a small element within the universe of corporate sustainability performance indicators. Other asset managers have integrated a "Climate Change Risk Scoring" system into their own portfolio management.

Finally, a caveat is necessary on the data from this field, because the respondents are not typical of the universe of asset managers, where generally speaking climate change impacts are ignored. The comments within the responses also indicate that there is some confusion between the direct and indirect effects of climate change, as with lenders.

4 Information needs of financial service providers

This section aims to shed light on:

- The relevance of certain data and information categories for financial institutions in general and the respective level of information / data supply now
- Respondents' estimates of their own knowledge regarding regional climate change-related information in their own country as well as internationally, and the availability of information
- The exposure to the direct impacts of climate change of different sectors / client groups and the corresponding level of information / data supply now

Much of the information was gathered in a subjective, commentary style, which is not suitable for statistical tabulation, but can provide valuable insights into the current state of play in this area.

Today, financial service providers use a variety of different sources to access relevant information about climate change and its impacts. These include in-house research, academic research, consultants, seminars, specialized analysts / third-party service providers, trade networks and international organisations (e.g., IPCC, UNEP, NGOs, etc.), government agencies and the media and news agencies (news, radio, internet, technical publications etc.). Additionally, insurance companies often receive information from insurance associations and reinsurance companies, and the insurance sector has developed its own in-house weather models.

Nevertheless, financial institutions feel that there is a lack of user-oriented information (some mention "too generic to be used for specific decisions" or consider them being of "limited applicability"). There is great inconsistency in the perception of the quality of data; it ranges from "good quality" to "qualities vary greatly" and "need for more information." This inconsistency also applies to the timely availability of the data and the value-for-money factor. Some participants also find it difficult to comment on factors such as quality, timely availability and value-for-money. This lack of unanimity or even opinion might not only reflect the wide range of different information needs about the impact of climate change, but also the range of familiarity with these issues among the respondents.

The majority of the 65 respondents – across the three different business fields – state that it is necessary (27) or at least advantageous (28) if the data provider is familiar with the nature of their (insurance / credit / asset management) business.

4.1 Importance of historical weather data and climate change predictions

More than half of the respondents feel that the level of information today is not sufficient.[2]

Survey participants were asked about the relevance of six different features of weather and climate change information and the adequacy of the current data.

2 It is interesting that a similar view was noted by the UK Government's advisory body, the Committee on Climate Change in its first report on adaptation *How well prepared is the UK for climate change?* published on September 16, 2010. It states on pg. 54 'many businesses do not think they have access to adequate weather data and climate projections, preventing them from assessing risks from current and future climate.'

On historical weather they were asked about:

I. High definition data on observed changes in temperatures, in frequency and intensity of extreme events like storms, heavy rain, hail and lightning, as well as too much water (floods) or too little water (droughts) on the regional level

II. High definition data on changes in the frequency of extreme values of the parameters above

III. Interpretation and evaluation of the validity, credibility, and reliability of available data

On climate change predictions they were asked about:

IV. Concrete statements about expected changes for a certain location and a defined 5-10 year time horizon

V. Concrete statements about expected changes for a certain location and a defined 10-30 year time horizon

VI. Interpretation and evaluation of the quality and confidence of statements and predictions

The significance of information in each of the six information features mentioned above ranges from "average importance" to "greatest importance" for the majority of the financial service providers (from 69% for feature I, up to 82% for feature VI).

Most important are predictions and their interpretation. The "interpretation and evaluation of the quality and confidence of statements and predictions" (information category VI) was considered most significant with 51 out of 62 respondents (82%) deeming it important ("greatest importance," "great importance" or "average importance"). This is closely followed by information category IV "Concrete statements about expected changes for a certain location and a defined 5-10 years time horizon" (49 out of 62 participants) and category V which refers to corresponding information for a 10-30 year horizon (47 out of 62 participants).

Regarding the availability of information, very few of the respondents feel "very well informed" on any of the six dimensions. Only 43% of the respondents feel "sufficiently informed" regarding information on historical weather (features I to III). Just one-third feels "sufficiently informed" on climate change (features IV to VI).

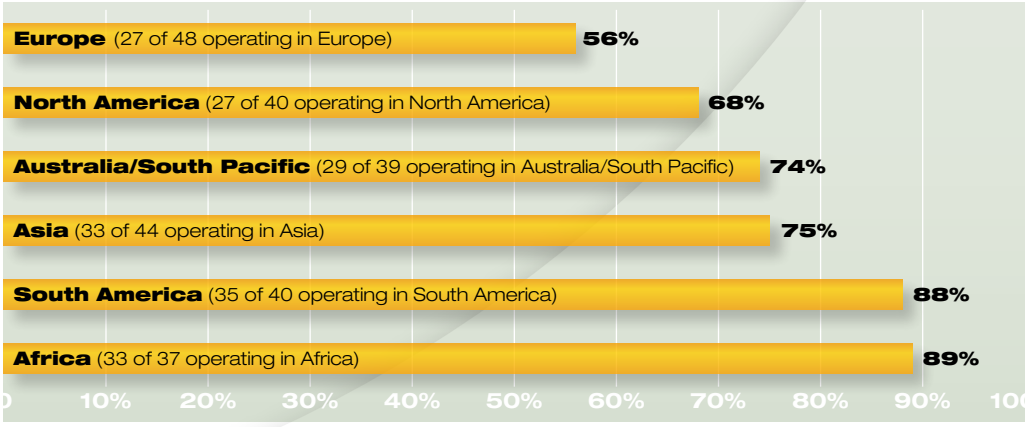
4.2 Regional focus

According to the Intergovernmental Panel on Climate Change (IPCC), climate change is affecting and will affect the various regions and landforms of the Earth in different ways. It is, therefore, crucial that climate information systems are structured spatially down to sub-country level for information such as features I to VI discussed in section 6.1.

Figure 4 below shows the proportion of respondents that are "badly informed and/or would like to be better informed" about climatic risks in six macro-regions:

Figure 4

Proportion of respondents inadequately informed about regional climatic risks



The results show a large information gap for continents with a high number of developing countries, but the demand for better climate information refers to all macro-regions of the world, not only those where information infrastructure is less developed.

Nearly half the respondents (26 out of 55) are "badly informed" and/or "would like to be better informed" about their own country, with about two-thirds wishing for better information concerning sensitive areas (river catchments, coastal areas, mountainous landscapes).

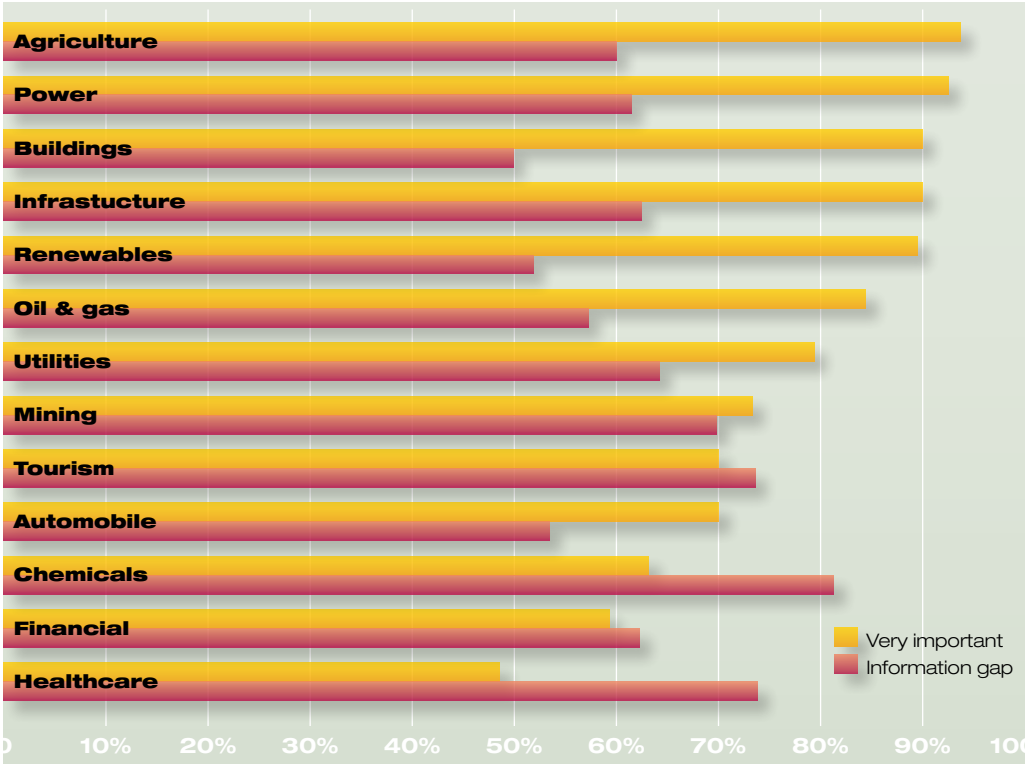
4.3 Sectoral focus

A key question for financial services providers is how exactly different client segments and economic sectors will be affected by climate change. For instance, there are industries where value creation depends highly on geographical factors, or that are especially affected by climate change (e.g. real estate, agriculture and forestry, tourism, etc.). With such information, financial service providers and their clients can assess whether these industries are taking appropriate adaptive measures.

Figure 5 below shows two aspects. Firstly, what proportion of respondents view a sector as being very important (of "great" or "greatest importance") regarding its exposure to the direct effects of climate change. Secondly, how many feel there is a significant lack of information about the sector's exposure to climate change ("poorly informed" and/or "would like to be better informed"). (N.B. not all service providers operate in every sector.)

Figure 5

Respondents' view concerning economic sectors (% of correspondents)



Only one sector (healthcare) falls below 50% in terms of being regarded as very important. Even for those sectors that are considered to be less critical regarding their exposure to the direct effects of climate change, financial service providers feel there is a big information gap. In fact, the gap is almost constant throughout all sectors.

The general demand for specific sector and industry-related climate change information is also confirmed by the high readiness to cooperate with climate service institutions in the development of industry analyses (see section 5).

5 Jointly developing climate information and services

The survey confirmed that climate change impacts are economically highly relevant for the financial sector and the private sector in general. Improved climate change information will enable the financial sector and its clients to better calculate risks and also will help policy makers to better weigh the costs of prediction-based adaptation measures against the costs of inaction from a macroeconomic perspective.

This requires greater climate expertise within the private sector; a process already under way, but needing further development. Also, the evolution of climate information services more scientific research on climate (impact) models and efforts to translate scientific knowledge and existing information into user-orientated information, applied information, and consulting services. In addition, there is a strong need for more extensive co-operation between users and suppliers, public and private actors, scientists, and decision makers. They have different competencies which can be used to build more efficient and effective value chains for climate information services.

The survey revealed:

- Preferences about the format of improved information systems, and the general willingness of financial institutions to collaborate in developing them (5.1)
- First indications regarding the roles of public and private actors (5.2)
- Major knowledge gaps and directions for further action (5.3)

5.1 The format of improved information services

There is a preference for 'applied' research and information, tailored to specific sectors or geographies; financial institutions are primarily not interested in pure climate information, but in a wide range of information services for specific purposes as listed below.

For many of these applications, leading insurers and other financial service providers have developed statistics and models and generated the relevant competencies.

The further improvements of information services can thus build on co-operation between partners with different experience and knowledge: The respondents (62 of 65) expressed a broad and strong interest to collaborate with weather and climate data and information providers, research institutes, and other partners regarding the (further) development of various information services and formats:

- sectoral analyses (54)
- regional scenarios (40)
- project databases (e.g. for renewable energy projects) (39)
- databases on weather/extreme events (26)
- loss and catastrophe models (24)
- loss databases (21)

In addition, insurers are interested in studies about market potential for new and / or modified insurance products.

In terms of the format for information, again survey respondents are interested in a wide range of media, as below (figures are for the 65 institutions that answered this question):

- Periodical reports about the effects of climate change on certain sectors and companies (61)
- Best practice cases on tackling risks and opportunities in the financial services industry (60)
- Periodical reports about the effects of climate change on certain regions (51)
- Further training (seminars / conferences) (33)
- Online services (FAQ etc.) (27)
- Ad hoc statements / Expert opinions (27)
- Periodical reports about the state of the art in climate science (27)

From a market perspective the information services and formats mentioned above are (business) opportunities for applied research institutes, information providers, risk management and adaptation consultants, environmental experts, financial analysts, and other private and public actors.

5.2 The role of public and private actors

The survey confirmed that improved and applied climate information is of high economic value for the financial sector and the private sector in general. Insurers and to some degree lenders and asset managers have already developed many relevant competencies, and so they are in a better position to manage the climate change related risks of their business and their clients. Insofar climate expertise is an emerging factor of competition. For this reason financial service providers, as well as other actors in the private sector certainly have information needs at a very granular level regarding specific business decisions. Some of this information partly can be generated privately – and therefore might be seen as a private good.

Today these information needs and the need for expertise are more obvious for the insurance markets as insurance of such weather- or climate change-related risks is a market of increasing importance and at the same time of increasing uncertainty. Therefore especially leading (re-)insurers have built up respective competencies, developed loss databases for their markets (in some countries as database of their industry associations), conducted regional and sector-specific studies with research institutes and have developed (internal) competence or service centres. Based on their expertise leading (re-)insurers not only improve their own risk management, but also can help their clients within different sectors and regions to assess and minimise their risks, adapt to changing risks, and insure remaining risks.

For most lenders and asset managers worldwide these weather and climate change related risks are emerging risks – already relevant today, but expected to increase in the future. Some of them have already adapted their risk management, have conducted studies and have improved research tools for their asset management.

To what extent insurers, lenders, and asset managers will have to improve their in-house expertise or can utilise external consultants and re-insurers will depend on the type of risks of their clients and investments and the regions they are active in, the effectiveness of adaptation strategies, the quality of public information, and last but not least, the expertise they can buy from external experts.

Leading financial service providers also go beyond their direct business and help build (independent) risk management capacities and work with national governments and international organisations on adaptation strategies.

Nevertheless, reliable climate change information for risk management and adaptation measures within the private sector needs a long “value chain” of research, public climate (impact) models, open debates on and interpretation of quality and confidence of these models and their predictions.

Crucially, also access to standardised (historical) weather information is necessary in order to ensure a common reference framework for the private and the public sector at all levels.

Because of the potentially serious consequences of the economic and social impacts of climate change and the uncertainness of these impacts, the development of such common knowledge is considered a public task. It serves both, the public and private interest – even more today than in the past. Without information transparency, stakeholders, in both private and public sector, will fail to develop economically efficient responses for climate change adaptation and risk management. Prevention of losses through improved climate information systems is also significant for the economy at large, particularly in smaller countries and at a local level, not just for individual firms and households.

Already national and international initiatives are on the way to address these challenges. However, it is time for a broader national and international discussion on the different roles and responsibilities of the public and the private sector actors – along the climate information value chain – to develop and provide appropriate climate knowledge and information. These efforts should include other economic sectors and industries (e.g. energy, agriculture, real estate, utilities, and tourism) which rely on weather and climate-related information and have specific expertise and information needs. Models of such public/private value chains should be developed in stages, with particular attention to conditions of use, stakeholders' interests, and the risks to be addressed.

5.3 Directions for further action

The study clearly showed that there is a need for more precise knowledge about the impact of climate change at the regional level within a time horizon of 10 to 30 years. Access to existing information and/or availability at all, are not sufficient. This indicates a need for research to provide more precise climate predictions. The reliability of climate model predictions at the regional level is still problematical for many important parameters like storms and precipitation. A key question is, what can be achieved realistically and when? It is a matter of real concern to the finance sector and other stakeholders.

Furthermore, there is the ongoing challenge of providing public platforms which are able to explain the remaining key uncertainties and give advice on the reliability of predictions.

Regarding general access to all historical and future weather data, the respondents' answers indicate significant deficiencies. Consequently, standardisation of weather observation data and the provision of general access is an urgent need.

These challenges are considered as basically public tasks and are a relevant part of the agenda of international and national public institutions responsible for climate change research and weather observation.

The efficiency and effectiveness of national and international adaptation strategies builds on the expertise of private actors and the development of specific information value chains and markets. Therefore, it is of private as well as of public interest to observe and understand to what degree private actors will pick up the results of (applied) research and make use of such information. Hence, it is the purpose of this study to raise awareness within the financial sector and beyond about the increasing need for climate change expertise.

The knowledge gaps that have been identified, the discussion about the roles of the private and public sector, and the format of improved climate information services all reflect the responses from three financial service sectors: Insurance, lending and asset management, and further discussions with industry experts. The results are based on the respondents' experience of interaction with a wide range of different client sectors in all five continents. Moreover, the study provides insights which go beyond the boundaries of the financial sector. Nevertheless, certainly the questions of how

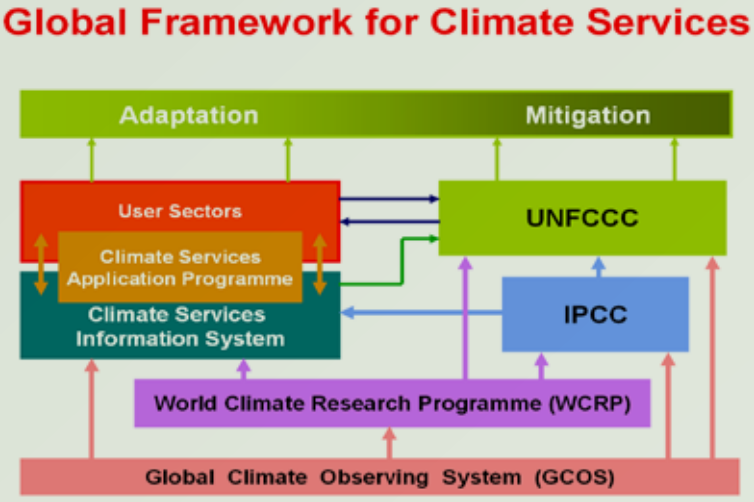
to design, organise, and finance a worldwide information architecture and related services drawing on public and private actors needs much more discussion and step by step development – bottom up from interaction on a regional and national level and top down from a global perspective.

Better climate information for a better future: Developments on the international agenda

The results of this study accords with, and at the same time is a contribution to, the international efforts regarding "Better climate information for a better future". At the World Climate Conference 3 (WCC-3), which took place August 31 - September 4, 2009 in Geneva (Switzerland), the need for global climate information services was particularly emphasised. A central outcome of the conference was the need for a Global Framework for Climate Services including a Global Climate Observing System (see following figure) in order to better link science-based regional climate forecasts and information with the management of climate-related risks and opportunities by practitioners and real-world decision makers: http://www.wmo.int/wcc3/page_en.php.

Figure:

Global Framework for Climate Services
(Source: The Vision for World Climate Conference-3 (WCC-3), Zillman 2009 p. 8)



According to the decision of WCC-3, a High-level taskforce (HLT) for the Global Framework for Climate Services (GFCS) was established to strengthen the production, availability, delivery and application of science-based climate prediction and services. Among others, its scope of work contains the development of the components of the GFCS, the development of options for its governance and the outlining of a plan for its implementation. For more information please see http://www.wmo.int/hlt-gfcs/.

Annex The Climate Change Finance Forum, Germany

CLIMATECHANGE
Finance Forum Germany

The "Climate Change Finance Forum" is a central research and dialogue platform for the effective implementation of the climate policy of the German Federal Government. The Forum serves for the development and the implementation of research initiatives and the systematic cooperation with the Federal Ministry of Education and Research (BMBF). The members of the "Climate Change Finance Forum" are: Altira AG, Axa Versicherung AG, BayernLB, Bundesverband der Deutschen Volksbanken und Raiffeisenbanken e.V., Bundesverband Deutscher Kapitalbeteiligungsgesellschaften e.V., Commerzbank AG, Deutsche Bank AG, Deutsche Postbank AG, Deutscher Sparkassen- und Giroverband e.V., Gesamtverband der Deutschen Versicherungswirtschaft e.V., Munich Re, UniCredit Bank AG (HypoVereinsbank).

CFI Climate Change, Financial Markets and Innovation

The activities of the forum are coordinated by the Sustainable Business Institute (SBI) as part of the project "CFI - Climate Change, Financial Markets and Innovation" funded by the Federal Ministry of Education and Research (BMBF), Germany. For more information about the project see: www.cfi21.org.

Climate change and information needs

A first survey was conducted by SBI with the "Climate Change Finance Forum" in 2009 to determine the specific information needs of financial service providers in Germany on the occasion of the creation of the Climate Service Center (CSC) in Hamburg, Germany (2009). The CSC is funded by the German Federal Ministry of Education and Research (BMBF). Together with a network of partners, it works towards narrowing the gap between existing scientific climate knowledge and data on the one hand and its practical application in industry, economy, policy, and society on the other. The results of this survey are summarised in the report "Jointly Developing Climate Information Systems: Requirements for the Climate Service Center (CSC) from the perspective of the financial sector," which can be downloaded from: http://www.cfi21.org/fileadmin/user_upload/CSC-Bericht_englisch_web.pdf.

Comparing results of the international survey with the national one conducted in Germany, it seems that more of the respondents to the international survey observe and expect risks regarding climate change impacts. One reason for the difference may be that some of the financial service providers operate in regions where climate change impacts are more obvious than in Germany. Another reason may be that in the international survey, only those answered the questionnaire who are already aware of these risks, whereas in the German survey, all major insurers and lenders were involved, no matter what their involvement with climatic risks is.

The development of information systems requires further applied research into the information needs of decision-makers. In the context of the survey among financial service providers in Germany in 2009, and additional personal interviews, the needs for research and development were particularly centred on the following topics:

- Climate impact research to assess the effects of convective extreme weather events (such as hail and heavy rainfall etc.) on the loss potential
- Climate impact research in the fields of agriculture and forestry (multi-peril insurance), the water sector, land use planning and the built environment
- Assessment of extreme events with a 'return period' greater than 1,000 years
- Loss prevention, adaptation (e.g. land use planning and the built environment, investigation of the adaptation needs of drainage systems

So far, two workshops have been organised by the Climate Service Center (CSC) (http://www.climate-service-center.de) and the Sustainable Business Institute (SBI) with support from the German Insurance Association (GDV) (http://www.gdv.de) on the following topics:

January 2010: "Climate impact research to assess the effects of convective extreme weather events on the loss potential in Germany"

Participants from meteorological research institutes, insurance companies, water management companies, as well as from the competence centre on flood hydrology in Cologne, jointly determined the State of the Art and the Needs for Further Research and Development within the Framework of three Working Groups: "Analysis" "Modelling" and "Risk Management."

April 2010: "Regionalised Assessment and Modelling of Revenue Losses in Crop Farming due to Climate Change-induced Increase of Extreme Weather Events**"**

The aims of the workshop included: The identification of further research; networking of potential partners from policymaking, administration, the professions and the insurance sector on pure and applied research; analysis of verified research results; and identification of the needs and possibilities regarding long-term climate information services in public-private partnerships.

Glossary

Accumulation of risks
Very large number of risks that may materialise due to one single event

CDP Carbon Disclosure Project (independent organization gathering and publishing primary corporate climate change information)

Climate change refers to a significant shift in typical weather conditions

Climate Change Finance Forum
Research and dialogue platform for the effective implementation of the climate policy of the German Federal Government

CSC Climate Service Center, Germany (intended to connect existing institutions and networks to provide better climate change related information)

Direct effects (of climate change)
Physical consequences like a shift in temperatures, sea level rise or an increase in intensity, severity, and variability of extreme weather events

GHG emissions Greenhouse Gas Emissions

Indirect effects (of climate change): The political, regulatory, social, and legal or market reactions to and consequences of climate change

IPCC Intergovernmental Panel on Climate Change

Prediction Statement of future conditions, (in this case the climate), dependent on specified assumptions. This differs from a forecast, which is a definite statement of what future conditions will be.

UNEP United Nations Environment Programme (environmental organisation in the United Nations system)

UNEP FI United Nations Environment Programme Finance Initiative (global partnership between UNEP and the financial sector)

UNFCCC United Nations Framework Convention on Climate Change (international system to tackle global warming)

WCC-3 World Climate Conference 3 (organized by the World Meteorological Organization (WMO) aims to advance the development of climate services and to enhance their application to socio-economic planning)

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- AXA (France)
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- Banco Santander (Spain)
- Bank Sarasin (Switzerland)
- Bayerische Landesbank (Germany)
- Caledonia Wealth Management (USA)
- CarbonRe (Switzerland)
- Citigroup (USA)
- Commonwealth Bank of Australia (Australia)
- Deutsche Asset Management (USA) / Deutsche Bank
- Development Bank of Southern Africa (South Africa)
- Development Bank of the Philippines (Philippines)
- DnB NOR (Norway)
- EIC Environmental Investment Network (UK)
- European Investment Bank (Luxembourg)
- Henderson Global Investors (UK)
- HypoVereinsbank / UniCredit Bank AG (Germany)
- Interamerican Hellenic Insurance (Greece)
- Intesa Sanpaolo (Italy)
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Paul Clements-Hunt
Head UNEP Finance Initiative

Paschen von Flotow
Head Sustainable Business Institute (SBI)

UNEP Finance Initiative
Innovative financing for sustainability

UNEP Finance Initiative (UNEP FI)

The United Nations Environment Programme Finance Initiative (UNEP FI) is a strategic public-private partnership between UNEP and the global financial sector. UNEP works with nearly 200 banks, investment firms, insurers and a range of partner organisations, to understand the impacts of environmental, social and governance issues on financial performance and sustainable development. Through a global programme encompassing research, training, events and regional activities, UNEP FI identifies, promotes and realises the adoption of best environmental and sustainability practice at all levels of institutional operations. Through its Climate Change Working Group (CCWG), UNEP FI aims to understand the roles of the finance sector in addressing climate change, as well as to advance the integration of climate change factors – both risks and opportunities – into financial decision- making.

The following financial institutions are members of UNEP FI's CCWG: Access Bank, Allianz, Aviva, Axa, BoA Merril Lynch, Calvert, CarbonRe, Chartis Insurance, Deutsche Bank (Co-Chair), Development Bank of Southern Africa, Ecobank, HSBC (Co-Chair), IL&FS, ING, JBIC, KfW, La Compagnie Benjamin de Rothschild, Munich Re, Pax World, SAM, Societe Generale, Standard Bank, Standard Chartered Bank, Swiss Re, UBS.

SBI SUSTAINABLE BUSINESS INSTITUTE

Sustainable Business Institute (SBI)

The Sustainable Business Institute (SBI), Germany, is a research center founded in 1987 – the year in which "Our Common Future", the Brundtland Report, was published by the United Nations World Commission on Environment and Development. Since then, we have been working on a wide spectrum of issues and conducted studies with several national and international stakeholders including United Nations Conference on Trade and Development (UNCTAD) and United Nations Environment Programme (UNEP) and the German Government. Among these were studies on sustainable and responsible investment, Foreign Direct Investment (FDI), voluntary agreements and environmental management. Furthermore, we are publisher of www.sustainable-investment.org.

We are currently focussed on the role of financial service providers regarding climate change adaptation and mitigation.