Carbon Disclosure Project

CDP 2011 Investor CDP 2011 Information Request

Munich Re

Module: Introduction

Page: Introduction

0.1

Introduction

Please give a general description and introduction to your organization

Risk Management is our strength

Reinsurance, primary insurance and Munich Health – these are the three pillars that form the basis of our integrated business model. We take on risks worldwide of every type and complexity, and our experience, financial strength, efficiency and first-class service make us the first choice for all matters relating to risk. Our strengths include risk management and expertise in the fields of Climate science and Climate Change risks. As such, we offer a range of innovative solutions covering emerging risk areas, including those arising from the market mechanisms set up to help mitigate climate change and are actively developing (re)insurance solutions for adaptation. Furthermore our Competence Centre on Climate Change (GEO/CCC), for example, has decades of experience and is considered a competent partner not only for our clients but also for discussions at a governmental level. Our client relationships are built on trust and cooperation.

1. Reinsurance
   With premium income of around €23.6bn from reinsurance alone, Munich Re is one of the world's leading reinsurers. Especially when clients require solutions for complex risks, Munich Re is a much sought-after business partner. Our roughly 11,400 staff in reinsurance possess unique global and local knowledge. Munich Re attaches great importance to its client service, which regularly receives top ratings.
2. Primary insurance
   Our primary insurance operations are mainly concentrated in the ERGO Insurance Group, one of the largest insurance groups in Europe and Germany. More than 40 million clients in over 30 countries place their trust in the services and security it provides. Munich Re's total premiums in the primary insurance are more than €19bn.
3. Munich Health
   Under the Munich Health brand, Munich Re combines its global healthcare knowledge in primary insurance and reinsurance with a premium income of around €5bn in the financial year 2010. Over 5,000 experts at 26 locations use this wealth of knowledge to offer our international clients innovative solutions and individual consultancy and services. Our unique business model means we can respond quickly and effectively to changes in local markets, thus ensuring the long-term success of our clients.
4. Asset management
   The Group's worldwide assets of €193bn are managed by MEAG. The quality of our asset management proved its worth during the recent financial crisis, which Munich Re weathered with continued financial strength.
   MEAG also manages the assets of clients outside Munich Re and ERGO. In total MEAG manages assets of €207bn.

Munich Re stands for exceptional solution-based expertise, consistent risk management, financial stability and client proximity. In the financial year 2010, the Munich Re Group achieved a profit of €2.43bn on premium income of €45.5bn. It operates in all lines of insurance, with around 47,000 employees throughout the world.

0.2

Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed

Fri 01 Jan 2010 - Fri 31 Dec 2010

0.3
Country list configuration

Please select the countries for which you will be supplying data. This selection will be carried forward to assist you in completing your response

Select country
Germany

0.4
Currency selection

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

EUR(€)

0.5
Please select if you wish to complete a shorter information request

0.6
Modules
As part of the Investor CDP information request, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sectors and companies in the oil and gas industry should complete supplementary questions in addition to the main questionnaire.
If you are in these sectors (according to the Global Industry Classification Standard (GICS)), the corresponding sector modules will be marked as default options to your information request. If you want to query your classification, please email respond@cdproject.net.
If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below. If you wish to view the questions first, please see https://www.cdproject.net/en-US/Programmes/Pages/More-questionnaires.aspx.

Further Information

Regarding Country list configuration: In addition we have operations in regions such as Latin America, Africa/Middle East, Asia/Australasia, Europe (without Germany). Nevertheless we do not report on each country, but we split into Group companies as they frequently operate in more than one country.

Module: Management [Investor]

Page: 1. Governance

1.1
Where is the highest level of direct responsibility for climate change within your company?

Individual/Sub-set of the Board or other committee appointed by the Board

1.1a
Please identify the position of the individual or name of the committee with this responsibility

Individual Board Member, Dr. Nikolaus von Bomhard (CEO Munich Re), responsible for Environmental Management.

Individual Board Member, Dr. Torsten Jeworrek (CEO of Munich Re's reinsurance business), responsible for Climate Change Strategy and Insurance Products

1.2

Do you provide incentives for the management of climate change issues, including the attainment of targets?

Yes

1.2a
Please complete the table

Who is entitled to benefit from these incentives?	The type of incentives	Incentivised performance indicator
Board chairman	Monetary reward	The variable remuneration component is geared to the overall performance of the Group and defined organisational units as well as to the personal performance of the individual member of the Board of Management and takes into account Climate Change related topics, e.g. CO2 neutrality in goals included (Board Chairman is equal CEO, both Nikolaus von Bomhard)
Board/Executive board	Monetary reward	The variable remuneration component is geared to the overall performance of the Group and defined organisational units as well as to the personal performance of the individual member of the Board of Management and takes into account Climate Change related topics, e.g. CO2 neutrality in goals included
Director on board	Monetary reward	The variable remuneration component is geared to the overall performance of the Group and defined organisational units as well as to the personal performance of the individual member of the Board of Management and takes into account Climate Change related topics, e.g. CO2 neutrality in goals included
Chief Executive Officer (CEO)	Monetary reward	The variable remuneration component is geared to the overall performance of the Group and defined organisational units as well as to the personal performance of the individual member of the Board of Management and takes into account Climate Change related topics, e.g. CO2 neutrality in goals included (Board Chairman is equal CEO, both Nikolaus von Bomhard)
Executive officer	Monetary reward	The Head of Group Development has an Emission Reduction Target in his bonus
Business unit managers	Monetary reward	The Climate Change Strategy is anchored through various business units. Their Managers have respective goals: 1. Reinsurance (GEO/CCC; Green Tech Solutions), 2. MEAG, 3. Primary Insurance (ERGO: Carbon neutrality via CO2 Lighthouse Project)
Environment/sustainability managers	Monetary reward	The Environmental Manager has an Emission Reduction Target in his bonus, as well as all other CR Managers are incentivized for CO2 reduction and EMS expansion
Facility managers	Monetary reward	Monetary rewards are received in case of reduction of the energy use and other generated savings

Page: 2. Strategy

2.1
Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities

Integrated into multi-disciplinary company wide risk management processes

2.1a
Please provide further details (see guidance)

i+v)We adopt a multidisciplinary approach to Climate Change (CC) risks, using and combining the pertinent experience/expertise of our scientists, specialist underwriters, lawyers, economists, sociologists and actuaries in a multi-disciplinary company-wide risk management process. An in-depth understanding of risks is the basis of Munich Re's (MR) business and CC is closely linked to our core business as it can have a financial impact on nearly all of our lines of business. There are different types of risk (ranging from regulatory to physical and other risks), which are monitored and evaluated by specialised departments. We differentiate between: 1.Company-related risks: risks in our own operations/business activities – responsibility: Integrated Risk Management (IRM), Internal Services; 2.Business-related risks: a)Risks our customers transfer to us – responsibility: IRM, Corporate

Underwriting (CU), Geo Risks Research/Corporate Climate Centre (GEO/CCC), and b)Risks in our asset management, e.g. risks arising out of investments in companies with high physical exposure to CC/exposure to changes in CO2 legislation – responsibility: Asset Liability Management, MEAG. This approach is supported internally by an Environmental Management System (EMS) and a Group-wide target of carbon neutrality by 2015 with a reduction of 10% in our emissions globally, in turn reducing operational costs. The EMS currently covers 60% of our employees and will be globally expanded by 2015. The units responsible work closely together, sharing their knowledge/expertise internally and externally (e.g. MR CC Symposium, 2010). Criteria for materiality: we see CC as one of the relevant megatrends. Other criteria include: changes occur within a longer period (>5 years); evidence of a trend – “empirically confirmed”, furthermore we closely monitor increase in loss due to weather extremes.
ii+iii+iv+vi)As CC poses serious risk to the insurance industry, MR started to investigate it from as early as 1973: a special research team was set up in 1974. Since 2007, a Group-wide CC Strategy covering all aspects – such as weather-related impact, regulatory impact, litigation risks – has supported our core Corporate Strategy. The Strategy embraces mitigation, adaptation, research, in-house CO2 reduction and political advocacy as main pillars to combat CC. Mitigation and adaptation in particular enable us to indentify business opportunities, e.g. renewable energy cover or weather–index-based crop insurance. We constantly analyse known/emerging risks on an ongoing basis to determine whether there have been changes in their structure/occurrence probability, also focusing on identifying new risks at an early stage to offer solutions for risks, hitherto been uninsurable. We differentiate between 1.Company-related risks, 2.Business risks through our clients/our asset management. 1.Includes physical risks of CC, such as storm, flooding or other extreme weather events, that have a direct impact on us, e.g. on our buildings and on IT/other infrastructure. As regards our ability to continue operations, a detailed “Business Continuity Plan” for all kinds of exceptional circumstances is in place and can be used in emergencies (responsibility: Internal Services). To mitigate CC, in-house green building and energy efficiency plays a vital part in facility management and procurement. Our EMS monitors our CO2-emissions annually, enabling us to develop measures to reduce them (see details above). 2.We are currently seeing a disproportionate rise in insured losses in relation to economic activity, for which we believe CC is partly responsible, in addition to an increase in values in exposed regions. New risk potentials and accumulation hazards are emerging, not only for economies, but also related to physical, regulatory and health risks. We therefore offer products/services to our clients for CC adaptation:*Crop Insurance by System Agro/*Flood insurance in developing countries/*http://www.munichre.com/corporate-responsibility/en/sustainable_products/default.aspx. Mitigation is a risk to our clients and a business opportunity for us: a)Firstly, clients face new emission trading requirements/exposures, and secondly they might be unable to comply with emission limits. Example of an opportunity: a guarantee for emission certificates not produced or increased emission following a loss. b)Our asset risks: change of regulatory framework, not being prepared for emission trading, energy-efficient production: this could result in higher operational costs/lower returns, and the same applies to cover for litigation risks. We also integrate/translate our expertise in CC risks and opportunities into new solutions for our asset management, e.g. a special climate fund. We not only analyse risks, but also the business opportunities of companies we invest in. We have invested €500m in our new RENT (Renewable Energy and New Technologies) programme. Research is also part of the CC Strategy: we not only have dedicated research teams in house, but also work with various universities, e.g. the London School of Economics, enabling us to develop our knowledge and incorporate scientific results into our risk assessment/product development. This is complemented by our political/societal advocacy (we are active in various committees, panels and working groups, e.g. German Insurance Association, UNEP FI, MCII), and our involvement on the political stage – e.g. participating in the “Conference of the Parties” for combating CC. Both risks and opportunities at all levels are constantly (daily) assessed by specialised departments and coordinated by GEO/CCC. Together with CU, experts ensure that CC is incorporated in our risk assessment/management, business/product development and asset management. Research findings are passed on to CU and IRM and used for product design/pricing, accumulation control and natural-catastrophe-model adjustments, and are also factored into our risk capital model calculations and risk strategy. Risk information is collated by IRM and incorporated in the control, management and operational processes at the relevant units. We provide individual support in the quantification and management of CC risks. Core components in the identification of risks: an integrated risk management approach involving underwriters/client managers to ensure direct access to markets and dialogue with clients, i.e. an early-warning system which ensures that regulatory risks are identified and assessed at an early stage; Centre of Competence experts who specialise in risk identification and analysis in specific lines such as D&O and geo risks research. Reporting: 1.Company and business-related risks/opportunities: direct reporting line CEO Reinsurance (Board Member) Dr. Jeworrek –responsible for main departments (IRM, GEO/CCC, all CU departments). Status/results of projects/business development in the context of CC are reported twice a year – relevant decisions also to the Reinsurance Committee.2.Asset management: Dr. Kabisch, CEO of MEAG, direct reporting line to CEO Munich Re, Dr. von Bomhard. 3.Responsible for all EMS-related issues: Corporate Responsibility; with direct reporting line to Group Development and CEO Munich Re. This ensures that approaches/processes for CC risks are integrated and opportunities assessed, enabling us to develop tailor-made solutions for our clients.

2.2

Is climate change integrated into your business strategy?

Yes

2.2a
Please describe the process and outcomes (see guidance)

i+ii)Munich Re (MR) has closely monitored global warming and its repercussions – from as early as 1973. Hence, Climate Change (CC) is deeply integrated into our core business and reflected in our core strategy. In 2007, Munich Re established the Corporate Climate Centre (CCC) within its Geo Risks Research unit. The Centre has overall responsibility for MR's CC Strategy, with a direct reporting line to the CEO of the Reinsurance Group, Dr. Jeworrek, and ongoing consultation with the CEO of MR, Dr. von Bomhard. Twice a year, formal reports are submitted to him, describing the current state of MR's CC Strategy and progress made on current projects. Projects particularly relevant to our business (e.g. climate product/distribution strategy, CC and natural catastrophe risk management) are also referred to the Reinsurance Committee to ensure that they are integrated into our core business strategy. The CCC and Corporate Underwriting, a multidisciplinary team of experts, deal with risk measurement/risk management, business/product development and asset management. The different departments share their knowledge in order to ensure that it is used for product design/pricing, accumulation control and the adjustment of natural catastrophes, making sure that risks are also factored into our risk capital model calculation and risk strategy. They also make sure that all aspects of CC are integrated into the overall strategy. The different pillars of the CC Strategy include: 1.Mitigation, (e.g. insurance coverage for renewable energies; our own investments in RENT – Renewable Energy and New Technologies). 2.Adaptation, offering products and services to mitigate CC ranging from crop insurance to flood insurance in developing countries, SystemAgro – more information at http://www.munichre.com/corporate-responsibility/en/sustainable_products/default.aspx. 3.Research: apart from dedicated research teams in-house, we work with various universities, e.g. the London School of Economics (LSE). A recent example of how this partnership has influenced our strategy is a study conducted through the LSE that shows normalised insured US losses from convective storms (i.e. losses that have been rescaled according to the increase in destructible assets, insurance penetration and inflation between the year of the loss and today) have increased substantially since 1973. There are indications on the side of meteorological observation, that changing climate conditions are among the most likely drivers of change. 4. Advocacy: We are active in various committees, panels and working groups (e.g. German Insurance Association, UNEP FI, Munich Climate Insurance Initiative), also providing expertise to policy makers. Furthermore, we have established corporate Topic Management to coordinate our activities and communications on strategically relevant issues such as CC within MR on a regular and short-term basis. A Group-wide Knowledge Management system has been introduced that provides the basis for MR's knowledge leadership by systematically capturing, developing and disseminating our existing knowledge and creating new knowledge. The constant generation of innovative risk solutions is essential for achievement of our business goals and for generation of long-term value for all our corporate stakeholders. Our own in-house CC mitigation through emission reduction is reflected in our Environmental Management System (EMS): our Group-wide target by 2015 is for the whole MR to be carbon-neutral and to have reduced its global emissions by 10%, this being achieved through more efficient energy use, less business travel, use of "green" power, investment in renewable energy and the off-setting of any remaining carbon emissions through the purchase of carbon credits. Various smaller-scale projects to mitigate emissions are already in place, e.g. a new printer system. A regular trend assessment at company level evaluates the urgency of CC.
iii+iv+vi)The main emphasis of our overall Group Business Strategy is on addressing the many different implications of CC for our Group and widening the current risk measurement focus to include product development and investment segments for innovative approaches. We translate CC risks into business opportunities in order to permit adaptation of societies to CC and to mitigate its impact by means of new insurance and reinsurance products, new asset-management products and risk-management practices that are more closely geared to the impact of CC. This reflects our short-term strategy, with recent findings being integrated into our business model, as well as our long-term strategy, in which our GEO/CCC and their trend research play an important role. A recent example is a new series of studies, based on the results of the IPCC Assessment Report, that deals with the impact of CC on various economic sectors, e.g. energy/transport/infrastructure, different regions of the world, focusing on the socio-economic impact of CC, and analysing changes in the physical sphere with particular reference to impacts now and over the next five years, including projections for 2020–2030 and for 2050 and beyond. Regarding short and long-term strategy: CC mitigation is linked with our in-house emission reduction and is reflected in our EMS (information above). Furthermore, a new department has been set up (Green Tech Solutions) to explore business opportunities in the renewable energy area. An example of how our long-term strategy has been influenced is the EU's pledge to increase the share of renewable energies to 20% and improve energy efficiency by 20% by the year 2020, creating an unprecedented boom in new technology investment in the next few years, and triggering a corresponding demand for insurance cover. Consequently, we decided to invest €2.5bn of our own capital in RENT (Renewable Energy and New Technology). So far, more than €500m has already been invested and a new insurance policy for renewable energy was developed in the course of this project. Furthermore, we also offer performance guarantees for solar and wind energy. Our own commitment is complemented by the strong support of the Dii Initiative.
v)In addition, Munich Re considers the insurance industry as an enabler for the dissemination of new technologies, providing support through the development of specific risk transfer solutions, which improve bankability and are attractive for investors, manufacturers and operators. At the same time, we benefit from growing expertise on CC issues and the widening of our product portfolio, as well as from an improved, refined risk management approach. CC Strategy is an integral part of our core business strategy. Innovative products such as renewable energy covers provide a strategic advantage as we act as first mover in the market and profit from a good reputation as a proactive and responsible player.

2.3
Do you engage with policy makers to encourage further action on mitigation and/or adaptation?

Yes

2.3a
Please explain (i) the engagement process and (ii) actions you are advocating

i)Munich Re (MR) engages with policy makers to encourage further action in mitigation/adaptation at different levels – both at policy level, with governmental and NGO's, associations and research institutes, and at company level. The motivation for MR is to support adaptation and mitigation measures in order to improve Climate Change (CC) resilience. MR is conducting the engagement directly via experts attending political discussion as well as through other initiatives such as the Munich Climate Insurance Initiative (MCII). In 2010, MR established a new business unit within Group Legal (Governmental Affairs) to more effectively observe, assess and exert a constructive influence on the relevant developments, as we have several departments responsible for integrating CC into our business, and to actively communicate on a political stage. In Munich, Berlin and now in Brussels, the department coordinates a process that takes in all of MR, assessing the relevant issues and developing positions valid for the entire Group. CC is one of the major topics, not least at European level. Activities have included a conference/panel discussion organised in Brussels (06/2011). Dr von Bomhard, CEO of MR, and high-ranking representatives discussed the need for new coalitions in order to rise to environmental challenges. Group Legal is in close contact with GEO/CCC, responsible for highlighting the strategic relevance of CC, as well as with Special Financial Risks Department, responsible for liability cover – to coordinate the different opinions and to harmonise communication. Furthermore, our involvement in various organisations (see below) demonstrates our strong commitment.
i+ii)We participate in many activities in the context of our engagement with policy makers, from responding to consultations to participating in policy research and taking an active part in discussions on various panels on scientific, business and political issues. Some examples: a) Experts from our Group: Prof. Dr. Höppe, Head of Geo Risks Research/CCC, is one of three advisors of the Bavarian Government on CC matters. He is: Co-Chair of the Finance Forum Climate Change of the High Tech Strategy of the German Federal Government, Board Member of the Global Climate Forum (GCF), member of the High Level OECD Advisory Board on "Financial Management of Large Scale Catastrophes", member of the working group on Extreme Weather of the European Academies Science Advisory Council (EASAC), member of the Review Panel of the Swiss National Centre of Competence in Research on Climate and member of the Advisory Board of the German Climate Service Centre. Thomas Loster, Chairman of the MR Foundation, is member of the national commission of the UN Decade of Education for Sustainable Development. The MR Foundation is member of the UN-ISDR Private Sector Advisory Group, founder and sponsor of the UN-ISDR/GRF/MRF "Risk Award" and in close contact with public authorities such as INGC and several administrators to improve the flood risk in Mozambique. Both MR and ERGO take part in CC working groups, e.g. with the German Insurance Association (GDV) and UNEP FI to position the industry as a whole vis-à-vis government policy and the general public. In the GDV, we are a member of the CC steering committee and active in several working groups, such as CC and solutions and Carbon Capture Storage. b) Active involvement in research and cooperation: 1) London School of Economics (LSE): since 2008, MR has been a founding corporate partner of the Centre for CC Economics and Policy of the LSE. In addition, we sponsor an independent research programme to evaluate the economics of climate risks and opportunities in the insurance sector in adaptation and mitigation (e.g. quantifying the costs of a climate-related increase in natural catastrophes, emission trading schemes). The findings provide useful information for decision-makers in politics and at company level and are used to sensitize our clients and identify/develop innovative solutions in the finance and insurance industry: e.g. at the 2010 CC symposium, Dr. Jeworrek (Board Member) spoke on the quantification and interpretation of economic and insured natural catastrophe loss trends. 2)MCII: MR initiated MCII in 2005, bringing together representatives from insurance, the World Bank, NGOs and science. Prof. Dr. Höppe and Thomas Loster (details above) are both members of MCII's board. Since 2011 MCII is conducting a pilot project sponsored by the International Climate Protection Initiative (IKI) of the German Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU), aiming to develop insurance solutions in three Caribbean countries to deliver CC adaptation benefits in developing countries through a public private partnership approach. MCII is also one of the leading partners of UNFCCC in the SBI "Loss and Damage" program, decided at COP16 in Cancun. 3)Dii GmbH: MR is one of the initiators of Desertec Industrial Initiative, aiming to establish an energy infrastructure in the EUMENA region that will supply Europe, North Africa and the Middle East with renewable energy from the desert. Objective: to meet around 15% of Europe's electricity needs in the form of carbon-free energy from the desert by 2050. Furthermore, MR is actively involved in industry initiatives such as the Climate Group, UNEP FI (CC Working Group), Geneva Association (Working Group CC+I) and the UN Initiative Caring for Climate.

Further Information

Supporting material for question 2.1.a:
2.1.a. Sustainable Crop Insurance
2.1.a Climate Change Products_presentation at Commerzbank
2.1.a MR Topics Geo 2010 Climate change

2.1.a Climate Liability
2.1.a Carbon Risk Insurance
2.1.a Insured losses_german

Attachments

https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/2.Strategy/2.1.a Insured losses_german.pdf
https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/2.Strategy/2.1a Sustainable Crop Insurance.pdf
https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/2.Strategy/2.1.a Climate Change Products_presentation at Commerzbank.pdf
https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/2.Strategy/2.1.a MR Topics Geo 2010 Climate Change.pdf
https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/2.Strategy/2.1.a Carbon Risk Insurance.pdf
https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/2.Strategy/2.1.a Climate Liability.pdf

Page: 3. Targets and Initiatives

3.1
Did you have an emissions reduction target that was active (ongoing or reached completion) in the reporting year?

Absolute target

3.1a
Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions (metric tonnes CO2e)	Target year	Comment
1	Scope 1+2+3	20%	100%	2006	227049	2012	The Reinsurance Group's headquarter in Munich became carbon neutral in 2009. The whole Munich Re Reinsurance Group will be carbon neutral by 2012.
2	Scope 1+2+3	100%	100%	2009	283096182	2015	The Board of Management of Munich Re approved in March 2011 the new Group-wide target to become carbon neutral by 2015. At least 10% of emissions will be reduced globally, no more than 90% will be offset.

3.1d
Please provide details on your progress against this target made in the reporting year

ID	% complete (time)	% complete (emissions)	Comment
1	100%	100%	Valid for Reinsurance Group headquarter in Munich: The Reinsurance Group's head office became carbon neutral in 2009.
1	50%	30%	Valid for entire Reinsurance Group: Munich Re's entire Reinsurance Group will be carbon-neutral by 2012. Emissions will be reduced and unavoidable emissions offset. Entities are currently in planning and implementation phases.
2	0%	19%	Valid for Primary Insurance ERGO: ERGO contributes to the Group's target to become carbon neutral by 2015. ERGO is currently in planning and implementation phases.
			Valid for Asset Management MEAG: MEAG contributes to the Group's target to become

2	0%	10%	carbon neutral by 2015. MEAG is currently in planning phase.

3.2
Does the use of your goods and/or services directly enable GHG emissions to be avoided by a third party?

3.3
Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and/or implementation phases)

Yes

3.3a
Please provide details in the table below

Activity type	Description of activity	Annual monetary savings (unit currency)	Investment required (unit currency)	Payback period
Energy efficiency: building fabric	Increasing energy efficiency (e.g. modernisation of building facilities and optimization of building-management systems: upgrading ventilation systems; renovations to lighting, lighting controls). A 2.5 megawatt solar power generation system will be installed at the Princeton area headquarters, beginning 2011. These are all voluntary activity. They are ongoing and further implemented, therefore a development stage/expected lifetime cannot be given/quantified. Annual monetary savings: not tracked/ Investment required (unit currency) : Embedded in usual retrofitting or technological upgrade			>3 years
Energy efficiency: building services	Increasing energy efficiency (e.g. optimisation of computer usage, reducing of IT-server landscape by virtualisation, optimisation or modernisation of building facilities, use of electricity from renewable sources, renovations to lighting, lighting controls). These are all voluntary activity. They are ongoing and further implemented, therefore a development stage/expected lifetime cannot be given/quantified. Annual monetary savings: not tracked/ Investment required (unit currency) : Embedded in usual retrofitting or technological upgrade			1-3 years
Energy efficiency: processes	Increasing energy efficiency: e.g. optimisation of computer usage, reducing of IT-server landscape by virtualisation, use of electricity from renewable sources, optimization of building-management systems (e.g. upgrading ventilation systems, renovations to lighting, lighting controls), introduction of IT measures designed to save more energy (e.g. switch to flat panel monitors, shut down PC's after regular business hours, use of Energy Star rated IT and facilities). A 2.5 megawatt solar power generation system will be installed at the Princeton area headquarters, beginning 2011. These are all voluntary activity. They are ongoing and further implemented, therefore a development stage/expected lifetime cannot be given/quantified. Annual monetary savings: not tracked/ Investment required (unit currency) : Embedded in usual retrofitting or technological upgrade			1-3 years
Low carbon energy purchase	Purchasing green electricity rather than a conventional energy mix. This is a voluntary activity and as ongoing and further implemented, a development stage/expected lifetime cannot be given/quantified. Annual monetary savings: no savings/ Investment required (unit currency) : low compared to total energy costs			>3 years
	Communication of new Carbon Strategy to relevant managers and set up of regular communication plan (intranet/internet) to employees (including EMS). Furthermore implementation of front end scanning			

Behavioral change	and Standard double side printing reduced paper consumption These are all voluntary activity. They are ongoing and further implemented, therefore a development stage/expected lifetime cannot be given/quantified. Annual monetary savings: no estimation/ Investment required (unit currency) : no additional costs			1-3 years
Other	Offsetting of unavoidable emissions. This is a voluntary activity and as ongoing and further implemented, a development stage/expected lifetime cannot be given/quantified. Annual monetary savings: no savings/ Investment required (unit currency) : a specific amount (not publically reported)			>3 years

3.3b

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	ISO14001 certified Environmental Management Systems.

Page: 4. Communication

4.1

Have you published information about your company's response to climate change and GHG emissions performance for this reporting year in other places than in your CDP response? If so, please attach the publication(s)

Publication	Page/Section Reference	Identify the attachment
In annual reports (complete)	page 134, 114 and magazine 13 (and also on 64, 109)	1. Annual Report 2010
In voluntary communications (complete)	page 5ff, 72ff	2. MR CR Report
In voluntary communications (complete)	page 33-41	3. MR Topics Geo 2010 Climate Change
In voluntary communications (complete)	page 21-25	4. MR Topics 1-10_Flash Floods-A much underestimated risk
In voluntary communications (complete)	page 14-16	5. 2010_Climate Liability_en
In voluntary communications (complete)	page 4-8	6. MR Response to climate change _sustainable_crop_insurance
In voluntary communications (complete)	page 1-24	7. 2010_LSE_Industry Brief_Aiming-for-2degree-goal
In voluntary communications (complete)	page 1-24	8. 2010_LSE_Industry Brief_Economic-trends-insured-losses[1
In voluntary communications (complete)	1-14	9. MR NatCatService loss database
In voluntary communications (complete)	all	10. Group focus topic climate change
In voluntary communications (complete)	all	11. Press dossiers Climate Summit in Cancun
In voluntary		12. Munich Re climate summit at Shanghai Expo highlights

communications (complete)	all	risks and opportunities of climate change
In voluntary communications (complete)	all	13. NATHAN Risk Suite
In voluntary communications (complete)	all	14. Download Centre for statistics on natural catastrophes

Attachments

https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/4.Communication/7. 2010_LSE_Industry Brief_Aiming-for-2degree-goal[1].pdf
https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/4.Communication/6. MR Response to climate change _sustainable_crop_insurance.pdf
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https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/4.Communication/2. MR Corporate Responsibility Report 2009.pdf
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https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/4.Communication/3. MR Topics Geo 2010 Climate Change.pdf
https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/4.Communication/12. Munich Re climate summit at Shanghai Expo highlights risks and opportunities of climate change.pdf
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Module: Risks and Opportunities [Investor]

Page: 5. Climate Change Risks

5.1
Have you identified any climate change risks (current or future) that have potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Risks driven by changes in regulation
Risks driven by changes in physical climate parameters
Risks driven by changes in other climate-related developments

5.1a
Please describe your risks driven by changes in regulation

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact

51a.a	International agreements	Climate Change is also the subject of lively debate on the international stage and international agreements have been concluded: in 1992, the international community of states agreed in the UN Framework Convention on Climate Change on the target of preventing further dangerous anthropogenic interference in the climate system. All conventions and protocols also affect the industry, and hence Munich Re as a financial service provider and investor. Consequently, political advocacy plays an important part in our Climate Change Strategy, enabling our risk experience to be used to achieve appropriate political solutions, as a clear regulatory framework is important for long-term investors.	Inability to do business	1-5 years	Direct	More likely than not	Low-medium
51a.b	Carbon taxes	As carbon taxes are steadily evolving, the risk for investors is that countries set carbon taxes.	Increased operational cost	1-5 years	Direct	Very likely	Medium
51a.c	Cap and trade schemes	Carbon trading is a market-based tool to limit greenhouse gas, but it is still in an early phase. However, though this does not affect Munich Re as the financial industry is not covered by this scheme, we are closely following developments as a potential business solution could arise. In addition, we purchase carbon credits in the voluntary market to become carbon neutral, the costs depending on the market: e.g. insurance cover could be provided for failed emission certificates.	Increased operational cost	1-5 years	Direct	Very likely	Medium
51a.d	Emission reporting obligations	Munich Re has a long history in research into Climate Change as well as in sharing knowledge. Whilst we are therefore already reporting and sharing our knowledge voluntarily, emission reporting obligations could nevertheless oblige us to also consider other aspects that we are currently not	Other: Impact on structural organization to complete emission reporting organizations	1-5 years	Direct	More likely than not	Medium

		focusing on.					
51a.e	Fuel/energy taxes and regulations	As an insurance company, Munich Re would not be affected in the same way as a manufacturer would be by taxes and regulations for fuel or energy. Nevertheless, energy taxes and regulations have a direct impact on operating costs.	Increased operational cost	Unknown	Indirect (Supply chain)	More likely than not	Low-medium
51a.f	Uncertainty surrounding new regulation	As already described in the “International agreements” Climate Change is also a very important topic on the political stage. With the current developments in the nuclear industry triggered by Fukushima, regulation can change rapidly, e.g. in favour of renewable energy. Systemic risks resulting in decreased energy or other resource prices are also likely. Thus we are steadily enhancing our competence in this field.	Other: New regulations would require adaption of products	Unknown	Direct	Unknown	Unknown
51a.g	Lack of regulation	Uncertainty regarding new regulations is not the only risk; a lack of regulation is also a long-term risk for investors.	Other: Lack of regulations increases uncertainty of outcome of products	Unknown	Direct	Unknown	Unknown

5.1b

Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; and (iii) the costs associated with these actions

An in-depth understanding of risks is the basis of Munich Re’s (MR) business, regulatory risks are also in the focus: specialised departments are monitoring and evaluating them. We differentiate between: 1.Company-related risks, in our own operations/business activities, e.g. reporting requirements/emission trading regulations – responsibility: Corporate Responsibility, Integrated Risk Management (IRM), Asset Liability Management (ALM), MEAG and Group Legal. Reputational risks are monitored by the Reputational Risk Committee. 2. Business-related risks: a)Risks transferred from our customers to us/arising out of climate liability – responsibility: IRM, Corporate Underwriting (CU), GEO/CCC. b)Risks in our asset management; e.g. risks on investments in companies with exposure to changes in CO2 legislation – responsibility: ALM, MEAG.
i) We analyse known and emerging risks on an ongoing basis to determine whether there have been changes in their structure/occurrence probability and their possible financial implications, as CC can have a financial impact on nearly all lines of business. Example: Storm Xynthia 2010: overall losses €4.5bn/insured losses €2.25bn. We differentiate between 1.Company-related risks, 2.Business risks through our clients/asset management: a)These risks occur in the regulatory area, related to new reporting regulations and emission trading stemming schemes. b)Risks are mainly related to our clients/asset management, affecting all of our business lines. For clients, we face the risk of litigation cover: we could potentially be affected by climate liability losses resulting, e.g. from breaches of reporting requirements/failure to exercise professional standards of care/failure to submit emission certificates (hence this is covered by one of our products: “Carbon Guarantee”). We consider whether climate litigation potential should be factored into the pricing of certain classes of business. Moreover, state intervention in natural catastrophe covers could become a significant regulatory risk; e.g. hurricane insurance in Florida, USA (regulatory intervention relating to insurance pricing and reinsurance offers). As regards asset management, we face the potential financial implications of the risk to our investment portfolio, e.g. relating to renewable energy, which is very likely for the whole investment period (>10years). This could result from a retroactive change of political incentive schemes, triggering a reduction in the expected rate of return. If the risk/return profile following changes were no longer competitive compared to other asset classes, we would have to reduce our target investment volume. We also run a risk when investing in companies that do not factor in changes in CO2

regulations in countries where they are setting up new factories: e.g., our asset values could be directly affected by regulatory intervention. MR set up an investment programme in 2008 to invest substantially in the area of Renewable Energy and New Technologies (RENT). In 2010, the Board of Directors decided to invest €2.5bn over the next few years. The projected return on investments ultimately depends on legislation and the financial incentives, e.g. feed-in tariffs offered by individual countries. In the event of changes in legislation, such as the retroactive changes in feed-in tariff conditions in Spain 2010, the return might no longer be adequate. Long-term investors such as MR need reliability to plan.
ii) Since 2007, a Group-wide CC Strategy covering all aspects of CC – e.g. weather-related impact, regulatory impact, litigation and health risks, etc. – has supported our core Corporate Strategy. The Strategy is based on five pillars: mitigation, adaptation, research, in-house CO2 reduction and advocacy. In general, we have set standard procedures for identifying CC risks in all areas: the findings of GEO/CCC are passed on to CU and IRM, and used for product design/pricing, accumulation control and natural-catastrophe-model adjustments. They are also factored into MR's risk capital model calculations and risk strategy. Core components in the identification of these risks are: an integrated risk management approach involving underwriters/client managers to ensure direct access to markets and dialogue with clients, i.e. an early-warning system enabling regulatory risks to be identified and assessed at an early stage. Experts specialise in risk identification and analysis in specific lines such as D&O and geo risks research. Risk information is collated by IRM and incorporated in the control, management and operational processes of the units concerned. In Asset Management, we monitor current developments and endeavour to take them into account as early as possible, even if not legally obliged to do so. To limit the risk, we diversify the portfolio and invest in different regimes and different technologies, which lowers the financial implications. MR was one of the first reinsurers to identify potential regulatory CC risks worldwide, analyzing them with relevant experts; e.g. invitation of experts to exchange on CC and implication on liability risks. The publication "Liability for climate change", documents the discussion, underlining our commitment to monitor and to respond to such developments, offering clients our appropriate support. Furthermore Prof. Dr. Ina Ebert, our expert and member of the Geneva Association's "Climate Risk and its Economic Impact on Insurance" working group, monitors court rulings, regulation and related coverage issues (e.g. the extent of applicability of the pollution exclusion), especially in the USA. All of these activities enable our risk management processes to respond at all stages. Insuring the consequences of CC is part of our daily business; e.g. if a loss occurs due to a breach of reporting requirements/failure to comply with professional standards of care, we are alerted and need to consider whether climate litigation should be included in pricing considerations for certain classes of business. MR is involved in encouraging further action in mitigation and adaptation at many levels – at policy level, with governmental and NGOs, associations/research institutes, and at company level. Our motivation: to support adaptation and mitigation measures to improve CC resilience and reduce CO2 emissions. In 2010, MR established a new business unit within Group Legal to more effectively observe and assess, and to hold constructive discussions, as CC is one of the major topics, not least at European level. Activities have included a conference/panel discussion organised in Brussels (06/2011). Dr. von Bomhard, CEO of MR, and high-ranking representatives discussed the need for new coalitions in order to rise to environmental challenges. Group Legal is in close contact with GEO/CCC, responsible for highlighting the strategic relevance of CC, and with Special Financial Risk Department, responsible for liability cover –to coordinate the different opinions and to harmonise communication.
(iii) Quantification is not possible at this point in time, since there are no precedents for litigation and any data provided would be unreliable. Asset Management: possible returns on investment could be lowered by changes in regulation and have to be assessed on a case-by-case basis. Carbon guarantee coverage: costs associated with submitting emission certificates. Nevertheless, costs are priced through our products.

5.1c

Please describe your risks that are driven by change in physical climate parameters

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
51c.a	Change in mean (average) temperature	The mean (average) temperature has already risen (1.7degree Celsius warmer than 1900, in general days and nights are also warmer), and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our	Increased operational cost	>10 years	Direct	Virtually certain	Medium-high

		business, as we offer various products to cover our clients' climate-related risks.					
51c.b	Change in temperature extremes	Global warming is already having an effect, resulting in changes in extreme temperatures and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.	Increased operational cost	1-5 years	Direct	Very likely	High
51c.c	Change in mean (average) precipitation	Global warming is already having an effect, resulting in changes in mean (average) precipitation and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business as we offer various products in this area.	Increased operational cost	1-5 years	Direct	Virtually certain	Medium-high
51c.d	Change in precipitation pattern	Global warming is already having an effect, resulting in changes in precipitation patterns and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.	Increased operational cost	1-5 years	Direct	Very likely	High
51c.e	Change in precipitation extremes and	Global warming is already having an effect, resulting in changes in precipitations extremes and draughts, and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As	Increased operational cost	1-5 years	Direct	Very likely	Medium-high

	droughts	Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.					
51c.f	Snow and ice	Global warming is already having an effect, resulting in changes in the incidence of snow and ice, and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.	Increased operational cost	6-10 years	Direct	Very likely	Medium-high
51c.g	Sea level rise	Global warming is already having an effect and may result in a rise in the sea level. There is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.	Increased operational cost	6-10 years	Direct	Very likely	Medium-high
51c.h	Tropical cyclones	Global warming is already having an effect, resulting in tropical cyclones (hurricanes and typhoons) and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally. As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area. One example here is the cover for Hurricane Katrina in 2005.	Increased operational cost	1-5 years	Direct	Very likely	High
	Induced changes in	Global warming is already having an effect (e.g. water shortage or extreme flooding) and there is no doubt that this trend will continue – what we don't know is to what extent	Increased				Medium-

51c.i	natural resources	and what effects this will have. As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.	operational cost	6-10 years	Direct	Very likely	high
51c.j	Uncertainty of physical risks	Global warming is already having an effect and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have. As Munich Re's core business is to cover risks, including those associated with climate change such as water scarcity or flooding, this has a direct impact on our business, as we offer various products in this area.	Increased operational cost	1-5 years	Direct	More likely than not	Medium-high
51c.k	Other physical climate drivers	Global warming is already having an effect and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have. As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.	Increased operational cost	1-5 years		More likely than not	Medium-high

5.1d

Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; and (iii) the costs associated with these actions

An in-depth understanding of risks is the basis of Munich Re's (MR) business. We are focusing on risks arising out of changes in physical climate parameters and have therefore specialised departments monitoring and evaluating these risks. In general, we differentiate between: 1. Company-related risks, including the physical risks of Climate Change (CC) such as storm, flooding, drought and other extreme weather events that we face in our own operations or our business activities; actual cases include risks related to our own buildings and IT and other infrastructure respectively. A detailed "Business Continuity Plan" for all kinds of exceptional circumstances is in place and can be used in emergencies –responsible: Internal Services. To mitigate our own Carbon Footprint and thus affect CC, green building and energy efficiency plays a vital role in our Facility Management and Procurement Department. Our Environmental Management System permits constant monitoring of our CO2 emissions and is used to devise reduction measures (current example: Group-wide strategy to become carbon-neutral by 2015). 2.Business-related risks, a)Risks our customers transfer to us (these are the same physical risks we also face as a company and we have to manage for our clients) –responsible: Integrated Risk Management, Corporate Underwriting, Geo Risks Research and Corporate Climate Centre. b)Risks in our asset management, meaning risks of investments in companies particularly exposed to CC (e.g. the construction industry, tourism).
(i) There are many indications that CC is partly responsible for rise in severe weather-related natural disasters such as storms, floods, temperature extremes. Changing weather patterns translate into shifting probability distributions of weather related losses: this has direct impact on our core business. According to data gathered by MR, since 1950 the number of major weather-related natural catastrophes has tripled: Aggregate economic losses caused by weather-related natural catastrophes since 1980 have now reached US$1,600bn. The average annual increase in nominal insured losses is in the order of 11%. The rise is mainly due to results of socio-economic factors (e.g. wealth accumulation, increasing insurance penetration), but also driven by CC. We see the potential impact of the physical risk today and in more than 10 years. However, it is very difficult to assess the impact CC. It depends to an extent on the individual situation and the effects of factors that cannot be established in isolation – e.g. what percentage of the financial implications of a natural catastrophe relates solely to CC? A collaborative project with the London

School of Economics (LSE) showed that normalised insured US losses from convective storms, i.e. losses that have been rescaled according to the increase in destroyable assets, insurance penetration and inflation between the year of the damage and today, have increased substantially since 1973. There are indications on the side of meteorological observation, that changing climate conditions are among the most likely drivers of change. However assuming CC risks is part and parcel of MR's core business and, with adequate risk management, writing such risks is more an opportunity than a threat to an insurance company.
(ii) Geo risks and CC factors that influence corresponding financial risks are at the centre of our research and the findings are integrated into our core business and pricing models. We differentiate between company-related risks and business-related risks and have specialised departments and tailored processes in place to monitor and track physical risks. As regards our company-related risks: to ensure the safety of our staff and to minimise the impact of business interruption events, business–driven risk management and a business continuity plan are in place. The business continuity management guidelines have been implemented Group-wide and incorporate issues such as emergencies, crises and recovery management. The local business-continuity plans are tailored to the exposure of individual locations and include events such as floods and storms. In the current case of Japan, our subsidiary in Tokyo was immediately relocated, thus ensuring that it continued to operate. As regards our business-related risks, in our client relationships the short-term effects of CC are primarily taken into account in property business, where weather-related factors play an important role, and CC risks are also reflected in the business-continuity policies MR offers to clients. Life, health and casualty business can also be subject to the long-term effects. To obtain a clear view of the situation, a dedicated Geo Risks Research task force and the Corporate Climate Centre work together to coordinate the relevant activities. In order to successfully perform our role as a global risk carrier, we need to take account of changes in risk in our underwriting. The dedicated team of geo risks researchers ensures that we constantly enhance our knowledge of the direct consequences of CC and use it to deliver tailored insurance solutions as well as to integrate the findings into our pricing models. Since 2008, MR has been working with the London School of Economics and Political Science and is a founding corporate partner of the Centre of Climate Change Economic and Policy, with the Grantham Research Institute, which has the objective of researching into the medium- and long-term effects of CC for the insurance industry and the economy (i.e. the business-strategy perspective of CC). The research project has been set up under the independent MR programme “Evaluating the economics of climate risks and opportunities for the insurance industry” and funded for five years. Furthermore, to show and share the knowledge of scientific data and findings with its clients, MR has produced an interactive Globe of Hazards DVD and an online application “NATHAN” containing scientific and insurance-related information relating to the natural catastrophes and CC. In April 2011, MR pooled its services for identifying and assessing complex natural hazard risks in the NATHAN Risk Suite, available either in print, DVD or online format, with individual-risk or portfolio analysis and differing levels of integration in the assessment process. In our asset management we ensure that 80% of our AUM are rated sustainable. This also includes taking CC into account as a risk. All in all, in the medium term, CC is a business opportunity, and not a threat to a global reinsurer like MR. Increasing natural hazards may well result in greater demand for (re)insurance. However, unless preventive measures are taken, CC could restrict our business in the long term. Whilst premiums commensurate with the risk are essential in insurance, demand for insurance begins to decline when prices exceed a certain threshold.
(iii) Quantification is not possible at this point in time and any data provided would be unreliable. To address the physical effects of CC on our clients we are developing insurance covers or other risk solutions. This is part of our usual business activities, and hence does not impose additional costs. Research such as our cooperation with the LSE and methodological tools such as Nathan incur costs.

5.1e

Please describe your risks that are driven by changes in other climate-related developments

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
51e.a	Induced changes in human and cultural environment	Physical climate parameters interact and induce changes in natural resources such as water scarcity, crops, forestry and insect vectors, for example causing changes in growing seasons, and species distributions (biodiversity). This is a possible threat to our customers.	Increased operational cost	1-5 years		Very unlikely	Low
	Uncertainty	Uncertainty in market signals may result in changing customer	Reduced				

51e.b	in market signals	behaviour. Furthermore, the technological competition leads to technical obsolescence.	demand for goods/services	6-10 years		Very unlikely	Low

5.1f

Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; (iii) the costs associated with these actions

The potential impact of Climate Change (CC) on our business is multifaceted. Many of Munich Re's (MR) units and legal entities are deeply involved in emerging risks and risk complexes. The short-term effects of CC are taken into account above all in property business, where weather-related factors (such as increased flood losses) play an important role. CC risks are also reflected in our business-continuity policies. Life, health and casualty business may likewise be prone to the long-term effects. MR is primarily affected through its clients. Emerging risks involve uncertainty on two counts: their future development and the sectors they will affect. Such risks have to be constantly monitored since, at any point in time, they could have serious, direct consequences for MR. Furthermore, the uncertain regulatory framework for investments also constitutes a potential risk.
(i) Though we monitor and track emerging risks and risk complexes constantly, at this point it is not possible to say what financial implications these risks could have. At present, we do not see any potential implications (with the exception of physical risks). We track and monitor through our departments Geo Risks Research/Corporate Climate Centre and Integrated Risk Management, as capital losses could arise. The risks include:*Agriculture and Forestry (increase in crop losses, greater water shortage, different cultivation methods/*Health care (pandemics, precautions)/*Energy (increased demand for renewable energy to compensate for nuclear power), traffic (increase in infrastructure damage)/*building sector (Damages at real estate).
(ii) At MR, dedicated early-recognition processes and research teams are in place to register change signals emitted by society, the environment (including CC), the economic sector, and the political and legal systems. However, predicting changes in occurrence frequencies and intensities, assessing the regional aspects of extreme atmospheric events and predicting what emerging-risk developments can be expected as a result of CC are still subject to considerable uncertainty. In this respect, CC itself was identified as an emerging risk some years ago.
The relevant activities are dealt with primarily by a dedicated Geo Risks Research task force and the Corporate Climate Centre. A recent example of the extensive research, focusing also on emerging risks in other climate-related development, is a series, based on the result of the IPCC report and actual studies, dealing with the impacts of CC on various economic sectors in different regions of the world. The series of four studies has been written primarily for client managers and key clients and covers the markets of Europe, Latin America, Africa/the Middle East and Asia. The four studies outline CC impacts in the following sectors:
• Energy
• Transport
• Infrastructure, industry and settlement
• Agriculture and forestry
• Water, coastal, marine systems and fisheries
• Tourism
• Human health
At business-unit level, dedicated early-recognition processes and research teams are in place to register change signals emitted by society, the environment, the economic sector, and the political and legal systems. At ERGO, for example, the emerging-risk process is integrated into ERGO's regular risk assessments, whilst MR America's Emerging Exposures unit continually receives new information on emerging risks. The reference materials are collated in the course of a systematic search and evaluation of specific observation fields by the Emerging Exposures unit and the relevant research department, and on the basis of client feedback. This information is regularly summarised in our Emerging Exposure E-news
(iii) Quantification is not possible at this point in time and any data provided would be unreliable.

Further Information

Further information on:
- Climate Liability: 2.1.a Climate Liability
- Changes in physical parameters: Presentation of GEO/CCC

Attachments

https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/5.ClimateChangeRisks/2.1.a Climate Liability.pdf
https://www.cdproject.net/Sites/2011/11/12611/Investor CDP 2011/Shared Documents/Attachments/InvestorCDP2011/5.ClimateChangeRisks/Changes in physical parameters_german.pdf

Page: 6. Climate Change Opportunities

6.1

Have you identified any climate change opportunities (current or future) that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Opportunities driven by changes in regulation
Opportunities driven by changes in physical climate parameters
Opportunities driven by changes in other climate-related developments

6.1a

Please describe your opportunities that are driven by changes in regulation

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact
61a.a	International agreements	Climate Change is also the subject of lively debate on the international stage and international agreements have been concluded: in 1992, the international community of states agreed in the UN Framework Convention on Climate Change on the target of preventing further dangerous anthropogenic interference in the climate system. All conventions and protocols also affect the industry, and hence Munich Re as a financial service provider and investor. Consequently, political advocacy plays an important part in our Climate	New products/business services	1-5 years	Direct	More likely than not	Low-medium

		Change Strategy, enabling our risk experience to be used to achieve appropriate political solutions, as a clear regulatory framework is important for long-term investors.					
61a.b	Cap and trade schemes	Carbon trading is a market-based tool to limit greenhouse gas, but it is still in an early phase. However, though this does not affect Munich Re as the financial industry is not comparable with manufacturers, we are monitoring developments closely as cap and trade schemes could be a part of our carbon neutrality strategy or for potential new types of insurance covers.	New products/business services	1-5 years	Direct	Very likely	Medium
		Munich Re has a long history in research into Climate Change and in sharing knowledge. Whilst we are therefore already reporting and sharing our knowledge voluntarily,					

61a.c	Emission reporting obligations	emission reporting obligations could nevertheless oblige us to also consider other aspects that we are currently not focusing on. Consequently, political advocacy plays an important part in our Climate Change Strategy.	Wider social benefits	1-5 years	Direct	More likely than not	Medium

6.1b

Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity; (iii) the costs associated with these actions

We adopt a multidisciplinary approach to Climate Change (CC) opportunities, using and combining the pertinent experience/expertise of our scientists, specialist underwriters, lawyers, economists, sociologists and actuaries in a multi-disciplinary company-wide risk management process. An in-depth understanding of risks is the basis of Munich Re's (MR) business, and therefore CC is closely linked to our core business as the opportunities that arise demand a profound knowledge of the risk.

(i) We analyse known and emerging opportunities on an ongoing basis to determine whether there have been any changes in their structure, occurrence probability or possible financial implication. In order to provide tailor-made solutions for our customers and to make profit out of the opportunity, we concentrate on the following aspects: 1.Provision for risk trough, heightening our clients' awareness and offering them consultancy services to achieve their loyalty, e.g. various customer platform are offered ("MR Touch Naturkatastrophen"). Customer loyalty is extremely important, as new regulations enhance renewable energy and other sectors where opportunities arise. 2. New products:*New technologies/renewable energy: our Green Tech Solutions Team was specifically set up to further explore possibilities, as the range of solutions is significantly shaped by regulatory requirements: a)PV industry: lack-of-sun cover for solar parks/performance warranty for concentrated solar power. b)Wind industry: performance warranty for wind turbines (serial loss cover)/lack-of-wind for wind farms/cover for offshore risks. c)Other opportunities deriving from new regulations:*Carbon Risk Insurance for sellers/buyers of carbon credits./*Clean Development Mechanism projects, for which we as a global reinsurer offer tailored solutions, have been launched in a number of fast-growing Asian economies, e.g. China and India, and in Latin America. There are potential opportunities for products covering new technologies and investment risks associated with CDM/Joint Implementation projects (emission certificates). Additional insurance and reinsurance scope in countries which have signed the Kyoto Protocol will provide potential for consultancy services supplying advice on loss prevention and compliance with energy regulations (relating to carbon certificates), where infringement may result in fines. Depending on the development of CC-related litigation MR may see an opportunity to develop new risk transfer solutions such as special D&O/PI coverage or special defence costs coverage for climate related litigation. Another example is green building, e.g. the HSB Green Equipment Breakdown Coverage offers insureds the opportunity to make energy savings upgrades to their equipment and property after a covered loss/covers business interruption and extra expense incurred as a result of the longer lead times for materials and labour/covers recycling of damaged property or equipment/addresses the changing exposures presented by today's "green technologies". We also see opportunities internally and are therefore further increasing investments in Renewable Energy and New Technology (RENT project investigating the potential for strategic investments in this sector, e.g. in energy efficiency and storage measures – in 2010, the Board of Directors decided to invest €2.5bn in the next few years). We also see increased demand for related products: long-term new investment opportunities in connection with carbon-reduction regulations and in other areas. We assume a mid-three digit millions premium volume due to renewable energy.

(ii)We translate the opportunities provided by regulatory requirements into innovative insurance products. To do this, all of the departments concerned (GEO/CCC, Integrated Risk Management, Corporate Underwriting, MEAG, Business Units) work closely together. Firstly, we make risks manageable through*Adaptation of our geo science risk model to different hazards./*Different pricing models relating to local and objective hazard characteristics./*Enhanced control of accumulation of risk (transparent liability)./*Optimisation of claims management. We also have specialised departments. In general we work with clients on a

project basis, first performing a detailed analysis of their risk profile and then, on the basis of that analysis, calculating their cover needs and developing suitable solutions. Using this method, the Green Tech Solutions Department was able to develop innovative enterprise risk solutions such as lack-of-sun, lack-of-wind and warranty covers for solar modules. The foundation for this is close cooperation, with research findings being integrated into the business model. For example, in 2009 the first performance warranty cover for photovoltaic modules, which provides producers and investors with a greater degree of certainty in their business operations by guaranteeing that the modules will perform to at least 90% of capacity in the first ten years and at least 80% over the next 15 years. In 2010, MR developed the world's first guarantee insurance for wind power plants (technical guarantee of five years in conjunction with corresponding service contracts). This makes it easier for the manufacturer to conduct business and allows it to focus its resources on expanding its position in a market that is still growing at above-average rates throughout the world. At the same time, such insurance is attractive for buyers and investors, as it enables the manufacturer to offer its customers greater security, reliability for planning purposes and creditworthiness to enable them to obtain finance from banks. MR is facilitating business for both vendors and investors and paving the way for future technologies to enter the market. Our clients rely on our extensive engineering knowledge, e.g. we can draw on our experience of offshore oil and gas projects to cover offshore wind parks. Depending on the opportunity concerned, we have different departments working closely together to guarantee the transfer of expertise. ERGO Insurance, for example, offers covers for officially appointed, certified inspectors against pecuniary loss resulting from the verification of emission reports and applications for European Emissions Trading Scheme allocations. The company also provides tailor-made professional liability cover for energy consultants, which includes the issue of energy certificates and reports, and provision of technical advice, recommendations and price comparisons.
(iii) CC and its related implications will lead to a general increase in demand for insurance solutions and consultancy services. This will result in new business potential for MR. Our insurance products are customer-tailored and differ widely according to the client’s need and the specific risk. CC is part of risk assessment and pricing but cannot be isolated from the overall product and pricing. At this point in time and across the board, we cannot make any quantitative assessments.

6.1c

Please describe the opportunities that are driven by changes in physical climate parameters

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
61c.a	Change in mean (average) temperature	The mean (average) temperature has already risen (1.7degree Celsius warmer than 1900, in general days and nights are also warmer), and there is no doubt that this trend will continue – what we don’t know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re’s core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products to cover our clients’ climate-related risks.	New products/business services	1-5 years	Direct	Virtually certain	Medium-high
		Global warming is already having an effect, resulting in changes in extreme temperatures and there is no doubt that					

61c.b	Change in temperature extremes	this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.	New products/business services	6-10 years	Direct	Very likely	High
61c.c	Change in mean (average) precipitation	: Global warming is already having an effect, resulting in changes in mean (average) precipitation and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business as we offer various products in this area.	New products/business services	1-5 years	Direct	Virtually certain	Medium-high
61c.d	Change in precipitation pattern	Global warming is already having an effect, resulting in changes in precipitation patterns and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we	New products/business services	6-10 years	Direct	Very likely	Medium-high

		offer various products in this area.					
61c.e	Change in precipitation extremes and droughts	Global warming is already having an effect, resulting in changes in precipitations extremes and draughts, and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.	New products/business services	1-5 years	Direct	Very likely	Medium-high
61c.f	Snow and ice	Global warming is already having an effect, resulting in changes in the incidence of snow and ice, and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have globally (shift of climates, extreme weather events,...). As Munich Re's core business is to cover risks, including those associated with climate change, this has a direct impact on our business, as we offer various products in this area.	New products/business services	6-10 years	Direct	Very likely	Medium-high
61c.g	Induced changes in natural	Global warming is already having an effect and there is no doubt that this trend will continue – what we don't know is to what extent and what effects this will have. As Munich Re's core business is to cover risks, including those	New products/business services	6-10 years	Direct	Very likely	Medium-high

	resources	associated with climate change such as water scarcity or flooding, this has a direct impact on our business, as we offer various products in this area.					

6.1d

Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity; (iii) the costs associated with these actions

The assumption of Climate Change (CC) risks is part and parcel of Munich Re's (MR) core business: we anticipate that CC will lead to a general increase in demand for insurance solutions/consultancy services. Consequently, we adopt a multidisciplinary approach to CC opportunities, using and combining the pertinent experience/expertise of our scientists, specialist underwriters, lawyers, economists, sociologists and actuaries in a multi-disciplinary company-wide risk management process. An in-depth understanding of risks is the basis of MR's business, so that CC is closely linked to our core business as the opportunities that arise demand a profound knowledge of the risk.
(i)We analyse known/emerging opportunities on an ongoing basis to determine whether there have been any changes in their structure, occurrence probability or possible financial implications. To provide tailor made solutions for our customers and to make profit out of the opportunities, we concentrate on the following aspects: 1.Provision for risk through:*Heightening client awareness/offering consultancy services to achieve customer loyalty, e.g. various customer platform ("MR Touch Naturkatastrophen"). Having a clear CC Strategy is a strategic advantage in winning new clients, as CC aspects play an increasingly important role in investment decisions./*Environmental warning system, e.g. NATHAN: to show/share the knowledge of scientific data/findings with clients, we have produced an interactive Globe of Hazards DVD and an online application, "NATHAN", containing scientific and insurance-related information relating to natural catastrophes and CC. In April 2011, MR pooled its services for identifying/assessing complex natural hazard risks in the NATHAN Risk Suite, available either in print, DVD or online format, with individual-risk or portfolio analysis and differing levels of integration into the assessment process. 2.New products through:*New technologies/renewable energy. Our Green Tech Solutions Team was specifically set up to further explore possibilities. The range of solutions is: a)PV Industry: lack-of-sun cover for solar parks/performance warranty for concentrated solar power. b)Wind industry: performance warranty for wind turbines (serial loss cover)/lack-of-wind for wind farms/cover for offshore risks. c)Other solutions:*Green building, e.g. the HSB Green Equipment Breakdown Coverage offers the opportunity to make energy savings upgrades to equipment and property after a covered loss/covers business interruption and extra expense incurred as a result of the longer lead times for materials and labour/covers recycling of damaged property or equipment/addresses the changing exposures presented by today's "green technologies"./*Agro System, a crop insurance that helps farmers to cover their growing need for agricultural raw materials. With governments and specialist insurance providers, we set up catastrophe funds to insure them against extreme weather events such as windstorm, drought, flood and late frost, as well as protecting cooperatives and their low-income members in the Philippines against extreme weather events through microinsurance. 3.Internal efforts are:*Group-wide strategy by 2015 to become carbon neutral and to reduce energy emission by 10%./*Energy efficiency measures./*Own investments in renewables (RENT and a climate fund). In general, more frequent and more severe natural catastrophe events will boost demand for flood and windstorm cover. Furthermore, new diseases (allergies, tropical ailments) will also bring opportunities in the alternative medicines market and give rise to new risks that require corresponding insurance solutions. However, quantification of the financial implications is not possible at this point in time and any data provided would be unreliable, as depending on the need of the product in the market (due to climate uncertainty not possible to estimate).
(ii) We translate opportunities arising into innovative insurance products. To do this, all of the departments concerned (GEO/CCC, Integrated Risk Management, Corporate Underwriting (CU), MEAG, Business Units) work closely together. Firstly, we make risks manageable through:*Adaptation of our geo science risk model to different hazards./*Different pricing models related to local and objective hazard characteristic./*Enhanced control of accumulation of risk (transparent liability)./*Optimisation of claims management. We have specialised departments and our engineering and geo risks expertise is incorporated in our products. Thus, natural catastrophe events like hurricanes, storm surge and flood are analysed and assessed and this information is supplemented by research findings from our dense network of scientific and economic contacts worldwide. The departments concerned (GEO/CCC, CU) work closely together to ensure a transfer of knowledge/expertise. Changing weather patterns translate into shifting probability distributions for weather-related losses and have a direct impact on our business. To successfully perform our role as a global risk carrier, we need to take account of changes in risks in our underwriting. Having a dedicated team of Geo Risks researchers ensures that we constantly update and extend our knowledge of the direct consequences of CC. Considerable uncertainty is involved in predicting changes in occurrence frequencies and intensities, assessing the regional aspects of extreme atmospheric events and predicting what emerging-risk developments are to be expected as a result of CC. We are therefore accumulating expertise from various scientific partnerships (e.g. cooperation with

the London School of Economics on the economic impact of CC for the insurance industry) and from our own databases (e.g. NatCatSERVICE, the world's largest natural catastrophe database). The findings are reflected in our underwriting (e.g. loss distribution adjustments) and risk management. Thus, we provide appropriate insurance solutions for our clients despite CC. MR founded the Munich Climate Insurance Initiative (MCII) in 2005. The World Bank, NGOs, and the MCII have drafted insurance-based proposals to help the most vulnerable people in the developing world. Proposals for a climate risk management system submitted by the MCII to the UNFCCC were discussed in the climate negotiations and many of the main concepts have been included in post-Kyoto-Protocol negotiation texts. In addition, MR and the German Agency for International Cooperation (GIZ) entered into a development partnership on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ) to provide suitable microinsurance solutions for extreme weather events. In 2010, we developed an insurance solution to protect cooperatives and their members against extreme weather events in the Philippines. As the product operates with remote sensing data, we expect it to have major potential for replication globally.
(iii)CC and its related implications will lead to a general increase in demand for insurance solutions and consultancy services. This will result in new business potential for MR. Our insurance products are customer-tailored and differ widely according to the client's need and the specific risk. CC is part of risk assessment and pricing but cannot be isolated from the overall product and pricing. At this point in time and across the board, we cannot make any quantitative assessments.

6.1e

Please describe the opportunities that are driven by changes in other climate-related developments

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
	Induced changes in human and cultural environment	Physical climate parameters interact and induce changes in natural resources such as water scarcity, crops, forestry and insect vectors, for example causing changes in growing seasons, and species distributions (biodiversity). This is a possible threat to our customers and a possible business opportunity for us.	New products/business services	1-5 years	Direct	Very unlikely	Low

6.1f

Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity; (iii) the costs associated with these actions

We adopt a multidisciplinary approach to Climate Change (CC) opportunities, using and combining the pertinent experience/expertise of our scientists, specialist underwriters, lawyers, economists, sociologists and actuaries in a multi-disciplinary company-wide risk management process. An in-depth understanding of risks is the basis of Munich Re's (MR) business, and therefore CC is closely linked to our core business as the opportunities that arise demand a profound knowledge of the risk.
(i)We analyse known and emerging opportunities on an ongoing basis to determine whether there have been any changes in their structure, occurrence probability or possible financial implication. In order to provide tailor-made solutions for our customers and to make profit out of the opportunity, we concentrate on the following aspects: 1.New products through: Our Green Tech Solutions Team was specifically set up to further explore new technologies/renewable energy possibilities, as we expect an increase in innovative technology investment in the US, Chinese, Indian and Korean markets over the next 12–36 months, further boosting new business potential for Munich Re. The focus of products includes new solutions:*Performance warranty for Lithium Ion batteries/*LED performance warranty cover/*High/low water level for power plants/*Cold/warm water for power plants/*Carbon Credit Risk Insurance. Further examples of solutions are*Penalty aggregate cover/contractual guarantee cover/*Extended warranty cover/*Supply chain interruption/*Serial loss cover/*contingency cover/*Reputational risk cover/*Pandemic non-damage BI cover/*Power plant availability cover./*Green building, e.g. the HSB Green Equipment Breakdown Coverage offers insureds the opportunity to make energy savings upgrades to their equipment and property after a covered loss/covers business interruption and extra expense incurred as a result of the longer lead times for materials and labour/covers recycling of damaged property or equipment/addresses the changing exposures presented by today's "green technologies"./*Agro System, a crop insurance that helps farmers to cover their growing need for agricultural raw materials and protect themselves against the

consequences of CC. With governments and specialist insurance providers, we set up catastrophe funds to insure them against extreme weather events such as windstorm, drought, flood and late frost, enabling, for example, cooperatives and their low-income members in the Philippines to be protected against extreme weather events through microinsurance. However, it is not possible to quantify the financial implications at this point in time and any data provided would be unreliable. Regarding renewable market: we assume a mid-three digit millions premium volume due to renewable energy.
(ii)We translate opportunities arising into innovative insurance products. To do this, all of the departments concerned (GEO/CCC, Integrated Risk Management, Corporate Underwriting, MEAG, Business Units) work closely together. We make risks manageable through:*Adaptation of our geo science risk model to different hazards/*Different pricing models related to local and objective hazard characteristic/*Enhanced control of accumulation of risk (transparent liability)/*Optimisation of claims management. We also have specialised departments. Whilst we also consider whether climate litigation should be factored into the pricing of certain classes of business, the direct consequences of CC cannot, in our opinion, be addressed through tort law. Our current underwriting practice is therefore appropriate. Should jurisdiction or legislation significantly change, however, modifications to our underwriting policy may become necessary. Renewable energies are a dynamic growth sector with increasing business potential for insurance. MR offers a number of solutions that promote the use of these new technologies. Since 2003, we have offered the first exploration risk insurance worldwide for the geothermal project in Unterhaching near Munich. We have put a lot of effort into the market segment in order to support geothermal energy. Special Financial Risks Department is currently exploring the business potential of the US geothermal market. A new Department, Green Tech Solutions, was set up to further explore potential business opportunities, enabling us in 2009 for example to offer the first performance warranty cover for photovoltaic modules, which provides producers and investors with a greater degree of certainty in their business operations. This policy guarantees that the modules will perform to at least 90% of capacity in the first ten years and at least 80% over the next 15 years. We are able to offer this insurance due to our research findings. In 2010, MR developed the world's first guarantee insurance for wind power plants (five-year technical guarantee in conjunction with corresponding service contracts). This makes it easier for the manufacturer to conduct business and allows it to focus its resources on expanding its position in a market that is still growing at above-average rates throughout the world. At the same time, such insurance is attractive for buyers and investors, as it enables the manufacturer to offer its customers greater security, reliability for planning purposes and creditworthiness facilitating the provision of finance by banks. This is part of a range of innovative covers that MR is using to underwrite risks in the renewable energies sector. By doing this, MR is facilitating business for both vendors and investors and paving the way for future technologies to enter the market. We develop innovative enterprise risk solutions such as lack-of-sun, lack-of-wind. Thus, MR provides a comprehensive range of insurance solutions along the whole value chain of the renewable energy sector and across the entire life cycle of renewable energy projects. MR and MEAG are currently conducting a project called RENT (Renewable Energies and New Technologies) to analyse the potential for strategic investments in renewable energies and new technologies, for example in energy efficiency and storage. Such projects are of great interest from a risk-return point of view. MR, the GIZ (German International Cooperation Agency) and an Indonesian primary insurance partner have also jointly developed a microinsurance solution offering flood cover in Indonesia. The product is now being marketed in Jakarta. MR launched the Desertec Industrial Initiative (Dii) to realise the Desertec vision: the establishment of an energy infrastructure in the EUMENA region that will supply Europe, North Africa and the Middle East with renewable energy from the desert. The objective is to meet around 15% of Europe´s electricity needs with carbon-free energy from the desert by 2050. Desertec's activities will be aimed at developing the right basic conditions and concrete business plans within the next three years.
(iii)CC and its related implications will lead to a general increase in demand for insurance solutions and consultancy services. This will result in new business potential for MR. Our insurance products are tailored to client needs and differ widely according to the client's requirements and the specific risk. CC is part of risk assessment and pricing but cannot be isolated from the overall product and pricing. At this point in time and across the board, we cannot make any quantitative assessments.

Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading [Investor]

Page: 7. Emissions Methodology

7.1
Please provide your base year and base year emissions (Scopes 1 and 2)

Base year	Scope 1 Base year emissions (metric tonnes CO2e)	Scope 2 Base year emissions (metric tonnes CO2e)
Sun 01 Jan 2006 - Sun 31 Dec 2006	49181	128454

7.2
Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

7.2a
If you have selected "Other", please provide details below

7.3
Please give the source for the global warming potentials you have used

Gas	Reference

7.4
Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data

Fuel/Material/Energy	Emission Factor	Unit	Reference

Further Information

Please be aware: The figures might not match with previous provided figures as we increased our coverage, refined data quality and recalculated data accordingly.

Page: 8. Emissions Data - (1 Jan 2010 - 31 Dec 2010)

8.1
Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

8.2a
Please provide your gross global Scope 1 emissions figure in metric tonnes CO2e

69621

8.3a
Please provide your gross global Scope 2 emissions figure in metric tonnes CO2e

146967

8.4
Are there are any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions which are not included in your disclosure?

Yes

8.4a
Please complete the table

Source	Scope	Explain why the source is excluded
Other	Scope 1 and 2	Our activities related to GHG emissions are managed by our Environmental Management. Our EM is focused on the entities/activities/facilities within the fundamental core business of an financial service provider.

8.5
Please estimate the level of uncertainty of the total gross global Scope 1 and Scope 2 figures that you have supplied and specify the sources of uncertainty in your data gathering, handling, and calculations

Main

Scope	Uncertainty Range	sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 30% but less than or equal to 40%	Extrapolation	We are not yet in the position to collect data on environmental consumption and GHG emissions for all of our staff worldwide. Therefore we do collect data from our larger entities and do extrapolate them to 100% of the Group's staff. However we are currently further increasing our coverage.
Scope 2	More than 30% but less than or equal to 40%	Extrapolation	We are not yet in the position to collect data on environmental consumption and GHG emissions for all of our staff worldwide. Therefore we do collect data from our larger entities and do extrapolate them to 100% of the Group's staff. However we are currently further increasing our coverage.

8.6
Please indicate the verification/assurance status that applies to your Scope 1 emissions

Not verified or assured

8.7
Please indicate the verification/assurance status that applies to your Scope 2 emissions

Not verified or assured

8.8
Are carbon dioxide emissions from the combustion of biologically sequestered carbon (i.e. carbon dioxide emissions from burning biomass/biofuels) relevant to your company?

Further Information

Regarding verification in 8.6 and 8.7: 20% of our operations are ISO14001 certified.

Please be aware: The figures might not match with previous provided figures as we increased our coverage, refined data quality and recalculated data accordingly.

Page: 9. Scope 1 Emissions Breakdown - (1 Jan 2010 - 31 Dec 2010)

9.1
Do you have Scope 1 emissions sources in more than one country or region (if covered by emissions regulation at a regional level)?

Yes

9.1a
Please complete the table below

Country	Scope 1 metric tonnes CO2e
Germany	38033
Other: North America	11488
Other: Latin America	272
Other: Africa, Middle East	409
Other: Asia, Australasia	2166
Other: Europe w/o Germany	17256

9.2
Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

Further Information

Please be aware: The figures might not match with previous provided figures as we increased our coverage, refined data quality and recalculated data accordingly.

Page: 10. Scope 2 Emissions Breakdown - (1 Jan 2010 - 31 Dec 2010)

10.1
Do you have Scope 2 emissions sources in more than one country or region (if covered by emissions regulation at a regional level)?

Yes

10.1a
Please complete the table below

Country	Scope 2 metric tonnes CO2e
Germany	80285
Other: North America	24250
Other: Latin America	574
Other: Africa, Middle East	861
Other: Asia, Australasia	4569
Other: Europe w/o Germany	36427

10.2
Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

Further Information

Please be aware: The figures might not match with previous provided figures as we increased our coverage, refined data quality and recalculated data accordingly.

Page: 11. Emissions Scope 2 Contractual

11.1
Do you consider that the grid average factors used to report Scope 2 emissions in Question 8.3 reflect the contractual arrangements you have with electricity suppliers?

No

11.1a
You may report a total contractual Scope 2 figure in response to this question. Please provide your total global contractual Scope 2 GHG emissions figure in metric tonnes CO2e

121939

11.1b
Explain the basis of the alternative figure (see guidance)

At some sites within the Group (e.g. Munich Re in Munich, ERGO in Düsseldorf) we purchase electricity from renewable sources. Therefore the conversion factor should be 0 t CO2e/kWh at those sites instead of the average grid factor.

11.2
Has your organization retired any certificates, e.g. Renewable Energy Certificates, associated with zero or low carbon electricity within the reporting year or has this been done on your behalf?

Yes

11.2a
Please provide details including the number and type of certificates

Type of certificate	Number of certificates	Comments
Renewable Energy Certificates	24453	

Further Information

Please be aware: The figures might not match with previous provided figures as we increased our coverage, refined data quality and recalculated data accordingly.

Page: 12. Energy

12.1
What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

12.2
Please state how much fuel, electricity, heat, steam, and cooling in MWh your organization has consumed during the reporting year

Energy type	MWh
Fuel	285429
Electricity	205342
Heat	101929
Steam	
Cooling	11421

12.3
Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Natural gas	186077
Diesel/Gas oil	372
Other: Heating Oil	34
Other: Natural gas used in CHP	98946

Further Information

Please be aware: The figures might not match with previous provided figures as we increased our coverage, refined data quality and recalculated data accordingly.

Page: 13. Emissions Performance

13.1
How do your absolute emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?

Decreased

13.1a
Please complete the table

Reason	Emissions value	Direction of	Comment

	(percentage)	change	
Emissions reduction activities	13	Decrease	Reduction of emissions due to energy efficiency measures, to reduced staff, improved data gathering and some unidentified reasons as well lead to 13% reduction. Following some examples: Use of electricity from renewable sources; optimization of building-management systems (e.g. upgrading ventilation systems; renovations to lighting, lighting controls); introduction of IT measures designed to save more energy (switch to flat panel monitors; shut down PC's after regular business hours; use of Energy Star rated IT and facilities). A 2.5 megawatt solar power generation system will be installed at the Princeton area headquarters, beginning 2011.
Change in boundary	13	Decrease	Reduction of emissions due to energy efficiency measures, to reduced staff, improved data gathering and some unidentified reasons as well lead to 13% reduction. Following some examples: Use of electricity from renewable sources; optimization of building-management systems (e.g. upgrading ventilation systems; renovations to lighting, lighting controls); introduction of IT measures designed to save more energy (switch to flat panel monitors; shut down PC's after regular business hours; use of Energy Star rated IT and facilities). A 2.5 megawatt solar power generation system will be installed at the Princeton area headquarters, beginning 2011.
Unidentified	13	Decrease	Reduction of emissions due to energy efficiency measures, to reduced staff, improved data gathering and some unidentified reasons as well lead to 13% reduction. Following some examples: Use of electricity from renewable sources; optimization of building-management systems (e.g. upgrading ventilation systems; renovations to lighting, lighting controls); introduction of IT measures designed to save more energy (switch to flat panel monitors; shut down PC's after regular business hours; use of Energy Star rated IT and facilities). A 2.5 megawatt solar power generation system will be installed at the Princeton area headquarters, beginning 2011.

13.2

Please describe your gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Explanation
4.8	metric tonnes CO2e	unit total revenue	21	Decrease	Due to the decrease in emissions and due to an increase in gross premiums written emissions intensity decreased. unit total revenue: €m

13.3

Please describe your gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per full time equivalent (FTE) employee

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Explanation
4.6	metric tonnes CO2e	FTE Employee	12	Decrease	Emissions decreased but FTEs are on stable level therefore emission intensity decreased.

13.4

Please provide an additional intensity (normalized) metric that is appropriate to your business operations

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Explanation

	metric tonnes CO2e				

Further Information

Please be aware: The figures might not match with previous provided figures as we increased our coverage, refined data quality and recalculated data accordingly.

Page: 14. Emissions Trading

14.1
Do you participate in any emission trading schemes?

14.2
Has your company originated any project-based carbon credits or purchased any within the reporting period?

Yes

14.2a
Please complete the following table

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes of CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits retired	Purpose e.g. compliance
Credit Purchase	Hydro	Sustainable Small Hydropower Stations, Rural South West China	VCS	10500		Yes	Voluntary Offsetting

Further Information

Please be aware: The figures might not match with previous provided figures as we increased our coverage, refined data quality and recalculated data accordingly.

Page: 15. Scope 3 Emissions

15.1
Please provide data on sources of Scope 3 emissions that are relevant to your organization

Sources of Scope 3 emissions	metric tonnes CO2e	Methodology	If you cannot provide a figure for emissions, please describe them
Waste generated in operations	1346	Once a year we collect data on consumption of paper, water, waste handling and business travel, actual coverage is 60% - will be expanded further. Data are extrapolated for those employees (=100%) not yet included in our reporting system. Ultimately, emissions are calculated on the basis of standardised conversion factors. We base data collecting and emissions calculation on the GHG Protocol for Scope 3 emissions.	
		Once a year we collect data on consumption of paper, water, waste handling and business travel, actual coverage is 60% - will be expanded further. Data are	

Business travel	27494	extrapolated for those employees (=100%) not yet included in our reporting system. Ultimately, emissions are calculated on the basis of standardised conversion factors. We base data collecting and emissions calculation on the GHG Protocol for Scope 3 emissions.	
Other: Paper	873	Once a year we collect data on consumption of paper, water, waste handling and business travel, actual coverage is 60% - will be expanded further. Data are extrapolated for those employees (=100%) not yet included in our reporting system. Ultimately, emissions are calculated on the basis of standardised conversion factors. We base data collecting and emissions calculation on the GHG Protocol for Scope 3 emissions.	
Other: Water	309	Once a year we collect data on consumption of paper, water, waste handling and business travel, actual coverage is 60% - will be expanded further. Data are extrapolated for those employees (=100%) not yet included in our reporting system. Ultimately, emissions are calculated on the basis of standardised conversion factors. We base data collecting and emissions calculation on the GHG Protocol for Scope 3 emissions.	

15.2

Please indicate the verification/assurance status that applies to your Scope 3 emissions

Not verified or assured

15.3

How do your absolute Scope 3 emissions for the reporting year compare to the previous year?

Decreased

15.3a

Please complete the table

Reason	Emissions value (percentage)	Direction of Change	Comment
Emissions reduction activities	11	Decrease	Reduction of emissions due to efficiency measures but due to reduced staff, improved data gathering and some unidentified reasons as well. Following some examples: New applications in electronic form, rather with paper forms, Implementation of front end scanning and Standard double side printing reduced paper consumption. Moreover especially business travel is one of the main lever of reducing Scope 3 for insurance (e.g. car travel by sales agents). Therefore Video & phone conferencing techniques are offered in order to decrease internal and business travel.
Change in boundary	11	Decrease	Reduction of emissions due to efficiency measures but due to reduced staff, improved data gathering and some unidentified reasons as well. Following some examples: New applications in electronic form, rather with paper forms, Implementation of front end scanning and Standard double side printing reduced paper consumption. Moreover especially business travel is one of the main lever of reducing Scope 3 for insurance (e.g. car travel by sales agents). Therefore Video & phone conferencing techniques are offered in order to decrease internal and business travel.
Unidentified	11	Decrease	Reduction of emissions due to efficiency measures but due to reduced staff, improved data gathering and some unidentified reasons as well. Following some examples: New applications in electronic form, rather with paper forms, Implementation of front end scanning and Standard double side printing reduced paper consumption. Moreover especially business travel is one of the main lever of reducing Scope 3 for insurance (e.g. car travel by sales agents). Therefore Video & phone conferencing techniques are offered in order to decrease internal and business travel.

Further Information

Please be aware: The figures might not match with previous provided figures as we increased our coverage, refined data quality and recalculated data accordingly.

Module: Sign Off

Page: Sign Off

Please enter the name of the individual that has signed off (approved) the response and their job title

Dr. Astrid Zwick, Head of Corporate Responsibility (direct reportin line to Group Development and CEO Munich Re)

Carbon Disclosure Project