Carbon Disclosure Project

CDP 2012 Investor CDP 2012 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 client relationships are built on trust and cooperation.

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.

- Reinsurance : With premium income of around €27bn 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 11,200 staff in reinsurance possess unique global and local knowledge. Munich Re attaches great importance to its client service, which regularly receives top ratings.
- Primary insurance: Our primary insurance operations are mainly concentrated in the ERGO Insurance Group. Worldwide, the Group is represented in over 30 countries and concentrates on Europe and Asia. ERGO offers a comprehensive spectrum of insurance, provision and services. In its home market of Germany, ERGO ranks among the leading providers across all segments. 50,000 people work for the Group, either as salaried employees or as full-time self-employed sales representatives. In 2011, ERGO recorded a premium income of €20bn.
- 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 €6bn in the financial year 2011. 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.
- Asset management: The Group’s worldwide assets of €202bn 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.

Munich Re stands for exceptional solution-based expertise, consistent risk management, financial stability and client proximity. In the financial year 2011, the Munich Re Group achieved a profit of €0.71bn on premium income of around €50bn. 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
Sat 01 Jan 2011 - Sat 31 Dec 2011
Fri 01 Jan 2010 - Fri 31 Dec 2010
Thu 01 Jan 2009 - Thu 31 Dec 2009

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

Please be aware:
Munich Re is active in over 30 countries.
As Germany is the home market, only Germany is indicated in the section "Country list configuration", nevertheless our data covers 87% of Munich Re's employees globally.

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. Also Climate Change related targets, for example CO2 neutrality by 2015 as well as a reduction of 10% CO2 emissions per employees globally, are included in the goals (Board Chairman is equal CEO, both Nikolaus von Bomhard).
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. Also Climate Change related targets, for example CO2 neutrality by 2015 as well as a reduction of 10% CO2 emissions per employees globally, are included in the goals (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 by 2015 as well as a reduction of 10% CO2 per employee.
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. Also Climate Change related targets, for example CO2 neutrality by 2015 as well as a reduction of 10% CO2 emissions per employees globally, are included in the goals.
Executive officer	Monetary reward	The Head of Group Development has an Emission Reduction Target in his bonus (10% CO2 emission reduction per employee by 2015 - base year 2009).
Business unit managers	Monetary reward	The Climate Change Strategy is anchored through various business units. Amongst others: for example our Asset Manager MEAG; on the one hand they are in charge of fulfilling the RENT project (investing €2.5bn into the Renewable Energy and New Technology Project in the forthcoming years). Furthermore MEAG is also incentivized to fulfil the sustainability quota of 80% regarding assets, bonds and shares. Especially the GEO/CCC department has also targets regarding Climate Change.
Environment/sustainability managers	Monetary reward	The Environmental Manager has an Emission Reduction Target in his bonus (10% CO2 emission reduction per employee in 2015 – base year 2009), as well as all local Environmental Managers and CR Managers are incentivized for CO2 reduction and Environmental Management System expansion.
Facility managers	Monetary reward	Monetary rewards are received in case of reduction of the energy use and other generated savings. For example at the headquarter in Munich, our Facility Services is incentivized and receives 50% of saved costs due to energy efficiency measurements. Furthermore all of the Board Members have sustainability and environmental targets to fulfil, hence they are reflected in their specific divisions, e.g. Internal Services has the incentivized target to support the reduction of 10% CO2 per employee by 2015.

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)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. As our own operations and sites are subject only to physical risks(iii), we incur most of our risks/risk types through business with our clients:
ii)a)Risks customers transfer to us: we have specialised departments with expertise in risk management, underwriting and climate issues. We are currently seeing a disproportionate rise in insured losses relating to economic activity, for which we believe CC is partly responsible, in addition to an increase in values in exposed regions.//b)Emerging risks: we track all kinds of risks constantly and have, e.g., a situation centre that continuously monitors global issues, as new risk potentials and accumulation hazards are emerging, not only for economies, but also relating to physical, regulatory and health risks. Together with Corporate Underwriting (CU), experts ensure that CC considerations are incorporated in our risk assessment/management, business/product development and asset management. Research findings are passed on to CU and Integrated Risk Management (IRM) and used for product design/pricing, accumulation control and adjustments to natural-catastrophe models, 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 are an IRM-approach involving underwriters/client managers to ensure direct access to markets and dialogue with clients, i.e. an early-warning system that ensures that regulatory risks are identified and assessed at an early stage, and Centres of Competence with experts who specialise in risk identification and analysis in specific lines such as D&O and geo risks research.
iii)Asset-management risks, e.g. risks arising out of investments in companies with high physical exposure to CC/exposure to changes in CO2 legislation. An example: change in 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 analyse not only risks, but also the business opportunities of companies in which we invest. By the end of 2011, we had invested €500m in our new RENT (Renewable Energy and New Technologies) programme, summing up in the forthcoming years to €2.5bn. Furthermore, we also monitor the risks for sites and subsidiaries, e.g. 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" and specialised teams for all kinds of exceptional circumstances are in place and can be used in emergencies. Furthermore, to mitigate CC, in-house green building and energy efficiency plays a vital part in facility management/procurement. This approach is supported internally by an Environmental Management System (EMS) and a Group-wide target of carbon neutrality by 2015 with a global reduction of 10% in our emissions, which will in turn reduce operational costs. The EMS currently covers 87% of our employees and will be expanded further by 2015. Our EMS monitors our CO2 emissions annually, enabling us to develop measures to reduce them – a detailed Reduction Plan is in place.
iv)We constantly analyse known/emerging risks 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 uninsurable. Both risks and opportunities at all levels are constantly (daily) assessed by specialised departments and coordinated by GEO/CCC. We also identify trends/faint signals in many ways, including systematic trend research and regular structured discussions in our Emerging Risks Think Tank (a group of internal experts). They derive conceivable scenarios and analyse their possible impact on MR, also looking at interdependencies between different risks and other consequences related directly or indirectly to emerging risks. They are supported by the Emerging Risks Core Group. Cooperation with external partners complements our internal early-warning system.
v)As our business is insuring risks, the criteria for determining priorities/materiality are included in our usual approach: Since CC poses a 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 and litigation risks – has supported our core Corporate Strategy. The Strategy embraces mitigation, adaptation, research, in-house CO2 reduction and political advocacy as the main pillars to combat CC. Mitigation and adaptation in particular enable us to indentify business opportunities/priorities, e.g. renewable energy cover or weather–index-based crop insurance.
vi)Reporting: 1.Company and business-related risks/opportunities: direct reporting line to CEO Reinsurance (Board Member) Dr. Jeworrek – responsible for main departments (IRM, GEO/CCC, all CU departments). 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. 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 Department, with direct reporting line to Group Development and CEO Munich Re (Dr. von Bomhard).

This ensures that approaches/processes for CC risks are integrated and opportunities assessed, enabling us to develop tailor-made solutions.

2.2

Is climate change integrated into your business strategy?

Yes

2.2a

Please describe the process and outcomes (see guidance)

i)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 and is an integral part of our business strategy. In 2007, MR 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. The department also make sure that all aspects of CC are integrated into the overall strategy. 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.
So far, no major changes have occurred related to our CC-strategy nor to our business strategy, e.g. following the extreme natural-catastrophe year 2011, MR paid out the same dividend as last year.
ii)The different pillars of the CC Strategy include:
1.Mitigation, e.g. insurance cover 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 (e.g. SystemAgro).
Mitigation and adaptation in particular enable us to indentify business opportunities/priorities, e.g. renewable energy cover or weather–index-based crop insurance (further information in chapter "5. Risks" and "6. Opportunities").
3.Research: apart from dedicated research teams in-house (GEO/CCC and economists), 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. Meteorological observations have indicated that changing climate conditions are among the most likely drivers of change. A regular trend assessment at company level evaluates the urgency of CC.
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.
5.Our own in-house CC mitigation (including an emission reduction target) 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% (base year 2009), 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.
Regarding reporting lines: 1.Company and business-related risks/opportunities: direct reporting line to CEO Reinsurance (Board Member) Dr. Jeworrek. 2.Asset management: Dr. Kabisch, CEO of MEAG, direct reporting line to CEO Munich Re. 3.All EMS-related issues: Corporate Responsibility Department, with direct reporting line to Group Development and CEO Munich Re (Dr. von Bomhard).
iii)The described approach is reflected in our short-term strategy, with recent findings being integrated into our business model and minor adjustments being made to our pricing and development of new products.
iv)Regarding our long-term strategy, especially our GEO/CCC unit and their trend research play an important role. This is also reflected in long-term product development and integrated into our own business strategy, e.g. internal adoption of the RENT project. Consequently, we decided to invest €2.5bn of our own funds in RENT. So far, more than €500m has already been invested and new insurance policies for renewable energy (e.g. performance guarantees) were developed in the course of this project. Another 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 to 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. We assume that premium volume for covers related to renewable energy will amount to several hundred million euros.
v)In addition, MR considers the insurance industry to be a conduit 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. 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.
vi)There are none to report, as no substantial changes were made to the business strategy. As already outlined, CC is included in our long-term strategy, so that business decisions are also taken on a long-term basis. For example, as regards the challenge posed by energy restructuring, MR is supporting the so called “Plan B”: ahead of Durban, MR advocated a climate protection Plan B alongside the international negotiations. The aim is to develop climate-friendly renewable energy sources able to compete financially with fossil energy sources in the medium term. Or the Fukushima Daiichi nuclear disaster, which affected our operating result 2011, despite which the same dividend was paid out.

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.i)Munich Re (MR) engages with policy makers at different levels as an individual company. The engagement ranges from public engagement (e.g. member of IPPC) to private engagement (e.g. discussions with politicians). In 2010, MR established a new business unit within Group Legal to more effectively observe, assess and exert a constructive influence on relevant developments, as several departments are responsible for integrating Climate Change (CC) into our business, and to actively communicate on a political stage. The department coordinates a process that takes in all of MR, assessing relevant issues and developing positions valid for the entire Group both public and private. They are in close contact with GEO/CCC, responsible for highlighting the strategic relevance of CC, as well as other specialised departments (e.g. for liability cover) – to coordinate the different opinions and to harmonise communication.
i.ii)The motivation and topic of engagement for MR is to support adaptation/mitigation measures in order to improve CC resilience. 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. One example in the area of legislation/policy: ahead of Durban, MR advocated a climate protection Plan B alongside the international negotiations. The aim is to develop climate-friendly renewable energy sources able to compete financially with fossil energy sources in the medium term.
i.iii)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 to the Bavarian Government on CC matters. He is: Co-Chair of the Finance Forum CC 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, 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 UNISDR/ 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, being a member of the CC steering committee and active in several working groups, such as CC and solutions and Carbon Capture Storage) and UNEP FI to position the industry as a whole vis-à-vis government policy and the general public.
b)Active involvement in research/cooperation; e.g. London School of Economics (LSE): since 2008, MR has been a founding corporate partner of the Centre for CC Economics and Policy at the LSE. We sponsor an independent research programme to evaluate the economics of climate risks and opportunities in the insurance sector in adaptation/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 heighten awareness among 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/interpretation of economic and insured natural catastrophe loss trends.
ii.i)Actions advocated included: a)Munich Climate Insurance Initiative (MCII): MR initiated MCII in 2005, bringing together

representatives from insurance, the World Bank, NGOs and science. Höppe and Loster are both members of MCII's board. Since 2011, MCII has been conducting a pilot project sponsored by the International Climate Protection Initiative (IKI) of a German Ministry (BMU), aiming to develop insurance solutions in 3 Caribbean countries to deliver CC adaptation benefits in developing countries through a public-private partnership approach. Furthermore MCII has received funding from the German Environmental Ministry (€ 2m) for pilot projects in the Caribbean (project partners e.g. CCRIF). It started in June 2011 and includes: Development of Livelihood/ Protection and Lender Portfolio Protection covers. MCII is also one of the leading partners of UNFCCC in the SBI "Loss and Damage" programme.// b)Dii GmbH: MR is one of the initiators of Dii Initiative, aiming to establish an energy infrastructure in the EUMENA region supplying Europe/ North Africa/the Middle East with renewable energy. Objective: meet around 15% of Europe's electricity needs in the form of carbon-free energy from the desert by 2050. Recently a study was published: „Desert Power 2050", demonstrating that a power system based on more than 90% of renewable energy is technically possible and economically viable.

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 and intensity targets

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
A:1	Scope 1+2+3	100%	100%	2009	231246	2015	The Board of Management of Munich Re approved in March 2011 the new Group-wide target to become carbon neutral by 2015. Regarding our intensity target: At least 10% of emissions will be reduced globally, no more than 90% will be offsetted (base year 2009).

3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions	Target year	Comment
I:1	Scope 1+2+3	100%	10%	metric tonnes CO2e per FTE employee	2009	4.89	2015	The Board of Management of Munich Re approved in March 2011 the new Group-wide target to become carbon neutral by 2015 (absolute target). Hereof at least 10% CO2 emission reduction per employee must be reduced globally, no more than 90% will be offset – this is our intensity target.

3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2	% change anticipated in absolute	Direction of change anticipated in	% change anticipated in absolute	Comments

	emissions at target completion?	Scope 1+2 emissions	absolute Scope 3 emissions at target completion?	Scope 3 emissions	
I:1	Decrease	10	Decrease	10	The expected decrease reflects all Scopes and is based on our Strategy to reduce 10% CO2 emission per employee globally by 2015 (base year 2009).

3.1d

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

ID	% complete (time)	% complete (emissions)	Comment
A:1	50	3	PLEASE BE AWARE: We state here the real decrease, nevertheless our strategy includes also green electricity to be considered with zero CO2 emissions and to offset then remaining CO2 emissions via emission certificates. This approach is reflected in A:1*. Valid for entire Munich Re Group: The entire Munich Re Group will be carbon neutral by 2015. Emissions will be reduced and unavoidable emissions offsetted. Entities are currently in planning and implementation phases.
A:1*	50	100	PLEASE BE AWARE: Considering green electricity with zero CO2 emissions and including carbon offsetting credits, we already achieved our goal. We hence decreased our emissions from our base year 2009 by 42%.
I:1	50	24	PLEASE BE AWARE: Valid for entire Munich Re Group: The entire Munich Re Group will reduce its CO2 emissions globally by 10% by 2015 (base year 2009).

3.2

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

No

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 identify the total number of projects at each stage of development, and for those in the implementation stages, estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings (only for rows marked *)
Under investigation		
To be implemented*		
Implementation commenced*		
Implemented*		
Not to be implemented		

3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e	Annual monetary savings (unit	Investment required (unit currency)	Payback period

		savings	currency)		
Low carbon energy purchase	i) Purchasing green electricity/electricity by renewable sources rather than a conventional energy mix – despite a higher price. ii) Scope 2, measure to achieve A:1. iii) This is a voluntary activity. iv) During the reporting period 2010-2011 the amount of green electricity was raised from originally 7% of the total energy consumption to 13%. Hence this is already an achievement. Nevertheless this measurement will be expanded further.				>3 years
Energy efficiency: building fabric	i) Increasing energy efficiency; e.g. modernisation of building facilities and optimization of building-management systems: upgrading ventilation systems, renovations to lighting, lighting controls, optimisation of computer usage, reducing of IT-server landscape by virtualisation, optimisation or modernisation of building facilities. ii) Scope 2, measure to achieve A:1 as well as I:1. iii) These are voluntary activities. iv) These are ongoing projects/measures and will be further implemented. One concrete example: Change of air conditioning devices in Zaragoza at DKV Seguros in Spain, implemented in 2011. This will save 1,28 t(metric) CO2 emissions. Another concrete example: is related to ERGO's CHP in Cologne. Due to modernizations at the site (modernization of building facilities, upgrading ventilation systems), and a newly installed CHP we will now save approximately 70% of the CO2 emissions.	8200	1403071	2191393	1-3 years
Behavioral change	i) Building of a worldwide EMS network, sharing experiences, information and best practice to improve employees understanding for environmental issues and create mind change. Ongoing consistent communication to all employees will help to implement several measures like avoid or double side printing, switching off light and computers, reduce travelling, use public transport, share cars etc. ii) Scope 1/2/3, measure to achieve A:1 as well as I:1. iii) These are voluntary activities. iv) These are ongoing projects/measures and will be further implemented.				>3 years
Other	i) Transport measures to reduce energy consumption like selection of CO2-efficient cars (<100g/km), obligatory driving training for CO2 efficient driving, using CO2 neutral rail travel. ii) Scope 1/3, measure to achieve A:1 as well as I:1. iii) These are voluntary activities. iv) These are ongoing projects/measures and will be further implemented.				>3 years

3.3c

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

Method	Comment
Compliance with regulatory requirements/standards	A group-wide Environmental Management Systems is in place, covering approximately 87% of Munich Re's employees globally. Our ISO14001 verification covers approximately 30% of the Munich Re Group. Furthermore we verified our environmental data for approximately 10% related to the Group at our headquarter in Munich and one of our subsidiaries in Spain (DKV Seguros).

Further Information

Please be aware:
The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

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 118f., 137f	Munich Re_Annual Report 2011
In voluntary communications (complete)	page 5ff, 72ff	Munich Re_CR Report
In voluntary communications (complete)	page 21-25	Munich Re_Topics 1-10_Flash Floods-A much underestimated risk
In voluntary communications (complete)	page 14-16	Munich Re_Liability for climate change
In voluntary communications (complete)	page 4-8	Munich Re_Response to climate change _sustainable_crop_insurance
In voluntary communications (complete)	page 1-24	LSE_Industry Brief_Aiming-for-2degree-goal_2010
In voluntary communications (complete)	page 1-24	LSE_Industry Brief_Economic-trends-insured-losses_2010
In voluntary communications (complete)	1-14	Munich Re_MR NatCatService loss database
In voluntary communications (complete)	all	Munich Re_Group focus topic climate change
In voluntary communications (complete)	all	Munich Re_NATHAN Risk Suite
In voluntary communications (complete)	all	Munich Re_Download Centre for statistics on natural catastrophes
In voluntary communications (complete)	page 36–40, 46-48	Munich Re_Topics Geo 2011 Climate Change
In voluntary communications (complete)	all	Munich Re_NatCatService 2011
In voluntary communications (complete)	all	Munich Re_Press Release: Outcome of climate summit disappointing
In voluntary		

communications (complete)	all	MUnich Re_Press Dossier: Climate Summit in Durban 2010
In voluntary communications (complete)	all	Munich Re_Topics Online 06_2011_Plan B for climate protection
In voluntary communications (complete)	all	Munich Re_Interview Prof. Dr. Höppe_Insuring climate change risk_UNFCCC
In voluntary communications (complete)	all	Munich Re_Press release: Core group of countries needs to take lead on climate change
In voluntary communications (complete)	all	Munich Re_Touch Natural Hazards NatCatSERVICE Downloadcenter
In voluntary communications (complete)	all	Munich Re_ Re Newables Magazine
In voluntary communications (complete)	all	Munich Re_NatCatService:Natural disasters 1980 - 2011
In voluntary communications (complete)	all	Munich Re_Press release_New insurance solutions to protect states particularly vulnerable to climate change
In voluntary communications (complete)	all	Munich Re_Climate & Re Newables Newsletter_Issue 2_Impact of climate change on BRICS economies
In voluntary communications (complete)	all	Munich Re_Press release of Corporate Responsibility_Munich Re invests in solar parks
In voluntary communications (complete)	all	Munich Re_NATHAN Risk Suite Flyer 2011
In voluntary communications (complete)	all	Munich Re_Climate & Renewables Newsletter_Issue 2_RENT Update_program extends to North America
In voluntary communications (complete)	all	Munich Re and Dii_ 2050 Desert Power

Attachments

https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_NATHAN Risk Suite.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Group focus topic-climate change.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Press release of Corporate Responsibility_Munich Re invests in solar parks.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Press release_Core group of countries needs to take lead on climate change.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Press release_New insurance solutions to protect states particularly vulnerable to climate change_ENG.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Liability for climate change.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Climate Renewables Newsletter_Issue 2_RENT

Update_program extends to North America_ENG.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_NatCatService loss database.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Homepage - Download Centre for statictics on natural catastrophes.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Interview Prof. Dr. Höppe-Insuring climate change risk_UNFCCC.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re Annual Report 2011.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/LSE_Industry Brief_Economic-trends-insured-losses_2010.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Climate Re Newables Newsletter_Issue 2_Impact of climate change on BRICS economies_ENG.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_NATHAN Risk Suite Flyer 2011_ENG.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Touch Natural Hazards.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Topics Online 06_2011_Plan B for climate protection.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_NatCatService_Natural Disasters 1980 - 2011_ENG.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Press release_Outcome of climate summit disappointing.PDF
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/LSE_Industry Brief_Aiming-for-2degree-goal_2010.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re - Press Dossiers_ Climate Summit in Durban.pdf
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https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_NatCatService 2011_ENG.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Corporate Responsibility Report 2009_2010.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Re Newables Magazine_ENG.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re and Dii_ 2050 Desert Power.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_Topics 1-10_Flash Floods-A much underestimated risk.pdf
https://www.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/Munich Re_System Agro_Response to climate change Sustainable Crop Insurance.pdf

Module: Risks and Opportunities [Investor]

Page: 2012-Investor-Risks&Opps-ClimateChangeRisks

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
A	Fuel/energy taxes and regulations	For Munich Re, notably energy and the corresponding legislation are of utmost interest, as project return on investment ultimately depends on legislation and financial incentives. Nevertheless, as an insurance company, Munich Re would not be affected in the same way as a manufacturer by taxes on fuel or energy.	Other: Less profit than process is generated.	1-5 years	Indirect (Client)	Very likely	Low-medium
B	Uncertainty surrounding new regulation	As already described, Climate change is a relevant topic on the political agenda of major economies. With the current developments in the nuclear industry triggered by Fukushima, regulation can change rapidly, e.g. in favour of renewable energy. Systemic risks in the context of energy or other resource prices are also likely (focus: asset management). Thus, we are steadily enhancing our competence in this field.	Other: New regulations would require adaptation of products.	1-5 years	Indirect (Client)	Likely	Unknown
C	Lack of regulation	Uncertainty regarding new regulations is not the only risk; a lack of regulation is also a long-term risk for investors, especially for long-term investment plans.	Inability to do business	Current	Indirect (Client)	Very likely	Low-medium

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

i)We analyse known/emerging risks related to regulation on an ongoing basis to determine whether there have been changes in their structure/occurrence probability and their possible financial implications, as Climate Change (CC) can have a financial impact on nearly all lines of business. This risk monitoring is particularly important in respect of regulation as a changing legal framework might influence customer demands, e.g. relating to energy and regulations(A), uncertain regulatory environment(B) or lack of regulation(C). In all areas, we monitor our exposure to climate liability losses, e.g. resulting from breaches of reporting requirements/failure to exercise professional standards of care/failure to submit emission. We analyse whether climate litigation potential has to be factored into the pricing of certain classes of business, but at this point it is not possible to quantify this. Moreover, state intervention in natural catastrophe covers could become a significant regulatory risk for primary insurance, as is the case, for example, for hurricane insurance in Florida, the US state severely prone to being hit by hurricanes, leading to significant losses - Example: Storm Xynthia 2010: overall losses €4.5bn/insured losses €2.25bn. As a result, private insurance companies are increasingly unable/reluctant to offer hurricane cover to property owners in more exposed areas of Florida for premiums (and other insurance conditions) that are considered affordable (by the property owners and/or the politicians). This has led to various types of state intervention, distorting risk-based premium pricing in the primary insurance market (regulatory intervention in insurance pricing(B). As regards asset management, we face potential financial implications for our investment portfolio, e.g. for renewable energy – probably for the whole investment period(B)&(C). This could result from a retroactive change of political incentive schemes (e.g. cutbacks pertaining the subsidies provided by feed-in tariffs), 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: Munich Re (MR) set up an investment programme in 2010 to invest €2.5bn into Renewable Energy and New Technologies (RENT) over the next few years. The projected return ultimately depends on legislation/the financial incentives, e.g. feed-in tariffs offered by individual countries(A). In the event of changes in

legislation, such as the retroactive changes in feed-in tariff conditions in Spain in 2010, the return might no longer be adequate. 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: our asset values could be directly affected by regulatory intervention(C). Long-term investors such as MR need reliability to plan for this. At the moment it is not possible for us to quantify the potential financial implications of the risks mentioned due to a number of uncertainties.
ii)In general, we have set standard procedures for identifying CC risks in all areas, especially regulatory changes: the findings of specialised MR research units (e.g. GEO/CCC) are passed on both to underwriting and to risk management departments, and are hence 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 (IRM) 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 countries and different technologies, which lowers the financial implications. MR was one of the first reinsurers to identify potential regulatory CC risks worldwide, analysing them with relevant experts; e.g. invitation of experts to exchange views on CC and the implications for liability risks (B&C). The publication "Liability for climate change", offers our clients useful support. Furthermore, our expert, Prof.Dr. Ebert and Prof. Höppe are members of the Geneva Association's "Climate Risk and its Economic Impact on Insurance" working group and monitor court rulings, regulation/related cover issues (e.g. extent of applicability of the pollution exclusion, relevant occurrence definitions), especially in the US(B&C). A recent example is the ruling by the Supreme Court (US) in AES vs. Steadfast: the Supreme Court of Virginia had to decide whether claims for damages (by inhabitants of the Alaskan island Kivalina) against utility companies based on GHG emissions can be covered under general liability policies and therefore trigger a duty to defend. This is a highly important aspect of climate litigation for liability insurers: while claims for damages based on global warming have so far been unsuccessful, defence costs can be staggering and, unlike European jurisdictions, the US legal system has no "loser pays rule". 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; for example, 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(A). 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 (C&B) as it is very likely that all risks occur.
(iii)Regarding the risk drivers mentioned in this section, quantification is not possible with some of the risks at this point in time as: *Since there are no precedents for litigation, any data provided would be unreliable/ *With regard to Asset Management, possible returns on investment could be lowered by changes in regulation and have to be assessed on a case-by-case basis. However, to manage these risks, we factor uncertainty margins into our products wherever applicable.

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
A	Uncertainty of physical risks	Global warming is already having an effect on the earth's climate system and we expect this trend to continue – as climate science shows (e.g. the IPCC SREX report), There is still considerable uncertainty regarding the quality of projections for changes in physical parameters. As Munich Re's core business is to cover risks, including those associated with climate change, this has an indirect impact on our business through our clients, and we therefore offer various products in this area.	Increased operational cost	>10 years	Indirect (Client)	Very likely	Medium-high
		All of the risk drivers mentioned in the table (changes in mean (average) temperature/ change in					

B	Other physical climate drivers	temperature extremes/ change in mean (average) precipitation/ change in mean (average) precipitation/change in precipitation extremes and droughts/ snow and ice/ sea level rise/ tropical cyclones (hurricanes and typhoons)/ induced changes in natural resources) can have an impact on Munich Re's business, as the core business of Munich Re is also to insure natural catastrophes. Against the background of climate change, we are focusing on risks from changes in weather extremes, which lead to more frequent and severe disasters such as convective events (thunderstorms, tornados, hailstorms), other tropical and extra-tropical storms, hydrologic and climatologic events. MR monitors all risks pertaining to natural disasters.	Increased operational cost	Current	Indirect (Client)	Very likely	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

(i)There are many indications that Climate Change (CC) is already partly responsible for the rise in severe weather-related natural disasters such as storms, floods, temperature extremes or convective events(B). Changing weather patterns and physical risks translate into shifting probability distributions of weather related losses: this has a direct impact on our core business(A). Hereby we focus on certain areas, including convective events(B) - such as severe thunderstorms, hailstorms or tornados. According to data gathered by Munich Re (MR), since 1980 the number of weather-related natural catastrophes has more than doubled(A): Aggregate economic losses amounted to US$2,600bn in the period 1980-2011, while aggregate insured losses were US$760bn in the same period (adjusted for inflation). In 2010, the average annual increase in nominal insured losses was of the order of 11%. The rise is mainly due to socio-economic factors (e.g. wealth accumulation, increasing insurance penetration(A), but is probably in part also driven by CC. In 2011 for example, weather-related events accounted for ~ $150bn of overall and ~ $55bn of insured losses, and it was the second-costliest year for weather-related disasters since 1980, taking inflation into account. The major cause of many extreme weather events in 2011 was very probably the influence of the La Niña weather phenomenon from January to May and from August to December. In the US for example, an extremely active thunderstorm season caused damage on an unprecedented scale across the country. Numerous tornado outbreaks devastated entire cities, causing a record of $47 billion in overall losses, of which $26bn were insured losses(B).
However, dealing with uncertainty in the impacts of CC is a challenge. The recently published IPCC SREX report shows that scientists' statements are becoming more sophisticated and at the same time more cautious. For example, regarding observed/projected changes in climate parameters and the anthropogenic influence on these changes, evidence found by the scientific community in various cases has only a low to medium confidence level due to insufficient evidence or lack of data. Furthermore, the impacts of CC depend to an extent on the individual situation and the effects of factors that cannot be established in isolation. A study conducted by London School of Economics (LSE) showed that normalised insured US losses from convective storms(B), 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. Meteorological observations have indicated that changing climate conditions are among the most likely drivers of change(B). 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.
(ii)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 anthropogenic CC and of natural climate variability and use it to deliver tailored insurance solutions as well as to integrate the findings into our pricing models.
Regarding company related risks: changes in physical climate parameters (described in Q5.1c) can have a direct impact on our company, in particular on company premises. While the risks from extreme weather events at our MR Headquarters are expected to be low, the risk of change could be higher in other regions of the world where the MR Group has branches, e.g. Hong Kong

(risk of tropical cyclones(B)). 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. 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. Since 2008, MR has been formally cooperating with the LSE and is a founding corporate partner of the Centre of CC 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/share 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 natural catastrophes and CC. A further consequence of CC mitigation is the development of renewable energies. The rapid growth and diffusion of these technologies generates accumulation risks. With MR’s NATHAN, these risks can be analysed faster and more accurately. In April 2011, MR pooled its services for identifying and assessing complex natural hazard risks in the NATHAN Risk Suite, with individual-risk or portfolio analysis and differing levels of integration into 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. We see the potential impact of the physical risk today and in more than 10 years.
(iii)Quantification is not possible at this point and any data provided would be unreliable. To address the physical effects of CC on our clients we develop insurance covers or other risk solutions. This is part of our usual business activities, hence not imposing additional costs. Research (e.g. our cooperation with the LSE) and methodological tools (e.g. Nathan) incur costs. MR is a founding corporate partner of the above-mentioned centre at LSE and is sponsoring an independent research programme on the economic consequences of CC (nearly €4m). Furthermore, approximately 30 people are working in the wider context of CC and natural catastrophes within MR group.

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
A	Changing consumer behaviour	Climate change might trigger changes in consumer behaviour towards products or services as it has an impact on the environment and consumer demand changes due to changing conditions.	Other: The socio-economic systems are dependent on each other; therefore, increased operational costs as well as worst case: inability to do business.	6-10 years	Direct	Likely	Unknown
B	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.	Other: The socio-economic systems are dependent on each other: therefore, increased operational costs as well as worst case: inability to do business.	6-10 years	Direct	Unlikely	Unknown
C	Uncertainty in market	Uncertainty in market signals may result in changes in customer behaviour. Furthermore,	Other: The socio-economic systems are dependent on each other: therefore,	6-10 years	Direct	Unlikely	Unknown

	signals	technological competition leads to technical obsolescence.	increased operational costs as well as worst case: inability to do business.				

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 evolving from risks from changes in other climate-related developments such as changing consumer demand(A), induced changes in human and cultural environments(B), and uncertainty in market signals(C). There is still ambiguity and uncertainty as to the long-term consequences of CC for human and socio-economic systems. As a reinsurer, MR is primarily affected through its clients. Additional risks are with capital market investments exposed to CC risks. Besides physical risks, which have already been discussed (see 5.1c), MR expects macroeconomic and social consequences, e.g. changes in livelihood(A/B/C), increasing costs of healthcare(B), increasing economic costs due losses on infrastructure(B), adverse effects on purchasing power(A/B), problems with the supply of necessary goods and services(B), etc. This might affect insurance demand and penetration, as well as the affordability and availability of insurance. Apart from the direct effects of increasing physical risks on our property business, the other risks discussed here might have an impact on life, health and casualty business in the long term.
(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 major implications (with the exception of physical risks). Nevertheless we track and monitor other risks(A/B/C) through our Geo Risks Research/Corporate Climate Centre (CCC) and Integrated Risk Management departments, as capital losses could arise. The risks include:
Relating to(B/C):*Agriculture and Forestry (increase in crop losses, greater water shortages, different cultivation methods/*Health care (pandemics, precautions)/Relating to(A): *Energy (increased demand for renewable energy to compensate for nuclear power), traffic (increase in infrastructure damage)/*building sector (damage to property).
(ii)At MR, dedicated early-recognition processes and research teams are in place to register change signals emitted by society and the economic sector. 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 CCC. 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. An example of the extensive research, focusing also on emerging risks in other climate-related developments, is a series of studies, based on the result of the IPCC report and current studies, dealing with the impact 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 covers the markets of Europe, Latin America, Africa/the Middle East and Asia. The four studies outline CC impact in the following sectors: *Energy/*Transport/*Infrastructure, industry and settlement/*Agriculture and forestry/*Water, coastal, marine systems and fisheries/*Tourism/*Human health. For example, for Europe, the study concludes that the negative direct effects of CC on infrastructure, industry and settlement are comparatively low due to their ability to adapt to the changes. Indirect impacts like regulations, supply-chain shifts(C) and changing consumer preferences(A) are probably more significant.
On the other hand, based on CC projections, societies in Asia are highly vulnerable to CC(A/B). The high dependency on water in combination with limited access to fresh water at the same time significantly affects agriculture in many Asian countries. Furthermore, large cities and megacities have developed in recent years, particularly in China and India(B). Those megacities are much more vulnerable in a warmer climate due to enhanced urban heat island effects and also due to the amplified adverse effects of natural hazards such as floods and tropical cyclones(B). With rising urbanisation and wealth, electricity demand and consumption is rising rapidly. Hydropower plants might be adversely affected if CC has an impact on seasonal run-off fluctuations. Higher temperatures lead to an increase in energy consumption(A), particularly in warm and hot regions, as energy is needed for cooling too. Dependency on fossil fuels like coal, oil and gas is currently still very high. However, the potential for electricity production from renewable energies such as wind power or solar energy is great. Regarding human health, the spread of infectious diseases, particularly in South and Southeast Asia, is caused by bad sanitary conditions and social factors, but also by the effects of CC. More frequent or more severe floods or droughts increase the incidence of such diseases. CC will also affect the spread of insect-borne virus diseases such as malaria or dengue fever(B).
(iii)Quantification is not possible at this point in time and any data provided would be unreliable.

Further Information

Please see also attachments under "4.Communication".

Page: 2012-Investor-Risks&Opps-ClimateChangeOpp

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
A	International agreements	Climate change related regulation is a subject on the political stage for some countries. Consequently, political advocacy is part of our Climate Change Strategy, enabling our risk experience to be used to achieve appropriate political solutions.	New products/business services	>10 years	Indirect (Client)	More likely than not	Low-medium
B	Fuel/energy taxes and regulations	Currently we constat a change in the area of energy and regulations, – e.g. in Europe –it triggered new business development possibilities. This leads to new and more energy technologies. Managing the risks in technologies (e.g. performance) is our core competence.	New products/business services	Current	Indirect (Client)	More likely than not	Low-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

(i)We continuously analyse known and emerging opportunities to determine whether there have been any changes in their structure, occurrence probability or possible financial implications and monitor opportunities due to changes in regulation. In order to provide tailor-made solutions for customers and to generate a profit from the opportunity, we concentrate on the following aspects:
1/(A): Provision for risk trough, heightening our clients' awareness and offering consultancy services, e.g. through various customer platforms ("MR Touch Naturkatastrophen"). As a consequence, customer loyalty increases and leads to a competitive advantage for Munich Re (MR), which in turn allows us to take new business opportunities. Another example is that we conduct market analysis focusing on political regulation in the field of Climate Change (CC) and renewable energy for many countries to provide clients with professional advice. Furthermore, as part of the Dii Initative, we supported the study "Desert Power 2050". It focus on possible scenarios for future renewable energy solutions for Europe and the MENA region. One finding was that this power system would allow Europe to meet its CO2 reduction targets of >90% in the power sector more cost effectively by importing 20% of its electricity from MENA, thereby saving a total of €33bn p.a., or €31 per MWh of power imported from MENA.
2/(B): 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. PV is a market involving many different technologies with promising, yet risky, innovations. PV firms consistently need to raise capital to advance/grow so they can keep pace with the market, hence creating balance-sheet concerns/share-price weakness. The recent past has seen a number of large-scale module performance losses, even for established manufacturers. Consequently, investors/lenders are looking for greater security. In the event of an unexpectedly large claim, MR provides liquidity to enable PV manufacturers to meet their performance warranty obligations – without delay – for up to 25 years. Hence, customers/lenders benefit from a higher degree of business certainty.// b)Wind industry: performance warranty for wind turbines (serial-loss cover)/lack-of-wind for wind farms/cover for offshore risks.// c)Cover for exploration risks for geothermal energy.// d)Other opportunities deriving from new regulations: additional insurance/reinsurance scope in countries that 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 covers or special defence costs cover for climate-related litigation.// We also see opportunities internally and are further increasing investments in Renewable Energy and New Technology (RENT project investigating 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). The Fukushima Daiichi nuclear disaster led to an international discussion on nuclear energy safety standards and to a re-evaluation of nuclear energy programmes. Various countries reacted to the disaster with political regulation, e.g. in Germany the government accelerated the nuclear phase-out to favour renewable energies. Based on a rough estimate, we assume that our renewable energy insurance solutions will generate premium volume of several hundred million euros p.a. by 2015. Further growth is expected depending on market developments.
(ii)We translate the opportunities provided by regulatory requirements(B) into innovative insurance products. To do this, all of the departments concerned (GEO/CCC, Integrated Risk Management, Corporate Underwriting, our Asset Manager 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. 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/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 was issued, providing producers/investors with a greater degree of certainty 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. For large-scale photovoltaic projects, risk-approved manufacturers further profit from the option that additional insurance guarantees can be granted directly to the project companies. By removing both the technology performance risk and the manufacturer's default risk, investors, contractors and operators of solar parks benefit from hitherto unachievable economic and financial security. MR provides extensive engineering knowledge, e.g. experience of offshore oil/gas projects to cover offshore wind parks. Depending on the opportunity, different departments work closely together to guarantee the transfer of expertise. ERGO, for example, offers covers for officially appointed, certified inspectors against pecuniary loss resulting from the verification of emission reports. 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, see also RENT (€2.5bn). Our insurance products are tailor-made and differ widely according to the client's needs 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, we cannot make any quantitative across-the-board assessments nor regarding the associated costs of these methods.

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
	Other physical climate opportunities	All of the above mentioned opportunities (change in mean (average) temperature/ change in temperature extremes/ change in mean (average) precipitation/ change in precipitation pattern/ change in precipitation extremes and droughts/ snow and ice/ induced changes in natural resources) are potential business opportunities for Munich Re, as our core business is to insure those possible natural catastrophes. Therefore, MR monitors all opportunities arising from natural disasters, adapting the product portfolio accordingly.	New products/business services	Current	Indirect (Client)	Very likely	Medium-high

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

(i)We continuously analyse known/emerging opportunities driven by all kinds of physical climate parameters 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 generate profit from 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 platforms (“Munich Re [MR] Touch Naturkatastrophen”)./*Environmental warning system, e.g. NATHAN: to share knowledge of scientific data/findings with clients: an interactive Globe of Hazards DVD and an online application, “NATHAN”, containing scientific and insurance-related information relating to natural catastrophes and Climate Change (CC), is available. In 2011, MR pooled its services for identifying/assessing complex natural hazard risks in the NATHAN Risk Suite, 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 an opportunity to make energy savings upgrades to equipment/property after a covered loss/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 in the framework of Munich Climate Insurance Initiative (MCII). In general, more frequent and more severe natural catastrophe events will boost demand for flood and windstorm cover. However, quantification of the financial implications is not possible at this point in time and any data provided would be unreliable, as it will depend on the need for the product in the market (estimate not possible due to climate uncertainty), but further growth is expected depending on market developments.
(ii)The assumption of CC risks is part and parcel of MR’s core business: we anticipate that CC will lead to a general increase in demand for insurance solutions/consultancy services in the medium to long term. 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. 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. 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, other business units) work closely together. 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. Furthermore, our engineering and geo risks expertise is incorporated in our products. Thus, natural catastrophe events like hurricanes, storm surges and floods 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. 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 characteristics./*Enhanced control of accumulation of risk (transparent liability)./*Optimisation of claims management.
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 exposures to changing weather risks. MR founded the Munich Climate Insurance Initiative (MCII) in 2005, bringing together representatives from insurance, the World Bank, NGOs and science. 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. Since 2011, MCII has been conducting a pilot project sponsored by the International Climate Protection Initiative (IKI) of a German Ministry (BMU), aiming to develop insurance solutions in 3 Caribbean countries to deliver CC adaptation benefits in developing countries through a public-private partnership approach. Furthermore MCII has received funding from the German Environmental Ministry (€ 2m) for pilot projects in the Caribbean (project partners e.g. CCRIF). It started in June 2011 and includes: Development of Livelihood/ Protection and Lender Portfolio Protection covers. MCII is also one of the leading partners of UNFCCC in the SBI "Loss and Damage" programme.
(iii)CC and its implications will lead to a general increase in demand for insurance solutions and consultancy services and are hence covered under the normal operating budgets of the units concerned. This will result in new business potential for MR: One example is RENT which target portfolio should reach an investment volume of round about €2.5bn in the medium term, depending on market conditions. Our insurance products are tailor-made and differ widely according to the client's needs 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, we cannot make any quantitative across-the-board 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
A	Changing consumer behaviour	Climate change might cause consumer behaviour towards products or services to change as it has an impact on the socio-economic environment and consumer demand changes due to changing conditions. This provides opportunities for new products.	New products/business services	1-5 years	Direct	More likely than not	Low-medium
B	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	New products/business services	1-5 years	Direct	More likely than not	Low-medium

		possible business opportunity for us.					
C	Fluctuating socio-economic conditions	Uncertainty in market signals may result in changes in customer behaviour. Furthermore, technological competition leads to technical obsolescence. New products might therefore be needed, creating an opportunity for us.	New products/business services	1-5 years	Direct	More likely than not	Low-medium

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

(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 implications.
In order to provide tailor-made solutions for our customers and to generate profit from the opportunity, we concentrate on the following aspects: New products for induced changes in human and cultural environments(B): 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 (MR).
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.
Further examples of solutions are:*Penalty aggregate cover/contractual guarantee cover// *Extended warranty cover// *Supply-chain interruption// *contingency cover// *Reputational risk cover// *Pandemic non-damage BI cover// *Power plant availability cover.
Specific examples: (A)*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”.
(B/C)*Serial-loss cover (wind industry): in the field of RE from wind power, companies have to face various technological risks: serial losses are most likely to arise when new technologies are employed and the first time major production series are completed. The loss suffered by the operator – or the manufacturer during the guarantee period – can be substantial. MR’s cover models help prevent the potential cost of serial losses from becoming a serious threat for our clients. They also explicitly cover even losses arising out of serial loss events that have not yet resulted in any material damage and secure guarantee payments. The cover applies from the time a defect is identified.
Regarding increased humanitarian demands(B&C), we have Agro System, a crop insurance that helps farmers to cover their growing need for agricultural raw materials and protect themselves against the consequences of Climate Change (CC). With governments and specialist insurance providers, we set up catastrophe funds to insure them against extreme weather events such as windstorm, drought, flood, late frost, enabling e.g., cooperatives and their low-income members in the Philippines to be protected against extreme weather events through microinsurance.
Regarding the renewables market: we assume a premium volume of several hundred million euros due to renewable energy. Further growth is expected depending on market developments. However, it is not possible to quantify the financial implications at this point in time and any data provided would be unreliable.
(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, other 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 characteristics// *Enhanced control of accumulation of risk (transparent liability)// *Optimisation of claims management.
For example(A/B/C), MR considers the progression of the renewable energy sector to be a consequence of the necessary structural change of the economy and society caused by the risks of a changing climate, which affects consumer behaviour as well as the socio-economic environments (e.g. economic, scientific-technical, political, legal and socio-cultural environments). The dynamic growth of the renewable energy sector offers 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 (Munich). Our Special Financial Risks Department is currently exploring the business potential of the US geothermal market. MR is 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.
Regarding increasing humanitarian demands(B): 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. Furthermore MR founded the Munich Climate Insurance Initiative (MCII) in 2005. Since 2011, MCII has been conducting a pilot project sponsored by the International Climate Protection Initiative (IKI) of a German Ministry (BMU), aiming to develop insurance solutions in 3 Caribbean countries to deliver CC adaptation benefits in developing countries through a public-private partnership approach. 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. One of the objectives is to meet around 15% of Europe´s electricity needs with carbon-free energy by 2050. Desertec's activities will be aimed at developing the right basic conditions and firm business plans within the next three years. A recent study shows that the power system should allow Europe to meet its CO2 reduction targets of 95% in the power sector more effectively and more economically by importing up to 20% of its electricity from MENA. Europe would thereby save a total of €33bn. Furthermore, MENA can thereby contribute to a 50% CO2 reduction in its power system despite a massive increase in demand while also benefiting from an export industry to Europe worth up to €60bn per year.
(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. Nevertheless, at this point in time, we cannot make any quantitative across-the-board 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)
Thu 01 Jan 2009 - Thu 31 Dec 2009	64210	129702

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)
Other

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

We used emission factors of PE International, GaBi 4 professional database and VfU 2011, where the Greenhouse Gas Protocol did not provide any.

Emissions are calculated via our SoFi Database (provided by PE International).

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 do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

Page: 8. Emissions Data - (1 Jan 2009 - 31 Dec 2009)

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

64210

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

129702

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?

No

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

Scope 1 emissions: Uncertainty range	Scope 1 emissions: Main sources of uncertainty	Scope 1 emissions: Please expand on the uncertainty in your data	Scope 2 emissions: Uncertainty range	Scope 2 emissions: Main sources of uncertainty	Scope 2 emissions: Please expand on the uncertainty in your data
More than 50% but less than or equal to 60%	Extrapolation	We are not yet in the position to collect data on environmental consumption/GHG emissions for all of our staff worldwide. Therefore we do collect data from our larger entities (coverage of employees: 48%) and do extrapolate them to 100% of the Group's staff. However we are currently further increasing our coverage as well as the data quality.	More than 50% but less than or equal to 60%	Extrapolation	We are not yet in the position to collect data on environmental consumption/GHG emissions for all of our staff worldwide. Therefore we do collect data from our larger entities (coverage of employees: 48%) and do extrapolate them to 100% of the Group's staff.

					However we are currently further increasing our coverage as well as the data quality.

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?

No

Further Information

Regarding Question 8.4: As we extrapolate to 100% of our employees, all sources are included in our disclosure. Small entities are still excluded due to a lack of verified data. Inclusion of further entities is planned.

Moreover: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

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

64450

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

106949

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?

No

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

Scope 1 emissions: Uncertainty range	Scope 1 emissions: Main sources of uncertainty	Scope 1 emissions: Please expand on the uncertainty in your data	Scope 2 emissions: Uncertainty range	Scope 2 emissions: Main sources of uncertainty	Scope 2 emissions: Please expand on the uncertainty in your data
More than 30% but less than or equal to 40%	Extrapolation	We are not yet in the position to collect data on environmental consumption/GHG emissions for all of our staff worldwide. Therefore we do collect data from our larger entities (coverage of employees: 60%) and do extrapolate them to 100% of the Group's staff. However we are currently further increasing our coverage as well as the data quality.	More than 30% but less than or equal to 40%	Extrapolation	We are not yet in the position to collect data on environmental consumption/GHG emissions for all of our staff worldwide. Therefore we do collect data from our larger entities (coverage of employees: 60%) and do extrapolate them to 100% of the Group's staff. However we are currently further increasing our coverage as well as the data quality.

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?

No

Further Information

Regarding Question 8.4: As we extrapolate to 100% of our employees, all sources are included in our disclosure. Small entities are still excluded due to a lack of verified data. Inclusion of further entities is planned.

Moreover: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

Page: 8. Emissions Data - (1 Jan 2011 - 31 Dec 2011)

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

90199

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

101381

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?

No

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

Scope 1 emissions: Uncertainty range	Scope 1 emissions: Main sources of uncertainty	Scope 1 emissions: Please expand on the uncertainty in your data	Scope 2 emissions: Uncertainty range	Scope 2 emissions: Main sources of uncertainty	Scope 2 emissions: Please expand on the uncertainty in your data
More than 10% but less than or equal to 20%	Extrapolation	We are not yet in the position to collect data on environmental consumption/GHG emissions for all of our staff worldwide. Therefore we do collect data from our larger entities (coverage of employees: 87%) and do extrapolate them to 100% of the Group's staff. However we are currently further increasing our coverage as well as the data quality.	More than 10% but less than or equal to 20%	Extrapolation	We are not yet in the position to collect data on environmental consumption/GHG emissions for all of our staff worldwide. Therefore we do collect data from our larger entities (coverage of employees: 87%) and do extrapolate them to 100% of the Group's staff. However we are currently further increasing our coverage as well as the data quality.

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

Verification or assurance complete

8.6a
Please indicate the proportion of your Scope 1 emissions that are verified/assured

More than 0% but less than or equal to 20%

8.6b
Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Level of verification or assurance	Relevant verification standard	Relevant statement attached
Reasonable assurance	ISO14064-3	Yes: "Certification AGIMUS for Munich Re Munich"

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

Verification or assurance complete

8.7a
Please indicate the proportion of your Scope 2 emissions that are verified/assured

More than 0% but less than or equal to 20%

8.7b
Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Level of verification or assurance	Relevant verification standard	Relevant statement attached
Limited assurance	ISO14064-3	Yes: "Certification AGIMUS for Munich Re Munich"

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?

No

Further Information

Furthermore 30% of our operations are ISO14001 certified.
Verification according to ISO 14064-3/EMAS is applied at our headquarter in Munich as well as some subsidiaries, e.g. DKV Seguros – this represents 10% of our operations.

Attachments

https://webadmin.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/8.EmissionsData(1Jan2011-31Dec2011)/Certification AGIMUS for Munich Re Munich.pdf

Page: 9. Scope 1 Emissions Breakdown - (1 Jan 2009 - 31 Dec 2009)

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	33909
Other: North America	9445
Other: Latin America	181
Other: Africa, Middle East	564
Other: Asia, Australasia	1646
Other: Europe w/o Germany	18465

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

Further Information

Please be aware regarding Question 9.1a:
As figures are rounded up, the total of a summing up might not completely match with previous stated figures.

Furthermore: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

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	33708
Other: North America	9458
Other: Latin America	188
Other: Africa, Middle East	565
Other: Asia, Australasia	1779
Other: Europe w/o Germany	18751

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

Further Information

Please be aware regarding Question 9.1a:
As figures are rounded up, the total of a summing up might not completely match with previous stated figures.

Furthermore: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.

Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

Page: 9. Scope 1 Emissions Breakdown - (1 Jan 2011 - 31 Dec 2011)

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	46430
Other: North America	12959
Other: Latin America	245
Other: Africa, Middle East	1078
Other: Asia, Australasia	2813
Other: Europe w/o Germany	26676

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

Further Information

Please be aware regarding Question 9.1a:
As figures are rounded up, the total of a summing up might not completely match with previous stated figures.
Furthermore: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

Page: 10. Scope 2 Emissions Breakdown - (1 Jan 2009 - 31 Dec 2009)

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	68496
Other: North America	19078
Other: Latin America	365
Other: Africa, Middle East	1140
Other: Asia, Australasia	3325
Other: Europe w/o Germany	37298

10.2

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

Further Information

Please be aware regarding Question 10.1a:
As figures are rounded up, the total of a summing up might not completely match with previous stated figures.

Furthermore: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

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	55936
Other: North America	15696
Other: Latin America	312
Other: Africa, Middle East	937
Other: Asia, Australasia	2952
Other: Europe w/o Germany	31115

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

Further Information

Please be aware regarding Question 10.1a:
As figures are rounded up, the total of a summing up might not completely match with previous stated figures.

Furthermore: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

Page: 10. Scope 2 Emissions Breakdown - (1 Jan 2011 - 31 Dec 2011)

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	52185
Other: North America	14565
Other: Latin America	275
Other: Africa, Middle East	1211
Other: Asia, Australasia	3161
Other: Europe w/o Germany	29983

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

Further Information

Please be aware regarding Question 10.1a:
As figures are rounded up, the total of a summing up might not completely match with previous stated figures.

Furthermore: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

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

67075

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, Cologne, DKV Seguros in Spain) we purchase electricity from renewable sources. Therefore the conversion factor should be considered with zero CO2 emission at those sites instead of the average grid factor. Regarding, for example, DKV Seguros, they explicitly select the provider with the lowest carbon footprints, as of this year all of their insurance products will be carbon neutral!

Furthermore regarding recalculated figures:
2011:
Scope 2 (total indirect energy)= 101381 t(metric),
hereof the amount of green electricity = 34305 t(metric),
therefore we internally account 67075 t(metric), for our Scope 2 //
2010:
Scope 2 (total indirect energy)= 106949 t(metric),
hereof the amount of green electricity = 17027 t(metric),
therefore we internally account 89922 t(metric), for our Scope 2 //
2009:
Scope 2 (total indirect energy)= 129702 t(metric),
hereof the amount of green electricity = 16172 t(metric),
therefore we internally account 113530 t(metric), for our Scope 2

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	34306	Within Germany, Munich Re Munich as well as ERGO Germany already purchase green electricity - in total this amounts to 34306 t(metric). This will be further expanded.

Further Information

Please be aware: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

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	186557
Electricity	201677
Heat	45166
Steam	0
Cooling	4334

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

Fuels	MWh
Natural gas	57774
Diesel/Gas oil	813
Other: Heating oil	78
Other: Natural gas used in CHP	127406
Other: Fuels for emergency power unit	487

Further Information

Please be aware:
In order to calculate the fuel amount we used the following method: Our assumption for Munich Re's fleet, including taxis and rented cars, is that 9 litre are used for 100 km. Furthermore we calculate for 1 liter fuel 9.8 kWh.

Regarding 12.2:
2009
Fuel: 107576 MWh
Electricity: 288043 MWh
Heat: 68695 MWh
Steam: 0 MWh
Cooling: 5136 MWh

2010:
Fuel: 98568 MWh
Electricity: 223034 MWh
Heat: 50915 MWh
Steam: 0 MWh
Cooling: 4770 MWh

Regarding 12.3
2009
Natural gas: 65266 MWh
Gas/Diesel oil: 344 MWh
Other: Heating Oil: 495 MWh
Other: Natural gas used in CHP: 41471 MWh
Fuels for emergency power units: 244 MWh

2010:
Natural gas: 45784 MWh
Gas/Diesel oil: 769 MWh
Other: Heating Oil: 18 MWh
Other: Natural gas used in CHP: 51803 MWh
Fuels for emergency power units: 194 MWh

Please be aware: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

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?

Increased

13.1a
Please complete the table

Reason	Emissions value (percentage)	Direction of change	Comment
Change in methodology	13	Decrease	We updated the emission calculation and are now using the calculation proposed by the Greenhouse Gas Protocol 2011. Therefore our emissions are now lower, as a refined, more accurate and realistic calculation is applied.
Change in boundary	2	Increase	As we included more companies and hence improved our employee coverage to 87% of the Munich Re Group, our scopes increase as we also include now units not having had an Environmental Management System till now. In taking into account sites where an Environmental Management System is already applied several years, we observe a decrease: e.g. Munich Re Munich 2010: 12739299 t(metric) 2011: 12285514 t(metric) Hence decrease -3,69% Or DKV

			Seguros: 2010: 1.249.769 t(metric) 2011: 934.989 t(metric) Hence decrease: -33,67%

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	Reason for Change
3.9	metric tonnes CO2e	unit total revenue	19	Decrease	Due to the increase in emissions and due to a bigger increase in gross premiums written, emissions intensity decreased. Please be aware: unit total revenue is provided in €m. Calculation methodology: Scope 1&2 = 191580 t(metric) GWP = €49.6bn Hence 191580 t(metric) / 49600€m = 3.9

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	Reason for Change
4.1	metric tonnes CO2e	FTE Employee	11	Increase	Due to an expansion of the boundaries and an increased coverage (87%), we constant an increase. Nevertheless at sites, where an Environmental Management System has been in place for a longer time period, there is a decrease. E.g. Munich Re Munich: 2010: 3.334 t(metric) 2011: 3.248 t(metric) Hence decrease of 3%.

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	Reason for Change
0.31	metric tonnes CO2e	Other: Megawatt hour (MWh)	5	Decrease	Due to an increase of renewable energy (from originally 7% to 13%) the amount of CO2 emission per MWh decreased.

Further Information

Please be aware: The figures do not match with previous provided figures as we updated our scope calculation according to the new Greenhouse Gas Protocol and recalculated the figures backwards up to 2009 in order to apply the same methodology and provide comparability.
Furthermore we increased our coverage and refined the data quality, therefore not only the scopes differ, but also relative figures might not match to previous given figures.

Page: 14. Emissions Trading

14.1
Do you participate in any emission trading schemes?

No, and we do not currently anticipate doing so in the next two years

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	River run offs in Chongqing, Yunnan, Sichuan and Guizhou provinces, P.R.China	Other: VCS with Social Carbon Standard	71238	71238	Yes	Voluntary Offsetting

Page: 2012-Investor-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	2491	Once a year we collect data on consumption of paper, water, waste handling and business travel, actual coverage of employees is 87% this 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 latest GHG Protocol 2011 for Scope 3 emissions, hence we updated the emission calculation this year.	
Business travel	28237	Once a year we collect data on consumption of paper, water, waste handling and business travel, actual coverage of employees is 87% this 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 latest GHG Protocol 2011 for Scope 3 emissions, hence we updated the emission calculation this year.	
Other (downstream)	2466	This figure is for paper. Once a year we collect data on consumption of paper, water, waste handling and business travel, actual coverage of employees is 87% this 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 latest GHG Protocol 2011 for Scope 3 emissions, hence we updated the emission calculation this year.	

Other (downstream)	679	This figure is for water. Once a year we collect data on consumption of paper, water, waste handling and business travel, actual coverage of employees is 87% this 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 latest GHG Protocol 2011 for Scope 3 emissions, hence we updated the emission calculation this year.	

15.2
Please indicate the verification/assurance status that applies to your Scope 3 emissions

Verification or assurance complete

15.2a
Please indicate the proportion of your Scope 3 emissions that are verified/assured

More than 0% but less than or equal to 20%

15.2b
Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Level of verification or assurance	Relevant verification standard	Relevant statement attached
Reasonable assurance	ISO14064-3	Yes: Certification AGIMUS for Munich Re Munich.pdf

15.3
Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

15.3a
Please complete the table

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Waste generated in operations	Change in boundary	16	Increase	Increase of emission is mainly caused by implementation of new sides which are not fully included in the Environmental Management System. Especially data quality needs to be improved. Sides which are well managed show rather decrease of emissions.
Business travel	Change in boundary	8	Increase	Increase of emissions is caused by better measuring of travelling data due to less travelling service provider - this is for example the case for American subsidiaries. Employee coverage increased as well (60% to 87%) including also entities not having had an Environmental Management System till now.
Other (upstream)	Change in boundary	39	Increase	PAPER. Increase of emission is mainly caused by implementation of new sides which are not fully included in the Environmental Management System. Especially data quality needs to be improved. Sides which are well managed show rather decrease of emissions.
Other (upstream)	Change in boundary	11	Increase	WATER. Increase of emission is mainly caused by implementation of new sides which are not fully included in the Environmental Management System. Especially data quality needs to be improved. Sides which are well managed show rather decrease of emissions.

Further Information

Question 15.1; please be aware regarding our recalculated figures:
2010:
Waste generated in operations: 2.140 t(metric)
Business travel: 26.115 t(metric)
Paper: 1.776 t(metric)
Water: 615 t(metric)
Total Scope 3: 30.646 t(metric)
2009:
Waste generated in operations: 2.431 t(metric)
Business travel: 31.452 t(metric)
Paper: 2.765 t(metric)
Water: 686 t(metric)
Total Scope 3: 37.333 t(metric)
As figures are rounded up, the total of a summing up might not completely match with previous stated figures.
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Attachments

https://webadmin.cdproject.net/Sites/2012/11/12611/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/15.Scope3Emissions/Certification AGIMUS for Munich Re Munich.pdf

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) and Maya Schürle (Consultant Corporate Responsibility)

Carbon Disclosure Project