

CDP 2013 Investor CDP 2013 Information Request

Module: Introduction

Page: Introduction

0.1

Introduction

Please give a general description and introduction to your organization

Risk Management is our strength

Munich Re Group combines primary insurance and reinsurance under one roof. 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 well as climate change opportunities. 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 within the GeoRisksResearch unit, 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.

- Reinsurance: With premium income of around €28bn 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 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. In 2012, ERGO recorded a premium income of more than €18bn and paid out benefits to customers amounting to more than €17.5bn.
- Munich Health: Under the Munich Health brand, Munich Re combines its global healthcare knowledge in primary insurance and reinsurance. Over 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 are managed by MEAG. The quality of our asset management proved its worth during the 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. It operates in all lines of insurance, with around 45,000 employees throughout the world.

All the information given within the CDP 2013 refers to the whole Munich Re Group.

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

Thu 01 Jan 2009 - Thu 31 Dec 2009

Enter Periods that will be disclosed

Fri 01 Jan 2010 - Fri 31 Dec 2010

Sat 01 Jan 2011 - Sat 31 Dec 2011

Sun 01 Jan 2012 - Mon 31 Dec 2012

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

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(€)

0.6

Modules

As part of the request for information on behalf of investors, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sectors, companies in the oil and gas industry and companies in the information technology and telecommunications sectors 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 not appear below but will automatically appear in the navigation bar when you save this page. 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>.

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. Torsten Jeworrek (CEO of Munich Re's reinsurance business), responsible for **Climate Change Strategy**.

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

Development of **insurance products related to climate change** are in the responsibility of **different Board Members** in charge of respective business fields and region.

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	Incentivized 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

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator
Chief Executive Officer (CEO)	Monetary reward	<p>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 Dr. Nikolaus von Bomhard).</p> <p>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 Dr. Nikolaus von Bomhard).</p>
Board/Executive board	Monetary reward	<p>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 globally, for all Board Members. Furthermore the Board Member responsible for Munich Re's reinsurance business has specific targets regarding the implementation of the Climate Change Strategy.</p>
Director on board	Monetary reward	<p>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.</p>
Executive officer	Monetary reward	<p>The Head of Group Development has an Emission Reduction Target in his incentive scheme (10% CO2 emission reduction per employee by 2015 - base year 2009).</p>
Business unit managers	Monetary reward	<p>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, so far already €1bn has been invested). Furthermore MEAG is also incentivized to fulfil the sustainability quota of 80% regarding assets, bonds and shares. Especially the Competence Centre on Climate Change within the GeoRisksResearch unit (GEO/CCC) has also targets regarding Climate Change.</p>
Other: Environment/sustainability managers	Monetary reward	<p>The Environmental Manager has an Emission Reduction Target in his incentive scheme (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 the expansion of the Environmental Management System.</p>
Facility managers	Monetary reward	<p>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 (base year 2009).</p>

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

i) Munich Re (MR) adopts a multidisciplinary approach to climate change (CC) risks, using and combining the experience/expertise of our scientists, specialist underwriters, lawyers, economists, and actuaries in a multidisciplinary company-wide risk management process. An in-depth understanding of risks is the basis of MR's 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 others), which are monitored and evaluated by specialist departments, integrated into MR's Internal Control System. Whilst we are in a position to adequately assess the known risks in our portfolio on the basis of current climate research, scientific research into CC is complex and the political and regulatory environment in which we operate is developing fast: We must remain vigilant with regard to the identification/ evaluation of new and changing risks. If new findings in climate research or actual claims development necessitate adjustments in risk assessment, we are able to make these changes promptly because the contractual periods of most of our natural hazards covers are only one year. However, changes in the physical environment and new regulations with regard to CC also open up many business opportunities – i.e. through new insurance products for renewable energy technologies or coverage for extreme weather events (public-private partnership for crop insurance).

ii) CC represents one of the greatest risks of change for the insurance industry. In the Corporate Climate Centre within the GeoRisksResearch unit (GEO/CCC), we analyse and assess climatic effects and are developing a holistic strategic approach. Findings are made available to all business areas and all business fields (reinsurance, primary insurance and asset-liability management). The main tool we use is our strict and disciplined risk management, which is firmly embedded in all our business operations. We monitor and assess all the identifiable risks holistically for both sides of the balance sheet.

As our own operations and sites are primarily subject to physical risks (see iii), we incur most of our risks/risk types through business with our clients:

a) Risks customers transfer to us: We have specialist departments with expertise in risk management, underwriting and climate issues.

b) Emerging risks: We track all kinds of risks constantly and have a competence 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, liability and health risks.

Process description: 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 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 physical and 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 liability and geo risks research.

In all this, we use models based on assumptions and parameters that are continually checked for plausibility and comprehensibility, also by the Board of Management. Common sense is indispensable in these considerations, as is the readiness to challenge the results of calculations by means of stress tests and scenario analyses. It is not possible, of course, to properly identify every risk or to always assess the correlations between different risks correctly. But as recent years show, we have succeeded relatively well – also during the financial crisis – in taking sensible decisions on the basis of our risk management systems.

iii) a) Risks arising out of investments in companies with high physical exposure to CC/exposure to changes in CO2 legislation; i.e. 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 sustainability fund. We analyse not only risks, but also the business opportunities of companies in which we invest. By the end of 2012, we had invested €1bn in our RENT (Renewable Energy and New Technologies) programme, rising to €2.5bn in the coming years.

b) We monitor risks for our sites and subsidiaries, i.e. meteorological risks of CC, such as storm, flooding or other extreme weather events that have a direct impact on us, i.e. 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. Furthermore, to mitigate CC, in-house green building and energy efficiency play 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 relative to 2009, which will in turn reduce operational costs. Since 2009 MR Munich has been carbon neutral, in 2012 the MR Reinsurance Group followed. The EMS currently covers 75% 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 – detailed reduction plans are 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 specialist 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 (group of internal experts, meeting monthly). 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. 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 business strategy approach such as loss probability and intensity: CC poses a serious risk of change to the insurance industry, so MR started to investigate it from as early as 1973: a special research team was set up in 1974 to build up know-how in GeoRisks and CC. 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 identify business opportunities/priorities, such as 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 (GEO/CCC, all CU departments). Projects and decisions 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, Head of MEAG's Mandate Management Division, direct reporting line to CEO MR, Dr. von Bomhard.

3. Responsible for all EMS-related issues: Corporate Responsibility Department, with direct reporting line to Group Development and CEO MR (Dr. von Bomhard).

2.2

Is climate change integrated into your business strategy?

Yes

2.2a

Please describe the process and outcomes

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, reflected in our core strategy and is an integral part of our business strategy, including also CC risks and opportunities. In 2007, MR established the Corporate Climate Centre within the GeoRisksResearch unit (GEO/CCC). 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. Developments and MR activities on the development of business potentials are permanently monitored and outline the current state of MR's CC strategy and progress made on current projects. The department also makes 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 our CC strategy, an integrated part of our business strategy, is proven to manage also difficult business years without major adjustment, e.g. following the extreme natural catastrophe year of 2011, MR paid out the same dividend as in the previous year, after a successful year in 2012 the dividend even went up.

ii) The different pillars of the CC strategy cover several aspects of CC, which are adapted accordingly:

1. Mitigation: Innovative insurance cover for renewable energies and energy efficiency, our own investments in RENT – Renewable Energy and New Technologies, see (iv).

2. Adaptation: Offering products and services to mitigate CC ranging from crop insurance (e.g. SystemAgro) to severe weather insurance in developing countries.

> Mitigation and adaptation in particular enable us to identify business opportunities/priorities (special department Green Tech Solutions, see [iii], i.e. renewable energy cover or weather-index-based crop insurance – hence developing green business opportunities). Further information in chapter "5. Risks" and "6. Opportunities".

3. Research: Apart from dedicated research teams in-house (GEO/CCC and economists), we work and, in some instances, have formal research cooperations with various universities, e.g. the London School

of Economics (LSE) as well as external experts.

4. Advocacy: We are active in various committees, panels and working groups (i.e. German Insurance Association, UNEP FI, Munich Climate Insurance Initiative, OECD), also providing expertise to policy makers, hence closely following regulatory developments, which we then can integrate into the strategy, e.g. EU pledge, see (iii).

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 of 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) This approach is reflected in our **short-term strategy**, with recent findings integrated into our business model and minor adjustments made to our pricing and development of new products for climate mitigation and adaptation. One current example: MR introduced in 2012 the first performance guarantee insurance for LED modules as an innovative energy efficiency solution. Nevertheless, new products, having an impact on short-term strategy, develop into a long-term strategy as soon as they are part of the product portfolio.

iv) Regarding our **long-term strategy**, our GEO/CCC unit and its trend research play an important role: This is also reflected in long-term product development and integrated into our own business strategy, i.e. internal adoption of the RENT project; consequently, we decided to invest €2.5bn of our own funds in RENT. So far, more than €1bn has already been invested and new insurance policies for renewable energy (e.g. performance guarantees) were developed in the course of this project. 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 renewable energy insurance will generate for MR a premium volume significantly in excess of €100m p.a. by 2015.

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, which has an influence on the short term (new products) as well as in the long term (new expert unit, capacity building).

In general: Our risk management is based on a solid basis geared to long-term stability, i.e. although 2011 was the most expensive year related to natural catastrophes and affected our operating result, the same dividend was paid out.

v) 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 strategic advantages 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. Nevertheless, due to the natural catastrophes occurred in the reporting period, the premium income and renewal were affected for this year, also region-related: Premium income benefited particularly from price increases in the segments recently affected by major losses, including natural catastrophe covers. Also, rising premium volumes in US agricultural insurance and at MR primary insurance subsidiaries in the US contributed to the premium growth in the first quarter. The combined ratio in property-casualty reinsurance in the first quarter of 2013 was 85.7% of net earned premiums. Natural catastrophe losses amounted to around €24m (in 2011: €41m). In the renewals at 1 April 2013, a premium volume of around €1bn was up for renewal. At slightly over 40%, natural catastrophe business accounted for a high percentage of this volume. Overall, prices moved sideways at a high level. This also applied to Japan, despite an increased supply of capacity from established and new market players. The renewals at 1 July mainly involve treaty business in the US market and in Australia, New Zealand and Latin America, with a premium volume of around €2.2bn up for renewal. A high percentage of this – around 30% – will again be accounted for by natural catastrophe covers. MR expects slight price erosion for such covers in the USA, due to growing capacity.

2.3

Do you engage in activities that could either directly or indirectly influence policy on climate change through any of the following? (tick all that apply)

- Direct engagement
- Funding research organizations
- Other

2.3a

On what issues have you been engaging directly?

Focus of legislation	Corporate Position	Details of engagement	Proposed solution
Clean energy generation	Support	<p>Munich Re is one of the initiators of the Dii Initiative, aimed at establishing an energy infrastructure in the EUMENA region supplying the Middle East/North Africa/Europe with renewable energy (RE). The initiative was founded under the German law as a "GmbH" (limited liability company) in Munich 2009 for three years. Dii's shareholders, including Munich Re, agreed in 2012 that Dii will be extended for further two years until the end of 2014. Today, more than 30 people work at the Dii head office in Munich (Germany) and in its branches in Rabat (Morocco) and Tunis (Tunisia). As shareholder Munich Re is member of the Dii Steering Operating Committee and participates in several working groups. In addition MR supports different events, one example: Dr. Torsten Jeworrek, Member of Munich Re Board, supported the annual meeting in Berlin in November 2012 with a key note speech highlighting the urgent need for new social and economic partnerships between Europe and its neighbours and the opportunities in the energy market. The main goals of the Dii GmbH are: 1. Improving the electricity supply from renewables in MENA countries, 2. Supply Europe with 10-20% of electricity from RE by 2050. The concrete objectives are the creation of a positive investment climate (development of the technological, economic, political and regulatory framework), the initiation of selected reference projects and the development of a long-term implementation concept by the year 2050. In June 2012 „Desert Power 2050“ was published focusing on mutual benefits for Europe and MENA from renewable energy deployment in the MENA region, demonstrating that a power system based on more than 90% of renewable energy is technically possible and economically viable. The second part of this publication, called “Getting Started”, has been launched at a high-level Policy Conference of the EU Sustainable Energy Week organized by Dii in June 2013. The study provides the pathway towards an interconnected energy system. This implementation roadmap is crucial as it provides policy recommendations and financial/business case approaches for developing the renewable energy market in the MENA region in the coming decades.</p>	
Adaptation resiliency	Support	<p>Munich Climate Insurance Initiative (MCII) was initiated by Munich Re in April 2005, bringing together representatives from insurance, the World Bank, NGOs and science in response to the growing realization that insurance solutions plays a role in adaptation to climate change. The initiative is based at the United Nations University Institute for Environment and Human Security (UNU-EHS). MCII has been involved in the United Nations climate negotiations process since 2005 and many of the main concepts have been included in post-Kyoto-Protocol negotiation texts and carried forward into the Work Programme on Loss and Damage under the Subsidiary Body for Implementation (SBI) of the UNFCCC. Concrete examples of adaptation resiliency: Since 2011, MCII has been conducting the Climate Risk Adaptation and Insurance in the Caribbean project. Initial funding has been provided by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) under the International Climate Initiative. The project seeks to increase social resilience against extreme weather events by developing and implementing insurance solutions in three Caribbean countries. Since then two parametric weather-index based insurance solutions have been developed. One product (Livelihood Protection Policy) is aimed at improving the financial protection of individuals in case of extreme weather events. In May 2013 the Livelihood Protection Policy has been launched in St. Lucia. The insurance is designed in such a way as to offer incentives for reducing risks. At the same time, the premium is so low that it is affordable for poor people. The payment of benefits is</p>	

Focus of legislation	Corporate Position	Details of engagement	Proposed solution
		triggered directly whenever a previously specified amount of rainfall or a wind-speed threshold is exceeded. The other weather-index based insurance solutions targets lending institutions and provides a hedge against increased loan default after extreme weather events (Loan Portfolio Cover). This project is a first operative step of MCII in promoting integral risk management solutions for climate change adaptation in developing countries.	

2.3d

Do you publically disclose a list of all the research organizations that you fund?

No

2.3e

Do you fund any research organizations to produce public work on climate change?

Yes

2.3f

Please describe the work and how it aligns with your own strategy on climate change

Since 2008, Munich Re has been a founding corporate partner of the Centre for Climate Change Economics and Policy at the London School of Economics (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 climate change symposium, Dr. Jeworrek (Board Member) held a speech on the quantification/interpretation of economic and insured natural catastrophe loss trends. The collaboration supports Munich Re to receive results from research with a stronger focus on the economics of climate change in the insurance industry.

2.3g

Please provide details of the other engagement activities that you undertake

Munich Re (MR) engages with policy makers at different levels as an individual company. The engagement ranges from public engagement (e.g. lead authorship with IPCC AR5) to individual engagement (e.g. discussions with politicians). MR is actively involved in industry initiatives such as UNEP FI (Climate Change Working Group), Geneva Association (Working Group CR+I), the UN Initiative Caring for Climate (Global Compact) and at national level MR is engaged in the Finance Forum and climate change.

One example in the area of legislation/policy: ahead of Durban, MR supports 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.

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.

Experts from our Group:

Prof. Dr. Höppe, Head of GeoRisksResearch/Corporate Climate Centre, is one of three advisors to the Bavarian Government on CC matters. He is 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 National Disasters Management Institute (INGC) and several administrators to improve the flood risk in Mozambique.

Both MR and ERGO take part in climate change working groups, e.g. with the German Insurance Association to position the industry as a whole vis-à-vis government policy and the general public.

Furthermore Astrid Zwick was chairing the Principles for Sustainable Insurance (PSI) initiative, a UN based platform to foster the development of a green economy and resilient communities.

She was also contributing to the position paper (“the future we want” Rio +20 of the UNEP FI) on finance sector engagement.

2.3h

What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Munich Re (MR) engages with policy makers at different levels as an individual company. The engagement ranges from public engagement (e.g. lead author of IPPC) to individual 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 part in relevant developments, as several departments are responsible for integrating Climate Change (CC) into our business, and to actively communicate on a political level. The department coordinates a process that takes in all of MR, assessing relevant issues and developing positions valid for the entire Group. They are in close contact with the Corporate Climate Centre (positioned within the GeoRisksResearch unit), responsible for the strategic relevance of CC and coordinating all activities of the Munich Re Group relating to CC and renewable energies, as well as other specialised departments (e.g. for liability cover) – to coordinate opinions.

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	226035	2015	Absolute target: The Board of Management of Munich Re Group approved in March 2011 the new Group-wide target to become carbon neutral by 2015. Furthermore an intensity target applies, as Munich Re Group wants to actively reduce its emissions: At least 10% of emissions per employee will be reduced globally by CO2 reducing technologies and projects, no more than 90% will be offset by emissions trading certificates (base year 2009 for both goals).
A:2	Scope 1+2+3	100%	100%	2009	87591	2012	Absolute target: The Munich Re Reinsurance Group had the goal to become carbon neutral by 2012 (base year 2009) by reducing energy and the purchase of emission trading certificates, hence fulfilling a first step of the Munich Re Group goal to become carbon neutral in 2015.

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	4.784	2015	The Board of Management of Munich Re Group approved in March 2011 the new Group-wide target to become carbon neutral by 2015 (absolute target A-1). Intensity target: Hereof at least 10% CO2 emission per employee must be reduced globally by CO2 reducing technologies and projects, no more than 90% will be offset by emissions trading certificates (base year 2009).

3.1c

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

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
I:1	Decrease	10	Decrease	10	The expected decrease reflects all three Scopes and is based on our Environmental Management 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	67%	85%	Climate neutrality of Munich Re Group partially reached through active reduction of emissions (in total decrease of 22%, comparison of 2009 and 2012), due to usage of green electricity as well as purchase of emissions trading certificates. So far, Munich Re is on the right track as the goal should be achieved by

ID	% complete (time)	% complete (emissions)	Comment
A:2	100%	100%	<p>2015. To achieve the ultimate goal of carbon neutrality, Munich Re will reduce further emissions and purchase emission trading certificates. Nevertheless not all sites of Munich Re are covered yet in the Environmental Management System, which includes tracking of CO2 emissions. The sites reporting cover 75% of Munich Re employees, remaining 25% are extrapolated.</p> <p>The Munich Re Reinsurance Group became carbon neutral by 2012 (base year 2009) by reducing energy as well as the purchase of emission trading certificates, hence fulfilling a first step of the Munich Re Group goal to become carbon neutral in 2015.</p>
I:1	67%	100%	<p>Reduction of 10% of CO2 emissions per employee already reached: 1. Solely through reduction initiatives we achieved a total reduction of 15% per employee. 2. Through usage of certified green electricity (therefore CO2 emission are accounted as zero) a reduction of 27% was fulfilled. Nevertheless not all sites of Munich Re are yet covered in the Environmental Management System, which includes tracking of CO2 emissions. The sites reporting cover 75% of Munich Re employees, remaining 25% are extrapolated.</p>

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 implementation phases)

Yes

3.3a

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

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation		
To be implemented*	10	250
Implementation commenced*	2	382
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 savings (metric tonnes CO2e)	Annual monetary savings (unit currency - as specified in Q0.4)	Investment required (unit currency - as specified in Q0.4)	Payback period
Energy efficiency: Building fabric	Nature of activity: Munich Re's primary insurance ERGO in Cologne: Due to modernizations at the site (modernization of building facilities, upgrading ventilation systems), and a newly installed CHP, we will now save	8200	1403071	2191393	1-3 years

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Annual monetary savings (unit currency - as specified in Q0.4)	Investment required (unit currency - as specified in Q0.4)	Payback period
Low carbon energy installation	<p>approximately 70% of the CO2 emissions. Scope type: Scope 2, measure to achieve A:1 as well as I:1. Voluntary/mandatory (in relation to external regulators): This is a voluntary activity. Expected lifetime: This is an ongoing project (start in 2012) and will be further implemented (till 2015).</p> <p>Nature of activity: At Munich Re Munich the following projects are planned: • Modernization of data processing area • Modernization of air conditioning systems • Optimization of building control system Scope type: Scope 2, measure to achieve A:1 as well as I:1. Voluntary/mandatory (in relation to external regulators): These are voluntary activities. Expected lifetime: These are starting projects (2012) and will be further implemented.</p>	632	235000	1500000	4-10 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 75% of Munich Re's employees globally, tracking Scope 1 -3 emissions through the following indicators: energy (direct and indirect), business travel, water, paper, waste. The Environmental Management System ensures setting specific goals, controlling the achievements and improving overall performance (i.e. reducing emissions and consumption of natural resources). Our ISO14001 certification covers approximately 32% 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).

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 places other than in your CDP response? If so, please attach the publication(s)

Publication	Page/Section reference	Attach the document
In mainstream financial reports (complete)	112 ff., 132 f.	
In voluntary communications (complete)	13 f., 29, 51 ff., 60, 62, 74, 100ff.	
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Topics Magazine 1_2012.pdf

Publication	Page/Section reference	Attach the document
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Topics Magazine 2_2012.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Topics Magazine 1_2013.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Climate Change effects increasingly influencing US thunderstorm losses.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Dii presents calculations on feasibility of Desertec vision.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re and IFC agreement on geothermal exploration risk insurance.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Liability for Climate Change.pdf
In voluntary communications (underway) - previous year attached	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re and Dii_2050 Desert Power.pdf
In voluntary communications (underway) - previous year attached	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re_NATHAN Risk Suite Flyer.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re_Factsheet Traditional Weather Products.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Natural catastrophes 2012 and Climate Change.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re_WRM_Factsheet_Lack of Water_2013.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Weather Risk Management.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re_WRM_Factsheet_Lack of Wind.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Natural catastrophe statistics for 2012.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re insures offshore wind turbines.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Climate Change Website.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re NatCatService_natural_disasters2012_worldmap.pdf

Publication	Page/Section reference	Attach the document
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re App on renewable energies.pdf
In voluntary communications (underway) - previous year attached	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re_Touch Natural Hazards.pdf
In voluntary communications (underway) - previous year attached	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re_Press release_Core group of countries needs to take lead on climate change.pdf
In voluntary communications (complete)	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re_2012_Review of the Japan disaster.pdf
In voluntary communications (underway) - previous year attached	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re Climate and Renewables Newsletter.pdf
In voluntary communications (underway) - previous year attached	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re_NatCatService_Natural Disasters 1980 - 2011.pdf
In voluntary communications (underway) - previous year attached	all	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifyAttachment/Munich Re_NatCatService loss database.pdf

Module: Risks and Opportunities [Investor]

Page: 5. Climate Change Risks

5.1

Have you identified any climate change risks (current or future) that have the 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
	Other regulatory drivers	Other regulatory drivers could include the introduction of limits for greenhouse gas emissions or duties to inform/report/disclose the amount of greenhouse gases produced by a product/service, or regulation changing building codes to prevent damage by extreme weather events. Munich Re expects regulation with regard to climate change and greenhouse gas emissions	Other: Munich Re could be affected as casualty and property reinsurer and primary insurer (defence costs, damages).	6-10 years	Indirect (Client)	Likely	Medium-high

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		to become stricter, especially in Europe and the US, where Munich Re does most of its business. This may lead to liability claims based on non-compliance with such regulation (e.g. duties to inform, disclose or report, greenwashing/greenbuilding claims). A fundamental change in regulation or court decisions could also lead to successful claims because of greenhouse gas emissions as such. Even if claims are unsuccessful, they could give rise to substantial defence costs in the US, owing to the absence of a loser-pays rule there. Regulation changing building codes to prevent damage from extreme weather conditions could increase costs involved in rebuilding damaged/destroyed buildings covered by liability or property lines of business. Potential plaintiffs could be victims of natural catastrophes (e.g. hurricanes like Katrina) or of rising sea levels (e.g. inhabitants of small islands).					

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)The potential financial risk Munich Re (MR) faces relates to clients/insurance products and not to MR as a company, as MR itself produces a small level of emissions compared to other industries; hence direct regulatory risks are rather unlikely.

Especially property insurance regularly covers losses that can be associated with the impact of climate change (CC) (e.g. changing frequency/intensity of weather-related natural catastrophes). Whether liability for greenhouse gas emissions as such could be covered by liability insurance seems doubtful (emissions are intentional, not accidental; therefore no occurrence, pollution exclusion, etc.). Losses indirectly related to CC (e.g. liability of architects/engineers for causing damage by not sufficiently considering global warming and its consequences) are often covered under liability insurance (e.g. PI, D&O). Therefore insurance coverage is generally available.

Financial implications are difficult to quantify at the moment. Losses indirectly related to CC are not a separate category, so little precise data is available. Damages claims based on greenhouse gas emissions as such have not yet been successful (e.g. Comer v. Murphy Oil, Kivalina v. ExxonMobil). Risks connected with CC, especially defence costs, could be a criterion for consideration in certain liability lines of business, especially if such litigation increases in frequency.

Furthermore, there are also regional aspects to be considered:

- Differences in procedural issues and litigation (availability of class actions and contingency fees, existence of loser-pays rule, strength and degree of relevant activities by NGOs, etc.).
- Claims mentality in different markets; acceptance of private law enforcement as method of enforcing regulation (high in the US, low in Europe).

> Only one CC-related claim in Europe to date, brought by Germanwatch and BUND to force the German government to disclose the contribution to CC made by projects supported by taxpayers through the country's export credit agency.

The MR publication "Liability for Climate Change? Experts' view on a potential emerging risk" published in 2010 contains a survey on CC-related liability risk conducted as an online poll by Germanwatch. A total of 32 respondents with expertise in the field of environmental and liability law participated in the poll. The survey was part of the research project entitled "Mainstreaming of climate risks and

opportunities in the financial sector”, and its complete results are published at <http://www.climate-mainstreaming.net/litrisctp>.

Outlook

It is necessary to distinguish between

- “Direct liability” for CO2 emissions as such: unlikely, but higher defence costs for likely defendants if occurrence clause makes coverage for such claims possible.
- “Indirect liability” (= liability related to CC): likely to increase in importance due to stricter regulation leading to stricter liability and standards of care and to greater public awareness due to intensive media coverage and growing consensus about man-made global warming.

Liability related to CC (indirect climate liability) is likely to increase constantly (claims based on non-compliance with regulations or professional duties, e.g. failure to warn or inform), on conspiracy to mislead consumers/the public/legislation/courts by “greenwashing” or “greenbuilding”), shareholder litigation (if financial loss of shareholders is, for example, caused by non-compliance with climate-related regulation, not sufficiently considering climate-related business aspects or greenwashing).

ii)MR was one of the first insurers to identify CC risks as being relevant for the insurance industry. For nearly four decades, MR has been monitoring and analysing these risks in cooperation with experts in all relevant areas of science worldwide (e.g. cooperation with relevant experts and academic/other institutions, exchanges on CC-related topics, participation in international conferences on CC-related topics, contributions to relevant publications). MR also provides advice to decision-makers.

Internally, MR adopts a multidisciplinary approach to CC litigation, using and combining the experience and expertise of our underwriters, actuaries, claims departments and legal/science counsels with all areas of environmental, toxic tort and construction defect claims. MR is constantly monitoring the developments in climate litigation, climate-relevant legislation and other trends in that area. Within MR, several experts specialised in CC-related issues lead these efforts (especially Prof. Dr. Peter Höppe and his division for GeoRisksResearch, Ernst Rauch and his Corporate Climate Centre, and Prof. Dr. Ina Ebert as expert for liability and insurance law). CC is also a regular topic within our internal Emerging Risk Process (steered by Integrated Risk Management; the Emerging Risks Core Team and Emerging Risks Think Tank). Internal workshops and other events for MR underwriters, claims people and risk managers regularly help to ensure that anyone dealing with CC-related business is well informed about ongoing developments in that area.

To support MR's cedants, a variety of workshops and conferences for clients complement MR's publications on these issues. Published conference transcripts (e.g. 13th International Liability Forum in 2009) and regular reports on ongoing relevant developments at the Annual Liability Regimes Conference and other market events make this information available to a wider audience among our clients. Besides this, several MR experts (Höppe, Rauch, Ebert – see above) are members of the Geneva Association's “Climate Risk and Insurance” working group, which monitors CC-connected risks and publishes regularly on these issues.

MR's activities in the CC context aim to raise awareness of CC-related risks within and outside the insurance industry, sharing our expertise and enabling insurers and insureds to react to these challenges appropriately, both in the short term (e.g. considering these aspects in policy wordings) and in the long term (e.g. developing new products, exploring alternative energies). Insuring the consequences of CC is and will remain part of our daily business in many ways. The publication “Liability for climate change”, as well as regularly published articles in our magazine “Topics”, document our approach, underlining our commitment to monitor and respond to such developments.

iii)Dealing with risks caused by CC-related regulation or litigation is part of MR's regular research activities, product development and risk management. Therefore costs are mainly integrated in existing and more general budgets of all the divisions (mentioned above) involved. Most of MR's CC activities have been taking place for decades and will continue in the future.

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
	Other physical climate drivers	Risk description: In a number of regions, the frequency of losses from weather-related natural catastrophes has risen in recent years. Based on current climate models, we expect this trend to play an increasingly prominent part in the changing risk	Other: Other increased losses from weather-related catastrophes. Natural catastrophe losses in reinsurance in 2012: €1,284m, Munich Re Annual Report “Key figures	Current	Indirect (Client)	Very likely	Medium-high

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		landscape in the future. Examples of weather extremes which are likely to have been influenced by climate change already are heat waves, droughts and torrential rain as well as intense windstorm events in many regions. Hence, from a risk management perspective, it is of crucial importance to understand the factors driving the risk of change here. For Munich Re as a global reinsurance group, it is crucial to analyse these changing conditions and feed the results into our internal risk management system, as well as to provide assistance to our clients. Especially in 2012 storms and droughts in the US dominated last year's natural catastrophes losses, hence this year's CDP answer is focusing on USA.	(IFRS)", page 3				

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)The development of natural catastrophes indicates that an increase in weather-related losses in many regions of the world is very likely. Loss drivers are mainly socioeconomic factors (e.g. expanding urban areas, higher values, settlement in exposed areas). However climate change (CC) might also be a driver of this trend. CC translates into changes in the frequency and intensity of weather-related natural hazards. Changing climate conditions leading to higher loss levels are not automatically balanced in that way, giving rise to solvency issues if going undetected for many years. This is true for both climate variability (e.g. the Atlantic Multidecadal Oscillation influencing hurricane activity levels) and long-term anthropogenic CC. Hence, from a risk management perspective it is crucial to understand the components of change in risk accounted for by external drivers such as climate. According to data gathered by Munich Re's (MR) NatCatSERVICE (loss database for natural catastrophes), there is an increase in weather-related natural catastrophes: the average for the last ten years (2003–2012) is significantly higher than the average for the last 30 years (1983–2012), while

geophysical events remained largely unchanged on average. In 2012, natural catastrophes caused US\$160bn in overall losses and US\$65bn in insured losses worldwide. The losses were above the ten-year average of US\$ 50bn for insured losses and slightly below the average of US\$165bn for overall losses. In total, aggregate losses from natural catastrophes for MR came to €1,284m, representing 7.7 percentage points of net earned premiums.

USA: Around two-thirds of the overall losses and nearly 90% of insured losses in 2012 can be attributed to the USA. The year's largest insured loss was caused by Hurricane Sandy (US\$30bn) followed by the Midwest drought (US\$15–17bn). For the period 1980–2012, some 3,400 loss events in USA are registered, for which 84% of insured losses (US\$590bn) can be attributed to various kinds of storm (high insurance density), 9% to climatologically events (extreme temperature, droughts, forest fire), 2% to floods and just 5% to geophysical events. Changing climatic conditions are having a considerable influence on the variability in severe thunderstorm overall losses in the USA. This correlation is documented by a scientific peer-reviewed study "Rising variability in thunderstorm-related U.S. losses as a reflection of changes in large-scale thunderstorm forcing". This study, conducted in cooperation with the German Aerospace Center, covers the period from 1970 to 2009. After adjustment of the losses to take account of socio-economic changes, increases in losses still remain, which cannot be explained by changes in exposed values. In parallel, there has been an increase in the meteorological potential for severe thunderstorms and its variability. In this study it has been possible for the first time to prove scientifically that climatic changes are already having an impact on US thunderstorm losses.

(ii)Methods to handle business-related risks: There is a need to understand all aspects of risks and the correlated dynamics. Detailed exposure and loss data, current hazard maps and vulnerability information are crucial to estimate loss potential from natural perils. Our objective is to ensure efficient premium calculation and identify unknown accumulations risks. In order to successfully perform our role as a global risk carrier, we need to take account of changes in risk in our underwriting. Our dedicated team of geo risks researchers (including storm experts) ensures that we constantly enhance our knowledge of the direct consequences of natural climate variability and of anthropogenically induced CC and use it to deliver tailored insurance solutions as well as to integrate the findings into our pricing models. As regards our business-related risks, in our client relationships the short-term effects of climatic variability are primarily taken into account in property business (annual renewal as well as adaptation of pricing), where weather-related factors play an important role. 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.

Research: We are accumulating expertise from various scientific partnerships and from our own databases, e.g. since 2008, MR has been formally cooperating with the London School of Economics (LSE) and is a founding corporate partner of the Centre of CC Economic and Policy, 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).

Furthermore an indirect approach and approved method for the detection of changing loss patterns to address the issue of long-term change is the method of normalisation. This method can be used for hazards which cannot be spatially resolved with today's climate models and such as analysed in the peer-reviewed study (above mentioned) conducted by MR experts and the German Aerospace Center and published in 2013 by the American Meteorological Society.

The MR NatCatSERVICE provides the basis for a wide range of information, tools and services related to risk management and research, but is also used by scientific and institutional facilities and the media. The data are obtained from more than 200 information sources such as news agencies, weather/geological services, insurance-related associations, and scientific institutions. Globally, the database currently comprises more than 30,000 data records of individual loss events caused by all types of natural perils, providing information on the effects they have on the insurance sector, on national economies, and on society. To share knowledge of scientific data and findings with its clients MR developed the NATHAN Risk Suite, a service for identifying and assessing complex natural hazard risks containing scientific and insurance-related information including individual-risk or portfolio analysis. For example, NATHAN enables new accumulation risks arising from a rapid increase in new technologies (e.g. renewable energies) to be analysed faster and more accurately. In 2012, MR published a new 274-page book entitled: "Severe weather in North America: Perils – Risks – Insurance" written by MR experts. The publication offers information mainly for North American clients on atmospheric-related risks (hurricanes, tornados, winter storms, floods, forest fires, droughts), discusses risk exposure and CC, and addresses the special aspects involved in underwriting such risks in the US and Canada.

Methods to handle company-related risks: Changes in meteorological climate parameters can have a direct impact on MR, in particular on company premises. 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 2011, directly after the earthquake in Japan our subsidiary in Tokyo was immediately relocated, thus ensuring that it could continue to operate.

(iii)At this point in time, quantification is not possible and any data provided would be unreliable. MR is mainly affected by an increase in losses and invests in the detection of loss drivers (internal research and processes, external research cooperations), as well as in developing insurance covers or other risk solutions and in supporting our clients with risk management services. The costs for internal detection of loss drivers, internal research activities and developing new risk transfer solutions are covered by our usual business activities. Approximately 30 people are working in the wider context of CC and natural catastrophes within the MR Group. Additional costs are incurred for the sponsoring of research

programmes (e.g. MR programme at LSE) and the development of publications (e.g. "Severe Weather in the U.S.", Topics Geo). In 2012, the annual costs for cooperations and publications were around €10m.

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
	Reputation	Ubiquitous reputational risk based on divergent shareholder or stakeholder interests in particular climate-related contexts. Potential risk of exclusion from Sustainable Responsible Investor (SRI) ratings/indices, as well as negative media response could affect Munich Re, loosing potential CC/SRI investors.	Other: Negative impact on share price due to a fall in investors and analysts' trust and potential risk of exclusion from SRI ratings, as well as negative media response.	Current	Direct	Unlikely	Low-medium

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

(i)Munich Re (MR) has closely monitored global warming and its repercussions – from as early as 1973 – and built up comprehensive know-how in the field of natural catastrophes and climate change (CC). CC itself is a strategic topic for MR. In 2007, MR established the Corporate Climate Centre within its GeoRisksResearch unit (GEO/CCC) to coordinate all activities of the MR Group relating to CC. In addition, the Centre has overall responsibility for the development of MR's CC Strategy. Its experts provide knowledge both internally and externally. All in all, MR enjoys widespread recognition as an expert in this area. MR takes a position on climatic changes and climate protection in the scientific, political and public debate. This positioning in the field of CC can potentially give rise to reputational risks for MR.

Reputational risks can involve various stakeholders, mainly our clients but also investors. Awareness of CC and opinions on the need for climate protection differ globally. Our clients also have divergent views on this topic. Our reputation as a financial industry expert in geoscience can be negatively affected if, for example, scientific studies contradict our view. In addition, our strong commitment to climate protection (e.g. Dii, energy supply from renewable energies) and climate adaptation (e.g. Munich Climate Insurance Initiative, nat cat insurance solutions for developing emerging countries) might not be considered positively by all clients (e.g. those that are sceptical about CC science). If investors disagree with MR's business approach in the field of CC, this could lead to their pulling out, with a negative impact on MR's share price.

It is not possible to quantify the potential financial implication – the bigger the reputational damage, the higher the effect on the share price. In general, we estimate that 5–8% of our shareholders are attracted by our sustainable performance in the area of CC and Corporate Responsibility (CR).

(ii)Currently, we consider the possibilities of reputational risk quite unlikely based on various measures and methods used to manage this risk of CC: MR has implemented various measures, methods and processes to minimise the risk of reputational damage. We provide for high quality in evaluating climate change risks based on external scientific expertise and address environmental, social and governance (ESG) aspects. In addition, we are in constant dialogue with science, policymakers, NGOs and other relevant stakeholder groups.

Having a dedicated team of geo risks researchers with university degrees in meteorology, hydrology, geology, geophysics and other related subjects ensures that we constantly update and extend our knowledge of the direct consequences of CC. Besides this, one MR expert is among the lead authors of the Intergovernmental Panel on CC (IPCC) for the Fifth Assessment Report (AR5). Our risk assessment of CC-related impacts is firmly based on the current state of science, which we carefully evaluate and from which we derive the adequate responses for our business. Sometimes, MR itself is at the forefront of science. For example, our own research on the relationship between increased thunderstorm activity and increased normalised losses has withstood the scrutiny of scientific assessment (peer-reviewed

paper). With regard to our commitment to climate protection and adaptation to CC, MR pays particular attention to the sensitivity of customers (e.g. reflecting climate scepticism in some parts of the world). To manage the reputational risks, we have implemented various measures (bodies, processes as well as frameworks).

Bodies:

- Our Integrated Risk Management Division supervises risk management Group-wide with the support of decentralised structures in all units of the Group. It is headed by the Chief Risk Officer, who, like the local CROs at individual companies, is supported by interdisciplinary teams of highly qualified staff.
- The Global Underwriting and Risk Committee is responsible for the establishment of an appropriate risk management process at re-insurance level.
- We monitor reputational risk through processes we have established in various internal units to identify it. These processes range from the general recording of risks for the purposes of our internal control system (ICS) to whistleblower procedures and our ad-hoc reporting process. Actual cases that could involve reputation issues are evaluated in the business segments either by a Reputational Risk Committee or through a comparable procedure in which a coordinating unit ensures that appropriate experts are consulted.
- MR's Emerging Risk Think Tank deals with trends and impact scenarios. It closely collaborates with external partners, which complements the early-warning mechanisms.
- The Group Communications unit supports the Group's reputational status and public image through press and media monitoring and through reporting measures embedded in a Group-wide identification process.

Processes:

- CC and CR are closely linked to business and to corporate strategy.
- There is a regular exchange between the CR Department and the underwriting units, e.g. at the annual Global Underwriting Meeting.
- MR has established an ongoing dialogue with international and national policymakers with representatives in Brussels and Berlin.
- In 2013, MR initiated a stakeholder dialogue with different NGO's, including environmental groups, on sensitive business issues.

Frameworks:

- MR's Code of Conduct serves as a supporting measure against reputational risks. It contains the most important rules and principles of conduct for all MR employees. The purpose of the Code is to provide clear information and guidance for all employees on the basic legal and ethical requirements they must comply with in the course of their work. The Code of Conduct was recently amended to include the United Nations (UN) Global Compact principles in its preamble.

MR is extremely conscious of its role in fulfilling its business and social responsibility, so we strive to be at the forefront of managing ESG issues. MR became the first Germany company to sign the UN Principles for Responsible Investment (PRI) in 2006, a standard we were also involved in developing. To enhance the processes and to also expand the focus from asset management to insurance, MR was involved in developing the UN Principles for Sustainable Insurance (PSI) and headed the Working Group at UNEP-FI until the official start of the PSI in June 2012 and the first PSI Board was elected in February 2013. So MR is a founding member of the PSI and signed the Principles in June 2012. The signatories commit themselves to systematically integrating ESG aspects in their core business, along the entire value chain. The companies also commit to an annual public disclosure process to publish the progress in implementation of the Principles. Through the PRI (asset management) and the PSI (insurance), MR is following a holistic approach to integrating CC and corporate responsibility in its business. Another external body where MR is engaged in developing internal risk management standards is the CRO Forum Emerging Risks Initiative (ERI). The latter was launched in 2005 to raise awareness of major emerging risks of relevance to the reinsurance industry.

(iii) It is currently not possible to quantify the costs of implementation, and any figures provided would not be reliable. Addressing the reputational risks of CC is part of our usual business activities, so does not incur additional costs. Besides this, approximately 30 people are working in the wider context of CC and natural catastrophes within MR Group, approximately 20 are working in the wider context of CR.

Page: 6. Climate Change Opportunities

6.1

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

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

6.1a

Please describe your opportunities that are driven by changes in regulation

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact
	Renewable energy regulation	Policy and legislation are among others the drivers of a low-carbon economy. In insuring or investing in new technologies, the insurance industry is making an important contribution not only to the success of energy restructuring but also to speeding it up. Insurance relieves entrepreneurs and their financial backers of some of their risks, thereby facilitating investments in new technologies. Munich Re is taking up this opportunity in offering innovative solutions in the field of renewable energy and new technologies (see text for specific examples).	Other: New investment and business opportunities.	Current	Direct	Very likely	Medium

6.1b

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

(i)Munich Re (MR) constantly analyse known and emerging opportunities to determine whether there have been any changes in their structure, occurrence probability or possible financial implications, furthermore monitoring opportunities due to changes in regulation. Policy and legislation are among others the drivers of a low-carbon economy. On the basis of the situation in early 2013, some 138 countries have already set renewable energy (RE) targets. Europe has set the “20/20/20” target by 2020: 20% reduction in CO2 emissions compared to 1990, 20% RE, and 20% increase in energy efficiency. Germany has even more ambitious targets, with 35% RE by 2020. By the end of 2012, the installed capacity of solar and wind power in Germany was more than 32 GW in each case. According to the 2011 assessment of the German Insurance Association, traditional insurance solutions in Germany (project cover, operational cover, electronic equipment business interruption cover) yielded a market premium volume of more than €230m. Capacities of 283 GW for wind power and 100 GW for solar power had been installed globally up to 2012.

Providing innovative solutions: In implementing new technologies, the insurance industry is making an important contribution not only to the success of energy restructuring but also to speeding it up. Insurance relieves entrepreneurs and their financial backers of some of their risks and frees up capital

otherwise necessary to pay for warranty-related claims, thereby facilitating investments in new technologies. MR wants to contribute to the development by providing capacity and offering innovative solutions tailored for all market participants specifically to the requirements of the market. Based on a rough estimate, we assume that our RE insurance solutions will generate a premium volume significantly in excess of €100m p.a. by 2015. Further growth is expected depending on market developments.

Investment: RE can also be seen as an attractive growth market for investments and, in addition, as a means of portfolio diversification and source of sound returns. Investments with a long duration like operating power plants fit perfectly into our asset-liability management approach. Beside attractive cash-flow patterns, this investment segment makes a significant contribution to the overall portfolio risk/return profile, due its high degree of independence from macroeconomic factors. In 2010, MR's Board of Management decided to invest €2.5bn over the next few years in renewable energies and new technologies (RENT). €1bn has already been invested in solar and wind projects with a total capacity of nearly 500MW. A low three-digit million euro amount, for example, has recently been invested in onshore wind park portfolios in the UK and France, with more than 200MW installed capacity in total, providing roughly 100,000 households with power from RE.

Involvement: Furthermore, as initiator and shareholder of the Dii initiative, we are supporting the development of RE in the Middle East/North Africa/Europe (first goal: improve electricity supply from RE in MENA; second goal: support/supply Europe with 10–20% of electricity from RE). The first milestone, the study "Desert Power 2050" published in June 2012, provides a vision as a fixed point of orientation. The second part, "Getting Started", published in June 2013, provides a pathway to an interconnected energy system.

(ii)MR translate the opportunities provided by regulatory requirements into innovative insurance products. To this end, all the departments concerned (business units, GeoRisksResearch and Corporate Climate Centre, our asset manager MEAG, Integrated Risk Management, Corporate Underwriting) work closely together. In addition to our business activities, we inform our clients and the public, support initiatives, and participate in the political and public debate.

Making risks manageable: 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), and optimisation of claims management.

Product development: MR provides extensive engineering knowledge based on experience in engineering going back more than 100 years, insuring RE for more than 20 years, and specialised know-how in offshore oil/gas projects and offshore wind parks. MR has established a centre of competence for RE and set up a special department for green tech solutions covering special financial risks. We work closely together with our clients. To develop suitable solutions, different departments collaborate to guarantee the transfer of expertise. MR develops tailor-made solutions along the whole value chain for all participants involved in the project.

Examples: a) Solar: Lack-of-sun/solar performance warranty and option cover for PV and CSP. The performance warranty cover provides manufacturers/investors with a greater degree of certainty by guaranteeing that, for example, the PV modules will perform to at least 90% of capacity in the first ten years and at least 80% over the next 15 years. By transferring 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 // b)Cover for exploration risks in geothermal energy: In 2013, MR and IFC announced an agreement to develop and pilot geothermal exploration risk insurance in Turkey. Four pilot projects will be supported, expected to facilitate US\$ 420m of private-sector investment and the installation of 140 MW of geothermal capacity.

Investment: The RENT initiative currently focuses on solar (PV) and wind farm (onshore) investments, but a widening of this focus to include geothermal energy, biogas and other attractive RE projects and new technologies is conceivable. Each project has to qualify on its own merits.

Using synergies between investment and insurance: The strategic focus will enable us to exploit overlaps between the investment side and our core business. We are confident that our insurance expertise enables us to take better investment decisions than other institutional investors. Very beneficial in this regard is our international experience and know-how at the various locations and in the different fields of technology. At the same time, the knowledge we gain from operating new RE projects will be a useful resource for calibration of existing insurance products and the development of new ones. As a risk carrier and investor, we thus promote the spread of sustainable technologies, simultaneously generating synergies between business and our commitment to sustainability as well as CC.

Engagement: We engage with our clients by providing market events, developing publications, organising webinars on technical aspects, and developing new platforms (Green Tech Solution Business Suite, Touch Engineering). For the public, MR has developed an app for Apple iOS and Android (Topics Renewables) to provide visual information on sustainable energy solutions. We are involved in insurance-related initiatives such as the German Insurance Association (GDV), e.g. offshore wind, investment, update of publication on RE (MR has provided support with professional articles), or as Chairman of the European Wind Turbine Committee (EWTC), a consortium of European primary and re-insurers for discussing technical risks of on- and offshore wind turbines. The EWTC initiated the project Offshore Code of Practice to proactively develop a holistic risk management for the building of offshore wind parks (MR leads one of the working groups).

(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 insurance and investment side:

(1)Our insurance products are tailor-made and differ widely according to the client's needs and the

specific risk. RE solutions are covered under the normal operating budgets of the units concerned. Nevertheless based on a rough estimate, we assume that our RE insurance solutions will generate a premium volume significantly in excess of €100m p.a. by 2015.

(2)Up to now MR invested €1bn within its RENT programme. We have insignificant additional costs for investments in RE projects compared with similar asset classes, also using in-house know-how for our due diligence work.

Furthermore regarding involvements: Dii's shareholders (including MR) have agreed that Dii will be extended for two further years until 2014. The annual shareholder fee is €130,000.

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 changes (e.g. 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) are not only a risk of change but can also be seen as potential sources of business for Munich Re (MR), given that our core business is to (re)insure weather-related catastrophes. Changing weather patterns can lead to a higher demand for nat cat insurance and result in innovative risk financing mechanisms in the private-sector and in partnership with supranational and state civil protection	New products/business services	Current	Indirect (Client)	Likely	Medium-high

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		agencies. MR therefore monitors especially this kind of solution/ opportunity arising from natural disasters, and is actively adapting its own product portfolio accordingly (amongst others e.g. SystemAgro).					

6.1d

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

(i)Munich Re (MR) continuously analyse known/emerging opportunities driven by all kinds of climate parameters to determine whether there have been any changes in their occurrence (intensity and frequency) or possible financial implications through changes associated with loss probabilities, potentially creating new opportunities.

MR estimates that, until 2020 the property-casualty insurance market as a whole will grow by approximately 50% compared with 2012 to €1.85tn, and the life insurance market by almost two-thirds to €3.1tn. Growth in insurance and reinsurance in emerging countries will be significantly stronger than in industrialised countries, so further growth is expected and likely. In general, more frequent and more severe natural catastrophe events will boost demand for flood and windstorm cover. At present, the global average natural catastrophe insurance density (ratio of insured losses to overall losses) is approximately 25%. Furthermore according to data gathered by MR NatCatSERVICE (database for natural catastrophes), developing and emerging countries suffer most from fatalities in this area and have a massive natural catastrophe insurance gap. In the period 1980–2012, the lower- middle-income and low-income economies (i.e. with gross national incomes of less than US\$ 1,026 and US\$ 1,026–4,035 respectively) accounted for 10% of overall global losses (US\$ 3,700bn) but only 1% of global insured losses (US\$ 970bn). The insurance industry has the experience to play a key part in breaking new ground in nat cat risk financing, both in private-sector nat cat risk management and in partnership with supranational and state civil protection agencies. Innovative disaster risk financing mechanisms (e.g. through national or international disaster loss pools) can ensure faster economic recovery from natural hazard events. Growing awareness of the need for such risk financing in these countries can lead to new business potential for MR.

Especially agriculture is directly exposed to weather-related catastrophes. Agricultural insurance premium volume worldwide in 2012 totalled US\$ 18bn, with an average market penetration of approx. 20%. With an increase in market penetration of 10% within ten years and a normal share of reinsurance, the business potential for this sector is significant. MR sees growth potential with SystemAgro, a best-practice framework for a sustainable public-private risk partnership tailored to agriculture risk transfer to cope with catastrophic weather events caused by multiple perils. Following the patterns of the USA, Canada, Spain or Turkey, SystemAgro agricultural insurance schemes are also observable in emerging markets, with India and China being notable examples. However, quantification of the financial implications is not possible at this point in time, and any figures provided would be unreliable.

(ii)The assumption of climatic effects risks is part and parcel of MR's core business: We anticipate that they will lead to a general increase in demand for insurance solutions/risk management consultancy services in the medium to long term. An in-depth understanding of risks is the basis of MR's business, so that climate change (CC) is closely linked to our core business. The opportunities that arise demand a profound knowledge of the risk. Having a dedicated team of geo risk researchers with university degrees in meteorology, hydrology, geology, geophysics and other topics ensures that we constantly update and extend our knowledge of the direct consequences of CC. Consequently, we adopt a multidisciplinary approach to CC opportunities, using and combining the pertinent experience/expertise of our scientists, specialist underwriters, lawyers, economists and actuaries in a multi-disciplinary Group-wide process for risk management and product development. To this end, Client Managers of business units and other units concerned (i.e. GEO/CCC, Corporate Underwriting) work closely together.

Making risks manageable: 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. This enables us to provide appropriate insurance solutions for our clients despite exposure to changing weather risks.

Expanding know-how: Considerable uncertainty is involved in predicting changes in occurrence frequencies and intensities of atmospheric events and assessing regional aspects of emerging-risk developments that 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 [LSE] on the economic impact of CC for the insurance industry or German Aerospace Center) and from our own databases (e.g. NatCatSERVICE, the world's largest natural catastrophe loss database). Supporting clients in risk management: Heightening client awareness/offering consultancy services to achieve customer loyalty, e.g. various customer platforms (MR Touch Natural Hazards). Environmental warning system, e.g. NATHAN containing scientific and insurance-related information relating to natural catastrophes, pooled 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.

Engagement with policymakers: Reinsurers have the know-how and data to participate in the political dialogue, especially with regard to understanding risks from natural hazards and providing support in finding solutions. An example is the Munich Climate Insurance Initiative (MCII), which was initiated by MR in 2005 in response to the growing realisation that insurance solutions can play a role in adaptation to CC. MCII has made formal proposals to UNFCCC for integral risk management solutions for CC adaptation in developing countries. Since 2011, MCII has been conducting the programme Climate Risk Adaptation and Insurance in the Caribbean (to increase social resilience against extreme weather events by developing and implementing insurance solutions). The project has developed two parametric weather-index-based insurance products. One product (Livelihood Protection Policy) is aimed at improving the financial protection of individuals in the case of extreme weather events. The other targets lending institutions and provides a hedge against increased loan default after extreme weather events (Loan Portfolio Cover).

Development of new solutions: Permanent development and rigorous research pave the way for innovative risk transfer solutions.

a)SystemAgro as a sustainable public-private partnership: Risk partnerships between the private insurance sector, governments and farmers are able to cope with catastrophic agricultural events caused by multiple perils. SystemAgro is based on private-sector insurers specialising in agricultural cover and offering standard products at affordable rates on standard terms and conditions. Since viability is guaranteed by the government, which co-finances premiums and catastrophic losses, all farmers can participate. To ensure this type of risk management is sustainable, it is based on agricultural insurance legislation that forms a key element of the government's agricultural policy.

b)MR CLIMBS microinsurance product: On the basis of a detailed analysis, MR and GIZ developed weather-index-based microinsurance, enabling the cooperatives to limit their loan defaults and meet their social commitments in the event of a catastrophe. Immediately after an event, the institution concerned receives a reinsurance payment which is disbursed to its members in the form of emergency loans granted on favourable terms, according to need. Weather-index microinsurance as a hedge for a credit portfolio is something totally new in this region.

c)Products for new technologies/renewable energy: In the area of weather-related risks, we have developed amongst others a lack-of-sun cover for the PV industry and solar parks, and a lack-of-wind cover for wind farms.

(iii)CC and its implications will lead to a further increase in demand for insurance solutions for natural catastrophe covers and are hence covered under the normal operating budgets of the units concerned. Our insurance products are tailor-made and differ widely according to the client's needs and the specific risk. At this point in time, we cannot provide any quantitative across-the-board assessments. Additional costs can be incurred for the sponsoring of research programmes (e.g. MR programme at LSE, further collaboration) and the development of publications. In 2012, the annual costs for cooperations and publications totalled around €10m.

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
	Reputation	Munich Re's role as an opinion leader in the field of climate change presents various opportunities, and the recognition we enjoy in the field of sustainability constitutes an intangible	Other: Knowledge transfer, attraction of new clients and shareholders driven by Sustainable Responsible Investment.	Current	Direct	Very likely	Medium

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		asset. Munich Re has a high reputation based on its expertise in geoscience and its function as a knowledgeable expert, not only as a service provider for clients but also in the political field and with other relevant stakeholders.					

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) Munich Re (MR) has built up in-depth expertise in natural catastrophes, geoscience and the field of climate change (CC), going back to 1973. This expertise is an important source of MR's superior capability to adequately assess opportunities driven by CC and natural catastrophes, including opportunities of change. At the same time, this expertise is a source of recognition as a preferred partner by our clients, also based on trust. MR's global expertise enables us to give clients all-round advice, helps us in establishing greater customer retention, and finally provides opportunities for new products and partnerships, as we have the expertise to develop tailor-made solutions.

This know-how also puts MR in a position to raise awareness in the political field and gather political support for the implementation of measures and standards to make societies more resilient against natural calamities. In this context, MR initiated the Munich Climate Insurance Initiative (MCII) to develop comprehensive risk management systems for developing countries, including risk reduction/prevention measures and risk transfer solutions, with a view to reducing losses associated with CC (e.g. with respect to storms, floods, droughts).

MR's reputation as an expert and committed corporate citizen in the field of natural catastrophes and CC makes MR an attractive company to work for. For example, our engagement in the Dii Initiative (power from renewable energies in the deserts) is a source of pride among our employees and attracts candidates for new positions at MR. It helps us in motivating and retaining staff, and is reflected in a trend towards more job applications.

All the above-mentioned factors strengthen MR's reputation. Ultimately, the high reputation of the MR brand adds to the value assigned to MR stock by investors/the capital markets. In particular, MR's reputation as an expert and committed corporate citizen in the field of natural catastrophes and CC is greatly appreciated by the socially responsible investment community, which makes up around 5–8% of our shareholders.

It is, however, not possible to quantify the direct potential benefits from a strong CC reputation.

(ii) CC is deeply integrated in our core business and reflected in our core strategy. MR is constantly investing in its expertise and the development of know-how in order to be state-of-the-art in risk management. Our strong CC reputation is based upon various departments within MR, partnerships with external stakeholders, and our strong dialogue with society.

Making risks manageable: CC represents one of the greatest risks of change for the insurance industry. In our Corporate Climate Centre (within the GeoRisksResearch unit), we analyse and assess the potential risk and scope of CC, developing a holistic strategic approach. The findings are made available to all business areas of the reinsurance group, to our asset-liability management function, and to ERGO.

Whilst we are in a position to adequately assess the known risks in our portfolio on the basis of current climate research, scientific research into CC is complex and the political and regulatory environment in which we operate is developing dynamically, so that we must remain vigilant with regard to the identification and evaluation of new and changing risks. We adopt a multidisciplinary approach, using and combining the pertinent experience and expertise of our scientists, specialist underwriters, lawyers, economists and actuaries as appropriate for the risk situation. If new findings in climate research or actual claims development necessitate adjustments in risk assessment, we are able to make these changes. However, changes resulting from other CC-related areas such as our strong CC reputation also open up many business opportunities. Applying the knowledge we have accumulated over decades, we exploit these opportunities – for example, through innovative risk transfer solutions for renewable energy technologies.

Investment in research: MR invests in qualified staff (more than 30 employees with university degrees in meteorology, hydrology, geology, geophysics and other subjects connected with geoscience;

development of new departments such as GreenTech Solutions); investment in collaborations with scientific institutions (e.g. London School of Economics, German Aerospace Center, Potsdam Institute for Climate Change Research).

Development of tailor-made solutions for our clients: Thanks to our reputation and our well-known CC expertise, clients contact us directly in order to obtain tailored solutions. Following some examples:

- Green building: The HSB Green Equipment Breakdown Coverage offers insureds the opportunity to make energy saving upgrades to their equipment and property after a covered loss, insures 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, and addresses the changing exposures presented by today's "green technologies".

- Our Green Tech Solutions Team was set up to further explore possibilities for new technologies/renewable energy opportunities, given that we expect an increase in innovative technology investment such as in the US, Chinese, Indian and Korean markets, further boosting new business potential for MR. The focus of solutions is as follows: performance 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.

- Our Primary Insurance ERGO 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.

Sharing expertise with business partners: Through our client management, client events, seminars and risk management tools, MR is in close contact with clients. MR also shares its CC expertise with clients through special publications (e.g. Topics Geo, Topics Risk Solutions). To additionally make available knowledge of scientific data and findings to its clients, MR has produced an interactive Globe of Hazards DVD and an online application "NATHAN", containing scientific and insurance-related information with regard to natural catastrophes and CC. 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. MR's NatCatSERVICE is the world's most comprehensive natural catastrophe loss database providing analyses for our clients.

Sharing extensive know-how with science, political actors and civil society: Besides the above-mentioned publications for clients (also targeted at the above-mentioned stakeholder groups), we share information via publications in scientific journals, business magazines, online media, and presentations for different target groups. On the international level, an MR scientist is engaged as lead author in a working group of the Intergovernmental Panel on CC. In addition, MR has established an ongoing dialogue with international and national policymakers with representations in Brussels and Berlin. MR is also involved in the MCII and the DiiGmbH (see above).

Conducting CC-related activities that make MR an attractive employer: This includes engaging in climate protection activities, student programmes, e.g. global change management seminar for students from FH Eberswalde and from the University of Bayreuth, university lectures and teaching.

(iii) It is currently not possible to quantify the reputational benefit from our CC expertise and activities, and any figures provided would be unreliable. CC risks and opportunities are part of our usual business activities, hence not incurring additional costs. Approximately 30 people are working in the wider context of CC and natural catastrophes within the MR Group. The annual costs for CC-related cooperations and publications in 2012 were around €10 m.

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 CO ₂ e)	Scope 2 Base year emissions (metric tonnes CO ₂ e)
Thu 01 Jan 2009 - Thu 31 Dec 2009	74193	116735

7.2

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

Please select the published methodologies that you use
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

7.2a

If you have selected 'Other', please provide details below

We additionally 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
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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
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Further Information

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as refined data quality. Therefore, not only the scopes differ, but also relative figures might not match with figures given previously.

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

8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

74193

8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

116735

8.4

Are there 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 2 emissions 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%	Assumptions Extrapolation	We do collect data on environmental performance, e.g. energy consumption and	More than 30% but less than or equal to 40%	Assumptions Extrapolation	We do collect data on environmental performance, e.g. energy consumption and

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
		CO2 emissions for 68% of employees worldwide. These data are extrapolated to 100% of the Group's employees. In few cases assumptions are made e.g. on the basis of data for at least three previous years. We will extent this coverage further but will not cover 100% due to the fact that we will cover only larger entities.			CO2 emissions for 68% of employees worldwide. These data are extrapolated to 100% of the Group's employees. In few cases assumptions are made e.g. on the basis of data for at least three previous years. We will extent this coverage further but will not cover 100% due to the fact that we will cover only larger entities.

8.6

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

Third party 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

Type of verification or assurance	Relevant standard	Attach the document
Not applicable	Other: EMAS/ ISO 14001	

8.7

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

Third party 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

Type of verification or assurance	Relevant standard	Attach the document
Not applicable	Other: EMAS/ ISO 14001	

8.8

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

Further Information

Regarding Question 8.2. and 8.3:

Data are gathered for 68% of Group employees. As data are extrapolated to 100% of our employees, all sources are included in our disclosure. Inclusion of further entities is planned.

Regarding Question 8.6 and 8.7:

ERGO Germany and Munich Re Munich had certified their Environmental Management System according to ISO 14001 and EMAS. EMAS certification included data verification.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

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

8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

61675

8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

102428

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 2 emissions 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 20% but less than or equal to 30%	Assumptions Extrapolation	We do collect data on environmental performance, e.g. energy consumption and CO2 emissions for 70% of employees worldwide. These data are extrapolated to 100% of the Group's employees. We will extent this coverage further but will not cover 100% due to the fact that we will	More than 20% but less than or equal to 30%	Assumptions Extrapolation	We do collect data on environmental performance, e.g. energy consumption and CO2 emissions for 70% of employees worldwide. These data are extrapolated to 100% of the Group's employees. We will extent this coverage further but will not cover 100% due to the fact that we will

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
		cover only larger entities.			cover only larger entities.

8.6

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

Third party verification or assurance complete

8.6a

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

More than 20% but less than or equal to 40%

8.6b

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

Type of verification or assurance	Relevant standard	Attach the document
Not applicable	Other: EMAS/ ISO 14001	

8.7

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

Third party verification or assurance complete

8.7a

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

More than 20% but less than or equal to 40%

8.7b

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

Type of verification or assurance	Relevant standard	Attach the document
Not applicable	Other: EMAS/ ISO 14001	

8.8

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

Further Information

Regarding Question 8.2. and 8.3:

Data are gathered for 70% of Group employees. As data are extrapolated to 100% of our employees, all sources are included in our disclosure. Inclusion of further entities is planned.

Regarding Question 8.6 and 8.7:

ERGO Germany and Munich Re Munich had certified their Environmental Management System according to ISO 14001 and EMAS. EMAS certification included data verification.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

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

8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

83331

8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

93996

8.4

Are there 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 2 emissions 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 20% but less than or equal to 30%	Assumptions Extrapolation	We do collect data on environmental performance, e.g. energy consumption and CO2 emissions for 71% of employees worldwide. These data are extrapolated to 100% of the Group's employees. We will extent this coverage further but will not cover 100% due to the fact that we will cover only larger entities.	More than 20% but less than or equal to 30%	Assumptions Extrapolation	We do collect data on environmental performance, e.g. energy consumption and CO2 emissions for 71% of employees worldwide. These data are extrapolated to 100% of the Group's employees. We will extent this coverage further but will not cover 100% due to the fact that we will cover only larger entities.

8.6

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

Third party 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

Type of verification or assurance	Relevant standard	Attach the document
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.6b-C3-RelevantStatement/DEUTSCHER BERICHT_AGIMUS for Munich Re Munich_ISO14064_Auszug.pdf
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.6b-C3-RelevantStatement/Certification AGIMUS for Munich Re Munich.pdf

8.7

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

Third party 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

Type of verification or assurance	Relevant standard	Attach the document
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.7b-C3-RelevantStatement/DEUTSCHER BERICHT_AGIMUS for Munich Re Munich_ISO14064_Auszug.pdf
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.7b-C3-RelevantStatement/Certification AGIMUS for Munich Re Munich.pdf

8.8

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

Further Information

Regarding Question 8.2. and 8.3:

Data are gathered for 71% of Group employees. As data are extrapolated to 100% of our employees, all sources are included in our disclosure. Inclusion of further entities is planned.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

Attachments

[https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/8.EmissionsData\(1Jan2011-31Dec2011\)/Certification AGIMUS for Munich Re Munich.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/8.EmissionsData(1Jan2011-31Dec2011)/Certification%20AGIMUS%20for%20Munich%20Re%20Munich.pdf)
[https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/8.EmissionsData\(1Jan2011-31Dec2011\)/DEUTSCHER BERICHT_AGIMUS for Munich Re Munich_ISO14064_Auszug.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/8.EmissionsData(1Jan2011-31Dec2011)/DEUTSCHER%20BERICHT_AGIMUS%20for%20Munich%20Re%20Munich_ISO14064_Auszug.pdf)

Page: 8. Emissions Data - (1 Jan 2012 - 31 Dec 2012)

8.1

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

Operational control

8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

64755

8.3

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

87106

8.4

Are there 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 2 emissions 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 20% but less than or equal to 30%	Data Gaps Assumptions Extrapolation	We do collect data on environmental performance, e.g. energy consumption and CO2 emissions for 75% of employees worldwide. These data are extrapolated to 100% of the Group's employees. In few cases assumptions are made e.g. on the basis of data for at least three previous years. We will extent this coverage further but will not cover 100% due to the fact that we will cover only larger entities.	More than 20% but less than or equal to 30%	Data Gaps Assumptions Extrapolation	We do collect data on environmental performance, e.g. energy consumption and CO2 emissions for 75% of employees worldwide. These data are extrapolated to 100% of the Group's employees. In few cases assumptions are made e.g. on the basis of data for at least three previous years. We will extent this coverage further but will not cover 100% due to the fact that we will cover only larger entities.

8.6

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

Third party 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

Type of verification or assurance	Relevant standard	Attach the document
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.6b-C3-RelevantStatement/0625_DEUTSCHER BERICHT_ISO 14064_Auszug.pdf
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.6b-C3-RelevantStatement/0625_DEUTSCHES ZERTIFIKAT 14064_MUNICH RE_2012.pdf
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.6b-C3-RelevantStatement/0625_Verification_Letter_according CDP Template.pdf

8.7

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

Third party 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

Type of verification or assurance	Relevant standard	Attach the document
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.7b-C3-RelevantStatement/0625_DEUTSCHER BERICHT_ISO 14064_Auszug.pdf
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.7b-C3-RelevantStatement/0625_DEUTSCHES ZERTIFIKAT 14064_MUNICH RE_2012.pdf
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-8.7b-C3-RelevantStatement/0625_Verification_Letter_according CDP Template.pdf

8.8

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

Further Information**Regarding Question 8.2. and 8.3:**

Data are gathered for 75% of Group employees. As data are extrapolated to 100% of our employees, all sources are included in our disclosure. Inclusion of further entities is planned.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

Attachments

[https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/8.EmissionsData\(1Jan2012-31Dec2012\)/0625_Verification_Letter_according_CDP_Template.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/8.EmissionsData(1Jan2012-31Dec2012)/0625_Verification_Letter_according_CDP_Template.pdf)
[https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/8.EmissionsData\(1Jan2012-31Dec2012\)/0625_DEUTSCHES_ZERTIFIKAT_14064_MUNICH_RE_2012.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/8.EmissionsData(1Jan2012-31Dec2012)/0625_DEUTSCHES_ZERTIFIKAT_14064_MUNICH_RE_2012.pdf)
[https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/8.EmissionsData\(1Jan2012-31Dec2012\)/0625_DEUTSCHER_BERICHT_ISO_14064_Auszug.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/8.EmissionsData(1Jan2012-31Dec2012)/0625_DEUTSCHER_BERICHT_ISO_14064_Auszug.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?**

Yes

9.1a**Please complete the table below**

Country/Region	Scope 1 metric tonnes CO2e
Germany	39193
Europe	21339
North America	10894
Africa and Middle East	667
Asia, Australasia	1885
Latin or South America (LSA)	215

9.2**Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)****Further Information****Please be aware:**

We distinguish between Germany and the rest of Europe as we have our main offices in Germany.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

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?**

Yes

9.1a**Please complete the table below**

Country/Region	Scope 1 metric tonnes CO2e
Germany	32256
Europe	17943
North America	9051
Africa and Middle East	541
Asia, Australasia	1703
Latin or South America (LSA)	181

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

Further Information**Please be aware:**

We distinguish between Germany and the rest of Europe as we have our main offices in Germany.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

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?

Yes

9.1a

Please complete the table below

Country/Region	Scope 1 metric tonnes CO2e
Germany	42894
Europe	24645
North America	11972
Africa and Middle East	996
Asia, Australasia	2598
Latin or South America (LSA)	226

9.2

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

Further Information**Please be aware:**

We distinguish between Germany and the rest of Europe as we have our main offices in Germany.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

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[https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/9.Scope1EmissionsBreakdown\(1Jan2011-31Dec2011\)/DEUTSCHER BERICHT AGIMUS for Munich Re Munich ISO14064 Auszug.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/9.Scope1EmissionsBreakdown(1Jan2011-31Dec2011)/DEUTSCHER%20BERICHT%20AGIMUS%20for%20Munich%20Re%20Munich%20ISO14064%20Auszug.pdf)

Page: 9. Scope 1 Emissions Breakdown - (1 Jan 2012 - 31 Dec 2012)**9.1**

Do you have Scope 1 emissions sources in more than one country?

Yes

9.1a

Please complete the table below

Country/Region	Scope 1 metric tonnes CO2e
Germany	33776
Europe	19996
North America	9031

Country/Region	Scope 1 metric tonnes CO2e
Africa and Middle East	819
Asia, Australasia	946
Latin or South America (LSA)	185

9.2

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

Further Information

Please be aware:

We distinguish between Germany and the rest of Europe as we have our main offices in Germany.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

Attachments

- [https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/9.Scope1EmissionsBreakdown\(1Jan2012-31Dec2012\)/0625_Verification_Letter_according CDP Template.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/9.Scope1EmissionsBreakdown(1Jan2012-31Dec2012)/0625_Verification_Letter_according_CDP_Template.pdf)
- [https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/9.Scope1EmissionsBreakdown\(1Jan2012-31Dec2012\)/0625_DEUTSCHER BERICHT ISO 14064_Auszug.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/9.Scope1EmissionsBreakdown(1Jan2012-31Dec2012)/0625_DEUTSCHER_BERICHT_ISO_14064_Auszug.pdf)
- [https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/9.Scope1EmissionsBreakdown\(1Jan2012-31Dec2012\)/0625_DEUTSCHES ZERTIFIKAT 14064 MUNICH RE_2012.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/9.Scope1EmissionsBreakdown(1Jan2012-31Dec2012)/0625_DEUTSCHES_ZERTIFIKAT_14064_MUNICH_RE_2012.pdf)

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?

Yes

10.1a

Please complete the table below

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling (MWh)
Germany	61666	181353	22494
Europe	33575	98742	12247
North America	17141	50410	6253
Africa and Middle East	1050	3088	383
Asia, Australasia	2965	8721	1082
Latin or South America (LSA)	338	993	123

10.2

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

Further Information

Please be aware:

We distinguish between Germany and the rest of Europe as we have our main offices in Germany.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

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?**

Yes

10.1a**Please complete the table below**

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling (MWh)
Germany	53570	162945	22890
Europe	29799	90641	12733
North America	15032	45724	6423
Africa and Middle East	898	2731	384
Asia, Australasia	2828	8602	1208
Latin or South America (LSA)	300	913	128

10.2**Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)****Further Information****Please be aware:**

We distinguish between Germany and the rest of Europe as we have our main offices in Germany.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

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?**

Yes

10.1a**Please complete the table below**

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling (MWh)
Germany	48384	142851	44465
Europe	27799	82075	25547
North America	13504	39870	12410
Africa and Middle East	1123	3316	1032
Asia, Australasia	2931	8654	2694
Latin or South America (LSA)	255	752	234

10.2

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

Further Information

Please be aware:

We distinguish between Germany and the rest of Europe as we have our main offices in Germany.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

Attachments

[https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown\(1Jan2011-31Dec2011\)/DEUTSCHER BERICHT AGIMUS for Munich Re Munich ISO14064 Auszug.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown(1Jan2011-31Dec2011)/DEUTSCHER%20BERICHT%20AGIMUS%20for%20Munich%20Re%20Munich%20ISO14064%20Auszug.pdf)
[https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown\(1Jan2011-31Dec2011\)/Certification AGIMUS for Munich Re Munich.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown(1Jan2011-31Dec2011)/Certification%20AGIMUS%20for%20Munich%20Re%20Munich.pdf)

Page: 10. Scope 2 Emissions Breakdown - (1 Jan 2012 - 31 Dec 2012)

10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

10.1a

Please complete the table below

Country/Region	Scope 2 metric tonnes CO2e	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling (MWh)
Germany	45435	137085	39627
Europe	26898	81158	23460
North America	12148	36654	10596
Africa and Middle East	1102	3326	961
Asia, Australasia	1273	3841	1110
Latin or South America (LSA)	249	752	217

10.2

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

Further Information

Please be aware:

We distinguish between Germany and the rest of Europe as we have our main offices in Germany.

Generally:

The figures provided this year do not match with previous figures reported the years before due to the fact that we again increased the coverage of internal data gathering as well as redefined data quality. Therefore, not only scopes differ but also relative figures might not match with data given previously.

Attachments

[https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown\(1Jan2012-31Dec2012\)/0625 Verification Letter according CDP Template.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown(1Jan2012-31Dec2012)/0625%20Verification%20Letter%20according%20CDP%20Template.pdf)
[https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown\(1Jan2012-31Dec2012\)/0625 Verification Letter according CDP Template.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor%20CDP%202013/Shared%20Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown(1Jan2012-31Dec2012)/0625%20Verification%20Letter%20according%20CDP%20Template.pdf)

[31Dec2012\)/0625_DEUTSCHES_ZERTIFIKAT_14064_MUNICH_RE_2012.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown(1Jan2012-31Dec2012)/0625_DEUTSCHES_ZERTIFIKAT_14064_MUNICH_RE_2012.pdf)
[https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown\(1Jan2012-31Dec2012\)/0625_DEUTSCHER_BERICHT_ISO_14064_Auszug.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/10.Scope2EmissionsBreakdown(1Jan2012-31Dec2012)/0625_DEUTSCHER_BERICHT_ISO_14064_Auszug.pdf)

Page: 11. Energy

11.1

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

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

11.2

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

Energy type	MWh
Fuel	140908
Electricity	118439
Heat	51742
Steam	0
Cooling	4672

11.3

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

Fuels	MWh
Natural gas	30848
Diesel/Gas oil	340
Other: Heating oil	3631
Other: Natural gas used in electricity/ heat cogeneration plant	106089

11.4

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor

Basis for applying a low carbon emission factor	MWh associated with low carbon electricity, heat, steam or cooling	Comments
Grid connected low carbon electricity generation owned by company, instruments created and retired by company	939	Some of Munich Re's International Organizations, such as e.g. Munich Re America, produce their own renewable energy, in this specific case through solar panels feeding into the energy supply of the buildings. Nevertheless during weekends, where no electricity is used, the produced electricity goes into the grid.
Tracking instruments, Guarantees of Origin	75971	Munich Re Group purchases renewable electricity of certified sources, where possible. Actually 64% of Munich Re's electricity comes from renewable electricity sources.

Page: 12. Emissions Performance

12.1

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

Decreased

12.1a

Please complete the table

Reason	Emissions value (percentage)	Direction of change	Comment
Emissions reduction activities	27	Decrease	Regarding Scope 1 and 2 emissions, ERGO Germany achieved major reduction due to emission reduction initiatives: Direct energy consumption decreased significantly between 2011 and 2012. This development is attributable to construction work at the data centre at the ITERGO HQ and a defect at the cogeneration plant in Cologne with a 10 weeks loss. Regarding indirect energy consumption (the consumption of energy generated by third parties), this also decreased significantly between 2011 and 2012, due to the company's in-house energy generation and the subsequent extensive coverage of corporate power and heating needs. The conversion to CO2-free power from renewable energy at our headquarters and at all major German locations improved our overall CO2 balance significantly. Other energy efficiency measures, such as improved building engineering and office technologies, also had a positive influence.
Divestment			
Acquisitions			
Mergers			
Change in output			
Change in methodology			
Change in boundary			
Change in physical operating conditions			
Unidentified			
Other	17	Decrease	In total Scope 1 and 2 CO2e of Munich Re Group decreased by 17% compared to last year. This was achieved due to: ... reduction of energy: - Introduction of human controls (e.g. rolling back heating and cooling by cleaning staff) - Automatic controls and mechanical controls ... business travel, applicable to Scope 1 - Integrate information on CO2 reduced travel in e-learning tools - Changing to more CO2 efficient fleet vehicles - Training in eco driving (combined with security) - „Driving manual“ for employees and clients - Video conferencing - „Telepresence“ (high end video conferencing) - Skype, Webex, Livemeeting - Teleworking ... behavioural changes of employees: - 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 helping to implement several measures like switching off light and computer, use public transport, share cars

12.2

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
2.9	metric tonnes CO ₂ e	unit total revenue	34	Decrease	Due to the decrease of our emissions and due to a bigger increase in gross premiums written (increase from €49.5bn to €52bn), emissions intensity decreased (from in 2011 3.9 to 2.9). Please be aware: unit total revenue is provided in €m. Calculation methodology: Scope 1&2 = 151860 t(metric) GWP = €52bn.

12.3

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
3.3	metric tonnes CO ₂ e	FTE employee	24	Decrease	Munich Re Environmental Management Strategy foresees to become carbon neutral by 2015 in line with reducing 10% CO ₂ e per employee (base year 2009). Therefore all of our entities must fill out a detailed reduction plan to make sure that the CO ₂ e are reduced accordingly. This year we achieved already a large reduction of 24% due to the different measures (see 12.1.a).

12.4

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
0.1	metric tonnes CO ₂ e	megawatt hour (MWh)	14	Decrease	Due to the decrease of our direct and indirect energy usage we achieved a 14% reduction compared to last year.

Page: 13. Emissions Trading

13.1

Do you participate in any emissions trading schemes?

No, and we do not currently anticipate doing so in the next 2 years

13.2

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

Yes

13.2a

Please complete the 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	Geothermal	Capacity Upgrade of Gunung Salak Geothermal Power Plant Project Indonesia. ID on VCS Registry: No 144.	VCS (Voluntary Carbon Standard)	37630	37630	Yes	Voluntary Offsetting
Credit Purchase	Hydro	Grouped Hydropower Plants in Chongqing, Yunnan, Sichuan and Guizhou provinces, P.R.China. ID on VCS Registry: No 438.	VCS (Voluntary Carbon Standard)	50173	50173	Yes	Voluntary Offsetting
Credit Purchase	Wind	a. 74.9 MW Bundled Wind Power Project in India. ID on VCS Registry: No 429. b. 18.86 MW Bundled Wind Power Project in India. ID on VCS Registry: No 497. c. 6.2 MW Bundled Wind Power Project in India. ID on VCS Registry: No 431. d. Wind power project by Patnaik Minerals Pvt. Ltd. ID on VCS Registry: No 734.	VCS (Voluntary Carbon Standard)	37630	37630	Yes	Voluntary Offsetting

Page: 14. Scope 3 Emissions

14.1

Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Methodology	Percentage of emissions calculated using primary data	Explanation
Purchased goods and services	Not relevant, explanation provided				As we are a financial provider and not a manufacturer, we consider the CO2 footprint of goods most relevant to us, like e.g. paper, within our tendering process and integrate this information into our reporting of Scope 3 (see paper footprint).
Capital goods	Not relevant, explanation provided				There are no upstream emissions regarding capital goods in Scope 3 as we are a financial provider and not a manufacturer. The relevant emissions such as used electricity (direct/ indirect energy, Scope 1 or 2) or transport (Scope 1 or 3) are calculated accordingly.
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Not relevant, explanation provided				All indirect energy and fuel related emissions are already covered by Scope 1 or 2. If possible we use the conversion factor provided by the supplier, if not we refer to conversion factor by GHG Protocol or VFU.
Upstream transportation and distribution	Not relevant, explanation provided				As we are a financial provider and not a manufacturer upstream transportation and distribution is not central to our business. Munich Re includes - if possible - the products' CO2 footprint (including upstream transportation and distribution) into its reporting according to the GHG Protocol Standards. Thus, CO2 emissions from this source are not included in our system boundary.

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Methodology	Percentage of emissions calculated using primary data	Explanation
Waste generated in operations	Relevant, calculated	2394	Once a year we collect data of waste output, actual coverage of employees is 75%, this will be expanded further. The following criteria are tracked: Recycled (valuable) materials/ Waste incinerated/ Waste to landfill/ Special waste treatment/ and Organic waste. 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 collection and emissions calculation on the latest GHG Protocol 2011 for Scope 3 emissions, hence we updated the emission calculation this year.	75%	
Business travel	Relevant, calculated	27894	Once a year we collect data of business travel, actual coverage of employees is 75% this will be expanded further. The following criteria are tracked: Rail travel/ Road travel (rented cars, taxi) in distance, only used for business travel/ Short-haul air travel/ and Long-haul air travel. 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 collection and emissions calculation on the latest GHG Protocol 2011 for Scope 3 emissions, hence we updated the emission calculation this year.	75%	

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Methodology	Percentage of emissions calculated using primary data	Explanation
Employee commuting	Not relevant, explanation provided				To collect these data it is necessary to know the way each employee takes to work. By reasons of data protection it is not possible to track these data. Exception: Managers and Executives use their company cars for business and private travelling, it is not possible for us to distinguish between both possibilities. Hence we track these data in Scope 1 by counting the yearly amount of kilometre fixed in each leasing contract.
Upstream leased assets	Not relevant, explanation provided				Emissions from upstream leased assets (as premises) are included in Scope 1 or 2, as we do not differentiate if a premise is lent or owned.
Investments	Not relevant, explanation provided				Emissions from investment are not tracked as no standard or methodology for financial service companies on CO2e on investments is established (Scope 3).
Downstream transportation and distribution	Not relevant, explanation provided				Munich Re products relate to financial service, and are distributed virtually or by postal services (policies). These emissions are not tracked so far. We consider the CO2 footprint of the service within the tendering process for postal service if possible.
Processing of sold products	Not relevant, explanation provided				Due to the fact that Munich Re sells financial services only, there are no third parties (e.g. manufacturers etc.) selling intermediate products. Hence

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Methodology	Percentage of emissions calculated using primary data	Explanation
Use of sold products	Not relevant, explanation provided				there are no emissions in this position. Due to the fact that Munich Re sells financial services only, there are no further emissions after the sale.
End of life treatment of sold products	Not relevant, explanation provided				As financial service provider our products are virtual and do not involve emissions over their life cycle. Therefore this criterion is not relevant.
Downstream leased assets	Not relevant, explanation provided				Emissions from downstream leased assets (real estates) are not tracked by Munich Re. They are included in Scope 1 or 2 of the lessees balance as they account for him (in case the lessee is balancing and reporting).
Franchises	Not relevant, explanation provided				Munich Re is not having any franchises, therefore there are no emissions in this category.
Other (upstream)	Relevant, calculated	2625	Once a year we collect data of consumption of paper, actual coverage of employees is 75% this will be expanded further. The following criteria are tracked: Post-onsumer recycled/ New fibres ECF + TCF/ New fibres chlorine bleached/ and Other paper. 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 collection and emissions calculation on the latest GHG Protocol 2011 for	75%	

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Methodology	Percentage of emissions calculated using primary data	Explanation
Other (downstream)	Relevant, calculated	680	Scope 3 emissions, hence we updated the emission calculation this year. Once a year we collect data of consumption of water, actual coverage of employees is 75% this will be expanded further. The following criteria are tracked: Rain water/ Tap water/ and Natural water. 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 collection and emissions calculation on the latest GHG Protocol 2011 for Scope 3 emissions, hence we updated the emission calculation this year.	75%	

14.2

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

Third party verification or assurance complete

14.2a

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

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

14.2b

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

Type of verification or assurance	Relevant standard	Attach the document
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-14.2b-C3-RelevantStatementAttached/0625_DEUTSCHER BERICHT_ISO 14064_Auszug.pdf
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-14.2b-C3-RelevantStatementAttached/0625_DEUTSCHES ZERTIFIKAT 14064_MUNICH RE_2012.pdf
Reasonable assurance	ISO14064-3	https://www.cdproject.net/sites/2013/11/12611/Investor CDP 2013/Shared Documents/Attachments/Investor-14.2b-C3-

Type of verification or assurance	Relevant standard	Attach the document
		RelevantStatementAttached/0625_Verification_Letter_according CDP Template.pdf

14.3

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

Yes

14.3a

Please complete the table

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Other (upstream)	Emissions reduction activities	0.06	Decrease	A little decrease of our Scope 3 emission were realized due to emission reduction activities, e.g. using videoconferencing instead of travelling.

14.4

Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)

Yes, our customers

14.4a

Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success

Munich Re offers products in the area of Climate Change (CC) hence we are in constant dialogue with our clients in order to raise awareness. Furthermore our CC strategy covers several aspects of CC, which are adapted accordingly:

1. Mitigation: Innovative insurance cover for renewable energies and energy efficiency, our own investments in RENT – Renewable Energy and New Technologies.

2. Adaptation: Offering products and services to mitigate CC ranging from crop insurance (e.g. SystemAgro) to severe weather insurance in developing countries.

Mitigation and adaptation in particular enable us to identify business opportunities/priorities (special department Green Tech Solutions e.g. renewable energy cover or weather-index-based crop insurance – hence developing green business opportunities. Further information in chapter "5. Risks" and "6. Opportunities".

3. Research: Apart from dedicated research teams in-house (GEO/CCC and economists), we work and in some instances have formal research cooperations with various universities, e.g. the London School of Economics (LSE) as well as external experts.

4. Advocacy: We are active in various committees, panels and working groups (e.g. German Insurance Association, UNEP FI, Munich Climate Insurance Initiative, OECD), also providing expertise to policy makers, hence closely following regulatory developments, which we then can integrate into the strategy, e.g. EU pledge.

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 of 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.

Sharing expertise with business partners is complementing our approach towards clients:

Through our client management, client events, seminars and risk management tools, MR is in close contact with clients. We engage directly with our clients by providing market events, ugh special publications (e.g. Topics Geo, Topics Risk Solutions), organising webinars on technical aspects, and developing new platforms (Green Tech Solution Business Suite, Touch Engineering). For the public, MR has developed an app for Apple iOS and Android (Topics Renewables) to provide visual information on sustainable energy solutions.

To additionally make available knowledge of scientific data and findings to its clients, MR has produced an interactive Globe of Hazards DVD and an online application "NATHAN", containing scientific and insurance-related information with regard to natural catastrophes and CC. 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. MR's NatCatSERVICE is the world's most comprehensive natural catastrophe loss database providing analyses for our clients.

Attachments

[https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared Documents/Attachments/InvestorCDP2013/14.Scope3Emissions/0625_Verification_Letter_according CDP_Template.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/14.Scope3Emissions/0625_Verification_Letter_according_CDP_Template.pdf)

[https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared Documents/Attachments/InvestorCDP2013/14.Scope3Emissions/0625_DEUTSCHES_ZERTIFIKAT 14064_MUNICH_RE_2012.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/14.Scope3Emissions/0625_DEUTSCHES_ZERTIFIKAT_14064_MUNICH_RE_2012.pdf)

[https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared Documents/Attachments/InvestorCDP2013/14.Scope3Emissions/0625_DEUTSCHER_BERICHT_ISO 14064_Auszug.pdf](https://www.cdproject.net/sites/2013/11/12611/Investor_CDP_2013/Shared_Documents/Attachments/InvestorCDP2013/14.Scope3Emissions/0625_DEUTSCHER_BERICHT_ISO_14064_Auszug.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 Department Corporate Responsibility at Munich Re Group.

CDP