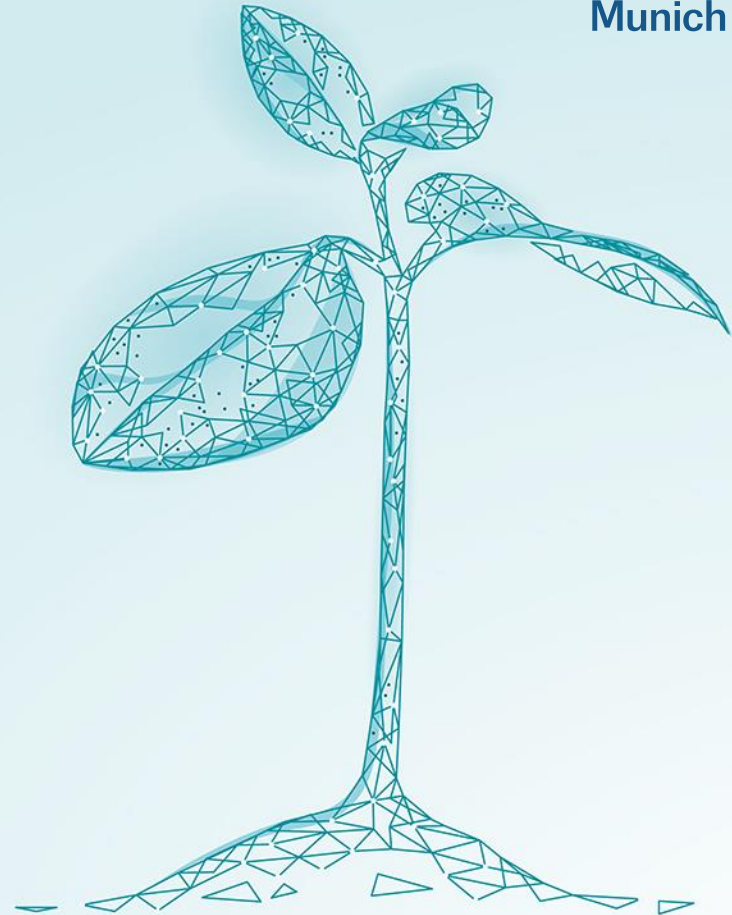


INVESTOR CALL ON  
**Corporate responsibility  
in business at Munich Re**

7 October 2019

Renate Bleich – Head of Sustainability  
Ernst Rauch – Chief Climate and Geo Scientist  
Michael Lardschneider – Group Security Risk Officer



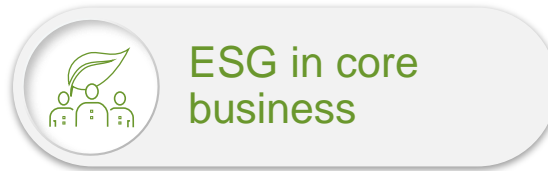
# Systematically integrating sustainability criteria when creating value – Key achievements in 2018



Enabling new technologies for a low-carbon economy

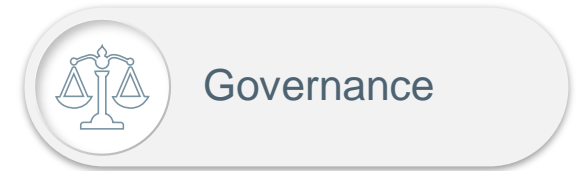
- Innovative insurance solutions for new technologies, e.g. battery storage
- €1.6bn invested in renewable energies, €0.9bn in green bonds, 800,000 t avoided CO<sub>2</sub> emissions

Driving industry standards for climate risk management via UNEP FI PSI<sup>1</sup> Working Group on TCFD<sup>2</sup> recommendations



Sustainability criteria deeply entrenched in our underwriting and investment decisions

- New investment process established to fully integrate ESG criteria for all asset classes
- Coal sector – divestment (30% revenue threshold) and strict underwriting exclusions for new coal projects



New remuneration system for the Board of Management, aligned with long-term shareholders' interests

Responsible employer

- Establishment of Munich Re Digital School to enhance digital qualifications of employees
- Voluntary programme to support reduced complexity and digital transformation

Top positions in major external ratings:  
MSCI AA rating, top 10 in DJSI, #1 Union Investment for governance

# Reconnecting Corporate Responsibility (CR) activities with the business creates shared value – for the company and society

## The concept of shared value ...

- Shared value creation focuses on connecting societal and economic progress
- Responsible behaviour increasingly relevant for competitive advantage – companies need to do good and do it well



## ... how we live it at Munich Re

- Corporate Responsibility in Business
- Environmental management
- Social impact projects

# Sustainable Development Goals Implementation at Munich Re

Through our risk expertise, our sustainable solutions and our actions as a responsible employer, we are contributing in particular to the achievement of the following seven UN Sustainable Development Goals (SDGs).

Selected examples:

- Public-sector risk transfer solutions (e.g. CCRIF, ARC, PEF, MCII)<sup>1</sup>
- Crop failure insurance
- Inclusive insurance products
- Renewable energy and energy efficiency solutions
- Investment in renewable energies and infrastructure
- InsuResilience initiative



<sup>1</sup> Please refer to slide [16](#), [33](#) and [36](#) for further information.

# We have implemented an ESG framework for insurance and investment activities

## ESG aspects, sensitive issues, Munich Re position and measures



### ENVIRONMENT

- Pollution
- Natural resources and biodiversity
- GHG emissions



### SOCIAL

- Political context and public awareness
- Labour and working conditions
- Human rights
- Health, safety and security for the community
- Displacement of people
- Cultural heritage



### GOVERNANCE

- Responsible and correct planning and evaluation
- Compliance
- Consultation and transparency



#### Banned weapons:

Policy on cluster munition and land mines



#### Coal:

Policy on coal business underwriting and investments



#### Arctic drilling:

Guidelines, risks to be referred to Arctic Drilling Panel



#### Oil sand:

Position paper including specific questions on ESG aspects



#### Fracking:

Position paper including specific questions on ESG aspects



#### Mining:

Position paper including specific questions on ESG aspects



#### Investments in farmland:

Mandatory ESG check for investments

### ESG Tool for Underwriting

Assessment of different industries, best practice in credit/surety

### Sustainable investment process

ESG research and ratings included in investment process

### ESG country rating

ESG information included in Munich Re Country Risk Assessment

Continuous evaluation and refinement of framework and processes, taking regulatory developments and industry-wide standards into consideration

# Reputational risk committees (RRC) for escalation of controversial underwriting and investment cases



## MISSION

- Consultation of business segments
- Analysis and assessment of individual cases



## EXAMPLES OF REQUESTS

- Investment in / (re)insurance of specific entities / Groups
- (Re)insurance of potentially polluting projects
- (Re)insurance of projects in specific countries
- Insurance of clinical trial participants
- Critical products



## WORKING MODE

- Reporting of critical issues prior to closing of a deal
- RRC responds within 48 hours, giving clear guidance
- Escalation to Board of Management by RRC coordinator in case of non-compliance

Declined  
**14%**

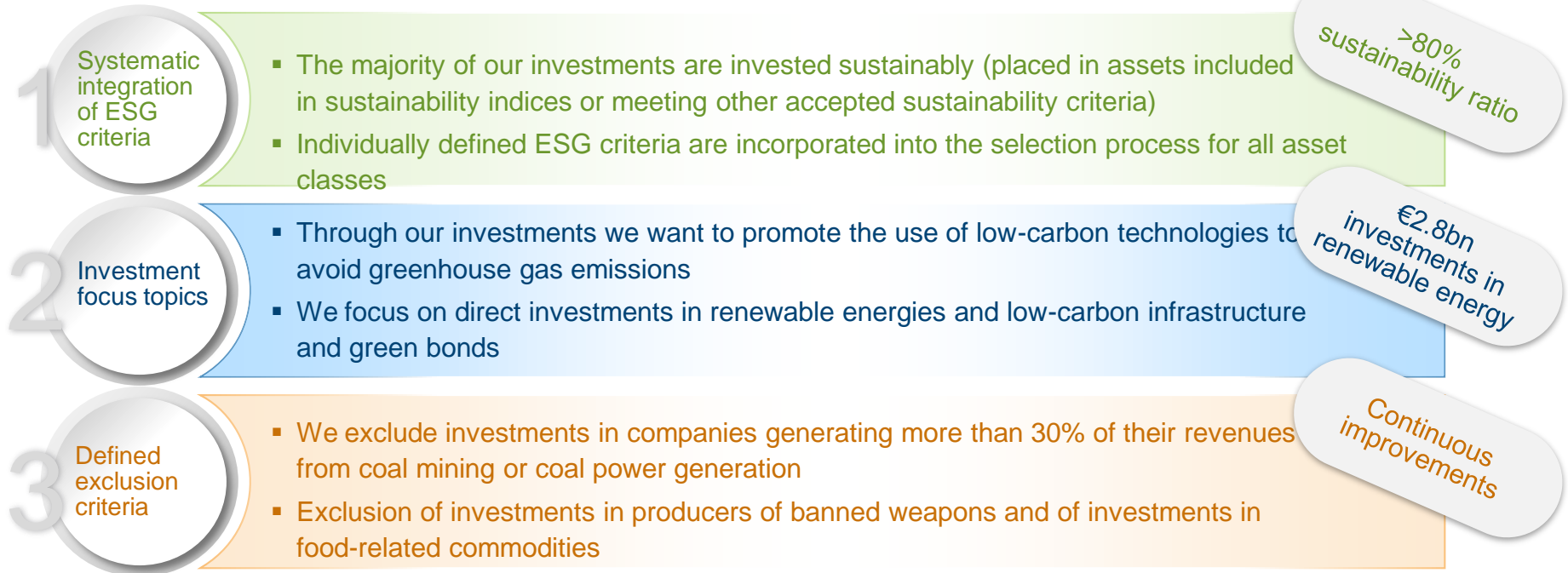
Approved  
with conditions  
**14%**



Approved  
**72%**

Reputational risks are monitored and steered within RRCs

# Munich Re's responsible investment strategy is based on three pillars



Binding public group-wide Responsible Investment Guideline (RIG) covers all requirements regarding PRI and ESG that concern Munich Re (Group) asset management

# Munich Re investments: Key achievements

1 Sustainability ratio for all forms of investment was >80% in 2018



2 Munich Re invested capital in renewable energies €1.6bn and green bonds €1.2bn (as of 30.06.2019)

3 Divestments from coal ~ €145m

## Shares, corporate bonds

- Systematic analysis of ESG criteria in addition to financial performance
- New investment process

## Government bonds

- Use of country ratings based on ESG information
- Exclusion of countries not meeting requirements

## Real estate

- During due diligence, ESG criteria taken into account, e.g. construction material, technical facilities, energy efficiency

## Infrastructure and renewable energies

- During due diligence, ESG criteria and political parameters taken into account

## Agriculture and forestry

- During due diligence, ESG criteria taken into account



# Munich Re's activities relating to climate change focus on the following fields of activity

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## CLIMATE STRATEGY MUNICH RE (GROUP)

---

### RISK EVALUATION

Recording and evaluation of the impact of climate change on the frequency and intensity of natural hazards.

### RISK-TRANSFER SOLUTIONS

Realisation of business growth areas as a leading provider of risk-transfer solutions for renewable energies and other products aimed at adapting to and mitigating climate change.

### ASSET MANAGEMENT

Supporting the expansion of renewable energies and infrastructure projects by pursuing a sustainable investment strategy.

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## Carbon neutrality of Munich Re

Munich: since 2009, Reinsurance worldwide: since 2012, Munich Re (Group): since end 2015

---

## Involvement in climate initiatives

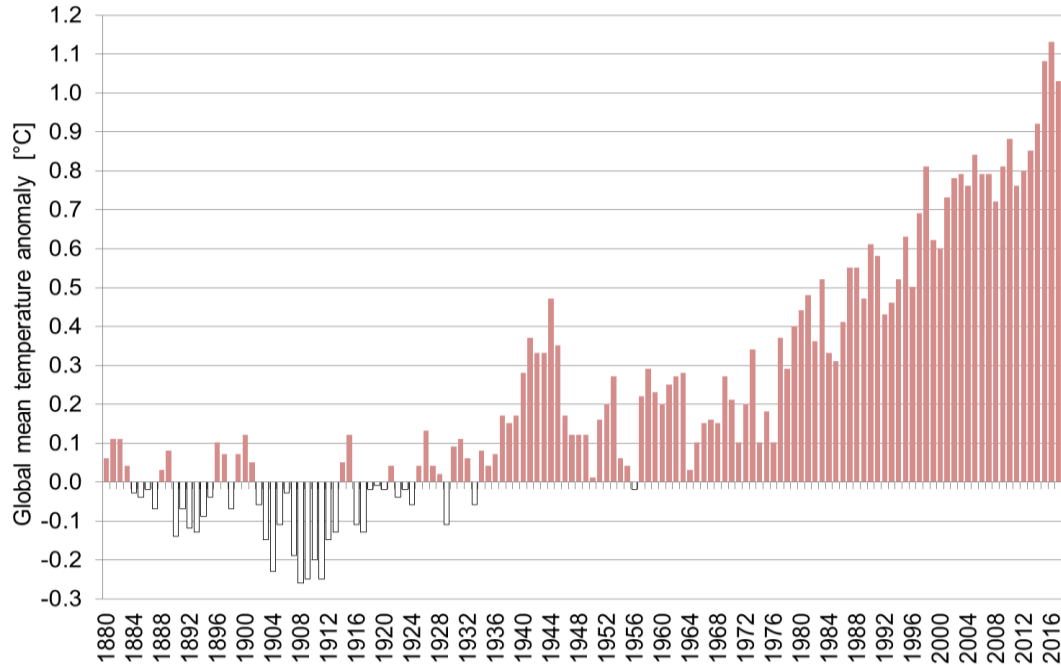
e.g. Munich Climate Insurance Initiative (MCII), InsuResilience

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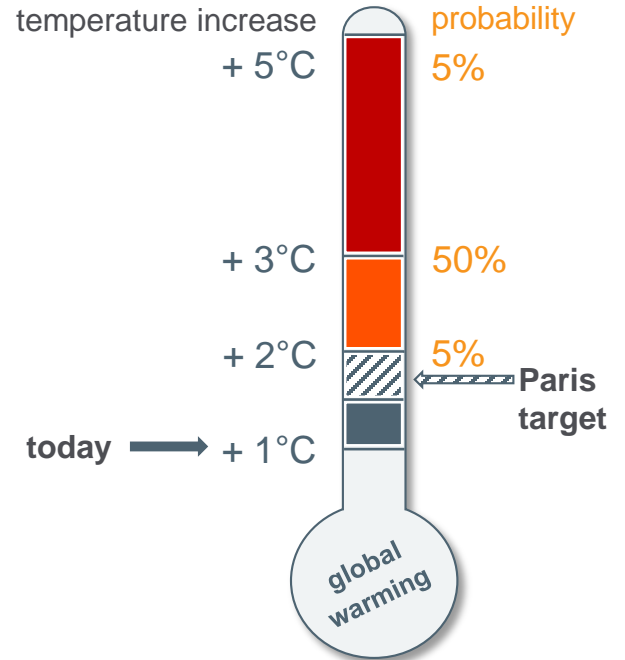
# Climate change today: physical impacts

Increasing temperatures → increasing higher weather hazards (examples)

approx. 1°C warming since 1900



Based on Paris Agreement commitments:  
50% probability of warming >2°C

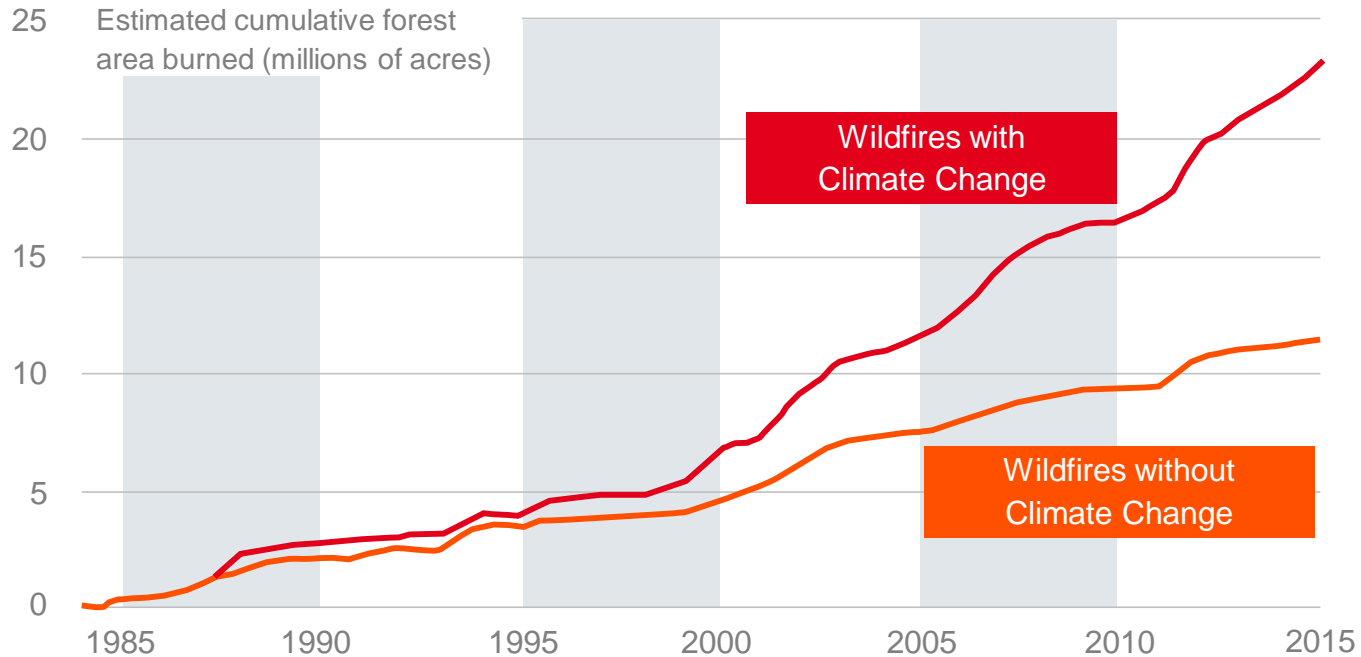


# Climate change today: physical impacts

## Increase in burned areas from wildfires



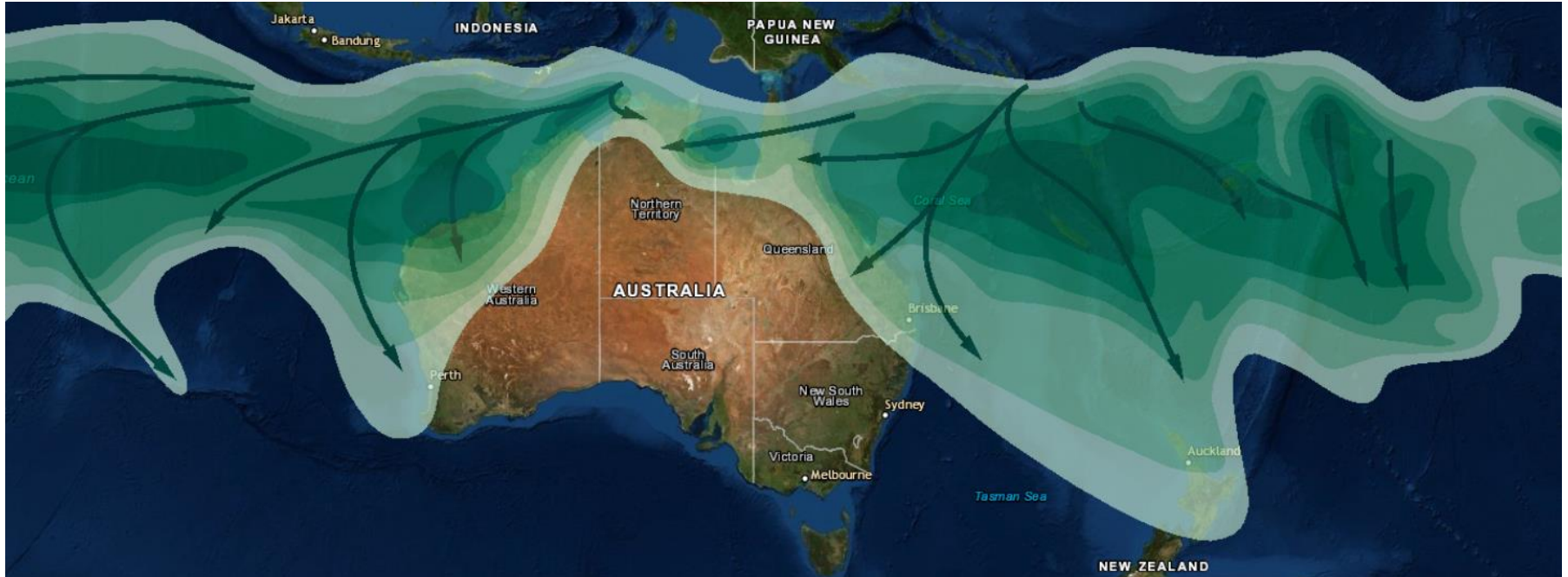
### Wildfire extent: area burned in the western US since 1984



# Climate change today: physical impacts

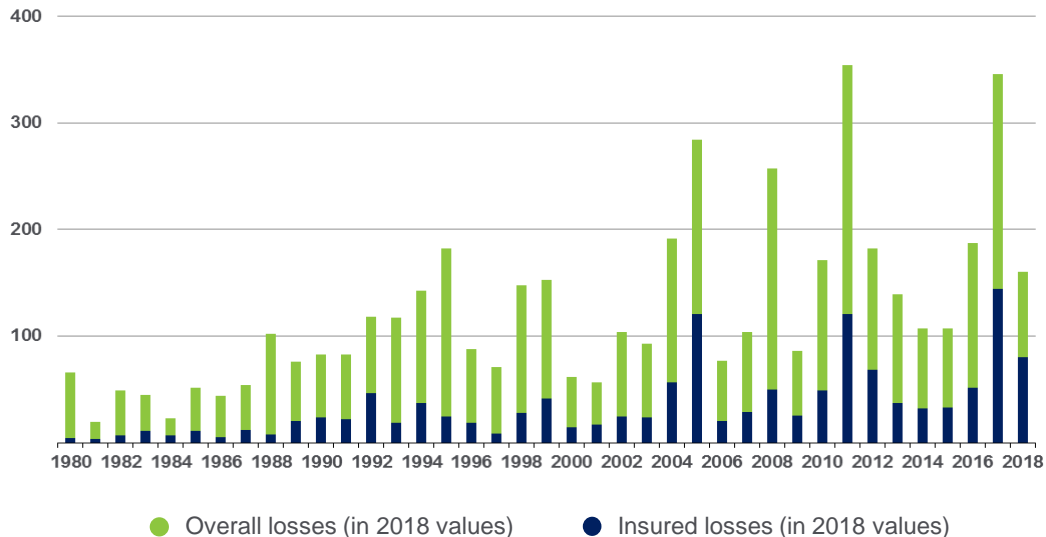
## stronger cyclones and new regions (e.g. south of Brisbane)

 Extreme weather events: future areas affected by tropical cyclones in Australia

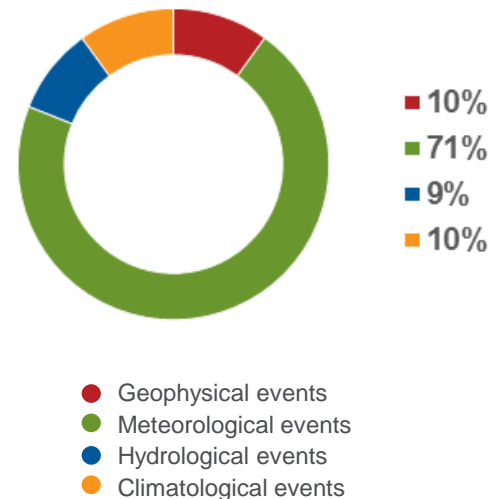


# Climate change today: insurance risk of change upward loss trend from natural catastrophes

## Overall and insured nat cat losses worldwide since 1980 (US\$ bn)



## 90% of insured nat cat losses from weather-related events



Inflation adjusted via country-specific consumer price index and consideration of exchange rate fluctuations between local currency and US\$.

# Climate change future impacts until the end of this century (3°-5°C temperature increase)

## Physical impacts

sea level rise (m)



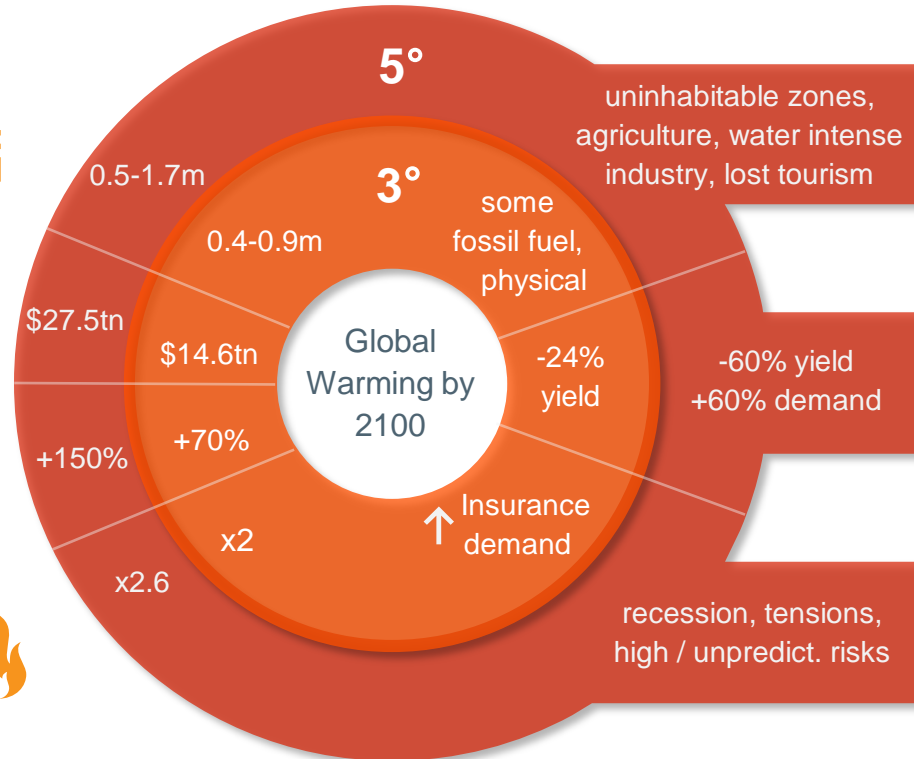
coastal assets to defend (\$tn)



frequency of extreme rainfall



increase in wildfire extent



## Economic impacts



stranded assets



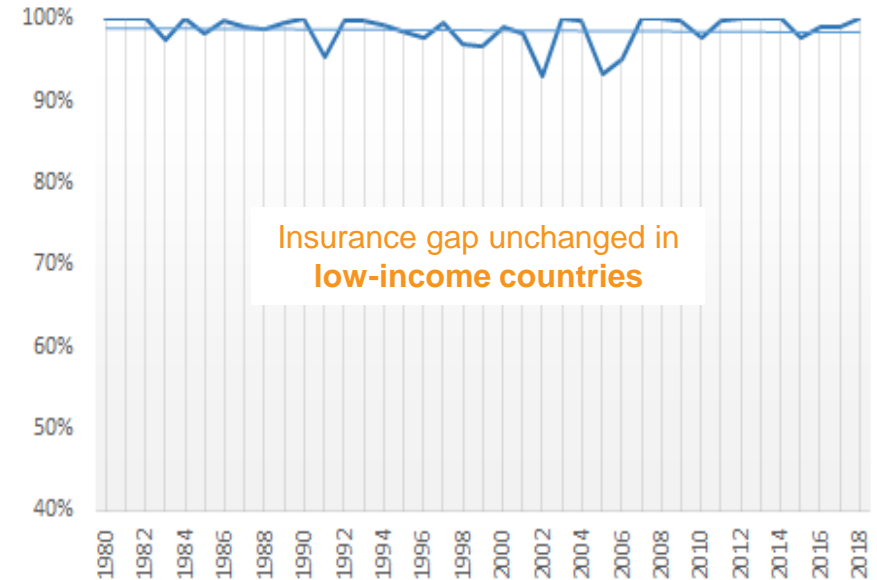
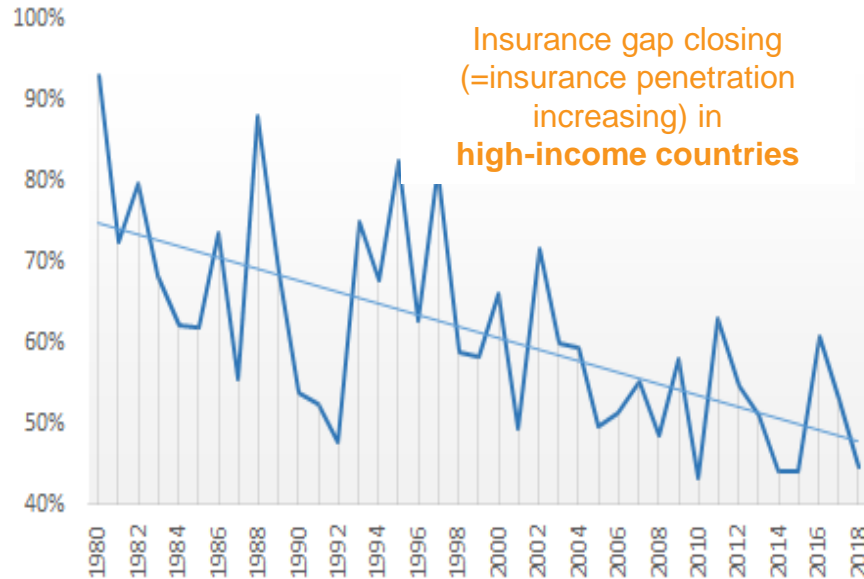
food supply



insurance opportunities/risks

# Climate change: risk and business development drivers (1)

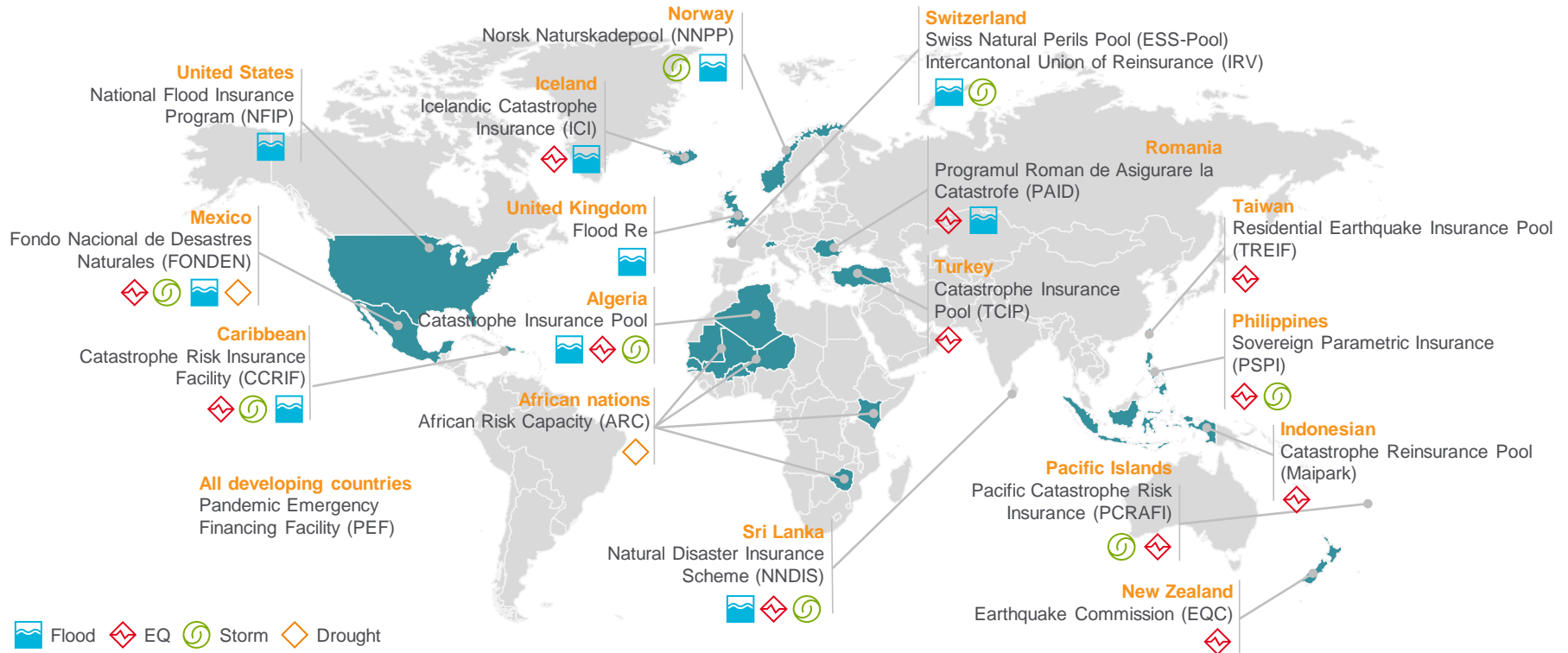
## Nat Cat insurance gap



Since 1980 the insurance gap (uninsured losses as a share of overall losses) has **significantly decreased in high-income countries**

# Climate change: risk and business development drivers (2)

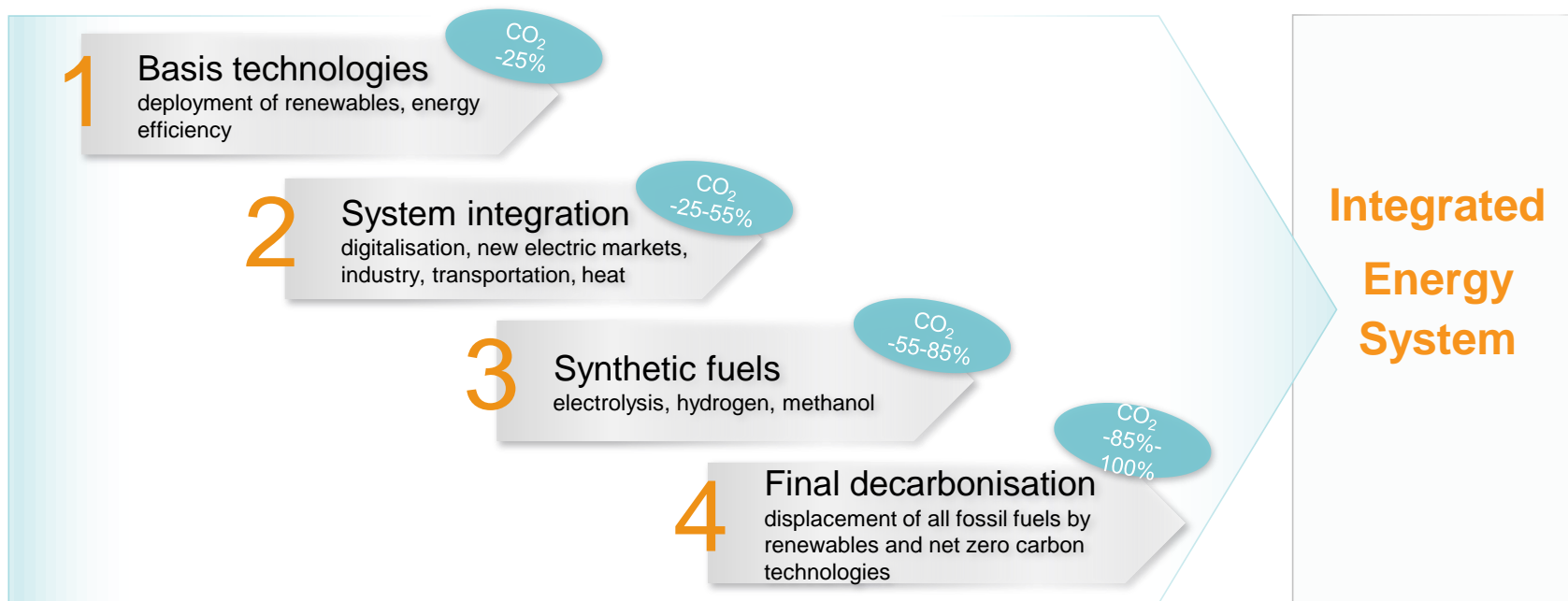
## sovereign and public-private Nat Cat risk transfer schemes





# Climate change: technology drivers

## achieving a complete decarbonisation by 2050: 4 phases



Munich Re's participation in science and technology networks: know-how generation and development of new business opportunities

# Technology drivers: Munich Re business opportunities

## innovative solutions by “Green Tech Solutions” – enabling new technologies

### Established Renewables



Solar Energy

Wind Energy

Hydro

Inverter

### Smart Energy & Disruptive Technologies



Electrical Energy Storage

E-Mobility

Energy Efficiency

Bio Energy/  
Waste to Energy

Fuel Cells

LED Asset/  
Installation Performance

# Munich Re focuses on investments in renewable energies and low carbon infrastructure

- Fundamental reorientation of energy supply investments and rapid escalation in low-carbon investments necessary to achieve 2° scenario
- Investments needs far surpass public funding possibilities
- Munich Re invests in renewable energy projects around the world such as solar power plants and wind farms
- Munich Re invested capital in renewables: **€1.6bn** (31.12.2018)
- Target: **€2.8bn**
- Impact:
  - Generation of 2.3m megawatt hours of green electricity in 2018
  - Supplying power to around 590,000 households
  - **Avoided CO<sub>2</sub> emissions 800,000 t**

Avoided CO<sub>2</sub> emissions since 2011: 3,000,000 t



Example:

- Don Rodrigo solar park, Spain
- Acquired: 12/2018
- 500,000 photovoltaic modules with a total output of around 175 megawatts
- One of the largest solar parks independent of government subsidies in Europe
- 300 gigawatt hours per year; produces electricity for ~93,000 households

# Munich Re's activities relating to digitalisation and cyber security focus on the following fields of activity

## BUSINESS OPPORTUNITIES

- Digital cooperation models (e.g. Digital Partners, SaveUp)
- IoT applications and services (via HSB/relayr)
- Cyber (re)insurance: GWP 2018 US\$ 473m
- Cyber embedded service solutions and growing cooperation network, e.g. DXC Technology
- Insurance of AI technology
- Data-driven solutions

## CYBER SECURITY STRATEGY

Defined mission:

- to protect Munich Re Group and stakeholder trust

Main objectives:

- Provide guidance to the organization
- Ensure consistency between degree of security with risk appetite
- Streamline activities by leveraging expertise and knowhow, existing infrastructures and services

## EMPLOYEES & KNOW HOW

- Digital technology is transforming the workplace
- Goal: supporting the digital readiness of employees and establishing a new learning culture with focus on the digital priorities of Munich Re
- Provision of target-group-specific basic and further training for our developers, users and managers e.g. digital school, data analytics curriculum, cyber expert pool
- Cyber security experts in business units

## Responsible handling of artificial intelligence

Social impact of AI – promote exchange, protect against risks

# Security Risk Management Process



1<sup>st</sup> LoD<sup>3</sup> (Risk taker, takes direct result responsibility) = Business and service units

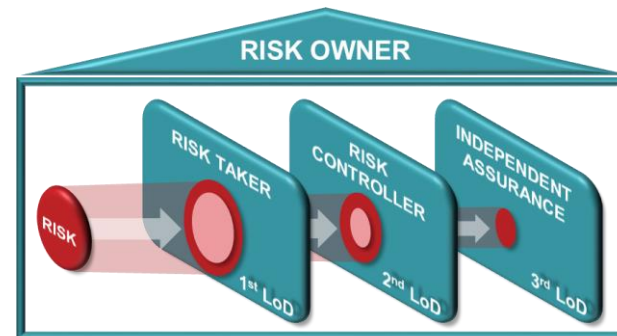
Reports exposures to independent risk management function

2<sup>nd</sup> LoD (Independent risk mgmt function, no result responsibility) = IRM

Challenges and provides input for risk strategy and risk decisions

3<sup>rd</sup> LoD (Internal audit must not have result responsibility) = Audit

Verifies that effective controls are in place and functioning properly

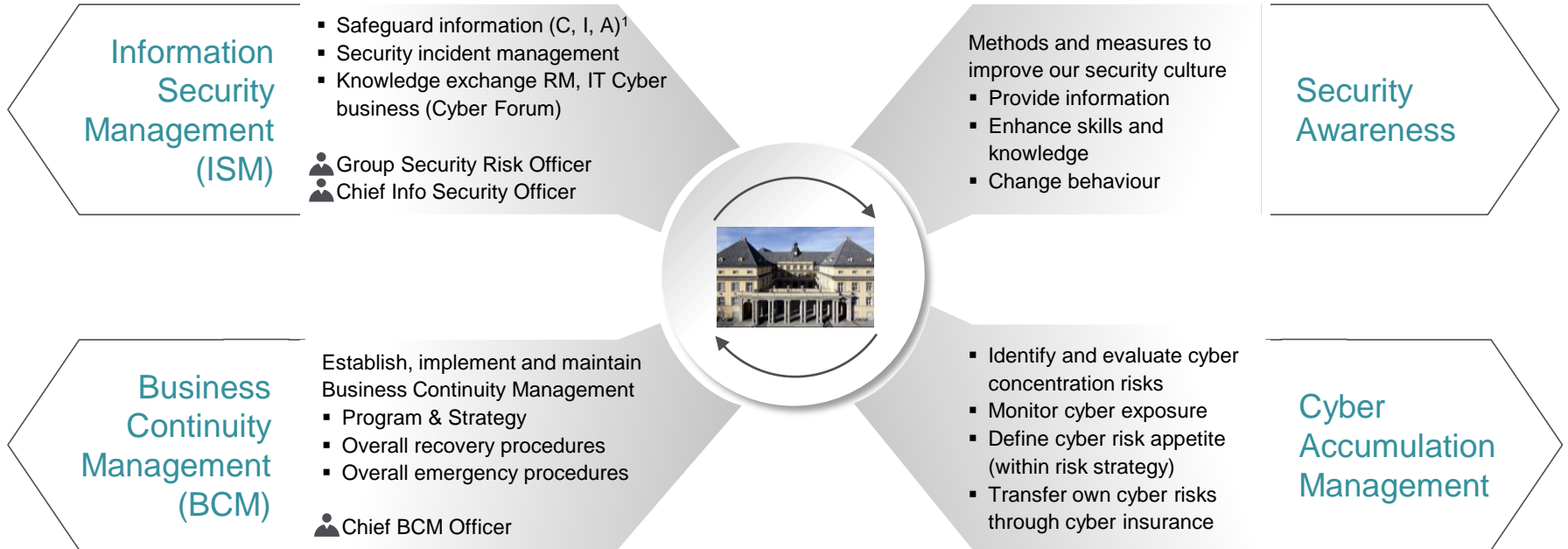


Security management is done in one integrated process with shared responsibilities on different levels of defense

1 A comprehensive assessment was conducted in 2018/19 by an external security consulting company, followed by regular progress assessments and reports to the management board. 2 Criticality managed by Security Incident Response Team (SIRT), Emergency Management Team (EMT) and/or Crisis Management Team (CMT), depending on the incident. 3 LoD = Line of Defense.

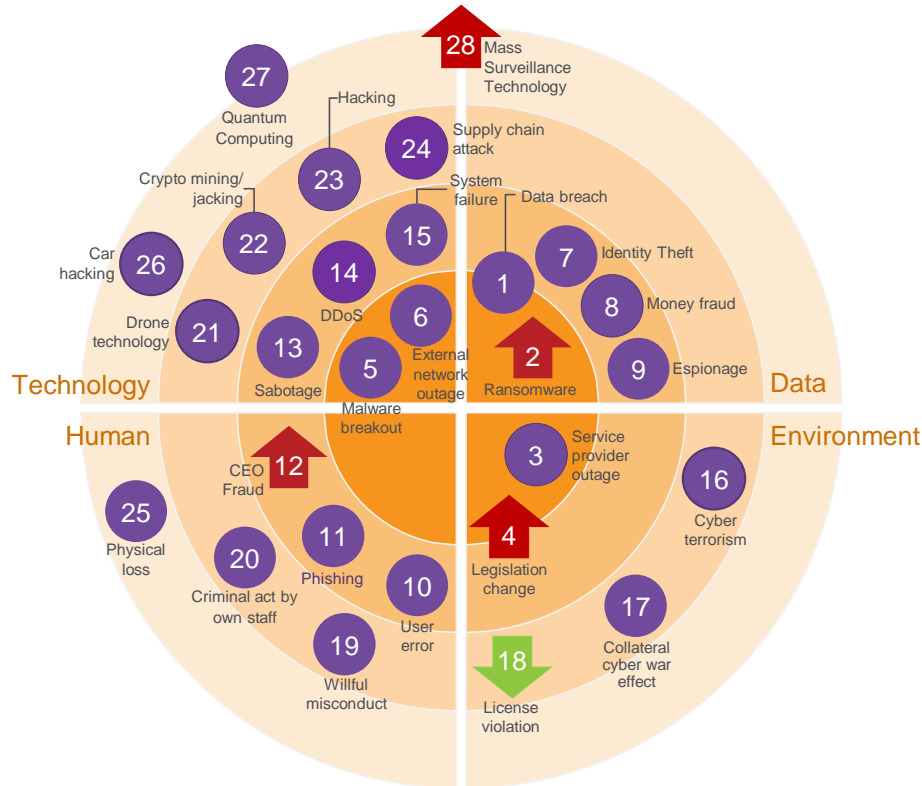
# Security Risk Management

## Tasks & Responsibilities of Integrated Risk Management



Protect Munich Re's information, operations, reputation and it's written business

# Munich Re Cyber Security Threat Radar (Status: 10/2019)



## Potential impact

- Potential for low cost single losses
- Potential of normal single losses
- Potential of expensive single losses
- Potential of accumulation losses

## Trend

- Increase of frequency of publicly known incidents and/or average loss
- Constant frequency of publicly known incidents and/or average loss
- Decrease of frequency of publicly known incidents and/or average loss of

# Munich Re's sustainability performance again amongst the top 10% insurers worldwide

## Sustainable Responsible Investment Ratings



MSCI

## Corporate Responsibility Report

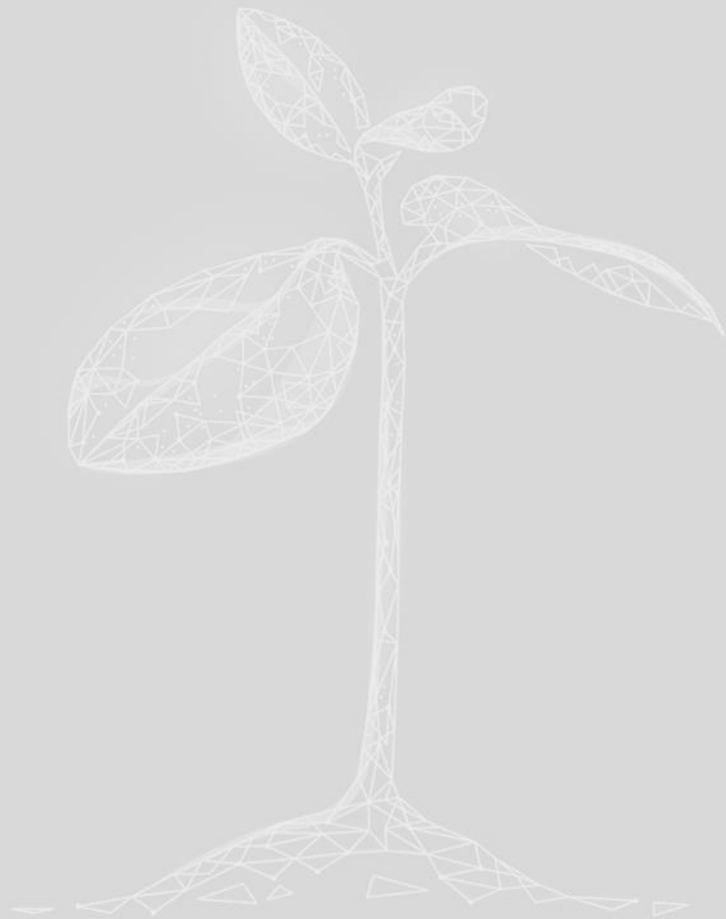


## Combined non-financial statement

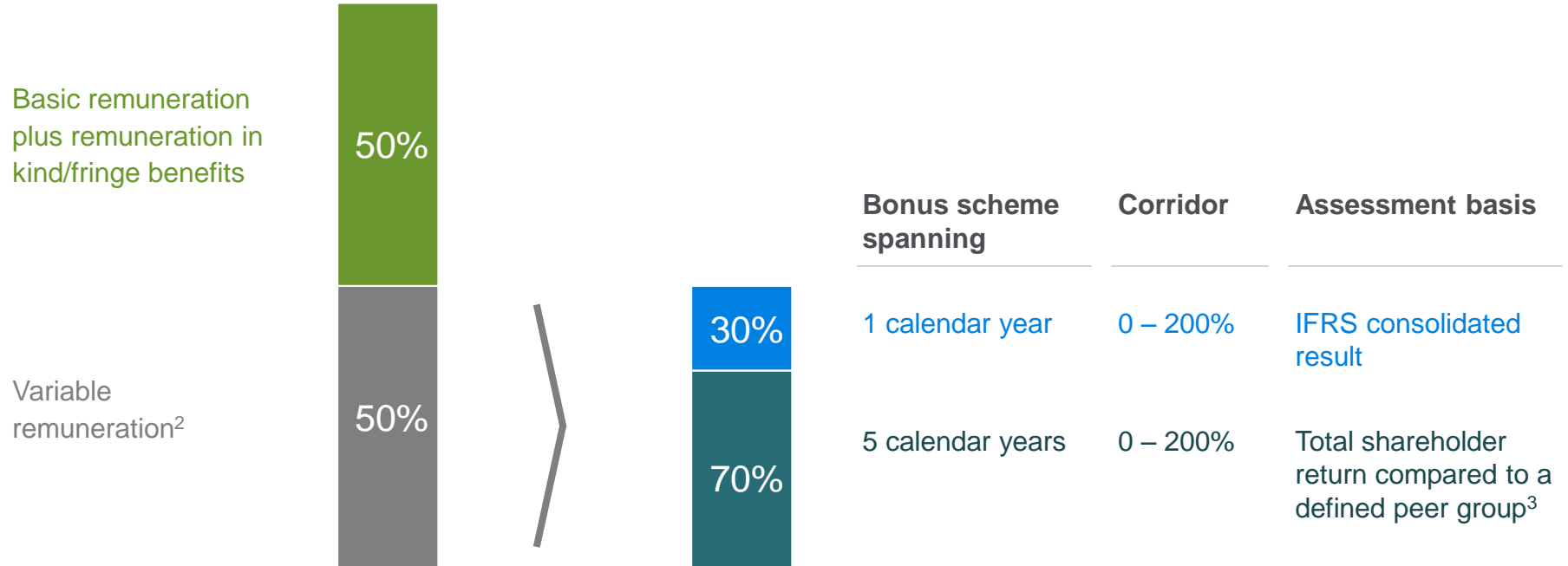




# Backup



# Governance – Remuneration system<sup>1</sup> for the Board of Management meets shareholder requirements



<sup>1</sup> Effective as at 2018. <sup>2</sup> For 100% achievement of objectives/performance evaluation. **Evaluation of overall performance: Adjustment of achievement figures by the Supervisory Board of up to 20 percentage points (loading/reduction).** <sup>3</sup> Peer group: Allianz, Axa, Generali, Hannover Re, SCOR, Swiss Re, Zurich.

# Criteria for the evaluation of overall performance (Examples for bonus / malus aspects)

## Individual management performance

- Result of division/line of business, contribution to overall performance
- Individual performance (qualitative and/or quantitative)
- ESG criteria (environmental, social and governance)
- Employee satisfaction
- Any malus factors taken into account
- Special market circumstances or unexpected developments taken into account
- Implementation of strategy, improvements in organisation and processes, innovation
- Conduct (leadership, example set, compliance with guidelines, working relationship with colleagues and Supervisory Board)

## Collective management performance

- Result of field of business (reinsurance and/or primary insurance)
- ESG criteria (environmental, social and governance aspects)
- Employee satisfaction
- Any malus factors taken into account
- Reaction to special market circumstances and unforeseeable developments

## Situation, success and future prospects of Company

- Financial situation of Company
- Short-term and long-term profit outlook
- Market environment (interest rates, situation in sector, etc.)

# The Sustainability Department is a central function at Munich Re – Structure overview



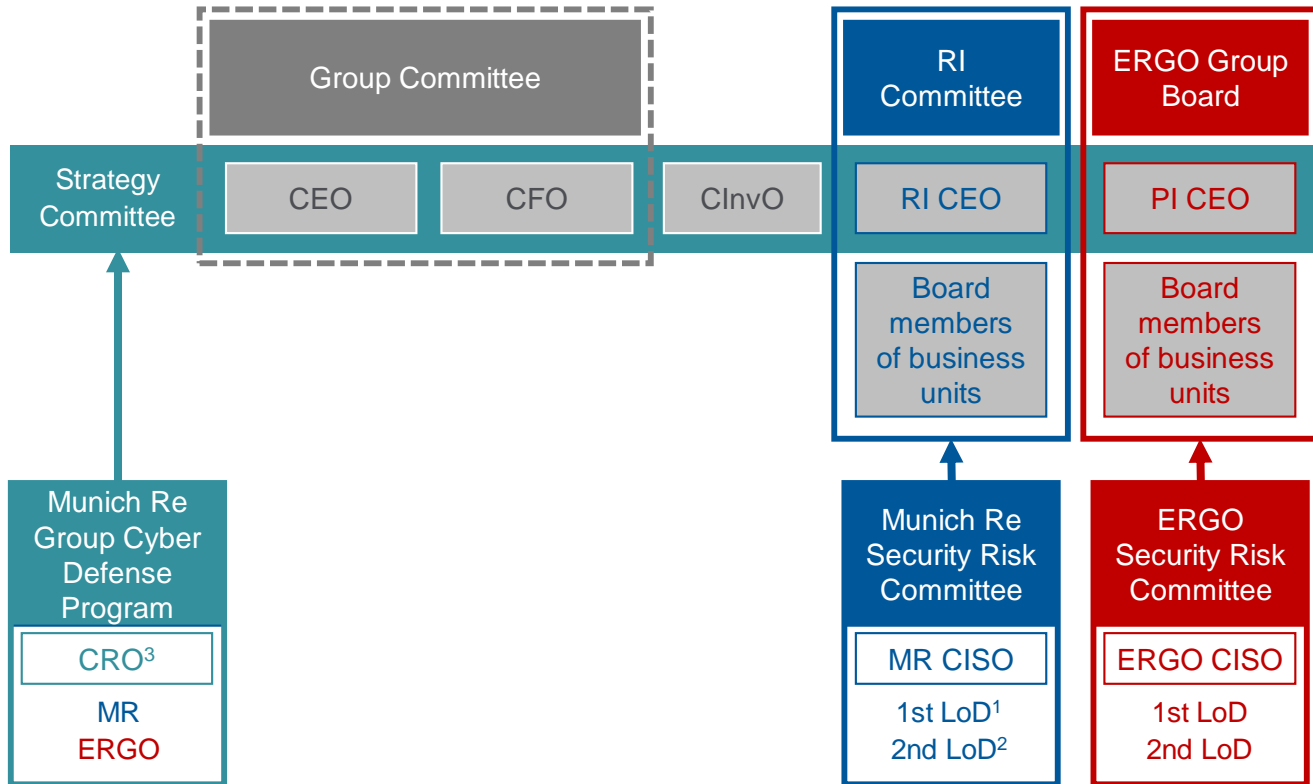
Business units implement strategy at local level with sustainability departments/coordinators, environmental managers, etc.

Sustainability is a central function located in ESP which directly reports to the CEO

Sustainability triggers, monitors, controls, enables and manages Group-wide sustainability-related tasks

Group Corporate Responsibility Committee (GCRC) as panel to monitor Shared Value Strategy and as Group Task Force for sensitive business issues

# Security Governance (Security Risk Committees)



1 1st Line of Defense (CIO, CITSO, Facility Management, Business Units). 2 2nd Line of Defense (CISO, Chief Risk Officer, Data Protection Officer).  
 3 Currently acting as Group Security Risk Officer.

# Business enabling examples

## Energy Storage System (ESS) Performance Warranty Cover

### Description

Long-term performance cover for

- Battery Cells & Packs
- Stationary Energy Storage Systems
- E-Mobility Applications

### Risk Transfer Solution

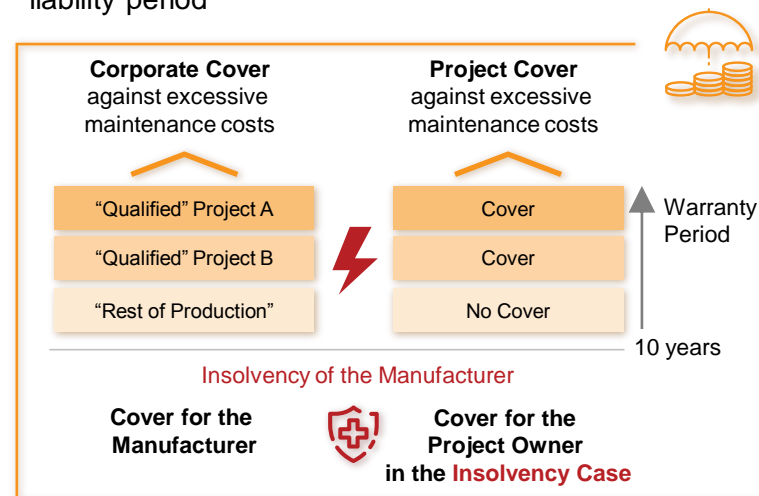
- Indemnification of excessive warranty claims
- One time premium based on insured year's revenue
- Non-cancellable for the insurer

### Achievements

- Increased predictability for financial reserving
- Boost of growth-relevant cash reserves for R&D/marketing
- Balance sheet protection

### Value proposition

- Enterprise risk management (ERM) cover for revenues of global annual production
- Long-term security for manufacturer during multi-year liability period



# Business enabling examples

## Photovoltaic (PV) Sales and Buyers Cover

### Description

Long-term performance cover for

- Investors in and manufacturer of photovoltaic modules
- Protecting the performance of solar panels up to 30 years

### Risk Transfer Solution

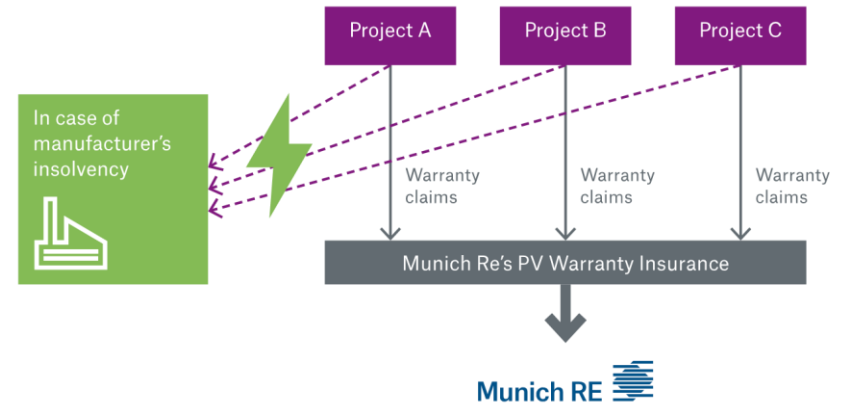
- Chosen projects covered
- In case of insolvency, the cover is transferred
- Realisation through covering technology AND credit risk
- Enabled to offer competitive rates

### Achievements

- Creation of significant global insurance market
- Stable renewal business
- Munich Re established as Warranty Partner

### Value proposition

- Planning stability due to dedicated capacity for Buyers and Project Investors
- Reliable Insurance partner and qualified due diligence



# Public Private Partnerships: NatCat Risk Management Solutions Munich RE

## for Governments, supranational Organizations & NGOs

### Damages



### Losses



### Public Assets

**If uninsured:**  
Property,  
Content &  
Infrastructure  
  
(Reconstruction  
& Replacement)

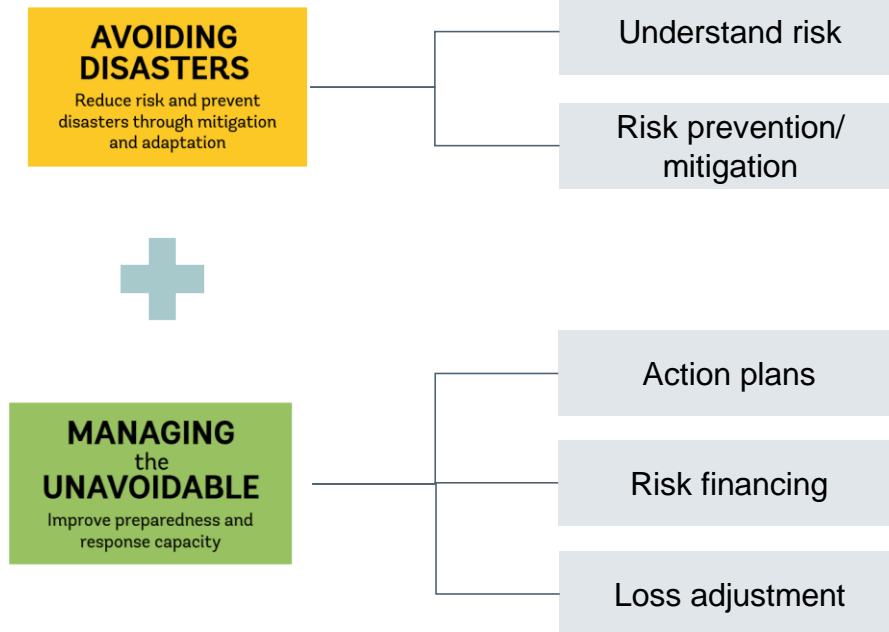
Recovery

### Private Assets Personal, Commercial and Industrial

**If state backed:**  
Property, Contents  
& Infrastructure  
  
(Reconstruction &  
Replacement)

Relief Payments  
Social Transfers  
Economic support  
Reduced Income

## Comprehensive Risk Management Framework





# Risk Transfer within the Sovereign Risk Management Framework: Different Possibilities

## Sovereign risk protection



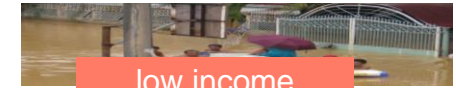
government

## Protection for households/private sector



private sector

## Social protection



low income

Policyholder

Governments  
(often the Ministry of Finance)

Private households or companies

Government with low-income households as beneficiaries

Funding / Government role

Part of the federal budget:  
Government manages allocation of resources in case of NatCats.

Governments creates legal and regulatory framework for high insurance penetration.

Government pays the premium while low-income households are the beneficiaries

Insured interest

Public assets and/or ex-ante financing of emergency response

Private property

Contingent public liability for low income households

Examples

- FONDEN (public assets)
- CCRIF (emergency response)
- PSPI (Philippines)

- TCIP (Turkey)
- NFIP (United States)
- Flood Re (United Kingdom)

- ARC
- NNDIS (Sri Lanka)

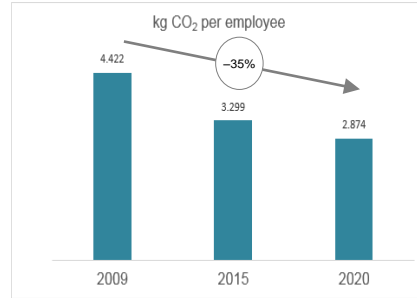
	Damage	Losses
Public Assets	X	X
Private Assets		X

	Damage	Losses
Public Assets		
Private Assets	X	

	Damage	Losses
Public Assets		
Private Assets	X	X

# Carbon neutrality based on environmental management and CO<sub>2</sub> emission reduction

## Our steps to carbon neutrality



**Data** gathering and measuring CO<sub>2</sub> emissions  
→ since 2015 externally verified by a third party

**Reduction** of CO<sub>2</sub> emissions by saving energy, water, paper, waste and business travel and improving carbon impact of consumed goods and services

**Substitute** conventional electricity by green electricity

**Compensate** remaining CO<sub>2</sub> emissions through purchasing carbon credits

A Group-wide environmental management system is in place and approx. 80% of employees are covered

Target Munich Re Group 2020: –35% CO<sub>2</sub> emissions per employee since 2009  
→ 2018 > –44% CO<sub>2</sub> reduction

Target Munich Re Group 2020: 100% electricity is from renewable sources  
→ 2018 > 86% electricity used from renewable sources

Since 2015: Munich Re Group is carbon neutral

# We implement various measures to reduce our carbon footprint

## Premises

- Modernisation of premises, e.g. cooling technology systems at Munich site (savings of ~160 tonnes of carbon per year)
- LED-lights e.g. at Hamburg site more than 12,000 lights replaced (~1,200,000 kWh electricity savings per year)
- MR America: shed roofs producing solar energy

## Mobility

- Reduce business travel and use new communication technology instead
- Vehicle fleet with low CO<sub>2</sub> emissions
- Charging stations for electric cars
- Subsidizing commuting by public transport (job ticket)

## IT/Procurement

- Environmentally friendly products for office supplies
- Use of efficient IT equipment

## Key Achievements in 2018

- Reduction of Group-wide carbon footprint by 44% per employee (base year 2009)
- 86% Green electricity procured Group-wide
- 103,000 t CO<sub>2</sub> emissions compensated for in 2018

It's key to inform staff about environmentally friendly behavior and motivate them to act

# Our commitment to protection against climate risk

- Munich Re supports the **InsuResilience Global Partnership** initiative with data, expertise and risk capital. Founded in 2015 by the G7 countries, this initiative initially aimed to enable an additional 400 million people in developing and emerging countries to access insurance products covering weather and climate risks by 2020. During the UN Climate Week 2019 the German Ministry for Economic Cooperation announced an extension of this initiative until 2025 with an increased ambition of 500 million people. The initiative is primarily financed by industrialised countries. However, at the same time, as part of the InsuResilience Global Partnership, it relies on the active involvement of the G20 and V20 countries, as well as close cooperation with civil society, insurers and the scientific community. The Insurance Development Forum (IDF) - in which Munich Re is represented in the Steering Committee by our reinsurance CEO Torsten Jeworrek – is the relevant public private partnership platform developing financial solutions to support the achievement of the InsuResilience targets.
- The **Munich Climate Insurance Initiative (MCII)** was founded back in 2005, following an initiative by Munich Re and representatives from the World Bank, NGOs and academia. Since then, MCII has participated in the global climate negotiations (COPs), providing suggestions on climate risk management and insurance solutions for low income countries. MCII has also provided technical support in the discussions on dealing with losses from climate change under the UNFCCC Loss and Damage programme and the Warsaw International Mechanism.
- Together with our partner, **Climate-KIC**, the largest public-private climate initiative in the EU, promotion of climate-friendly technologies at a very early stage. The accelerator programme is aimed at cleantech start-ups whose technologies and business models offer responses to climate change. The promotion takes the form of financing, but also involves consulting from experts, who support the companies as mentors.

# Diversity at Munich Re

- Our group-wide public Diversity Policy sets down the most important principles in regards to Diversity and forms the basis for overarching and comprehensive diversity management.  
*“For Munich Re, diversity is a business need which promotes the acceptance and value of differences between our employees. This includes not only classic aspects such as **gender, religion, age, disabilities, nationality or cultural differences, and sexual orientation**, but also inherent characteristics such as **experience, education, personality or views**. Together, we benefit from those differences in achieving Munich Re’s strategic goals and objectives.”*
- Measures to increase the proportion of women in management positions:
  - (Cross-)mentoring programmes for women
  - Training courses for female management staff, advisory services
  - Formation of women’s networks (Munich Re “EFEU”; Munich Re of America “Employee Resource Groups”; MEAG “WIN@MEAG”)  
Identification of high-potential female employees through the performance management process, talent discussion with gender sensitisation
  - Strong commitment to the promotion of women through a special internal company agreement (Munich Re Munich)

2018: Women in management positions (with disciplinary responsibilities for staff) 35.7 % worldwide (2017: 33.5%); Women 53.9 % of our Group’s workforce (2017: 54.5 %);

# Employee Development & Digitalisation

We developed a platform that analyses Munich Re's needs in terms of new employee profiles and aims at upskilling the current workforce in all fields relevant to the digital transformation. Initiatives:

- **Digital School<sup>1</sup>**: introduced in September 2018, it provides comprehensive overview over all learning opportunities and trainings in the field of digitalisation to all employees globally. In the first half of 2019 more than 2000 employees of 32 different sites accessed the Digital School.
  - Goal: cultural change towards digital learning.
- **Data Analytics Curriculum**: employees can acquire knowledge in the area of data analytics on different levels (Basic, Advanced, Black Belt, Experts). Facts since launch in Q2 2018:
  - eLearning: >4.000 learners (8/2019)
  - Classroom trainings: >1400 participants
  - University certificates for Black Belt: 140 until Q2 2019
- **Cyber Expert Pool**: launched in 2016, established a special training programme for cyber experts. The programme is aimed at qualifying candidates with suitable professional experience in cyber security to work in cyber underwriting. 13 underwriters were trained as cyber experts since 2016.

Group Trainee Programme EXPLORE has been awarded as a “Fair Trainee Programme 2019”! The certification was given by the Trendence Institute, in cooperation with the Institute for Human Resources Management at LMU Munich.

## Corporate Responsibility

Renate Bleich

Head of Sustainability

## Climate & Public Sector Business Development

Ernst Rauch

Chief Climate and Geo Scientist

## Integrated Risk Management

Michael Lardschneider

Group Security Risk Officer

## Investor Relations

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