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04 Climate-related financial disclosure

This section is our climate-related financial disclosure and covers our proprietary investments as well as our insurance underwriting. As part of our commitment to transparency, we apply the recommendations of the G20 Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD).

We strive to continuously enhance our climate change-related reporting and business practices to drive best practice and we collaborate with and support others to do the same.

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This report covers the proprietary investments as well as the insurance underwriting of Allianz Group. The climate-related disclosures of our two asset managers Allianz Global Investors and PIMCO can be found on their respective websites.

The Allianz Group Climate Change Strategy commits us to reach net-zero greenhouse gas (GHG) emissions by 2050 across our business. This is in line with the ambitions of the Paris Agreement to limit global warming to a maximum of 1.5°C by the end of the century. Our priorities include exiting coal-based business models by 2040 at the latest, enhancing our systematic approach to investee engagement and policy advocacy, and implementing the TCFD recommendations.

Noteworthy developments in 2021

1. In July 2021, Allianz joined forces with seven other leading insurers to form the U.N.-convened Net-Zero Insurance Alliance (NZIA). See section 02.1.
2. Allianz has set decarbonization targets for 2025 for its listed equity, corporate bonds and real estate portfolio. Overall emissions are to be cut by 25 percent against a 2019 baseline. Targets have also been set for our infrastructure portfolio. See section 04.6.
3. In 2021, the Supervisory Board of Allianz SE established a Sustainability Committee to oversee Environment Social and Governance (ESG) issues and monitor the Board of Management’s sustainability strategy. See section 05.4.
4. In section 04.4, we disclose the results of comprehensive climate scenario analyses on both sides of our balance sheet.
5. We are working to improve the ecosystem for climate and sustainability disclosures by being active in Open Source Climate (a group of corporates to jointly build a ‘pre-competitive layer’ of modeling and data), the European Financial Reporting Advisory Group and the EU Platform on Sustainable Finance. See section 04.3.3.

04.2 Governance

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Given the materiality of climate change to our business, we govern it at the highest level and cascade responsibility through to management.

04.2.1 Overarching and board-level governance

Allianz's climate ambition, strategy and targets are decided at the Supervisory Board and Board of Management level and cascaded to relevant functions. We describe this governance approach and how remuneration is linked to climate performance in section 01.3 and 05.5 of this report.

04.2.2 Business and management-level governance

In 2021, we thoroughly reviewed our approach to identify and manage climate change risks and opportunities. This review concluded that a program to develop and implement continuously improved tools, processes and disclosures – including appropriate governance structures – should be implemented from 2022 onwards. The process is steered by a cross-functional group of senior executives at Group and OE levels. They include the Chief Risk Officer, Chief Sustainability Officer, Heads of Group Accounting and Reporting, Global Property-Casualty (P&C), Global Commercial, Centre of Competence Life and Health and one of the Managing Directors of Allianz Investment Management. Progress is reported to the Group Sustainability Board.

The governance described refers to the status in the reporting year 2021.

Group functions

Addressing sustainability matters requires cross-functional collaboration and support across our global operations. The Global Sustainability function includes a team dedicated to Climate Integration and is responsible for coordinating integration of sustainability and climate aspects into core investment, insurance and business operation activities. It also acts as the secretariat of the Sustainability Board and meets regularly with its Chair. Further functions such as Group Risk, Global P&C, Global Commercial, Allianz Investment Management and Group Accounting and Reporting report on climate-related matters and support operating entities in integrating the Group's strategic approach and policies. Additional bodies and functions, such as Allianz Research, monitor and analyze market, technological and regulatory trends and developments and share insights.

Investment and insurance functions

Our key insurance operating entities, two major investment businesses (Allianz Global Investors and PIMCO) and investment management function (Allianz Investment Management) have well-established climate and sustainability teams.

At Allianz Investment Management (AIM), the Investment Management Board (IMB) oversees implementation of climate and sustainability strategy for our proprietary investment portfolio of € 849.2 billion. This includes regular updates, discussions and decisions on implementation, target-setting and compliance related to portfolio decarbonization targets and measures. Analyses of potential growth opportunities as well as asset stranding in climate scenarios and engagement on climate aspects are also regularly addressed. In 2021, The IMB held a dedicated session on physical and transition risk covering the proprietary

investment portfolio in a holistic way. Within AIM, climate and sustainability are steered at the IMB level with a Managing Director in charge of the implementation.

For our P&C insurance business, the ESG Business Services team located at Allianz Global Commercial & Specialty (AGCS) is responsible for developing, coordinating and supervising sustainability and climate-related governance.

📄 For more details, see section 02.2 as well as the Allianz ESG Integration Framework.

04.2.3 Climate competence

In addition to the governance mechanisms described above, we apply a variety of instruments to foster sustainability and climate competency at Board, senior executive and employee levels. These include:

- Extensive reports and briefings for top management, translating climate science into business implications.
- Sustainability roundtables of investment functions.
- Trainings for employees, investment-related functions, underwriters and sales agents.
- Knowledge sharing with and upskilling of local sustainability colleagues.
- Conferences on sustainability topics which include Board member presentations; in 2021 we held the conference 'Understanding Climate Risks' and two internal Sustainability Forums open to all employees.

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Since 2005, the Allianz Group Climate Change Strategy has encouraged solutions for tomorrow’s climate. It steers the uptake of climate-related risks and opportunities in our insurance and investment business. Regularly updated, it is overseen by the Sustainability Board.

Our 2021 materiality assessment confirmed the results of 2019 in finding climate change to be Allianz’s top sustainability topic according to stakeholder views on the importance of topics to our business and to society. See section 05.2 for more details on the materiality assessment.

04.3.1 Our Climate Change Strategy

The strategy focuses on three areas: Anticipating the risks of a changing climate; Caring for the climate-vulnerable; and Enabling the low-carbon transition. These strategy pillars are described in chapter 01.5.3 of this report.

04.3.2 Climate-related risks and opportunities

Climate change will materially affect global economies and Allianz’s lines of business. The risks and opportunities emerging today will increase over the mid- and long-term. They include acute and chronic physical impacts on property and human health such as warming temperatures, extreme weather events, rising sea levels, intensifying heatwaves, droughts and potential changes in vector-borne diseases.

Risks and opportunities also result from the cross-sectoral structural change stemming from the transition to a low-carbon economy. These transition risks include the impacts of changes in climate policy, technology and market sentiment, and impact thereof on the market value of financial assets, as well as impact resulting from climate change litigation.

Impact on our business and impact of our business

- Allianz Group is exposed to risks that are influenced by climate change in a multitude of ways. We are particularly impacted in two key ways through our core business activities, both of which can influence the ability of assets to generate long-term value:
- As an insurer providing insurance policies, e.g. covering health impacts, property damage or litigation claims, and through changes in the sectors and business models we underwrite.

- As a large-scale institutional investor with significant stakes in various economies, companies, infrastructure and real estate that might be affected by the physical impact of climate change and the transition to a low-carbon economy.
- The largest risks in our risk profile are market risks, especially equity risk, credit and credit spread risks driven by assets backing long-term liabilities. P&C premium and reserve risks, resulting from natural and man-made catastrophes and from claims, uncertainty must be considered.

Risk category	Climate-related changes		
Physical	Acute	First-order hazard/risk	Second-order risk
		Like extreme weather, heat stress, etc.	Like soil moisture deficit, coastal erosion etc.
	Chronic	First-order hazard/risk	
		Like changing temperature patterns or rising sea levels, etc.	
Transition	Policy and legal		
	Technology		
	Market		
	Reputation		
Litigation	Litigation for (enabling) GHG/emissions/failure to mitigate, etc.		
	Litigation for insufficient disclosure, adaptation, etc.		

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Internal analysis shows that our proprietary investment portfolio, especially the listed equity and corporate bonds asset classes, is most sensitive to climate transition scenarios. This is mainly because equity investments are directly affected by climate-related impacts and changing market expectations and resulting market valuation. In contrast, for a long-term investor like Allianz, impacts on debt investments would be felt first by a changing of spreads and to a lesser extent by impairment of debt service of assets.

In section 04.4 we disclose different quantitative and qualitative assessments for physical and transition risks.

As well as being impacted by climate change, the choices Allianz makes about how to conduct its business have an impact on climate change, e.g. by investing in or insuring activities which either cause or reduce GHG emissions. To manage potentially detrimental impacts on both climate and our business, we have committed to align our proprietary investment and insurance underwriting portfolios to 1.5°C climate scenarios.

04.3.3 Our response

We embed the management of risks and opportunities resulting from climate change in our overall business strategy. Measures include: developing and adjusting financial products and services; updating policies and processes; setting targets and limits; managing our operational climate footprint; and engaging with internal and external stakeholders.

Long-term ambition and the Net-Zero Alliances

After the release of the landmark Special Report on Global Warming of 1.5°C by the Intergovernmental Panel on Climate Change (IPCC) in October 2018, we thoroughly reviewed the implications for our corporate response. As a result, we increased our ambition from ‘well below 2°C’ and committed to pursuing efforts to limit global warming to a maximum of 1.5°C by the end of the century. This is postulated as the upper ambition level of the Paris Agreement and the European Union’s long-term climate strategy.

As a major outcome of incorporating the assessment of climate-related risks and opportunities into our business strategy, we co-founded the U.N.-convened Net-Zero Asset Owner Alliance (AOA) and Net-Zero Insurance Alliance (NZIA), thereby committing to setting long-term emissions reduction targets for our proprietary investment portfolio, insurance underwriting and business operations.

 The AOA is explained in more detail in section 02.2 and the NZIA is explained in section 02.1.

In 2020, Allianz set intermediate targets following the guidance of the AOA for the asset classes listed equity, corporate bonds and real estate. In 2021, we also set targets for infrastructure investments. Our targets cover all four dimensions as described in the U.N. AOA Target Setting Protocol and are explained in detail in section 04.6.1.

Managing transition risks

Fundamental to managing transition risks is an understanding of the pathways along which companies can, and should, develop their business models to align with 1.5°C. Allianz continuously conducts detailed analysis of energy-intensive sectors’ emission profiles, prototypical decarbonization pathways and necessary technology shifts within sectors and companies.

As part of the Glasgow Financial Alliance for Net-Zero (GFANZ) Allianz is leading the work on sectoral decarbonization pathways to enhance development, understanding and uptake. As part of this, we are also engaging with top-down and bottom-up modelers of those pathways.

We use the results for portfolio analysis, for risk management and to inform our engagement process and management decisions. Emissions footprints are used as a proxy for transition risks and are therefore covered in our decarbonization targets.

Allianz started to restrict financing coal-based business models in 2015. Equity stakes have been divested, existing fixed income investments put in run-off and no new investments have been allowed since 2015. We do not offer insurance for individual coal power plants or mines and we require all companies across our P&C insurance and proprietary investment portfolio to fully phase out coal by 2040 at the latest. Our criteria are continuously tightened as explained in more detail in our public Statement on Coal-based Business Models. A more detailed explanation of our coal approach is included in section 02.2.

Seizing on opportunities

Our business strategy includes systematically leveraging opportunities to finance a low-carbon and climate-resilient future, e.g. by investing in renewable energy, energy efficiency in real estate and electric vehicle infrastructure and by providing insurance solutions to protect against physical climate impacts and support low-carbon business models. For proprietary investments, the Allianz ESG Functional Rule for Investments provides the foundation for integrating climate-related issues. It comprises asset manager selection and systematic integration of climate and sustainability factors into our investment decisions.

 Read more in our ESG Integration Framework

We have strategically invested in low-carbon assets for over a decade. This includes renewable energy, certified green buildings and green bonds (see section 02.2.2). Our Sustainable Solutions program provides products and services that create shared value by improving people’s lives and/or delivering a positive environmental impact. Allianz is one of the leading insurers of low-carbon technologies. As part of our Sustainable Solutions approach, we provide standardized and tailor-made insurance products and are insuring renewables in 70 countries.

We also aim to reduce the impacts of climate risks and incentivize preventive measures to increase customers’ resilience and compensate for climate-related damages. Examples include risk consulting services offered by AGCS, our active support of the InsuResilience Global Partnership and our work with the German Corporation for International Cooperation (GIZ) to pilot innovative insurance solutions in emerging and developing countries.

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Active company dialogue, joining forces and targeted engagement

We actively engage investee companies and insurance clients using a variety of channels and formats. A key forum for engaging the 167 most carbon-intensive companies is Climate Action 100+ (CA100+), a collective engagement platform made up of more than 600 global investors responsible for more than \$60 trillion in assets under management across 33 markets. Our goals and actions in CA100+ are explained in section 02.2.3.

AIM has a dedicated engagement function for proprietary investments. AIM systematically engages with external asset managers on climate integration, climate risk management, proxy voting processes and public discourse.

In addition, our internal asset managers, AllianzGI and PIMCO, and our insurance entities are active stewards on climate-related matters.

📄 For more details on our engagement approach please see section 02.2 and 02.3.

📄 For voting records of AllianzGI, please refer to their overview web page.

We are joining forces with other asset owners in encouraging companies to implement transition pathways. Our participation in the Transition Pathway Initiative (TPI), CA100+ and the Principles for Responsible Investment (PRI) connects us with like-minded investors and offers opportunities for collaborative engagement. On decarbonization matters, the AOA strives to be the link between these existing engagement platforms, asset owners, target verification initiatives and tools and policymakers.

Addressing climate change in our own business operations

We rate impacts from climate change risks on the operations of the Allianz Group to be of limited materiality. The exposure of Allianz offices and data centers to locations at high risk of extreme weather events is contained and managed through risk mitigation measures as well as business continuity and disaster recovery plans.

The low-carbon footprint of our operations makes us less prone to carbon price risk and we have committed to reduce it further (see section 02.6).

Forest protection to protect carbon sinks and biodiversity

In 2019, we committed to pursue efforts to limit global warming to a maximum of 1.5°C by the end of the century and aim for net-zero emissions by 2050. We have claimed our operations to be ‘carbon neutral’ since 2012. This has been achieved through investments in the protection of existing rainforests (Wildlife Works Carbon and Rimba Raya), maintaining significant carbon sinks and biodiversity while empowering the local population through job creation, provision of health care and education and preserving biodiversity.

Looking ahead, we believe the focus should be both on reducing emissions in line with science and protecting natural systems. We have set corresponding targets to reduce emissions in our investments and operations. Science has made clear that the 1.5°C target will require an upscaled removal of emissions from the atmosphere into technical and natural carbon sinks. The IPCC defines carbon neutrality as

achieved when anthropogenic emissions of GHGs to the atmosphere are balanced by anthropogenic removals over a specified period. We support this understanding in the context of our net-zero commitment. We expect to define our new strategy on this matter in 2022.

Partnerships, memberships and financial industry engagement

We actively contribute to specialized initiatives that focus on decarbonization, including:

- The Glasgow Financial Alliance for Net-Zero (GFANZ), NZIA, AOA and Science Based Targets initiative (SBTi) represent the commitment to decarbonize our operations, proprietary investments and P&C insurance underwriting.
- CA100+ coordinates the investor community engagement of 167 of the largest global corporates on climate matters and Allianz leads engagements.
- The Transition Pathway Initiative (TPI) assesses the climate performance of corporates across a variety of sectors.
- The G7 Investor Leadership Network (ILN) and Institutional Investors Group on Climate Change (IIGCC) serve as networks to share and develop best practice. Allianz is represented on the board of both.
- Open Source Climate is a group of corporates to jointly build a ‘pre-competitive layer’ of modeling and data that is globally shared and accessible. Allianz is represented on the board.

Through our additional memberships, including The B Team and World Economic Forum (WEF) Alliance of CEO Climate Leaders, we encourage companies within our sector and beyond to step up and improve their climate strategies and climate disclosures, as well as develop our own.

Allianz partners with international organizations to drive climate-smart investment and insurance. One example is the Sustainable Development Investment Partnership (SDIP) which aims to scale the use of blended finance in sustainable infrastructure investments in developing countries, an initiative coordinated by the WEF with support from the OECD. Another example is our three-year strategic alliance with GIZ aimed at ‘Closing the Protection Gap’ around climate risks in developing countries.

We are an active member of climate-related industry associations and initiatives including the Munich Climate Insurance Initiative, Chief Risk Officer Forum, Climate Finance Lab, Accelerating Sustainable Finance initiative, Geneva Association, ClimateWise, RE100 and others.

📄 For more details on stakeholder engagement see section 05.3 in this report.

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Advocating for strong climate policy

A supportive policy environment is crucial to ensure the viability of a socially-just transition to climate resilience and net-zero emissions. Without decisive action by governments, there will be insufficient frameworks and market incentives to bring down demand for emission-intensive products and to allocate capital in line with a 1.5°C trajectory. The private sector, including insurers, can play an important role in raising government awareness and making the business case for getting on track to deliver the Paris Agreement.

Asset owners like Allianz are in a unique position in the financing value chain, especially those setting themselves portfolio targets and therefore being dependent on change in policy and the real economy to achieve them.

In 2021, we continued to advocate for a green recovery to build back better after the COVID-19 pandemic. As part of the recovery, government spending and recovery packages are playing a pivotal role in underpinning economies, infrastructures, jobs and livelihoods. Policy and fiscal decisions taken now cut across numerous policy areas and will either pave the way for necessary structural changes – or delay action.

Allianz has been vocal through engagement from Board-level to working-level interventions, joint calls to action and dedicated papers such as:

- The U.N. convened Net-Zero Asset Owner Alliance Discussion Paper on Governmental Carbon Pricing;
- The WEF Alliance of CEO Climate Leaders’ statement to G7;
- German Business Statement for crisis management coordinated by Stiftung Klimawirtschaft (formerly Stiftung 2 Grad);

- The Investor Call for Ambitious Methane Regulation for the Oil and Gas Industry;
- We Mean Business letter to G20.

We also advocate for:

- Embedding ‘net-zero by 2050’ in short- and long-term governmental climate targets, climate strategies and emissions reduction plans, following latest climate science which requires at least halving emissions every decade in line with pathways of no or low overshoot of a 1.5°C temperature rise.
- Development of sector policies to promote a swift and just transition including the development of more granular short-, medium- and long-term zero carbon infrastructure plans.
- Stringent carbon pricing to internalize the external costs of pollution, including a phase-out of direct and indirect fossil fuel subsidies.
- Protection of nature and support for regenerative forestry and agriculture.
- Support for and potentially redirecting of subsidies to scale-up new technologies that will provide solutions in hard to abate sectors, e.g. carbon capture and storage and green hydrogen.
- Promotion of mandatory assured climate reporting and transition plans like GHG emissions, associated reduction targets and alignment with 1.5°C trajectories.
- Climate disclosure aligned with TCFD and the E.U. Sustainable Finance agenda, in particular the E.U. sustainability taxonomy.
- Sustainable finance regulation that provides a defined, science-based and reliable framework via a common taxonomy of sustainability, clarification of asset managers’ and investors’ duties, inclusion of sustainability in prudential regulation, and enhanced transparency of corporate reporting.

Towards open source climate data, models and analytics

More and more financial institutions are committing to align their portfolios with the Paris Agreement. One of the main barriers they face is accessing trusted data and transparent analytical tools to quantify and act decisively on climate-related risk and opportunities. Current regulation and methodologies are not standardized enough and the market for data and tools is highly fragmented. To improve this, Allianz is supporting and contributing to advancing climate disclosures in a number of ways:

1. We are a member of Open Source Climate (OS-C), an initiative hosted under the Linux Foundation to enable like-minded companies to build a ‘pre-competitive layer’ of modeling and data that is globally shared and accessible. OS-C links company data, climate analytics (scenarios and stress-tests) and scientific climate models in one platform, allowing for global collaboration on this exceptional data challenge which will accelerate innovation.

Allianz is heavily involved in the development of the prototype along with other large corporations like Amazon, Microsoft and Goldman Sachs. OS-C also develops a prototype Implied Temperature Rating tool in line with the TCFD’s work on Portfolio Alignment. It will start with four sectors (Automotive, Oil & Gas, Steel and Utilities).

2. Allianz is a member of the Project Task Force for non-Financial Reporting in the European Financial Reporting Advisory Group (EFRAG) which prepares the elaboration of possible E.U. non-financial reporting standards in a revised Non-Financial Reporting Directive (NFRD).
3. We are the only insurer within the E.U. Platform on Sustainable Finance which acts as a permanent expert group of the European Commission to assist developing the E.U.’s sustainable finance policies, notably the further development of the E.U. taxonomy.

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Climate change considerations are an integral part of our insurance and investment strategy.

We apply various quantitative and qualitative approaches to carry out climate stress testing and scenario analysis in consideration of the long time horizons over which climate change may unfold and the high uncertainty over the direction of future climate and economic developments. Our objective is to foster risk awareness, build expertise in the assessment of financial risks

from climate change, test our business strategy and inform risk management and business decision making.

We perform sensitivity and scenario analyses with time horizons up to 2050 and including scenarios ranging from 1.5°C to 4°C of average warming by the end of the century. We make use of internal models and external tools. While time horizons naturally differ depending on the lines of business under consideration, the range of scenarios we apply allows us to better assess the variety of risks and opportunities associated with climate change.

Aspects covered	Scenarios used	Scenario provider
Transition and physical	<ul style="list-style-type: none">Climate Biennial Exploratory ScenarioGeneral Insurance Stress-test 2019	Bank of England
Transition and physical	<ul style="list-style-type: none">OrderlyDisorderlyHot-house (for physical)	Network for Greening the Financial System
Transition	<ul style="list-style-type: none">53 scenarios used for Special Report on Global Warming of 1.5°C (no and low overshoot)	Intergovernmental Panel on Climate Change (IPCC) (building on a multitude of scenario providers)
Transition	<ul style="list-style-type: none">Net-zero by 2050Sustainable Development ScenarioBeyond 2° ScenarioStated Policies Scenario2° Scenario	International Energy Agency
Transition	<ul style="list-style-type: none">One Earth Climate Model	University of Technology Sydney
Transition	<ul style="list-style-type: none">RPSFPS	Inevitable Policy Response
Physical	<ul style="list-style-type: none">RCP¹ 4.5RCP¹ 8.5RCP¹ 2.6 will be implemented in the course of 2022	IPCC

When we conduct analyses which assess 1.5°C scenario alignment, we adjust our scenario selection using guidance developed by the AOA which is focused on 1.5°C scenarios with no or low overshoot of 1.5°C of warming which limits the need to remove GHG emissions from the atmosphere in the second half of the century.

When conducting outside-in impact scenario analysis, we use a broader range of scenarios in terms of temperature outcomes and characteristics. Qualitative assessments are conducted to explore to what extent and across which channels climate change risks affect different aspects of our business, unconstrained by the still limited availability of quantitative models. As an example, we report results from qualitative exposure screening for investments using a transition risk heat map in section 04.4.1 and insights from a survey based assessment for P&C retail business in section 04.4.2.

We deploy quantitative assessments for indicative sizing of our exposure to climate change risks. A top-down approach is developed to assess risks at the level of our balance sheet, in a first step applying scenario data provided by the Bank of England for the Climate Biennial Exploratory Scenario 2021 (CBES 2021) for the analysis of our investment portfolio presented in section 04.4.3.

Complementary bottom-up modeling for the most relevant exposures provides insights into climate change risks at the level of individual investment or underwriting projects and may support contextualization of results from top-down analyses. This is showcased in the carbon price stress-test for listed equity and corporate bonds in section 04.4.4, the inland flood risk case study for real estate (see case study on page 80) and the analysis of inland flood and tropical cyclone risks for property insurance liabilities in section 04.4.5.

Note that the analyses included in this report reflect our current approaches to climate change risk assessments. Prevailing methodological and data limitations as well as the high degree of uncertainty inherent in any long-term analysis may still limit decision-usefulness of some results. However, these approaches will change over time as climate scenarios evolve in line with research, developmental-stage methods improve further and industry best-practices emerge.

Short-term	Medium-term	Long-term
Up to three years As defined, for instance, in our standard Top Risk Assessment process.	Three – ten years Needed for establishing solvency considerations and capital adequacy.	Ten+ years As, for instance, required for strategic decisions and transactions with investment horizons of several decades like real estate and infrastructure.

1 Representative concentration pathway.

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Overview of business-related climate risk analyses disclosed in this report

Objective	Name	Scope	Aspects covered	Chapter
1. Economic impacts (top-down)	Qualitative risk exposure screening	Investments	Transition	04.4.1
2. Economic impacts (top-down)	Qualitative risk assessment	Insurance	Transition	04.4.2
3. Economic impacts (top-down)	Quantitative climate stress-test	Investments	Transition, physical	04.4.3
4. Economic impacts (bottom-up)	Quantitative carbon stress-test	Investments	Transition	04.4.4
5. Economic impacts (bottom-up)	Quantitative risk assessment	Insurance	Physical	04.4.5

Further examples of the application of scenario analysis include:

- Prospective and existing infrastructure assets undergo a thorough due diligence along evaluation criteria, considering an asset’s GHG emissions and potential impact on capital expenditures and performance. Assets are required to have a clear and time-lined strategy showing how they will adapt to a decarbonizing world.
- Allianz Real Estate regularly conducts an energy and carbon performance overview of its direct real estate portfolio, including indicative decarbonization targets. Furthermore, Allianz Real Estate piloted the application of in-house climate scenario analysis for investment portfolios. This work builds on internal underwriting tools to assess location-based physical climate risks and paves the way to use them on the asset side as well.

- For our business operations, threats as a result of climate change and other extreme weather related events are assessed on a forward-looking basis via an emerging threat assessment that is conducted between Allianz Technology and the Allianz Group. This assessment aims to identify top emerging threats, including interdependencies, and the definition of potential mitigation strategies, following a multi-step process involving external market research, expert reviews and surveys.

Subject matter experts from across Allianz Technology and the Allianz Group assess each identified threat for relevance to Allianz, establish ratings for impact and probability of occurrence, and define high-level mitigation strategies. Climate-related issues considered in the most recent assessment included adverse impacts from increasing frequency and severity of extreme weather events on Allianz premises, consequences of heatwaves on operations and energy efficiency of data centers under rising temperatures, and potential challenges with regard to the implementation of future energy efficiency regulation.

The threat of business disruptions and damaged or destroyed assets due to extreme weather events already exists under current climate conditions. Further increase of this threat due to climate change is addressed through review and update of risk mitigation measures and business continuity and disaster recovery plans. Other defined mitigation strategies targeted to mid- or long-term issues range from developing solutions for managing data center load and cooling at temperature peaks to designing implementation concepts for regulatory requirements.

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04.4.1 Top-down qualitative transition risk exposure screening of investment portfolio

Allianz Research calculated the macroeconomic negative impact of increasing regulatory intensity on the global industry at nearly 2.5 trillion U.S. dollars over the next decade, while also identifying opportunities for a variety of sectors.

Methods

The analysis focused on the most important measures of climate policy currently enacted or under discussion. These measures can be grouped into the following categories: carbon pricing; energy mix and efficiency mandates; mobility regulations; and industry-specific taxes, fines and levies. Costs for businesses depend on emissions’ costs, regulation and policy dynamics. The ultimate risk is a complete loss of value of certain assets or entire businesses.

According to report findings, the energy sector will be hit hardest with an estimated cost of 900 billion U.S. dollars. The steel sector follows with a cost of 300 billion U.S. dollars. The air and marine transport sector faces 55 billion U.S. dollars costs. Other sectors at risk include automotive, chemicals, pulp and paper, retail and machinery/manufacturing.

The report also presents a heat map showing transition risk severity for the next twenty years and drivers and mitigating factors for different sub-sectors. An extract of the results is shown below.¹

We have used the findings of this macroeconomic analysis for internal analyses. For this year’s report, we introduce an overview of the exposure of our proprietary investment portfolios to the sub-sectoral risks shown above. We assume a static portfolio where the sector allocation would remain the same and where risks are evenly spread within the sector.

Results

Mapping listed investments to the heatmap provides a first indication in which sectors the main exposures to transition risk are concentrated in and how these exposures evolve over time on the assumption of a static portfolio. Using this approach, less than 4 percent of our combined listed equity portfolio and listed corporate bond portfolio would fall in the category of being prone to high or very high climate change risk in a 1.5°C scenario considering the 2020 risk landscape. This is mainly driven by the utilities exposure in the corporate bonds portfolio. Over time this share grows, led by exposures to energy intensive industries in the materials and industrials sectors. According to the heatmap, a step change in the exposures to high and very high climate change risk is to be expected after 2030 due to policy tightening, particularly affecting the oil and gas related energy sectors. The share of sectors at high or very high risk would increase to around 18 percent by 2040.

Naturally, our investment portfolio will not remain static over this time horizon. Implementing our decarbonization strategy and the corresponding targets will also adapt both inter- and intra-sector allocation to provide effective mitigation against this exposure increase – our strategic response to identified risks is summarized in section 04.4.6.

Assets and business impact under transition scenarios (source: Allianz, excerpt)

Global		2°C					1.5°C				
		2020	2025	2030	2035	2040	2020	2025	2030	2035	2040
Energy	Integrated oil and gas	(M)	(M)				(M)				T
Energy	Oil and gas storage and transportation										
Energy	Coal and consumable fuels				T, P	T, P				T, P	T, P
Materials	Fertilizers and agricultural chemicals	(T)	(T)	(T)	(T)	(T)	(T)	(T)	(T)	P	
Materials	Aluminum										
Materials	Steel										
Industrials	Industrial conglomerates										
Industrials	Airlines	(T)	P				(T)	P			
Consumer discretionary	Auto components										
Consumer discretionary	Automobiles			P	P, T	T		P	P	P, T	P, T
Utilities	Electric utilities	P	(M)		P	P	P	(M)		P	P
Utilities	Renewable electricity				T	T				T	T
Risk enhancer:		Risk mitigator:		Risk:							
P = policy		(P) = policy		Low							
T = substitution technology		(T) = little substitution technology		Medium							
M = related market forces		(M) = countering market forces		High							
				Very high							

1 The heatmap was not updated in the last year. If it was updated, results might change.

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04.4.2 Top-down qualitative risk assessment for retail P&C

Given their business focus and flexibility, we consider qualitative approaches as suitable tools to identify risks and opportunities as well as response options from a strategic angle. They allow us to explore in principle a rich set of transmission channels and interdependencies that do not have to be hardwired from the outset. Here, we report on a pilot survey-based assessment covering our major P&C retail lines of business which we launched as part of our first iteration towards building a comprehensive qualitative risks and opportunities assessment framework.

Methods, assumptions and limitations

The Network for Greening the Financial System (NGFS) provides six scenarios with differing levels of physical and transition risks. For the qualitative risk assessment, we have chosen the two ‘extreme’ scenarios of ‘Divergent Net-Zero’ and ‘Current Policies’ to present two clearly distinguishable development paths to the participants of the survey. ‘Divergent Net-Zero’ is characterized by ambitious and immediate, but rather un-coordinated climate policies. The net-zero target will be reached in 2050; physical risks will be low as compared to scenarios with more severe global warming, but the lack of policy coordination across sectors results in rather high transition costs, compounded by fast technological change. The scenario ‘Current Policies’, on the other hand, assumes that only currently implemented policies are preserved, implying relatively slow technological change and low transition risks but high physical risks; by end of the century, global warming will exceed 3°C.

For the first round qualitative risk assessment, we decided to keep the scope of the exercise straightforward with regards to lines of business and time horizons. Participants were asked to give their assessments for the retail motor and property lines of business and for two time horizons (2022 to 2030 and 2031 to 2050). The survey was limited to Europe, our main market. Giving participants a better understanding of how the scenarios might affect the business environment, we augmented NGFS data with specific business drivers such as the numbers of electric vehicles or targets for retrofitting buildings.

Risks and opportunities from climate change were assessed on a four-point scale based on qualitative criteria such as shrinking markets, higher claims, dwindling reinsurance capacity or changes that increase the market’s susceptibility to disruption, also considering efforts that need to be undertaken to adapt to a changing business environment. Ratings were established for volume and profitability impacts as well as overall consequences. The subsequent assessment of requirements towards risk mitigation considers whether effective mitigation is provided by business-as-usual risk management practices, such as re-pricing or reinsurance, or whether extraordinary measures such as a business-line exit need to be taken, and whether a strategy on how the business might respond to the risk has already been elaborated. Ratings are commented for proper contextualization of the survey participants’ choices.

Results

We show a summary of results of the pilot assessment, which was performed by the Allianz SE Global P&C leadership team, in the following table.

Result of analysis

Line of business	Time horizon	Divergent Net-Zero	Current Policies
Motor retail	Short- to mid-term	Negative	Neutral
	Long-term	Negative	Negative
Property retail	Short- to mid-term	Positive	Neutral
	Long-term	Positive	Positive

Transition risks under the different scenarios can be further differentiated into three categories: policy, technological and consumer preferences. All three will weigh on future premium growth and profitability in retail motor. Higher carbon prices, for example, will translate into higher mobility costs. At the same time, expected high public investments should make public transport more attractive. Consumers will react to these shifts by reducing car ownership and individual mobility. These trends are likely to accelerate after 2030. For Allianz, technological change is the main driver for declining profits in motor retail, i.e., higher loss ratios. Although frequency of claims might decline thanks to better technologies, this is more than offset by severity, i.e., higher costs for repairs and spare parts. Over the long-term, this should be reflected in pricing and then technological impact turns neutral. Physical risks like extreme weather events are assessed to have only a minor impact on claims in the motor business.

While the ‘Divergent Net-Zero (1.5°C)’ scenario is expected to have a clearly negative impact on the retail motor business, the story is different for retail property. Here, an overall positive impact is expected, in particular for top-line growth, i.e. Gross Written Premium. The main drivers are new standards for buildings (the policy aspect of

the transitions risks) which require corresponding insurance cover and offer new opportunities. Furthermore, increased NatCat risks are likely to lead to higher premiums. On the profitability side, the picture is more nuanced. More extreme weather events will lead to rising claims, but pricing and portfolio steering should be able to neutralize the impact on the bottom line.

Turning to the scenario ‘Current Policies (3.0°C)’, assessments are similar, but transition impacts are seen generally as less severe; this is in particular true for the short- to mid-term time horizon. As policies stay more or less unchanged, the trends of less individual mobility and more climate efficient buildings will unfold more slowly. Therefore, the qualitative risk assessment expects almost no change in the business environment until 2030. Only after this the impact of these trends will be felt, and in the same direction as in the ‘Divergent Net-Zero (1.5°C)’ scenario (negative for retail motor due to declining premium volume and positive for retail property through rising premium volume). For the bottom line, profitability impacts from more extreme weather events are seen as rather neutral for both lines of business, even over the longer time horizon. This also applies to the ‘Divergent Net-Zero (1.5°C)’ scenario for the same reasons.

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Outlook

The first round of the survey-based qualitative risk assessment for P&C retail business delivered valuable insights. Moving forwards, qualitative risk assessments will be performed through a step-by-step process for the most relevant P&C business portfolios, expanding the scope with regards to client segments and regions. Further development of the approach is planned to make it fit for feeding into business strategy and decision-making related to identified risks and also business opportunities (e.g., for product development, portfolio management and provision of risk consulting services). Upon repeating the exercise in coming years, it will be interesting to see how these assessments change over time as climate policies and, correspondingly, climate scenarios continue to evolve.

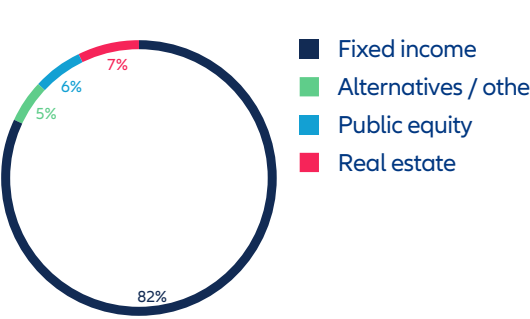
04.4.3 Top-down quantitative climate stress-test for investments

The initial assessment of financial risks from climate change on the Allianz investment portfolio we report here leverages on a rich set of climate scenario data developed by the Bank of England for regulatory stress-test purposes in 2021 (Climate Biennial Exploratory Scenario, CBES), using input from NGFS reference scenarios and various other sources. We may adopt other scenarios for similar top-down analysis going forward, depending on analysis objectives.

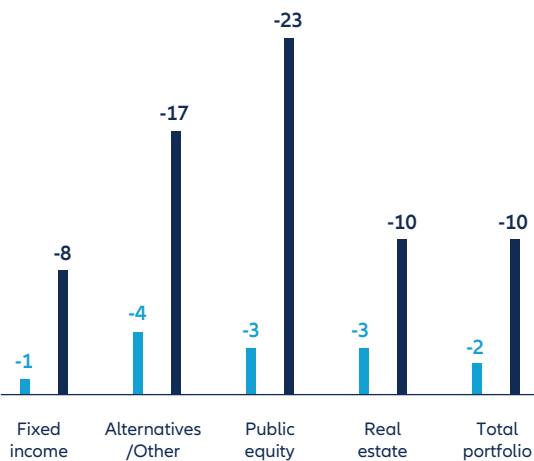
Methods, assumptions and limitations

The CBES 2021 provides three scenarios exploring different levels of transition and physical risks.¹ The Early Action (EA) scenario assumes an early and orderly transition to net-zero by 2050, with limited impact on economic growth. The late and disorderly transition to net-zero entails a sudden contraction of the economy in the Late Action (LA) scenario in 2031, only slowly recovering to growth by 2050. Physical risks are negligible in the EA and LA scenarios over the 2050 time horizon. Accounting only for climate policies that were in place before 2021, the No Additional Action (NAA) scenario is characterized by limited transition risks and high physical risks which start to materialize over the second half of the century.²

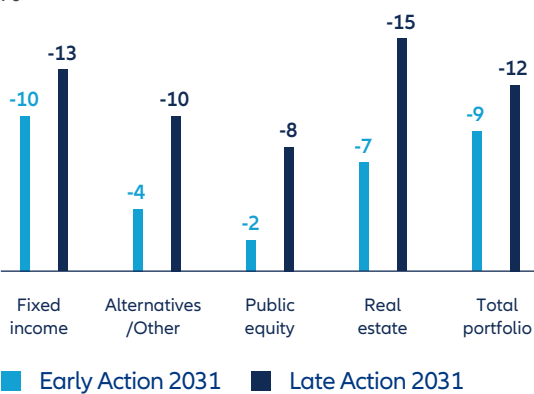
Asset allocation based on market value as of December 31st 2021




Market value loss in 2031



Market value loss in 2050



¹  Please refer to <https://www.bankofengland.co.uk/stress-testing/2021/key-elements-2021-biennial-exploratory-scenario-financial-risks-climate-change> for a detailed description of the CBES 2021 scenarios.

² Note that in the NAA scenario pathways provided by the BoE physical risks that are expected to materialize in 2050–2080 are mapped to 2020–2050, the time period used for the CBES 2021 exercise. We reverse this mapping for the purpose of our analysis, effectively moving the starting point of the NAA scenario pathways to 2050.

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We use pathways for financial and macroeconomic risk variables extending from 2020 to 2050 as provided by the Bank of England. These are expanded to adapt sectoral and regional coverage to the Allianz investment portfolio. Simple proxy models are applied for some asset classes where suitable valuation factors are missing in the scenario data. To separate the impact of climate change risk from trend growth, stress levels are assessed relative to a baseline or counterfactual scenario and hypothetical variable pathways that would be expected in the absence of transition or physical risk. Instantaneous stress on the static year end 2021 investment portfolio is assumed for the calculation of stress impacts, without adaptation or mitigation actions.

One major benefit of the CBES 2021 scenarios is their comprehensiveness. This supports ease-of-use for stress testing as compared to other scenarios. The magnitude of outcomes, however, have to be taken with a pinch of salt accounting for the crucial role of assumptions made in building the scenarios. This notably includes assumptions for the counterfactual scenario which have a critical impact on results. Under the EA scenario, overall market value losses of the investment portfolio from gradual climate policy implementation remain limited to below -2 percent in 2031. This is largely determined by muted impacts on fixed income investments, by far the largest exposure in the portfolio. In comparison, real assets suffer somewhat higher losses on a standalone basis but contribute less to overall market value losses due to a lower share in the portfolio. This picture changes when moving forward to 2050, where overall market value losses increase in the order of -10 percent. Substantially higher long-term interest

rates in 2050 relative to 2031 drive losses from fixed income investments above losses from real assets, especially affecting valuations of long-dated bonds held for liability matching purposes. Real estate prices decline further, driven by costs of energy efficiency improvements.

The disruptive onset of climate policy implementation under the LA scenario in 2031 causes a contraction of the overall economy entailing immediate market value losses of the investment portfolio of close to -10 percent. Impacts are most pronounced for real assets, where a rise in risk premia adds to direct consequences from transition policies on emissions intensive sectors. Credit spreads rise substantially for the same reason, driving losses from fixed income investments. Economic recovery by 2050 and progress made in transitioning to low-carbon production reduces market value losses for equity and alternative investments relative to 2031, whereas losses on real estate investments increase above 2031 levels, similar to the EA scenario. While credit spreads tighten by 2050, higher long-term interest rates increase losses from fixed income investments as compared to 2031, entailing about -12 percent market value losses of the overall investment portfolio.

Under the NAA scenario, the investment portfolio experiences minor market value losses of roughly -3 percent in 2050 resulting from a loss of economic production due to global warming. Substantially more severe consequences across all asset classes are predicted for late in the century.

📌 For our strategic response to identified risks please see 04.4.6.

04.4.4 Bottom-up quantitative carbon stress-test for investments

This year, we publish the results of our second assessment modeling carbon risks for our investment portfolio using a bottom-up approach. In 2020, we started with listed equity and we have now also included corporate bonds. This stress-test complements top-down approaches such as those put forward by financial markets regulators. We see merit in a model which gives us full transparency on methods and parameters, is easy to implement and gives a first understanding of the evolution of potential climate impacts on our portfolio. It also provides opportunities to cross-check external methodologies and potentially develop more elaborate models going forward.

Methods, assumptions and limitations

Our approach uses effective carbon prices as a proxy for policy intensity, e.g. actual carbon pricing, energy-related subsidies and incentives, standards for energy efficiency and emissions.

The fundamental idea is that an increase in emissions price entails a decrease in earnings at the level of individual investee companies. This decrease in earnings can be translated into a stock market value loss based on price-to-earnings multiples. The model requires assumptions, for example on cost pass-through, price elasticities and regulatory easing (either explicitly or implicitly via effective carbon prices). These are kept simple for this first version and will need to be further refined moving forwards.

Our starting point is the carbon footprint of listed equity and corporate bonds portfolios, as disclosed in section 04.6 using Scopes 1 and 2 emission figures. On this foundation, we apply carbon price shocks derived from the climate scenarios developed by the Network for Greening the Financial System (NGFS). Please note that we updated the scenarios applied for this analysis according to the latest available reference scenarios published by the NGFS in 2021.

Under the scenarios, prices materialize over the coming ten years and depend significantly on intensity of policy action and underlying scenario assumptions. The model assumes instantaneous change of effective carbon prices applied to the portfolio, with no mitigation actions.

To re-emphasize, this version of our assessment focuses on listed equity and corporate bonds impacts only. It does not account for factors like different physical asset bases and resulting lock-ins, cost pass-through abilities, price elasticities or regulatory relief. It also does not yet differentiate between Scopes 1 and 2 emissions and, importantly, it assumes companies do not respond to climate policy trends such as governmental net-zero strategies by lowering their carbon exposure. These factors will be incorporated in future more elaborate versions of the assessment. The impacts for corporate bonds rely on a high-level estimate of the statistical relationship between the movements of a corporate bond's spread and the respective issuer's equity market value.

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Results

Absolute emissions are concentrated in only a few sectors. At level 2 of NACE sector classification, for the listed equity portfolio the 10 sectors with the highest absolute emissions contribute around 82 percent to absolute owned emissions in the portfolio, but only 29 percent to AuM. Sector concentration is even a bit more pronounced in the listed corporate bond portfolio where the 10 sectors with the highest absolute emissions contribute around 84 percent to absolute financed emissions in the portfolio, but only 26 percent to AuM.

Consistent with analyses disclosed in previous years and with the scoping of this approach, our listed equity and corporate bonds portfolios show – within the current modeling framework and its limitations – sensitivities in those sectors.

Over the 2031 time horizon, the overall sensitivity of the listed equity portfolio stays contained in the ‘Below 2°C’ scenario, with market value losses between 2.5 percent to 4 percent depending on climate-economic model. The consequences of more stringent policy reaction and faster technology change are reflected in higher sensitivities under the 1.5°C-aligned ‘Net-Zero 2050’ and ‘Divergent Net-Zero’ scenarios, where market value losses go up to 9 percent to 11 percent in the disorderly ‘Divergent Net-Zero’ scenario. The carbon price sensitivity in the ‘Delayed transition’ scenario is still muted relative to other scenarios due to delayed policy action setting in only after 2030.

In addition to high emitting sectors and issuers, duration is another main driver of the carbon price sensitivity of the listed corporate bonds portfolio. The overall sensitivity is around two times lower as compared to listed equity, with market value losses going up to 4.0 percent to 4.5 percent under the most onerous disorderly ‘Divergent Net-Zero’ scenario. This is mainly owing to the limited co-movement of corporate bond spreads and equity returns observed in historical timeseries data which is used in the model to translate sensitivities for listed equity into sensitivities for listed corporate bonds.

From 2020 to 2021, the numbers substantially decreased as our equity and corporate bonds portfolio carbon footprint reduced, see section 05.6. Looking ahead to 2050, in the absence of adaptation or mitigation actions maximum carbon price sensitivities under the ‘Divergent Net-Zero’ scenario could almost triple as compared to 2031.

Being aware of the limitations of our approach, the results are still leading us to the right follow-up questions to understand how carbon price increases can affect different sectors and which parameters of individual investee companies will lead to a non-uniform development inside a given sector as not all will be affected equally. This holds especially true as major carbon emitters are often exempted from carbon pricing schemes due to carbon leakage risks.

Our strategic response to carbon risks is our long-term commitment to our intermediary portfolio targets made as part of the U.N.-convened Net-Zero AOA. See section 04.4.6 for further details.

Carbon price sensitivity of the Allianz listed equity portfolio for effective carbon prices projected for 2031.

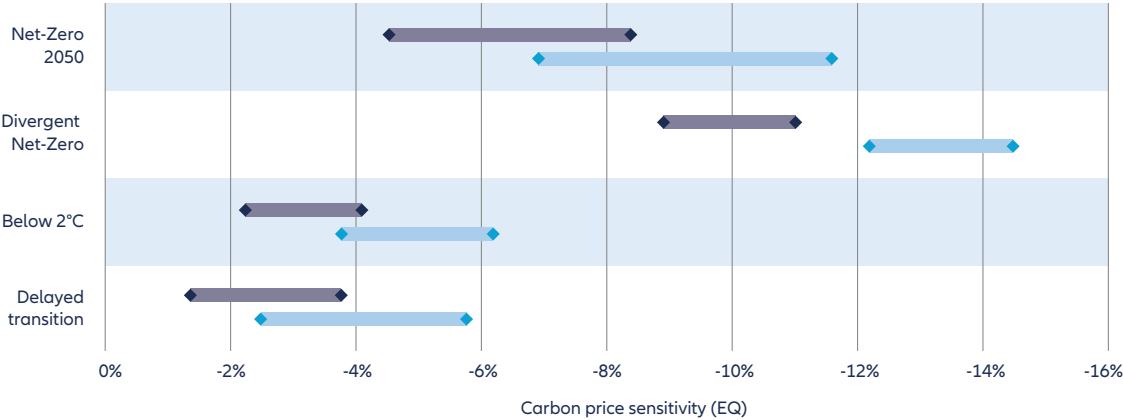


Figure 1 Carbon price sensitivity of the Allianz listed equity portfolio for effective carbon prices projected for 2031.

Carbon price sensitivity of the Allianz corporate bonds portfolio for effective carbon prices projected for 2031.

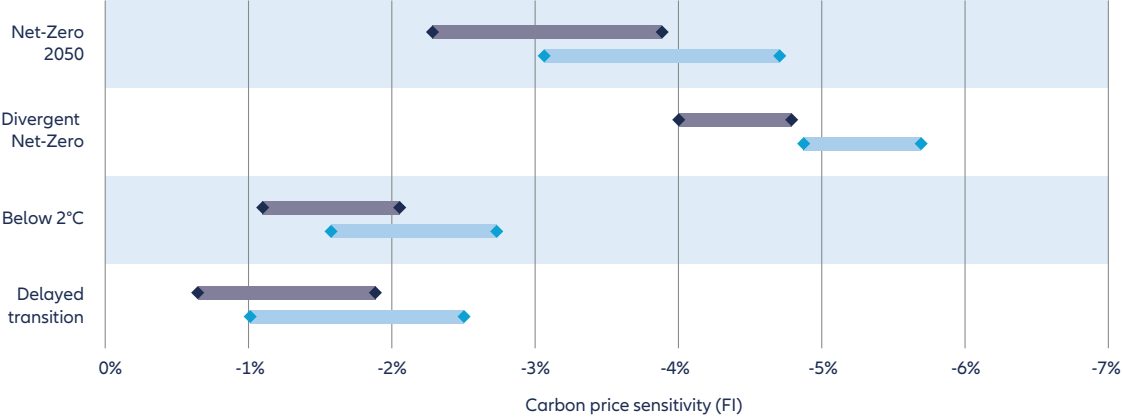


Figure 2 Carbon price sensitivity of the Allianz corporate bonds portfolio for effective carbon prices projected for 2031.

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04.4.5 Bottom-up quantitative physical risk analysis for P&C insurance

To be able to assess physical climate risk exposure for investments and insurance, Allianz Reinsurance has initiated the Allianz Climate Change Risk Score (ACCRiS) project. The project will allow Allianz to understand the physical climate change risk at single location for a number of perils under a variety of climate scenarios and time horizons.¹

Methods, assumptions and limitations

Integration of climate model data into the existing Allianz global hazard layers provides the basis for the tool. The available outputs are hazard, risk and financial impact metrics for current and future climate. For the estimation of risk under climate change, numerous climate model outputs are used for each peril, climate change scenario and time horizon combination, allowing for the accounting of the uncertainty in the predictions.

Results of the first two perils provided to the business were inland flood and tropical cyclone. The climate change risk for the key insurance portfolios exposed to either peril was analyzed. An estimation of the impacts of climate change for inland flood and tropical cyclone, including identification of risk clusters, under the RCP 4.5 and RCP 8.5 scenarios in 2030 and 2050 was made for each individual policy for tens of millions of insured objects.

Results

For inland flood, portfolios from 24 Allianz P&C Insurance operating entities were analyzed. There is a clear trend that inland flood risk will increase for the entire Allianz portfolio, with higher emissions scenarios having a larger impact. Locations in Western Europe were identified as driving the increasing risk. On an individual Allianz operating entity basis, the trends can differ, with entities in Mediterranean climates exhibiting decreasing or stable flood risk due to more extreme and prolonged droughts. However, there are large uncertainties in the level of increase of inland flood risk across the different climate models. There are opportunities to reduce flood risk under climate change, which are not directly reflected in the analysis. For example, Allianz can educate customers to make them more flood-resilient, governments can improve flood defenses, and the construction industry can select the flood resilient building materials and designs for high risk locations.

For tropical cyclones, North America and Australia were analyzed. In general, climate change is expected to amplify the tail risk due to an increase in the frequency of high-intensity tropical cyclones. Regions with historically low risk will see a higher frequency of tropical cyclones (northern US Atlantic coast and southern Australian east coast). While the difference between emission scenarios is low in the short-term up to 2030, opposing influences and limitations in the ability of climate models to simulate tropical cyclones makes projections in the second half of the century increasingly uncertain.

Outlook

Outcomes from this analysis are to inform a forward-looking view on the risk-adequate price for Allianz P&C insurance entities. By the end of

2022, additional perils and climate scenarios (including RCP 2.6) will be finalized and analyzed for the insurance and investment portfolios to ensure a truly Allianz view of physical climate change risk.

Allianz climate change risk scores applied to real estate

For the proprietary investment portfolio, a pilot study was conducted applying the ACCRiS method introduced in section 04.4.5 for the estimation of flood climate change risk to the Allianz Real Estate global direct portfolio. For every real estate location, the impact of all perils was analyzed under current climate. For the most relevant peril – inland flood – an estimation of the impacts of climate change, including identification of risk clusters under the RCP 4.5 and RCP 8.5 scenarios in 2030 and 2050, was made. The analysis found that most properties are not located in high-risk floodplains but there is a clear trend that inland flood risk will increase with higher emissions scenarios for those investments most at risk of inland flooding. Locations in Western Europe were identified as driving the increasing risk, where there is a noticeable difference in frequency of flooding if we compare the current climate to 2030/2050.

Risk Score	Current Climate	RCP 4.5		RCP 8.5	
		2030	2050	2030	2050
Low	68%	68%	68%	68%	68%
Medium	4%	3%	3%	2%	2%
High	12%	10%	10%	10%	9%
Very high	16%	20%	19%	20%	21%

Table: Inland Flood Risk Score of Allianz Real Estate direct investments under influences of climate change

Outcomes from the pilot project enable informed investment decision making processes, optimizing future portfolio allocations accounting for climate change, and identification of asset locations where adaptation measures should be evaluated to ensure minimal impacts of flood events. By the end of 2022, we expect to add additional perils and analyze other kinds of investments (e.g. infrastructure).

¹ Two perils, inland flood and tropical cyclone are already implemented and assessment of physical climate change risk for every single global location can be provided. Next perils to be implemented are: hail and costal flood, additional perils to come in line with business requirements. Scenarios used are RCPs 2.6, 4.5, and 8.5. RCPs are scenarios that describe alternative trajectories for greenhouse gas emissions and the resulting atmospheric concentration from 2000 to 2100. The scenarios are based on different assumptions about population, economic growth, energy consumption and sources, and land use over this century. The scenarios are named after the level of 'radiative forcing' that each scenario produces (measured in Watts per square meter).

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04.4.6 Strategic response to identified carbon risks

The impacts of transition risk scenarios on the investment portfolio discussed in sections 04.4.1, 04.4.3, and 04.4.4 appear to be manageable considering both the magnitude of predicted losses and the time horizon over which they materialize. Extending this analysis to a full balance sheet view, including mitigating effects from insurance liabilities, would further support this assessment – for example accounting for the offsetting of fixed-income losses from increasing long-term interest rates by lower long-term liabilities from life insurance under the EA and LA CBES scenarios. Moreover, the investment portfolio will not remain static. Instead inter- and intra-sector asset allocation will be adapted dynamically to limit the identified transition risk exposure. Effective mitigation, however, requires long-term action to align the portfolio with policy targets.

Reports like the U.N. Emission Gap Report show that the world is currently on a 2.7°C pathway meaning decisive and credible measures from all groups of actors are needed urgently. Our strategic response to carbon risks is our long-term commitment to decarbonize our investment and insurance portfolios to net-zero GHG emissions by 2050, consistent with a maximum temperature rise of 1.5°C above pre-industrial temperatures.

As founding member to the U.N.-convened Net-Zero (AOA), we have set intermediary investment portfolio targets. The work of the AOA is done in collaboration and with a collective ambition, bringing together global investors, leading civil society, academia, and the leadership of the U.N. The AOA remains the first and only group of financial sector global players to set 2025 interim targets across four areas: sub-portfolio targets (at asset class level); sector targets; engagement targets and financing targets. The purpose of these targets is to drive decarbonization of real economy towards 1.5°C. (see section 04.6.1 on investment portfolio targets). With regard to target implementation, both the top-down and bottom-up approaches for investments included in this report support our view that sector pathways such as those being developed in the Glasgow Financial Alliance for Net-Zero and assessing companies transition plans along these pathways is the way to go as we want to finance the transition and not divest from high emitting sectors.

While increasing the resilience of our portfolio against the transition risks, for example as exemplified in the EA and LA CBES scenarios over the short- to mid-term in section 04.4.3, our decarbonization strategy also contributes to limiting the physical risks showcased in the NAA CBES scenario, which may materialize in our portfolio over the long-term.

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The risks and opportunities posed by climate change require the use and regular review of our comprehensive framework to ensure it is properly addressed and applied.

04.5.1 Overarching risk governance

Climate change risks and adaptation to the resulting impacts have been integral to our risk management process for many years and our approach continues to improve. All processes and rules are codified in the Allianz Standards and Functional Rules. Compliance with these rules is mandatory. Our risk management and adaptation processes and rules cover all insurance and underwriting-specific processes.

Climate risks are addressed as part of an overarching qualitative and quantitative risk reporting and controlling framework:

- As a general principle, responsibility for the ‘First Line of Defense’ rests with business managers in the related Allianz Group undertaking. They are responsible for the risks taken and the returns from their decisions.
- The ‘Second Line of Defense’ consists of independent global oversight functions – Risk, Actuarial, Compliance and Legal. These support the Group Board of Management in defining the risk frameworks within which the business can operate.

- Group Audit forms the ‘Third Line of Defense’, independently and regularly reviewing risk governance implementation and compliance with risk principles, performing quality reviews of risk processes, and testing adherence to business standards, including the internal control framework.

Early warning indicators are monitored and regularly reported to senior management through risk dashboards, risk capital allocation and limit consumption reports to identify when climate aspects become material. Supplemented by quarterly updates, senior management decides the risk management strategy and related actions.

A key tool is the Allianz Risk Capital Model which assesses natural catastrophe events for the upcoming year on subsidiary and Group level. Another important instrument is the yearly Top Risk Assessment which helps to identify and remediate significant threats to financial results, operational viability, reputation and delivery of strategic objectives, regardless of whether they can be quantified or not. This includes immediate risks for the company and emerging risks which may arise from technological developments, new or changing environmental risks and socio-demographic changes. Climate-related factors are included in Top Risk Assessments which are conducted at both operating entity and Group level. Relevant emerging risks are discussed by the Group Finance and Risk Committee or the Group Underwriting Committee. Following that, underwriting opportunities or mitigation measures are implemented where necessary.

📄 **For more details on these risk management processes please see the Risk and Opportunity Report on pages 97 – 115 of the Allianz Group Annual Report 2021.**

04.5.2 Natural catastrophe risk governance

The Group-wide risk management framework is applicable to Natural Catastrophes (Nat Cat). Very specific processes and rules apply to the management of Nat Cat risks due to the significance of relevance and potential exposure.

Main risk management processes covering physical climate change adaptation include pricing risks, portfolio management, exposure and risk management, risk consulting, claims handling and governance.

Each operating entity is responsible for controlling its exposure to individual catastrophes and for defining local reinsurance requirements based on local risk appetite and capital position. The respective cover is provided by Allianz SE or one of its subsidiaries.

At Group level, the Board of Management reviews and approves the risk appetite. The reinsurance division is responsible for designing and implementing Group catastrophe protections within given exposure limits. These covers take various forms and aim to protect the Group against excessive losses from major natural catastrophes. We measure, monitor and steer risk based on an approved internal model which quantifies the potential adverse development of own funds. All relevant P&C insurance and reinsurance portfolios are considered.

We use special Nat Cat modeling techniques which combine portfolio data (e.g. geographic location, characteristics of insured objects and their values) with simulated natural disaster scenarios to estimate the magnitude and frequency of potential losses. Where such models do not exist, we use deterministic, scenario-based approaches to estimate potential losses.

Experts at Allianz Reinsurance – including meteorologists, hydrologists, geophysicists, geographers and mathematicians – model around 50 Nat Cat scenarios for Allianz Group. Data is captured using best-in-class standards to map a range of perils and regions. In past years, these were used to conduct stress-tests for floods in Germany as well as wildfires in the U.S. and Australia. The results provide the basis for group-wide risk monitoring, risk limits and subsequent business decisions. The top three perils contributing to Nat Cat risk for Allianz Group in the past four years were windstorms in Europe, floods in Germany and earthquakes in Australia.

We also conduct selected stress-scenario analysis on Nat Cat risks like hail or windstorms to be used in risk steering. Nat Cat models are regularly updated according to the latest scientific information. We are continuously improving the inclusion of global Nat Cat hazard information, including climate, into underwriting decisions.

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04.5.3 Climate and sustainability-related risk governance

In addition to addressing climate-related risks as part of our overarching qualitative and quantitative reporting and controlling framework, a variety of comprehensive policies and processes foster integration of climate-related risks and opportunities.

The Allianz sustainability approach integrates climate- and sustainability-related considerations by applying Group-wide corporate rules and sustainability instruments across all underwriting and investment activities. This includes the Allianz ESG Functional Rule for Investments and the Allianz Standard for Reputational Risk and Issues Management which establish a core set of principles and processes for the management of reputational risks and sustainability issues within the Group.

All rules and standards are regularly updated to reflect newest insights and external developments. The publicly-available third edition of the Allianz ESG Integration Framework increases transparency around internal processes and guidelines related to our sustainability approach. We also rely on external providers for data related to climate, sustainability and reputational risks.

As an additional layer, the Climate Integration team within Global Sustainability and the sustainability Task Forces ensure the early identification, measurement and business integration of risks and opportunities arising from physical climate change and the low-carbon transition. Examples include regulatory

activity around climate change and sustainable finance, integration of sustainability and climate considerations in business processes, and dedicated projects. Substantial topics are channeled to the Sustainability Board to inform strategic decision-making.

Risk and opportunity considerations are supplemented by additional processes including:


- The annual Allianz Risk Barometer produced by Allianz Global Corporate & Specialty. This is a survey of corporate clients, brokers, industry trade organizations, risk consultants, underwriters, senior managers and claims experts, in total collecting more than 2,650 responses from 89 countries and 22 industry sectors. Climate change is ranked sixth. It is also linked to Nat Cat risks in third position, as a key risk to property business, and gains increasing importance in shaping emission-intensive industries in terms of transition risks. Business interruption is ranked second highest, behind cyber incidents, with potential triggers found in climate-related events.

 You can access the full Risk Barometer here.

- The Global Claims Review analyzes more than 470,000 claims in over 200 countries and territories. The latest Review from 2019 found windstorms as the only Nat Cat event to appear in the top 10 causes of loss. Natural catastrophes account for five percent of claims in number and 13 percent of total value of all claims. It represents some of the largest exposures to energy as well as property and engineering segments. Environmental and climate change-related liability issues are seen to potentially increase in future.

- Our partnership and memberships as described in section 05.3 facilitate early risk detection as well as access to industry discussions and best practice.
- Our regular materiality assessment ranks emerging sustainability and climate issues and opportunities according to their importance for our business and our stakeholders. See section 05.3.
- Ongoing dialogue with internationally recognized non-governmental organizations (NGOs) provides ad hoc and scheduled exchanges on sustainability matters. The NGO dialogue is a forum for direct exchange of ideas and points of view designed to leverage NGO’s expertise on climate and sustainability matters to support the development and implementation of internal policies, programs and plans. Allianz listens to the concerns of NGO partners and discusses potential solutions to address these concerns.
- Ongoing dialogues with policymakers, regulators and academia on key economic, governmental, environmental and societal issues, including climate change, to anticipate arising developments and share opinions, knowledge and best practice.

For proprietary investments, the ESG Functional Rule for Investments provides the foundation for integrating climate-related issues.

 For more details on our activities as a sustainable insurer and investors, see sections 02.1 and 02.2.

04.5.4 Risk management processes

Methods of adaptation to climate change risks form part of our overall risk management approach and apply to the whole value chain of our insurance operations, covering all business segments, lines of business, new business and in-force business. Relevance of climate change impact and need for adaptation vary across our portfolios.

Insurance-related processes

Product development, risk models and tariff calculations reflect expected claims from natural catastrophes, especially in Property, Engineering and Motor insurance. In risk segments and lines of business where significant impact from climate change cannot yet be observed, risk patterns and their development are monitored closely (e.g. liability). Coverages and terms and conditions are designed with respect to changing risk patterns, taking all relevant developments into account. Terms and conditions and tariffs provide incentives for customers to protect the insured assets against natural hazards and other climate-related risks, where relevant.

In distribution, consulting and advising customers on their risks, based on a thorough individual risk assessment, is an integral part of our sales strategy in retail and commercial business. For our commercial business, the sales organization is supported by underwriters and risk engineers who provide specific advice to customers on protection and adaptation measures against all types of risk, especially Nat Cat and other climate change-related risks.

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In underwriting, a thorough rules-based risk assessment is performed prior to any underwriting decision, either automated (mostly in retail business) or individually (mostly in commercial business). Risk information is captured and stored in our database and linked to all relevant business processes. For Nat Cats, our Group Global Geographic Information System (GIS) combines single risk information with global natural hazard maps. This is key to managing risk exposure and accumulation risk. We have established a limit system for each Nat Cat loss type at all levels of the organization, including Nat Cat limits at Group and operating entity levels. In the commercial business, underwriters and risk engineers consult and advise customers on prevention measures and support them in adapting to changing risk patterns. Our re-insurance structure protects our capital base against volatility and impact beyond defined thresholds.

In portfolio management, regular performance assessments are conducted by operating entities and at least twice per year for all relevant portfolios together with the responsible Group Center of Allianz SE. Any departure from projected plans – including claims frequency and severity – is identified and action immediately taken. As our policies are renewed on a yearly basis, actions can be implemented annually if necessary. Adaptation measures with regards to climate change risks comprise re-pricing actions, deductibles, changes in terms and conditions and even cancellation of policies where a sufficient premium for the risk cannot be obtained.

📄 **For further details, please refer to the Risk and Opportunity report page 97 to 115 of our Group Annual Report 2021.**

Investment-related processes

Comprehensive climate risk management processes cover all major asset classes:

- Climate scenarios are analyzed by inter-departmental teams under the joint lead of the AIM Risk and Investment Analytics and AIM ESG teams.
- Both physical and transition risks are assessed based to a large extent on quantitative KPIs, making use of the climate stress-tests discussed.
- Risks are actively managed for the total portfolio, supported by our ESG-scoring approach (see section 02.2).
- On physical risks, we seek to identify potential impacts on physical assets we own, as well as impacts on client or investee level and associated portfolios (see section 04.4.5).
- Maintaining active dialogue with asset managers and investee companies on climate strategies integrates into risk management framework.

Measures to manage our risks are based on two major levers:

1. Adapt asset allocation:

- Shift volumes towards zero carbon assets (mid-term).
- Increase exposure to companies leading the transition (all sectors).
- Increase of blended finance volumes.
- Reduce exposure to climate laggards per sector.
- Fossil fuel policy.

2. Enhance climate change readiness of existing assets:

- Broad engagement, bilateral dialogue and participation in global initiatives like CA100+ or IIGCC.
- Real Estate: Steer and align real estate portfolio with CRREM pathways (1.5°C pathway).
- Reduce emissions in line with IPCC pathways for infrastructure portfolio.
- For physical assets with direct material ownership like real estate and infrastructure, dedicated asset-level adaptation plans are implemented based on thorough location-sharp physical risk assessments.
- The Allianz Climate Change Risk Score (ACCRiS) tool (see section 04.4.5) will be used for new acquisitions and for portfolio assessment.
- The energy sector is covered by the AOA-related sector targets for Utilities and Oil and Gas.
- Dedicated asset manager engagement is in place.

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Our support for the low-carbon transition is steered by our commitment to set science-based emission reduction targets and reach net-zero emissions by 2050 in our business operations and proprietary investment portfolio in line with the Paris Agreement’s target of limiting global warming to 1.5°C.

04.6.1 Climate-related targets

Allianz investment portfolio targets, as part of Asset Owner Alliance

Target layer	Measure	Base year (2019)	Current year (2021)	Target year (2024)	Description
Sub-portfolio Listed Equity	-25 % absolute owned GHG emissions, Scopes 1 and 2	24.9mn t of CO ₂ e ¹	18.7 mn t CO ₂ e	18.7mn t of CO ₂ e	
Sub-portfolio Corporate Bonds					
Sub-portfolio Real Estate	<ul style="list-style-type: none">Fully owned real estate portfolio aligned with 1.5 degree pathways of CRREM²Reach 52.2 kgCO₂e/sqm²	67.5 kgCO ₂ e/sqm	n/a ^{3*}	52.2 kgCO ₂ e/sqm	
Sub-portfolio Infrastructure	<ul style="list-style-type: none">Full transparency on financed emissions latest by 2023 for all investmentsFor direct equity investments an absolute carbon reduction of -28 % by year-end 2025 (base year 2020)New direct (equity and debt) investments in high emitting assets only in case a 1.5°C aligned decarbonization plans in placePhase in of net-zero targets for new fund investments by year-end 2024	n/a [*]	n/a [*]	n/a [*]	
Sector Utilities	<ul style="list-style-type: none">Coal phase out in line with 1.5°C pathwayIncrease direct and indirect exposure to renewable energy by 5.85 % per year (IRENA⁴ global pathway)	n/a	n/a [*]	increase by 5.85% annually	Indirect
		€ 2.9 bn	€ 3.14 bn	€ 3.9 bn	Direct – debt renewables
		€ 4.3 bn	€ 3.88 bn	€ 5.7 bn	Direct – equity renewables
Sector Oil and Gas	<ul style="list-style-type: none">Scopes 1 and 2 20 kgCO₂e/boe⁵ in line with OGCI⁶50 % of AuM to set net-zero by 2050 targets for Scope 1 and 2 greenhouse gas emissions	n/a [*]	n/a [*]	20 kgCO ₂ e/boe	Scopes 1 and 2 upstream GHG emissions intensity
		~40 %	n/a [*]	~50%	Share of AuM with net-zero 2050 target for Scopes 1 and 2 emissions
Engagement	<ul style="list-style-type: none">Engagement coverage of at least Top 30 (non-aligned) emitters in portfolio. Top 30 means new engagement with 8 companies, others are covered by existing bilateral or collaborative engagements alreadyFull participation in all available AOA organized sector and asset manager engagementsIncrease overall engagement activities by at least 100 %				
Financing Transition	<ul style="list-style-type: none">4 to 5 new blended finance vehiclesClimate-positive solutions: Start investing into Forestry, Hydrogen and other	Blended Finance: 2020: Africa Grow 2021: Emerging Market Climate Action Fund Climate-positive solutions: 2021: Investment in BTG Core US Timberland Fund			

1

CO₂e refers to carbon dioxide equivalent, which includes CO₂ and other greenhouse gases.

2

CRREM: Carbon Risk Real Estate Monitor.

3*

Where n/a is displayed most recent and/or comprehensive data is not yet available.

4

IRENA: The International Renewables Agency is an intergovernmental organization supporting countries in their transition to a sustainable energy future.

5

BOE: barrel of oil equivalent.

6

OGCI: Oil & Gas Climate Initiative; a CEO-led consortium of industry leading O&G companies.

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04.6.2 Climate-related metrics

We use a variety of indicators across different lines of business to monitor, assess and steer climate-related aspects of the economy. A detailed list of sustainability-related KPIs can be found in section 05.

Investment portfolio composition

On the investment side, it is helpful to contextualize, for instance, our commitment to the AOA with mainstream financial information like the spread across different asset classes, jurisdictions and sectors.

 **More information can be found in the 2021 Annual Report financial supplement and the corresponding analyst presentation here**

Carbon footprint methodology

We disclose carbon footprint information of our listed equity and corporate bonds portfolio. We provide both general portfolio indicators and emission-related indicators. We expect to enhance this disclosure in upcoming reporting cycles in light of the expansion of asset classes covered by our AOA commitment, i.e. real estate, infrastructure and sovereign bonds.

Methodology and Scope

The portfolio carbon footprint for listed equity and corporate bonds is calculated based on the following measures for Scopes 1 and 2 emissions in line with the GHG Protocol. The required data is sourced from MSCI and Refinitiv.

Variables

- I_i

Allianz’s investment in issuer i in Euro
- Q

Allianz’s total portfolio market value in Euro
- V_i

Enterprise value incl. cash of issuer i in Euro
- Y_i

Sales/revenues of issuer i in Euro
- m_i

GHG emissions of issuer i in t CO₂e
- F_a

Absolute portfolio carbon footprint of Allianz’s listed equity and corporate bond portfolio in t CO₂e
- F_r

Relative portfolio carbon footprint of Allianz’s listed equity and corporate bond portfolio in t CO₂e per Euro invested
- F_w

Portfolio weighted average carbon intensity per revenue
- w_i

Weight of issuer i in Allianz portfolio (I_i/Q)

Enterprise value including cash (V_i) is defined as the sum of the market capitalization of common stock at fiscal year-end, the market capitalization of preferred equity at fiscal year-end, and the book values of total debt and minorities’ interests without the deduction of cash and cash equivalents held by the enterprise.

Due to regulatory requirements, we changed the calculation approach for our portfolio carbon footprint as of 2021. The new methodology is described above and 2019 and 2020 figures have been restated accordingly.

Absolute portfolio carbon footprint:

$$F_a = \sum_{i=1}^n \frac{I_i}{V_i} \cdot m_i$$

Relative portfolio carbon footprint (i.e. portfolio carbon footprint per Euro invested):

$$F_r = \frac{F_a}{Q}$$

Weighted average carbon intensity (i.e. portfolio weighted average carbon intensity per revenue):

$$F_w = \sum_{i=1}^n w_i \cdot \frac{m_i}{Y_i}$$

The emission data represents the latest data we have as of March of this year. In case of this year’s report, this means that emission data is largely comprised of data from FY 2020, as FY 2021 data will only be made available by investees in the first half of 2022.

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Investment portfolio carbon footprint

Both our listed equity and corporate bonds portfolio have undergone considerable changes in the two past years, characterized by the economic impacts of the COVID-19 pandemic and the first impacts of our portfolio steering towards the climate targets.

Since 2019, we achieved a reduction of absolute emissions of almost 25 percent. This was driven by four major factors: a COVID-19 effect on emissions, change in company valuation which impacts the denominator, portfolio changes, and structural emission reductions of our investee companies. The latter is the real-economy change we are seeking and it contributes significantly to the emissions reductions we observed.

Our absolute carbon footprint may rebound next year to a certain extent, but what is important for us is that the underlying structural trend is intact and enables to achieve our target in 2025.

Sectorally, considerable shares of our equity and bond portfolios are invested in manufacturing companies. The absolute emissions of manufacturing make up 45 percent of our emissions in both asset classes. Therefore, we also display NACE level 2 sectors for manufacturing to further disaggregate the sector figures.

The past two years showed why we believe that both absolute and relative indicators are necessary to measure the carbon performance of portfolios. Relative indicators are sensitive to changes in either direction in both company valuation and company sales, whereas absolute emissions are sensitive to strategic asset allocation shifts.

It should also be noted that our current emission Scope is 1 and 2 and does not consider emissions in the wider value chain of investees, which can be significant for many sectors. While data quality for Scope 3 emissions is still low, there is merit in sector-specific Scope 3 indicators and data to determine if companies and their products are on a pathway consistent with our 1.5°C ambition. We are working to develop these indicators also as part of our work with the AOA. We are also calling for harmonized carbon disclosure requirements across all three scopes of greenhouse gas emissions (see section 04.3.3).

Please note that figures for financial year 2020 have been restated due to a change in methodology.

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Table TCFD-1
Listed equity portfolio indicators

Indicator	Unit	2021	2020 ¹	Δ y-o-y
Equities, Portfolio AuM	€ bn	40.8	32.5	25.6 %
Equities, Share of total AuM	%	5.0	4.0	-1.0 %-p
Equities, Absolute emissions	mn t CO ₂	2.3	2.2	3.2 %
Equities, Relative emissions	t CO ₂ / mn € invested	55.7	67.5	-17.5 %
Equities, Weighted average carbon intensity	t CO ₂ / mn € sales	134.0	143.7	-6.7 %
Equities, Emissions data coverage	%	97.0	97.0	0.0 %-p

Table TCFD-2
Sectoral listed equity portfolio indicators

Indicator		Unit	2021	2020 ¹	Δ y-o-y
Total AuM in 4 sectors with highest owned absolute emissions		€ bn	21.6	16.9	27.2 %
Absolute Emissions of 4 sectors with highest owned absolute emissions		mn t CO ₂ e	2.0	2.0	1.5 %
Number of issuers in 4 sectors with highest owned absolute emissions			2,053	2,041	0.6 %
Under Engagement by Climate Action 100+			112	118	-6
Split of sectors with highest owned absolute emissions in equities portfolio ²		Unit	2021	2020 ¹	Δ y-o-y
Manufacturing	sector total AuM	€ bn	19.3	14.8	30.2 %
	share of equity AuM	%	47.0	46.0	-1.0 %-p
	absolute emissions	mn t CO ₂ e	1.6	1.5	7.4 %
	relative emissions	t CO ₂ e/€ mn invested	82.6	99.6	-17.0 %
	Weighted average carbon intensity	t CO ₂ e/€ mn sales	74.7	78.2	-4.5 %
Manufacture of other non-metallic mineral products	Manufacture of other non-metallic mineral products sector total AuM	€ bn	0.7	0.5	39.1 %
	Manufacture of other non-metallic mineral products absolute emissions	mn t CO ₂ e	0.2	0.4	-40.7 %
	Manufacture of other non-metallic mineral products relative emissions	t CO ₂ e/€ mn invested	355.5	828.6	-57.1 %
	Manufacture of other non-metallic mineral products Weighted average carbon intensity	t CO ₂ e/€ mn sales	22.7	38.5	-41.1 %
Manufacture of basic metals	Manufacture of basic metals sector total AuM	€ bn	0.2	0.1	56.1 %
	Manufacture of basic metals absolute emissions	mn t CO ₂ e	0.5	0.3	53.7 %
	Manufacture of basic metals relative emissions	t CO ₂ e/€ mn invested	2.7	2.8	-1.8 %
	Manufacture of basic metals Weighted average carbon intensity	t CO ₂ e/€ mn sales	7.7	8.1	-4.4 %

1. The number of issuers in 5 sectors with highest owned absolute emissions in equities portfolio increased significantly compared to previous year reporting, mainly due to the generation of carbon footprint report using the NACE sector. Moreover, a considerable share of equity portfolio is invested in manufacturing sector, resulting in large numbers of issuers in scope.

2. These four NACE level 1 sectors comprise the majority of our listed equity absolute owned emissions. We decided to further break down the manufacturing sector to the most impacted NACE level 2 sectors as it alone accounts for a material part of the emissions.

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Table TCFD-2
Sectoral listed equity portfolio indicators continued

Indicator				Unit	2021	2020 ¹	Δ y-o-y
Manufacturing	Manufacture of coke and refined petroleum products	Manufacture of coke and refined petroleum products sector total AuM		€ bn	0.9	0.7	34.5 %
		Manufacture of coke and refined petroleum products absolute emissions		mn t CO ₂ e	0.3	0.3	19.0 %
		Manufacture of coke and refined petroleum products relative emissions		t CO ₂ e/€ mn invested	327.7	369.8	-11.4 %
		Manufacture of coke and refined petroleum products weighted average carbon intensity		t CO ₂ e/€ mn sales	23.6	22.7	4.0 %
	Manufacture of chemicals and chemical products	Manufacture of chemicals and chemical products sector total AuM		€ bn	1.9	1.5	23.4 %
		Manufacture of chemicals and chemical products absolute emissions		mn t CO ₂ e	0.3	0.3	5.9 %
		Manufacture of chemicals and chemical products relative emissions		t CO ₂ e/€ mn invested	152.6	177.7	-14.1 %
		Manufacture of chemicals and chemical products Weighted average carbon intensity		t CO ₂ e/€ mn sales	44.2	46.7	-5.3 %
Electricity, gas, steam and air conditioning supply	Electricity, gas, steam and air conditioning supply sector total AuM			€ bn	0.9	1.0	5.9 %
	Electricity, gas, steam and air conditioning supply sector share of equity AuM			%	2.0	3.0	-1.0 %-p
	Electricity, gas, steam and air conditioning supply sector absolute emissions			mn t CO ₂ e	0.2	0.2	-6.8 %
	Electricity, gas, steam and air conditioning supply sector relative emissions			t CO ₂ e/€ mn invested	247.1	249.4	-0.9 %
	Electricity, gas, steam and air conditioning supply weighted average carbon intensity			t CO ₂ e/€ mn sales	17.8	23.2	-23.2 %
Mining and quarrying	Mining and quarrying sector total AuM			€ bn	0.7	0.7	0.0 %-p
	Mining and quarrying sector share of equity AuM			%	2.0	2.0	0.0 %-p
	Mining and quarrying sector absolute emissions			mn t CO ₂ e	0.2	0.2	-6.3 %
	Mining and quarrying sector relative emissions			t CO ₂ e/€ mn invested	251.4	280.3	-10.3 %
	Mining and quarrying weighted average carbon intensity			t CO ₂ e/€ mn sales	12.2	15.2	-20.0 %
Transportation and storage	Transportation and storage sector total AuM			€ bn	0.6	0.4	35.7 %
	Transportation and storage sector share of equity AuM			%	1.0	1.0	0.0 %-p
	Transportation and storage sector absolute emissions			mn t CO ₂ e	0.1	0.1	3.0 %
	Transportation and storage sector relative emissions			t CO ₂ e/€ mn invested	115.0	150.9	-23.8 %
	Transportation and storage weighted average carbon intensity			t CO ₂ e/€ mn sales	5.9	7.6	-22.4 %

1 The number of issuers in 5 sectors with highest owned absolute emissions in equities portfolio increased significantly compared to previous year reporting, mainly due to the generation of carbon footprint report using the NACE sector. Moreover, a considerable share of equity portfolio is invested in manufacturing sector, resulting in large numbers of issuers in scope.

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Regional listed equity portfolio indicators

Region		Unit	2021	2020	Delta in %
Europe	Europe Region total AuM	€ bn	20.1	15.6	28.6 %
	Europe Region Absolute emissions	mn t CO ₂ e	1.4	1.2	17.1 %
	Europe Region Relative emissions	t CO ₂ e/€ mn invested	34.4	36.9	-6.8 %
	Europe Region weighted average carbon intensity	t CO ₂ e/€ mn sales	62.7	69.4	-9.6 %
North America	North America total AuM	€ bn	9.5	7.5	27.2 %
	North America Absolute emissions	mn t CO ₂ e	0.3	0.3	-2.5 %
	North America Relative emissions	t CO ₂ e/€ mn invested	6.6	8.4	-22.4 %
	North America weighted average carbon intensity	t CO ₂ e/€ mn sales	35.8	26.4	35.4 %
Asia/Pacific	Asia/Pacific Region total AuM	€ bn	6.5	5.6	15.5 %
	Asia/Pacific Region Absolute emissions	mn t CO ₂ e	0.3	0.4	-24.4 %
	Asia/Pacific Region Relative emissions	t CO ₂ e/€ mn invested	6.7	11.1	-39.8 %
	Asia/Pacific Region weighted average carbon intensity	t CO ₂ e/€ mn sales	16.4	25.2	-34.8 %
Emerging Markets	Emerging Markets Region total AuM	€ bn	4.7	3.7	25.6 %
	Emerging Markets Region Absolute emissions	mn t CO ₂ e	0.3	0.4	-8.9 %
	Emerging Markets Region Relative emissions	t CO ₂ e/€ mn invested	8.0	11.1	-27.5 %
	Emerging Markets Region weighted average carbon intensity	t CO ₂ e/€ mn sales	19.1	22.7	-15.6 %

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Corporate bonds portfolio indicators

Indicator		Unit	2021	2020	Δ y-o-y	
Corporate bonds portfolio AuM		€ bn	197.6	192.2	2.8 %	
Corporate bonds share of total AuM		%	31.0	31.0	0.0 %-p	
Corporate bonds absolute emissions		mn t CO ₂	16.4	20.0	-17.6 %	
Corporate bonds relative emissions		t CO ₂ / mn € invested	83.2	103.8	-19.9 %	
Corporate bonds weighted average carbon intensity		t CO ₂ / mn € sales	190.4	208.2	-8.6 %	
Corporate bonds emissions data coverage		%	73.0	74.0	-1.0 %-p	
Sectoral corporate bonds portfolio indicators		Unit	2021	2020	Δ y-o-y	
Total AuM in 4 sectors with highest owned absolute emissions		€ bn	84.3	85.6	-1.6 %	
Absolute Emissions of 4 sectors with highest owned absolute emissions		mn t CO ₂ e	14.4	17.8	-18.8 %	
Number of issuers in 4 sectors with highest owned absolute emissions			1,138	1,068	6.6 %	
Under Engagement by Climate Action 100+			111	111	0	
Split of sectors with highest owned absolute emissions in corporate bonds portfolio		Unit	2021	2020	Δ y-o-y	
Manufacturing	Manufacturing sector total AuM	€ bn	47.2	48.4	-2.5 %	
	Manufacturing sector share of corporate bonds AuM	%	24.0	25.0	-1.0 %-p	
	Manufacturing sector absolute emissions	mn t CO ₂ e	6.5	8.4	-22.2 %	
	Manufacturing sector relative emissions	t CO ₂ e/€ mn invested	138.4	173.4	-20.2 %	
	Manufacturing sector weighted average carbon intensity	t CO ₂ e/€ mn sales	53.1	60.8	-12.6 %	
	Manufacture of coke and refined petroleum products	Manufacture of coke and refined petroleum products sector total AuM	€ bn	8.2	8.2	-0.2 %
		Manufacture of coke and refined petroleum products absolute emissions	mn t CO ₂ e	3.1	3.7	-18.0 %
		Manufacture of coke and refined petroleum products relative emissions	t CO ₂ e/€ mn invested	371.5	449.5	-17.3 %
		Manufacture of coke and refined petroleum products weighted average carbon intensity	t CO ₂ e/€ mn sales	94.3	93.2	1.1 %
	Manufacture of other non-metallic mineral products	Manufacture of other non-metallic mineral products sector total AuM	€ bn	0.9	1.1	-18.4 %
		Manufacture of other non-metallic mineral products absolute emissions	mn t CO ₂ e	1.1	1.5	-29.1 %
		Manufacture of other non-metallic mineral products relative emissions	t CO ₂ e/€ mn invested	1.1	1.3	-13.0 %
		Manufacture of other non-metallic mineral products weighted average carbon intensity	t CO ₂ e/€ mn sales	40.0	48.2	-17.1 %
	Manufacture of chemicals and chemical products	Manufacture of chemicals and chemical products sector total AuM	€ bn	3.0	3.4	-12.1 %
		Manufacture of chemicals and chemical products absolute emissions	mn t CO ₂ e	1.0	1.5	-32.9 %
		Manufacture of chemicals and chemical products relative emissions	t CO ₂ e/€ mn invested	343.0	452.3	-24.2 %
		Manufacture of chemicals and chemical products weighted average carbon intensity	t CO ₂ e/€ mn sales	36.6	44.4	-17.6 %
	Manufacture of basic metals	Manufacture of basic metals sector total AuM	€ bn	1.1	0.9	17.8 %
		Manufacture of basic metals absolute emissions	mn t CO ₂ e	0.6	0.6	-9.3 %
		Manufacture of basic metals relative emissions	t CO ₂ e/€ mn invested	541.5	701.7	-22.8 %
		Manufacture of basic metals weighted average carbon intensity	t CO ₂ e/€ mn sales	16.7	16.7	0.3 %

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Corporate bonds portfolio indicators continued

Split of sectors with highest owned absolute emissions in corporate bonds portfolio		Unit	2021	2020	Δ y-o-y
Electricity, gas, steam and air conditioning supply	Electricity, gas, steam and air conditioning supply sector total AuM	€ bn	18.6	18.4	1.3 %
	Electricity, gas, steam and air conditioning supply sector share of corporate bonds AuM	%	9.0	10.0	-1.0 %-p
	Electricity, gas, steam and air conditioning supply sector absolute emissions	mn t CO ₂ e	5.4	6.4	-15.7 %
	Electricity, gas, steam and air conditioning supply sector relative emissions	t CO ₂ e/€ mn invested	288.0	346.0	-16.8 %
	Electricity, gas, steam and air conditioning supply weighted average carbon intensity	t CO ₂ e/€ mn sales	80.9	82.2	-1.5 %
Transportation and storage	Transportation and storage sector total AuM	€ bn	14.5	14.9	-3.1 %
	Transportation and storage sector share of corporate bonds AuM	mn t CO ₂ e	7.0	8.0	-12.5 %
	Transportation and storage sector absolute emissions	t CO ₂ e/€ mn invested	1.6	1.8	-12.3 %
	Transportation and storage sector relative emissions	t CO ₂ e/€ mn sales	108.9	120.5	-9.6 %
	Transportation and storage weighted average carbon intensity	t CO ₂ e/€ mn sales	21.7	27.3	-20.4 %
Mining and quarrying	Mining and quarrying sector total AuM	€ bn	4.0	3.9	2.0 %
	Mining and quarrying sector share of corporate bonds AuM	%	2.0	2.0	0.0 %-p
	Mining and quarrying sector absolute emissions	mn t CO ₂ e	1.0	1.2	-20.3 %
	Mining and quarrying sector relative emissions	t CO ₂ e/€ mn invested	243.8	313.5	-22.2 %
	Mining and quarrying weighted average carbon intensity	t CO ₂ e/€ mn sales	11.9	13.6	-12.6 %

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Regional corporate bonds portfolio indicators

Region		Unit	2021	2020	Δ y-o-y
Europe	Europe Region total AuM	€ bn	87.6	93.5	-6.3 %
	Europe Region Absolute emissions	mn t CO ₂ e	6.5	8.3	-22.0 %
	Europe Region Relative emissions	t CO ₂ e/€ mn invested	32.7	43.2	-24.1 %
	Europe Region weighted average carbon intensity	t CO ₂ e/€ mn sales	56.3	63.3	-11.1 %
North America	North America total AuM	€ bn	86.8	78.2	11.0 %
	North America Absolute emissions	mn t CO ₂ e	6.2	7.9	-20.7 %
	North America Relative emissions	t CO ₂ e/€ mn invested	31.6	41.0	-22.9 %
	North America weighted average carbon intensity	t CO ₂ e/€ mn sales	107.7	118.2	-8.9 %
Asia/Pacific	Asia/Pacific Region total AuM	€ bn	7.1	7.3	-2.9 %
	Asia/Pacific Region Absolute emissions	mn t CO ₂ e	0.7	0.8	-13.1 %
	Asia/Pacific Region Relative emissions	t CO ₂ e/€ mn invested	3.4	4.0	-15.5 %
	Asia/Pacific Region weighted average carbon intensity	t CO ₂ e/€ mn sales	5.2	7.2	-27.9 %
Emerging Markets	Emerging Markets Region total AuM	€ bn	16.1	13.2	22.2 %
	Emerging Markets Region Absolute emissions	mn t CO ₂ e	3.0	3.0	1.3 %
	Emerging Markets Region Relative emissions	t CO ₂ e/€ mn invested	15.4	15.6	-1.5 %
	Emerging Markets Region weighted average carbon intensity	t CO ₂ e/€ mn sales	21.2	19.5	8.9 %