Allianz

Allianz Biodiversity Case-study

Assessing biodiversity impacts, risks and dependencies: Reflections from piloting the TNFD's LEAP approach on the Allianz proprietary investment portfolio

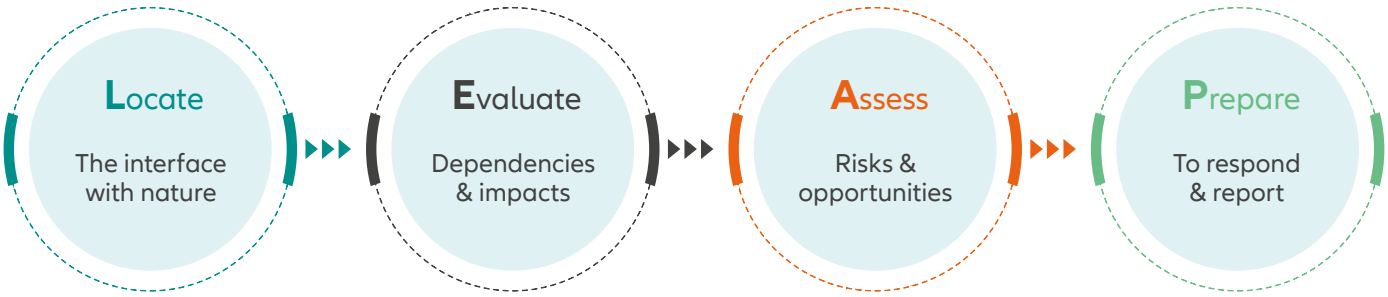
Executive Summary

- Biodiversity is critical to the functioning of our society, economies and financial systems, and despite this, biodiversity is declining faster than ever before. Although biodiversity loss and its main drivers are well documented, the quantification of the impacts of business activities on biodiversity is still an emerging area.
- Financial institutions, such as Allianz, are indirectly linked to actual/potential impacts via its business activities. Biodiversity loss poses a risk for businesses and their supply chains, thereby impacting financial risks for investors.
- To better understand how to assess biodiversity-related DIROs across our business activities, in 2024, we conducted pilot LEAP assessments on samples across three asset classes within Allianz's proprietary investment portfolio: Single location assets, multi-location assets (corporates) and sovereigns.
- While data and tools are constantly evolving, this case-study highlights the critical role of and need for consistent, reliable and location-specific data disclosures by the entities we invest in, including supply chain data, to assess actual biodiversity-related DIROs within our portfolio.
- Considering the complex and multi-faceted nature of biodiversity issues, nuanced data aggregation approaches should be developed before integration into existing strategies and decision-making processes.
- Understanding the impacts, risks and dependencies on biodiversity of our portfolio also requires evaluating how the entities we invest in assess and manage their biodiversity-related DIROs. This includes examining their biodiversity policies, actions, and targets, as well as mitigation measures.
- As next steps, we will explore the development of a systematic biodiversity approach, focusing on a single sector and assessing how to effectively aggregate available data into meaningful insights. We will also continue to leverage our involvement in multi-lateral engagement initiatives such as Nature Action 100, PRI Spring, Global Investor Commission on Mining 2030 and the Investor Initiative on Hazardous Chemicals to deepen our understanding of challenges and opportunities for investee companies in high biodiversity impact sectors and geographies.
- We will continue to monitor developments data and methodologies, and refine our approach as data disclosures and tools evolve to support a more granular assessment of biodiversity DIROs in our portfolio.

01 Introduction

Biodiversity plays a critical role in the functioning of ecosystem services such as pollination, flood protection, climate regulation and carbon sequestration, which in turn support functioning societies and resilient economies. According to the World Economic Forum, more than half of global GDP is moderately or highly dependent on biodiversity and nature[1]. **Allianz Group has identified biodiversity as a material topic from its double materiality assessment** under the Corporate Sustainability Reporting Directive (CSRD), which requires Allianz to **identify and assess its biodiversity related impacts, risks, dependencies, and opportunities**, based on the principles of the LEAP framework from the Taskforce for Nature-related Financial Disclosures (TNFD). LEAP refers to Locate (L), Evaluate (E), Assess (A) and Prepare (P)[2].

Allianz is indirectly linked to potential/actual material impacts through our proprietary investments, which can materialize through financing biodiversity-affecting activities, sectors and governments. These impacts may include contributions to the loss of biodiversity and alterations of ecosystems, leading to a potential materialization of risks for our portfolios[3].



For our proprietary investments, adverse developments in investment returns may be attributable to investments in sectors vulnerable to the consequences of biodiversity loss, for example material scarcity (construction, manufacturing), reduced yields (agriculture), or a downturn in the attractiveness or utility of natural areas for leisure purposes (property, tourism). Similarly, adverse returns may occur on a regional or sectoral basis due to biodiversity-related litigation or new regulations, as well as the deterioration of natural buffers that help mitigate physical damage and business disruption due to extreme weather events. Additionally, for our proprietary investments, we may also be exposed to reputational damage arising from association with investees publicly criticized for their contribution towards a loss in biodiversity.[2]

Assessing the biodiversity impacts, risks and dependencies of our proprietary investment and underwriting portfolio is an emerging topic for us and the financial industry. Considering constraints related to the measurement of – and accessibility to – comparable disclosed data at scale, standardized methodologies, and metrics, we are exploring how we can conduct such assessments and clarifying the limitations and boundaries of the analysis.

This case study explores the application of the LEAP framework to samples within three asset classes in our proprietary investment portfolio. The analyses were performed for the first three phases, Locate (L), Evaluate (E), and Assess (A), of the LEAP approach. The case study was conducted to gain insights into best practices for biodiversity-related assessments, available datasets and tools to perform such assessments, challenges and lessons learned. As this is an exploratory case study, an opportunities assessment and the Prepare (P) phase were out of scope for this pilot.

Scope

The LEA(P) approach was applied within Allianz's proprietary investment portfolio as follows:

- **Asset classes:** Single location assets, multi-location assets, and sovereign bond issuers.
  - **Single-location assets**[4] – Sample portfolio of real estate and infrastructure (which generally covers renewable energy, grids or pipeline) projects.
  - **Multi-location assets (corporates)** – Sample portfolio of companies within the 'Chemicals', 'Biotechnology and Pharmaceuticals', and 'Metals and Mining' sectors. These sectors are recognized as having high potential impact on biodiversity, and are of strategic importance to address biodiversity loss[5].
  - **Sovereign bond issuers** – Sample portfolio comprising Germany and Australia.
- **Geographies:** Germany and Australia
  - Germany is the headquarters of Allianz Group, and the single most important market for Allianz.
  - Australia is a country heavily reliant on mining for its economic growth, with mining being recognized as a high biodiversity impact sector[6].
- **Data and Tools:** A combination of open-source and commercial data sources and tools.

  The data sources and tools used includes both sector and location-based analyses. Given data limitations, where data is inconclusive or does not fit with our expectations, we conducted further analysis using expert judgement and qualitative assessments to validate our results.

02 Biodiversity Assessment

Single-location assets

The selected project sample is comprised of predominantly brownfield sites situated in biomes spanning temperate broadleaf and mixed forests and urban areas.

- **Assets:** a sample portfolio of real-estate and infrastructure assets, where Allianz has geolocation data
  - Assets A and B: Infrastructure
  - Assets C and D: Real Estate
- **Geographies:** Germany and Australia

Locating interface with biodiversity and nature ('Locate')

The assessment was based on relative proximity of assets to areas of biodiversity importance, such as Key Biodiversity Areas (KBAs), protected areas, and areas with threatened species under the IUCN Red List. For highly dispersed assets (e.g., grids) requiring analysis of multiple geolocation data points, the proximities to sensitive locations were aggregated.

Figure 01: Illustrative example of proximity scoring for single-location assets for sensitive locations

Asset	KBAs	Protected/ Conserved Areas	IUCN Red List
Asset A	🟡	🟡	🟡
Asset B	🟡	🔴	🟢
Asset C	🟢	🟢	🟢
Asset D	🟢	🟢	🟢

Colours represent Scoring	High	Medium	Low
	🔴	🟡	🟢

The analysis highlighted that the infrastructure assets are located in key biomes, and intersected with at least one or more of the key sensitive location datasets.

Understanding impacts, risks and dependencies ('Evaluate' & 'Assess')

In this phase, impacts, dependencies and risks were determined and assessed through a variety of data sources and tools, as well as further analysis, which included evaluating the type of asset (e.g., brownfield vs greenfield), mitigation measures, either voluntary or required by regulation (e.g., in a publicly available environmental impact assessment (EIA)), and the asset's end-use. For example, while both a wind park and pipeline may have adverse impacts on biodiversity through land-use change, wind parks contribute to renewable energy goals. This consideration of an asset's end-use provides an additional perspective during such assessments

Figure 02: Illustrative example of biodiversity impact, dependency and risk scoring for single-location assets

Asset	Dependencies	Impacts	Physical Risks
Asset A	🟡	🟡	🟡
Asset B	🟡	🔴	🟢
Asset C	🟢	🟢	🟡
Asset D	🟢	🟢	🟢

Colours represent Scoring	High	Medium	Low
	🔴	🟡	🟢

Material impacts were identified as changes to land-use and forest cover, and impacts on species, particularly for the assets located in Australia. The most material dependency identified, particularly for the real estate assets, was air condition, as poor air quality may adversely impact the attractiveness and value of such assets. Additionally, wildfire hazards were identified as a 'high' material risk for the real estate asset in Australia.

Multi-location assets (corporates)

Listed corporate holdings are classified as multi-location assets; these do not have a single interface to nature, but instead via a multitude of assets owned by the company and/or across its value chain. We focused on four companies in high-biodiversity impact sectors, headquartered in Germany and Australia and with global operations.

- **Assets:** a sample portfolio of four companies
- **Geographies:** Germany and Australia
- **Sectors:**
  - Company A: Chemicals
  - Company B: Biotechnology and Pharmaceuticals
  - Companies C and D: Metals and Mining

Locating interface with biodiversity and nature ('Locate')

Due to challenges with accessing granular asset-level information for each company, the assessment was based on the companies' direct operations assets, and not indirect operations (i.e., supply chain). Here, we assessed:

- The relative proximity of assets to areas of biodiversity importance, such as Key Biodiversity Areas (KBAs), protected areas, and areas with threatened species under the IUCN Red List.
- Type of company asset: the exposure of an asset to biodiversity issues is dependent on the type of asset. For example, a brownfield office building is less critical compared to a mine.

This information was aggregated on company level and used to assess which companies and sectors within a portfolio have operations in close proximity to biodiversity sensitive locations. The results demonstrate that the companies in the four sectors assessed have assets located in proximity to ecologically sensitive areas.

Understanding impacts, risks and dependencies ('Evaluate' & 'Assess')

A company's impact on biodiversity was evaluated using the impact drivers: air, water and land pollution, greenhouse gas emissions, land use change, water consumption, and waste production. Each impact driver was defined using raw environmental data from company disclosures and modelled information. For example, the levels of sulfur dioxide and nitrogen emissions were used to determine the impact of air pollution.

Biodiversity related risks can impact companies, especially as they materialize on asset level. We also evaluated risk exposure across different biodiversity-related risks, such as water stress, drought risk, and extreme heat, to company assets, and aggregated at company-level.

Figure 03: Example output of Biodiversity Impact and Risk scoring on company-level

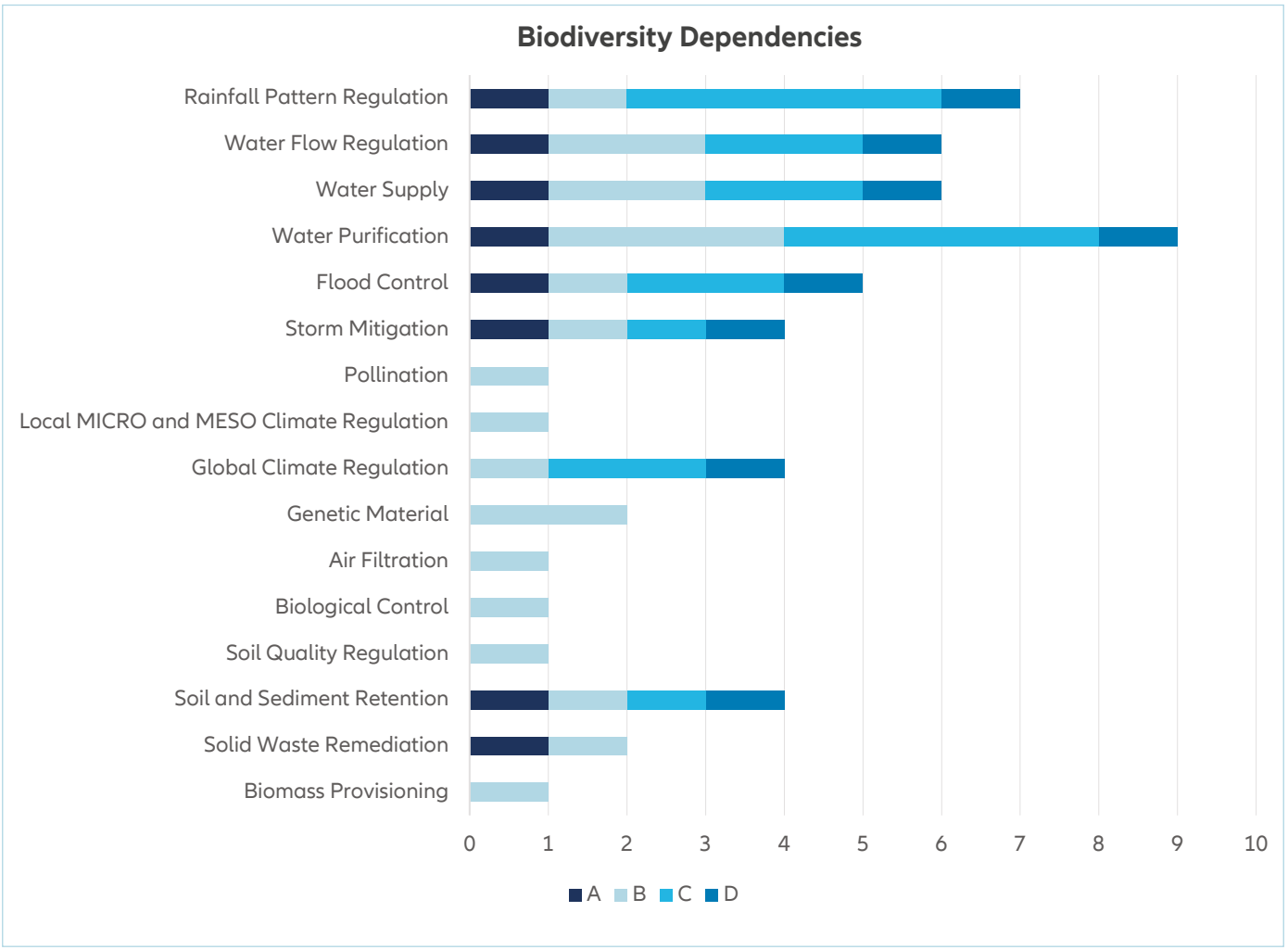
Company	Biodiversity Impact	Biodiversity Risk
Company A	●	●
Company B	●	●
Company C	●	●
Company D	●	●

Colours represent Scoring	High	Medium	Low
	●	●	●

Of the four companies in this pilot, those within the Metals and Mining sector demonstrated a higher biodiversity impact, while all companies demonstrated exposure to physical biodiversity risks, particularly for water demand and availability, and operating within medium-high water stress regions.

Biodiversity-related dependencies were assessed using expert knowledge and sector level data, which indicated that companies in the Chemicals, Metals and Mining, and Biotechnology and Pharmaceuticals sectors are significantly dependent on water-related ecosystem services, such as water supply, water flow regulation and purification.

Figure 04: Example output of corporate-level assessment for dependencies on ecosystem services[7]



Sovereign bond issuers

We focused our assessment on two sovereign bond issuers:

Sovereign bond issuers: Germany, Australia

Locating interface with biodiversity and nature ('Locate')

For sovereign bond issuers, the respective country borders represent the area relevant for the assessment. The interface with biodiversity was assessed through indicators on protected/conserved areas, forest and land cover, and KBAs, which provide insights to the extent of which countries protect biodiversity and the current condition of ecosystems.

Table 01: Comparative indicators on biodiversity sensitive locations for Germany and Australia[8]

	Australia	Germany
No. of Protected Areas	11,149	23,207
Protected Areas Coverage (%)	Terrestrial = 20.36% Marine = 44.34%	Terrestrial = 37.59% Marine = 45.46%
No. of IUCN Protected Areas	10,865	17,223
No. of KBAs	330, of which ~30% are also classified as Protected Areas	537, of which ~38% are also classified as Protected Areas
Natural Forest Land Area [2010]	38.0 Mha, 5.1% of land area	5.80 Mha, 36% of land area

The relative amount of terrestrial area of Germany designated as protected is significantly higher compared to Australia. This reflects the high protection efforts by the German government as required by the EU Biodiversity Strategy[9]. Conversely, it may highlight potential future challenges in balancing biodiversity protection and nature conservation with economic development.

Understanding impacts, risks and dependencies ('Evaluate' & 'Assess')

In this phase, the assessment was based on quantitative country profile data and a qualitative deep-dive through independent desk research, where 'high' and 'very high' dependencies, risks and impacts were identified.

For Germany

- Ecosystem condition was identified as a high biodiversity-related dependency, with further analyses indicating that Germany will be at 'medium to high' risk of water stress and drought in the future (2030, 2050)[10]. This can also exacerbate impacts to ecosystem conditions across Germany.
- Agricultural pressures, such as resistance to herbicides, were identified as a high biodiversity-related risk, where observations from a study in 2022 detected that nearly 50% of the weed samples demonstrated resistance or decreased sensitivity against several herbicides[11].

For Australia

- Condition and productivity of the soil and forests were identified as high biodiversity-related dependencies. Further analyses indicated that Australia has lost 21% of tree cover since 2000, which can significantly impact forest productivity and forest ecosystem conditions. The highest loss observed was in New South Wales and Western Australia, predominantly driven by fire hazards[12].Additionally, the Australian government has assessed the condition of soil as old, infertile and vulnerable to further degradation, primarily due to intensive agricultural practices[13].

- Invasive species was identified as a high biodiversity impact driver for Australia, which was corroborated by a 2021 study[14] on the economic impact of invasive species, which estimated that invasive species have cost Australian farmers $300Bn in the past 60 years.
- Physical hazards, such as extreme heat and wildfires, were identified as key biodiversity-related risks, with analyses also indicating Australia at medium-high risk from water stress and drought in the future (2030, 2050)[8]. Such risks are closely interconnected, as a dry, hot environment is conducive for the development of bushfires/wildfires, as evidenced in recent years, where Australia has observed an increase in temperatures, and in the number of severe bushfires[15].

03 Findings and Next Steps

For financial institutions, such as Allianz, our investment activities are linked to biodiversity-related impacts through **what** we finance (i.e., sectors and activities which impact and are dependent on biodiversity), **where** activities are being financed (i.e., proximity to sensitive locations such as protected areas, KBAs) and **how** they are financed.

Our pilot LEAP assessment highlighted the critical **need for consistent and reliable data** to better understand the impacts and dependencies of our portfolio on biodiversity ('inside-out perspective'), the risks and opportunities associated with biodiversity loss on our portfolio ('outside-in perspective'), and therefore, effectively manage our investments.

Comprehensive, standardized location-specific disclosure on biodiversity impacts, dependencies, and risks by the entities and assets we invest in is essential and currently insufficient.

- We acknowledge that biodiversity data is multi-dimensional and location-specific. Presently, disclosed data on biodiversity is limited, and often relies on estimations and modelling using sector- or country-level data.
- Available data typically focuses on a company's direct operations, whereas supply chain disclosures are essential for a more thorough assessment, particularly for sectors involved in raw material sourcing.
- There are limited disclosures on the proactive measures and policies that entities may have in place to manage or mitigate their biodiversity impacts, risks and dependencies.
- We anticipate that regulations, such as CSRD, and voluntary disclosure frameworks, will improve data availability, reliability and consistency, and support the development of standardized methodologies, and metrics. This will equip us to better understand and manage our DIROs.

It is crucial to consider how entities are managing their biodiversity impacts, risks and dependencies.

- Relying solely on sector-level analyses and company output data fails to capture detailed insights into efforts and strategies employed to address and mitigate biodiversity-related DIROs.
- For companies, this involves examining their biodiversity policies, actions, and targets while for sovereigns, it is important to evaluate biodiversity-related regulations in the respective jurisdictions. For single-location assets, the presence of mitigation measures (either voluntary or required by regulation, such as in an environmental impact assessment or similar) should be considered.

Aggregation of biodiversity data is inherently complex, but required for organizations to undertake LEAP assessments and action the results for decision-making.

- There is no unified metric equivalent to GHG emissions in climate data, and consolidating all biodiversity information into a single figure or metric is neither practical nor effective.
- Nuanced approaches, such as a biodiversity scorecard, are necessary to capture the full scope of biodiversity impacts, risks and dependencies for effective due diligence and decision making.
- We also refrained from using metrics such as Mean Species Abundance (MSA) and Potentially Disappeared Fraction (PDF), as, in our view, they tend to oversimplify these complexities and lack clear interpretation.

Despite challenges with data, reflections from conducting the LEAP approach on small sub-portfolio samples represent a starting point for developing a systematic approach for integrating biodiversity in decision-making processes.

- Undertaking a scoping exercise can be beneficial, particularly focusing on sectors, assets, and sovereigns where critical biodiversity issues are more prevalent, and data is available.
- When assessing companies, it is advantageous to concentrate on sectors where critical issues arise within direct operations, as opposed to within their supply chains, such as Metals and Mining. This is because asset-level biodiversity data is more accessible and available for direct operations.
- We will explore developing a systematic biodiversity approach for a single sector, leveraging our involvement in multi-lateral engagement initiatives and assessing how to effectively aggregate available data into meaningful insights.

As biodiversity loss is a systemic issue, it requires a whole-of-society response. We believe that, as an asset owner, one of the most effective actions we can take to address our biodiversity-related DIROs is engagement with portfolio companies and asset managers.

- Allianz Investment Management SE joined several multi-lateral biodiversity-related engagement initiatives in 2024, such as Nature Action 100, PRI Spring, Mining 2030 and the Investor Initiative on Hazardous Chemicals (IIHC).
- We expect these engagements to deepen our understanding of company action to address biodiversity loss, improve data disclosures, and thus, gradually strengthen our biodiversity policies and actions.

We will continue to monitor developments in data and methodologies, and gradually expand our biodiversity assessments throughout asset classes within our proprietary investment portfolio over time.

References

1. World Economic Forum – "New Nature Economy Report" (published 2020)
2. Guidance_on_the_identification_and_assessment_of_nature-related-issues_The_TNFD_LEAP_approach_v1.pdf
3. For more details, refer to the 2024 Allianz Group Annual Report "E4 Biodiversity and Ecosystems"
4. In general, we consider real-estate assets held for investment as 'true' single-location assets, while infrastructure assets, which generally cover investments in renewable energy, grids or pipelines, are single sites spanning large areas and/or are more geographically dispersed.
5. As identified by the UNEP-FI "Beyond Business as Usual: Biodiversity Targets and Finance" and Finance for Biodiversity (FfB): "Assessment of the biodiversity impacts and dependencies of globally listed companies: A collaborative multi-tool footprinting approach".
6. As identified by the UNEP-FI "Beyond Business as Usual: Biodiversity Targets and Finance" and Finance for Biodiversity (FfB): "Assessment of the biodiversity impacts and dependencies of globally listed companies: A collaborative multi-tool footprinting approach".
7. Reproduced from publicly available information – available here.
8. Reproduced from public information – available here.
9. Germany | Biodiversity Information System for Europe
10. Aqueduct Country Ranking
11. Rissel, D. and Ulber, L (2024) – „Herbicide resistance monitoring" series from the Julius Kühn-Institut (JKI)
12. Australia Deforestation Rates & Statistics | GFW
13. Government of Australia, 2021. Australia state of the environment 2021. Australia state of the environment 2021
14. Bradshaw CJA, Hoskins AJ, Haubrock PJ, Cuthbert RN, Diagne C, Leroy B, Andrews L, Page B, Cassey P, Sheppard AW, Courchamp F (2021) Detailed assessment of the reported economic costs of invasive species in Australia. In: Zenni RD, McDermott S, García-Berthou E, Essl F (Eds) The economic costs of biological invasions around the world. NeoBiota 67: 511-550. https://doi.org/10.3897/neobiota.67.58834
15. Australia's Heatwave and Bushfire: A Case for Tackling Climate Change with Energy Transition

Allianz SE information

Allianz SE
Königinstrasse 28
80802 Munich
Germany
www.allianz.com

Publication Date: May 2025

Cautionary note regarding forward-looking statements

This document includes forward-looking statements, such as prospects or expectations, that are based on management's current views and assumptions and subject to known and unknown risks and uncertainties. Actual results, performance figures, or events may differ significantly from those expressed or implied in such forward-looking statements. Deviations may arise due to changes in factors including, but not limited to, the following: (i) the general economic and competitive situation in the Allianz's core business and core markets, (ii) the performance of financial markets (in particular market volatility, liquidity, and credit events), (iii) adverse publicity, regulatory actions or litigation with respect to the Allianz Group, other well-known companies and the financial services industry generally, (iv) the frequency and severity of insured loss events, including those resulting from natural catastrophes, and the development of loss expenses, (v) mortality and morbidity levels and trends, (vi) persistency levels, (vii) the extent of credit defaults, (viii) interest rate levels, (ix) currency exchange rates, most notably the EUR/USD exchange rate, (x) changes in laws and regulations, including tax regulations, (xi) the impact of acquisitions including and related integration issues and reorganization measures, and (xii) the general competitive conditions that, in each individual case, apply at a local, regional, national, and/or global level. Many of these changes can be exacerbated by terrorist activities.

No duty to update

Allianz assumes no obligation to update any information or forward-looking statement contained herein, save for any information we are required to disclose by law.