

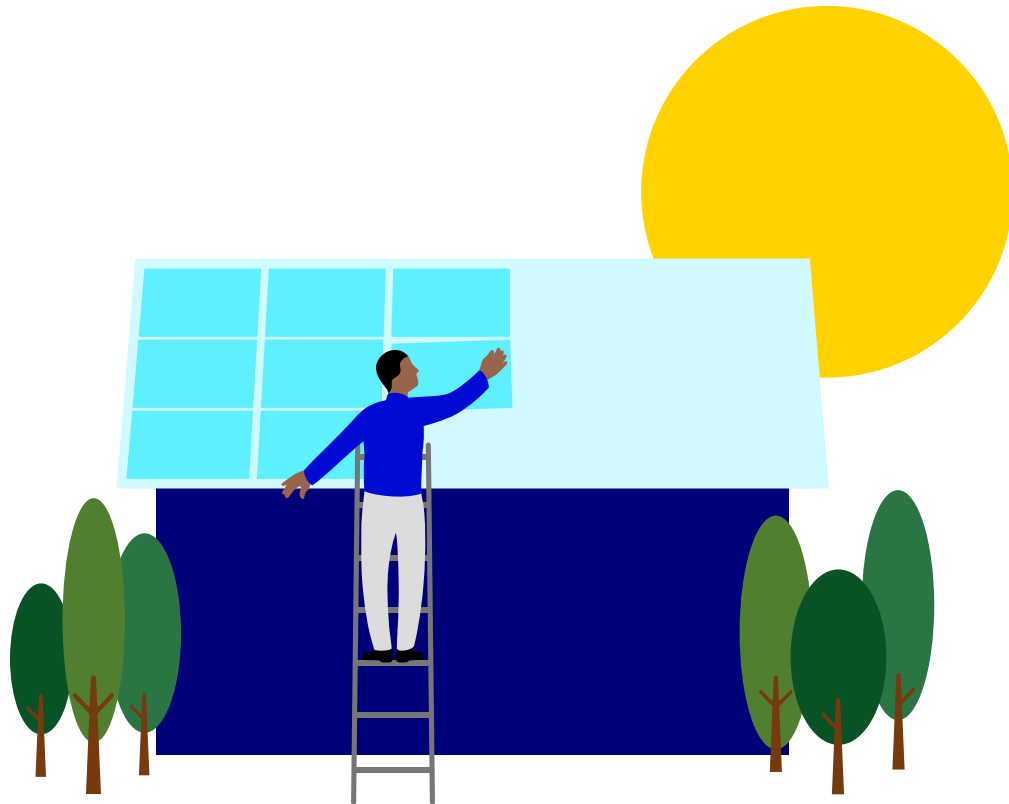
2021 Climate Change Report

In line with the Task Force on Climate-related
Financial Disclosures (TCFD)



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1.0

Introduction

In this chapter we provide an overview of Invesco and our organizational structure. We also provide an update on our initial commitment as a member of the Net Zero Asset Managers initiative and the key takeaways from this report.





Commitment to responsible investment



Net Zero Asset Managers initiative

Signatory to IIGCC and the Net Zero Investment Framework, PRI and participant in Climate Action 100+

Committed to the

TCFD

Inaugural report published 2020

Discloser and signatory to

CDP

Score B- in 2021

Offset corporate business travel emissions

Through two ClimateCare projects

1.1 About Invesco

Invesco is an independent investment management firm dedicated to delivering an investment experience that helps people get more out of life. We are privileged to manage US\$1.3 trillion in assets on behalf of clients worldwide as of 30 September 2022 (previously US\$1.5 trillion AUM as of 31 March 2022).¹

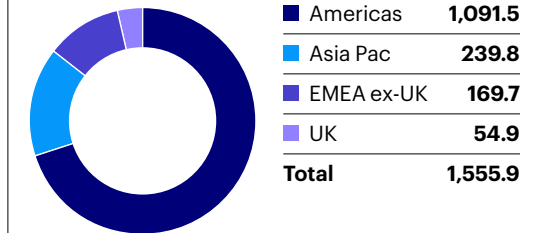
Invesco has:

- Specialized investment teams managing investments across a comprehensive range of asset classes, investment styles and geographies
- More than 8,000 employees focused on client needs around the globe
- Proximity to our clients, with an on-the-ground presence in 28 countries
- Solid financials, an investment-grade debt rating and a strong balance sheet

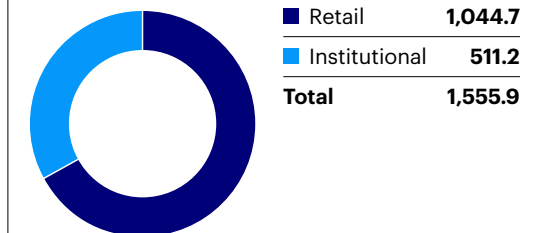
We offer strategies across the full spectrum of asset classes, tailored to the needs of institutional and retail investors. In addition to our offerings in equities, bonds and real assets, we have multi-asset strategies and liability-driven investments. Most of our assets are in equities, followed by bonds and alternatives.

We are diversified as a firm

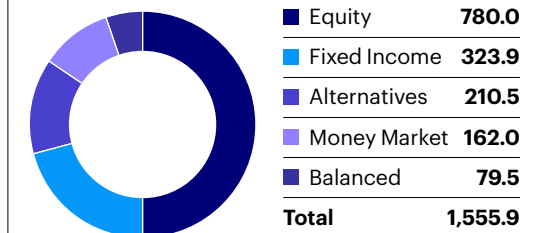
By client domicile (US\$bn)



By channel (US\$bn)



By asset class (US\$bn)



¹ Source: Invesco Ltd. For the purposes of this report, 31 March 2022 serves as our reference date for assessing assets under management, in line with the reporting period for holdings and emissions data.

Source: Invesco, as of 31 March 2022. Numbers may not add up due to rounding.

1.2 Net Zero Asset Managers initiative: Progress update

In last year's report we announced our membership of the Net Zero Asset Managers initiative (NZAM). We are pleased this year to announce an update on our initial commitment to net zero and our targets for implementation.

We have taken a rigorous, bottom-up approach to net zero in consultation with our clients. Implementing net zero in such a way allows us to partner with our clients and our investee companies to help them navigate the transition and create long-term value.

Invesco will initially manage 12% of its AUM, or US\$195.3bn, in line with net zero which includes portfolios where clients are seeking to implement a decarbonization objective consistent with net zero by 2050 or sooner, as well as where the investment team is committed to working with companies to support their efforts to manage transition risk in line with client objectives. It also includes approaches where broad alignment with net zero is embedded in the fund strategies. As methodologies continue to evolve, we will work with our clients and investment teams to further increase our committed AUM over time.

More details on our approach to net zero can be found in [Strategy – Part 1](#) and our full net zero targets in the [Metrics and targets](#) section of this report.



Image source: AdobeStock

1.3 About our 2021 Climate Change Report

Invesco's third iteration of our TCFD-aligned Climate Change Report seeks to build on our past experience and provide a comparable, investor-relevant disclosure on our activities and capabilities in climate-aware investing.



Key takeaways of this report include:

- Invesco has updated to the second vintage of climate scenarios developed by NGFS as the basis for our climate scenario analysis, which are comparable with the scenarios we used in our 2020 report.
- For the first time, we have also done an analysis using the Inevitable Policy Response's (IPR) Forecast Policy Scenario. Commissioned by the UN Principles for Responsible Investment, this offers a high-confidence model of policy responses to delayed climate action for an alternative look at the possible impact this could have on the portfolios we manage on behalf of clients.
- Invesco has submitted its initial net zero targets as part of its Net Zero Asset Managers commitment, details of which are disclosed in this report.
- Our climate-aware investment capabilities continue to expand, with the launch of Paris-aligned passive portfolios and our first net zero fixed income strategies.
- Our climate metrics reporting continues to expand and align with industry best practice, now incorporating all of the TCFD recommendations and Partnership for Carbon Accounting Financials (PCAF) methodology.

2.0

Governance

In this chapter we first briefly describe our Board's oversight of climate-related risks and opportunities. We then explain the role of Invesco's management in assessing and managing these risks and opportunities, dividing our approach into three interrelated dimensions.



2.1 Board-level oversight

Invesco's approach to climate change is integrated into our broader governance structure. This covers corporate responsibility (CR) considerations at operational level and environmental, social and governance (ESG) considerations at investment level.

The Board reviews its long-term strategic plan at least annually. Invesco's Chief Executive Officer and the Invesco Ltd. Board of Directors have general supervisory oversight responsibility for the company's activities and policies. The Board is responsible for setting, maintaining and regularly reassessing policies and processes to manage the firm's overall exposure to risk.

Investment Centre coordination

Invesco operates 11 investment centres across the globe. In line with Invesco's investor-led approach, these investment centres operate in a decentralised manner, each with their own Chief Investment Officer reporting to various members of global leadership. This allows each investment centre the autonomy to develop, set and maintain an investment process and philosophy which helps them deliver the investment results our clients seek.

To coordinate our response to global movements, such as climate change, Invesco operates several working groups and councils with representatives from each investment centre. This allows us to create common frameworks and standards that can be implemented globally across asset classes whilst taking into account the diverse viewpoints and requirements of our investment professionals and their clients.

- **Global Investment Council (GIC)**

Our GIC provides oversight to our specialized investment teams and offers a balance of global expertise, support and connectivity. In this way, it helps provide better outcomes for clients with greater consistency over the long term.

- **GIC ESG Subcommittee**

Where our GIC provides broad coverage, guidance and discussion to investment teams, our ESG subcommittee focuses on addressing ESG investment issues, including climate change and social equity.

- **Climate Initiatives Working Group (CIWG)**

Our CIWG is an open forum led by our Global ESG Team that coordinates our response to and implementation of new climate initiatives, such as TCFD-informed disclosure obligations, SFDR and net zero. Common frameworks and tools can be agreed with input from our various affected stakeholders that can then be taken to our governing bodies, such as the GIC, for approval.

- **Regional ESG Working Groups**

We run regional ESG working groups in North America, EMEA and Asia Pacific to allow investment centres to respond appropriately to more localised issues and trends. Representatives from these groups will feed into to our global working groups and councils for knowledge sharing and alignment.

2.2 The role of management

From a broader management perspective, Invesco has a governance structure across four dimensions that enables oversight and accountability for effective management of climate-related risks.

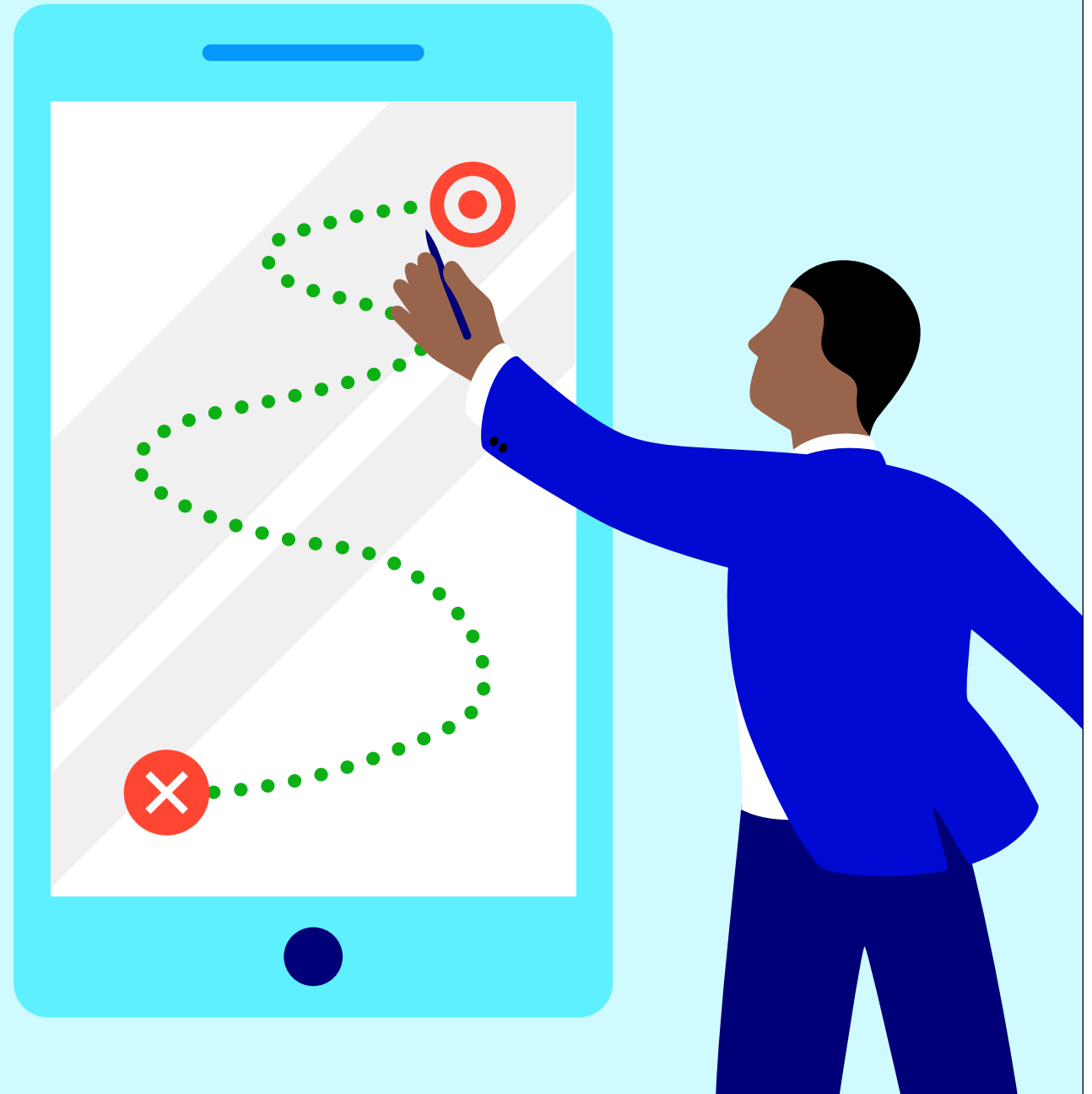
1. The Global Investment Council (GIC) comprises Chief Investment Officers and Managing Directors representing our global investment centres and asset classes. It is co-chaired by our CEO and our Senior Managing Director Head of Investments. The GIC drives the strategy and governance of our internal programs. It provides oversight to our specialized investment teams and offers a balance of global expertise, support, and connectivity. In this way, the GIC helps provide better outcomes for clients, with greater consistency over the long term.
2. Our Global ESG team of 22 professionals acts as a centre of excellence, responsible for leveraging best practices in ESG capabilities across Invesco. These include ESG integration, voting and engagement, supporting the distribution teams with client engagement, and advising product teams on ESG innovation. Therefore, the team is organized across four pillars: Client, Research, Proxy, and Analytics. Located across the three regions of North America, Asia Pacific and EMEA, the Global ESG team provides support and analysis, while investment teams maintain discretion on portfolio decisions. Invesco's ESG efforts are also supported by our global proxy services team located in Hyderabad, India.
3. The GIC's ESG subcommittee specifically focuses on ESG investment issues. The incorporation of ESG considerations is conducted by investment teams on a team-by-team basis. This group comprises over 60 individuals from investment teams, operational teams and the Global ESG team. It enables collaboration on ESG matters between individual investment centers globally.
4. Several working groups have formed at various sectors of the organisation to ensure our ESG integration approach is purposeful, holistic, and impactful. Some working groups are brought together to deliver an initiative or increase ESG integration efforts across an asset class or region. For example, in 2021, the Climate Initiatives Working Group (CIWG) focused on the implementation of the Net Zero Asset Managers initiative (NZAM). Others focus on evergreen ESG priorities, including engagement. There is also a cross-organisational effort that brings in functional elements, such as products, marketing, regulatory affairs, technology, and distribution.

As a large, global asset manager, Invesco's structure enables us to benefit from diversity of thought while maintaining globally consistent standards for stewardship. Our investment teams can leverage the resources of the Global ESG team and participate through the GIC ESG subcommittee and working groups, with oversight and accountability provided by the Global Investment Council (GIC). This structure enables our specialised investment teams to have the capability to implement ESG approaches relevant to their asset classes and investment styles, and aligned with client objectives.

3.0

Strategy – part 1: Overview

In this chapter, the first of two addressing issues related to strategy, we outline our commitment to integrating climate change and other ESG considerations into our approach to long-term investing. We then explore this philosophy further through the prism of TCFD, NZAM and other initiatives.



3.1 ESG at Invesco

Invesco's mission to be the most client-centric asset manager extends to our approach to ESG. We focus on sustainable value creation with a philosophy grounded in materiality, momentum, and engagement. Our proprietary research is based on an input, output model with sector specific indicators. We focus on incorporating qualitative and active engagement input to form an overall investment view.

This approach allows us to assess whether an issuer may be exposed to any potential physical or transition risks posed by the low-carbon transition. We also seek to understand whether they may be undercapitalizing or failing to position themselves for new opportunities this presents.

We can then use our active ownership model to help them navigate a dynamic landscape that is now largely being driven by market and regulatory forces.

Asset managers have a fundamental role to play in providing products that enable clients to express their values through investing, including those related to the environment. We seek to act as capable stewards to our many clients seeking long-term value creation who are concerned by the uncertainties the climate transition presents.



Image source: AdobeStock

Client driven. Focus on sustainable value creation. ESG as a journey.



ESG integration

We aspire to incorporate financially material ESG considerations in our investment capabilities and our processes, and our investment teams have the final say in how ESG factors are applied in the investment process.



Diversity of thought

Invesco's ESG capabilities are investment led. Our global ESG team supports our investment teams by providing specialist insights on research, engagement, voting, integration, tools, client, and product solutions. Investment teams can leverage this resource to implement ESG approaches relevant to their asset classes and investment styles.



Exercising our rights & responsibilities for value creation

Through engagement and proxy voting, we:

- engage with issuers to enhance the sustainable value creation of assets
- cast voting decisions to align with client objectives
- amplify our active votes as our passive vote typically follows the largest active holder



Leveraging innovative technology

We appreciate the power of technology, innovation, and data to scale our ESG integration and improve the support and information our investment teams receive. We have launched our own proprietary tools to assist with research, portfolio reviews, and portfolio optimization.



Environment as a focus

We have committed to:

- the Task Force on Climate-related Financial Disclosures
- the Net Zero Asset Managers initiative (NZAM)



A commitment to solutions

We see ESG from every angle. Our ESG capabilities cover a variety of asset classes and investment vehicles, which employ ESG strategies and criteria across the spectrum. We already manage approximately **\$89bn in ESG AUM**.



Transparency

We view transparency as a responsibility and an opportunity to demonstrate our ESG credentials.

3.2



Image source: AdobeStock.

Our Net Zero Asset Managers (NZAM) initiative commitment: Invesco's approach

In April this year, we submitted our initial net zero commitment and targets to the Institutional Investor Group on Climate Change (IIGCC) as part of our commitment to NZAM, which was published in NZAM's Initial Target Disclosure Report 2022.²

Invesco will be using the Paris Aligned Investment Initiative's (PAII) Net Zero Investment Framework (NZIF) as a basis for its net zero implementation. We have initially committed 12% of our AUM (or US\$195.3bn) to be net zero by 2050, and achieve a 50% lower carbon footprint as measured by tCO₂/\$invested by 2030 against a 2019 baseline.

Full target details can be found in the [Metrics and targets](#) section of this report.

Our measurements include scope 1 and 2 top-down portfolio reduction targets. Given the estimated nature of current scope 3 assessment methodologies and data availability, it is too immature at this stage to meaningfully measure against a net zero reduction target.

Invesco has taken a bottom-up, investment-led approach – in consultation with clients where appropriate – meaning that each investment team has made a determination as to whether their portfolio can currently be managed in line with a net zero pathway.

This approach offers advantages to the top-down alternatives, which do not guarantee investor buy-in or can make assumptions about the intentions of clients or direction of travel for entire asset classes.

Our intention is to deliver absolute transparency and integrity around this vital aspect of ESG-related asset management. Our ESG efforts are client- and investor-led. Collaboration and client-centricity are at the heart of Invesco's culture, and we have engaged extensively with our clients, our investment teams, and other stakeholders since becoming a signatory to NZAM.

Net zero investing is a spectrum, including both dedicated net zero labelled products and managing portfolios with net zero analysis as part of the investment and engagement process.

Active engagement is the primary lever for transitioning a portfolio to net zero. This means investors are not required to have any exclusionary criteria (with the exception of new thermal coal projects and associated infrastructure).³

Invesco favours engagement and dialogue with companies over divestment. We seek to work with investee companies to understand sustainability issues and promote long-term prosperity through the energy transition.

² Net Zero Asset Managers initiative, Initial Target Disclosure Report May 2022, <https://www.netzeroassetmanagers.org/media/2022/05/NZAM-Initial-Target-Disclosure-Report-May-2022-1.pdf>

³ Paris Aligned Investment Initiative, Net Zero Investment Framework 1.5 Implementation Guide, <https://www.parisalignedinvestment.org/media/2021/03/PAII-Net-Zero-Investment-Framework-Implementation-Guide.pdf>, p19

Three components required for Net Zero Investment

We have identified three main components required for a net zero investment strategy, as outlined on the right. However, this is still a nascent concept for the market and there are several challenges asset managers face in implementing such a strategy. We outline some of these challenges and how Invesco seeks to address them. With our common net zero research framework and proprietary data and analytics tools, we have developed a net zero investment framework that our investment teams can apply across geographies and asset classes.



1.

Clear and consistent investment frameworks

Systematic evaluation of issuers on net zero alignment can support our teams to progressively move material emitting sectors and issuers to align to net zero rather than just excluding high emitters. Companies who are transitioning (aligning or aligned to pathway) are valid holdings in a net zero strategy.

Common issues

- **Ensuring consistency** when assessing and evaluating net zero across geographies, asset classes, portfolios and strategies

How Invesco seeks to address this

- **Develop common assessment frameworks** for net zero assessment and alignment
- Ensure there is a single view of net zero alignment for corporates regardless of the asset class

2.

Access to, and effective use of, emissions data

The challenges with data necessitate a sophisticated approach to acquiring, combining, and analyzing data through proprietary tools.

Common issues

- **Lack of commitment (and disclosures)** by end issuers and corporates
- **Quality of data** disclosed by corporates

How Invesco seeks to address this

- **Support for industry-wide commitments** to drive data disclosure and consistency
- Incorporate **market-leading external data sources into proprietary analytical tools**

3.

Meaningful engagement

Coordinated engagement with material emitters on a global scale to set and deliver on 1.5° alignment plans.

Common issues

- **Know-how** on effective engagement
- **Scale and reach** to influence corporates
- **Underlying technologies** required by certain sectors or corporates for net zero pathways

How Invesco seeks to address this

- Build an **engagement approach that can reach across geographies and industries** (including understanding sector pathways)
- **Embed tools** to support tracking and monitoring of engagement objectives

3.3 Active ownership

3.3.1 Engagement

As active owners and good stewards, Invesco considers engagement with investee companies as a powerful and effective tool to promote long-term sustainable value creation, for the benefit of our clients.

Supporting and guiding companies, whose approaches to adaptation, transition, and the allocation of capital help future-proof the planet, as well as secure their operating models in a changing physical and regulatory environment, is of increasing importance to many clients. In 2021 alone, we engaged with more than 3,000 companies on ESG topics, including over 870 focused on the 'E' of 'ESG', and we also vote on around 12,000 company proposals annually. During the same time period, investment teams coordinated with our Global ESG team to conduct 186 targeted ESG engagements, 45% of which focused on climate transition.

In line with Invesco's investment-led approach and ethos around diversity of thought, investment teams can leverage our ESG resources to implement approaches to climate change engagement relevant to their asset classes and investment styles. During our engagements, our investment teams work to be very transparent with companies about which portfolios they are representing.

We recognize climate change is a key topic for more and more investors – one where our long-term approach to active investing is increasingly delivering success. As a result, these investors also benefit from our approach to this issue.

3.3.2 Proxy voting

Invesco's Policy Statement on Global Corporate Governance and Proxy Voting outlines our approach to proxy voting globally.⁴ Our good governance principles and voting guidelines promote corporate accountability, transparency and strong oversight of material risks, including risks associated with climate change. Invesco leverages a range of tools to support vote decisions, including third-party research and ratings. Our approach to proxy voting considers the unique circumstances affecting business, regional best practices, insights from our proprietary research, and any dialogue we have had with portfolio companies.

Ultimately, individual investors make their own voting decisions on behalf of clients. But in order for investors to effectively assess a company's strategic planning and business practices related to climate change, clear and consistent reporting is essential.

Invesco's global proxy policy recommends robust disclosure and reporting on material environmental topics, and generally supports shareholder proposals requesting disclosure regarding material environmental risks that are reasonable and not duplicative or excessively prescriptive. In addition, we may support shareholder proposals requesting that specific actions are taken to mitigate exposure to climate risk, such as establishing GHG emissions reduction targets, with a particular focus on companies that have made their own net zero commitment. In evaluating these proposals, we consider a company's track record managing climate-related risks and the efficacy of the proposal request.

Where significant gaps in the management and disclosure of environmental and social issues are identified, Invesco may vote against the adoption of annual accounts and reports or similar resolutions. Where material risk oversight failures occur (including business ethics, environmental and social failures), we will consider voting against director nominees. This approach ensures that we consider climate-related topics even where there aren't specific resolutions on climate change to be voted. The final voting decisions are made by our portfolio managers and analysts, with input and support from our Global ESG team and Proxy Operations functions. Invesco's proprietary proxy voting platform, PROXYintel, facilitates the implementation of voting decisions and rationales across our global investment teams. Our governance principles, structure and processes ensure proxy votes are cast in accordance with clients' best interests.

Engagement stats in 2021

We engaged with more than
3,000
companies on ESG topics...

...including over
53%
focused on the 'E' of ESG

We also vote on around
12,000
company meetings each year



⁴ Our Policy Statement on Global Corporate Governance and Proxy Voting is available [here](#).

3.3.3 Case study



Company

Australian Energy company

ESG issues addressed

Climate change and low-carbon transition/disclosure

Method of engagement

Video call

Issue

The investment team had previously met with the company following their 2021 AGM. The company committed to a ‘Say on climate’ vote at their 2022 AGM, which means they would offer shareholders a vote on their climate plans. The company wanted to understand the investment team’s view as to what kind of vote shareholders wanted, giving us an opportunity to shape their climate strategy.

In their 2020 AGM, shareholders had supported a shareholder proposal requesting that the company set plans to reduce their scope 3 emissions, indicating notable support from shareholders for the company to take greater action on climate change.

Action

The investment team, in conjunction with Invesco’s Global ESG team, met with the company’s CEO, Chairman and Head of Investor Relations in May 2021 to discuss the shareholder resolutions tabled in the AGM and call on management to disclose their Paris-aligned emissions reductions plans, as well as greater clarity and disclosure around their direct and indirect lobbying activities.

During the call, the investment team made clear that we wanted the company to give shareholders the opportunity to vote on their climate strategy, and not just their reporting. In addition, the investment team gave feedback on additional areas we wanted to see climate reporting, such as scenario analysis based on International Energy Agency (IEA) scenarios with a gradual reduction in demand for fossil fuels.

The investment team met with the company again in March 2022 for further discussions with the company on their climate initiatives and upcoming climate change report.

Outcome

The company has drastically improved its reporting of its climate strategy, incorporating many of the investment team’s recommendations (e.g. including a net zero scenario as part of their scenario analysis and aligning their disclosures to the TCFD and SASB frameworks).

However, their strategy relies very heavily on offsets, future projections of carbon capture and storage (CCS) and an assumption that their key markets won’t decarbonise as fast as they have promised. Furthermore, without pointing to an alternative scenario to the IEA “Net Zero by 2050”, the company has not explained how new projects are consistent with their Paris-alignment claim, which may carry reputational impacts if there is further NGO and public scrutiny, or even action from the local government, which has indicated it will develop an emissions target following COP26. Additionally, their reasoning for not setting scope 3 targets is not on par with the actions taken by their European counterparts.

Escalation and next steps

Having voted unanimously for the 2021 shareholder resolutions, the investment teams involved in the engagements, in conjunction with the Global ESG team, made a recommendation to vote against the 2022 Climate Report due to its shortcomings. About half of the company’s shareholders voted against the report.

We continue to engage with the company to seek improved target setting and disclosure.

3.4 Climate-aware investment solutions

3.4.1 Fixed income offerings

For clients committed to achieving net zero, Invesco recognizes that it must provide offerings that focus on real-world emissions reductions in absolute terms, not simply reducing portfolio emissions by way of exclusion. For net zero transition strategies, this means high-emitting issuers can be held in a portfolio but only where credible plans to decarbonise exist and/or engagement can drive progress towards net zero alignment. Investing directly in technologies and projects that are consistent with meeting the goal of net zero will also be key.

As such, Invesco has launched its first dedicated net zero fixed income strategies that will pursue this goal. Recognizing the need for an orderly transition, the strategies will invest in high-emitting sectors today to facilitate the transition to net zero through active ownership to deliver real-world change. By way of engagement, the strategy looks to align its objectives with the corporates it invests in, as well as those it would like to hold in the future.

Targets are set for the movement of companies along a net zero spectrum, from 'not aligned' to 'achieving net zero', continuously measuring progress against these objectives that are both long term and short term. Ensuring a credible pathway to net zero means:

5-year objective

- Target 50% of portfolio assets to be aligned with net zero within 5 years

Immediate

Minimum of 70% of emissions in high emitting sectors are either:

- Aligned or achieving net zero
- Subject of direct or collective engagement and stewardship actions

By 2030

Minimum 90% of emissions in high-emitting sectors are:

- Net zero / aligned, or
- Subject to direct or collective engagement and stewardship actions

By 2040

100% of assets are:

- Net zero / aligned; with
- Ongoing monitoring of alignment status

The strategies demonstrate how ESG objectives can be blended with traditional approaches to investing. As well as targeting net zero, the strategies hope to deliver attractive risk-adjusted returns by implementing:

A thematic approach

Finding medium- to long-term investment themes allows us to isolate opportunities and spot credit market trends. We then strategically apply these findings to security selection and portfolio positioning.

Relative value

We implement these investment themes using a relative value approach versus the benchmark. This allows us to balance the risks within the portfolio across specific risk factors as we seek to outperform the benchmark. These factors are regions, sectors, currency of bonds, credit curve term structure, and capital structure.

Macro overlays

Reducing downside capture during periods of corporate bond weakness is a key part of seeking to defend capital. We can implement macro overlays using liquid derivatives, depending on the level of risk identified. The idea is to efficiently manage portfolio risk and limit transaction costs.



01

Net zero ambition

The company has set a long-term goal consistent with achieving net zero emissions by 2050.

02

Emissions targets

The company has explicit short- and medium-term emissions reductions targets covering its scope 1, 2 and material scope 3 emissions.

03

Emissions performance

The company demonstrates that its current emissions intensity performance meets targets that it has set with reference to climate science-based approaches.

04

Disclosure

The company discloses its scope 1, 2 and material scope 3 emissions.

05

Decarbonization strategy

The company has a quantified plan setting out measures deployed to meet its GHG reduction targets, proportion of green revenues and increases in green revenues.

06

Capital allocation alignment

The company's capital expenditures are clearly consistent with the goal of achieving net zero.

3.4.2 Passive portfolios

Passive portfolios have become key components in ESG strategies. Passive investment vehicles that include ESG in their objectives have seen strong demand in recent years.

For climate-conscious investors looking to align their strategy with the goals of the Paris Agreement in particular, Invesco launched a series of MSCI ESG Climate Paris Aligned passive portfolios that aim to reduce climate risks and capture opportunities from the transition to a low-carbon economy, whilst delivering meaningful ESG outcomes.

The passive portfolios aim to track MSCI ESG Climate Paris Aligned Benchmark Select Indices, which are designed to align with a 1.5°C climate scenario and focus on companies with strong ESG profiles. The indices use an optimization approach to meet specific targets, while minimizing tracking error compared to the Parent Index with low turnover.



3.4.3 Invesco Indexing

3.4.3.1 Climate benchmarks

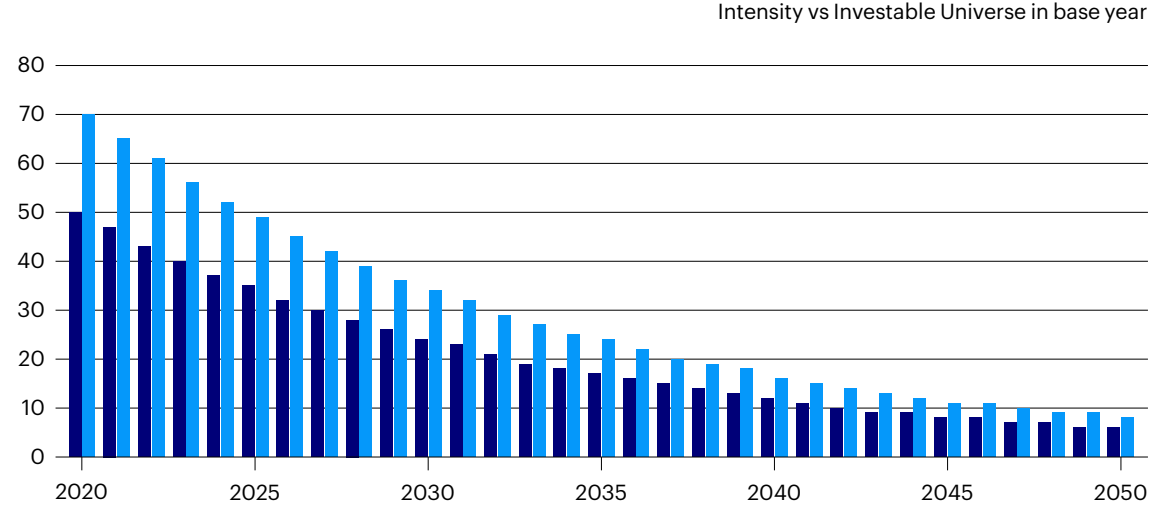
Credible climate-related benchmarks are becoming increasingly important for investors wishing to pursue carbon reduction strategies. The EU Regulation on Climate Transition Benchmarks, introduced in 2019, created two new categories of climate-related benchmarks within the EU:

- The EU climate transition benchmark (EU CTB) which brings the benchmark portfolio onto a decarbonization trajectory; and
- The EU Paris Aligned Benchmark (EU PAB), which brings the benchmark portfolio onto a stricter decarbonization trajectory aligned with the goals of the Paris Agreement.

The EU benchmarks represent a conceptual shift in how climate-related benchmarks have traditionally operated. Not only must the benchmarks have relative 30 and 50 percent lower emissions than their reference index respectively, but also a built-in year on year absolute reduction in emissions within the benchmark itself.

Invesco Indexing has designed a set of EU Climate Benchmarks that, in addition to meeting the benchmark minimum standards, can be fully customizable to factor in clients' other ESG or performance objectives, such as reducing tracking error. The Indexing team, working across Invesco's capabilities, will often go through several iterations of the design process with the client until the ideal version is achieved.

Example decarbonization trajectory from a base year of 2020
**Base Year 30% (CTB) / 50% (PAB) reduction in Year 1,
 7% (geometric) reduction afterwards (emissions reduction, %)**



Source: Invesco Indexing.

3.4.3.2 Net zero benchmarks

Similarly, the emergence of net zero investing strategies has created the need for compatible indexes, whether as a reference benchmark or passive investment vehicles. Invesco indexing has been working with clients to explore how such indexes would function, including what more ambitious trajectories to achieve net zero before 2050 could look like.

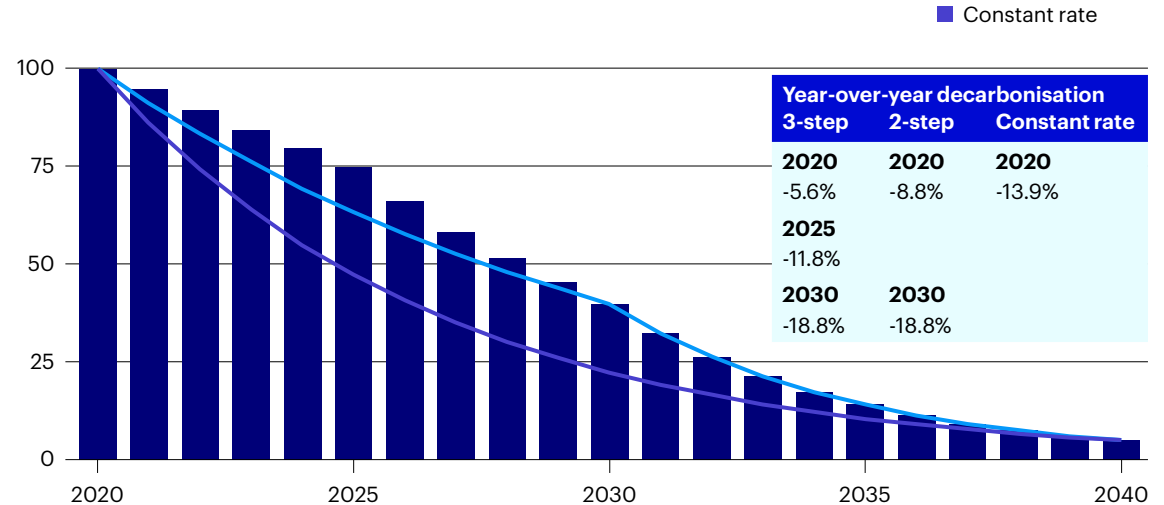
For example, this would mean needing to set steeper interim targets whilst balancing what a realistic trajectory from today's baseline would be to reach them.

A strategy that seeks to be net zero by 2040 may, for instance, set interim targets of 25% by 2025 and 60% by 2030 (versus a 50% reduction for a 2050 net zero target).

Whilst annual emissions reductions can be built into the index construction, an investor will need to consider what is happening in the real economy and how likely a linear progression in line with net zero is from today. Conversely, front-loading emissions reductions is more in line with the science of 1.5° but may increase tracking error.

Invesco Indexing has modelled what these multiple paths to a net zero 2040 target would require. Such indexes would still be compliant with the EU Benchmark regulations but may require heavier weighting towards issuers on forward-looking metrics, such as to achieve their goal whilst minimizing turnover.

Multiple paths to net zero
Custom decarbonization trajectory through 2040



Source: Invesco Indexing.

**Base Year 30% (CTB) / 50% (PAB) reduction in Year 1, 7% (geometric) reduction afterwards
(emissions reduction, %)**

Base Year	PAB GHG Intensity vs Investable Universe in base year	CTB GHG Intensity vs Investable Universe in base year
2020	50.00	70.00
2021	46.50	65.10
2022	43.25	60.54
2023	40.22	56.30
2024	37.40	52.36
2025	34.78	48.70
2026	32.35	45.29
2027	30.09	42.12
2028	27.98	39.17
2029	26.02	36.43
2030	24.20	33.88
2031	22.51	31.51
2032	20.93	29.30
2033	19.46	27.25
2034	18.10	25.34
2035	16.84	23.57
2036	15.66	21.92
2037	14.56	20.38
2038	13.54	18.96
2039	12.59	17.63
2040	11.71	16.40
2041	10.89	15.25
2042	10.13	14.18
2043	9.42	13.19
2044	8.76	12.27
2045	8.15	11.41
2046	7.58	10.61
2047	7.05	9.87
2048	6.55	9.18
2049	6.10	8.53
2050	5.67	7.94

Source: Invesco Indexing.

Custom net zero decarbonization trajectory through 2040

Date	3-phase approach	2-phase approach	Constant rate
2020	100.00	100.00	100.00
2021	94.41	91.24	86.09
2022	89.13	83.26	74.11
2023	84.15	75.97	63.80
2024	79.44	69.31	54.93
2025	75.00	63.25	47.29
2026	66.14	57.71	40.71
2027	58.33	52.66	35.05
2028	51.44	48.04	30.17
2029	45.36	43.84	25.97
2030	40.00	40.00	22.36
2031	32.49	32.49	19.25
2032	26.39	26.39	16.57
2033	21.44	21.44	14.27
2034	17.41	17.41	12.28
2035	14.14	14.14	10.57
2036	11.49	11.49	9.10
2037	9.33	9.33	7.84
2038	7.58	7.58	6.75
2039	6.16	6.16	5.81
2040	5.00	5.00	5.00

Source: Invesco Indexing

Invesco Indexing Limited Liability Corporation (IILLC) is recognised as a third country benchmark administrator under the UK/EU Benchmark Regulations. Invesco Asset Management Limited is the legal representative of IILLC in the UK. Invesco Investment Management Limited is the legal representative of IILLC in the EU.

3.4.4 Real estate case study

Background	Location	Sector	Size	Constructed	Certifications
Invesco Real Estate (IRE) acquired the building in 2014	Melbourne, Australia	Office	30,200 sq m	1930s original 2017 retrofit	6 Star NABERS Energy 6 Star NABERS Water 5.5 Star NABERS indoor environment

Overview

Achievement of net zero carbon of a historic 20-storey office in Melbourne, Australia. It became the first office building in the state of Victoria to achieve the highest market leading 6 NABERS energy rating and Net Zero in IRE's APAC portfolio.

Sustainability features

This property was retrofit to feature sustainable technologies, with an onsite trigeneration plant providing electricity and heating, placing the building among the top 5% of buildings nationally. Further actions implemented in 2020 include installation of LED lighting, a bin tracker to increase waste diversion, and an on-site organic waste recycling plant that turns organic waste into fertilizer pellets. End-of-trip facilities comprising 150 bike racks, 20 showers, 200 lockers and a wellness centre were added to encourage clean transport, along with electric vehicle charging.

In 2021, 321 Exhibition St. was certified Carbon Neutral under the Australian Government Climate Active Carbon Neutral Standards. It is the first asset in IRE's portfolio to meet IRE's commitment to net zero carbon by 2050 since publication of the goal in March 2021.



Image source: Invesco Real Estate.

Goals

- Carbon, energy and water management
- Net Zero Carbon

Results

- Achievement of highest 6/6 star NABERS energy rating, demonstrating performance as top 5% of local market
- Achievement of Australian Government certificate for carbon neutrality



Image source: Invesco Real Estate.

3.5 Industry commitment

3.5.1 Advocacy

Invesco is involved with various industry organizations to better understand and support climate topics. Such efforts underscore our commitment to engaging in policy and regulatory initiatives to promote high standards in sustainable finance.

For example, Invesco is a member of the Institutional Investors Group on Climate Change (IIGCC). The IIGCC is a European body facilitating investor collaboration on climate change, effectively serving as a conduit for investors to advocate a prosperous, low-carbon future. In 2021, we joined the Policy Steering Committee. Through membership of this committee, we contribute to regulatory and policy developments by engaging on finance and climate policy at the global, EU and national levels across Europe.

In 2021, Invesco became a member of the Hong Kong Green Finance Association. Through our membership, we collaborate as part of various industry working groups, focused on facilitating green finance and sustainable investments in Hong Kong and beyond.

In addition to participating and supporting climate-focused industry organizations, Invesco aims to remain closely involved in ongoing policy and regulatory developments, whether via active engagement with policymakers, indirect dialogue via trade associations, formal comment letters, responses to consultations or other means.

For example, in EMEA, we continue to engage with EU policymakers on the development of the EU taxonomy. We published a white paper setting out our views on how to reform the EU taxonomy to be a more powerful and useable tool for investors wanting to finance the transition to a sustainable economy. Additionally, our Head of EU Government Relations and Public Policy was invited in June 2021 to represent financial services users on the UK's Green Technical Advisory Group, advising the UK Government on the development of its own Green Taxonomy.

3.5.2 Thought Leadership

At Invesco, we recognize our position as a bridge between industry practitioners and academia, for the benefit of our clients. Our Global Thought Leadership team collaborates with internal teams to produce ESG content that leverages practitioner expertise, responds to the needs of our clients, and stays abreast of policy, governmental, and regulatory developments. We also partner externally with a broad network of academic scholars and other practitioners from across the asset management industry to deliver quality research and contribute to broader industry-wide conversations. There is an increasing rise in the supply of and demand for ESG-related thought leadership for the asset management industry.

In 2021, we produced a variety of climate-related content, including:

Economic Transition Monitor

- In the [first paper](#) of a series regularly monitoring the path to net zero, we focused on the C20 – the 20 largest CO₂ emitting countries – and examined progress against the net zero targets set by each country. This piece analyzed the success of meeting those targets by looking at recent trends in emissions, emissions per capita and the CO₂ intensity of economic activity. Based on recent trends, they expect only the UK will meet its net zero target.

Reflections on COP26: meaningful progress or more “blah blah blah”?

- In this podcast, Invesco delegates at the 2021 United Nations Climate Change Conference share some of their insights on the decisions reached in Glasgow and, just as importantly, some that were not. You can listen to the podcast [here](#).



Image source: AdobeStock.

4.0

Strategy – part 2: Resilience

In this chapter, the second addressing issues related to strategy, we demonstrate the resilience of our approach to climate change, paying regard to key issues such as emissions intensity, temperature alignment and now also financed emissions.



The results relate to our Aggregate Portfolio – our universe of listed global equities, listed corporate bonds and listed sovereign bonds – as held on behalf of clients on 31 March 2022. Data coverage by AUM is roughly 96% for equities and 77% for fixed income, which amounts to 64% data coverage for our entire holdings as of 21 March 2022. We use the second vintage of climate scenarios developed by NGFS. A benchmark is provided throughout for context. When benchmarking results for an individual asset class we make use of the publicly available MSCI ACWI (equities), Bloomberg Global Aggregate Corporate Bond Index (corporate bonds) and FTSE World Government Bond Index (sovereign bonds) indices. The benchmark for the Aggregate Portfolio as a whole is a weighted combination of all indices.

The charts and tables in section 4.0 have been created by Invesco, drawing on selected data provided by/from Planetrics, a McKinsey & Company solution (which does not include investment advice). This report represents Invesco's own selection of applicable scenarios and its own portfolio data. Invesco is solely responsible for, and this report represents, such scenario selection, all assumptions underlying such selection, and all resulting findings, and conclusions and decisions. Planetrics, a McKinsey & Company solution, is not an investment adviser and has not provided any investment advice.



4.1 Temperature alignment, emissions metrics and scenario analysis

4.1.1 Introduction

In 2021, Invesco continued to improve its understanding of both the impact of our investments towards achieving climate goals and their exposure to potential climate risks and opportunities. In this chapter we present the weighted average carbon intensity and temperature alignment of our Aggregate Portfolio. We also report the exposure of our Aggregate Portfolio to climate risk and opportunities under different climate scenarios.

This chapter builds on the quantitative disclosures we made in the 2020 Invesco Climate Change Report. We have updated the analysis to reflect the latest available data and modelling. We have also incorporated the second vintage scenario set produced by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) in our value impact analysis and temperature alignment scores.

In addition, we have expanded the range of metrics we use to provide additional transparency and insight. For the first time, we include a measure of our portfolio's total carbon emissions. We also introduce a new temperature score methodology that reflects firms' expected cumulative emissions to 2050, taking into account the latest TCFD guidance on temperature alignment metrics.⁵ We have also considered the implications of a new scenario set, the Inevitable Policy Response scenarios⁶, enabling us to gain greater insight into the potential impacts and drivers of climate risk.

The results we present relate to our Aggregate Portfolio: our universe of listed global equities, listed corporate bonds, and listed sovereign bonds held as of 31 March 2022. Throughout, we use benchmarks to provide context for the results. Where we benchmark results for an individual asset class, we make use of publicly available indices:

- MSCI ACWI (Equities)
- BBG Global Agg Corp Total Return Index (Corporate Bonds)
- FTSE World Government Bond Index (Sovereign Bonds)

For the Aggregate Portfolio as a whole, the benchmark is a weighted combination of all indices based on the weighting of equities and bonds in the Invesco Aggregate Portfolio.

⁵ Measuring Portfolio Alignment: Technical Supplement, TCFD (2021)
⁶ <https://www.unpri.org/inevitable-policy-response/the-inevitable-policy-response-2021-forecast-policy-scenarios-and-15c-required-policy-scenarios/8726.article>
⁷ Calculated based on 4 NGFS (2021) scenarios
⁸ The methodology also accounts for companies' impact on emissions through the products they sell, with companies who experience higher revenues from products associated with low-emissions scenarios awarded lower temperature scores and companies who experience lower revenues in scenarios with strong decarbonization experiencing higher temperature scores.

4.1.2 Metrics: Temperature alignment

Pathways method

We report implied temperature rise metrics for our Aggregate Portfolio as an indicator of how our portfolio aligns with global climate targets. An implied temperature rise indicates the expected increase in global temperature (in °C) by 2100 that would occur if the projected future greenhouse gas emissions associated with a portfolio were to be reflected across the whole economy. This calculation is performed for individual assets in the portfolio and then aggregated to create a temperature score for the full portfolio.

Last year, Invesco increased the sophistication of its approach to calculate implied temperature rise by using a warming function⁷ and considering point-in-time emissions intensity of portfolio companies in 2050.⁸

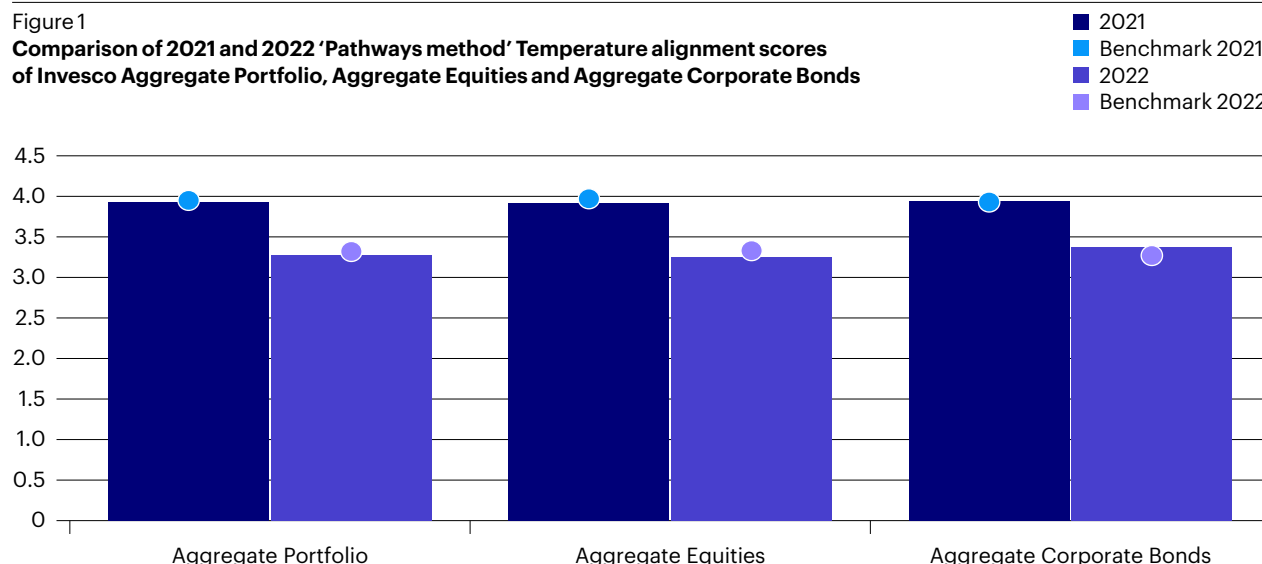
We refer to this methodology as the 'Pathways method' since it compares each company's emissions in 2050 with the emissions pathways for its sector in 2050 in a number of climate scenarios.

Figure 1 compares the 'Pathways method' temperature scores across the different portfolios and their respective benchmarks for the 2022 portfolio. It also shows the results for the equivalent 2021 portfolio as presented in the 2020 Invesco Climate Change Report, for comparison.

For the 2022 portfolio, the Aggregate Portfolio and Aggregate Equities have a temperature rise of around 3.3°C, which is similar to their respective benchmark temperature scores. The Aggregate Corporate Bonds has a temperature rise score of around 3.4°C,

which is also similar to its benchmark. All 2022 temperature scores are lower than the 2021 scores. This is driven primarily by a change in the underlying calculation rather than a change in the portfolio constituents. The 'Pathways' approach portfolio temperature score is a weighted average of the portfolio constituents' company-level temperature scores. In 2021, the weighting was based on assets under management (AUM) and company emissions intensity. In 2022, we changed the weighting to AUM and company sector median emissions intensity to derive the portfolio score. This change was taken to prevent companies with very high emissions intensity from skewing the portfolio temperature score.

Figure 1
Comparison of 2021 and 2022 'Pathways method' Temperature alignment scores of Invesco Aggregate Portfolio, Aggregate Equities and Aggregate Corporate Bonds



Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022.

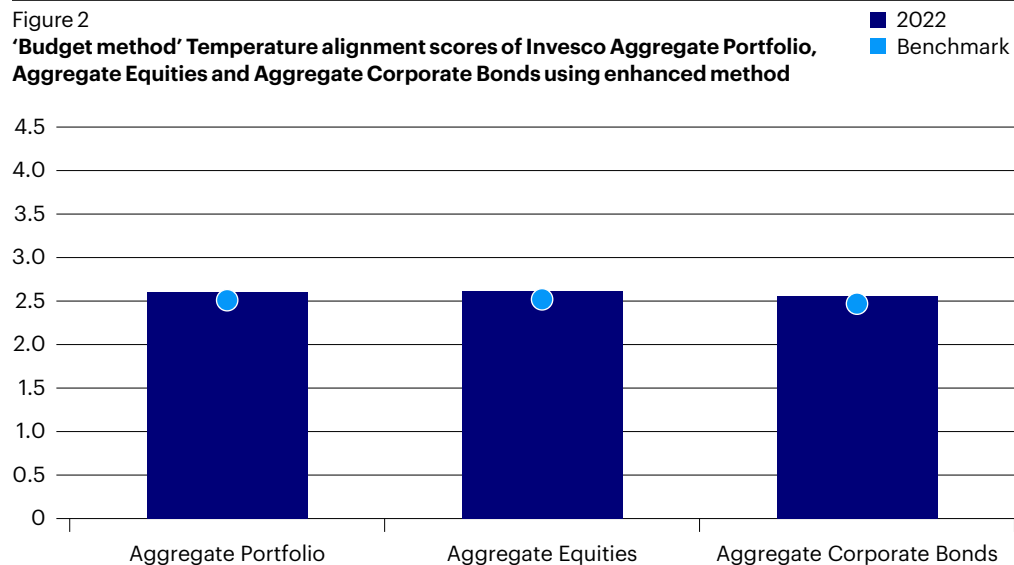
Budget method

This year, we have also added a new approach to calculating temperature alignment, known as the **'Budget method'**. The 'Budget method' takes into consideration the most recent recommendations of the Task Force for Climate-related Financial Disclosures (TCFD) in this area. These have been released since the publication of the 2020 Invesco Climate Change Report.⁹ This methodology calculates the overshoot of the portfolio's cumulative emissions to 2050 relative to a carbon budget aligned with the 'Below 2°C' climate scenario to derive an implied temperature score.¹⁰

The 'Budget method' is based on the scientific understanding that there is a direct relationship between cumulative emissions into the atmosphere over time and the global mean temperature rise by the end of the century.^{11,12}

A carbon budget is the total volume of cumulative emissions that corresponds to a specific temperature goal, such as a global mean increase of 2°C by the end of the century. The 'Budget method' allocates a share of this global carbon budget to the Invesco portfolio. If the total cumulative expected future emissions for the portfolio are greater than its carbon budget, the portfolio's implied temperature score will be higher than 2°C. If they are smaller, it will be lower. The 'Budget method' therefore reflects the direct relationship between the expected cumulative emissions of companies in Invesco's portfolio and the level of warming that these emissions will create.

Figure 2
'Budget method' Temperature alignment scores of Invesco Aggregate Portfolio, Aggregate Equities and Aggregate Corporate Bonds using enhanced method



Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022.

⁹ Measuring Portfolio Alignment: Technical Supplement, TCFD (2021)
¹⁰ NGFS (2021) Below 2°C scenario
¹¹ This relationship is defined by the transient response to cumulative CO2 emissions (TCRE)
¹² Climate Change 2021 The Physical Science Basis, IPCC (2021) https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf, p28
¹³ TCFD (2017) <https://www.tcfddhub.org/Downloads/pdfs/E09%20-%20Carbon%20footprinting%20-%20metrics.pdf>
¹⁴ PCAF (2020), <https://carbonaccountingfinancials.com/files/downloads/PCAF-Global-GHG-Standard.pdf>

The 'Budget method' scores are lower than the 'Pathways method' scores for both the Invesco portfolios and benchmarks due to the differences in the calculation methodology. Both approaches assume that company emissions intensity is held flat from today to 2050. However, in calculating the implied temperature rise the 'Budget approach' considers cumulative emissions from today to 2050, whereas the 'Pathways method' considers point-in-time emissions intensity in 2050. This results in a higher temperature score under the 'Pathways method' as the difference between current company emissions intensity and the required decarbonization pathway to limit warming to the goals of the Paris Agreement is greatest in 2050. In contrast, the 'Budget method' captures emissions reduction through time and the divergence between the trajectory of current company emissions and the carbon budget, which starts small and increases through time.

Many companies have published transition strategies and targets for reducing their emissions or changing their product mix to reduce their climate impacts over the coming decades. The calculation of the implied temperature rises for the 'Pathways' and 'Budget' methods used in this analysis do not account for these plans. This is a relatively conservative assumption, which results in an implied temperature rise that strongly reflects portfolio companies' emissions as they are today.

Data and methodologies for calculating portfolio temperature alignment continue to evolve. Invesco will continue to monitor developments in these areas to identify opportunities to strengthen and deepen our understanding of our portfolio's climate impact.

4.1.3 Metrics: Emissions

In this chapter we report on two carbon footprinting and exposure metrics as outlined by the TCFD for our Aggregate Portfolio: weighted average carbon intensity (WACI) and total carbon emissions (financed emissions). Table 1 provides the definition of both of these metrics, as well as the equivalent terminology used by the Partnership for Carbon Accounting Financials (PCAF) for these metrics.

Table 1
Definition of TCFD and PCAF metrics

Definition	TCFD Metric ¹³ (Carbon footprinting and Exposure)	PCAF metric ¹² (Financed emissions)
Portfolio's exposure to carbon-intensive companies, expressed in tons CO ₂ e / \$M revenue	Weighted average carbon intensity (WACI)	Weighted average carbon intensity (WACI)
The absolute greenhouse gas emissions associated with a portfolio, expressed in tons CO ₂ e	Total carbon emissions	Absolute emissions

Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022.

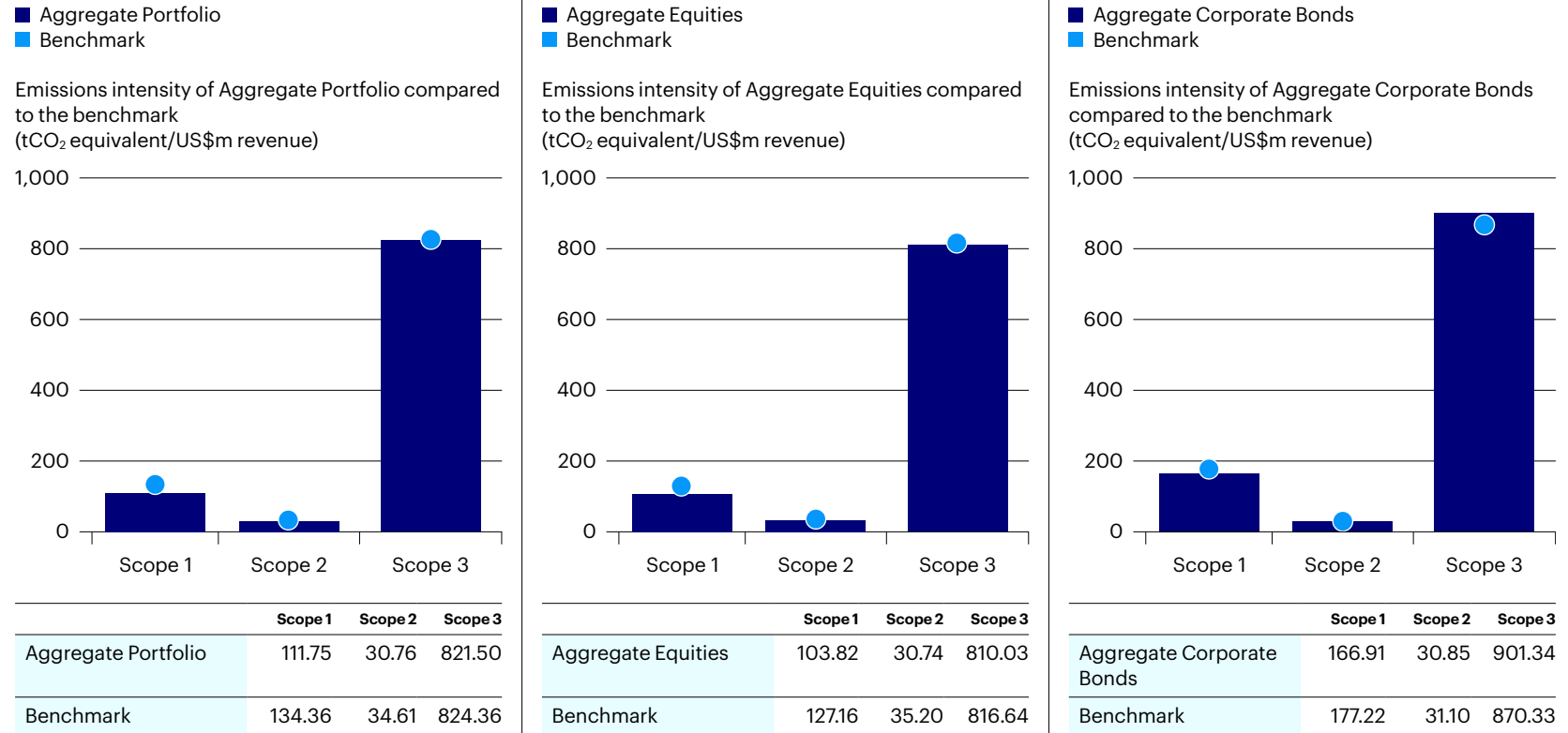
Weighted average carbon intensity

WACI reflects the exposure of the portfolio to companies with high emissions relative to their revenues. The WACI calculation computes each portfolio company's emissions (measured in tonnes of CO₂) per unit of revenue (measured in \$US million), and then calculates a weighted score for the full portfolio based on each individual company's proportion of the total portfolio value.

The WACI for our Aggregate Portfolio, Aggregate Equities and Aggregate Corporate Bonds, generated for all portfolio constituents using a portfolio weight based on Bonds, exhibit emissions intensities that are similar to the benchmark for Scope 1, 2, and 3 emissions (Figure 3).

Scope 3 emissions intensities in Figure 3 are significantly higher than reported in the 2020 Invesco Climate Change Report. This change is driven by changes in the methodology used to generate scope 3 emissions data rather than changes in the composition of the portfolio or the emissions of the portfolio companies. Since scope 3 emissions are not widely reported by companies, most scope 3 emissions data is estimated. The estimation methodology used for some sectors has been updated and this has resulted in higher scope 3 emissions values. In addition, additional categories of scope 3 emissions, including some financed emissions, have been newly included in the calculation.¹⁵

Figure 3
Emissions intensity of Invesco's Aggregate Portfolio, Aggregate Equities and Aggregate Corporate Bonds compared to benchmark



Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022. Scope 1 emissions refer to direct emissions from a company's owned or controlled sources. Scope 2 emission refers to indirect emissions from purchased or acquired energy. Scope 3 emissions refer to all indirect emissions that occur in the value chain of a reporting company.

¹⁵ Reported and estimated emissions data is provided by a third party.

We have also examined emissions intensities at a sector level separately for the Aggregate Equities and Aggregate Corporate Bonds for scope 1 (Figure 4), scope 2 (Figure 5) and scope 3 (Figure 6) emissions. The Utilities, Materials and Energy sectors are the most significant contributors to emissions intensity, accounting for 81%, 38%, and 40% of Aggregate Equity scope 1, 2, and 3 emissions intensities respectively, despite collectively representing only around 10% of the value of Aggregate Equity.

Emissions intensity by sector for Invesco's Aggregate Equities and Aggregate Corporate Bonds

- Communication Services
- Consumer Discretionary
- Consumer Staples
- Information Technology
- Energy
- Financials
- Healthcare
- Industrials
- Materials
- Real Estate
- Utilities

Figure 4
Scope 1: Aggregate Equities

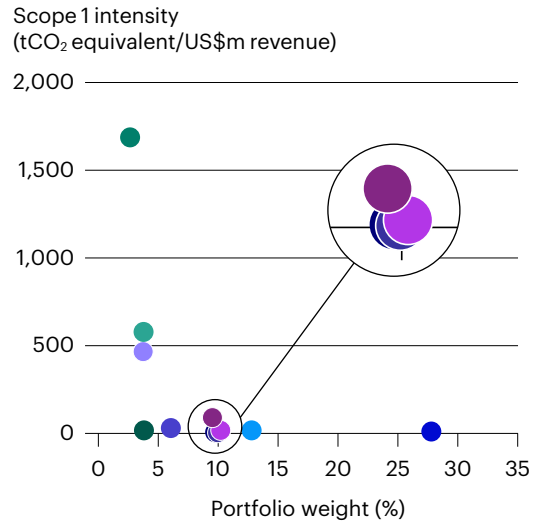


Figure 5
Scope 2: Aggregate Equities

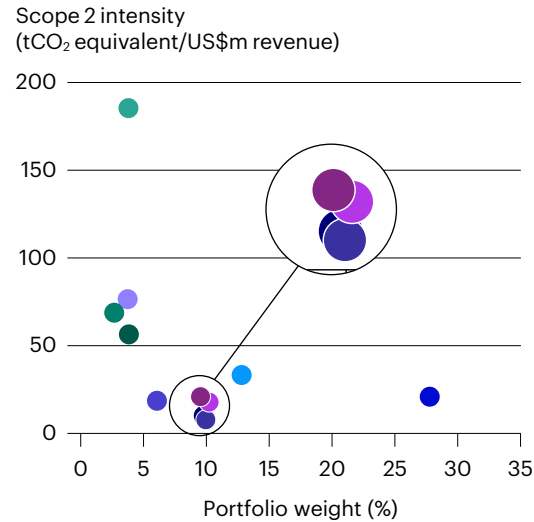
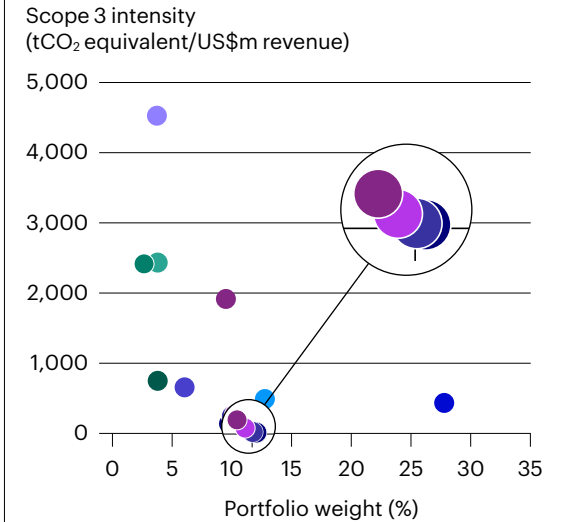
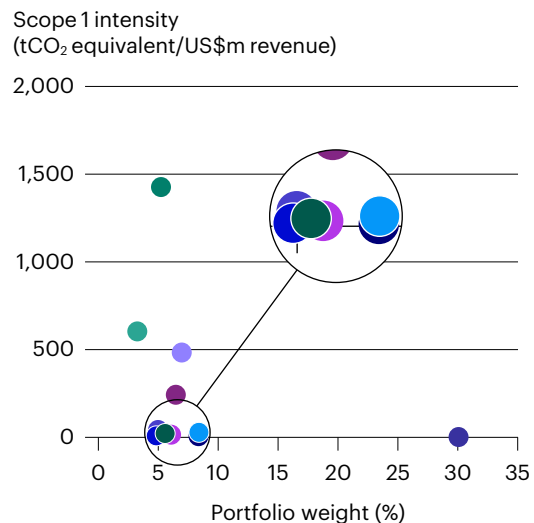


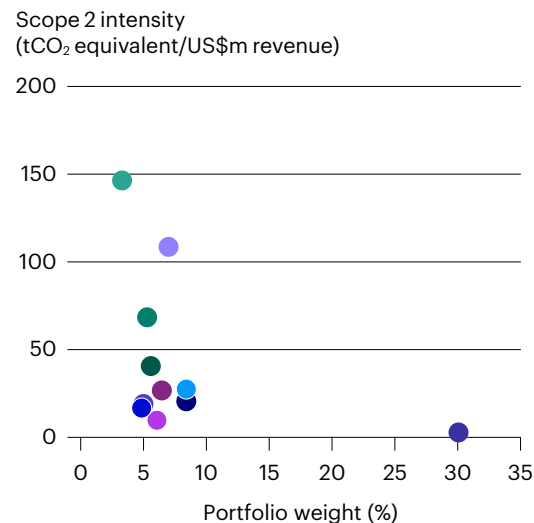
Figure 6
Scope 3: Aggregate Equities



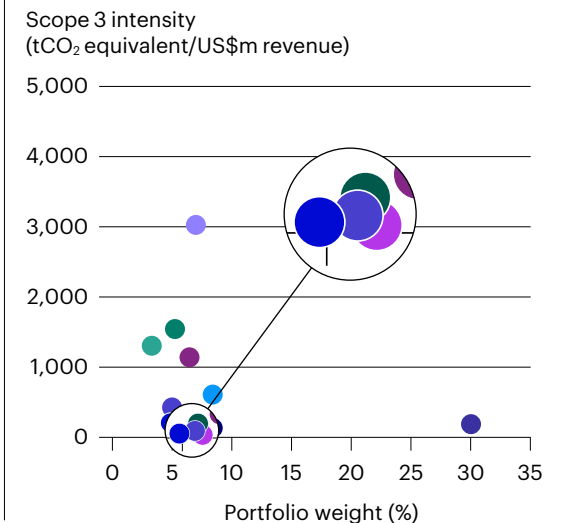
Scope 1: Aggregate Corporate Bonds



Scope 2: Aggregate Corporate Bonds



Scope 3: Aggregate Corporate Bonds



Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022. See next page for data table.



This analysis shows that the majority of our equities' footprint comes from on three sectors that collectively make up only 10% of AUM.

Emissions intensity by sector for Invesco's Aggregate Equities and Aggregate Corporate Bonds

		Communication Services	Consumer Discretionary	Consumer Staples	Energy	Financials	Healthcare	Industrials	Information Technology	Materials	Real Estate	Utilities
Scope 1												
Aggregate Equities	WACI (tCO ₂ equivalent/US\$m revenue)	1.90	22.48	29.52	468.69	4.23	20.20	89.08	10.43	582.79	19.86	1,690.06
	Portfolio weight	10%	13%	6%	4%	10%	10%	10%	28%	4%	4%	3%
	Portfolio WACI contribution	0.2%	3%	2%	17%	0.4%	2%	8%	3%	21%	1%	43%
Aggregate Corporate Bonds	WACI (tCO ₂ equivalent/US\$m revenue)	4.89	27.32	37.17	484.33	2.74	10.56	240.27	7.34	604.09	18.05	1421.74
	Portfolio weight	8%	8%	5%	7%	30%	6%	6%	5%	3%	6%	5%
	Portfolio WACI contribution	0.2%	1%	1%	20%	0.5%	0.4%	9%	0.2%	12%	1%	45%
Scope 2												
Aggregate Equities	WACI (tCO ₂ equivalent/US\$m revenue)	10.12	33.33	19.15	76.43	8.07	17.89	20.82	21.25	185.17	56.34	68.86
	Portfolio weight	10%	13%	6%	4%	10%	10%	10%	28%	4%	4%	3%
	Portfolio WACI contribution	3%	14%	4%	9%	3%	6%	6%	19%	23%	7%	6%
Aggregate Corporate Bonds	WACI (tCO ₂ equivalent/US\$m revenue)	21.12	28.29	19.28	108.74	3.61	10.02	27.51	17.32	147.00	41.21	68.92
	Portfolio weight	8%	8%	5%	7%	30%	6%	6%	5%	3%	6%	5%
	Portfolio WACI contribution	6%	8%	3%	25%	4%	2%	6%	3%	16%	7%	12%
Scope 3												
Aggregate Equities	WACI (tCO ₂ equivalent/US\$m revenue)	127.10	475.46	639.66	4,520.17	241.85	252.61	1,902.83	414.08	2,429.24	738.71	2,414.97
	Portfolio weight	10%	13%	6%	4%	10%	10%	10%	28%	4%	4%	3%
	Portfolio WACI contribution	2%	7%	5%	21%	3%	3%	22%	14%	11%	3%	8%
Aggregate Corporate Bonds	WACI (tCO ₂ equivalent/US\$m revenue)	179.54	848.42	598.08	4,238.50	252.65	221.42	1,588.77	297.32	1,818.43	313.70	2,152.51
	Portfolio weight	8%	8%	5%	7%	30%	6%	6%	5%	3%	6%	5%
	Portfolio WACI contribution	2%	8%	3%	33%	8%	1%	11%	2%	7%	2%	13%

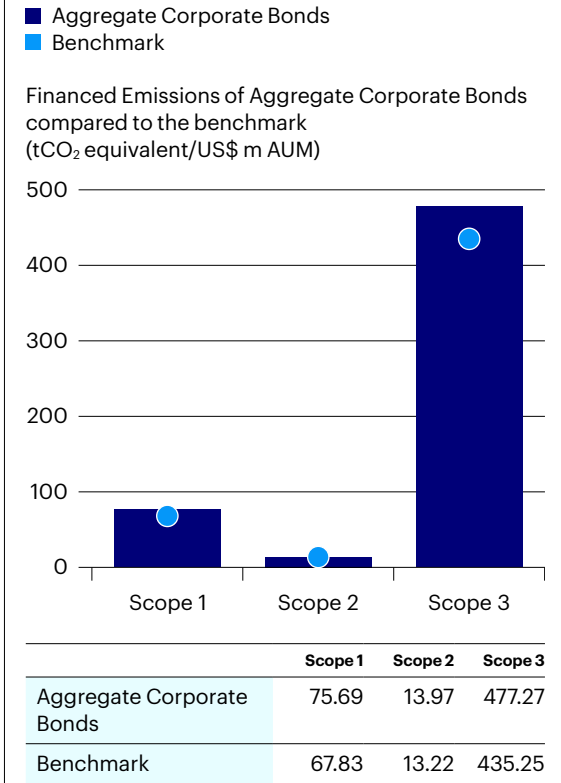
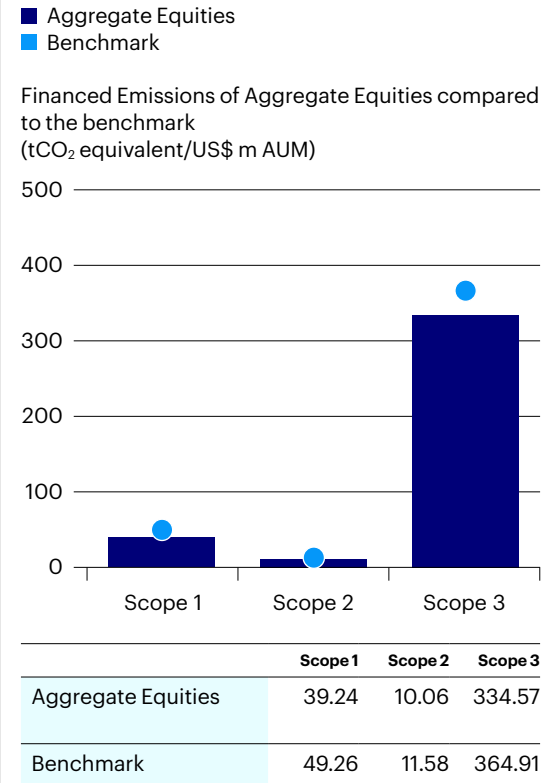
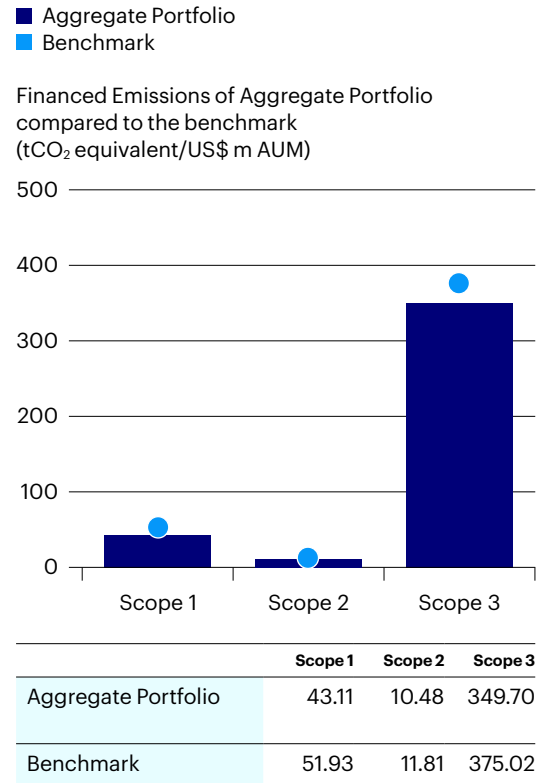
Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022.



Total carbon emissions

For the first time, this year we have also calculated the portfolio's total carbon emissions¹⁶ across scopes 1, 2 and 3 in line with PCAF¹⁷ methodology. We have calculated this by multiplying each portfolio company's reported annual emissions by the proportion of the company's total enterprise value that is owned by Invesco, before summing across all companies in the portfolio. For example, if Invesco owns corporate bonds valued at 1% of the total enterprise value of Company X, then the financed emissions associated with Company X would be 1% of Company X's reported annual emissions.

Figure 7
Financed emissions of Invesco's Aggregate Portfolio, Aggregate Equities and Aggregate Corporate Bonds compared to benchmark



Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022.



Using PCAF's methodology we are able to get a better sense of our real-world impact.

¹⁶ This metric is also known as the portfolio's financed or absolute emissions.

¹⁷ Partnership for Carbon Accounting Financials.

4.1.4 Scenario Analysis

Scenarios

Climate scenarios are plausible descriptions of alternative future physical and economic pathways, based on assumptions about the evolution of climate policies, technologies, and the economy over time. Invesco has modelled the impact of a range of climate scenarios on our Aggregate Portfolio to better understand how these could impact our investments.

Invesco has used the most recent set¹⁸ of climate scenarios developed by NGFS as the basis for our climate scenario analysis¹⁹. The 2021 NGFS scenarios draw on the same Integrated Assessment Models (IAMs) used for the IPCC AR6 report, and are widely used by central banks and the financial sector to analyze climate risks and opportunities.

The NGFS 2021 scenario set includes six scenarios that explore varying levels of transition and physical risks through different emissions and temperature pathways. Table 1 summarizes key variables for the three scenarios selected for this year's analysis, including global temperature and emissions trajectories, carbon prices, and energy demand. These scenarios were selected as they reflect a wide range of physical and transition risks.



Hot House World

This scenario assumes that no additional climate policies are enacted beyond those in place today, resulting in low transition risk. In the absence of additional climate policies, emissions continue rising through the century, leading to temperature rise of over 4°C by 2100. This leads to the highest physical risks, including high icesheet melt and increasing tropical cyclone risks.



Below 2C (Orderly)

This scenario assumes climate policies are introduced straight away and gradually become more stringent, leading to a 67% chance of limiting temperature increase to below 2°C throughout the 21st century. As a result, physical risks are smaller in this scenario than in Hot House World. Transition impacts by contrast are larger: carbon-intensive sectors experience increasing costs due to rising carbon prices and reduced revenue from falling demand; low-carbon products and commodities associated with them experience increasing demand over time. This has significant impacts on sectors like energy and transport in the near term and the longer term.



Delayed transition (Disorderly)

This scenario assumes a similar overall temperature rise as the Below 2C scenario, however climate policies are not introduced until 2030, after which time a sharp reduction in emissions is required to meet the temperature target. This leads to higher transition risk as greater levels of decarbonization must occur over a shorter time period than the Below 2C scenario. The result is that transition impacts occur later than in the Below 2C scenario, but they are more severe since carbon prices increase more quickly.

Table 1
Key NGFS scenario variables (used as inputs for modelling)

Unit	Hot House World			Below 2C			Delayed transition			
	2030	2040	2050	2030	2040	2050	2030	2040	2050	
Relative to preindustrial levels (1850-1900)										
Global temperature*	°C above preindustrial levels (median)	+1.6	+2.0	+2.5	+1.4	+1.6	+1.7	+1.5	+1.7	+1.8
Absolute values				Relative to Hot House World						
GHG emissions	GtCO ₂ eq/year	59	60	60	-20	-33	-41	0	-36	-48
Carbon prices**	US\$ 2020/tCO ₂	3	3	4	+66	+123	+225	0	+391	+734
Oil demand**	Mbbl/d	90	100	90	0	-10	-20	0	-20	-50
Gas demand**	Bn m ³ /year	3800	4000	4000	-400	-1500	-2400	0	-2200	-3200
Coal demand**	Mtce/year	5600	5500	6000	-3000	-5100	-5900	0	-5300	-5900

Source: NGFS, Invesco analysis. *Temperature pathways used in the modelling are adjusted to reflect latest climate data. For the Hot House World scenario, the 90th percentile warming is used to heighten physical risk; ** Figures have been rounded.

¹⁸ NGFS published its initial set of climate scenarios in 2020. In June 2021 NGFS released an updated scenario set, and these updated scenarios are used as a basis for the analysis in this chapter.

¹⁹ NGFS climate Scenarios (2021), https://www.ngfs.net/sites/default/files/media/2021/08/27/ngfs_climate_scenarios_phase2_june2021.pdf

Greenhouse gas emissions are the key driver of physical risk in the scenarios, since these determine global temperature changes over the coming decades, which in turn determines the level of physical climate change impacts. Each scenario has a different emissions trajectory over time (Figure 8, top left). Physical impacts are greatest in the Hot House World scenario, where emissions continue to increase and global mean temperature rises by 2.5°C by 2050 (Figure 8, top right). This increases the risk of natural hazards such as coastal flooding and other weather-related disasters. Hazards disproportionately affect some countries and companies because they are location-specific. For example, companies with a high proportion of coastal assets may experience high increases in costs resulting from climate damage.

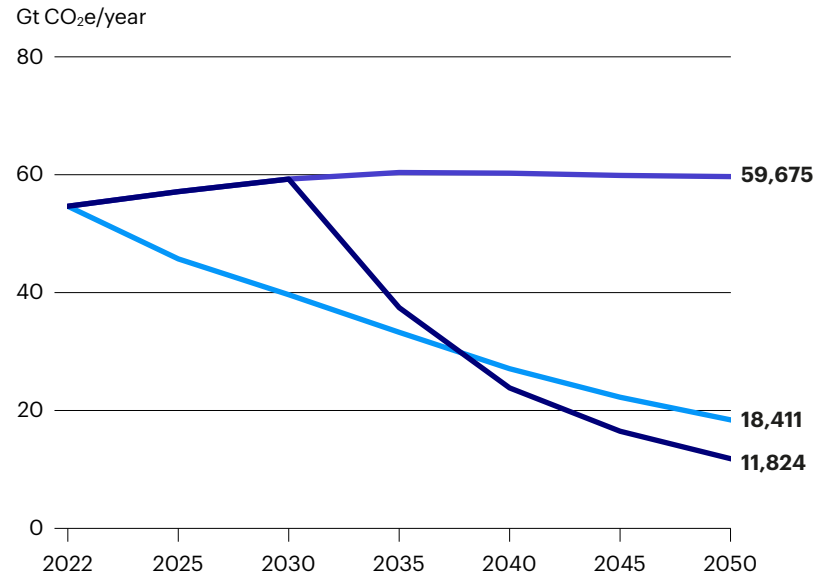
Carbon pricing is the largest direct driver of transition risk. In the Below 2C and Delayed transition scenarios, emissions fall year on year until 2050 due to increased carbon prices. These structural changes create risks for Invesco:

- Revenues increase for companies exposed to low-carbon products anywhere in the value chain, such as renewable energy and electric vehicles
- Revenues decrease for companies exposed to carbon-intensive products from demand destruction
- Carbon-intensive companies face increases in costs of production as carbon prices rise, losing market share to less emission-intensive rivals

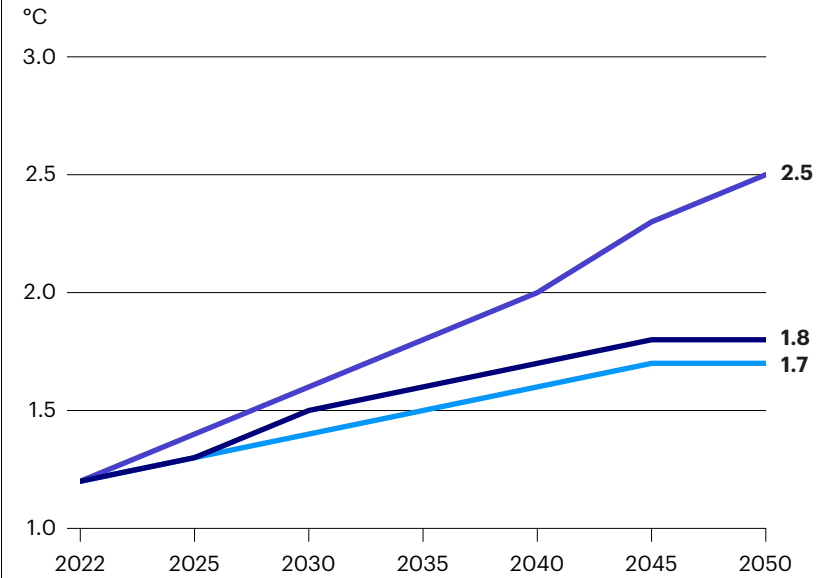
Figure 8
Selected NGFS scenario variables for the Hot House World, Orderly, and Disorderly scenarios²⁰

■ Delayed transition
■ Below 2C
■ Hot House World

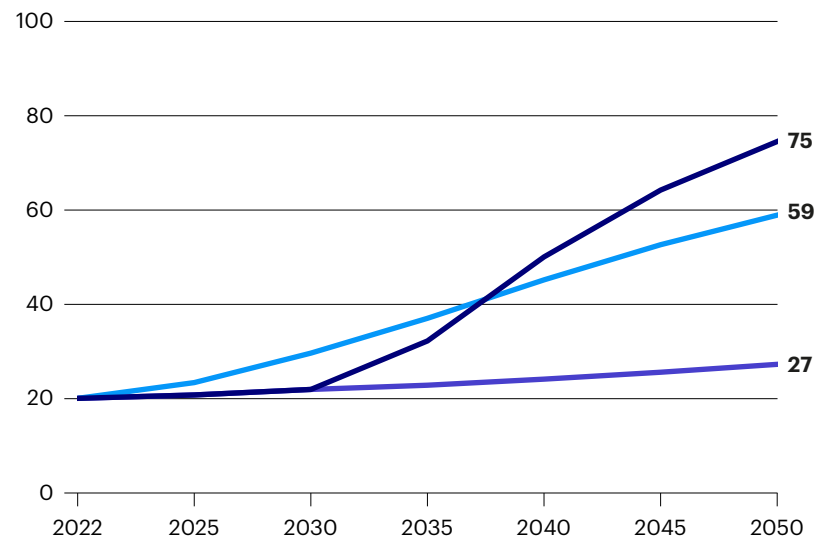
Greenhouse gas emissions



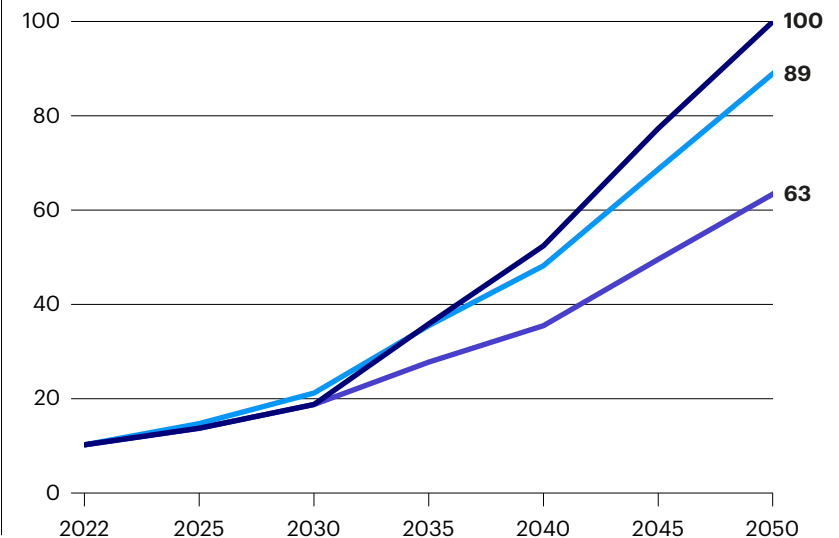
Global mean temperature rise



% of Low Carbon Energy in Global Energy Mix (EJ/year)



% of Global Vehicle Sales that are Ultra Low Emission Vehicles (ULEVs)



²⁰ Temperature pathways used in the modelling are adjusted to reflect latest climate data. For the Hot House World scenario, the 90th percentile warming is used to heighten physical risk.

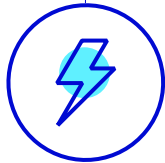
Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022.

Model

We have used a forward-looking scenario-based model to assess the impact of a range of physical and transition risks on the value of Invesco's individual securities across equities, corporate bonds and sovereign bonds invested in on behalf of our clients. All changes are evaluated relative to a baseline where no additional physical impacts arise from climate change relative to today, and no additional climate-related policies are introduced.

Corporates (Equities & corporate bonds)

For corporations, the model calculates company-level changes in earnings across seven climate risk channels, incorporating company characteristics that include geographical location, markets in which they operate, and greenhouse gas emissions:



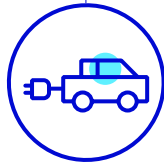
Physical impacts

Changes in the frequency and severity of natural hazards lead to changes in costs for companies resulting from event-driven damages, and longer-term shifts in climate patterns lead to changes in productivity and changes in revenue for companies.



Adaptation actions

Companies can reduce costs from physical impacts as a result of their ability to take actions such as building flood defenses to mitigate their impacts.



Demand creation

Increased demand for low-carbon products and associated manufacturing activity and commodities (for example, electric vehicle sales, electric vehicle manufacturing, and minerals used in electric vehicle manufacturing) increases revenue for companies operating in these markets.



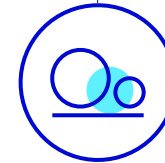
Demand destruction

Reduced demand for carbon-intensive products and associated activities and commodities (for example oil production and refining) reduces revenue for companies operating in these markets.



Direct carbon costs

Carbon pricing leads to additional costs for all companies as they are required to pay a price for emissions from their own operations.



Abatement actions

Companies can reduce costs from carbon pricing as a result of their ability to take economically optimal actions to reduce their emissions, such as implementing energy efficiency measures or switching to a less carbon-intensive energy source.



Market impacts

Companies are able to pass some of their increased costs on to consumers, and competition with other companies in their markets may lead to market share reallocation. For example, in a scenario with high carbon prices, less carbon-intensive companies may gain market share from more carbon-intensive companies.

Changes in overall company earnings are calculated for each year of the scenario horizon .to 2050, and then translated into impacts on equity value and corporate bond value for each climate scenario.

Sovereign bonds

The model calculates the impacts of each climate scenario on the value of sovereign bonds based on macroeconomic changes that could arise under that scenario. Climate scenarios can create a range of macroeconomic impacts, including changes in inflation (for example, because carbon prices raise energy costs), GDP (for example, because natural perils damage infrastructure and reduce the productive capacity of the economy), and trade patterns (for example, as fossil fuel exporters see the volume and value of their exports decline). Central bank policymakers adjust interest rates in response to these changes in inflation and GDP,

and the level of outstanding government debt relative to GDP affects governments' perceived probability of default. Both of these factors impact sovereign bond values. For example, if a climate scenario leads to a significantly lower GDP in a particular country, the interest rates may increase, leading to higher prices for sovereign bonds.

All macroeconomic variables used in the modelling of sovereign bond prices are provided by the NGFS²¹, based on the National Institute Global Econometric Model (NiGEM) run by the National Institute of Economic and Social Research.

²¹ NGFS (2021), p11 https://www.ngfs.net/sites/default/files/media/2021/08/27/ngfs_climate_scenarios_phase2_june2021.pdf

Insight from scenario analysis

Our scenario analysis has several key findings observed during our analysis of our holdings:

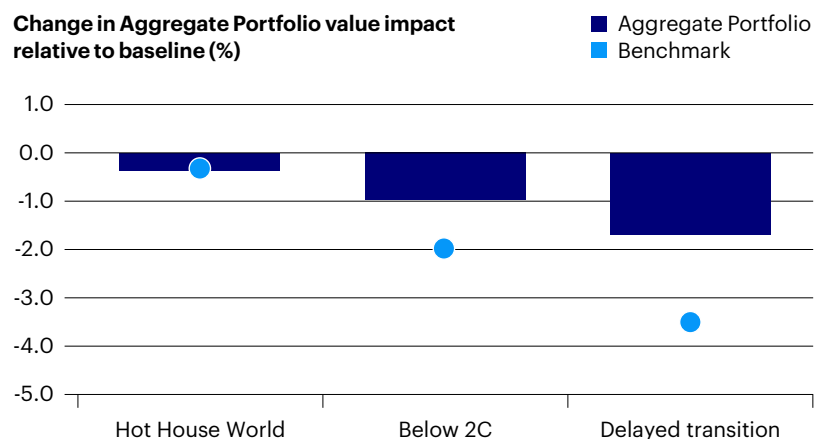
1. At the Aggregate Portfolio level, value impacts are negative in all three scenarios and largest in the Delayed transition scenario.
2. Equities are the most strongly impacted asset class, with significant differences between and within industry sectors.
3. Corporate bonds experience smaller value impacts than equities, with the longer maturity bonds more strongly affected.
4. Sovereign bond values experience a mix of positive and negative impacts across scenarios and maturities.

At the Aggregate Portfolio level, value impacts are negative in all three scenarios and largest in the Delayed transition scenario.

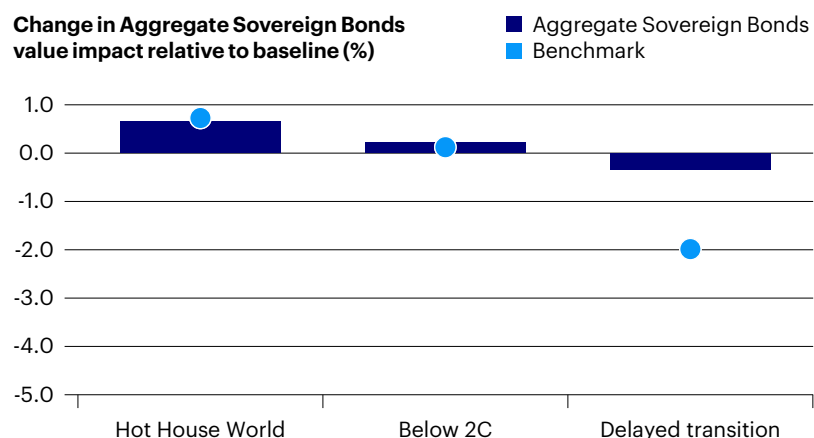
All three scenarios reduce the value of the Aggregate Portfolio relative to its baseline value (Figure 9). Value impacts are largest in the Delayed transition scenario (-1.7%), where transition risks are largest. Impacts are smallest in the Hot House World scenario²². Impacts on Aggregate Equities and Aggregate Corporate Bonds follow the same pattern. For Aggregate Sovereign Bonds, impacts are very small but positive in the Hot House World and Below 2C scenarios, and negative in the Delayed transition scenario.^{23,24} For Aggregate Equities and Aggregate Corporate Bonds, portfolio value impacts are less negative in the Below 2C and Delayed Transition scenarios than in the benchmark. This is because the Invesco portfolio has a greater portfolio exposure to companies whose value is less negatively impacted than the benchmark, particularly in the utilities sector.

²² The model simulates the impacts of physical and transition risks until 2050. Physical risks are expected to be higher after 2050 in the Hot House World scenario.
²³ Corporate bond value changes reflect shifts in the market value of bonds arising from changes in risks to their issuer. If a company's profitability is lower in a climate scenario than in the baseline scenario, then it is at a higher risk of defaulting, and this risk is reflected in a lower market value for the bond in that scenario.
²⁴ Corporate bond value changes reflect shifts in the market value of bonds arising from changes in risks to their issuer. If a company's profitability is lower in a climate scenario than in the baseline scenario, then it is at a higher risk of defaulting, and this risk is reflected in a lower market value for the bond in that scenario.

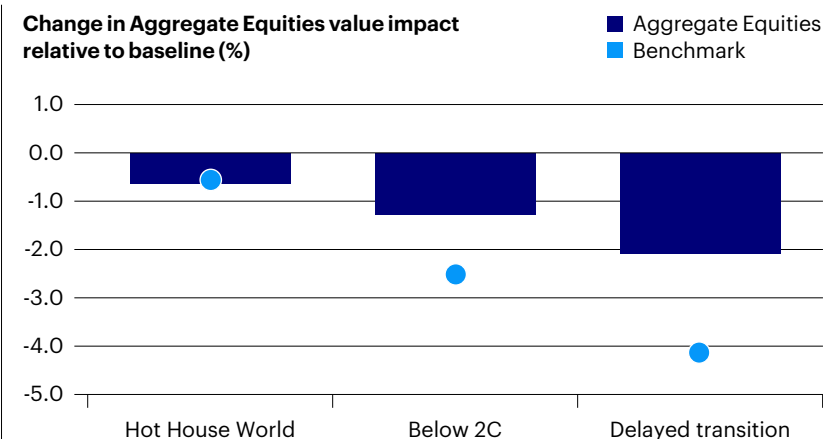
Figure 9
Change in value impacts by scenario for Invesco's Aggregate Portfolio, Aggregate Equities, Aggregate Corporate Bonds and Aggregate Sovereign Bonds



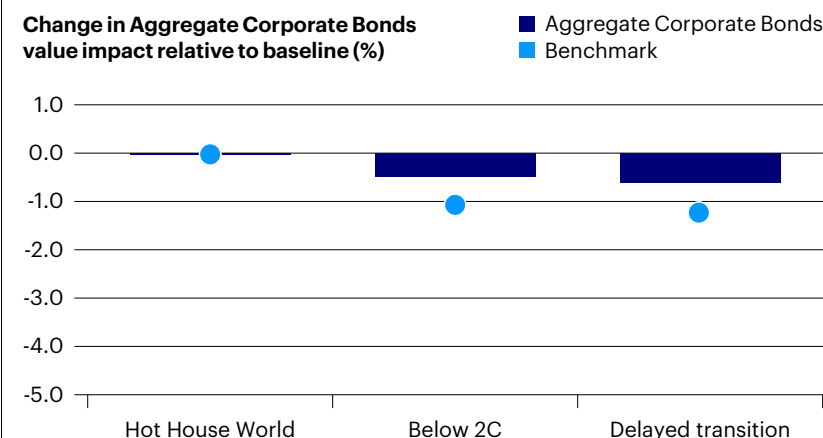
	Hot House World	Below 2C	Delayed transition
Aggregate Portfolio	-0.4%	-1.0%	-1.7%
Benchmark	-0.3%	-2.0%	-3.5%



	Hot House World	Below 2C	Delayed transition
Aggregate Sovereign Bonds	0.7%	0.2%	-0.3%
Benchmark	0.7%	0.1%	-2.0%



	Hot House World	Below 2C	Delayed transition
Aggregate Equities	-0.6%	-1.3%	-2.1%
Benchmark	-0.6%	-2.5%	-4.1%

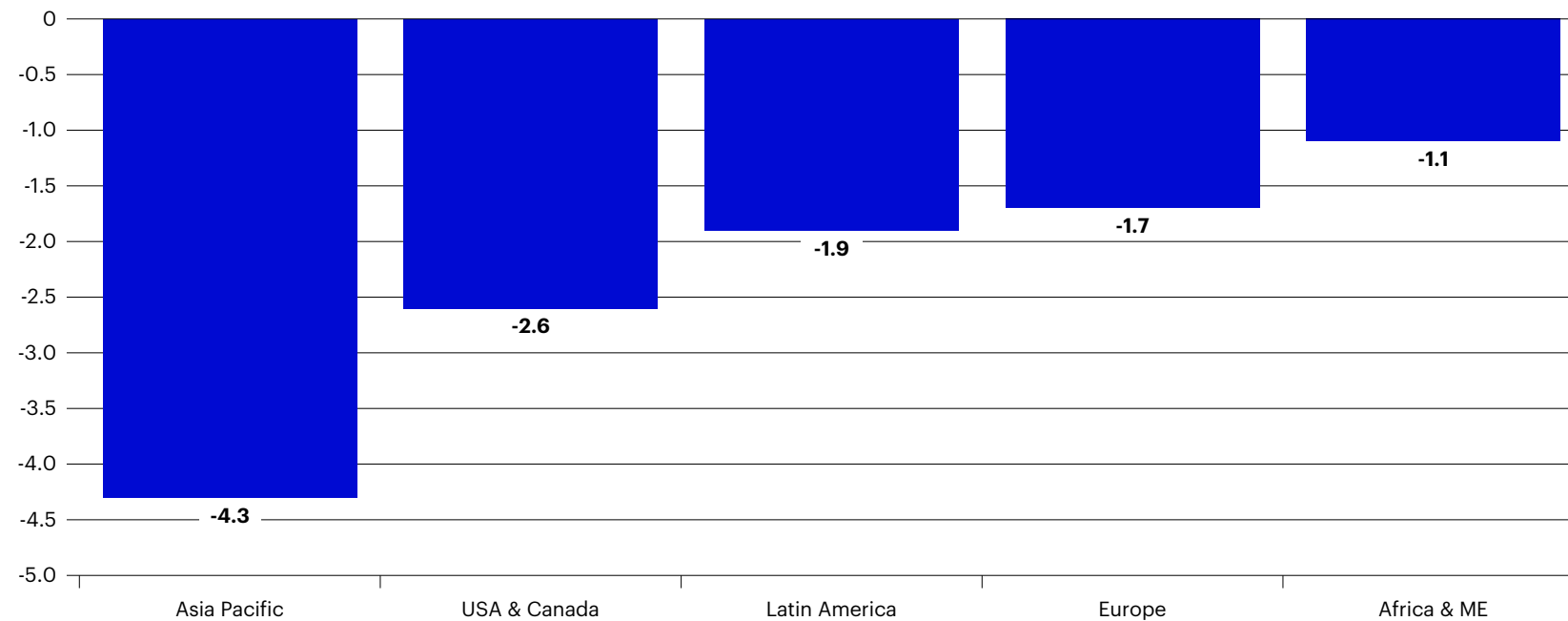


	Hot House World	Below 2C	Delayed transition
Aggregate Corporate Bonds	0.0%	-0.5%	-0.6%
Benchmark	0.0%	-1.1%	-1.2%

While impacts in the Hot House World scenario are smallest among the three scenarios we have tested, there are significant variations between regions, with assets in the Asia Pacific region particularly strongly impacted (Figure 10). This has relatively less impact on the Invesco portfolio as a whole since the region represents 12% of the portfolio value. Impacts also vary considerably between industry sectors, with companies in the Energy and Consumer Services sectors particularly strongly impacted. These industries represent 14% of the aggregate portfolio.²⁵

The smaller portfolio value impacts in the Hot House World scenario also reflect the approach we have taken to modelling physical climate risks. We have modelled impacts in the period to 2050, while many of the more severe climate-related physical stresses will materialize in the second half of the century in the Hot House World scenario. We have also not modelled supply chain risks and other secondary impacts that could also impact companies in future. We will continue to develop our modelling of these risks over time.

Figure 10
Physical risk impact by geography in the Hot House World scenario for Aggregate Portfolio (impact on value, %)



²⁵ Region and sector exposure in this context is calculated for equities and corporate debt only and does not include real estate or sovereign debt assets. The Aggregate Equities and Aggregate Corporate Bond portfolios represent 86% of the Aggregate Portfolio.

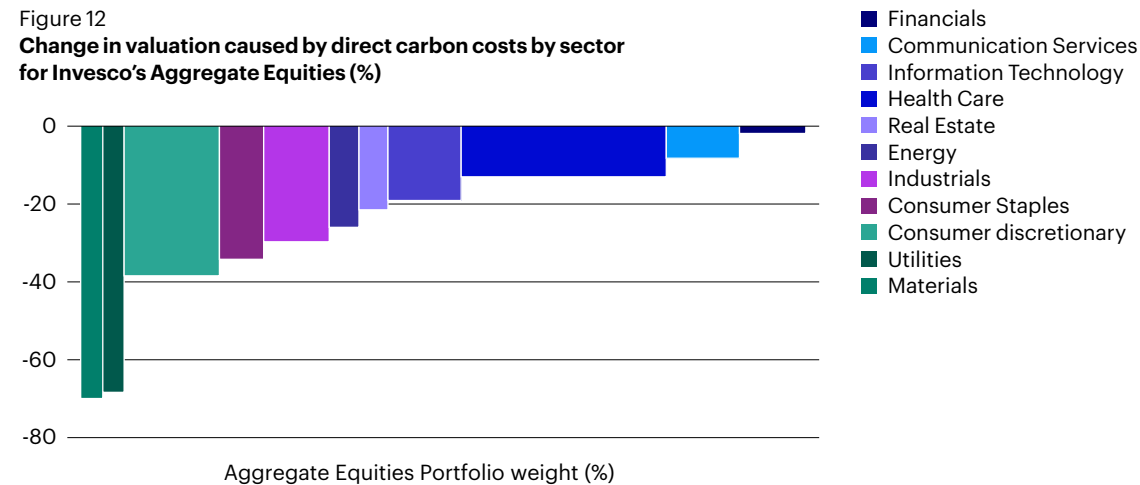
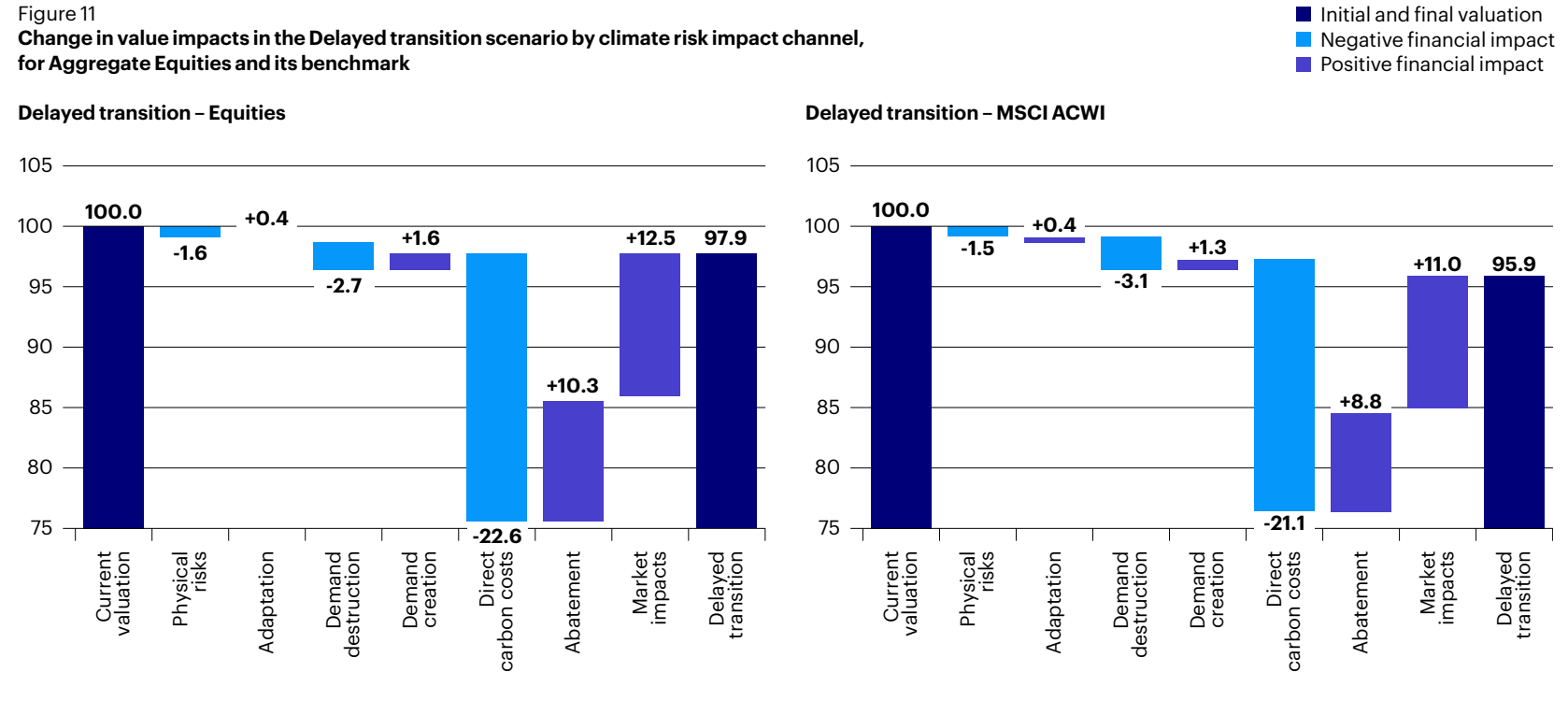
Equities are the most strongly impacted asset class, with significant differences between and within industry sectors

The largest value impacts are seen in the Aggregate Equities portfolio (Figure 9). Among the multiple climate risk drivers modelled for corporates, direct carbon costs result in the largest negative value impacts and contribute most to overall portfolio value impact in the Delayed transition scenario (Figure 11).

Within the Aggregate Equities portfolio, different sectors have different exposure to direct carbon costs. The sectors with the highest scope 1 and 2 emissions intensities (Materials and Utilities) (Figures 4 & 5) experience the most negative impacts from direct carbon costs in the Delayed transition scenario (Figure 12). Although the Information Technology sector has a low emissions intensity and a relatively small value impact from direct carbon costs, it has a larger weighting within Invesco's portfolio and contributes similarly to overall portfolio value impact from direct carbon costs (Figure 12).

The impact of direct carbon costs can be mitigated through taking abatement actions that reduce emissions (Figure 11). The model assumes that companies take economically optimal abatement action, such as employing technology or improving operations, when the cost of abating one ton of emissions is less than the carbon price of emitting one ton of emissions. This results in net savings for companies, however the potential savings from abatement varies significantly by sector, driven by differences in the availability and price of existing mitigation technologies.

Companies are also able to pass on a share of remaining cost increases to consumers, resulting in a positive value impact from the 'Market impacts' channel (Figure 11). The 'Market impacts' channel also captures market share reallocation, with some companies able to gain market share at the expense of more carbon-intensive competitors. These effects reduce the overall impact of climate risks across the whole portfolio, though there are significant variations in individual companies' abilities to pass through costs and gain market share.



Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022.

We have built on our sector-level analysis by using counterparty information to explore differences in exposure within sectors and between sectors. This counterparty-level analysis reveals that the differences in risk within sectors can be at least as significant as the differences between sectors.

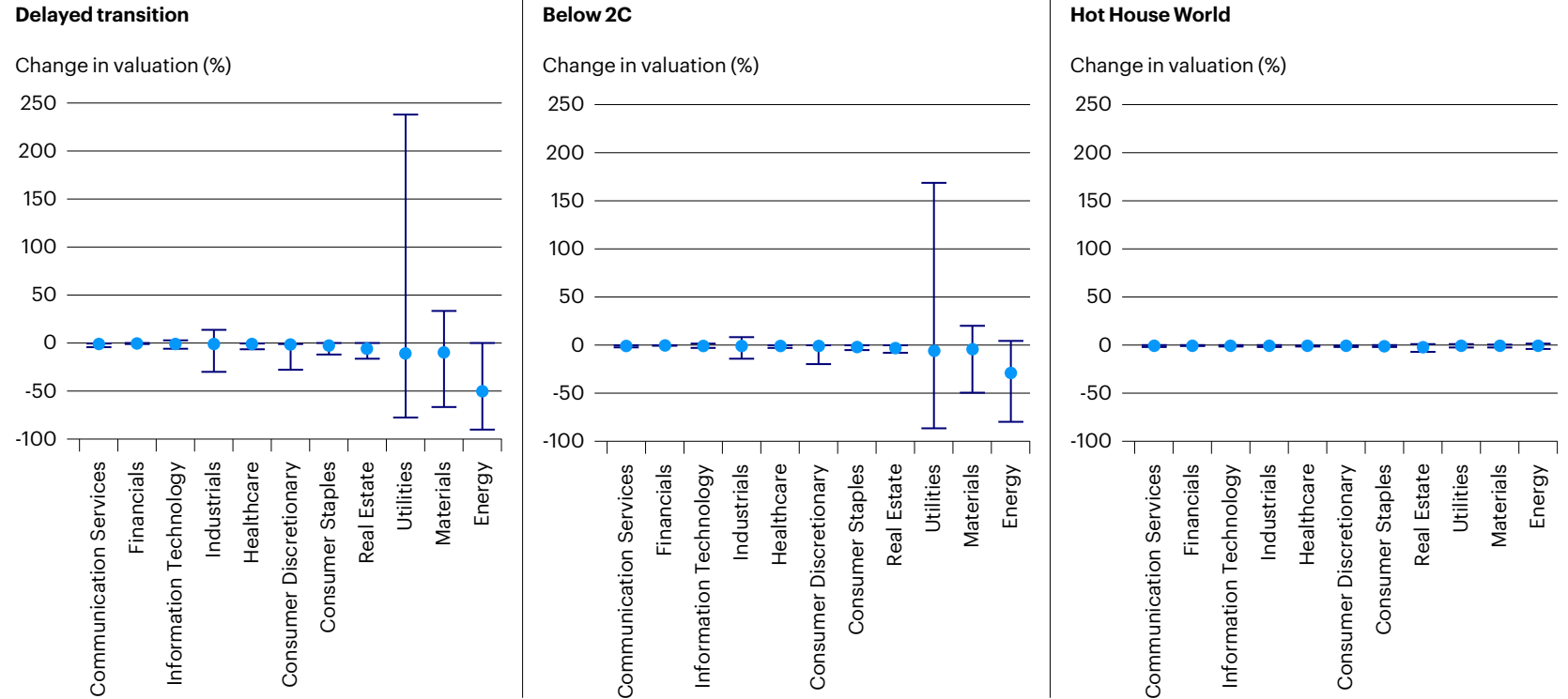
In the Delayed transition scenario, for example, the median reduction in the value of Invesco's Energy sector equity holdings is almost 50% (Figure 13). But for individual companies within this sector, the impact can be much larger. Some firms lose more than 90% of their value, others lose very little value, and a small minority of companies gain value. The main drivers of value impact for the Energy sector are companies' exposure to asset stranding and fossil fuel prices, and the emissions intensity of their operations.

For the Utilities sector, the median impact across Invesco's equity holdings is relatively small even in the Disorderly scenario, at -11%. But the variance in the sector is very large, with some utilities companies more than doubling in value, and others losing well over half of their value.²⁶ The main driver of value impact is the carbon intensity of electricity generation. Low-carbon utilities experience small cost increases from direct carbon costs and are able to benefit from market share reallocation at the expense of high-carbon competitors, resulting in large, positive value impacts. In contrast, high-carbon utilities face large cost increases from direct carbon costs and are eventually forced to exit the market, resulting in large, negative value impacts. The importance of company-level differences is shaping Invesco's investment decision-making and our engagement with companies in highly exposed sectors.

In the Hot House World scenario, both median impact on value and variation in impacts are small. Since transition risks are low in this scenario, the main driver of risk in this scenario is exposure to physical risks, which varies by sector and geography.

Figure 13
Change in value impacts (Median, 10th percentile and 90th percentile) by sector and scenario for Invesco's equity holdings)

— 90th percentile
● Median
— 10th percentile



	Communication Services	Financials	Information Technology	Industrials	Healthcare	Consumer Discretionary	Consumer Staples	Real Estate	Utilities	Materials	Energy
Delayed transition											
Median	-1.0	-0.3	-0.9	-1.1	-1.2	-1.7	-2.8	-5.9	-11.0	-9.5	-50.0
10 th percentile	-4.5	-1.0	-6.0	-29.8	-6.6	-27.7	-11.8	-16.4	-77.4	-66.5	-90.4
90 th percentile	0.2	-0.1	2.6	13.8	0.6	1.0	0.4	-0.1	238.0	33.4	-0.2
Below 2C											
Median	-0.5	-0.2	-0.4	-0.5	-0.6	-0.9	-1.5	-3.1	-5.5	-3.8	-28.6
10 th percentile	-2.5	-0.6	-3.1	-14.1	-3.1	-19.7	-5.1	-8.0	-86.6	-49.4	-79.8
90 th percentile	0.1	0.0	1.5	8.3	0.2	0.4	0.0	0.0	168.9	19.9	4.4
Hot House World											
Median	-0.4	-0.3	-0.4	-0.3	-0.4	-0.5	-0.6	-1.7	-0.5	-0.5	-0.2
10 th percentile	-1.7	-0.7	-1.6	-1.7	-1.2	-1.9	-1.9	-6.7	-2.6	-2.5	-4.0
90 th percentile	0.1	0.0	0.1	0.4	0.1	0.1	0.0	1.3	1.3	0.8	1.8

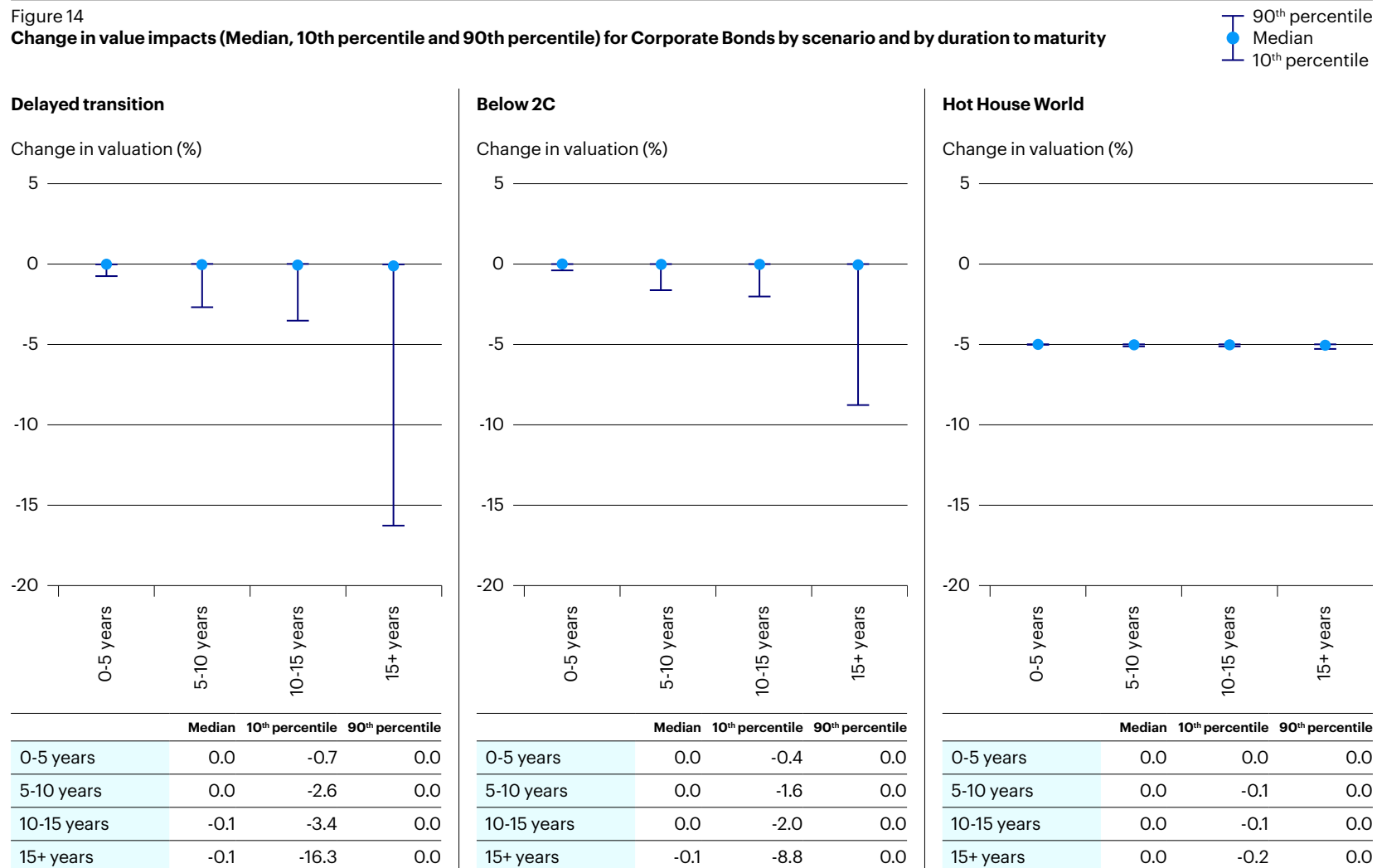
²⁶ 10th percentile is a 77% loss, and the 90th percentile is a 238% gain in value.

Corporate bonds experience smaller value impacts than equities, with the longer maturity bonds more strongly affected

Equities absorb much of the change in companies' profitability, with corporate bond value impacts changing only when profitability impacts are relatively large. In addition, many of Invesco's corporate bond holdings are for relatively short maturities, whereas the largest transition and physical risks materialize after 2030, resulting in lower exposure to these risks for corporate bonds.

Median impacts are small (<1%) in all scenarios and for all bond durations, but for a relatively small number of companies, impacts are significantly larger. Impacts are largest in the Delayed transition scenario, where companies in highly exposed sectors experience the deepest reductions in profitability. Value impacts for long-dated bonds with maturities of more than 15 years in the future exceed -5% for the most highly impacted companies. In all scenarios, corporate bond value impacts are smallest for short-duration bonds and largest for long-duration bonds. This is a result of the increase in both transition risks and physical risks over time in all scenarios.

Even though short duration bonds held by Invesco today present a low-level of climate risk, they could present risks in future if Invesco continues to roll over short-term bonds to any highly exposed counterparties. We will therefore proactively manage our exposure over time to track and mitigate this risk.



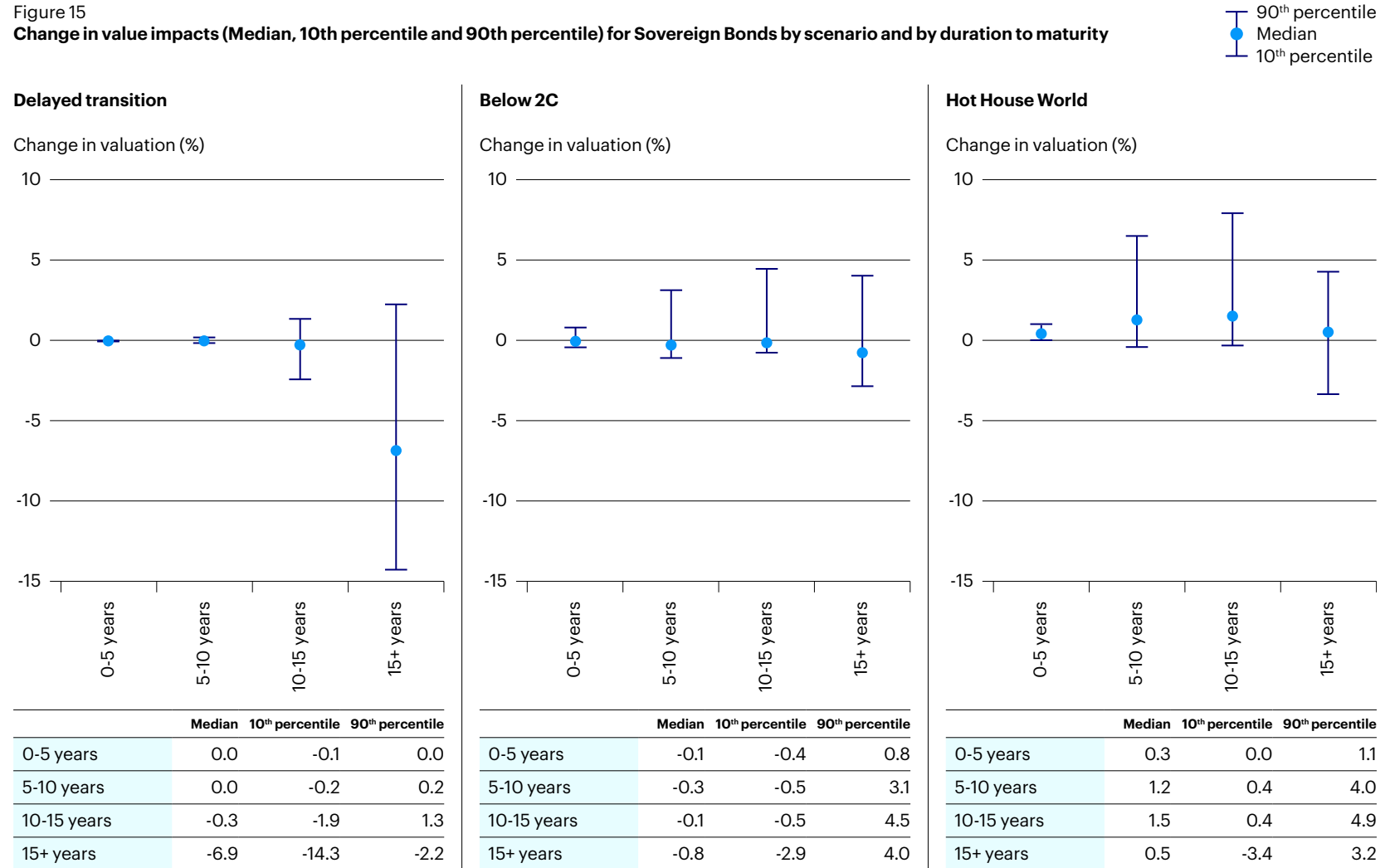
Sovereign bond values experience a mix of positive and negative impacts across scenarios and maturities

Sovereign bond values are sensitive to climate risks and can increase and decrease in value depending on countries' exposure to climate risks and their approach to managing those risks.

They also, on average, gain value in the Hot House World and Below 2C scenarios, unlike other asset classes. These differences arise because of central banks' responses to two countervailing drivers of sovereign bond values: increasing inflation and reduced growth.

Climate risks impact sovereign bond values through two channels. Transition and physical risks reduce economic output measured in GDP, and in response to these negative shocks, central banks would tend to reduce interest rates to stimulate the economy. Increasing carbon prices also drives inflation, and increased inflation will tend to lead central banks to increase interest rates to reduce inflation. The sovereign bond modelling captures the dynamics of base interest rate changes driven by central banks optimizing policy between rising inflation and contracting GDP. Scenario modelling inputs on sovereign debt are taken from NGFS scenario modelling data and forecasts.

The impact of these opposing trends depends on individual countries' macroeconomic fundamentals. For countries whose economies are highly exposed to transition risks, such as some oil-producing countries, the impact on GDP will dominate, while for economies that are heavily dependent on fossil fuel consumption, the inflation effect will dominate, particularly in the later years of the Below 2C and Delayed transition scenarios, since transition and physical risks are higher. Therefore, sovereign debt that has longer maturity will have larger value impacts than shorter durations.



Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022.

4.1.4.1 Forecast Policy Scenario

Climate policy developments over the next 5 to 10 years are key to shaping Invesco's climate strategy. To explore the implications of the kinds of climate policies that could materialize within this horizon, we have also tested our portfolio against the 'Forecast Policy Scenario' (FPS). This scenario was published in 2021 by the Principles for Responsible Investment (PRI) as part of its 'Inevitable Policy Response' (IPR) scenario set. It is designed to provide a high-conviction forecast of likely climate policy developments at a country-level, based on expert review. This scenario provides Invesco with an insight into how 'real-world' climate policies are likely to develop and their potential impact on the economy and energy system. This provides an alternative view to the NGFS climate scenarios, which rely solely on carbon pricing as the policy driver for reducing emissions.

The FPS forecasts higher policy ambition across eight key policy levers, including coal phase-out, zero emission vehicle legislation, and carbon pricing. This results in an emissions pathway with a 50% probability of keeping average global temperature rise to below 2°C. The FPS is therefore broadly similar to the NGFS Below 2C scenario in terms of climate ambition.²⁷ Although the physical risk associated with these two scenarios is similar, the different approach to climate policy taken by the IPR compared with the NGFS results in a different pattern of transition risk. One key difference between the FPS and Below 2C scenario is the rate of electric vehicle (EV) uptake. The FPS assumes that governments take direct policy measures to ban sales of internal combustion engine vehicles (Table 2). This results in a higher proportion of EV sales than is implied by the NGFS scenarios.

The Aggregate Portfolio has an overall slightly positive value impact in the FPS, compared with a slightly negative impact in the Below 2C. This is mostly due to greater positive value impact from the 'Demand creation' channel. This is partly driven by the impact of the more rapid uptake in EVs in the FPS, which leads to a greater increase in revenues for electric vehicle manufacturing and its supply chain, including metals required for EV batteries (e.g. lithium). The faster switch to EVs also leads to an increase in demand for electricity, resulting in greater capacity additions for solar and wind, and more positive value impacts for low-carbon utilities and manufacturers of renewable technologies. As electricity becomes the dominant energy source for the Transport sector, there is a reduction in demand for oil, which leads to greater negative impacts from 'Demand destruction'.

The differences in the evolution of the economy and energy sector between the two scenarios provide insights into how different transition pathways could affect Invesco's portfolio, and will inform Invesco's strategy and decision-making on climate in the coming years.

²⁷ The Below 2C scenario has a 67% of maintaining temperatures below 2°C.

²⁸ UNPRI (2021) <https://www.unpri.org/download?ac=12954>

²⁹ UNPRI (2021) <https://www.unpri.org/download?ac=12954>

Table 2

Forecast Policy Scenario assumptions example: Electric Vehicle Policy Overview

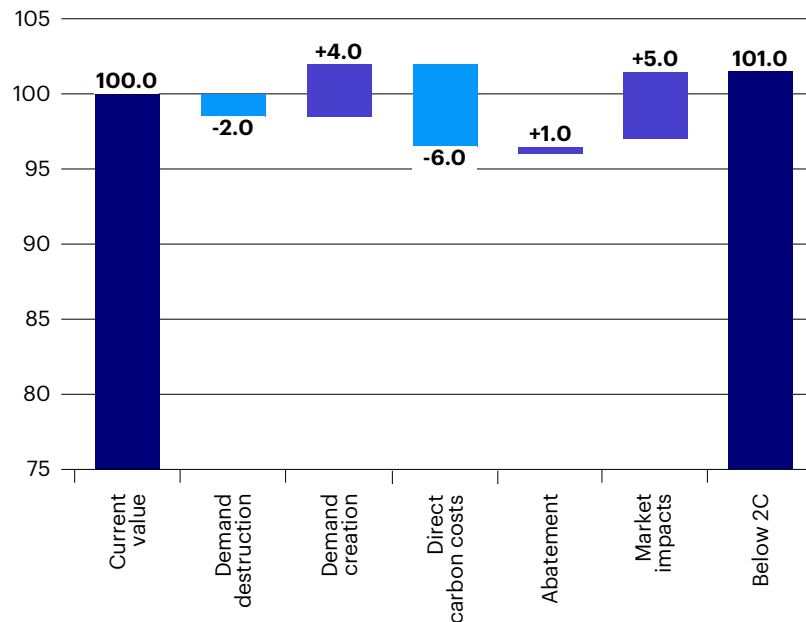
FPS vs Below 2C	FPS forecast ²⁸	Supporting policy trends ²⁹
More rapid switch to electric vehicles (EVs)	<ul style="list-style-type: none"> Sales ban of internal combustion engine (ICE) vehicles in leading countries by 2035 Other countries follow as industry reaches a tipping point and EVs reach cost parity with ICEs by 2030 	<ul style="list-style-type: none"> 3 IPR countries have set an objective to end the sale of new ICE vehicles 12 IPR countries have targets to increase uptake of EVs The market share of EVs in new car sales is accelerating rapidly

Source: Inevitable Policy Response; Forecast Policy Scenario.

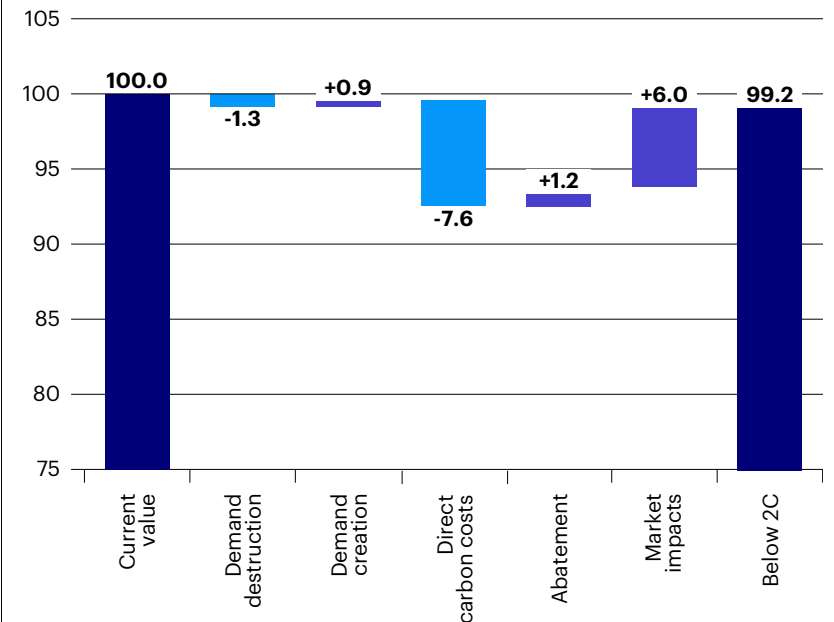
Figure 16

Change in value by impact channel for the Aggregate Portfolio in the FPS and Below 2C scenarios, for transition risk only

Aggregate Portfolio – FPS (transition only)



Aggregate Portfolio – Below 2C (transition only)



Source: Planetrics, a McKinsey & Company solution, as of 31 March 2022.

5.0

Risks management

In this chapter we describe our processes for identifying, assessing and managing climate-related risks. We also explain how these processes are integrated into Invesco's overall risk management.



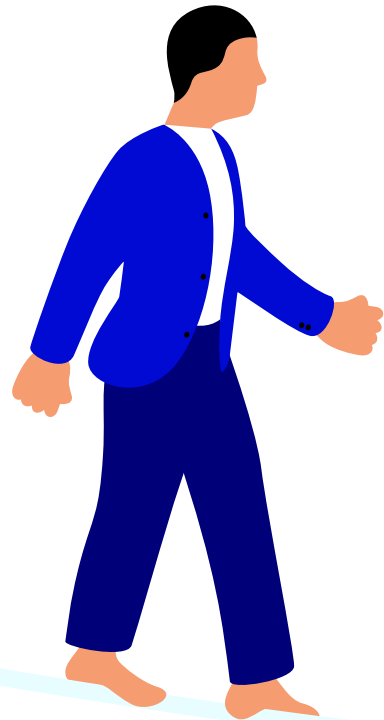
5.1 Enterprise risk

As noted in the preceding chapters on strategy, the primary vectors through which climate risks are likely to impact our business are existing risk factors. These include investment risk and changing client preferences, as well as operational risk, regulatory risk and reputational risk.

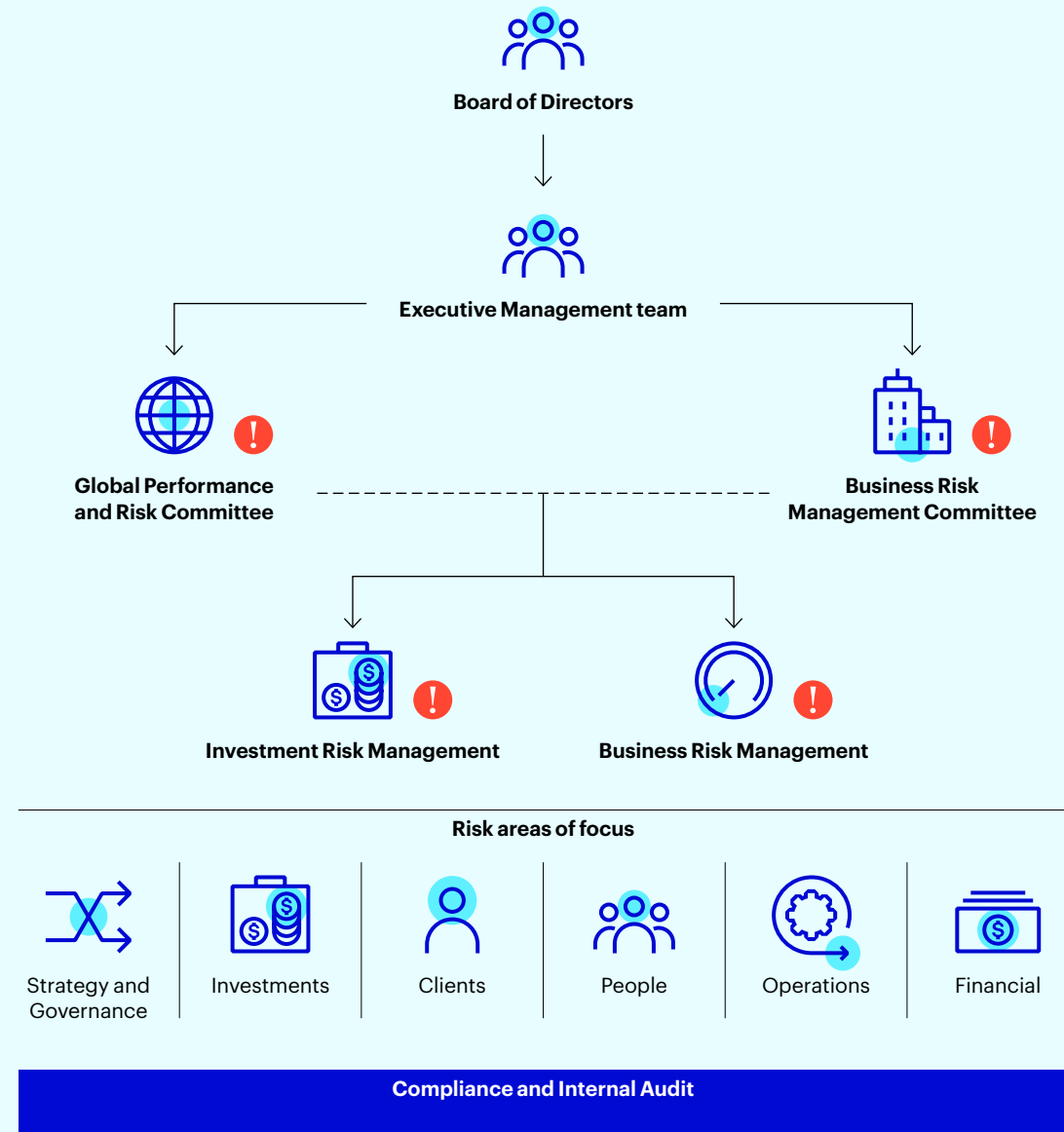
Our enterprise risk management framework structures our investment and business risk management under four pillars of Operational Risk, Financial Risk, Strategic Risk, and Investment Risk. ESG has its own category within the Investment Risk pillar.

Our Executive Management team, with oversight from the Board, has principal responsibility for our risk management processes and for understanding the company's overall risk profile.

Ultimately, our enterprise risk management framework ensures we maintain the integrity of our company, our financial statements, our compliance with law and ethics, and our relationships with stakeholders – including clients and other business partners.



Our enterprise risk management framework



Source: Invesco.

5.2 Investment risk

5.2.1 Our three lines of defense

Access to climate-related and carbon-related data is essential to our investment risk process. All investment centres have access to such data, either directly or through our ESG Data team.

Our Global ESG team also screens the full range of Invesco holdings to identify companies that are high-risk from the perspective of decarbonization. We use Sustainalytics, a carbon analysis screening tool, to ensure we focus our climate-related engagement efforts, which continued to be scaled up during the period covered in this report.

Our approach to climate-related investment risk can be thought of in terms of three separate lines of defense:

1.

Our first line of defense comprises our Portfolio Managers and Analysts, who assess climate-related issues for their respective asset classes. They draw on available data as an input to their proprietary ESG rating methodologies to augment other ESG metrics already used by investors.

Sourced from various data providers, external scores may also be used by investment teams that analyze climate change risk. The main providers are Sustainalytics, Customer Data Platform, Institutional Shareholder Services (ISS), MSCI and the Climate Bond Initiative. Customer Data Platform also offers research to complement that available from sell-side brokers.

An assessment may lead to dedicated engagement with a company or issuer. As mentioned in section 2.2, some investment teams are also integrating ESG and climate risks into their formalized CIO oversight processes.

2.

Our second line of defense includes our functions and teams dedicated to investment compliance. These provide monitoring and oversight of all ESG risk, including climate change risk.

3.

Our third line of defense takes the form of periodic independent reviews of our ESG practices conducted by the Internal Audit department. Internal Audit provides the entire organization with independent, objective assurance and advisory services that are designed to add value and improve the Company's operations by bringing a systematic and disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes. It provides independent oversight over the integrity, consistency, and quality of our ESG practices and provides risk advice to the Global ESG team.

5.3 Regulatory risk

5.3.1 Global climate disclosure

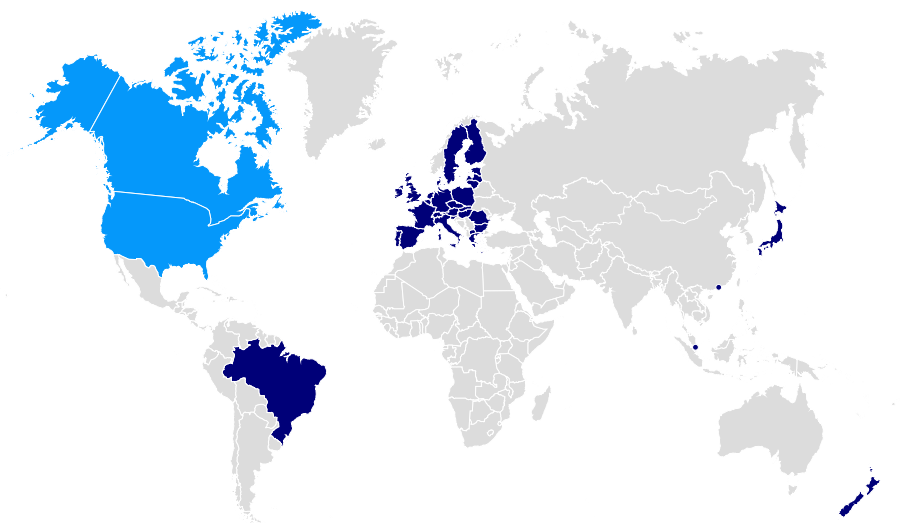
Climate disclosure is increasingly coming within the purview of regulators around the world. Several major economies and financial hubs, such as the United Kingdom, Hong Kong, and Singapore, have already mandated TCFD disclosure for companies operating in their jurisdictions. As part of its Green Deal, the EU is adopting a Corporate Sustainability Reporting Directive which is intended to align with existing frameworks such as TCFD. In the US, the SEC is proposing climate disclosure rules for listed companies, which draw on the TCFD recommendations.

Whilst all these proposals and regulations attempt to align with TCFD, they all differ in the exact disclosures required. This is problematic for firms who operate in several jurisdictions and must evaluate whether they currently meet the requirements of each jurisdiction they operate in, and tailor their disclosures for each one.

In addition to TCFD, the International Sustainability Standards Board (part of the International Financial Reporting Standards) is attempting to set a global baseline for corporate sustainability reporting. The ISSB has the support of the G20, along with Finance Ministers and Central Bank Governors from more than 40 jurisdictions on six continents, who officially welcomed the IFRS Foundation's goal to create a comprehensive global baseline of sustainability disclosures focused on meeting the needs of capital markets. The ISSB has already released its Climate-related Disclosures (Climate Exposure Draft) that draws on the TCFD as well as incorporating Sustainability Accounting Standards Board recommendations. The hope is for a convergence around these standards, but there remains a risk in the meantime of corporations and financial firms being subject to overlapping reporting requirements.

Jurisdictional TCFD-aligned disclosure

- Implemented or implementing
- Proposed or supported



Excerpt from 2021 TCFD Status Report³⁰

Figure ES2 – Announcements of Official TCFD-Aligned Reporting Requirements

Brazil: In April 2021, the Central Bank of Brazil (BCB) issued a public consultation on rules for disclosure of social, environmental, and climate-related risk management by institutions of the National Financial System (SFN). In September 2021, BCB announced mandatory TCFD-aligned disclosure requirements, which will initially focus on qualitative aspects related to governance, strategy, and climate-related risk management for regulated institutions, with a second phase incorporating quantitative aspects.

European Union: In April 2021, the European Commission issued a proposed Corporate Sustainability Reporting Directive (CSRD) that would amend existing reporting requirements. The EC noted that the reporting standards should take into account existing standards and frameworks, including the TCFD framework, which would lead to TCFD-aligned reporting for nearly 50,000 large companies with a presence in the European Union.

Hong Kong: In December 2020, Hong Kong's Green and Sustainable Finance Cross-Agency Steering Group published a new Strategic Plan, announcing that TCFD-aligned disclosures "will be mandatory" across relevant financial sectors by 2025. The Steering Group pledged to "increase the coverage of mandatory disclosure as soon as practicable."

Japan: In June 2021, the Tokyo Stock Exchange published a revised Corporate Governance Code (the Code) based on the proposals made by Japan's Council of Experts Concerning the Follow-up of Japan's Stewardship Code and Japan's Corporate Governance Code. Under revised Securities Listing Regulations, the Code requires certain listed companies to enhance the quality and quantity of climate-related financial disclosures based on the TCFD recommendations, with effect from June 11, 2021.

New Zealand: In September 2020, New Zealand announced plans to mandate climate-related financial disclosures aligned with the TCFD recommendations for approximately 200 organizations, including most

licensed insurers, listed issuers, large registered banks, and managers of investment schemes. In April 2021, New Zealand introduced the Financial Sector (Climate-related Disclosure and Other Matters) Amendment Bill. If passed, legislation would enter into force within 12 months after receiving Royal assent.

Singapore: In August 2021, the Singapore Exchange Regulation proposed a road map for mandatory TCFD-aligned disclosure. Starting in 2022, all issuers would be required to adopt TCFD-aligned reporting on a comply or explain basis. Disclosure would become mandatory in 2023 for companies in key industries, including finance and transportation, and in most industries in 2024. Public consultation on the proposed road map ended on September 27, 2021.

Switzerland: In December 2020, Switzerland's Federal Council indicated the authorities should prepare the binding implementation of the recommendations of the TCFD for Swiss companies across all sectors of the economy. In July 2021, the Swiss Financial Market Supervisory Authority (FINMA) amended its circulars to include the disclosure of climate-related financial risks based on the TCFD recommendations. In August 2021, the Swiss Federal Council instructed the Federal Department of Finance to prepare a consultation draft for mandatory climate reporting based on the TCFD by summer 2022.

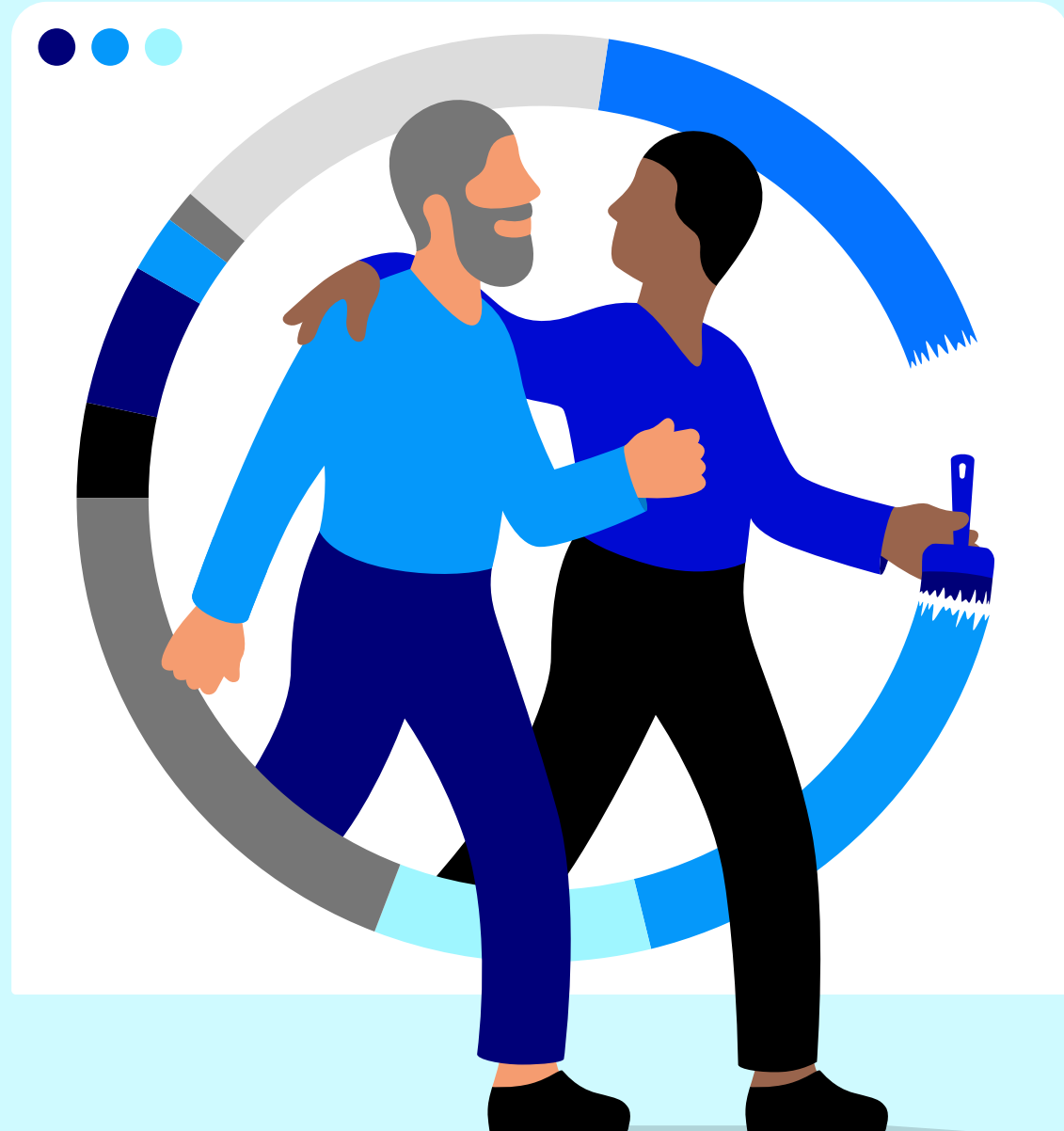
United Kingdom: In November 2020, the UK's Chancellor of the Exchequer announced the UK's intention to mandate climate disclosures by large companies and financial institutions by 2025. In December 2020, the Financial Conduct Authority introduced new rules for companies with a UK premium listing to disclose climate-related risks and opportunities in line with the TCFD recommendations on a comply or explain basis. In June 2021, the FCA published further proposals to extend TCFD-aligned disclosure requirements to issuers of standard listed equity shares and introduce TCFD-aligned disclosure requirements for asset managers, life insurers, and FCA-regulated pension providers.

³⁰ Task Force on Climate-related Financial Disclosures 2021 Status Report, <https://www.fsb.org/wp-content/uploads/P141021-1.pdf>

6.0

Metrics and targets

In this chapter we outline the metrics we use to assess climate-related risks and opportunities in line with our strategy and our processes for risk management. We also provide details of our emissions and the related risks. Finally, we describe the targets Invesco uses to manage climate-related risks and our performance against these.



6.1 Emissions metrics

We use carbon emission indicators both as part of the climate toolkit incorporated into our overall ESG analysis and as part of our investment solutions focused on decarbonization strategies. We also engage with investee companies to gain enhanced disclosure of emissions data, to understand their activities and plans in relation to energy transition and to gauge their progress.

Our approach in many strategies seeks to encourage investee companies to follow a path of decarbonization. We are continuously refining our climate change engagement with clients and investee companies, and designing solutions that can potentially reduce carbon emissions while enhancing investment performance.

Invesco has a vast suite of carbon-related metrics and climate analytics at its disposal for portfolio analysis and construction.

The following metrics form part of our standard client reporting at present, for portfolios and their benchmarks:

- Total Carbon Intensity scope 1 & 2 (tCO₂e per million USD of revenue)
- Scope 3 Downstream Carbon (tCO₂e) weighted average
- Scope 2 Upstream Carbon (tCO₂e) weighted average
- Scope 1 Direct Carbon (tCO₂e) weighted average

In addition to these, some strategies and asset classes augment their reporting with the following analytical capabilities:

- Weighted average carbon emissions (scope 1, scope 2 and scope 3) at sector level versus benchmark
- Weighted average carbon intensity (scope 1, scope 2 and scope 3) at sector level versus benchmark
- Identification of top issuers with highest carbon intensity
- Time series for weighted average carbon emissions (scope 1, scope 2 and scope 3) and weighted average carbon intensity (scope 1 and scope 2) at portfolio level versus benchmark
- Statistics on issuers in portfolio and benchmark based on climate emissions, Science-Based Targets commitments and physical/transition risk

Our 2021 carbon metrics

Metric	Unit	Scope	2021	2020 ³¹	2019 ³¹
Weighted average carbon intensity	tCO ₂ e per USD million revenue	Scope 1	111.75	103.83	137.88
		Scope 2	30.76	31.41	30.13
		Scope 3	821.50	847.97	909.68
Total carbon emissions	tCO ₂ e	Scope 1	56,073,982.08	48,103,440.59	42,823,587.06
		Scope 2	13,629,502.47	12,789,254.71	9,164,326.54
		Scope 3	454,903,728.14	445,432,338.05	329,177,684.38
Carbon footprint³²	tCO ₂ e/million AUM	Scope 1	43.11	54.70	65.88
		Scope 2	10.48	14.54	14.10
		Scope 3	349.70	506.52	506.38
Exposure to carbon-related assets	USD Million invested (% of AUM)		147,659.83 (8.9)	132,922.33 (9.8)	98,989.84 (8.0)

³¹ Due to changes in the methodology for scope 3 calculations from our third-party data vendor, there have been significant changes to emissions figures in 2021. For comparability, we have recalculated all our emissions data for our 2020 and 2019 portfolios using the new methodology, which have been restated in the table opposite. The original figures can still be found in our previous Climate Change reports.

³² Carbon footprint has been calculated using EVIC as the denominator, in line with PCAF standards.

Understanding carbon metrics

Readers will see myriad emissions data reported by companies and financial institutions, the reasons and purposes of which can often be confusing. The table below explains in simple terms what some of the common metrics seek to measure and what their use case is in a financial context.

Metric	Description	Purpose
Absolute emissions (also called 'total emissions', 'financed emissions' or 'total financed emissions')	<p>The total Greenhouse Gas (GHG) emissions of a portfolio apportioned to the ownership of an issuer by its enterprise value (including cash).</p> <p>Note that this metric can also be apportioned using market capitalization, but that would not take account of debt issuance and therefore would yield misleading results for investors attempting to attribute both equity and debt holdings.</p>	<p>To understand the real-world impact of investments by using an absolute measure. Whilst this metric will naturally fluctuate with the size of a portfolio and therefore have limited comparability purposes, it can be used to track whether emissions reduction strategies eventually result in overall carbon reductions. Users also need to be aware that as the denominator is an issuer's enterprise value, valuation changes can also skew the output.</p>
Emissions intensity	<p>The amount of GHGs per unit of economic output, such as per million dollars of revenue, or physical output, such as MWh of electricity or tonne of steel.</p>	<p>Intensity metrics allow investors to understand the carbon efficiency of a portfolio (more carbon efficient portfolios may be exposed to less transition risk or be better positioned to benefit from a low-carbon economy). It also allows portfolio managers to compare the efficiency of companies within their portfolio on an equal measure.</p>
Carbon footprint	<p>Similar to absolute/total/financed emissions, this metric measures the total emissions associated with a portfolio, but by simply dividing emissions per million dollars invested.</p>	<p>Carbon footprinting offers a direct link between money invested and its associated emissions and, unlike absolute emissions, allows for like-for-like comparisons across portfolios.</p>
Weighted Average Carbon Intensity (WACI)	<p>To understand a portfolio's exposure to carbon intensive companies.</p>	<p>This metric allows for the greatest comparison between portfolios as it normalizes emissions by revenue and then weights it by the size of the investment within the total portfolio.</p>



Like other forms of data, carbon needs to be measured and understood in different ways depending on the use-case.



Targets

Invesco has set the following interim targets covering the proportion of assets initially committed to be managed in line with net zero.

Asset Level 1

Portfolio Coverage Targets

- Every **five years**, meaningfully **increase the percentage of AUM** in material sectors that are considered net zero, aligned or aligning with annual report on progress
- **100% of AUM** in material sectors is considered net zero or aligned by **2040**
- In support of our clients and investments teams we will continue to progress collective understanding of net zero solutions as data and methodologies evolve

Asset Level 2

Engagement Threshold Targets

- Companies making up **70% of financed emissions** in material sectors will either be assessed as net zero, assessed as aligned or subject to direct engagement/active management by **2025**
- Companies making up **90% of financed emissions** in material sectors will either be assessed as net zero, assessed as aligned or subject to direct engagement/active management by **2030**
- **100% of assets in material sectors** are aligned or achieving net zero by **2040**, as stipulated in the IIGCC PAII Framework

Portfolio Level 1

Portfolio Decarbonisation Reference Targets

- **50% lower carbon footprint** as measured by tCO₂/\$invested by 2030 versus 2019 baseline
- **Net zero by 2050** against 2019 baseline

Coverage of scope 1, 2, and the extent of scope 3 emissions

Our measurements include scope 1 and 2 top-down portfolio reduction targets. Given the estimated nature of current scope 3 assessment methodologies available, we believe this measurement is too immature at this stage.

6.2.1 Operational Responsibility

6.2.1.1 Energy and emissions

Invesco is committed to supporting client efforts to ensure a sustainable environment for future generations, not only as part of our investment offerings but also in our corporate operations. The primary way we approach this is by continually reducing energy use and GHG emissions.

In 2021, we set a new 2019 baseline for our corporate emissions and aligned our reduction goals to the Science Based Targets initiative (SBTi). Our goal is to reduce our energy use and emissions output in line with the SBTi by 4.2 percent year over year, reaching 46 percent by 2030 and net zero by 2050 or sooner, to mitigate the effects of climate change.

Now that we have increased our reporting boundaries, it is clear that in our corporate operations our largest environmental impacts are our GHG emissions, which come from three main areas: scope 1, direct emissions from sources owned or controlled by Invesco; scope 2, indirect emissions from purchased electricity, steam, heat and cooling; and scope 3, all other emissions associated with our activities, such as purchased goods and services, capital goods, waste, business travel, employee commuting and investments (not included in the scope of the operations emissions). Since our 2019 baseline year, our energy use and emissions have decreased. This was a result of ongoing energy efficiency initiatives at our offices, as well as significantly less corporate energy usage and travel due to COVID-19. In 2021, corporate travel remained low, with restrictions limiting travel to critical business only.

Invesco has disclosed data and actions to the CDP Climate Change Disclosure recommendations since 2016. In 2021, we received a B- score demonstrating management and coordinated action on climate issues. See our [2021 Corporate Responsibility Report](#)³³ for more details.

Our energy and GHG emissions data is calculated through the World Resources Institute Greenhouse Gas Protocol. We continue to update our reporting boundaries as more data becomes available, and in comparison with previously reported GHG emissions the results are larger than 2019–2020 figures previously presented.

The primary drivers for this difference are:

- Operational boundary – The new 2019 baseline follows the operational control methodology when accounting for emissions associated with leased offices. A review of the Invesco portfolio confirmed that all leases fall under the ‘operating lease’ category, which means emissions associated with the fuel consumed and electricity purchased at these sites fall into scope 1 and 2 boundaries respectively. This has resulted in the number of sites reporting in the scope 1 and 2 boundary increasing from Invesco’s 15 largest sites to all 120 sites, an increase to 2,670,241 square feet from 1,616,495 square feet (a 65 percent increase).
- Emissions in reporting boundary – The 2019 baseline now covers an increased set of scope 3 reporting categories. The scope 3 categories now reported are: purchased goods and services, capital goods, waste generated in operations, business travel and employee commuting (including working from home).

The scope 3 categories previously reported were: waste generated in operations for 15 largest offices, business travel (air and rail) and fuel- and energy-related activities (not included in scope 1 or scope 2). Fuel- and energy-related activities now sit in scope 2 under the new baseline.

Our corporate metrics on climate change, 2019-2021

Environmental indicators	2021	2020	2019	
Greenhouse gas emissions and energy ³⁴	Total energy consumed (kWh) ²⁴	35,666,991	68,001,837	78,941,291
	Scope 1 emissions (tCO ₂ e)	1,884	2,167	2,180
	Scope 2 emissions (Location based) (tCO ₂ e)	12.7	30	37.1
	Scope 2 emissions (Market based) (tCO ₂ e)	16.4	31	36.9
	Scope 3 emissions (Exc. Investments) (tCO ₂ e)	279,317	294,573	344,725
Waste	Waste to landfill (tonnes)	83	94	260
	Waste to energy (combustion) (tonnes)	60	189	66
	Waste to energy (anaerobic digestion) (tonnes)	11	10	25
	Waste to unknown disposal (tonnes)	8	8	23
	Composted (tonnes)	3	20	25
	Closed-loop recycling (tonnes)	85	70	265
	Open-loop recycling (tonnes)	31	38	126
Water	Water withdrawn (m ³)	83,386	673,825	750,612
	Water recycled (m ³)	37,461	N/A	N/A
	Water discharged (m ³)	76,208	668,476	689,761

Source: Invesco.

6.2.1.2 Water and waste

Across every Invesco office, we take measures to be responsible stewards of the planet. We aim to conserve water and reduce the waste we produce in our offices as much as possible. By continually reducing our environmental footprint and operating responsibly, we make our operations more sustainable today and into the future.

Invesco focuses on continuous improvement in our environmental performance year over year. Because many of our offices are green buildings with LEED or ISO 14001 certification, they follow stringent requirements for sustainability, including water use and waste management.

On an ongoing basis, we look for new ways to increase water efficiency in our offices. In 2021, we installed Waterblades water reduction devices in washrooms across the Henley, England facility, in conjunction with the removal of raw water tanks. It is difficult to determine the scope of the reduction due to these efforts because of limited office occupancy during 2021.

To further reduce waste in our offices, in 2021 Invesco conducted a single-use plastic baseline audit and will look to remove or reduce these plastics where practicable in 2022. Many of our offices also have recycling programs for e-waste, batteries and other items, in addition to common items such as aluminum, glass and paper.

³³ <https://www.invesco.com/crr/en/home.html>

³⁴ Actual data (e.g. utility bills, invoices, meter readings) is used where available. Where data gaps exist, estimations and assumptions have been made to provide a complete data set. Where more accurate data becomes available, we may update our metrics to reflect.

7.0

Addressing climate change at the operational level

In this chapter we offer a concise overview of the operational-level steps Invesco takes to address issues related to climate change. Full details can be found in our 2021 Corporate Responsibility Report, as originally referenced in section 1.3.



7.1 Our environmental management system

Our Environmental Management System (EMS) serves as a framework for how we manage our environmental impact at our Henley, London, Dublin, Frankfurt, Toronto, Atlanta, Houston, New York, Charlottetown, Downers Grove and Hyderabad offices around the world. Our EMS meets ISO 14001 requirements, which signifies a commitment to quality and good business practices, and other relevant compliance obligations, and is assured by the British Standards Institute through continuing assessments on an annual basis, with recertification audits taking place every three years. We also conduct an annual internal review of our EMS at both the global and location levels. These environmental assessments take into consideration risks, opportunities

and compliance obligations associated with environmental aspects. Results from reviews are used to identify the areas for improvement and environmental control procedures.

To ensure the effective management and continuous improvement of Invesco's EMS, we assigned operational EMS responsibilities to Corporate Properties, supported by local facilities teams and subcontracted services. Invesco also uses an independent consultant, S2 Partnership Ltd. and its IT operating platform RiskWise, to perform audits in all facilities around the world for safety risk and to ensure that our operations are in line with local regulations and international best practices. In 2021, 99.52 percent of our risks were controlled.



Source: Invesco.

Green buildings

Invesco is building a new global headquarters in Atlanta, Georgia to open in 2022. The building will be LEED Silver, and the Invesco square footage is aspiring to obtain both LEED Platinum and WELL Platinum certification. LEED certification is a globally recognized symbol of sustainability achievement and leadership in construction and design. WELL certified buildings also include features that impact human health and wellbeing, through air, water, nourishment, light, fitness, comfort and mind. Buildings meeting these requirements operate to a higher standard of environmental sustainability than conventional buildings.

Included in our owned properties is a building in Henley, England, which is powered by 100 percent renewable energy from sources that include solar panels and landfill gas. The facility also has three 7kW electric vehicle (EV) chargers, two 22kW EV chargers, on-site PV panels and energy efficient windows in the employee gym. In Dublin, Ireland, our LEED Platinum facility features 100 percent renewable energy, rainwater harvesting and water reduction fixtures, PV panels and tenant submetering for accurate consumption data.

To further operate responsibly and to continuously reduce our impact on the environment, Invesco prioritizes leasing office space in green buildings.

While we have limited control on energy procurement in our leased offices, we work with our landlords to encourage them to buy green energy whenever possible. Our leased offices meet the following certifications:

- Atlanta, Georgia, U.S. (Peachtree) LEED Silver
- Dallas, Texas, U.S. LEED Silver
- Denver, Colorado, U.S. LEED Gold
- Dublin, Ireland LEED Platinum
- Frankfurt, Germany LEED Gold
- Henley, England 100 percent renewable energy
- Houston, Texas, U.S. LEED Silver
- Hyderabad, India LEED Platinum
- New York, New York, U.S. LEED Gold
- Vancouver, B.C., Canada LEED Gold and BOMA

Energy Star certified buildings:

- Atlanta, Georgia, U.S.
- Boston, Massachusetts, U.S.
- Dallas, Texas, U.S.
- Denver, Colorado, U.S.
- Downers Grove, Illinois, U.S.
- New York, New York, U.S.
- Newport Beach, California, U.S.
- San Francisco, California, U.S.
- Toronto, Canada
- Washington D.C., U.S.

Investment risks

The value of investments and any income will fluctuate (this may partly be the result of exchange rate fluctuations) and investors may not get back the full amount invested. Property and land can be difficult to sell, so investors may not be able to sell such investments when they want to. The value of property is generally a matter of an independent valuer's opinion and may not be realized.

The use of ESG criteria may affect the product's investment performance and therefore may perform differently compared to similar products that do not screen investment opportunities against ESG criteria.

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