

The logo consists of the letters 'A', 'P', and '2' in a bold, white, sans-serif font. The 'A' and 'P' are connected, and the '2' is slightly offset to the right. A thin vertical white line is positioned to the right of the 'P' and '2'.

Andra
AP-fonden

CLIMATE REPORT 2022

In accordance with the TCFD's recommendations

Climate Report 2022

In accordance with TCFD recommendations

Andra AP-fonden is continuously working on developing a climate-aligned portfolio. The target is net zero emissions by 2045. The Fund integrates climate aspects into risk assessments and investment decisions to achieve a sustainable strategic portfolio and participates in global collaborations to tackle the climate issue from a broader perspective.

The overall research on climate change, assessed in the reports of The Intergovernmental Panel on Climate Change (IPCC), clearly shows the necessity of limiting global warming, preferably to 1.5 degrees, and that a rapid and powerful transition is required to achieve this. To stabilise the climate at this level, net emissions of greenhouse gases must be reduced to zero by 2050. As the expected temperature increase correlates with the aggregated volume of green-house gas emissions over time, it is important that emissions are reduced as soon as possible. A key tool for reducing emissions is to increase transparency and reporting, for both companies and investors. As a long-term investor AP2 must identify climate-related risks and opportunities. The Fund also needs to understand how it can contribute to the transition.

In June 2017, the Task Force on Climate-Related Financial Disclosures (TCFD) presented its recommendations on climate-related disclosures for different types of organisations. Reporting in accordance with the TCFD's guidelines should include:

1. How climate change is addressed by the organisation's governing bodies (board of directors and management team);
2. What the organisation's strategy is for climate change and the transition to a fossil-free economy;
3. A description of the organisation's climate-related risks and opportunities; and
4. Information about the metrics and targets used by the organisation.

In December 2022, more than 4 000 organisations in 101 countries had expressed their support for TCFD; an increase of more than 1 300 organisations in one year. Identification of climate-related risks and opportunities is central to the TCFD framework. Read more on the website www.fsbtcf.org

TCFD divides climate risks into two groups: transition risks and physical risks. For AP2, identified climate risks involve adaptation of the strategic portfolio and selection of the indices that represent the different asset classes. Under the heading climate opportunities, TCFD includes resource efficiency, renewable energy and resilience. For AP2, climate opportunities are investments with an expressed intention to contribute to a sustainable transition.

AP2 supports the TCFD framework as it increases transparency and simplifies the evaluation and

comparison of companies. It is also an important tool for the Fund, as it offers an opportunity to communicate the Fund's climate-related work.

AP2 published its first TCFD report in the beginning of 2018 and has subsequently continued to develop the reporting. The Fund has used the suggestions of the TCFD recommendations, both the guidance for all sectors and the specific guidance available to asset owners.

In 2022, the Fund continued to implement the EU Paris-Aligned Benchmark (PAB index) in the management of its global listed equity, corporate bond portfolios and Swedish equity. In addition, the Fund continues to make targeted sustainability investments and to participate as an active owner in several engagement initiatives. This report provides a description of AP2's climate-related work based on the TCFD framework.

TCFD's framework



Governance

Andra AP-fonden's management is responsible for assessing and managing climate-related risks and opportunities. The Board of Directors has considerable expertise and a high level of commitment in these issues.

The Board's oversight of climate-related risks and opportunities

AP2 is an independent government agency that must manage fund assets in an exemplary and responsible manner, for the greatest possible benefit to the pension system. Particular emphasis should be placed on sustainable development, without compromising the overall objective of return and risk.

AP2 is governed by Swedish law. The Swedish Government appoints the Fund's Board members and submits an annual report to the Swedish Parliament on the Fund's activities, including an evaluation of its sustainability work.

The Board shall by law establish the Fund's objectives and the overall framework for the operations in an annual business plan, which includes investment beliefs, strategic portfolio and sustainability policy.

The business plan is followed up by the Board and management and is reported in the annual and half-year reports.

The Board also determines the strategic portfolio and makes decisions on all index changes. A sustainability analysis is carried out in the docu-

mentation produced prior to the decisions on any index changes. Among other things, the analysis looks at how the change will affect the carbon footprint.

AP2 has a process for continuously informing the Board of the Fund's work on sustainability, which include climate-related issues. The Board has an opportunity to discuss climate issues at each meeting.

Management's role in assessing and managing climate-related risks and opportunities

The main responsibility for AP2's strategic sustainability work rests with the Fund's Executive Management, chief strategist and senior sustainability strategist. They are also responsible for implementation and follow-up. Climate is one of the Fund's five focus areas within sustainability and management's work therefore focuses closely on this area.

All of the Fund's employees have a responsibility to take climate into consideration in their various roles and the Chief Investment Officer is responsible for managing climate-related risks and opportunities in the asset management.

The senior sustainability strategist is responsible for reporting on the Fund's climate-related work to the Board. Analysis of climate-related investment opportunities is initiated by the asset management team.

Continued work

AP2 is continuously working on developing and clarifying information and processes relating to oversight and assessment of climate-related risks and opportunities. As part of the work on the business plan for 2021 to 2023, at the beginning of 2020 the Fund launched a number of research studies in various areas, including sustainability. In this work, the Fund identified the following areas to focus on in the future:

- *Physical risks and sustainable investments*
A deeper understanding is needed of the risks caused by climate change in the Fund's portfolios. Increased insight also opens up opportunities for sustainable investments.
- *Biodiversity*
Biodiversity has been identified as an important area that is also strongly linked to

climate – a link that oscillates between interaction and contrast; both perspectives are required in the transition to a net zero portfolio. In 2022, AP2 has added biodiversity as a new focus area and is working further to integrate the focus area into the fund administration.

- *Social risks*
Management takes into account how social risks affect the Fund's climate-related work, since risks relating to climate and human rights are often interlinked.

One objective of the business plan is that by 2023 the Fund will have developed a more efficient, sustainable and resilient portfolio. AP2 will continue to develop and clarify information and processes regarding oversight and assessment of climate-related risks and opportunities.

Strategy

Climate-related risks and opportunities have both real and potential impacts on the organisation's strategy. For Andra AP-fonden as an asset owner, this means that risks and opportunities must be described on the basis of the Fund's investment strategy.

AP2's sustainability strategy

AP2 primarily operates based on a long-term perspective of 30 years. This is reflected both in the long-term allocation of capital between different asset classes and in the strategies that determine the allocation within each asset class. AP2's sustainability strategy is based on the Fund's statutory mission and its investment beliefs.

The strategy also reflects the Fund's vision and values.

In view of AP2's long-term investment horizon, it is crucial to take climate aspects into consideration in all investment decisions from the highest strategic level down to individual investments. The investment beliefs frame the Fund's approach to sustainability in its asset management. In 2019, these were reviewed, among other things, to ensure that the Fund's approach to sustainability in general, and climate change in particular, are appropriately reflected. One of AP2's investment beliefs is that "climate change is a systemic risk". However, climate aspects are not only seen from a risk perspective, but also as an opportunity, as expressed in the investment belief "sustainability

pays off". There may be, for example, investment opportunities in renewable energy companies. The Fund works to both take into account and reduce the financial climate risk and actively contribute to the transition.

The Fund has formulated a method that contains six parts that guide AP2's sustainability work and are the basis for the strategies within each focus area.

AP2's climate strategy contains both short-term and long-term climate goals with clear descriptions of how the Fund will follow up on the goals. In addition, a detailed action plan is included for each type of asset.

Risks and opportunities

Climate change has a major impact on the Fund's work to create a good long-term return for the pension system. The principle of integrating sustainability in all investment processes means that climate risks and opportunities are taken into consideration in everything from choice of strategic portfolio to tactical and active investment decisions.

AP2's investment beliefs

1. Thorough analysis of the pension system is key to choice of strategy.
2. Systematic risk-taking is required.
3. Diversification reduces risk.
4. Active management creates added value.
5. Sustainability pays off.
6. Climate change is a systemic risk.
7. Long-term mandate presents special opportunities.
8. People and culture are critical success factors.
9. Stable processes are essential for good results.
10. High level of cost-effectiveness leads to improved results.

AP2's method of working with sustainability

1. **Integration** – Sustainability is integrated throughout the organisation, in asset management and in the Fund's day-to-day work.
2. **Materiality** – AP2 focuses its work on the issues that are most important and where the Fund can make the greatest difference.
3. **Analysis** – Sustainability work is based on solid, fact-based analysis, both before an investment and in the role of owner.
4. **Engagement** – AP2 influences companies to fulfil the Fund's expectations in sustainability issues.
5. **Collaboration** – The Fund can achieve more through collaboration, both internally and with other investors.
6. **Transparency** – AP2 walks the talk and builds trust through transparency.

The ALM analysis, the Fund's tool for developing the most relevant strategic portfolio, has taken the risks posed by climate change into account for a number of years. The choice of strategic portfolio consists partly of determining which asset classes are to be included and how much is to be invested in each asset class, and partly which indices or strategies are to represent each asset class. The choice of allocation between asset classes is based on a scenario where sufficient measures are not taken and the global temperature increase is 3 degrees instead of the 1.5 degrees which is the goal of the Paris Agreement.

The Fund has implemented indices in line with the EU's Paris-Aligned Benchmark, which today forms the basis for the asset management of Swedish and global equities as well as corporate bonds (equivalent to approximately 52 per cent of the Fund's assets under management). This has had major consequences for the portfolio, with extensive divestments of companies with operations linked to fossil energy sources. After the 2020 launch of these indices, which resulted in a halving of emissions in the portfolios concerned, the criteria for the indices stipulate that the portfolio's total emissions over time, should continue to decline by an average of 7 per cent per year.

The real climate-related opportunities that have been identified constitute a growing part of AP2's allocation. One example is the Fund's investments in so-called sustainable infrastructure, which is based on the rapid transition required by energy and transport systems from fossil-based to renewable. In 2022, AP2 made further investments with a focus on renewable energy.

Another example is the Fund's strategic allocation to green bonds. In 2021, the number of issues of green and social bonds increased significantly. This applies to both governments and companies, where the automotive industry, among others, features strongly. During the year, the Fund increased its focus on transparent reporting from issuers and commenced work on analysis of the impact of its investments. The Fund's investments in green bonds represent 3 per cent of assets under management.

Within AP2's investments in forestry and agriculture, management of sustainability and climate-related issues is constantly being developed. The Fund's agricultural managers are increasingly taking a regenerative approach, and forest managers are applying Natural Climate Solutions (NCS), i.e. conservation and restoration of land to its original state.

The assessment of potential risks includes long-term assumptions about how climate change will affect the development of the economic and demographic situation. If the climate situation deteriorates, this is judged to have negative consequences for global economic growth. This is taken into account in the Fund's strategy. At the same time, various international climate partnerships are taking shape that create new investment opportunities.

In 2022, the Fund has created a clear, detailed climate strategy for continued work within each asset class. Transition risks and physical risks are part of this plan, as well as reporting and follow-up of emission data for individual asset classes.

ANDRA AP-FONDEN TOWARDS NET ZERO IN 2045

| Goal | 2019 | 2025 | 2030 | 2035 | 2040 | 2045 |
|--|--|------|------|------|------|----------|
| Greenhouse gas emissions | Base year | -35% | -55% | | | Net Zero |
| Share of portfolio in line with Paris Agreement | | 100% | | | | |
| Share of portfolio with reported CO ₂ e | | 100% | | | | |
| Plan: | Invest in solutions | | | | | |
| Three paths to reduced emissions | Support the transition through active ownership | | | | | |
| | Divest from assets deemed unlikely to transition | | | | | |



Scenario analysis

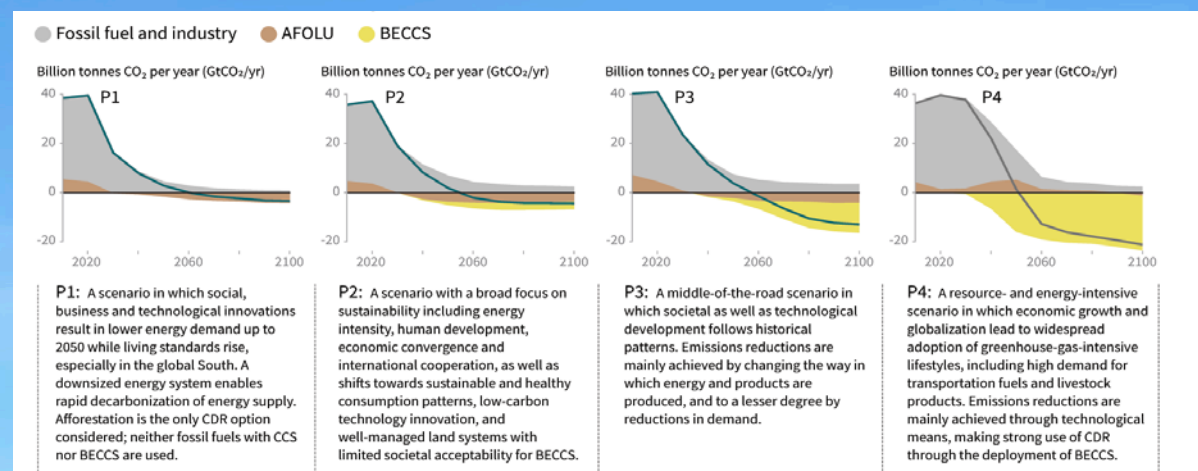
One of Andra AP-fonden's sustainability principles is to take a scientific approach. The UN's Intergovernmental Panel on Climate Change (IPCC) is tasked with compiling scientific knowledge of climate change. The panel's reports form the basis for the Fund's work with climate scenarios.

In 2018, the IPCC published a special report on the consequences of global warming at the request of the United Nations Framework Convention on Climate Change (UNFCCC). The report describes the effects of global warming of 1.5°C and related greenhouse gas emission pathways, in order to strengthen the global ability to act on climate change and to set sustainable development goals.

The report presents different scenarios for how the target of 1.5 degrees can be achieved depending on whether a temporary overshoot of the warming level is allowed or not. In scenarios with no or limited overshoot of the warming level, global net CO₂ emissions decrease by approximately 45 per cent from the 2010 level until 2030 and reach net zero around 2050. If a high overshoot is permitted, it is possible to wait until 2030 for a reduction in emissions, but then both a significant reduction in emissions and a large uptake of carbon dioxide (negative emissions) are required.

As a result of AP2 implementing indices that follow the criteria for the EU Paris-Aligned Benchmark (PAB) in 2020, the Fund reports the development of the portfolio relative to the most conservative of IPCC's 1.5 degree scenarios (P1 in the figure). This is due to the uncertainty surrounding threshold effects and the potential for large-scale negative emissions within 10 years.

BREAKDOWN OF CONTRIBUTIONS TO GLOBAL NET CO₂ EMISSIONS IN FOUR ILLUSTRATIVE MODEL PATHWAYS



Source: Figure SPM.3b from IPCC, 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press.

AFOLU (Agriculture, Forestry and Other Land Use)
BECCS (BioEnergy with Carbon Capture and Storage)
CDR (Carbon Dioxide Removal)

Risk management

The Fund has integrated climate risk management in its asset management and has a risk process with methods for identification, assessment and management according to the asset class in which climate-related risks arise.

To achieve its business objectives, the Fund must take financial risks in its asset management. Financial risk is one of the most important resources available to the Fund. However, this risk-taking must be designed as efficiently as possible and implemented through responsible investments and responsible ownership, to ensure that the Fund's asset management is exemplary. AP2 considers sustainability risks in all investment processes, to ensure efficient management of risk and an exemplary asset management.

In accordance with the TCFD, climate risks and opportunities are divided into two groups: transition risks and physical risks. Transition risks are subdivided into regulatory risks, technological

risks, market risks and brand risks. Physical risks are subdivided into acute risks and systemic risks. On the opportunity side there are resource efficiencies, energy, products/services, markets and resilience. In the table on pages 11-13, the Fund gives examples of how the portfolio is affected by risks and opportunities in each category. These climate risks are part of the existing risk categories that the Fund already takes into account, such as financial risk, operational risk and impact risk. The purpose of categorisation is to make it easier to highlight, manage and communicate the risks to which the Fund is exposed.

There are various types of climate risk and they affect the Fund in different ways. The risks can be

seen as financial or operational risks, and analysed on the basis of this classification. Fossil reserves are one example of a climate risk factor that affects financial risk. The risk is that, as a result of the transition to a more fossil-free world, assets risk losing value, which would cause the value of companies holding these assets to depreciate. This can be viewed as a climate risk, but becomes apparent as a financial risk. The most common sustainability risk factor under operational risks is reputational risk – the risk that investment activities undermine confidence in the Fund's operations or the pension system as a whole. In addition to the division into financial and operational risks, during 2021 AP2 introduced impact risk, as the third category of

risk. An example of impact risk is when an investment risks causing harm to people or the environment, without necessarily having any effect on financial or operational risk. If impact risk is high, the Fund finds it difficult to achieve its objective of exemplary asset management. The risk of the Fund contributing to illegal deforestation through its investments is one example of this type of risk.

Identification, assessment and management

The identification, assessment and management of both transition risks and physical risks are adapted to the different asset classes in the portfolio. The first step in the risk management process is risk identification, which is handled by each portfolio



manager. The Fund continuously works to improve and integrate the identification of climate risks. Risk assessment and risk management are also performed by the portfolio manager, with the support of sustainability analysts.

Listed equities and credits

For listed equities and credits, transition risks are managed via an internally developed Paris Aligned Benchmark (PAB)-adapted index. The index is updated twice a year and governs the Fund's investments in these asset classes. PAB is an integrated process which partly entails divestment from companies as a direct consequence of risk identification and assessment. Active engagement is another important aspect which has been part of the Fund's process since its inception. AP2's dialogues with companies are conducted differently, depending on the purpose. Major initiatives are launched with a letter to the company's chair and CEO, and the dialogue then continues with the people who work directly with the issues that are the subject of the dialogue. The dialogues take place both individually and together with other investors, including through the Institutional Investor Group on Climate Change (IIGCC) and the Climate Action 100+ initiative.

In 2022, the Fund began to map the physical risks in the portfolio and to develop a process for these risks. This work will continue during 2023, after which the conclusions will be integrated into the management process.

Government bonds

In 2022, the Fund worked to eliminate transition risks, including in the portfolio of government bonds in emerging markets. Assessment using index data for a low carbon economy forms the basis for decisions to divest state-owned fossil fuel companies with bonds issued in US dollars. During 2023, the Fund plans to continue working on access to data and processes, to reduce both transition risks and physical risks.

Non-listed real estate

Both transition risks and physical risks are assessed to be low for the Fund's investments in conventional real estate. The transition risks for real estate include requirements to reduce energy use and carbon emissions for property management activities, as well as in connection with any new construction. AP2's external managers, Vasakronan, Cityhold Office Partnership and US Office Holding, have worked with transition risks for many years, reducing many risks. Some risks remain, however, in particular regulatory and market-related transition risks such as higher prices for emissions, increased taxes, increased costs of materials, or changes in customers' behaviour that can lead to increased costs.

During the year, with the help of input from each manager, the Fund analysed the physical risks associated with the Fund's real-estate holdings. Depending on the properties' geographical location, there is variation in the distribution of the risks between holdings. The Fund's Swedish

EU Paris-Aligned Benchmark

The Fund's internally managed listed equities and corporate bonds are managed in accordance with the EU Paris-Aligned Benchmark (PAB), which entails that the Fund does not invest in companies that receive more than a certain percentage of their sales from coal, oil and/or gas, or in energy companies that receive more than 50 per cent of their revenue from combustion of fossil fuels. The maximum share for coal is 1 per cent, for oil 10 per cent and for gas 50 per cent. This has resulted in a total of 250 companies no longer being included in the Fund's portfolio.

The framework also requires a PAB-adjusted index to have an initial carbon footprint that is a maximum of 50 per cent of the benchmark index, in AP2's case equivalent to a market-weighted index. Furthermore, the footprint must be reduced by 7 per cent per year over time, with the aim of achieving net zero emissions by 2050. This means that the carbon footprint will be reduced by 76 per cent by 2030, compared to the market-weighted index for 2020.

Why PAB?

The main purpose of adapting portfolio holdings in equities and corporate bonds in accordance with PAB is to influence companies to reduce their greenhouse gas emissions. It can generally be said that companies with significant emissions will find it more difficult to finance their operations via ownership shares or loans. The framework also stipulates that the index must be exposed to industries with high emissions, which means that it is not possible to decarbonise the portfolio solely by owning companies in sectors with low emissions. The PAB framework is designed for the achievement of net zero emissions by 2050. In addition to the fact that mandates managed under the framework do not contain certain companies, companies that do not over time reduce their greenhouse gas emissions, both as direct emissions from operations and as emissions generated by their services and/or products, will have a reduced weighting in a PAB-adapted portfolio.

Climate Action 100+

AP2 participates actively in Climate Action 100+, an international dialogue initiative launched in December 2017. More than 700 investors are collaborating in dialogues with 166 companies. These companies account for a significant proportion of the world's greenhouse gas emissions. The aim is to persuade these companies to reduce their emissions to a level in line with the Paris Agreement, that they report in accordance with the Task Force on Climate-related Financial Disclosures (TCFD), and that their boards take clear and unequivocal responsibility for the work of addressing climate change.

Together with Ohman and Alecta, AP2 is leading the dialogue with AB Volvo, within the framework for the project. During the five years of dialogue with the focus companies, major progress has been achieved. The initiative is followed up annually via a report showing how the dialogues have developed that is available on the Climate Action 100+ website: www.climateaction100.org.

holdings show a greater propensity for chronic risks, such as rising sea levels and temperatures, but also a risk of flooding, which is an acute risk. While the global holdings in the portfolio are also subject to increased chronic risks, the analysis shows that the propensity for acute risks, such as flooding, storms, droughts and fire, is greater globally than in Sweden. The Fund's external managers undertake regular scenario analyses and monitor the development in and the consequences of climate change.

Timberland and farmland

The Fund's investments in farmland are managed by an external manager, Nuveen, whose company, Westchester, is responsible for the operational management of farmland. Nuveen is working to create a more resilient, efficient and environmentally sound farmland system. Part of its approach is innovative solutions to influence and reduce the carbon footprint. The manager intends to add physical risks to existing analyses, which include

information about weather events, as fires and droughts are considered to be two of the greatest risks. The Fund engages in dialogue with the manager concerning climate risks and how these are assessed and managed.

The Fund's timberland investments are deemed to be a targeted sustainability investment, which means that the investments contribute to the possibility of increasing carbon sequestration in growing forests and in timberland products. However, there are risks associated with, for example, changes in climate policy. The physical risks for timberland are expected to increase and to vary in scope depending on where the timberland is located. The risks identified are the presence of pests and diseases, droughts, floods, extreme storms and forest fires. The Fund's three external managers (New Forest, Molpus and Nuveen) have processes in place to map these risks, and AP2 maintains a continuous dialogue with the managers.

Private equity

In 2022, AP2 initiated an evaluation of the Fund's managers of private equity funds, in order to map transition risks in the portfolio. The risks are expected to be limited as they are balanced by opportunities presented by targeted sustainability investments within the asset class. Physical risks will be mapped for this asset class before 2025.

Sustainable infrastructure and green bonds

Both asset classes are categorised as transition investments and are thereby not exposed to transition risk in the same way as other assets. However, there may be physical risks, which the Fund plans to map in 2024.

TABLE 1A EXAMPLES OF POTENTIAL TRANSITION RISKS (ADAPTED FROM THE TCFD)

| Transition risks | Potential financial impacts on companies | Potential financial impact on AP2 |
|---|--|---|
| Policy and Legal | | |
| <ul style="list-style-type: none"> Increased pricing of GHG emissions Enhanced emissions-reporting obligations Mandates on and regulation of existing products and services Exposure to litigation | <ul style="list-style-type: none"> Increased prices for greenhouse gas emissions. Greater requirements for emissions reporting. Higher requirements/regulations for existing products and services. Exposure to legal processes (lawsuits). | <p>Higher price for carbon, climate regulations and reporting is generally speaking financially positive for AP2 as a universal owner. If the cost of carbon is internalised, this results in a more effective market.</p> <p>The challenge for AP2 lies in identifying which classes of asset/sectors/companies are winners and losers, respectively, as the regulatory requirements increase.</p> |
| Technology | | |
| <ul style="list-style-type: none"> Substitution of existing products and services with lower emissions options Unsuccessful investment in new technologies Costs to transition to lower emissions technology | <ul style="list-style-type: none"> Write-offs and early retirement of existing assets. Reduced demand for products and services. Research and development (R&D) expenditures in new and alternative technologies. Capital investments in technology development. Costs to adopt/deploy new practices and processes. | <p>The rate of transition is decisive for the financial valuation of the fossil fuel reserves and the companies that have assets that are dependent on fossil energy for their products/services.</p> <p>The challenge for AP2 lies in assessing which technologies will succeed and at what rate and how new technologies will affect classes of asset, sectors, companies and securities.</p> |
| Market | | |
| <ul style="list-style-type: none"> Changing customer behavior Uncertainty in market signals Increased cost of raw materials | <ul style="list-style-type: none"> Reduced demand for goods and services due to shift in consumer preferences. Increased production costs due to changing input prices (e.g. energy, water) and output requirements (e.g., waste treatment). Abrupt and unexpected shifts in energy costs. Change in revenue mix and sources, resulting in decreased revenues. Re-pricing of assets (e.g., fossil fuel reserves, land valuations, securities valuations). | <p>Technological and market risks and opportunities are linked. The transition will involve changes among consumers and they may both depend on changes in preferences and/or technological changes.</p> <p>The challenge is the same as for technological risks.</p> |
| Reputation | | |
| <ul style="list-style-type: none"> Shifts in consumer preferences Stigmatization of sector Increased stakeholder concern or negative stakeholder feedback | <p>Reduced revenue from decreased:</p> <ul style="list-style-type: none"> Demand for goods/services. Production capacity (e.g. delayed planning approvals, supply chain interruptions). Negative impacts on workforce management and planning (e.g., employee attraction and retention). | <p>Companies can create increased shareholder value by reinforcing their brand. It is important that companies/funds in the AP2 portfolio do not violate conventions and guidelines that Sweden has signed up to.</p> <p>For AP2, it is important to manage the pension assets in a way that maintains or reinforces the public's confidence in the pension system.</p> |

TABLE 1B EXAMPLES OF POTENTIAL PHYSICAL CLIMATE-RELATED RISKS (ADAPTED FROM THE TCFD)

| PHYSICAL CLIMATE RISKS | Potential financial impacts on companies | Potential financial impacts on AP2 |
|--|---|--|
| Acute | | |
| <ul style="list-style-type: none"> Increased severity of extreme weather events such as cyclones and floods | <ul style="list-style-type: none"> Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions). Reduced revenue and higher costs from negative impacts on workforce (e.g., health, safety, absenteeism). Write-offs and early retirement of existing assets (e.g., damage to property and assets in “high-risk” locations). | Physical climate-related risks may have a potential impact on all classes of asset, but the asset classes in which physical climate-related risks (both acute and systematic) are greatest are traditional real estate, timberland and farmland. |
| Chronic | | |
| <ul style="list-style-type: none"> Changes in precipitation patterns and extreme variability in weather patterns Rising mean temperatures Rising sea levels | <ul style="list-style-type: none"> Increased operating costs (e.g., inadequate water supply for hydroelectric plants or to cool nuclear and fossil fuel plants). Increased capital costs (e.g., damage to facilities). Reduced revenues from lower sales/output. Increased insurance premiums and potential for reduced availability of insurance on assets in “high-risk” locations. | Physical climate-related risks are important to AP2’s investments in CatBonds. |

TABLE 2 EXAMPLES OF POTENTIAL CLIMATE-RELATED OPPORTUNITIES (ADAPTED FROM THE TCFD)

| CLIMATE-RELATED OPPORTUNITIES | Potential financial impacts on companies | Potential financial impacts on AP2 |
|---|--|--|
| Resource efficiency <ul style="list-style-type: none"> • Use of more efficient modes of transport • Use of more efficient production and distribution processes • Use of recycling • Move to more efficient buildings • Reduced water usage and consumption | <ul style="list-style-type: none"> • Reduced operating costs (e.g., through efficiency gains and cost reductions). • Increased production capacity, resulting in increased revenues. • Increased value of fixed assets (e.g., highly rated energy-efficient buildings). • Benefits to workforce management and planning (e.g. improved health and safety, employee satisfaction) resulting in lower costs. | <p>It is beneficial to AP2 for companies to work with climate-related opportunities in a way that increases shareholder value. By integrating ESG factors into investment analyses and processes, the Fund is able to identify companies that are resource-efficient.</p> <p>AP2 sees investment opportunities in these areas and invests in them through several different asset classes, including sustainable infrastructure and green bonds.</p> |
| Energy source <ul style="list-style-type: none"> • Use of lower-emission sources of energy • Use of supportive policy incentives • Use of new technologies • Participation in carbon market • Shift toward decentralized energy generation | <ul style="list-style-type: none"> • Reduced operational costs (e.g., through use of lowest cost abatement). • Reduced exposure to future fossil fuel price increases. • Reduced exposure to GHG emissions and therefore less sensitivity to changes in cost of carbon. • Returns on investment in low-emission technology. • Increased capital availability (e.g., as more investors favour lower-emissions producers). • Reputational benefits resulting in increased demand for goods/services. | |
| Products and services <ul style="list-style-type: none"> • Development and/or expansion of low emission goods and services • Development of climate adaptation and insurance risk solutions • Development of new products or services through R&D and innovation • Ability to diversify business activities • Shift in consumer preferences | <ul style="list-style-type: none"> • Increased revenue through demand for lower emissions products and services. • Increased revenue through new solutions to adaptation needs (e.g., insurance risk transfer products and services). • Better competitive position to reflect shifting consumer preferences, resulting in increased revenues. | |
| Markets <ul style="list-style-type: none"> • Access to new markets • Use of public-sector incentives • Access to new assets and locations needing insurance coverage | <ul style="list-style-type: none"> • Increased revenues through access to new and emerging markets (e.g., partnerships with governments, development banks). • Increased diversification of financial assets (e.g., green bonds and infrastructure). | |
| Resilience <ul style="list-style-type: none"> • Participation in renewable energy programs and adoption of energy-efficient measures • Resource substitutes/diversification | <ul style="list-style-type: none"> • Increased market valuation through resilience planning (e.g., infrastructure, land, buildings). • Increased reliability of supply chain and ability to operate under various conditions. • Increased revenue through new products and services related to ensuring resiliency. | |

Targets and metrics

Specific metrics and targets are used for the best possible assessment and management of relevant climate-related risks and opportunities. The Fund reports emissions for the listed portfolio from three different perspectives.

Goal

AP2 will have a portfolio with net zero emissions by 2045.

The Fund's objective is for the entire portfolio to be in line with the Paris Agreement, i.e. to reduce the portfolio's greenhouse gas emissions at a rate that can limit global warming to 1.5 degrees. The Paris Agreement stipulates that net zero emissions must be achieved by 2050 at the latest. Since Sweden is committed to a steeper reduction, with net zero in 2045, AP2 believes that this target should also apply to the Fund.

The Fund has also set goals for greenhouse gas emissions to be reduced by at least 35 per cent by 2025, and by at least 55 per cent by 2030, compared with 2019 as the base year.

Metrics

The Fund's annual reporting of greenhouse gas emissions is expressed as carbon dioxide equivalents, CO₂e, which includes all seven greenhouse gases under the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), incompletely halogenated fluorocarbons (HFCs), fluorocarbons (FC), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃). Carbon dioxide, followed by methane and nitrous oxide, are the greenhouse gases that have the greatest impact on global warming.

The Fund's reporting includes absolute emissions expressed in tCO₂e, which initially include Scope 1 and Scope 2 emissions, emission intensities according to the TCFD, and an analysis of drivers of change in the greenhouse gas footprint. Over time, AP2 aims to expand reporting of greenhouse gas emissions to include more asset classes and to include Scope 1-3. In step with this, the Fund's reporting will be updated and historical data will need to be revised.

Carbon footprint of listed equities (the AP Funds' joint reporting)

AP2's annual carbon footprint for portfolio holdings is calculated using the latest available data for the companies' direct and indirect emissions (Scope 1 and 2). AP2 calculates and reports the carbon footprint of its listed equity portfolios based on holdings for metrics 1, 2 and 3 (see page 15). Portfolio weighting is used for metric 4.

- 1. Total carbon emissions**
Total of owned share of the portfolio companies' individual carbon emissions.
- 2. Relative carbon emissions**
Total of owned share of portfolio companies' individual carbon emissions in relation to the portfolio's market value.

3. Carbon intensity

Total of owned share of portfolio companies' individual carbon emissions in relation to the total of owned share of the portfolio companies' turnover.

4. Portfolio-weighted carbon intensity (TCFD)

The metric adds together the individual carbon intensity of each portfolio company, i.e. a company's carbon emissions in relation to its turnover, weighted according to each individual company's share of the portfolio.

AP2 has been reporting the carbon footprint of the listed equity portfolio each year since 2014. In 2015, the AP Funds all agreed to use the same methodology and metrics and then selected three metrics for carbon footprints that are all based on the funds' ownership share. Since then, metric 4 for carbon dioxide as a weighted average has been added, in accordance with the TCFD's recommendations.

In 2019, the AP Funds agreed to also report the drivers of change in the carbon emissions of the equity portfolios. Changes in the carbon footprint of the AP Funds' portfolios can be caused by two factors: Changes to the portfolio holdings and a change in the companies' carbon emissions. More information about the calculations can be found on AP2's website.

Reporting of emissions in Scope 1, 2 and 3

- **Scope 1** covers direct emissions that occur in the company's own operations, such as the combustion of coal during steel production or fuel combustion from vehicles that the company owns or controls.
- **Scope 2** covers emissions from purchased electricity, heating and cooling.
- **Scope 3** covers emissions throughout the company's value chain, from the production of purchased materials to emissions during the use of the company's product and any waste management of the product. The company's emissions such as business travel and other emissions caused by the company, but not directly owned or controlled, are also included.

AP2's carbon footprint 2022

The total carbon emissions for AP2's equity portfolio in 2022 are 1.05 (1.17) million tCO₂e, equivalent to a reduction by 9.8 per cent during the year. From 2019 as the base year, AP2 has reduced the

Fund's total carbon emissions for the listed equity portfolio by approximately 37 per cent. The relative carbon emission per krona invested is 7 tCO₂e/SEK million. By comparison, carbon intensity in 2021 was 6 tCO₂e/SEK million. The reason for the

increase in this metric is the decline in the portfolio's market value. If the footprint is instead related to the ownership share of the companies' turnover, the carbon intensity is 9 tCO₂e/SEK million. By comparison, carbon intensity in 2021 was 10

tCO₂e/SEK million. The companies in the portfolio have increased their turnover, which results in lower intensity.

AP2 also reports its carbon footprint broken down into Sweden, developed markets and emerging markets. There is a major difference in carbon intensity between developed and emerging markets, where companies in emerging markets are least carbon-efficient with higher greenhouse gas emissions.

For 2022, the Fund reports a carbon intensity for emerging markets of 13 tCO₂e/SEK million, based on the companies' turnover, while developed markets lie at 7 tCO₂e/SEK million and Sweden at 3 tCO₂e/SEK million.

In accordance with the TCFD framework, the Fund also reports a portfolio-weighted carbon intensity metric. This is similar to the aforementioned carbon intensity metric based on the companies' turnover, but is also weighted on the basis of each company's weighting in the portfolio.

All metrics for the various markets are shown in the table on the left.

AP2 uses data from MSCI ESG Research and Trucost as input. The average value of these two sources constitutes the Fund's carbon database, which is used to calculate the carbon footprint. Suppliers' data may include their estimates if reported data is missing. If there is no data from the suppliers, AP2 makes an estimate. The general trend is an increase in reported data. For AP2's carbon footprint, data is available for 100 per cent of the equity portfolio.

Fossil reserves

In the listed portfolio, the Fund holds five companies with coal reserves which, on combustion, would have an impact of 0.042 mtCO₂e. The fund also has holdings in eight companies with oil and gas reserves totalling 0.02 mmbae (million barrels of oil equivalent). AP2 has used data from MSCI ESG Manager to report fossil reserves.

CARBON FOOTPRINT OF THE LISTED EQUITY PORTFOLIO, SCOPE 1 AND 2

| Metrics | 2022 | 2021 | 2020 | 2019 |
|--|-------|-------|-------|-------|
| 1. Total carbon emissions (million tCO₂e) | 1.05 | 1.17 | 1.44 | 1.68 |
| Sweden | 0.05 | 0.07 | 0.09 | 0.13 |
| Developed markets | 0.33 | 0.4 | 0.51 | 0.62 |
| Emerging markets | 0.67 | 0.7 | 0.84 | 0.93 |
| Change in the portfolio's total carbon emissions from the previous year (%) | -9.8 | -18.8 | -14.6 | |
| – of which the change related to changes in the portfolio's holdings (% units) | -15.2 | -9.3 | -17.3 | |
| – of which the change related to changes in the companies' emissions (% units) | 5.4 | -9.5 | 2.7 | |
| 2. Relative carbon emissions (tCO₂e/MSEK) | 6.97 | 6.23 | 8.92 | 11.45 |
| Sweden | 1.49 | 1.75 | 2.58 | 4.09 |
| Developed markets | 4.61 | 4.25 | 6.7 | 8.94 |
| Emerging markets | 14.48 | 13.41 | 16.4 | 20.78 |
| 3. Carbon intensity (tCO₂e/MSEK) | 8.82 | 10.09 | 12.73 | 14.06 |
| Sweden | 2.9 | 4.78 | 5.07 | 6.86 |
| Developed markets | 6.48 | 7.48 | 9.97 | 11.56 |
| Emerging markets | 13.1 | 14.77 | 18.85 | 20 |
| 4. Portfolio-weighted carbon intensity (TCFD)(tCO₂e/MSEK) | 7.68 | 8.97 | 12.27 | 15.89 |
| Sweden | 2.78 | 3.48 | 4.15 | 5.17 |
| Developed markets | 6.92 | 8.1 | 10.93 | 17.92 |
| Emerging markets | 12.32 | 14.95 | 19.63 | 20.66 |
| Change in the portfolio's carbon intensity (TCFD) from the previous year (%) | -14.3 | -26.9 | -22.8 | |
| – of which the change related to changes in the portfolio's holdings (% units) | 5.8 | -4.1 | -33.4 | |
| – of which the change related to changes in the companies' emissions (% units) | -20.1 | -22.8 | 10.6 | |
| Market value of the Fund's portfolio covered by CO ₂ e data (SEK billion) | 151 | 187 | 161 | 147 |
| Proportion of the share capital for which data is available (%) | 100 | 100 | 99 | 99 |

Carbon measurements as from and including 2019 are based on a broader universe of carbon data and a refined method of estimating carbon emissions from non-reporting companies. As companies in the portfolio improve and increase their reporting of carbon data, AP2 also revises historical data. There may therefore be deviations in comparison with previous reports.

1. Total carbon emissions. Total of owned share of portfolio companies' individual carbon emissions.

2. Relative carbon emissions. Total of owned share of portfolio companies' individual carbon emissions in relation to the portfolio's market value.

3. Carbon intensity. Total of owned share of portfolio companies' individual carbon emissions in relation to the total of owned share of the portfolio companies' turnover.

4. Portfolio-weighted carbon intensity (TCFD). The metric adds together the individual carbon intensity of each portfolio company, i.e. a company's carbon emissions in relation to its turnover, weighted according to each individual company's share of the portfolio.

The formulae for the above indicators are available on the Fund's website.

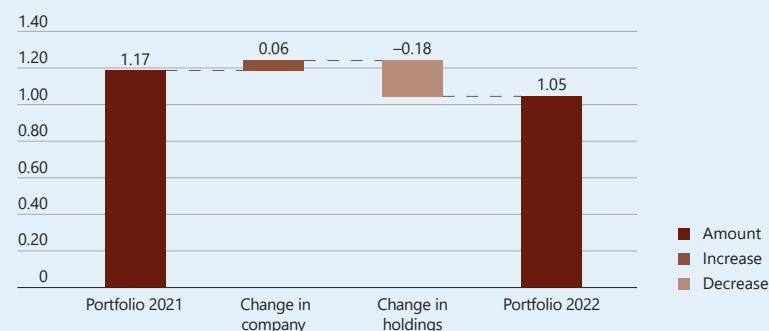
CO₂e (carbon equivalent) is a unit of measurement that makes it possible to compare the climate impact of different greenhouse gases.

Drivers for change in carbon emissions

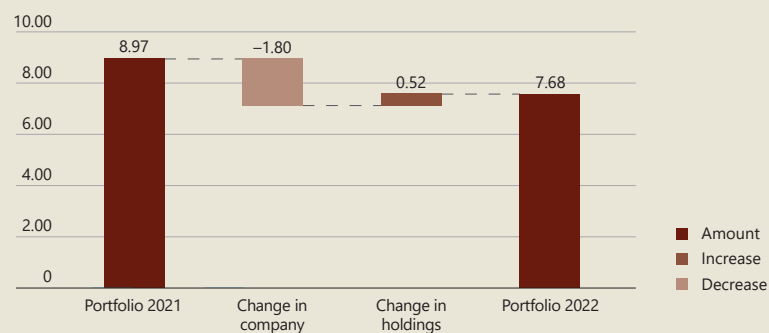
The upper graph on the right shows the reasons for the change in total carbon emissions between 2021 and 2022 for AP2's listed equity portfolio. The calculations relate to emission data from Scope 1 and 2 expressed in millions of tCO₂e. The graph shows that most of the decrease can be attributed to changes in the Fund's holdings. On the other hand, the companies are increasing their emissions between 2021 and 2022 by around 5 percentage points.

One reason for the increase in the companies' emissions is that their operations have grown, with a total increase in the portfolio's turnover of 30 per cent from 2021. Regardless of this explanation, there is a clear signal that major reductions in the companies' emissions should take place in the coming years. Given the increased turnover, the companies contribute to improved carbon intensity; see the lower graph on the right. The companies' reduced carbon intensity is the driving force behind the reduction of the portfolio according to this metric.

CAUSES OF CHANGE IN TOTAL CARBON EMISSION BETWEEN 2021 AND 2022, MILLION tCO₂e



CAUSES OF CHANGE IN PORTFOLIO-WEIGHTED CARBON INTENSITY BETWEEN 2021 OCH 2022, tCO₂e/MNKR



Greenhouse gas emissions for Paris-Aligned Benchmark (listed equities and credits)

In order to meet the requirements of the Paris Agreement, the companies must reduce their total emissions and become less carbon intensive. AP2 implements its own PAB indices whereby companies' carbon intensity is calculated using a debt-adjusted market value (EVIC, Enterprise Value Including Cash). AP2 uses this metric to

follow up portfolio development in line with the Paris Agreement. In addition to Scope 1 and Scope 2, Scope 3 is also included in the calculation of this carbon footprint. Scope 3 is currently included for companies in the energy, chemical, mining, transport, construction and materials sectors. Graphs 1 and 2 show the carbon footprint of the portfolios adjusted to the framework and for the corresponding market-

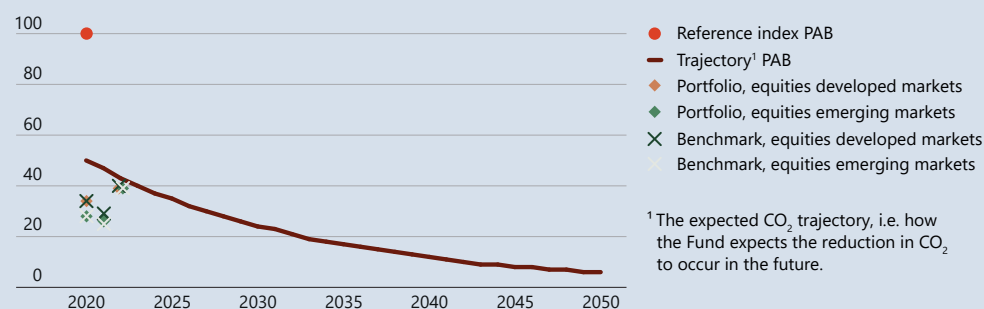
weighted index. The curve shows an annual decrease of 7 per cent. Over time, the portfolios must be below this curve, to fulfil the PAB criteria.

In both graphs 1 and 2, the carbon footprint is reported as a percentage compared to the equivalent market-weighted index for the portfolios that are adapted to the PAB framework.

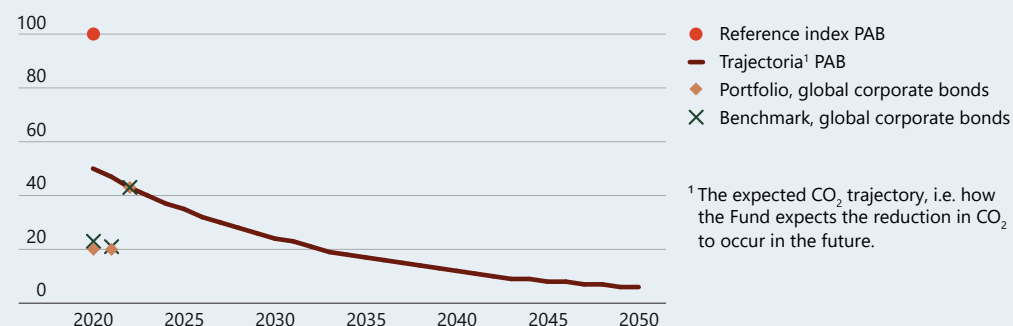
The carbon footprint in 2022 follows the expected curve, but with an increase, compared

with 2021, to 39 (27) per cent of the benchmark index for equities and 43 (20) per cent for corporate credits. Over time, the Fund intends to keep the portfolios' footprint below the respective trajectories, but the trend is expected to vary from year to year. One reason for this year's increase was the inclusion of Scope 3 for a number of sectors.

GRAPH 1. CARBON FOOTPRINT IN PAB-ADJUSTED EQUITY PORTFOLIOS COMPARED TO A MARKET-WEIGHTED INDEX, %



GRAPH 2. CARBON FOOTPRINT IN PAB-ADJUSTED CREDIT PORTFOLIOS COMPARED TO A MARKET-WEIGHTED INDEX, %



Other asset classes

AP2's ambition is to eventually present a carbon footprint that includes all asset classes. For 2022, the Fund has calculated the carbon footprint of listed equities, corporate bonds, parts of timberland and farmland, and conventional real estate. This means that 68 per cent of AP2's assets under management are measured according to a carbon indicator.

AP2's non-listed real-estate companies include Scope 1 and Scope 2, as well as Scope 3 in the form of the tenants' energy consumption. The Fund's total carbon emissions are aggregated to

118,903 tonnes CO₂e and the carbon intensity is 0.58 tCO₂e/SEK million, based on market value. Energy intensity increased during the year due to the re-opening of offices to the workforce after Covid-19, which has a direct impact on carbon intensity. During the year, AP2's real estate companies, and in particular US Office Holdings, undertook extensive energy efficiency measures, which has resulted in reduced carbon intensity, despite the re-opening of offices to the workforce.

The Fund and its timberland managers are in dialogue on calculation of carbon sequestration and carbon emissions. All of the Fund's managers,

Molpus, New Forests and Nuveen, have calculated the total carbon sequestration of their forests. AP2's share of carbon sequestration is 51.20 million tCO₂e. The increase since last year is due to all managers now reporting carbon sequestration.

During the year, AP2's farmland managers calculated the investments' carbon footprint. This type of calculation is complex and the choice of method is subject to academic debate. Following discussions with leading industry experts and academic institutions, a method has been developed. It is based on direct inflows and outflows (e.g. fuel, fertiliser, chemicals and harvest) for the farm and

includes 70 different production systems with combinations of region, type of crop and production method. Emissions are then calculated for each production system and compiled as a total figure for the portfolio.

The farmland carbon sequestration is also estimated, but only for the Brazilian farmland and the large areas set aside for conservation purposes, i.e. Legal Reserves (LR) and Permanent Protection Areas (PPA). Based on these assumptions, AP2's share of carbon sequestration is estimated to amount to 6.6 million tonnes of tCO₂e.

CARBON FOOTPRINT FOR OTHER ASSET CLASSES, SCOPE 1, 2 AND 3

| Metrics | 2022 | 2021 | 2020 | 2019 |
|---|--------|--------|--------|--------|
| 1. Total carbon emissions (million tCO₂e) | | | | |
| Non-listed properties | 0.12 | 0.11 | 0.14 | 0.16 |
| Farmland* | 0.08 | 0.08 | 0.07 | 0.07 |
| Timberland | 0.55 | - | - | - |
| Sustainable infrastructure | 0.0021 | - | - | - |
| 2. Carbon intensity (tCO₂e/MSEK) | | | | |
| Non-listed properties | 0.58 | 0.65 | 0.84 | 0.64 |
| 3. Total carbon sequestration (million tCO₂e) | | | | |
| Farmland** | -6.57 | -6.60 | -6.60 | -6.25 |
| Timberland | -51.20 | -19.20 | -12.30 | -11.50 |

* Scope 1 and 2 only.

** Only Brazilian farmland.

As reporting of CO₂ data increases and improves, AP2 also revises historical data. There may therefore be deviations in comparison with previous reports.



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