

AP2

Andra
AP-fonden

CLIMATE AND NATURE REPORT 2023

In accordance with the TCFD and TNFD recommendations



Climate and nature report 2023

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Climate and biodiversity are focus areas in Andra AP-fonden (AP2)'s sustainability work. Changes in climate and nature are likely to have a significant impact on the living conditions of future generations and also on the Fund's returns and achievement of its objectives.

Climate change is ongoing and is caused by human impacts. The atmosphere, the sea, the polar ice caps and the Earth's living organisms are affected and are changing at a pace that is unprecedented in history. All inhabited areas on the planet will be affected by climate change, including extreme weather conditions and changing precipitation patterns.

Nature, with its resources and ecosystem services, is essential for human existence and for all economic activities. Biodiversity – diversity within species and between species and ecosystems – is diminishing more rapidly than ever before in the history of humankind, with extensive and irrevocable consequences.

Climate and biodiversity are interrelated in many ways. There is also a strong link between these areas and human rights, since climate- and nature-related risks have consequences for indigenous people's rights, human health, essential supplies, access to food and water,

human safety, economic growth and the entire global economy. In its sustainability strategy, AP2 therefore chooses to address all these issues from a holistic perspective.

About this report

AP2 sees the frameworks Task Force on Climate Related Financial Disclosures (TCFD) and Taskforce on Nature-related Financial Disclosures (TNFD) as support for the work of identifying and managing climate- and nature-related risks and opportunities, while also encouraging companies to be transparent via annual and comparable reporting. This is the Fund's first combined report.

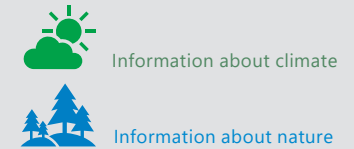
The work on climate- and nature-related issues, and on the preparation of this report, has the following starting points:

- **Double materiality** – AP2 applies the principle of double materiality to its sustainability work, including risk

management and reporting. This is defined in the Fund's sustainability policy. This entails considering not only the risks of the Fund's investments being subject to climate and nature impacts, but also that the Fund's investments have an impact on the world at large.

- **Scope of reporting** – The report focuses on climate- and nature-related issues, based on AP2's investment portfolio. In some aspects, the Fund's work has been prioritised to the asset classes and risks that are deemed to be of the greatest materiality, and in these cases, reporting is also concentrated on these asset classes and risks, which is stated in the report.
- **Geographical presence** is an important parameter to be able to assess AP2's climate risks, in particular physical risks, and the Fund's impact and dependence on

Symbols in the report



ecosystem services and biodiversity. For the fixed assets in the Fund's portfolio, such as real estate, timberland and farmland investments, geographical presence can be mapped with good precision. When it comes to the listed portfolio, this is more challenging. For these assets, the Fund uses estimates from data providers, which are based on where the companies in the portfolio own assets. An important limitation of this method is that it does not capture the exposure that exists through the companies' supply chains.

- **Time perspective** – AP2 consistently applies the following definitions in the report:
 - Short term – up to 5 years
 - Medium term – 5-10 years
 - Long term – over 10 years

TCFD and TNFD framework



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Governance

The organisation's management of climate- and nature-related dependencies, impacts, 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 must be given to sustainable development, without compromising the overall return and risk objective. 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.

Board of Directors

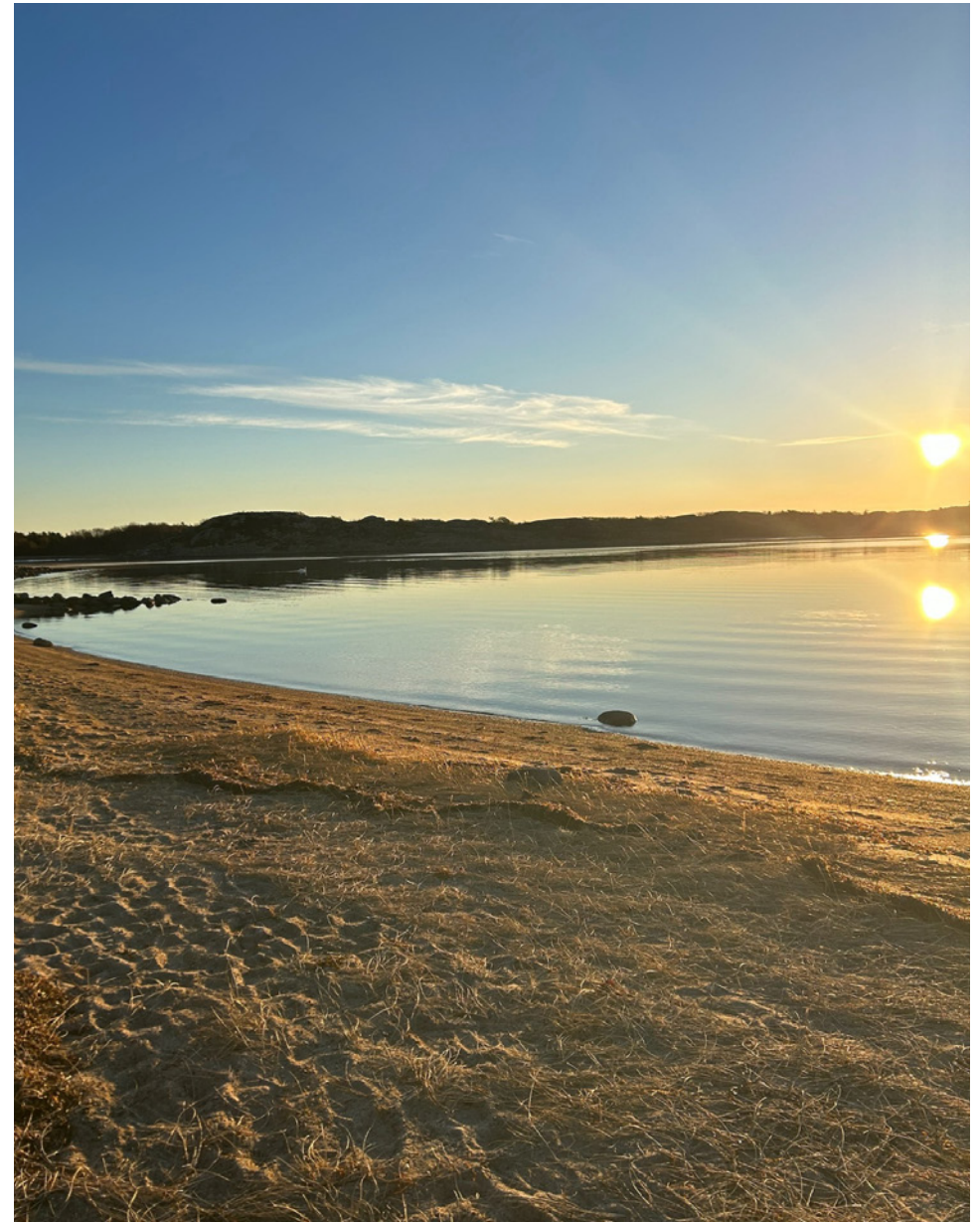
The Board must by law adopt the Fund's objectives and the overall framework for its activities in an annual business plan, which includes investment beliefs, strategic portfolio and sustainability policy. The sustainability policy (see www.ap2.se) describes the Fund's approach to sustainability work and defines governance, goals, commitments, integration and transparency for each focus area.

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

The Board of Directors is informed in writing about the Fund's sustainability work prior to each Board meeting and has the opportunity for in-depth consideration and discussion under a standing agenda item on sustainability issues at each ordinary Board meeting. In addition, if necessary, separate, in-depth reviews are held with the Board on the various focus areas.

A. The Board's oversight of climate- and nature-related impacts, dependencies, risks and opportunities.

AP2's Board receives ongoing information on the Fund's sustainability work, which includes climate- and nature-related issues. The Board has the opportunity to discuss this under a standing agenda item on sustainability issues at each ordinary Board meeting.



B. Management's role in assessing and managing climate- and nature-related impacts, dependencies, risks and opportunities.

All management team members have a responsibility to take climate and nature issues into account, according to their various roles. Since AP2 is a small organisation, where several managers are directly engaged in the sustainability work, the management is very familiar with the work that is done. The Fund thus has good opportunities to assess and manage climate- and nature-related risks and opportunities.

Management

Responsibility for AP2's strategic sustainability work rests with the Fund's CEO, management group, chief strategist and senior sustainability strategist. They are also responsible for implementation and follow-up on the sustainability policy. Climate and biodiversity are two of the Fund's five focus areas within sustainability and the work is consequently focused on these topics. All of the Fund's employees have a responsibility to take the sustainability perspective into consideration in their various roles and the Chief Investment Officer is responsible for integrating sustainability risks and opportunities in the management of assets. The senior sustainability strategist is part of the fund management organisation and is responsible for coordinating the sustainability work, supporting the fund management organisation in the integration, and reporting to the management team and Board.

C. Policies, oversight and engagement for human rights in relation to nature, indigenous peoples and local communities.



AP2's work is based on the Fund's human rights policy. The Fund is committed to following the UN Guiding Principles on Business and Human Rights. This is supervised by the Board and management in the same way as the work for climate and nature. The rights of indigenous peoples are also considered in AP2's policy against deforestation, where the Fund's expectations of companies are defined.



Human rights

Like climate and biodiversity, human rights are a focus area for AP2's sustainability work, and there are strong links between these issues. AP2's work on human rights is based on the Fund's human rights policy (see www.ap2.se). AP2 undertakes to comply with the UN Guiding Principles on Business and Human Rights and works to implement these principles, with the aim of conducting its business in line with the UN Guiding Principles as from 2025 at the latest.

Work on human rights is supervised by the Board and management in the same way as work on climate and nature, and as described above.

In addition to the human rights policy, which covers a wide range of human rights relevant to AP2's activities, the rights of indigenous peoples are addressed in AP2's anti-deforestation policy, in which the Fund's expectations of companies are defined. These expectations form the basis for the Fund's engagement work on the deforestation issue. Human rights that are associated particularly with deforestation, and that companies with activities related to deforestation risk should manage, include rights for indigenous peoples and local communities, including the right to land and to free, prior and informed consent. AP2 has zero tolerance of threats and violence against environmental and human rights champions.



Strategy

Integration of significant climate- and nature-related impacts, dependencies, risks and opportunities in the organisation's business model, strategy and management.

Sustainability work is part of AP2's mission. The AP Funds are required by law to manage their fund assets in a way that provides the greatest possible benefit for the insurance of income-based old-age pensions. The total risk level must be low, measured in outgoing pensions. The funds' mission requires the fund assets to be managed in an exemplary manner through responsible investments and responsible ownership. When managing the assets, special emphasis must be given to how sustainable development can be promoted without compromising the overall goal.

Exemplary means that the investments should have the best risk and return, given the needs of the pension system, and that sustainability should be an integral part of the asset management. This integration means, among other things, that one of the Fund's investment beliefs is sustainability-related – "Sustainability pays off".

The Fund believes that sustainable development is a prerequisite for a good pension, when taking a broader perspective on retirement than just financial security into consideration.

The Fund's overall strategy is based on the strategic roadmaps that are defined at regular intervals. The current plan focuses on developing a more effective, sustainable and resilient portfolio and on creating a more adaptable and effective business. A more effective, sustainable and resilient portfolio entails enhancing sustainability work and contributing actively to sustainable development.

AP2's sustainability strategy

AP2's sustainability work adheres to a method that consists of six parts. These form the basis for the action plans describing the work that the Fund undertakes within each focus area. The method answers the question of "how" this work is conducted through responsible investments and responsible ownership. Based on the method's six keywords, the Fund has defined action plans for climate and biodiversity work, to provide a detailed picture of how the focus areas will be integrated within the Fund's various asset classes.

AP2's definition of sustainability

AP2's sustainability work is based on the Fund's mission and involves acting over the long term to protect and create value – based on an economic, environmental and social perspective.

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 operations.

2. Materiality

AP2 focuses its work on the most important issues and areas where the Fund can make the biggest difference.

3. Analysis

Sustainability work is built on thorough, fact-based analysis, both prior to an investment and in the Fund's role as owner.

4. Engagement

AP2 encourages companies to live up to the Fund's expectations in relation to sustainability issues.

5. Collaboration

The Fund can achieve more through collaboration, both within AP2 and with other investors.

6. Transparency

AP2 practices what it preaches and establishes trust through transparency.

A. Climate- and nature-related impacts, dependencies, risks and opportunities identified by AP2 in the short, medium and long term.



In the short term, AP2's investments are assessed to have a low climate risk and there are great opportunities for investments within the transition. In the medium and long term, however, climate risks are expected to increase and may have a major impact on long-term returns.



AP2 has mapped the portfolio's impacts, dependencies, risks and opportunities using the ENCORE database and with a focus on sectors with a high risk according to TNFD. The Fund's analysis shows that land use as a driver of biodiversity loss, as well as the food and beverage, forest and paper, and energy sectors, should be prioritised in AP2's investment strategies and engagement work.

Identified impacts, dependencies, risks and opportunities



Climate change entails both risks and opportunities for the Fund's long-term returns. The Fund's climate-related risks are divided into transition risks and physical risks. Both of these risks may in the future lead to financial risks for the Fund and its investments.

Transition risks are associated with the risks arising from the transition to a carbon-neutral society and include regulatory, technological and market risks, as well as brand risks. Among other things, this may entail that the financial value of assets can diminish sharply, but also that investment opportunities arise in areas such as sustainable infrastructure and green bonds.

Physical risks are subdivided into acute risks and systemic risks. These may affect several of the Fund's assets, including real estate and timberland and farmland investments, as well as companies located in risk zones where activities may be affected by, for example, floods, fires and sustained temperature increases.

In the short term, the Fund's investments are assessed to have a low climate risk and great opportunities for investment to contribute to the transition. In the medium and long term, however, climate risks are expected to increase and may have a major impact on long-term returns.



AP2 has analysed and evaluated the investment portfolio's material nature-related dependencies, impacts, risks and opportunities using the ENCORE database developed by the Natural Capital Finance Alliance and the UN's environmental programme, UNEP¹.

Impacts and dependencies

The analysis is based on the principle of double materiality and was performed from a sector perspective, and the assessment was made according to the following parameters:

- The principal drivers of biodiversity loss, according to IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services)².
- Sectors that have the greatest impact on these drivers of biodiversity loss.
- Sectors most dependent on nature resources and ecosystems.
- Sectors with the greatest exposure to the various asset classes in AP2's portfolio.

The analysis is based on the extent of the negative biodiversity impacts of the sectors identified with high relevance in TNFD's guidelines, according to ENCORE, and is limited to the sectors that are relevant for AP2 (sectors that are not part of the Fund's portfolio are not included). In the analysis, sectors are evaluated on the basis of the entire value chain,

i.e. a restaurant or grocery store is considered to be linked to the risks associated with the farming of the products sold.

Impacts are analysed according to the five drivers of biodiversity loss identified in the IPBES report, and how they affect land, fresh water, sea and atmosphere. According to the IPBES report, the five main drivers of biodiversity loss are:

- Changing use of sea and land
- Direct exploitation
- Climate change
- Invasive non-native species
- Pollution

AP2 works on the climate issue and in this work addresses the sectors and companies that have the greatest impacts through this driver. For this reason, the impact of sectors on climate change is not included in this analysis. Of the four remaining drivers, the analysis shows that land use and pollution are the most relevant for the Fund's investments.

Sectors in AP2's portfolio with a high negative impact on and high dependence on natural resources and ecosystems are highlighted in the overview on the next page, which is structured according to the Fund's exposure to each sector. Based on the analysis, the Fund has chosen to primarily prioritise the food and beverage sectors (including the entire value chain from agriculture to producers, trade and restaurants), as well as forest and paper, when integrating nature aspects in

¹www.encore.naturalcapital.finance/en

²IPBES (2019): Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Diaz, and H. T. Ngo (editors). IPBES Secretariat, Bonn, Germany. 1,148 pages. <https://doi.org/10.5281/zenodo.3831673>

AP2's investment strategies and engagement work. The work is thereafter planned to also include the energy sector, including sustainable infrastructure.

The food and forestry sectors are particularly relevant in view of AP2's focus on land use. According to IPBES, the food sector stands out in terms of negative impacts from land use, primarily through deforestation in tropical areas with rich and sensitive biodiversity. Furthermore, 75 per cent of tropical deforestation is caused by four raw materials – cattle, soya, palm oil and timber. According to IPBES, agriculture alone is identified as the primary threat to 24,000 of the 28,000 (86 per cent) species at risk of extinction. The global food system is also an important driver of climate change and accounts for around one third of the total human-generated greenhouse gas emissions. The food and forest sectors are dependent on ecosystem services such as water, climate and pollination. If these are weakened, the industry will be negatively affected. According to IPBES, around 85 per cent of the Earth's arable land is threatened by erosion, deterioration of soil quality and pollution, and more than 75 per cent of the world's harvests depend on pollination.

The energy sector and its sub-sectors have been identified as being at high risk from both an impact and dependency perspective. Given the need to invest in renewable energy from a climate perspective, and the Fund's focus on investments that contribute to the climate transition, it is important to include the nature perspective when evaluating investments and projects.

Risks and opportunities

In total, 20 per cent of AP2's assets are invested in the sectors identified by TNFD as having high nature-related impacts and dependencies, through the asset classes comprising listed equities and credits, private equity funds, farmland and tim-

berland investments and the Fund's investments in sustainable infrastructure. The three prioritised sectors comprising food and beverages, forestry and paper, and energy account for 10 per cent of the Fund's investments, which have both a very high impact and dependence on nature. There is a risk of negative impacts on these investments in the event of a lack of natural resources and

weakened ecosystem services, particularly in the medium and long term.

The Fund sees opportunities to invest in activities that reduce the negative impact on nature and promote biodiversity. This takes place through the Fund's targeted sustainability investments, including sustainable infrastructure, timberland and farmland, that fulfil the Fund's sustainability criteria,

and through investments via private equity funds, including animal-free alternatives to meat and leather, and sustainable agricultural technology.

The nature-related impacts and the dependencies and opportunities identified in the above analysis are relevant in all time perspectives. The risks are expected to materialise primarily in the medium to long term.

AP2'S HOLDINGS IN SECTORS WITH A HIGH IMPACT AND DEPENDENCE ON NATURE RESOURCES AND ECOSYSTEMS

Sector	Share of AP2's portfolio, %	Impacts					Dependencies						
		Utilisation of resources		Contaminants			Direct resources		Enables production		Risk protection		
		Land	Water	To air	To water	To soil	Materials	Water	Pollination, soil	Water flow	Climate	Wind, flooding	Land-slide, erosion
Food & beverages	5%	Very high	Very high	Medium	High	High	Very high	Very high	Very high	Very high	Very high	Very high	Very high
Energy	3%	Very high	Very high	High	High	High	Very high	Very high	Very high	Very high	Very high	Very high	High
Medical products	3%	Medium	High	High	High	High	High	High	High	High	High	High	High
Semiconductors	2%	Very high	Very high	High	High	High	High	High	High	High	High	High	High
Forestry & paper	2%	Very high	Very high	High	High	High	Very high	Very high	Very high	Very high	Very high	Very high	Very high
Chemicals	1%	High	Very high	High	High	High	High	High	High	High	High	High	High
Textiles	1%	High	Very high	High	High	High	High	High	High	High	High	High	High
Vehicles	1%	Medium	High	High	High	High	High	High	High	High	High	High	High
Mining & metals	1%	Very high	Very high	High	High	High	High	High	High	High	High	High	High
Construction services	1%	Very high	High	High	High	High	High	High	High	High	High	High	High
Transport	1%	Medium	High	High	High	High	High	High	High	High	High	High	High
Hygiene products	1%	Medium	High	High	High	High	High	High	High	High	High	High	High
Construction materials	0%	Very high	High	High	High	High	High	High	High	High	High	High	High
Packaging	0%	Medium	Very high	High	High	High	High	High	High	High	High	High	High

Very high High Medium

B. Effects of climate- and nature-related risks and opportunities on AP2's investment strategies.

Climate change has a major impact on the ALM analysis, the Fund's tool for developing the most relevant strategic portfolio. In practice, integration into management involves three paths towards sustainable investments for climate and nature.

1. Invest in solutions through targeted sustainability investments.
2. Support change through long-term perspective and engagement as active owners.
3. Divest from adverse exposure through selective divestment from assets with persistent high risk.



Effects on AP2's investment strategies

One of AP2's investment beliefs is that sustainability pays off, and this belief is integrated into the Fund's asset management in several ways. Climate change has a major impact on the ALM analysis, the Fund's tool for developing the most relevant strategic portfolio. Choosing the strategic portfolio entails determining which asset classes are to be included and how much is to be invested in each asset class, and also which indices or strategies are to represent each asset class. The distribution between asset classes is based on a scenario where sufficient measures are not taken and the global temperature increase is 3°C, instead of the 1.5°C which is the goal of the Paris Agreement.

The assessment includes long-term assumptions about how climate change and changes in nature will affect the development in the economic and demographic situation. If the climate situation deteriorates, this would be assessed to have negative consequences for global economic growth, which is taken into account in the Fund's strategy. If the situation deteriorates, this would be assessed to have negative consequences for global economic growth, which is taken into account in the Fund's strategy.

In practice, integration into asset management involves three paths towards sustainable investments.

Investing in solutions

Creating a fossil-free and nature-positive society requires major investments, and AP2 supports the transition through targeted sustainability investments in different asset classes. One example is the Fund's investments in sustainable infrastructure, which are based on the rapid transition from fossil-based to renewable required for energy and transport systems. Another example

is the Fund's strategic allocation to green and blue bonds. In recent years, the number of these bond issues has increased significantly. This applies to both governments and companies, where the automotive industry, among others, is strongly represented. Some of the private equity funds in which the Fund invests are focused on investments with a positive impact on climate and nature, with portfolio companies active in such areas as renewable energy, animal-free alternatives to meat and leather, and sustainable agricultural technology. AP2 also has a Swedish cleantech portfolio with investments in companies active in wind power, energy efficiency planning and the circular economy.

Supporting change

AP2 supports the transition as active owners by continuously analysing and evaluating their holdings and how they live up to the Fund's expectations of portfolio companies and external managers, based on their focus areas. AP2 expects, among other things, that portfolio companies adapt their activities in line with the Paris Agreement, and ensure that activities are deforestation-free and that companies comply with the UN's Guiding Principles on Business and Human Rights. External managers are also expected to work to meet these expectations. In cases where the portfolio's evaluation points to risks or holdings that do not meet AP2's expectations, the

THREE PATHS TO SUSTAINABLE INVESTMENTS

INVESTING IN SOLUTIONS

TARGETED SUSTAINABILITY INVESTMENTS

SUPPORTING CHANGE

LONG-TERM APPROACH AND ENGAGEMENT AS ACTIVE OWNERS

DIVESTING FROM ADVERSE EXPOSURE

SELECTIVE DIVESTMENT FROM ASSETS WITH PERSISTENT HIGH RISK



Fund conducts active engagement work, including company dialogues, voting and collaboration with other investors.

Divesting from adverse exposure

AP2 may choose to divest if a company is deemed to present a high climate or nature risk and does not have the ambition or ability to transform its activities. These may be stranded assets that are expected to lose value in a decarbonised world, and companies that, despite attempts at dialogue, do not manage climate and nature risks adequately.



The Fund has implemented an index in line with the EU's Paris Aligned Benchmark, which today forms the basis for the management of global equities and corporate bonds (equivalent to approximately 42 per cent of the Fund's assets under management). This has entailed extensive divestment of companies with activities linked to fossil energy sources. Following the launch of this index in 2020, which resulted in a halving of emissions in the portfolios concerned, the criteria for the index stipulate that the portfolio's total emissions should continue to decline by an average of 7 per cent per year.

The indices for the foreign government bonds asset class were also adjusted during the year to enable the Fund to invest in countries/states with lower emissions, as an element of reducing the Fund's exposure to transition risks.

Example of targeted sustainability investment



One example of AP2's targeted sustainability investments is the company Form Energy, which focuses on developing better, more environmentally friendly and more cost-efficient energy storage systems. The company provides a new type of batteries, "iron-air" batteries, which use new technology to recover the electrons that are generated when iron rusts. The batteries use oxygen and iron to create rust from which the released electrons generate energy. The batteries are more energy efficient and last longer than traditional lithium batteries, and they do not need to use rare minerals for the process, which is better for the environment. "Iron-air" batteries have been named "Best Innovation 2023" within energy by Times Magazine.

Responsible timberland and farmland investments



The work to promote climate and nature is a key issue for AP2's managers of timberland and farmland properties. The Fund's timberland managers are certified in accordance with international standards, which require management of entire ecosystems and zero tolerance of deforestation. AP2 has been involved in developing guidelines for responsible farmland investments for the Fund's managers, who have also adopted a zero-tolerance policy against deforestation in their Brazilian farmland investments. The policy constitutes an enhanced strategy to combat deforestation by safeguarding the original natural vegetation and increasing reforestation, and thereby stopping the loss of biodiversity. AP2's managers use satellite-based mapping technology, in some cases combined with biomass measurement data, to determine a farmland's compliance with the policy.

C. Resilience in AP2's strategies for risks and opportunities in various climate and nature scenarios.



AP2 has conducted an overall scenario analysis in which physical and transition risks are estimated on the basis of two scenarios: a scenario with an orderly transition and global warming of 1.5°C, and a "hothouse" scenario with global warming of 3°C. In both scenarios, the physical risks are significantly higher for the Fund than the transition risks. AP2's estimated transition risks are significantly lower than for a comparable global equity index (MSCI ACWI), as the Fund has worked to develop a portfolio in line with the Paris Agreement. According to the analysis, the main physical risks for the Fund's listed equities are extreme heat and floods. The Fund will continue to work to understand and manage these risks.



An initial scenario analysis has been carried out in line with TNFD's recommendations. A combination of severe degradation of ecosystems and weak coordination between different actors is deemed more likely than the more optimistic scenario, with limited degradation and strong coordination. This would entail a high risk in terms of both physical and restructuring risks, which are currently difficult to assess and quantify. AP2 will therefore continue to analyse its holdings, with scientific support, in order to better understand and manage these risks.



Scenario analysis



In the scenario analysis, AP2 has chosen to use data from MSCI and the Climate Value at Risk (CVaR) metric, which analyses the portfolio's transition risk and physical risk, based on forward-looking data. The model is based on scenarios from the NGFS (Network for Greening the Financial System) framework, where the effects of different combinations of climate change and climate policy are explored.

According to NGFS, there are six different scenarios and three different dimensions. The "orderly" dimension assumes that climate policy is introduced early and becomes stricter. Both restructuring and physical risks are somewhat mitigated. The "disorderly" dimension examines higher transition risk due to policies being delayed and may also differ between countries. The third, "hothouse", dimension is based on how global efforts to address climate change are insufficient to stop global warming.

MSCI's model uses a database of climate analyses for companies based on NGFS' scenarios, with policy-related transition risks and physical risks in the event of global warming of 1.5°C, 2°C and 3°C. The calculations of the physical risks are based on many extreme weather events, such as extreme heat, cold, wind, precipitation, snowfall and tropical cyclones, and are based on a database in which companies' assets are mapped and valued.

Based on the above model, the Fund has carried out two different scenario analyses for the listed equities portfolio. An orderly transition scenario with global warming of 1.5°C and a "hothouse" scenario with global warming of 3°C.

The scenario based on the orderly dimension and 1.5°C warming mainly provides the Fund with insights into the risks that exist in the short and medium term.

According to the analysis, AP2 has lower transition risks in the portfolio than the MSCI ACWI benchmark index, which is an expected outcome as the Fund has worked for a long time to reduce these risks.

The physical risks are usually subdivided into acute and chronic risks.

- Acute risks constitute severe and extreme events and are site-specific. Examples of this are droughts, storms and forest fires.
- Chronic risks represent the gradual climate change risks such as temperature, precipitation, rising sea levels and biodiversity loss over several decades.

In a comparison of the physical risks, these are estimated to be significantly higher for the Fund than the transition risks, and also slightly higher than for the MSCI ACWI benchmark index. The main physical risks that the analysis indicates in the equities portfolio are chronic risks such as extreme heat and floods.

The scenario based on the hothouse dimension, i.e. that sufficient measures have not been taken, mainly gives an idea of risks in the longer term.

In this scenario, too, the Fund has a lower risk than MSCI ACWI in terms of transition risks. In general, however, this risk is lower for this scenario, as it is characterised by weak regulatory measures from the political arena.

On the other hand, the physical risks are significant in this scenario, and for AP2 with a rather higher physical risk compared to MSCI AWCI. Even in this scenario, the main risks are chronic risks such as extreme heat, flooding, rising sea levels and heavy precipitation.

Conclusions and consequences

The Fund's climate adjustment of the portfolio, including through the implementation of the PAB framework in the global equity and credit portfolio, has resulted in a reduced transition risk. On the other hand, the analysis shows that the Fund's portfolio is exposed to physical climate risks.

The Fund will continue its work to adapt its equity portfolio to climate change. With regard to the transition risks, this primarily takes place via the PAB framework, but also via engagement work whereby the Fund works to reduce emissions from the companies. With regard to the physical risks, the Fund will continue to work on mapping, identifying and analysing the physical risks in the portfolio, which can be addressed in the engagement work towards the companies, in order to ensure

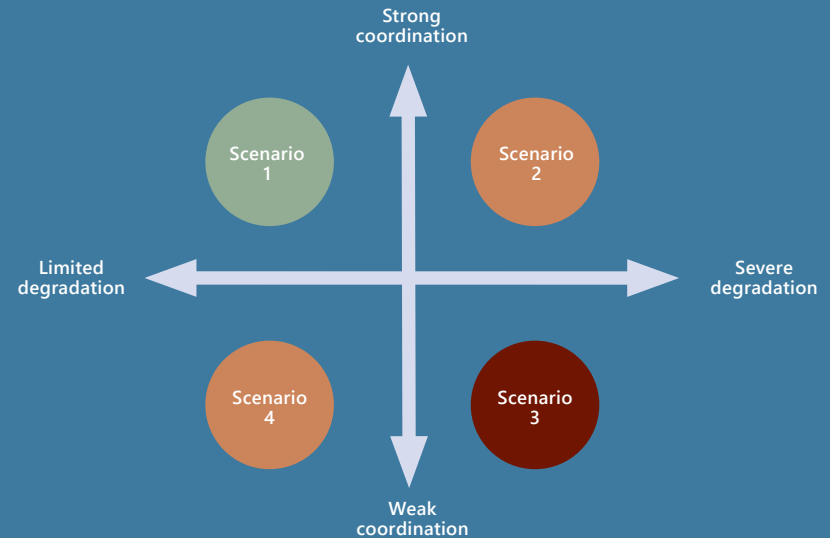
that they proactively plan for the risks. The identification of physical risks may also lead to considerations in the investment process.



As an initial approach to analysing nature-related risks and opportunities, AP2 has conducted an internal workshop based on TNFD's proposed structure. Scenarios were discussed on the basis of two critical sources of uncertainty:

- Ecosystem degradation – the extent to which biodiversity and critical ecosystems are weakened, on a scale ranging from limited impacts on nature and ecosystem services to a serious impact on, for example, pollination and access to water.
- The degree of coordination between governments, authorities, companies and individuals, which in turn leads to different degrees of transition risk, where good coordination creates predictability and contributes to rational decisions, while a lack of coordination risks driving transition risks, leading to short-term and suboptimal decisions and high costs.

SIMPLIFIED ILLUSTRATION BASED ON TNFD'S SCENARIOS FOR NATURE-RELATED RISK



CONCLUSIONS AND CONSEQUENCES FOR AP2

- The probability of a negative outcome in both dimensions is deemed to be high, both for severe degradation and for weak coordination, which means that Scenario 3 is deemed to be more likely than Scenario 1. This would entail significant risks, both physical and transition risks, which are currently difficult to assess and quantify.
- The analysis has major limitations, is conducted on an overall and simplified level, and is seen as a first approach. AP2 will continue its work of analysing its holdings and understanding the Fund's risks and opportunities from different scenarios. The framework's dimensions will continue to be applied as a starting point for this analysis. The Fund will continue to monitor research in this area in order to increase understanding of both the probabilities, and the consequences, of each scenario.
- To better assess and manage risks and opportunities for AP2, the Fund will conduct in-depth analyses of its geographical exposure through its holdings, both to sensitive areas and to areas with high physical risk. In the long term, the ambition is to be able to include the portfolio companies' value chains in this analysis, which is currently challenging, with a lack of access to data.
- An important component of the work going forward is to base analyses on natural science facts and to participate in interdisciplinary collaboration. Among other things, the Fund participates in Mistra BIOPATH, a research collaboration that aims to develop methods for integrating biodiversity in financial decision-making (see www.mistrabiopath.se).
- The risks and opportunities identified in the above analysis will be included in the Fund's integration of sustainability into investments, which may involve, for example, engagement work towards companies identified as high-risk, or the identification of investment opportunities for targeted sustainability investments.

D. Geographical location of activities and of assets and activities in AP2's portfolio.



AP2's own activities are based in Gothenburg and employ around 70 people. Via its global investment portfolio, the Fund has significant geographical exposure. The work of mapping this exposure is ongoing, but is challenging in terms of access to and the quality of data concerning the companies' supply chains. Through its investments in agricultural real estate, the Fund has assets in two sensitive geographical areas according to the TNFD framework. These are located in Brazil and California and represent approximately 1.3 per cent of the Fund's total assets.

Risk management

Identification, management and control of impacts, dependencies, risks and opportunities.

A. Process to identify and assess climate- and nature-related impacts, dependencies, risks and opportunities in the portfolio*.

The Fund has established processes to identify, assess and manage climate- and nature-related risks within its respective asset classes and regularly analyses risks and opportunities associated with climate and biodiversity. Data on greenhouse gas emissions, but also estimates of companies' and countries' alignment towards net zero emissions, are used to assess climate risks. Within biodiversity, the portfolio's deforestation risk and companies' management of this risk, as well as their commitment to a deforestation-free supply chain, are analysed. For actual assets, risks are analysed based on sector and geographical presence.

Identification



There are different processes for identifying, assessing and prioritising climate risks and opportunities for the various asset classes in AP2's portfolio. These assessments and risk management are performed by the respective portfolio managers. Many of the processes are supported by the IIGCC (Institutional Investors Group on Climate Change) net zero investment framework.

The identification takes place on the basis of climate data from one or more different data providers, which the portfolio managers can use to assess climate risks for their respective portfolios. For most portfolios, this means that carbon data forms the basis for the assessment and the priorities set. Some asset classes, such as timberland investments, have a longer time horizon when assessed than, for example, listed equities. The physical climate risk and forward-looking data are also integrated into the assessment.

For example, the Fund has identified the companies that account for 90 per cent of the Swedish equity portfolio's emissions, and evaluated these companies' climate work. This analysis forms the basis for the Fund's planned engagement work.



In pursuing a deforestation-free portfolio, the Fund has analysed the portfolio of listed equities and credits to identify companies with a high deforestation risk, with special focus on the food value chain as the first step. Using a weighted analysis of companies identified with high risk and lack of management of the deforestation issue in the Forest 500 tool from Global Canopy, supplemented with analyses from FAIRR and SPOTT concerning cattle and soya, and palm oil and forest, as well as a weighted company analysis from Finance for Biodiversity, at the beginning of 2023 AP2 identified 39 companies with a very high deforestation risk in its listed equity and credit portfolios. At the end of the year, 28 of these companies were still in the Fund's portfolio. The identified high-risk companies are prioritised in the Fund's engagement work with regard to deforestation.

During the year, AP2 initiated collaboration with the Climate & Company think tank, which aims to develop a tool for analysis and monitoring of deforestation risk in investment portfolios. It is hoped that this tool can be used to examine the entire portfolio (and not only the companies identified in the above analyses)

and collectively assess both deforestation risk and the status of the companies' management of the deforestation issue, based on a number of indicators. The Fund's risk analysis will be updated in 2024 using this model.

AP2 has also conducted a risk analysis of its private equity portfolio and identified which portfolio companies and managers have exposure to raw materials that entail a high deforestation risk. In total, these companies account for around 4 per cent of the value of the private equity portfolio. Assessment of the managers' handling of any possible deforestation risk will in future be included in the annual evaluation of their sustainability work. Questions regarding assessment and management of deforestation risk are also included in the Fund's due diligence process for new managers.

*Reporting according to indicator A(ii), according to TNFD, with a focus on AP2's portfolio and not its own activities.

Management



Global equities and credits

In these asset classes, 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 whereby management also entails divestment from companies as a direct consequence of risk identification and assessment.

Swedish equities

Within Swedish equities, climate risks are primarily managed via categorisation of companies' adjustment along a "maturity scale" defined by the IIGCC's Net Zero Framework. Using this framework, and its defined forward-looking adjustment criteria, together with emission figures, the Fund can assess whether a company has a credible plan to adapt to net zero emissions and can categorise the company accordingly. By using an established framework, AP2's assessment becomes comparable with other investors and thereby also in its contact with the companies.

Government bonds

Until now, the Fund has assessed and managed government bonds in emerging markets, among others, using index data for a low-carbon economy in order to eliminate transition risks. During the year, the Fund developed a new process for all government bonds, in line with IIGCC's Net Zero Investment Framework, which is based on adjustment criteria for governments. Two public data sources provide the basis for an assessment model in which the portfolio manager obtains a current status based on emission gaps, capacity and inten-

tion to implement a carbon policy, as well as capacity for economic transition for each country. This assessment is supplemented with an evaluation of the current status based on countries' forward-looking expected transition paths and a fairness aspect in terms of contributions to transition in countries with less economic capacity, where great efforts are still required to attract international capital in order to implement climate policy. Based on this assessment, the Fund prioritises investments and engagement work.

B. Process for managing climate- and nature-related impacts, dependencies, risks and opportunities.

AP2's ambition is to conduct engagement work with all companies that, in accordance with the above processes, have been identified as having a high risk and inadequate management of risks within the respective focus area. Engagement work is conducted in collaboration with other investors if possible, but if necessary, under our own auspices. Active dialogues normally involve meetings with the companies at least twice a year and follow-up on defined key figures and the progress of the dialogue. If necessary, the dialogue can be escalated through, for example, voting or shareholder proposals. Divestment is a last resort if the Fund has exhausted its opportunities to exert influence without any result, or it is assessed that assets cannot be converted.



Timberland and farmland investments

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, which can have significant market consequences. The physical risks for timberland are expected to increase and to vary in scope according to 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.

The Fund's farmland properties are managed by an external manager, Nuveen, which works to create a more resilient, efficient and environmentally adapted agricultural 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.

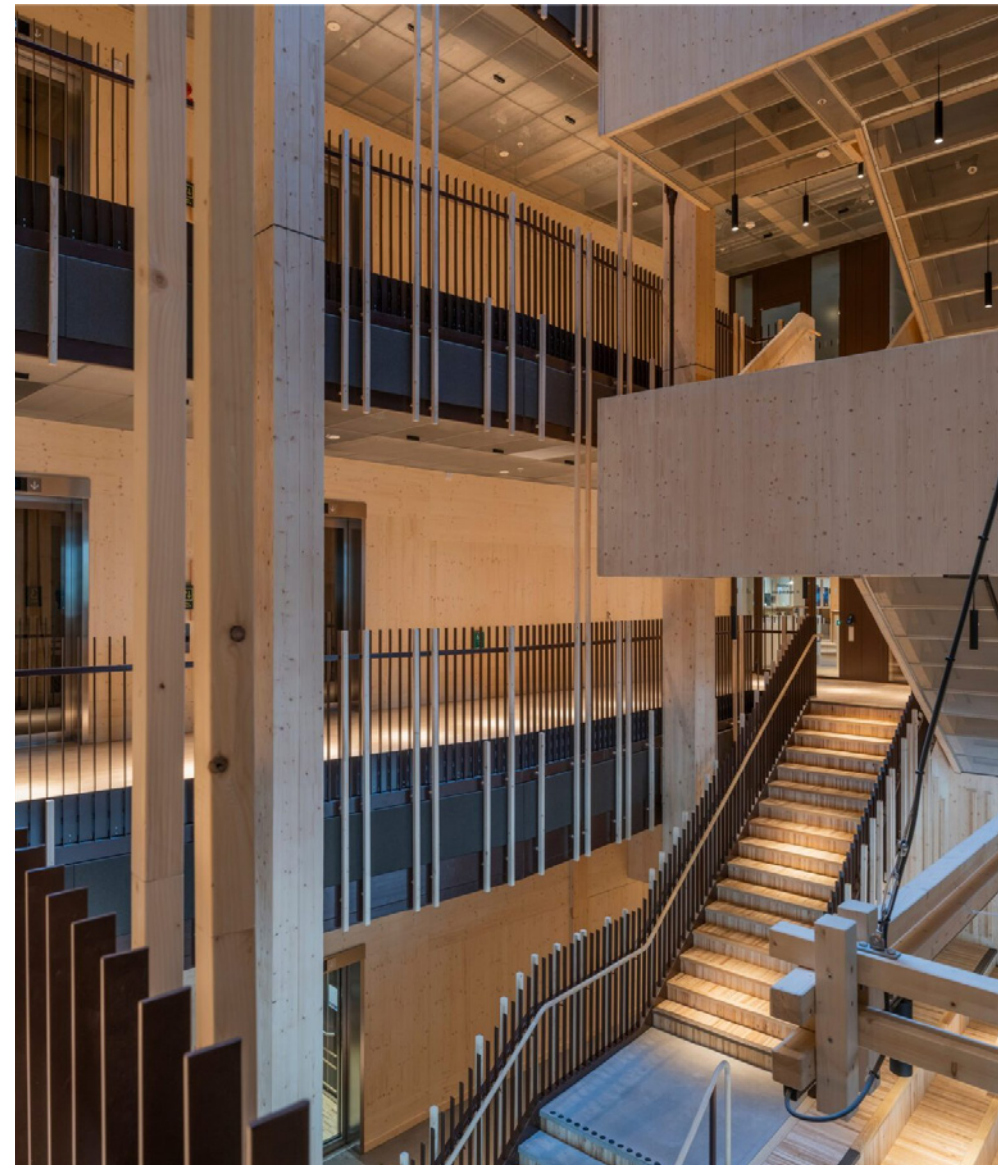
Non-listed real estate

Both transition risks and physical risks are assessed to be low for the Fund's non-listed 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, so that many risks have been reduced. Some risks remain, however, in particular regulatory and market-related transition risks such as higher prices for emissions through increased taxes, increased costs of materials, or changes in customers' behaviour that can lead to increased costs. The physical risks from the Fund's holdings show variation in the distribution of the risks between holdings, depending on the properties' geographical location. The Fund's Swedish 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. The global holdings in the portfolio are also subject to increased chronic risks, such as rising sea levels and temperatures, but first of all 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.

Private Equity

During the year, the Fund conducted dialogues with its managers of private equity funds, which in turn influence the companies. The dialogues focused, among other things, on the managers' approach to the Paris Agreement and the reporting of emission data. In 2023, AP2 started work on analysing emission data for the portfolio and will use this as a starting point, together with the climate measures being taken, to assess the managers' adjustment to net zero emissions. The Fund's process for due diligence and side agreements has also been developed, to include requirements for new managers to align towards net zero emissions.



Vasakronan's property Magasin X in Uppsala, Sweden's largest office building with an all-timber carcass. Photography by: Gustav Kaiser.



Sustainable infrastructure and green bonds

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

Engagement

Joint management of all asset classes and impacts of all processes constitutes the dialogue-based engagement work that is an important tool for the Fund. 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+ and Net Zero Engagement initiatives.

AP2 uses various means to influence portfolio companies to adjust and reduce their carbon emissions. The Fund does this in dialogue with the companies, often collaboratively with other global investors, by requiring the companies to report their climate risks, and by using governance, processes and activities to manage these risks in accordance with TCFD. AP2 is also engaged as an active owner regarding these issues, for instance at AGMs.

AP2 works with other European investors through membership of the IIGCC. The aim is to promote the investors' views on these issues and to engage with companies, authorities and other investors in order to highlight long-term risks and opportunities that arise in connection with climate change. IIGCC is an effective platform for communicating investors' wishes in the climate field. The organisation is also a platform for collaboration with other investors in terms of both dialogues with companies and the development of methods and tools for investors. More information is available at www.iigcc.org.



By 2025, AP2 aims to conduct engagement work, through collaboration or under its own auspices, with all companies in the Fund's listed portfolio that have been identified with a high deforestation risk, with inadequate management of the risk. Engagement is based on the Fund's deforestation policy (see www.ap2.se), which describes the Fund's expectations on companies in AP2's portfolio.

Based on these criteria, and via the analysis described above, at the beginning of the year the Fund identified 39 companies in the listed equity and credit portfolios, of which 28 were included the Fund's holdings in December 2023.

Through the Finance Sector Deforestation Action (FSDA) investor partnership, dialogues are conducted with 19 of these companies, which corresponds to 68 per cent of the companies identified. FSDA brings together international investors who, like AP2, are committed to working towards a deforestation-free portfolio. The dialogues are based on a common expectations document that is well in line with the Fund's expectations of portfolio companies. AP2 is leading seven of these dialogues and has seen good progress in 2023. All companies in the Fund's dialogues recognise the issue and work, at different stages, on managing the risks of deforestation. One of the companies fully lives up to expectations. One observation during the dialogues is that several of the companies with which AP2 engages in dialogue are working on the issues in practice, and some with full traceability of critical raw materials, but that few of the companies communicate about their work or make public commitments.


Nature Action 100 is an investor initiative with a broader approach to biodiversity,

launched in autumn 2023. The initiative will conduct dialogues with 100 companies in eight sectors that are assessed to have the greatest negative impact on biodiversity. Among these companies are 13 of AP2's focus companies, of which three are not already engaged in FSDA's dialogues. The Fund will play a leading role in three dialogues when the work begins in early 2024.

Besides the aforementioned engagement work at company level, AP2 participates in the Investor Policy Dialogue on Deforestation (IPDD), which conducts dialogue at policy level in countries with a high deforestation risk. The Fund is active in the Brazil Working Group and, when the IPDD visited Brazil in April, attended meetings with, among others, representatives of relevant ministries, Banco Central do Brasil and the authorities responsible for the implementation of laws and regulations to stop deforestation.

Marking by voting

In 2023, AP2 also voted at AGMs against 13 companies with a high deforestation risk, and inadequate management of the risks, and which did not present a positive response in an ongoing dialogue.




C. Integration of climate- and nature-related risks into the overall risk management.


Climate- and nature-related risks are part of the Fund's existing risk categories – financial risk, operational risk and impact risk – that are monitored on an ongoing basis and reported to the management group and Board of Directors. Climate- and nature-related risks are relevant in all categories: financial risks linked to transition and physical risks and dependencies on weakened natural resources and ecosystems; operational risks in the form of reputational risk and reduced confidence in the business or pension system; and impact risks through the investments' impact on climate and nature.

Targets and metrics

Metrics and targets used to assess and manage climate- and nature-related impacts, dependencies, risks and opportunities.

A. Metrics used to assess climate- and nature-related risks and opportunities.

 AP2 uses a large number of metrics to analyse the climate footprint, risks and opportunities within different asset classes. These include emissions, in both absolute terms and intensity, reasons for change (change in portfolio and companies' emissions, respectively), as well as indicators to assess companies' and managers' alignment towards net zero emissions.

 Metrics are being developed. AP2 is a partner in the BIOPATH research collaboration for a broader approach to metrics, and collaborates with the Climate & Company think tank to develop a method for analysing deforestation risk. In 2023, the Fund analysed data from Global Canopy's Forest 500 in order to estimate the portfolio's exposure to deforestation risk and to monitor the portfolio companies' performance.

Metrics



The Fund's net zero emissions target is expressed as carbon dioxide equivalents, CO₂e, and includes all seven greenhouse gases under the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), incompletely halogenated fluorocarbons (HFC), 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.

Over time, AP2 seeks to expand reporting of greenhouse gas emissions to include more asset classes and to include Scope 1-3. Portfolio emissions for 2023 are reported for the asset classes comprising listed equities, foreign corporate bonds, government bonds, timberland and farmland real estate, non-listed real estate and sustainable infrastructure. This means that 76 (70) per cent of AP2's strategic portfolio is measured according to a carbon indicator.

Challenges and limitations

Access to data is one of the challenges, which is particularly evident in the reporting of Scope 3 emissions. A high proportion of the Fund's reported emissions in Scope 3 are estimated emissions, as many companies do not yet report these emissions. In addition, there are major dif-

ferences between different companies in terms of what they choose to include in their reported emissions. This can lead to difficulties in comparing companies and portfolios and in interpreting changes. In addition to actual differences in emissions, the variations may be due to deviations in both the reporting from companies and in what they include in their Scope 3 calculations, and in the data providers' calculation methodology. The time aspect is another challenge presented by reported data, as emissions from the portfolio are based on the previous year's reported or estimated emissions from the companies in the portfolio. There is therefore a lag in terms of when actual changes are seen in the emissions for the investment portfolios.

In step with these changes, the Fund's reporting will be updated and historical data will need to be revised. There may therefore be deviations compared to previous reports.

Equities and corporate bonds

The listed equities portfolio is measured and reported on the basis of three different approaches. The purpose of having several different metrics is to be able to demonstrate different aspects of climate risk, such as the sensitivity of the asset portfolios to, for example, a market price for carbon dioxide, and to be able to monitor developments both in absolute terms and relative to the portfolio companies' revenue

and the value of the portfolio. The AP Funds' overall annual carbon footprint is calculated for portfolio holdings as of 31 December using the latest available carbon data for the companies' direct emissions (Scope 1) and indirect emissions from energy (Scope 2), as well as emissions throughout the companies' value chain (Scope 3). As from 2023, the total carbon emissions for AP2's equities

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. Emissions such as business travel and other emissions caused by the company, but not directly owned or controlled, are also included.



The AP Funds' joint carbon footprint reporting

1. **Carbon emissions, Scope 1 and 2**
Total of owned share of portfolio companies' respective carbon emissions (Scope 1 and 2), based on the company value.
2. **Carbon emissions, Scope 3**
Total of owned share of portfolio companies' respective carbon emissions (Scope 3), based on the company value.
3. **Relative carbon emissions, Scope 1 and 2**
Total of owned share of portfolio companies' respective carbon emissions, based on the company value as above in relation to the portfolio's market value.
4. **Portfolio-weighted carbon intensity (WACI), Scope 1 and 2**
Total of portfolio companies' respective carbon intensity, i.e. a company's carbon emissions in relation to its revenue, weighted according to the respective company's share of the portfolio.

portfolios are calculated on the basis of the Enterprise Value Including Cash (EVIC). However, this only applies to the metric for total greenhouse gas emissions and not to the relative emission metric and the portfolio-weighted intensity metric. The Fund therefore also revises the reported figures for previous years.

AP2 uses emission data from MSCI ESG Research and Trucost for Scope 1 and 2. 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. For Scope 3, only data from MSCI ESG Research is used. 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 equities portfolio. A precautionary approach should be taken to the calculation of Scope 3 emissions, as the emission figures for each company are subject to relatively high uncertainty. In addition, double counting occurs when Scope 3 figures are summed up in an investment portfolio. However, AP2 considers it important to develop reporting in which all scopes are included. These calculations are explained by the formulas given on AP2's website. More information about carbon footprints and formulas for other metrics is also available on the website.

Causes of changes in carbon dioxide emissions
By measuring drivers of changes in emissions, the Fund can see whether the changes are due to changes in portfolio holdings, or to changes in companies' carbon emissions. Changes in portfolio holdings do not lead to reduced emissions to the atmosphere, as these do not occur until the companies' emissions are reduced. AP2 attaches great importance to this follow-up, which is also the basis for engagement work.

Greenhouse gas emissions from PAB-adapted portfolios

As AP2 has implemented its own indices that are compliant with the criteria for the EU Paris-Aligned Benchmark (PAB), another metric has been added to its carbon footprint report, namely carbon intensity based on EVIC (Enterprise Value Including Cash), as this metric is prescribed by PAB. Scope 3 is also included in the framework. The Fund will add the last sectors for Scope 3 emissions for companies during 2024. In 2023, the method of producing CO₂ data for PAB was further developed, which is estimated to give more stable values of higher quality for developing the portfolio. The data will be updated once a year and estimated values for Scope 3 will be used to a greater extent in the management of the portfolio.

Physical climate risks

The Fund’s physical climate risks are also measured for the first time and compared with MSCI ACWI (see more on page 11). This gives the Fund a perception of which physical risks are most material to the portfolio.

Assessments of companies’ alignment to net zero emissions

For Swedish equities, AP2 uses a process that is supported by the IIGCC (Institutional Investors Group on Climate Change) Net Zero Investment Framework and its categorisation of companies’ adaptation along a “maturity scale”. Using this framework, and its defined forward-looking adjustment criteria, together with emission figures, the Fund can assess whether a company has a credible plan to adapt to net zero emissions, and can categorise the company accordingly. The categorisation is divided into two stages, where the first stage determines whether the company has high or low emissions. The high-emission companies account for approximately 90 per cent of the portfolio’s emissions. The remaining companies are low-emitting. Subsequently, the high-emission companies are assessed according to the framework’s criteria.

Government bonds

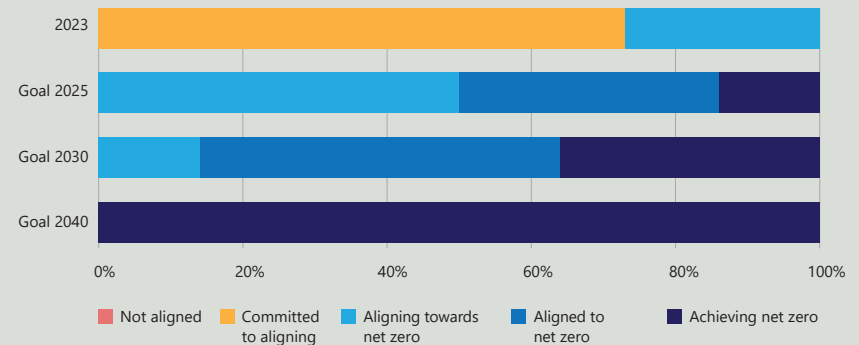
During the year, the Fund developed a new process, in line with IIGCC’s Net Zero Investment Framework, for all government bonds, which corresponds to approximately 58 per cent of the asset

class. The process is based on criteria for governments’ adjustment to net zero emissions, where several data sources, such as Climate Action Tracker¹ och EDGAR², provide the basis for an assessment model. The portfolio manager receives a status assessment of each country’s climate adjustment measures, based on historical emissions, emission gaps in relation to development in line with the Paris Agreement, the country’s capacity and intention to implement a carbon policy, and capacity for economic transition. This assessment is supplemented with an evaluation of the current situation based on the countries’ forward-looking, expected transition pathways. The evaluation also includes a fairness aspect to facilitate contributions to transition in countries with less economic capacity, where major efforts are still required to attract international capital and thereby implement a climate policy. Based on this assessment, the Fund prioritises investments and engagement work. Engagement work for this asset class is preferably conducted via investor networks such as IIGCC.

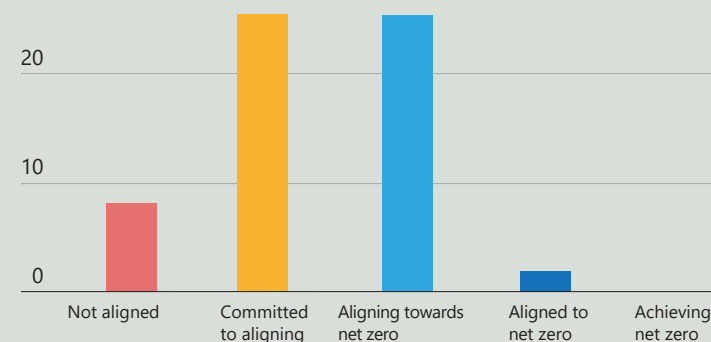


For nature-related risks and opportunities, in 2023 AP2 focused on deforestation risks in the portfolio and worked to develop relevant metrics, including through the Climate & Company project described on page 14. The Fund continuously monitors the performance of companies deemed to have a high deforestation risk, including through Global Canopy’s rating of the companies in Forest 500³.

SWEDISH EQUITIES – ASSESSMENT/OUTCOME OF THE PORTFOLIO’S ADAPTATION TOWARDS NET ZERO EMISSIONS



GOVERNMENT BONDS – ASSESSMENT/OUTCOME OF THE PORTFOLIO’S ADAPTATION TOWARDS NET ZERO EMISSIONS, NUMBER OF COUNTRIES



¹www.climateactiontracker.org
²www.edgar.jrc.ec.europa.eu
³www.forest500.org



Greenhouse gas reporting
AP2's total carbon footprint

For 2023, the Fund has calculated the carbon footprint from listed equities, foreign credits, government bonds, timberland and farmland properties, non-listed real estate and sustainable infrastructure. This means that 71 (67) per cent of AP2's strategic portfolio is measured according to a carbon indicator. The Fund's

ambition is to eventually present a carbon footprint that includes all asset classes.

For the first year, the Fund has combined its total carbon emissions, which for 2023 amounted to 5.4 million tCO₂e. AP2 sees a great deal of uncertainty, especially with regard to Scope 3 data, as the proportion of estimated data is still very high. Nevertheless, the Fund considers it important to be as trans-

parent as possible when it comes to the portfolio's emissions.

Equities and corporate bonds

The AP Funds' joint carbon footprint reporting

Carbon emissions for the equities portfolios were 3.82 (5.20) million tCO₂e in total for 2023. From 2019 as the base year, AP2 has reduced the Fund's total carbon emissions for the equities portfolios

by approximately 44 per cent. Scope 3 emissions account for approximately 90 per cent of the Fund's greenhouse gas emissions.

The relative carbon emissions per invested SEK, which are only based on Scope 1 and 2, are approximately 4.5 tCO₂/SEKm, which can be compared with the intensity in 2022, which was 7.4 tCO₂e/SEKm. The reason for the reduction is that the portfolio's emissions have been reduced.

B. TCFD: Reporting on greenhouse gases in Scope 1, 2 and 3.

TNFD: Metrics used to assess and manage nature-related impacts and dependencies.



AP2 reports on greenhouse gas emissions for around 70 per cent of the Fund's assets and in accordance with Scopes 1, 2 and 3. For equities and corporate bonds, emissions are reported in accordance with the AP Funds' joint reporting, drivers of change in emissions and portfolio performance compared to the Paris Aligned Benchmark.



The Fund's reporting of nature-related metrics is being developed and currently includes estimates of sector and geographical exposure to nature-related impacts and dependencies, as well as nature-related risks and opportunities according to TNFD Core.

SUMMARY TABLE FOR ALL ASSET CLASSES, SCOPE 1, 2 AND 3

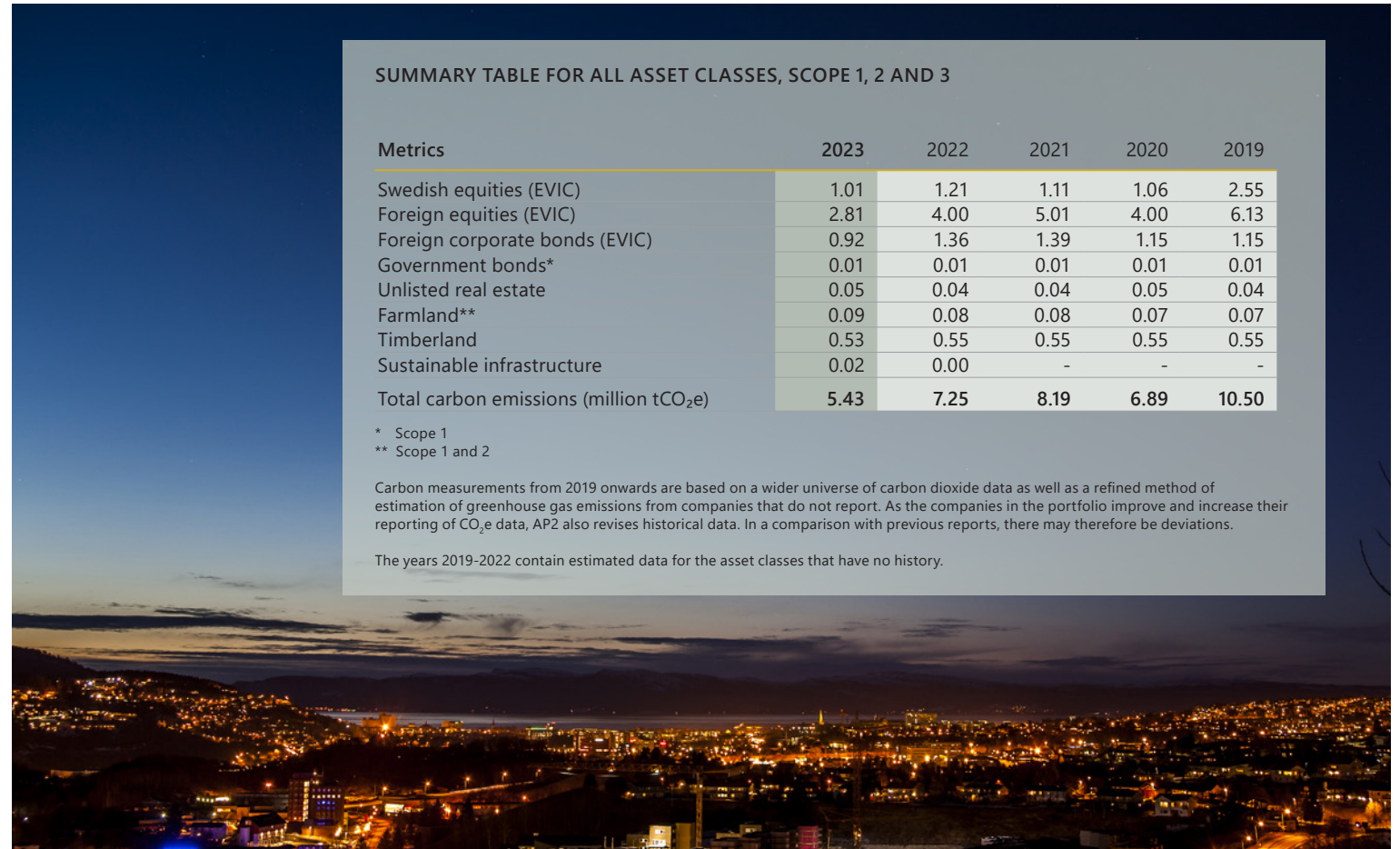
Metrics	2023	2022	2021	2020	2019
Swedish equities (EVIC)	1.01	1.21	1.11	1.06	2.55
Foreign equities (EVIC)	2.81	4.00	5.01	4.00	6.13
Foreign corporate bonds (EVIC)	0.92	1.36	1.39	1.15	1.15
Government bonds*	0.01	0.01	0.01	0.01	0.01
Unlisted real estate	0.05	0.04	0.04	0.05	0.04
Farmland**	0.09	0.08	0.08	0.07	0.07
Timberland	0.53	0.55	0.55	0.55	0.55
Sustainable infrastructure	0.02	0.00	-	-	-
Total carbon emissions (million tCO₂e)	5.43	7.25	8.19	6.89	10.50

* Scope 1

** Scope 1 and 2

Carbon measurements from 2019 onwards are based on a wider universe of carbon dioxide data as well as a refined method of estimation of greenhouse gas emissions from companies that do not report. As the companies in the portfolio improve and increase their reporting of CO₂e data, AP2 also revises historical data. In a comparison with previous reports, there may therefore be deviations.

The years 2019-2022 contain estimated data for the asset classes that have no history.



If the footprint is instead based on the portfolio-weighted carbon intensity, i.e. a company's carbon emissions in relation to its revenue, weighted according to each company's share of the portfolio, the 2023 outcome is 5.6 tCO₂e/SEKm for Scope 1 and 2. The same metric for 2022 shows an outcome of 8.2 tCO₂e/SEKm. AP2 also reports its carbon footprint broken down into Sweden, developed markets and emerging markets. The Fund can observe large differences in carbon intensity between developed and emerging markets, where companies in emerging markets are the least carbon-efficient, with higher greenhouse gas emissions.

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

Causes of changes in carbon dioxide emissions

The graph on the next page presents the reasons for the change in total carbon emissions between 2022 and 2023 for AP2's listed equities portfolio. The calculations relate to emission data from Scope 1, 2 and 3, expressed in millions of tCO₂e. The graph shows that most of the decrease can be attributed to changes in the Fund's holdings. The companies' contribution to the reduction is marginal, which clearly shows that significantly greater reductions in the companies' emissions need to take place in the coming years. During the year, to help drive this change the Fund intensified its engagement work with high-emission companies.

CARBON FOOTPRINT OF THE LISTED EQUITY PORTFOLIO, SCOPE 1, 2 AND 3

Metrics	2023	2022	2021	2020
1. Carbon emissions, Scope 1 and 2, EVIC (million tCO₂e)	0.40	0.62	0.69	0.82
Sweden	0.03	0.04	0.07	0.06
Developed markets	0.17	0.28	0.33	0.36
Emerging markets	0.20	0.30	0.29	0.40
2. Carbon emissions, Scope 3, EVIC (million tCO₂e)	3.42	4.58	5.44	4.24
Sweden	0.98	1.17	1.05	0.99
Developed markets	1.45	1.94	2.77	2.25
Emerging markets	0.99	1.47	1.62	1.00
Carbon emissions, Scope 1–3, EVIC (million tCO₂e)	3.82	5.20	6.13	5.06
Change in the portfolio's total carbon emissions from the previous year (%)	–26.9	–14.6	22.9	
– of which the change related to changes in the portfolio's holdings (% units)	–26.4	–35.8	3.2	
– of which the change related to changes in the companies' emissions (% units)	–0.5	21.3	19.7	
3. Relative carbon emissions, Scope 1 and 2, market value (tCO₂e/SEKm)	4.48	7.43	6.35	8.82
Sweden	1.13	1.67	1.95	2.58
Developed markets	3.71	8.17	5.36	3.91
Emerging markets	8.30	16.37	14.8	19.31
4. Portfolio-weighted carbon intensity (WACI), Scope 1 and 2, market value (tCO₂e/SEKm)	5.68	8.21	9.04	12.11
Sweden	2.14	3.07	3.64	4.07
Developed markets	5.41	14.65	13.4	12.62
Emerging markets	8.79	12.31	15.00	21.10
Portfolio-weighted carbon intensity (WACI), Scope 1–3, market value (tCO₂e/SEKm)	52.9	72.1		
Change in the portfolio's carbon intensity from the previous year (%)	–26.7			
– of which the change related to changes in the portfolio's holdings (% units)	–27.6			
– of which the change related to changes in the companies' carbon intensity (% units)	0.9			
Market value of the Fund's portfolio covered by CO ₂ e data (SEKbn)	158	151	187	161
Proportion of the share capital for which data is available (%)	100	99.9	99.8	99.5

Carbon measurements as of and including 2019 are based on a broader universe of carbon data and a refined method of estimating greenhouse gas emissions from non-reporting companies. As companies in the portfolio improve and increase their reporting of CO₂e data, AP2 also revises historical data. There may therefore be deviations in comparison with previous reports.

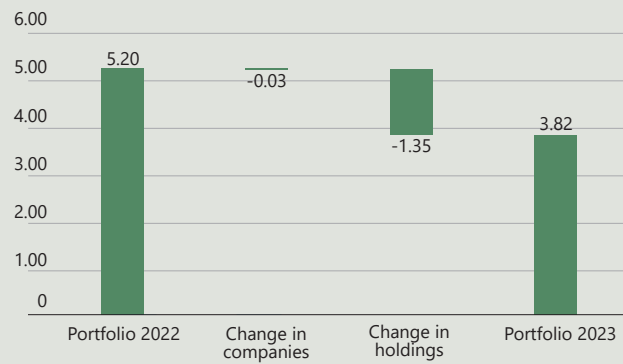
1. Carbon emissions, Scope 1 and 2. Total of owned share of portfolio companies' individual carbon emissions (Scope 1 and 2) based on company value as above.
2. Carbon emissions, Scope 3. Total of owned share of portfolio companies' individual carbon emissions (Scope 3) based on company value as above.
3. Relative carbon emissions, Scope 1 and 2. Total of owned share of portfolio companies' individual carbon emissions based on company value as above in relation to the portfolio's market value.
4. Portfolio-weighted carbon intensity (WACI), Scope 1 and 2. Total 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.

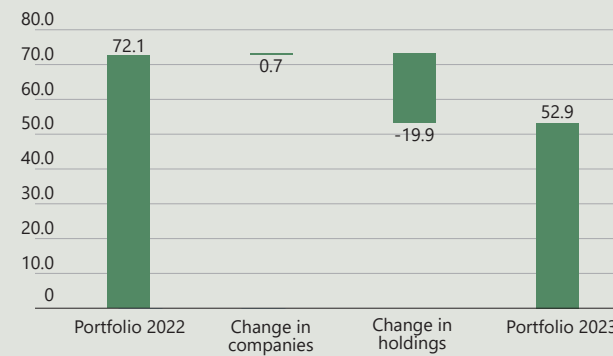
CO₂e (carbon dioxide equivalent) is a unit of measurement that enables comparisons of the climate impact of different greenhouse gases.



DRIVERS OF CHANGE IN TOTAL CARBON EMISSIONS BETWEEN 2022 AND 2023, MILLION tCO₂e



DRIVERS OF CHANGE IN PORTFOLIO-WEIGHTED CARBON INTENSITY BETWEEN 2022 AND 2023, tCO₂e/MSEK



Greenhouse gas emissions from PAB-adapted portfolios

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, which means the global equity and credit portfolios. The curves show an annual decrease of 7 per cent. 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. The points in the graphs show the outcome for the portfolios and for the benchmarks that manage them.

The carbon footprint for 2023 follows the expected curve. Both asset classes are on or slightly below the curve, with 40 (39) per cent of the carbon footprint for the market-weighted index for equities and 38 (43) per cent for corporate bonds.

Greenhouse gas emissions for other asset classes

Government bonds

A new aspect in 2023 is that AP2 has started reporting greenhouse gas emissions for the government bonds asset class. However, this reporting is limited to production emissions as defined by the United Nations Framework Convention on Climate Change (UNFCCC), national

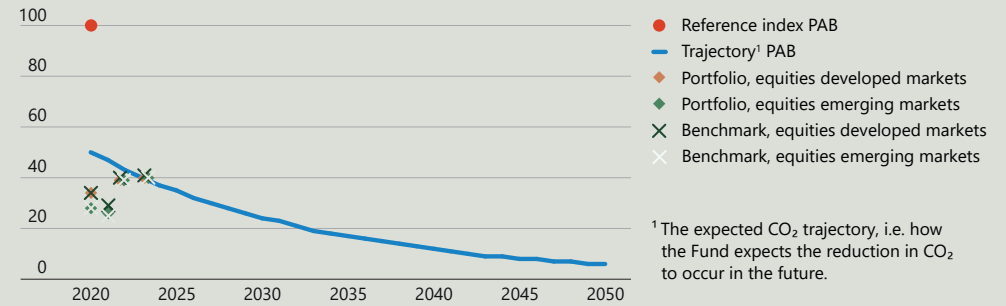
emissions inventory as recommended by the Partnership for Carbon Accounting Financials (PCAF). The Fund also considers it important to report consumption emissions, but the data is still too incomplete to be reported. Based on this, the fund has an estimated carbon footprint for all government bonds in the portfolio. This means that the Fund reports a carbon footprint of 10,000 tCO₂e (Scope 1) for approximately 80 per cent of the portfolio. In 2024, AP2 will continue to work on developing reporting for bonds in the portfolio.

Non-listed real estate

AP2's non-listed real-estate companies report Scope 1, 2 and 3 in the form of tenants' energy consumption. The Fund's share of carbon emissions totalled 45,159 tCO₂e and the carbon intensity amounted to 0.62 tCO₂e/SEKm per million SEK invested, which is a reduction from 1.06 tCO₂e/SEKm per million for the previous year. The reduction is mainly due to more precise calculation methods.

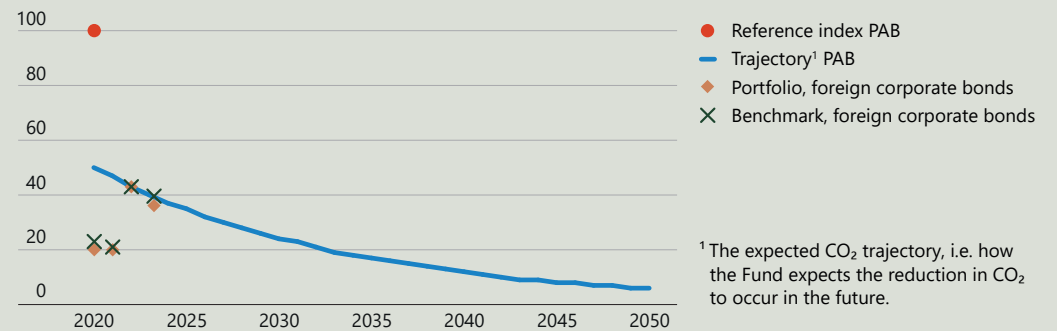
Energy consumption and carbon emissions per area unit were 124 kWh/m² and 0.023 tCO₂e/m², which represents a strong reduction of energy consumption during the year. This is mainly due to the managers' work to reduce energy consumption through more efficient energy systems.

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



¹ The expected CO₂ trajectory, i.e. how the Fund expects the reduction in CO₂ to occur in the future.

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



¹ The expected CO₂ trajectory, i.e. how the Fund expects the reduction in CO₂ to occur in the future.

Timberland and farmland

The Fund engages with its timberland managers on calculation of carbon sequestration and carbon emissions. All of the Fund's timberland managers, Molpus, New Forests and Nuveen, calculate the total carbon sequestration in their forests. AP2's share of the carbon sequestration is 50.58 (51.20) million tCO₂e. The Fund's share of carbon emissions is calculated at 0.53 million tCO₂e, which is comparable to last year's emissions of 0.55 million tCO₂e.

AP2's farmland managers also calculate the investments' carbon footprint. 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 calculated at approximately 57 million tCO₂e and emissions are calculated at 0.09 million tCO₂e.

Sustainable infrastructure

The asset class is included in the Fund's targeted sustainability investments, and is an important aspect of the Fund's sustainability work. As the portfolio is still under construction, some reporting of greenhouse gas emissions is delayed. However, the Fund considers it important to account for the elements that have been reported, even if this is not a complete emission figure. The portfolio shows emissions of around 20,000 tCO₂e.



Metrics of nature-related impacts and dependencies

1. Exposure to sectors with high nature-related impacts and dependencies AP2 has analysed its exposure using the ENCORE tool, see the description and illustration on page 8. In total, 20 per cent of AP2's assets are invested in sectors identified by TNFD, through the asset classes comprising listed equities and credits, private equity funds, farmland and timberland investments and the Fund's investments in sustainable infrastructure.
2. Exposure to sensitive geographies Reported for farmland and timberland investments. 25 per cent of these investments have exposure to sensitive geographies, with 14 per cent in Brazil, in biomes particularly important for biodiversity, and 11 per cent in California, with a high risk of water shortage. In total, this corresponds to 1.4 per cent of the Fund's assets. AP2 has exposure to sensitive geographies in other asset classes, through portfolio companies and their value chains. Work is underway to understand this exposure, with the hope that more relevant data will be available when more portfolio companies report their exposure.

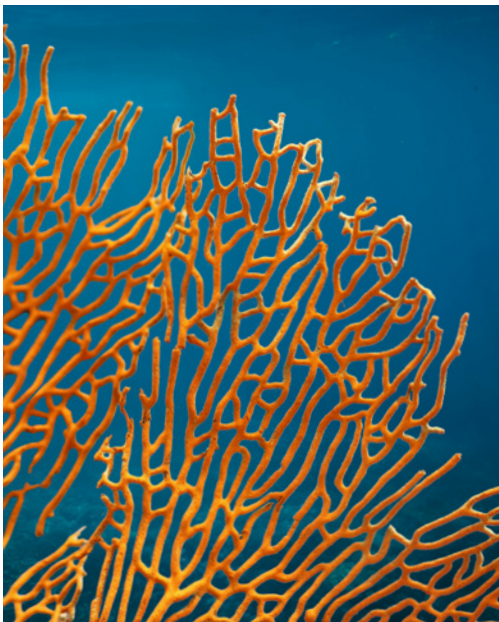
INDICATORS AND METRICS FOR NATURE-RELATED RISKS AND OPPORTUNITIES¹

Category	Metrics	AP2 reporting 2023
Risks	Assets with high nature-related transition risk.	Based on a climate scenario with an orderly transition, approximately 3 per cent of the Fund's total portfolio is estimated to have a high climate- and nature-related transition risk ¹ .
	Assets with high nature-related physical risk.	Based on a climate scenario with global warming to 3°C, and with aggressive assumptions concerning physical risks, approximately 15 per cent of the Fund's total portfolio is estimated to have a high climate- and nature-related physical risk ² , primarily extreme heat and flood risk.
	Fines or compensation during the year from nature-related incidents.	0
Opportunities	Investments in nature-related opportunities.	In December 2023, the Fund's total investment in climate- and nature-related sustainability solutions amounted to approximately SEK 34 billion. These are defined according to the Operating Principles for Impact Management ³ .
	Income from products and services with positive impacts on nature.	Non-applicable

¹ Includes both climate- and nature-related transition risk and physical risk.
² High risk is defined by AP2 as companies with a climate- or nature-related risk that amounts to at least 20 per cent of the company's value in a scenario analysis with data from MSCI.
³ www.impactprinciples.org

C. AP2's goals for managing climate- and nature-related impacts, dependencies, risks and opportunities, and outcomes in relation to these.

AP2 has defined goals for climate and nature in the short, medium and long term, to set the direction for the work of developing a climate- and nature-adapted portfolio.

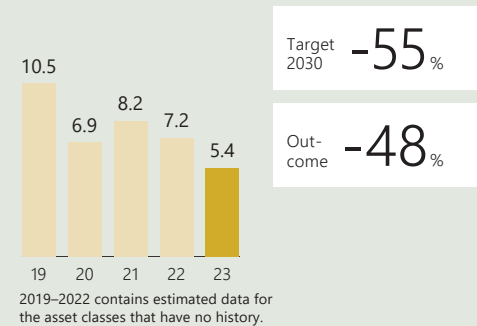


Climate goals

- AP2 must achieve net zero emissions of greenhouse gases 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°C. 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 as early as 2045, AP2 believes that this target should also apply to the Fund.
- AP2's greenhouse gas emissions must be reduced by at least 35 per cent by 2025, and by 55 per cent by 2030.
- Research shows that emission reductions need to start quickly, with an approximate halving every ten years, to limit global warming to 1.5°C. Since AP2 has set the target of achieving net zero by 2045, the Fund should also strive for a substantial reduction as early as 2030. The above goal, with 2019 as the base year, corresponds to a linear reduction rate of 7 per cent per year.

Outcome 2023

For the first time, AP2 has combined its total carbon emissions (Scope 1-3), which for 2023 amounted to 5.4 million tCO₂e. This is a major reduction from 2019, when the Fund's total carbon emissions were 10.5 million tCO₂e. AP2 sees a great deal of uncertainty, particularly with regard to Scope-3 data, as the proportion of estimated data is still very high, yet still wants to be as transparent as possible concerning the portfolio's emissions.





Nature goals

- AP2 strives to be nature positive by 2030.
 - There is still no consensus on what the concept of nature positive entails, and work is underway to develop a definition. Nevertheless, AP2 has chosen to use the concept as an overall objective whereby nature, with biodiversity, ecosystems and natural capital, develops in a positive direction, with the Fund contributing to this development. When the organisations working on the definition of nature positive have reached a common view, the Fund will review the objective in the light of this.
- By 2025, AP2 must have a portfolio that does not contribute to deforestation.
 - The Fund has defined a target for deforestation, which is the main driver of biodiversity loss and is relevant to the Fund's investments. This goal is in line with the commitment to a portfolio free of deforestation due to agricultural products made by AP2 in connection with COP26,

and with the Fund's climate commitment to net zero greenhouse gas emissions by 2045. The Fund's ambition is, by 2025, to contribute to engagement work with 100 per cent of the portfolio companies identified as having a high deforestation risk and weak management of this risk.

Outcome 2023

Methods and metrics for monitoring the nature-related goals are being developed. This is currently followed up through risk analysis of the portfolio and by continuous follow-up of the Fund's engagement work in this area. In 2023, AP2 contributed to company dialogues with 68 per cent of the portfolio companies identified as having a high deforestation risk and weak management.

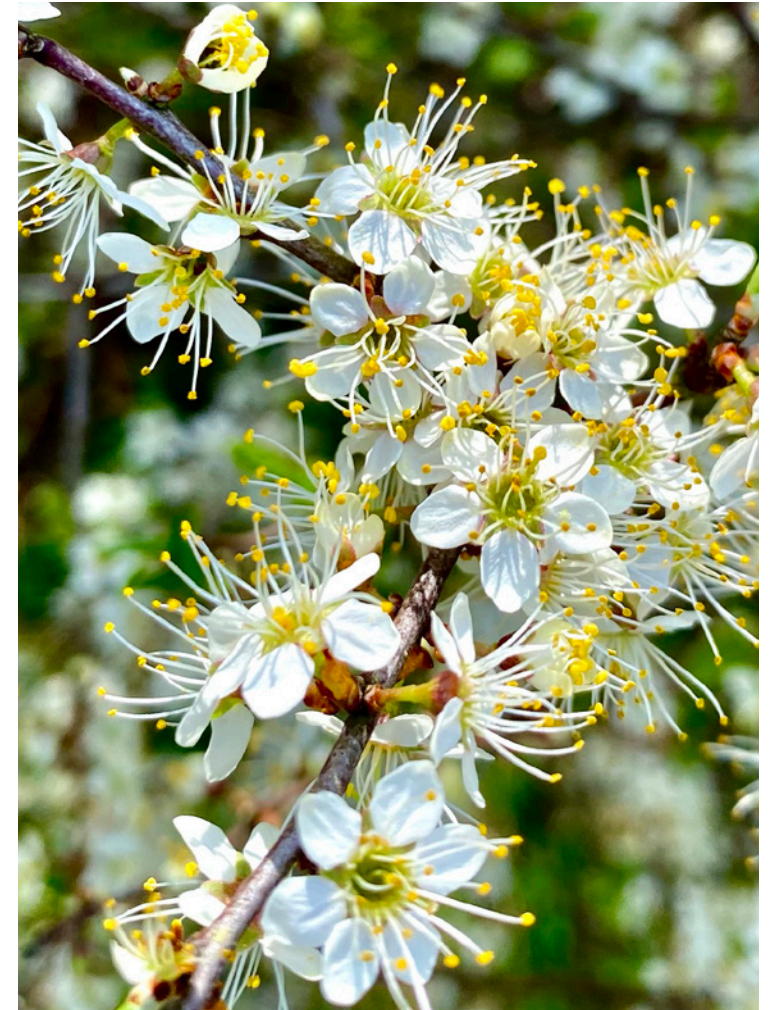


TABLE 1A EXAMPLES OF POTENTIAL TRANSITION RISKS (ADAPTED FROM THE TCFD)

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). 	Higher prices for carbon, regulations and reporting are generally positive financially for AP2 as owner. If costs for carbon are internalized, it provides a more efficient market. The challenge for AP2 is to identify which asset classes/sectors/companies are winners and losers.
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. 	The rate of transition is decisive for the financial valuation of the fossil reserves and companies with assets that depend on fossil energy for their products/services. The introduction of PAB has reduced AP2's financial exposure to fossil assets. A challenge for AP2 is to assess which technologies will succeed, at what pace and how asset types, sectors, companies are affected.
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). 	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.

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 can potentially affect all asset classes, including the Fund's real estate, timberland and farmland assets. Work is underway to analyze the physical risks in the Fund's listed portfolios for equities and credits.
Chronic	<ul style="list-style-type: none"> Increased operating costs (e.g., inadequate water supply for hydro-electric 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. 	

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. 	



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