

SUSTAINABILITY REPORT 2019

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Climat report according to TCFD's recommendations

Content

Mission, goal, vision and strategy	2
Andra AP-fonden's sustainability work	4
The UN's Sustainable Development Goals	10
Dialogue – a tool for achieving improvements	13
Sustainability in the investment process	16
Climate	28
Corporate Governance	36
Diversity	38
Human rights	40
Sustainability data	42
GRI-index	44
Climate report according to	4.0
TCFD's recommendations	48

The Fund's approach to sustainability

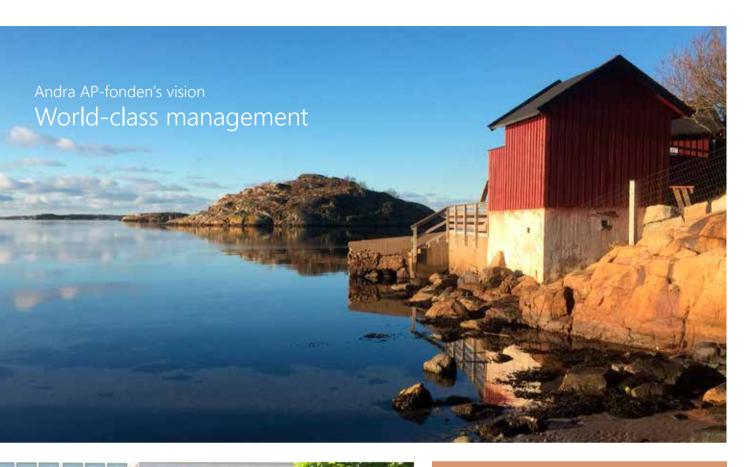
The sustainability work implemented by AP2 derives from the nature of its mission and involves acting over the long term, to protect and add value to its invested assets – based on an economic, environmental and social perspective.

Andra AP-fonden

Andra AP-fonden (AP2) is one of five buffer funds within the Swedish pension system, and one of northern Europe's largest pension funds. The Fund manages SEK 381.3 billion in virtually all asset classes, all over the world. We are leading specialists in the Swedish pension system and seek to be a world-class asset manager. We are a global leader in integrating sustainability in our investments, for the benefit of the pension system. The Fund is a long-term and responsible asset manager.



Photo: Shutterstock page 12, 17, 25, 35, Jessika Ingvarsson page 22, Ulrika Danielson page 8 and Caroline Eking pag





AP2:s Sustainability Report

AP2 prepares a separate detailed sustainability report, including GRI index, which is published on the Fund's website. The sustainability data in the annual report is an overview only. The Fund's ambition in the annual report is to comply with the provisions of the Swedish Annual Accounts Act. Read more about AP2's sustainability work at www.ap2.se

You can also read the Council on Ethics of the AP Funds' annual report at www.etikradet.se

GRI reporting

This sustainability report was prepared in accordance with the GRI Standards, Core level. The GRI is an international framework for reporting and accounting for an organisation's activities in the area of sustainability and covers environmental, social and economic aspects. AP2's GRI index (see page 44) provides an overview of the general disclosures in accordance with the GRI's guidelines and information for areas that AP2 has reported on the basis of the materiality analysis. Read more on page 6.

Andra AP-fonden is an independent government agency that autonomously manages funds within insurance for income-based old-age pensions. Andra AP-fonden is part of the public pension system along with the other buffer funds. As part of their mission, the AP Funds must manage the fund assets in an exemplary manner through responsible investments and responsible ownership.

The mission as a buffer fund means that AP2 will, with its return, contribute in the long term to the balance of the pension system, thereby ensuring a good pension trend, even in times of economic and demographic fluctuations.

Mission and goal

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By law, the goal of the AP Funds is to manage their fund assets in a way that provides the greatest possible benefit for insurance for income-based retirement pensions. The total risk level should be low, measured in outgoing pensions.

As part of their mission, the AP Funds must manage the fund assets in an exemplary manner through responsible investments and responsible ownership. When managing funds, special emphasis must be given to how sustainable development can be promoted without compromising on the overall goal of providing the greatest possible benefit to the pension system.

Exemplary means that the investments should have the best risk and return given the pension system's needs and that sustainability should be an integrated part of fund management. The goal of exemplary management should be achieved without sacrificing the overall objective of a high return in the long term.

Vision

AP2's vision, World-class management, serves as both motivation and a guide for the Fund's employees. It helps the Fund motivate and attract employees, prioritise and make the right decisions. The vision covers all parts of the Fund's activities.

A sustainable strategic portfolio

As part of AP2's strategic roadmap, the Fund's objective is to develop a new and sustainable strategic target portfolio by 2020. A sustainable strategic portfolio is a strategic portfolio that, by having integrated sustainability into underlying decisions, is better equipped to fulfil the overall goal of providing the greatest possible benefit to the pension system in the long term. The integration of sustainability is necessary for achieving that goal. A sustainable strategic portfolio, without sacrificing the overall goal, also promotes sustainable development.

Sustainability strategy

During the year AP2 developed a new sustainability strategy. The strategy is based on the statutory mission and the Fund's investment beliefs. The strategy also reflects the Fund's vision and values. The investment beliefs provide

AP2's Investment beliefs

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

"As part of their **mission** the AP Funds must manage the **fund assets** in an exemplary manner through **responsible investments**"



the outer framework for the Fund's approach to sustainability in asset management. In addition, a number of more concrete sustainability principles have been adopted.

AP2's six sustainability principles are:

- AP2 integrates sustainability in all investment processes.
- 2. AP2 actively seeks for investments that contribute to sustainable development.
- 3. AP2 works on the basis of the focus areas.
- 4. AP2 uses dialogue as a tool.
- 5. AP2 takes a scientific approach.
- 6. AP2 seeks to be a leader within sustainability.

The sustainability strategy is based on these principles and its aim is to concretise activities aimed at reaching the overall goal of a sustainable strategic target portfolio, which is also in line with the Paris Agreement.

The strategy also includes goals in order to analyse how the Fund's sustainability work affects return and risk.



One of Andra AP-fonden's sustainability principles is a striving to be at the forefront of sustainability, a goal that the Fund works towards continuously. The Fund began its work on sustainability issues in 2006 and was one of the founding signatories of PRI. The Fund has on several occasions been a pioneer in terms of investments in green bonds, sustainability requirements in contractual agreements with private equity funds, divestment from fossil energy companies, TCFD-compliant reporting and now, most recently, also UNGPRF. The Fund was included in PRI's Leaders' Group 2019 for integrating ESG in external management and private equity.

AP2's sustainability work covers the environment, ethics, social issues and corporate governance. Sustainability is the umbrella term that the Fund uses for these issues. The goal of the Fund's sustainability work is to generate and protect values. By including sustainability aspects in analyses and investment processes the Fund gets broader and better decision data. The Fund is also working to maintain a high level of confidence by promoting a solid ethical and environmental approach, while also contributing to the development of sound practice in asset management issues.

AP2's framework

AP2 is a government agency whose activities are regulated in the Act (2000:192) on Swedish National Pension Funds. The law has been amended as of 1 January 2019. The AP Funds' mandate includes generating a high rate of return while maintaining a low level of risk. The investment strategy shall make provision for the impact of pension payments as well as the liquidity requirement associated with outflows from the funds. It is important that AP2 has the confidence of the general public and acts in a responsible manner. The revised Act states that the AP Funds should manage their assets in an exemplary manner

through responsible investments and responsible ownership.

For AP2, sustainability and responsible investment are a high priority. A proactive approach to the environment, ethics, social issues and corporate governance are means to attain the goal of a high, riskadjusted return.

Guiding documents for the sustainability work

AP2 has a number of policies and guidelines that form the basis of the sustainability work (see description on page 5). Information and training in these are provided continuously. The Fund performs a annually review of policies and guidelines and follows it up through internal controls and routines.

AP2's operative work on sustainability and governance issues is based on the Fund's sustainability policy and corporate governance policy. The corporate governance policy consists of ten principles that cover structural issues, corporate governance as well as environmental and ethical issues. The corporate governance policy also describes which principles that the Fund has adopted and guidelines and initiatives to which the Fund has signed up or uses in its sustainability work.

The corporate governance policy is adopted annually by the Board and is published on the Fund's website. The policy clarifies what AP2 expects from the companies in which the Fund invests, but also what the companies can expect from the Fund as an owner in the company.

Regulations and conventions such as the OECD Guidelines for Multinational Enterprises and corporate governance, the UN's Global Compact, the UN's Principles for Responsible Investment, the UN's Guiding Principles on Business and Human Rights, the Swedish Companies Act, the Swedish Code of Corporate Governance and other

AP2's approach to sustainability

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specific codes of corporate governance such as the ICGN Global Stewardship Principles and the UK Stewardship Code together with the EU's work on Sustainable Finance also form the basis for AP2's work with sustainability.

Handling conflicts of interest

AP2's policy on conflicts of interest is part of the Fund's corporate governance policy. Handling conflicts of interest in asset managers' corporate governance work is a key area. As an independent, institutional state owner, AP2 does not have the same inherent potential for conflicts of interest as other players. Should they nevertheless arise, they are handled in accordance with the policy's process. Any conflicts of interest that arise are reported to the Board and published, in cases of special importance, on the Fund's website.

Implementation of PRI

AP2 supports and works to implement the **UN-supported Principles for Responsible** Investment, PRI. The Fund signed these principles already in 2006 when they were launched. Implementing is a continuous process where consideration for sustainability issues is taken in both the Fund's role as asset manager as well as its role as asset owner. PRI provides a variety of tools and activities to support investors to implement the principles and to facilitate collaboration among investors. Around 2 000 investors have signed up for these principles. PRI carries out an annual survey where all signatories report how they are working to implement the principles. AP2's response to this survey is available on the PRI's and AP2's websites. AP2 also follows the PRI's Guidance for Responsible investment in

Farmland. These were drawn up in 2011 by AP2 and a group of international investors. AP2's reporting on the implementation of these principles can be found on the Fund's website.

Organisation and distribution of responsibility

AP2's Board determines guidelines and policies in governance issues and has mandated the CEO of the Fund to manage these in the ongoing operations of the Fund.

The Fund Executive Management, together with the Head of the strategy department and the Fund's senior sustainability analysts, are responsible for the strategic sustainability work and for implementation and follow-up. The day-to-day work is handled by the Fund's various departments.

Andra AP-fonden's management of sustainability-related issues

Decision level	Category	Governing documents	Follow-up	Goals and outc	omes 2019
THE BOARD OF DIRECTORS	Strategy	Operating plan, including corporate governance policy and sustainability	This is followed up by the Board and the executive management. Followed up by the Board and executive management and reported in the annual and half-year reports.	Goal: Long-term average annual real return 4,5%.	Outcome: In five years, 5,9%, in ten years 7,2%.
	Return				
	Code of Conduct	Ethics policy	The General Counsel is generally responsible for following up of how the guidelines are complied with and reports to the Board on important ethical issues concer-	Goal: No form of corruption, giving or taking bribes.	Outcome: 0 cases.
		Compliance policy			
		Principles for hospitality and gifts	ning the business and the employees' actions.		
CEO / EXECUTIVE MANAGEMENT	Sustainability	Policy for human rights	The work is followed up by the Board, Executive Management and steering groups.	Goal: See page 9.	Outcome: See page 9. Outcome: See page 42.
		Financial sustainability areas		Goal: Increase number of train journeys Gothen-burg–Stockholm. Reduce number of printouts.	
		Environmental policy			
		Sustainability strategy			
	Staff manual	HR policy	The CEO is responsible for ensuring that policies and plans are drawn up. The overall work is planned and followed up by the Fund's HR manager.	Goal: Increase the proportion of female managers at AP2.	Outcome: 28 (33)%.
		Equality and diversity plan			
		Discrimination policy		Goal: No employee of AP2 shall be exposed to discrimination.	Outcome: 0 cases.
		Work environment policy			
		Hospitality policy			
		Travel policy			

To continue to successully integrate sus-

The ongoing work of corporate governance is carried out by the Fund's corporate governance group which is comprised of members from the Fund's Executive Management and Head of Swedish equities. Based on the Fund's corporate governance strategy, the governance group prepares action plans and follows up the work continuously.

AP2's Board receives a report at each board meeting about the Fund's sustainability and corporate governance work.

Stakeholder dialogue and materiality analysis

The AP Funds have an impact on people, the environment and society through their operations and investments. To identify

the most important sustainability issues. AP1, AP2, AP3 and AP4 conducted a materiality analysis in 2017.

A key part of the analysis was a dialogue with representatives of the Fund's most important stakeholder groups who are impacted to a large degree by or who themselves impact of the Fund's operations. The stakeholder dialogue was carried out in the form of a workshop. The funds' goal for the workshop was to identify stakeholder expectations and priority issues, get feedback on the Fund's current sustainability work and to learn the views of stakeholders regarding the ongoing sustainability work.

All stakeholder groups held the view that what is most important is the AP Funds' actions in investment and management in view of the fact that the most significant impact is in these areas. Long-term return was seen as an overall goal and not a specific sustainability target.

It was established that the selection of priority sustainability issues varies between

the different companies and funds in which the AP Funds invest. However, three issues were highlighted as being particularly important and given top priority: indirect environmental impact, indirect climate impact and human rights.

Accordingly, each AP Fund has performed their own prioritisation of sustainability issues based on each individual fund's position.

Focus areas

One of the Fund's six sustainability principles is to base its work on focus areas.

According to this principle AP2's sustainability work is concentrated primarily on a number of prioritised focus areas that the Fund considers to be important for a better long-term return. The aim of focusing the Fund's resources on a number of areas is to achieve results within areas of financial significance. AP2 possesses extensive expertise and experience in these selected focus areas, having worked on

World-class management









































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Awards

The UN's Principles for Responsible Investment (PRI) has included AP2 in the "Leaders' Group 2019". This group includes asset owners who PRI has identified as leaders in terms of selection of external managers for listed and/or private equity. AP2 qualified for both categories. Through Leaders' Group, PRI aims to show good leadership and raise the standards of responsible investments amongst all its signatories.



these issues for a considerable period. The Fund also expects to work with these areas for long into the future.

During the year the Fund has reviewed its focus areas and has added one, human rights, as this too is an area of great importance and in which the Fund has performed structured work for a couple of years.

The Fund's focus areas in sustainability are:

- Climate
- Corporate governance
- Diversity
- · Human rights.

The work carried out in these focus areas is targeting companies in which AP2 has invested most heavily and/or those in which it controls a substantial interest and in sectors that are deemed to pose considerable financial sustainability risks. The reason for this is that the Fund shall focus on areas and companies which are financially the most important for the Fund. The work on human rights issues is driven mainly on the basis of a severity perspective in accordance with the UN Guiding Principles. This can be carried out in collaboration with other investors to achieve improvements for an

individual company and/or within a sector. The work on focus areas is also carried out internally.

Goals broken down in the long and short term for each respective focus area and activities for achieving the goals are specified in the Fund's annually business plan for sustainability and in the action plans for each asset class. The work on focus areas is also carried out internally.

Collaboration with other investors

In addition to the cooperation between the AP Funds in the Council on Ethics, AP2 collaborates with other Swedish and international investors. During the year, the Fund has exchanged experience on the environment, ethics and corporate governance in asset management with others including the Swiss federal pension fund, PUBLICA, and other parties within the Fund's network. AP2 is also a member of and supports various Swedish and international initiatives in issues relating to the environment, ethics and corporate governance. The Fund works with other investors to influence new legislation, primarily within corporate governance. This cooperation is becoming increasingly important in order to influence and bring about change, and thereby to improve

shareholder value in the long term. AP2 is part of the reference group for a research project launched by PRI, UNEP FI and Generation Foundation, where the purpose is to investigate if and how legal frameworks permit and encourage investors to take into account how sustainability factors influence and are affected. The project, "A Legal Framework for Impact", will analyse the exisiting legal frameworks to see to which extent owners can prioritise sustainability factors, even when it leads to a negative impact on the return. When it comes to managers, the Fund will investigate how they can or should approach sustainability factors when their mandates do not include it.

Collaboration on climate issues

AP2 works with other European investors on climate issues through membership of the IIGCC (Institutional Investors Group on Climate Change). The aim is to promote the investors' views on climate 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.

Climate issues are important for AP2 as a long-term investor. Currently, there is great uncertainty as regards future

"AP2 is also a member of and supports various Swedish and international initiatives relating to environment, ethics and corporate governance"



Seminar on TCFD at the PRI in Person conference in San Francisco 2018 in which AP2's senior sustainability analyst Christina Olivecrona (2nd from right) took part.

regulations and frameworks for reducing emissions of greenhouse gases and to stimulate alternative energy sources. This makes it difficult for companies to make profitable investments and for the investors to calculate the risks and returns. IIGCC is an efficient platform for expressing investors' requirements in the climate field. It is also is also a good way for the Fund to obtain the latest information about various climate-related investments. One of the Fund's employees was a member of the IIGCC Board until November 2019. Read more at www.iigcc.org

More information about AP2's membership and initiatives are available on the Fund's website.

Training in sustainability

All employees receive continuous internal training in sustainability issues. All members of the board have also completed training in sustainability. It has included current trends within the sustainability field, the UN's Sustainable Developement Goals, current events globally within the finance sector, AP2's sustainability work and the work of the Council on Ethics. During the year, all employees have completed internal mandatory training in human rights.

New sustainability goals 2020

On the basis of the sustainability strategy produced by the Fund during the year, new sustainability goals will be set during 2020.

A selection of Andra AP-fonden's sustainability goals

Focus area/asset class	Goal	Follow-up method/ Key indicators	Achieved 2019	Shall be achieved
ESG-integration				
Swedish equities	Follow-up and evaluation of the sustainability work for the ten largest Swedish holdings, based on the Fund's ownership share	Analysis and dialogue completed	✓	2019
Fixed-income securities	Investigate the opportunity to integrate further ESG factors for corporate bonds	Analysis completed and implementation done	√	2019
	Implement multifactor indices with ESG factors for corporate bonds	Analysis completed, design in progress		2020
Reporting				
Traditional real-estate	That all the Fund's non-listed real estate companies and funds respond to GRESB's questionnaire 2019	Percentage of companies/funds that responded to the survey	✓	2019
	That the Fund's non-listed real-estate companies improve their overall GRESB score (the maximum is 100)	GRESB-score	92 (86)	Annually
Climate				
The Fund shall have a portfolio in line with the Paris Agreement	Develop methods for measuring the portfolio's compliance with the Paris Agreement	Methods developed		2021
	The Fund shall report in accordance with TCFD's framework	Published report	\checkmark	Annually
	The Fund shall carry out scenario analyses to identify financial climate risks and opportunities	Completed analyses	√	2019
	Develop the Fund's knowledge on the impact of farmland investments on the carbon footprint	The Fund's carbon footprint	✓	2019
Diversity				
Swedish equities	That the percentage of women shall increase on company boards where the Fund participates on the nomination committee	Percentage of women on the board	See table on page 43	Annually
Corporate Governance				
Swedish equities	Vote in all companies that fulfil the Fund's criteria for participating in general meetings	Percentage of companies in which the Fund has voted	√	Annually
Global equities	Vote at 750 international AGMs	Number of companies in which the Fund has voted	√	Annually
	Write 50 follow-up letters to companies where the Fund has voted against the proposals of the board	Number of letters that the Fund has sent	√	Annually

The UN's Sustainable Development Goals

In September 2015, the 193 member states of the UN unanimously adopted 17 Sustainable Development Goals. The goals, to be achieved by 2030, aim to end poverty and create a sustainable world. The 17 global goals have been divided into 169 targets that are measured by various indicators.

Each country is responsible for implementation and follow-up on the Sustainable Development Goals. To achieve the goals, governments, civil society and business and industry are required to work together.

The 17 Sustainable Development Goals are integrated and indivisible, which means that no goal may be achieved at the expense of any other one and that progress is required in all areas in order to achieve the goals. The Paris Agreement is an integral element of the UN's Sustainable Development Goals.

As a global investor, AP2 can contribute to achieving the goals in various ways; through the Fund's sustainability work and through the investments it makes.

Examples of investments

AP2 has invested in The Rise Fund, a private equity fund that is managed by TPG Growth. The Rise Fund manages USD 2.1 billion of assets, primarily for global institutions, which makes it the largest impact fund that has ever been set up. The objective of the Fund is to achieve measurable, positive social and environmental results, as well as financial returns comparable with the market. All investments must have a positive impact on at least one of the UN's Sustainable Development Goals. The Rise Fund measures the specific size of the impact a potential investment is expected to have during its investment life cycle, with focus on the impact result as defined by the UN's Sustainable Development Goals.

Green and social bonds

AP2 works actively to implement and develop sustainability aspects within asset management. For some time, the Fund has invested actively in green and social bonds. These bonds are transparent concerning how liquid funds are invested in projects to promote climate change and address social challenges. As a general rule, these projects are directly connected to at least one of the UN's Sustainable Development Goals.

Investing in green and social bonds has been an effective and successful way of implementing sustainability aspects in the Fund's fixed-income management and thereby achieving greater transparency and understanding of sustainability issues in the fixed-income portfolio. AP2 has invested in green bonds since 2008 and made its first investment in a social bond in 2014.

The Fund's ambition is to aggregate reporting for these bonds in order to give an overall picture of the sustainability aspects of fixed-income management. Today, there is no defined reporting standard and this reporting varies considerably depending on such factors as the issuers' areas of activity, where they operate, etc. During the year, AP2 analysed and compiled reporting for all of the Fund's green and social bonds. The reporting clearly shows that more and more issuers are linking their projects to the UN's 17 Sustainable Development Goals. Half of the projects reported on during the year account

for their contributions to the UN's goals. For issuers that do not report according to the goals, the Fund applied the framework created by the International Capital Market Associations (ICMA). More information is available at www.icmagroup.org

The aim of the analysis was to illustrate the practical implementation and diversification of sustainability within AP2's fixed-income management.

In total, the Fund has currently invested in 74 different issuers of green and social bonds. These finance around 3 000 projects, of which around half are green and half are social.

Active involvement

AP2 is also committed to the goals in other ways. On many occasions, the Fund's CEO, Eva Halvarsson, has reported on how the Fund's investments contribute to achieving the goals. Eva Halvarsson has also given a number of interviews, primarily in international media, about the work of the Fund.

The Fund's sustainability analyst is also a member of the PRI Advisory Committee concerning the UN's Sustainable Development Goals.

AP2 participated in the financial service sector's commission "Finance Against Slavery and Trafficking (FAST)", which presented its final report – Unlocking Potential: A Blueprint for Mobilizing Finance Against Slavery and Trafficking – at the UN General Assembly in New York in September 2019.

Contribute to the UN's Sustainable Development Goals

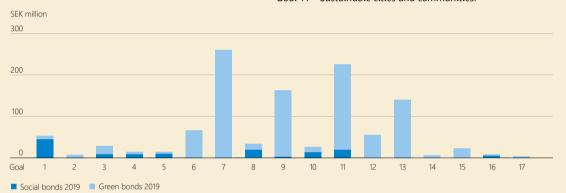
AP2's analysis shows that the Fund has a total of SEK 14.5 billion invested in green and social bonds that are directly linked to some of the UN's Sustainable Development Goals.

AP2's analysis shows that the green bonds in the Fund's portfolio primarily contribute to

- Goal 7 Affordable and clean energy
- Goal 11 Sustainable cities and communities
- Goal 9 Industry, innovation and infrastructure

The social bonds primarily contribute to

- Goal 1 No poverty
- Goal 5 Gender equality
- Goal 11 Sustainable cities and communities.



Mapping the portfolio

Investing in both green and social bonds gives a wider range of sustainability aspects in the fixed-income portfolio. Review of the reporting of all holdings of social and green bonds at project level, whereby each project is connected to the UN's Sustainable Development Goals, gives a clear picture of a sustainable and diversified fixed-income portfolio. Green bonds focus primarily on Sustainable Development Goals related to the environment and climate, while social bonds focus on such areas as poverty and equality. The chart shows the market value of the Fund's total holdings of SEK 14.5 billion in relation to the UN's Sustainable Development Goals.



FAST aims to eliminate modern slavery, human trafficking, forced labour and child labour, in accordance with target 8.7 of the UN's Sustainable Development Goals. AP2 was one of only two institutional investors to take part in the commission's work.

Together with some of Europe's largest pension managers, AP2 has signed a position on the importance of interna-

tional investors investing in solutions that contribute to achieving the UN's Sustainable Development Goals. Since the Fund considers it important to have a common definition of "Sustainable Development Investments", in the position paper it encouraged other major institutional investors to take similar initiatives.

The Fund has also signed the "Stock-holm Declaration" initiative. Through

the initiative, both Swedish and international investors acknowledged that the UN's Sustainable Development Goals will constitute a central framework for investments up to 2030.

"AP2 has regular dialogues with its external managers and Swedish and international companies in issues concerning the environment, ethics, social issues and corporate governance"



Dialogue – a tool to achieve improvements

As an active asset owner and asset manager, dialogue is an important tool both in relation to companies and to society in general. AP2 has regular dialogues with its external managers as well as Swedish and foreign companies in issues concerning the environment, ethics and corporate governance.

One of the Fund's six sustainability principles is to use dialogue as a tool. AP2 conducts dialogues in accordance with the corporate governance policy and corporate governance policy strategy. Using dialogue as a tool to influence companies and other players to improve their sustainability work, helps to generate value for the Fund while also promoting sustainable development. The Fund willingly collaborates with other investors to enhance efficiency and increase the impact of the dialogues.

Collaboration with other investors is important in order to achieve success in dialogues with companies, but also for promoting a trend of responsible investments. AP2 collaborates with both Swedish and foreign institutional investors. Climate Action 100+ is a dialogue project in which the Fund is taking part. Read more on page 30. In AP2's view it is important to be an active owner and drive dialogues to achieve improvements. If no changes can be made, the Fund can, as a last resort, exclude the companies.

Excluded companies

If AP2 has reason to suspect that any of the companies that the Fund has invested in are seriously and systematically in violation of an international convention that Sweden has entered into, or has expressed an intention to enter into, the facts of the case should be investigated. This includes a dialogue with the company in question. If the suspicions are confirmed, the company should be encouraged to provide an explanation and develop an action plan.

In its assessment of the case, AP2 shall take account of the nature of the event and any measures that have been taken (or should be taken) to ensure that the event does not happen again. If the contacts with the company do not yield a satisfactory result, the Fund shall, following an overall assessment, decide whether the company shall be excluded. The Fund may also decide on exclusion if it considers the circumstances to be of such a serious nature that exclusion is required, even though no violation of conventions exists or can be detected.

Since 2014 the Council on Ethics of the AP Funds has introduced a time limit of four years for reactive dialogues conducted with companies where breach of conventions have been verified by external experts. If the purpose of the dialogue has not been achieved within four years, the Council on Ethics recommends that the AP Funds divest from the company.

According to the new legislation for the AP Funds, which came into effect on 1 January 2019, the funds shall draw up common guidelines for which assets the funds should not invest. These guidelines are published on AP2's website. At the end of 2019, AP2 had excluded 18 companies that are in violation of international conventions and where dialogue with companies has not yielded any improvements. The Fund publishes a list of these companies publicly as opposed to when it divests from companies when it is a purely financial decision. Information about which companies AP2 has excluded can be found on the Fund's website.

Divested companies

In line with the AP Funds' new legislation, AP2 has analysed the international conventions that are aimed at certain products or businesses over time being limited in use, scope or distribution. The Fund has also evaluated the need for a change in approach according to the underlying purpose of the conventions.

With the support of the revised statutory regulations for the AP Funds on exemplary management, the Fund divested from a total of about 60 tobacco companies and companies involved in the maintenance and modernisation of nuclear weapons systems.

Since 2013, work has been ongoing on analysing financial climate risks for fossil energy companies and coal-based electric power companies. In total, the Fund has divested from equities and corporate bonds in 80 companies due to financial climate risks, including 23 coal, 20 oil and gas companies and 37 utility companies.

The return contribution is -0.31 (-0.27) per cent, after having excluded compa-

nies as a result of breach of conventions, that are included/have been included in MSCI World DM since 2006. These exclusions are equivalent to 0.78 per cent of MSCI World DM in 2019.

For MSCI EM, the return contribution is -0.38 (0.43) per cent after having excluded companies that are included/have been included in MSCI EM since 2007. These exclusions are equivalent to 1.37 per cent of MSCI World EM in 2019.

Read about the financial contributions of the divestments on page 29.

The Council on Ethics of the AP Funds

Dialogues with foreign companies are coordinated through the AP Funds' joint Council on Ethics. The Council on Ethics is a collaboration between the First, Second, Third and Fourth AP Fund, which was launched in 2007. The Council on Ethics has preventive and reactive investor dialogues with companies all over the world.

The companies with which the Council on Ethics conducts dialogues are identified primarily in conjunction with the Fund's biannual screening of its total shareholdings, with a view to determining whether any portfolio company is in contravention of an international convention. This screening is conducted by an external consultant. The work is based on the principles of commitment, action and change, with the intention of making a difference. The Council on Ethics identifies companies that can be linked to violations of conventions and focuses on persuading such companies to deal with confirmed violations and to implement systems and measures to preclude future violations. Dialogue is a vital tool in enabling the Council on Ethics to influence corporate behaviour.

When companies in which AP2 has invested can be linked to the breach of an international convention, the Fund's core strategy is to exert its influence as an investor to ensure that such violations cease, that systems designed to prevent any recurrence are implemented and that measures are taken to prevent any future violations. Through its commitment and by deploying its power as a major investor in reacting to breach of international conventions, as well as demanding change, the Fund can make a difference. Only in cases where this cannot be achieved the Fund will consider excluding its holdings in the company.

International investor collaboration on safety for tailings dams

After the collapse of the Vale dam in Brumadinho, Brazil in January 2019 and its tragic consequences including loss of life, loss of livelihood and catastrophic environmental destruction, the Council on Ethics of the AP Funds, the Church of England Pension Board and investors all around the world have launched a collaboration that focuses on safety in the mining industry. The parties that form part of the investment collaboration have around SEK 10 000 billion in assets under management. One general demand is the improved safety at mine tailings dams, and that a global public database (www.grida.no) of all tailings dams should be set up, which could be used by communities, governments, civil society organisations and investors. Letters have been sent to 680 mining companies, challenging them to publish technical information for every tailings dam that they fully own or co-own. The Council on Ethics and the Church of England's Pension Board are also PRI (Principles for Responsible Investment) representatives in an international working group that is working for the creation of a global safety standard for mine tailings dams. This would help improve the possibilities for preventing future dam accidents.

Anti-corruption work

The work to prevent corruption is and will remain an important issue for the Council on Ethics to drive forward as corruption undermines the legitimacy and sustainability in the economic system. The Council on Ethics holds dialogues with a large number of companies, and in principle all proactive projects with which the Council on Ethics works include anti-corruption issues. The Council on Ethics's annual report for 2019 will be published in April 2020. Read more at www.etikradet.se

14

Brazil

In 2019 Brazil has been in the media focus due both to current concerns about land and sustainability issues attributable to the country's new president and the forest fires in the Amazon. AP2 has a direct exposure to Brazil, mainly via investments in farmland, government bonds and equities. The Fund has therefore closely been monitoring developments in the country during the year.

Jair Bolsonaro took over as president on 1 January 2019 and his agricultural and environmental policy has sparked a great deal of criticism and concern globally, due among other things, to his view that the protection of the rainforests and its indigenous population needs to be weakened in order to promote Brazil's economic growth. In spring 2019, representatives from AP2 therefore went to Brazil to, among other things, hold meetings with government representatives to focus on environmental and agricultural issues. At the meetings it was pointed out that sustainability issues are very important to investors such as AP2.

Deforestation and forest fires

Not only is stopping the felling in the Amazon imperative for the states where the rain forests exist, but also globally, as the Amazon contributes substantial eco-system services both for the climate and biodiversity.

Brazil's nature conservation law, The Forest Code, embraces not only the forest but all vegetation and provides relatively strong protection. The statutory requirements are geared towards Brazil's six different biological and socio-economic zones and include requirements on areas that may not be cultivated in view of the need to preserve and stimulate biodiversity both for fauna and flora. In the Amazon, 80 per cent of the timberland area may not be cultivated. There are also requirements on not cultivating in areas near watercourses or hilltops in order to reduce erosion, create geological stability or preserve specific fauna and flora. The problem is that a substantial portion of the felling being carried out in the Amazon is illegal. To reduce deforestation, better supervision of compliance with the law is needed.

In 2006, to reduce deforestation a moratorium was introduced on soya growing in the Amazon, which has been a very effective tool. Deforestation attributable to soya growing has decreased by 30 per cent (2006) to 1.5 per cent (2014), while soya production through the use of existing farmland has increased by 400 per cent. This moratorium is now being called into question after the

change of political governance in Brazil. In December 2019, therefore, AP2 signed an open letter, aimed at preserving the current moratorium. The letter was signed by some 80 investors and companies.

Since 2017 the Council on Ethics of the AP Funds has been in dialogue with the Brazilian company Bunge Limited due to issues of deforestation in Brazil and Bolivia. Bunge has pledged to eliminate deforestation from its supplier chain for seeds and oil plants by 2025. In 2018 the company introduced a three-step process to increase the traceability of soya grown in South America. In August 2018 it launched a financing solution aimed at encouraging and rewarding suppliers who avoid the deforestation of indigenous vegetation and instead enhance the efficiency of their farming on existing cultivated land. The Council on Ethics expects Bunge to implement its fixed-term policy on zero tolerance on deforestation and encourages the company to increase the transparency of its public reporting on the implementation. See also an article on the dialogue with Bunge in the Council on Ethics's annual report for 2018.

In September 2019, 251 institutional investors, including AP2, issued a joint statement on deforestation and the forest fires in the Amazon. In the statement the investors are requesting companies who are exposed to suppliers in livestock and soya to intensify their work and adopt a clear stance against deforestation in their supplier chains. The companies are being called upon to:

- Publish and implement a zero tolerance policy on deforestation across the entire supplier chain.
- Evaluate their businesses and supplier chains on the basis of the risks regarding deforestation and publish this information.
- 3. Set up a transparent supervision and verification system for their suppliers.
- Report annually on their exposure to and handling of deforestation risks, including the progress they have made on the zero tolerance objective.

AP2's farmland managers have zero tolerance on deforestation

In August 2018, AP2's manager of farmland in Brazil, Nuveen, adopted a policy of zero tolerance on deforestation in Brazil. AP2 has no farmland in the Amazon.

Sustainability in the investment process

Taking into account sustainability factors in analysis and decision-making processes means integrating sustainability into the asset management. In this way, the Fund can also reduce the risk and create better conditions for an increased return. Andra AP-fonden's view is that long-term sustainable companies also generate good returns in the long term.

The Fund's fundamental conviction is that companies with long-term sustainable business models generate a higher long-term value for their shareholders. Such investments are also, other things being equal, less risky. Companies which integrate factors such as ethics and environment in their long-term business development will have a real advantage over their competitors and better able to create long-term value for their shareholders. A proactive approach to the environment, ethics, social issues and corporate governance are means to attain the goal of a good risk-adjusted return.

Sustainability - part of the strategy

During the year AP2 developed a new sustainability strategy (read more on page 2) based on the Fund's six sustainability principles. One of the principles is that AP2 integrates sustainability in all investment processes.

According to the principle, sustainability shall be an integrated part of all investment processes. The form of the integration depends on the conditions that are in place for each individual asset class and decision process. The way that sustainability is integrated may differ, for instance, between the fundamental management the quantitative management and the selection of index. It may also differ between the active management, management of listed assets, nonlisted assets and the internal management and the external management.

The departure point for integrating sustainability is by improving the possibilities for overall goal attainment. This can either be done by improving the expected return, by minimising the risk or by promoting sustainable development without sacrificing the risk-adjusted return. The objective is that the expected return increases while the risk is reduced, while a sustainable development is also promoted. Integrating sustainability is a continuous process rather than a goal that can be completed by a given date.

Risk system that includes sustainablity

The Fund's risk system currently includes ESG-related data that enables the sustainability analyses of the Fund's portfolio to be performed. In 2019, a tool has been developed that makes carbon footprint data available, on a daily basis, for the internal equity mandates. One of the Risk Management goals for 2020 is to produce possible measurements and metrics for evaluating how the portfolio's sustainability is developing.

Equities

Swedish equities

Fundamental analysis is employed in the management of Swedish equities. In the analysis of companies, consideration is given to sustainability aspects and how they can affect company valuation and revenue in the long term. Examples of sustainability aspects include regulations relating to the environment, corporate governance issues and the shift in technology.

AP2 believes that companies can both create and protect value by working on sustainability issues. By being an active investor, the Fund can influence companies and support them in the development of their sustainability work. For example, the Fund participates in nomination committees, votes at shareholders' meetings and raises specific issues with companies. During the year, AP2 held a number of dialogues with Swedish companies about sustainability issues.

Global equities

AP2's management of global equities is largely through an active internal quantitative management. In 2018, AP2 replaced all existing indices for the internal management of global equities. The new multi-factor indices have been developed internally. The factor to which the indices have greatest exposure is an internally developed sustainability factor which is linked to a number of environmental, social and corporate governance factors. This means that equities in companies that have a good ESG profile will receive a higher index weight. Further elements of sustainability are found within the active quantative management in relation to these indices. As access to sustainability data is on the increase and due to AP2's internal research, the Fund's sustainability factors are developing, both in index construction and in active strategy.

"During the year AP2 developed a new sustainability strategy, based on the Fund's six sustainability principles"



AP2 has made divestments from global listed companies that the Fund has determined as having financial climate risks. This work is based on comprehensive sector and company analyses where sustainability issues and financial information is woven together.

The Fund has so far investigated the utility sector, the coal sector and the oil and gas sector. In total, the Fund has divested from 80 companies.

External mandates for global equities

AP2 also has externally managed mandates within global equities. Account of sustainability factors is taken in the choice of managers. The managers' work is followed up and evaluated annually. For external managers who have invested in portfolio companies or in regions where the risk of breaches of international conventions is

assessed to be high, the Fund implements a close, active dialogue to ensure that the managers integrate sustainability factors in their asset management.

Norm-based screening

All companies in AP2's equity portfolios are screened twice a year in order to identify companies that are in violation of international conventions and guidelines. This screening is carried out by an external consultant and forms the basis for dialogues that the Council on Ethics carries on. Read more about the work of the Council on Ethics at www.etikradet.se

Private equity funds

Since 2014 AP2 is represented on the PRI Private Equity Advisory Committee (PEAC), which is an advisory body for PRI's work with private equity funds. The purpose of the

committee is to give opinions on strategies and activities, to monitor the implementation of PRI's Principles for Responsible Investment within the private equity sector, and to help with guidance and a common standard. AP2 has also participated as a member of a working group led by PRI in cooperation with Environmental Resources Management (ERM) in order to produce a guide for ESG evaluation, reporting and dialogue within private equity. The guide which was published in June 2018 is an element of PRI's work to support investors (Limited Partners) and managers (General Partners) to include sustainability in investment processes.

ILPA (Institutional Limited Partners Association) is the only global organisation for investors in private equity funds that focuses on driving issues common to investors in the private equity sector. ILPA works continually on updating and developing guidelines for principles, practice and policies, and in 2018 has included frameworks that cover sustainability and diversity. This is included in the questionnaire that AP2 uses in the due diligence process and is a component in the overall assessment in connection with an investment.

An increased focus on sustainability issues and a clearer conviction on the significance of sustainability issues for long-term value creation is noticeable among private equity companies. AP2 notices that more

private equity companies are working actively on these issues in the investment process and that their ESG reporting is also being improved. AP2 is working continually to analyse and evaluate the sustainability work within private equity investments and strives to contribute through dialogue to progress and improvements.

In-house analysis and evaluation model AP2 has developed a model for analysing and evaluating the sustainability work of private equity companies. This model is based on PRI's framework for due dili-

gence and for follow-up and dialogue with private equity companies. Based on a dialogue that includes the due diligence process, ESG reporting and investor meetings, private equity companies' sustainability work is evaluated on 25 assessment points.

The evaluation is carried out the first time at the time of investment and is then updated with new information on an ongoing basis. Results show an evaluation and comparison of private equity companies' sustainability work in three categories that follow PRI's framework - policy and process, portfolio and incidents. On the basis of the ana-

Work method and model

Framework

PRI's framework for due diligence, follow-up and dialogue

Dialogue

- Due diligence
- ESG reporting
- Annual follow-up
- Dialogue with managers

Analysis

- Model for analysis and evaluation
- The manager's ESG activities are evaluated against 25 assessment points
- The baseline is set at the time of investment/due diligence. The evaluation is continuously updated with new information from the manager's ESG reporting, presentations and meetings/dialogues.

Conclusions

- Assessment of ESG activities on a scale of 0–100 per cent for all managers
- Follows the performance of the manager's ESG activities from time of investment onwards
- Analysis and comparison
- Result in three categories based on PRI's framework:
 - I Policy and Process
 - II Portfolio
 - III Significant ESG incidents
- Basis for dialogue focus areas, issues and opportunities for improvement

ESG evaluation % 100 50 1 2 3 4 Managers Present status Manager 1

lysis, AP2 can raise further questions and highlight improvement possibilities in the continued dialogue with the manager.

In addition to systemisation of the evaluation process, evaluation criteria have been established for all assessment points. In addition to an individual evaluation, the aim is to create prerequisites to be able to compare the sustainability work within various management organisations.

Bonds

Green and social bonds

In 2019, AP2 has increased the strategic weighting of green bonds from 1.0 to 3.0 per cent of the total portfolio. During the year, a strong continued growth in the market was recorded, with more issues and more organisations and companies issuing both green and social bonds The aim of green bonds is to finance projects that contribute to necessary transitions and to mitigate the effects of climate change. During the year, the Fund has invested in a number of green bonds from new issuers, which has helped to diversify the Fund's portfolio and broaden its climate commitment. The Fund has invested in 123 different issuers with over 3 000 projects across the globe, for example renewable energy, developing public transport and railways, making offices and housing energy efficient and water purification.

One way to expand the sustainability work within fixed-income management has been to invest in social bonds, among other things. AP2 made its first investment in a social bond in 2014. Since then, the Fund has invested in more than ten bonds with a focus on social issues.

AP2 active in development

The increased access to green and social bonds is positive as the Fund is better positioned to promote a more sustainable society in a clear manner while generating a good return. Considerable resources are required in order for a transition to a more climate-efficient economy to occur. Furthermore, green and social bonds help to raise awareness of sustainability within the finance industry. AP2 has an active involvement and views it as important to help to develop and raise awareness of the issue. Cooperation with universities and research within the field is self-evident. The Fund has, among other things, taken part in a study which yielded a report from the Stockholm School of Economics "A Swedish market for sustainability-related and socially labelled bonds: Institutional investors as drivers". In this report, focus is on AP2's work with social bonds. Of a total of 20 major Swedish institutional investors, AP2 is alone in having a clearly systematic approach to its selection process.

The Fund has also been represented since 2017 as an advisor for the Yale Initiative on Sustainable Finance (YISF) and the Center for International Climate Research (CICERO).

AP2 had holdings in green and social bonds worth approximately SEK 14 billion as of 31 December 2019.

Corporate bonds

During the year, a number of sustainability factors have been included in the active management of corporate bonds. The environmental, social and governance factors form an ESG theme that has several subcategories. As an example there are factors

that focus on diversity, corporate governance, use of resources and emissions. The Fund has also divested corporate bonds where the issuer is deemed to have financial climate risks.

Government bonds

AP2 strives to invest in government bonds in emerging countries when it is consistent with the Fund's requirements on risk-adjusted return, so that governments receive an incentive to strengthen their sustainability work and contribute to the attainment of the UN's Sustainable Development Goals. Three ways in which the Fund does this is in practice is via ESG-weighted index, green bonds and ESG factors in the active management.

Since February 2019 AP2 employs JP Morgan's ESG index for government bonds issued in dollars by emerging market countries. The index construction is based on JP Morgan standard index, but shifts the weighting so that countries with a higher ESG score are given more weight. The ESG scores are based on data from renowned sources and correlates strongly with the UN index in terms of how far the countries have progressed in attaining the UN's Sustainable Development Goals. Green bonds are given greater weighting than in an standard index. The ESG weighting yields a clearly positive effect on the sustainability profile in the index without the risk-adjusted return profile being reduced.

The active management of AP2's government bonds issued in dollars by emerging countries has been based since 2015 on a points system that,

among other things, reflects the political risks in the various countries. The points system covers areas including the strength of the legal system, institutional quality, political stability, unemployment and poverty, risk of conflicts and maintaining democratic principles. The combined political score therefore represents the S and G segments in ESG and correlates positively with the UN index of how far countries have progressed in attaining the global goals. The active strategy puts the countries' sustainability profiles in relation to the price of their bonds and the expected return by over-weighting countries whose interest rates are higher than what the Fund's models deem to justifiable with respect to the country's economic and socio-political risks. All things being equal, AP2 therefore invests more in dollar bonds issued by countries with a better sustainability profile.

Traditional real estate

Many different sustainability aspects are important for the real estate sector. In November 2019, for the fourth consecutive year, AP2 arranged a sustainability day for its non-listed property companies (Vasakronan, Cityhold and US Office Holdings) to increase cooperation on sustainability issues between the companies and to discuss sustainability indicators.

Evaluation of sustainability work

In spring 2014, the Fund joined the Global Real Estate Sustainability Benchmark (GRESB) in order to better monitor and evaluate the sustainability work for AP2's investments in real estate. GRESB is an organisation which employs an annual questionnaire to assess seven different sustainability aspects in real-estate companies and real-estate funds. These aspects are management, policy and reporting, risks and opportunities, follow-up and environmental management systems, environmental indicators (energy, greenhouse gas emissions, water and waste), construction certification, and stakeholder dialogues. More than 900 real-estate companies and funds took part in the questionnaire in 2019.

AP2 encourages its non-listed real estate companies and funds to respond to the GRESB questionnaire every year. All the Fund's non-listed real-estate companies and foreign non-listed real-estate funds responded to the questionnaire in 2019.

GRESB gives each company/fund an overall points score, a GRESB score from 0 to 100. AP2's non-listed real-estate companies received an aggregated GRESB score of 92 (86). Of the 14 Swedish listed real-estate companies in which AP2 has invested, four companies responded.

Carbon footprint

Climate and energy is a key issue, as the real-estate sector accounts for almost 30 per cent of the global emissions of greenhouse gases and almost 40 per cent of energy consumption. The non-listed companies' carbon footprint was 0.6 tCO₂e per million SEK invested, in the previous year it was 0.7 tCO₂e per million SEK invested.

The reduction in the carbon footprint is attributable to the increase in the

real-estate market value. Energy consumption and carbon emissions per area unit remains the same as in 2018.

Timberland

Timberland is an asset class that offers both diversification and stable, long-term returns. AP2 has been investing in timberland since 2010. Of the Fund's total assets, 1.3 per cent is invested in timberland. The majority of the investments are in Australia and the USA, and in timberland assets that produce sawn timber and and pulp wood. The Fund has three external managers: New Forests, Molpus and GreenWood Resources. New Forests invests in Australia and New Zealand. Molpus in the USA and GreenWood Resources in Europe, Latin America and the USA. The Fund's share of these timberland investments corresponded to approximately 129 000 hectares as at 30 September 2019.

Requirements on sustainability certification

AP2 requires portfolio managers, whenever possible, to certify the timberland assets in accordance with one of the international sustainability certification schemes Forest Stewardship Council (FSC) or Programme for Endorsement of Forest Certification (PEFC). Even if the asset cannot be certified, it will be managed in accordance with these organisations' principles for certification.

New Forests was started in 2005 and is a fund manager specialising in forestry. It also works to find markets for the ecosystem services the forest offers. Since its start.

"AP2 has chosen to invest in **farmland** through **joint ventures** with other investors, a form of investment that suits the Fund's **long-term view** on these investments"

sustainability issues have been central to New Forests' business concept. New Forests' stated ambition is to be at the forefront of sustainability, which means that it has policies and management systems for its sustainability work and that the timberland assets have been awarded sustainability certification by an independent party. It is also working with various stakeholders on issues relating to the environment and social sustainability. AP2 has invested in three of New Forests' funds that focus on Australia and New Zealand. The tree species are predominantly eucalyptus and pine. New Forests' sustainability report is available at www.newforests.com.au

Molpus has been managing investments in timberland in the USA since 1996 and has a long tradition of sustainable forestry. The timberland assets in Molpus' funds contain a mixture of deciduous and coniferous trees, primarily oak, maple, poplar, spruce and fir. Molpus also has policies and management systems for its sustainability work. It uses the Sustainable Forest Initiative (SFI), which is the US certification programme within

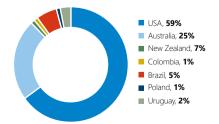
PEFC. Since 2011, it has a multi-site certification, which means that an independent party audits approximately one third of the assets on an annual basis and that new assets are included as they are acquired. Molpus may also, in some cases, choose certification in accordance with FSC. The audit reports are available on SFI's website www.sfiprogram.org

GreenWood Resources is reposnsible for management of timberland assets in two companies, Global Timber Resources and Lewis & Clark, which AP2 invests in together with other institutional investors. GreenWood was established in 1998 and manages timberland in accordance with FSC and PEFC. It is very involved in developing plant material, focusing on fastgrowing tree species such as poplar. Through Global Timber Resources, AP2 is able to diversify both geographically (Brazil, Colombia, Poland and Uruguay) and towards faster-growing tree species. Lewis & Clark's timberland assets are traditional forests located on the West Coast of the USA. Read more at www. greenwoodresources.com

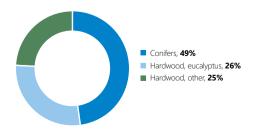
Farmland

Investments in farmland form part of AP2's efforts to diversify the overall portfolio. Of the Fund's assets under management, 3.2 per cent is invested in farmland. Sustainability issues are central to AP2's investments in agriculture. The Fund's strategy is to invest in large-scale farmland assets in countries with clearly-defined legal structures. Accordingly, many geographic regions are not available for investment. AP2 has chosen to invest in farmland through joint ventures with other investors, a form of investment that suits the Fund's long-term view on these investments. The Fund has invested in three jointly-owned companies and one fund: TIAA-CREF Global Agriculture (TCGA), TCGA II, Teays River Investments and the TIAA European Farmland Fund (TEFF). TCGA and TCGA II own farmland in the USA, Australia, Brazil and Chile. AP2 has invested USD 450 million in TCGA and committed to invest USD 750 million in TCGA II and USD 100 million. in TEFF. The Fund has invested USD 100 million in Teays River Investments, which mainly invests in the USA.

Geographical breakdown of forest (hectares)



Production breakdown of forest (hectares)



"AP2 maintains a continous dialogue with the managers and also makes visits to farmland real-estate a couple of times a year"



AP2's share of these farmland assets corresponded to an area of approximately 145 000 hectares as at 30 September 2019.

TCGA, TCGA II and TEFF are managed by Nuveen, whose company Westchester is responsible for the operational management of the farmland. AP2 is actively working to improve the companies' work regarding sustainability for instance through its board work. The Fund's representative on the Board of TCGA is also a member of its ESG committee. During 2018, AP2 held a dialogue with Nuveen on deforestation in Brazil. In August 2018, Nuveen adopted a policy that makes clear that Nuveen and Westchester have zero tolerance for the acquisition of deforested land. Land may not be acquired if it has been deforested after the dates stated in the policy (between 2006 and 2017).

The difference in dates are due to the fact that Brazil is divided into different biological zones. Read more at www.nuveen.com

Nuveen is continuously working on increasing transparency, with regard to the geographic location of the farmlands, for instance. Read more at www.nuveen.com/en-us/institutional/strategies/alternatives/farmland-map

The investment guidelines for TCGA and TCGA II stipulate that no land in the Amazon's biologocal zone may be acquired. TCGA and TCGA II have never included such farmland real-estate.

AP2 does not cultivate any land. The land is either leased to local farmers/companies or managed by the external managers of the jointly-owned companies.

Where the farmland is rented out, it is the tenant (the farmer) who decides which

crops to grow and is responsible for production and sales of the harvested crops. If the farmland has permanent crops, such as fruit trees, the farmland will be managed by an operator appointed by the external manager. Most of the area owned by the jointly-owned companies is leased out. However, the majority of the investments made by Teays River are managed directly by the operating companies.

AP2 maintains a continuous dialogue with the managers and also makes visits to farmland real-estate a couple of times a year.

Disclosure of PRI's Guidance for Responsible Investment in Farmland

In autumn 2014 PRI took over the responsibility for the administration of the principles of responsible farming that AP2 helped prepare in 2011. Consequently, the

farmland principles have been developed into "Guidance for Responsible Investment in Farmland".

PRI encourages all signatories who have invested in farmland to implement the Guidance. Reporting on the implementation will be included in PRI's reporting tool. Nuveen publishes a report annually in which it describes its implementation of the Guidance for Responsible Investment in Farmland. It has developed a number of indicators on the basis of the Guidance which Teays River also uses in its reporting to AP2. River also uses in its reporting to AP2. More information about how the managers work with the Guidance is available on AP2's website.

Sustainability audits of farmland in Brazil

TIAA-CREF Global Agriculture (TCGA) leases out farmland in Brazil to local tenants and operators. In 2015, BSD Consulting, a global sustainability consultant, carried out an audit of all TCGA's farms in Brazil, focusing on the activities' regulatory compliance regarding working conditions, health and safety at work, and the environment and integrity. TCGA's ESG com-

mittee, of which AP2 is a member, works together with TCGA's managers on the implementation of the audits. The purpose of the audits was to evaluate compliance with laws and regulations in Brazil, with PRI's Guidance for Responsible Investment in Farmland and/or commitment in relation to sustainability certification.

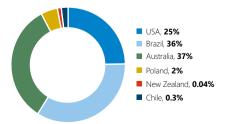
The audits showed that a majority of TCGA's tenants had good management systems, but cases of non-compliances and/or observations occurred at all farms. In order to support the tenants, TCGA's manager changed its process for site visits to include a more comprehensive review of the tenants' activities as well as a visit to their head offices, which is carried out even if it is not located on land owned by TCGA. The manager has also prepared a detailed code of conduct for the tenants, which is discussed in person with each tenant. A steering and supervisory process to facilitate compliance with the code of conduct is under development. TCGA's manager has also used the results of the audits to improve its control procedures for new acquisitions.

In 2018, third party audits were also carried out for all farmland activities in TCGA II.

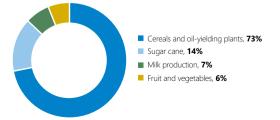
Selected farmlands in TCGA were audited again as they were deemed to constitute a high risk of non-compliance based on the 2015 audit. The new audits were also performed by BSD and were even stricter and conducted with greater thoroughness than in 2015 due to the governance and supervisory processes that were developed after the previous audit. Again, the result showed that the majority of Brazilian farmland activities are handled by certified tenants with good, stable processes in place. Any observations that were made related mainly to a lack of formal processes. Of the farms that were reviewed again, there was a small increase in the number of observations which shows the importance of continuously performing these audits and to actively support the tenants in their sustainability work. Approximately one third of the farms will continuously undergo an audit every year, based on a risk matrix. All farms will thereby be verified during a three-to four-year period.

For more information, see AP2's Report on Human Rights 2019.

Geographical breakdown of farmland (hectares)



Production breakdown of farmland (hectares)



Biodiversity

Biodiversity is an umbrella term to collectively describe the variety in species and habitats that exist on earth and forms the basis for the proper functioning of ecosystem services. The UN convention on Biological Diversity defines biodiversity as: "The variability among living organisms from all sources including, interalia terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems."

Timberland

24

The management of biodiversity is expressly included in all certification schemes and forestry standards such as the Forest Stewardship Council (FSC) and Programme for Endorsement of Forest Certification (PEFC). AP2 requires portfolio managers, whenever possible, to certify the timberland assets in accordance with one of the international sustainability certification schemes. Even if the asset cannot be certified, it will be managed in accordance with them. These certifications have core principles that apply globally and form the groundwork for an environmentally adapted, socially responsible and economically dynamic timberland. The principles, criteria and requirements in these systems, together with legislation, constitute a minimum requirement in managing biodiversity in investments. AP2's managers strive to go beyond a "dono-harm approach" and instead actively promote biodiversity in the Fund's investments. According to FSC's principle 6:

"Forest management shall conserve biodiversity and its associated values, as water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest." There are several identified environmental aspects where research has shown there is a quantifiable benefit to biodiversity. These environmental aspects include retention trees, dead wood, land provisions, key biotopes and deciduous trees.

Retention trees are living trees that are left behind for nature conservation purposes after final felling. Trees can be saved either in small groups or individually. The intention is for all saved retention trees to be allowed to grow into the new forest generation and remain in the forest until they die and degrade naturally. They are important for many species in forest habitats.

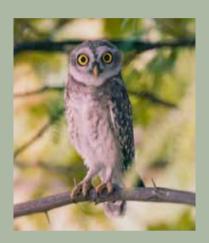
Dead wood has many important functions: such as food source, habitat or protection. A large proportion of red-listed forest species are dependant on dead wood. In particular, certain species of fungiand insects need dead wood for their survival but also birds, larvae and mosses make use of dead wood. Certification programmes and forest conservation law imposes requirements on dead wood being saved when felling. The difference is that these certification programmes require active creation of dead wood.

The voluntary provisions of timberland enhances the conditions for conserving valuable forest environments in addition to the authorities' formal protection. The forest that landowners set aside for conservation purposes should be exempted from forestry, with the exception for measures aimed at promoting the development of biodiversity.

Deciduous forests are environments very rich in different species, and many forest species depend on deciduous trees for their survival. Deciduous trees grow very well after natural disturbances in the forest such as fires and storms. The certification schemes specify the goals for areas of deciduous forest both at portfolio and landscape level.

Farmland

In agriculture there are no equivalent certification and AP2 has therefore been involved in developing the Guidance for Responsible Investment in Farmland. These principles are today administrated by PRI. AP2's managers for farmland have pledged to comply with these guidelines. The first quideline concerns contributing to environmental sustainability by promoting measures that reduce the risk of soil erosion, for example, protect biodiversity, reduce the handling of chemicals and help promote more efficient water management. The protection of biodiversity includes endangered species and sensitive ecosystems, by making provisions to protected areas on their own land. Biodiversity among microorganisms and in the soil that is cultivated is most important in the cultivation of the land, where fertile soil is a prerequisite for good harvests and longterm profitability. The overuse of farmland can lead to the sharp reduction in the fer**AP2** is **joint owner** in a large **timberland area** in the USA, called Lewis & Clark, which supports **biodiversity**. It hosts endangered species such as Northern Spotted Owl, Red Tree Vole and Bald Eagle.







tility of the soil. For landowners it is important to monitor soil quality and promote farming methods that prevent soil erosion to reduce the risk of inferior soil quality. Factors that can have an adverse impact include excessive use of agricultural chemicals such as pesticides and fertiliser, and excessive watering which can increase the salt content of the soil.

The Brazilian Forest Code was established in 1965 and created a statutory framework for land use, environmental conservation and forest management in Brazil. This is highly important for farmland investments in the country. The Brazilian Forest Code is one of the world's most comprehensive statutory regulations for vegetation on private land. The most important components of the Forest Code include the designations Permanent Protection Areas (PPA) and

Legal Reserves (LR), which establish a minimum area requirement (percentage of land area) that must be kept as primary forest vegetation. PPA provides absolute protection of environmentally significant areas such as riparian zones of rivers and hilltops. Accordingly ownership of farmland in the Cerrado area of Brazil, 20-35 per cent of the land must be set aside as a legal reserve (LR), where no cultivation may be carried out and the vegetation left untouched.

Biodiversity in AP2's timberland investments

Provision for conservation purposes

One of the more pressing issues for the forestry sector is how the forests and management of the forests is integrated into the planning of large landscape areas. Land use planning takes into

account economic, social and environmental values to determine the distribution of how the land should be used for a large area. Optimal land use planning supports timberland investments by ensuring that several different environmental and social values can be obtained from forests and land.

AP2's timberland plays a role in the conservation of wild fauna and flora. In the Northwestern USA, in a mountainous area of forest rich in wildlife, some of AP2's timberland has been permanently set aside for the conservation of wild animals, plants and clean water and for recreation. The area is of great importance for the grizzly bear and many other large mammals, which are dependent on the land bridge that has now been set aside to allow them to roam between the mountains and forests. The easement was prepared in col-

laboration with Molpus, the Idaho Department of Lands Estate, the Idaho Department of Fish and Game, the Nature Conservancy and the U.S Forest Service, and ensures that sustainable forestry can still take place. At the same time, future division or commercial development of the land is prevented. The easement also helps maintain the local and regional economy for surrounding communities, which are dependent on forestry for their livelihood. At the same time, it protects public access to the forest, animal habitats and good water quality.

One of the Fund's timberland areas in New 7ealand is near a wetland of international importance and with a sensitive ecosystem. The area is located by the coast and is one of New Zealand's most diverse with 95 different bird species and the habitat of 23 different species of endangered birds, fish and plants. The Fund's timberland includes a non-productive beach corridor with vegetation to improve the conditions for biodiversity, provide a good habitat and erosion protection. The corridor also supports plantation productivity by providing protection against strong coastal winds. This non-productive area has been increased by an additional 20 000 square metres after a new acquisition and thereby helps to further strengthen the area's conservation and survival.

In Australia there is a type of seasonal herbaceous wetlands that features several species of grass and herbs. They are rare and classified as critically endangered by the Australia's Environmental Protection and Biodiversity Conservation Act. At the same time, they reduce in quantity and area due to climate change and conversion to agricultural land. One of the Fund's timberland areas in Australia has up to 40 wetlands, the majority of which are in good condition thanks to the protection for conservation that the timberland provides. The manager of the timberland is conducting restoration projects for 22 of these wetlands, five of which are of national importance. The projects entail improving the ecosystem for plants and wildlife who need them for their habitat and the conservation of the biodiversity in the region.

In Tasmania AP2 is a joint owner of a large timberland area, where more than 80 000 hectares of timberland is set aside for conservation purposes.

Forestry for promoting biodiversity

AP2 is co-investor in a large timberland area in the states of Oregon and Washington in the USA, called Lewis & Clark, managed by Nuveen/GreenWood. The timberland was one of the first to be certified at the end of the 1990s in accordance with US standard SFI within PEFC. The ongoing forestry activities include leaving retention trees and dead wood when felling, in accordance with the environmental certification. Trees or parts of them are left as well as tree stumps at a few metres height. This benefits fungi, insects, birds, larvae

and mosses who need the old trees or dead wood for their survival. The total area of timberland that is managed for conservation purposes to support biodiversity, is 4 444 hectares. The forestry management plan for wildlife includes 21 endangered species of birds, fish, mammals and plants.

Lewis & Clark also supports the habitats of fish by creating or conserving special "fish passages" for salmon and other species. In total watercourses equivalent to 974 kilometres are protected fish bearing streams in relation to the total of 4 934 kilometres brooks and streams, i.e. 20 per cent.

On New Zealand's south island the manager for one of the timberland real estate in which AP2 has invested has entered into a partnership with Marlborough Falcon Trust. The aim of this partnership is to raise awareness and expertise of forest workers in how to conduct sustainable forestry in areas where falcons live and breed. The timberland manager also collaborates with the New Zealand Department of Conservation in developing a plantation scheme for reestablishing the endangered and endemic tree specie Mountain Totara.

Biodiversity in AP2's farmland investments

Biodiversity among microorganisms in the soil that is cultivated is most important in the cultivation of the land, where fertile soil is a prerequisite for good harvests and long-term profitability. AP2's portfolio

"In **Tasmania** AP2 is a **joint owner** of a a large **timberland area**, where more than **80 000 hectares** of timberland is set aside for **conservation purposes**"

managers for farm investments continuously take samples of soil to determine the soil's chemicals and physical composition. If, for example, there are excessive levels of pesticide or if an illegal substance is identified, the tenant is required to provide an explanation and remedy. To reduce erosion and maintain soil quality, residue from the harvests are left on the fields and no ploughing or other soil processing is carried out. The no-till-farming methods are used in all all regions where AP2 invests. This is particularly important in Australia, for example, where maintaining the soil structure and preserving moisture in the soil is crucial for their agricultural system. By leaving the soil virtually untouched, it can retain more water, increase its resilience and thereby become more fertile. Additional water is saved by providing previous seasons' residue from crops on the fields. They form a protective layer over the land, reducing evaporation, minimising run-off and erosion and binding carbon,

For the Fund's farmland in Poland, AP2's managers are planning to start a project to plant mixed flowers in specific fields on the farms to support the population of bees and other insects and thereby increase pollination. The project will also strengthen the collaboration between farmers and beekeepers, thereby creating a better dialogue regarding the use of pesticides and modern agriculture.

Several of the vineyards in the Napa area in California, USA, in which the Fund has

invested, have obtained certification in accordance with the region's Fish Friendly Farming programme (FFF), which is administrated by the California Land Stewardship Institute. The programme helps growers employ methods for the soil that improve the quality of the water and restore and maintain fish habitats on cultivated farmland. This benefits several endangered local species of salmon and salmon trout.

In Brazil, a total of 71 000 hectares of land has been set aside as Permanent Protection Areas (PPA) and Legal Reserve (LR) in AP2's agricultural investments and more than 700 000 indigenous trees have been planted. For certain farms, the provisions even exceed the requirements of Brazilian law. For example, the farmland property Catuai Norte, which was acquired in 2013, has a total area of approximately 18 000 hectares in Cerrado biome. Approximately 45 per cent of the farmland is covered by indigenous vegetation, of which 38 per cent is regeistered as Legal Reserve (LR) to meet the government's conservation requirement. This means that an additional 1220 hectares of the land's natural vegetation could be converted to agricultural land, but with a zero tolerance towards deforestation, this land will remain in its original condition.

Zero Tolerance to Deforestation

In 2018, AP2 helped to produce a zero tolerance towards deforestation in its Brazilian farmland investments. The policy constitutes an enhanced strategy to combat deforestation by safeguarding the original natural vegetation, increasing forest plantation rate and reforestation and thereby stopping the loss of biodiversity. It is based on the established dates for five of Brazil's biomes, where the land may not be deforested after those dates. The dates are based on environmental protocols, trade agreements and legalisation. The aim of the policy is to ensure that the Fund's investments do not contribute to the deforestation of forest areas and other indigenous vegetation on owned land or land to be acquired. AP2's managers use satellite-based mapping technology, in some cases combined with information about biomass measurements, in order to determine if a farmland complies with the policy.

The Amazon

The Amazon in Brazil is both a state and a biogeograpohical zone, a biome, that encompasses five additional states. AP2 does not invest in farmland or timberland either in the Amazon state or the Amazon biome. The Fund has also actively contributed to a a Zero Deforestation Policy in its Brazilian farmland investments.

Climate

Climate is one of Andra AP-fonden's focus areas, which means that the Fund integrates climate into analysis and investment processes, strives to influence companies and decision-makers and works to reduce its own direct climate impact through the internal environmental work.

Climate change is a long-term risk that could have far-reaching impact on global financial markets and is therefore an important strategic issue in sustainability. AP2's ambition is to develop the portfolio in line with the Paris Agreement.

Reporting in accordance with the TCFD

In June 2017, the Task Force on Climate-related Financial Disclosures (TCFD) presented its recommendations for reporting on climate-related information. The recommendations are directed at both companies and investors. AP2 supports the recommendations and is working to implement them. AP2's first TCFD report was published in the beginning of 2018.

Reporting in accordance with the TCFD's framework includes information on: 1) how the climate issue is handled by the organisation's governing bodies (board of directors and executive management), 2) the organisation's strategy relating to climate change and the transition to a low-carbon society, 3) the organisation's climate risks and opportunities, and 4) the metrics and targets used by the organisation. This is the third year that the Fund reports in accordance with TCFD. The report can be found on page 48.

Review of investment beliefs

Within the framework of sustainability, the Fund's belief is that climate change occupies a special position when it comes to the potential impact on the Fund's return and, in the long run, its goal attainment.

It is also an issue with a long horizon and with long-term consequences. Climate change is also closely linked to many other areas in sustainability. Therefore climate change has been put in focus in the review of the Fund's investment beliefs in 2019. Read more about the investment beliefs on page 2.

Climate and choice of strategic portfolio

If the global temperature increase fails to remain well under of 2°C, it could, according to academic research, lead to costs in the form of reduced real economic growth, with consequences for the global financial markets. Through its potential impact on the global economy, not only is climate change expected to have an effect on the Fund's rate of return, but also on the indexing of outgoing pensions, which is also dependant on economic growth. In that perspective, climate change is also a risk for the economic system, and not only for the earth's climate or ecosystems.

Furthermore, sustainable growth requires significant social change in terms of use of different kinds of energy. This means that the world needs to stop depending on fossil fuels such as coal and oil, in favour of wind and solar power which is a prerequisite for sustainable global development in line with the Paris Agreement.

Climate change can be seen both from the perspective of possibility and risk. The risk that climate change constitutes for economic growth and financial markets is significant. AP2 has therefore in

2019 included climate risk in the Fund's overall return assumptions, which is the basis for the selection of the strategic portfolio. The Fund also sees investment opportunities in the climate area and makes investments that directly contribute to the transition that is required without compromising the risk-adjusted return. One example of this is that AP2 has increased its allocation to green bonds in the strategic portfolio from 1.0 to 3.0 per cent in 2019. Another example is that the Fund also decided to make allocation to sustainable infrastructure, i.e. assets that contribute to sustainable development in line with the Paris Agreement.

Contribute to the transition for sustainable development

AP2 has long been working to integrate sustainability into asset management, by focusing on areas such as climate change. It also plays a key role for sustainable

Contribute to the transition

AP2 aims to contribute to the transition towards a society in line with the Paris Agreement. The Fund will do this by:

- Investments in sustainable strategies
- Dialogues with companies
- Dialogues with decision-makers.

"The Fund also sees investment opportunities in the climate area and makes investments that directly contribute to the transition that is required"

growth and also for the future economic growth and return on financial assets.

With the new National Pension Insurance Funds (AP Funds) Act. that came into effect in 2019, the Funds shall put special emphasis on how sustainable growth can be promoted without compromising the overall mission of provi-

ding the greatest possible benefit to the pension system.

Political measures required

Political measures are required to keep the global temperature increase in line with the Paris Agreement. However, this does not prevent institutional investors such as AP2 from having an important roll to play.

Limiting global warming to 2°C, or preferably 1.5°C, which the countries of the world agreed at the Climate Conference (COP21) in Paris 2015, means a clear direction towards a society without net greenhouse gas emissions.

Financial contributions of the divestments

To monitor the financial contributions of the divestments, AP2 has developed a methodology for comparing the returns for MSCI World Developed Markets and MSCI Emerging Markets, excluding and including the divested companies.

The contribution to returns from divested companies that are included in MSCI World DM was, following their exclusion from index, positive at 3.12 per cent from autumn 2014 until 31 December 2019. At year-end, these divestments represented 1.67 per cent of MSCI World DM.

The contribution to returns from companies that are included in MSCI EM, was, after their exclusion from index, positive at 0.81 per cent from autumn 2014 until 31 December 2019. At year-end, these divestments represented 1.36 per cent of MSCI EM.

The graphs below illustrate the contribution to returns from coal, oil, gas and coal-based electricity production. The largest positive contribution came from divestments from oil and gas companies in developed markets. In emerging markets (MSCI EM) divestments from power companies provided the largest contribution to returns.

Accumulated contribution MSCI World DM, %



Accumulated contribution MSCI EM, %



The special report published by the UN's Intergovernmental Panel on Climate Change (IPCC) in October 2018 shows that it is possible to reach 1.5°C. This requires that carbon emissions up to 2030 must have decreased by 40 to 60 per cent compared to 2010, and that zero emissions should be reached by 2050 if not large negative emissions are assumed.

Investments in sustainable strategies

Creating a low-carbon society requires, among other things, a conversion of energy and transport systems. Several of the private equity funds in which AP2 invests focus on companies whose products and services enable resource-efficient solutions. AP2's investments in green bonds and timberland are two other examples of investments with sustainable strategies that have a positive climate impact. The Fund works also on developing the internal ESG indices so that more investments can be made in companies with 'green' operations. There are also assessed to be considerable investment needs in sustainable infrastructure. Such investments are well in line with AP2's overall mission of promoting sustainable development without compromising on the overall goal.

Dialogue with companies

AP2 actively participates in Climate Action 100+, an international dialogue initiative launched in December 2017. The investors who are part of the initiative will, over a five-year period, collaborate in dialogues with about one hundred companies that account for the world's largest greenhouse gas emissions. The aim is to reduce their

emissions so that they are in line with the Paris Agreement, that they report in accordance with the Task Force on Climate-related Financial Disclosures (TCFD) and that the companies' boards take a clear responsibility for the work on the climate. AP2 and Öhmans carry out a dialogue with AB Volvo, which is one of the companies in the initiative. A report showing the development of the dialogues in this initiative was published in September 2019 and is available on the Climate Action 100+ website.

By January 2019, 370 investors had signed the initiative. Read more at www.climateaction100.org

AP2 also helps disseminate expertise and influence financial players with regard to TCFD and the importance of reporting climate risks and opportunities.

Dialogue with decision-makers

AP2 has been a member of the Institutional Investor Group on Climate Change (IIGCC) for several years. The organisation is working to make investor engagement on the climate issue clear for decisionmakers and to submit investors' demands for policy measures, which enable increased investments in climate-smart solutions. Among other things, the IIGCC, together with a number of other investor organisations, has published a document, Global Investor Statement on Climate Change, which describes how investors can contribute and what expectations investors have on governments. More than 470 investors have signed this document. AP2, along with about 200 global investors, has urged the governments of the G7 and G20 countries to live up to the Paris Agreement,

push for rapid implementation and express their continued support for this work.

Financial climate risks

Climate change is expected to have a major impact on the long-term return. Integrating climate aspects into risk assessments and investment decisions are therefore becoming increasingly important.

Climate risks can be divided into two groups: transition risks and physical risks. Transition risks are divided into regulatory risks, technological risks, market risks and reputation risks. Physical risks are divided into acute and systematic risks.

The Fund has an internal working group on fossil energy and financial climate risks. Since 2013, work has been ongoing on analysing financial climate risks for fossil energy companies and coal-based electric power companies. An important part of this work is to assess whether the climate risks facing the companies are priced by the market. AP2's work with financial climate risks focuses on regulatory risks for companies within fossil energy and the electric power sector. The Fund's work also includes analyses of technologies and fossil energy markets.

The Fund began by establishing its position on investments in fossil energy and analysing the financial climate risks for coal and energy companies.

This analysis led to AP2's decision in 2014 to no longer invest in a total of 20 energy companies, of which 12 were coal companies. Approximately 40 per cent of the world's electricity production is based on coal, which is the most polluting energy type, both from a climate and a

"Integrating climate aspects into risk assessments and investment decisions are therefore becoming increasingly important"



health perspective. Emissions from coalbased electricity production account for about one-third of global greenhouse gas emissions. This means that the sector is the focus of climate regulations around the world. Therefore, the next focus for the Fund was the power sector, primarily companies that produce, transfer, distribute and/or sell electricity, which resulted in divestments from 28 companies in 2015. The Fund carries out annual follow-ups. In 2019 the climate risks were followed up for coal-based power companies which resulted in an additional divestment from two companies. Five companies have been reintroduced to the Fund's benchmark index, as they no longer meet AP2's criteria for divesting from power companies. In total, the Fund has divested from equities and corporate bonds in 80 companies due to financial climate risks, including 23 coal, 20 oil and gas companies and 37 power companies. The divestments have brought positive financial contributions, see page 29.

Carbon footprint

The advantage of measuring the carbon footprint is that it provides an overall picture of the carbon intensity of a portfolio or index. It is then possible to look at sector or company level for more detailed information on the direct emissions of the sector/companies and the emissions from the electricity they use. For several years now, carbon footprint information has been included in the decision-making basis for index changes at AP2.

The carbon footprint can also be used to assess the sensitivity of different portfolios to carbon pricing.

The metrics used in calculating the carbon footprint provide important knowledge but there are limitations, see table on page 33. One of the limitations is that previously there was no information about actual emission changes in the portfolio companies. To increase transparency in this regard, the AP Funds agreed in 2019 to increase the reporting by specifying how large a part of the change in the carbon footprint is due to changes in the Fund's equity holdings and changes in company emissions. The calculations are performed using the formulas that are given on AP2's website. There is also more information about the carbon footprint and formulas for other indicators.

AP2 employs a number of different methods for highlighting and minimising the environmental impact of its activities. It was therefore a natural step to introduce the Fund's own environmental management system, which is based on City of Gothenburg's Environmental Diploma. The Fund was first certified in January 2009 and has been recertified annually since then. The system operates on the same basic principle as the ISO 14001 and EMAS systems but is better suited to smaller organisations. A special environmental group drives the Fund's own environmental work and environmental training is provided continuously to all employees.

An internal environmental review shows that the largest environmental impact from AP2's office comes from electricity consumption and carbon emissions associated with travel. Internal targets based on the Fund's internal environmental policy have been set. In 2019, 97 per cent of all trips between Gothenburg and Stockholm were by rail. During the year, the Fund also held a workshop for all employees aimed at reducing travel, and thereby reducing the carbon footprint, reducing costs and employing modern working methods such as video conferencing. One of the results from the Fund's work on creating a digital platform to enable modern working methods was a significant reduction in the number of printouts during the year.

AP2 has had a green lease agreement with the landlord Hufvudstaden since 2015. An action plan has been drawn up to reduce the impact from AP2's office by, among other things, only using green electricity and taking measures to reduce electricity consumption and improve waste management.

32

Collaborative group

Using transparent reporting with common indicators for the Fund assets' carbon footprint, the AP Funds aim to highlight an aspect of climate risk, such as the asset portfolios' sensitivity to carbon pricing, for example. The AP Funds consider that common indicators facilitate understanding and comparability.

Since 2015, the AP Funds have had a collaborative group with representatives of each AP Fund to coordinate the funds' reporting of the carbon footprint. In 2019 the AP Funds have elected to change the names of the previous indicators. The formulas to all the indicators are available on the Fund's website.

The annually AP Funds' carbon footprint will be calculated for holdings as of December 31 using the latest available carbon data for the companies direct emissions (Scope 1) and indirect emissions from energy (Scope 2). Exposure to carbon risk is reported using the four following indicators:

1. Total carbon emission

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

2. Relative carbon emissions

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

3. Carbon intensity

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

4. Portfolio-weighted carbon intensity (TCFD)

The metric adds together the individual carbon intensity of each portfolio company, i.e. a company's carbon emissions in relation to tur-

nover, weighted according to each individual company's share of the portfolio.

Reporting changes in the carbon emissions

There are two causes for the change in the carbon footprint of an investment portfolio. The change may be caused both by changes in the portfolio holdings, and by the change in the companies' carbon emissions.

By making adjustments to the portfolio, by selling companies with large carbon emissions and buying companies with small emissions, for example, the total carbon footprint of the portfolio can be reduced. Such a change reduces the portfolio's exposure to fluctuations in the price of carbon emission rights, for example, reducing the portfolio's climaterelated risk. At the same time there is no change in the total emissions of atmospheric carbon emissions, and the

Advantages and limitations of the carbon footprint

Advantages of the carbon footprint	Limitations of the carbon footprint
Provides a basis for assessing certain climate-related financial risks such as carbon pricing.	Does not measure the total impact of investments on the climate because: - Only certain emissions are included. - Emissions data from companies is incomplete. - Only certain asset classes are measured. - Savings on emissions through products and services are not factored in. - Information on fossil reserves is not included.
Can form a basis for company interventions such as requirements for emission reduction targets, risk management, business strategies and transparency.	Does not measure a portfolio's total climate risks, such as physical risks in the event of extreme weather, floods and droughts or, for example, consequences of more stringent legislation on energy efficiency. In addition, carbon footprints are not a measure of a portfolio's total climate options or how well a portfolio is positioned for a transition to a low-carbon society.
Improves the transparency of the AP Funds and encourages increased transparency and data quality in business and industry.	Does not measure what is required to achieve the two-degree target and provides no guidance on how investors can contribute to achieving it. A unilateral focus on the reduced carbon footprint of individual portfolios therefore risks drawing attention away from actual emission reductions and how investors can provide solutions for a low-carbon economy. The introduction of indicators for changes in carbon footprint helps increase transparency regarding actual changes in emissions.

climate risk for the world has not been affected by the fund's transactions.

Not until the companies reduce their actual emissions will the atmospheric emissions go down and the climate improve. As an owner, AP2 works actively with various means to influence its portfolio companies, to quickly adjust and reduce their carbon emissions. This is performed in dialogue with companies, often in collaboration with other global investors, by requiring that companies report their climate risks, and the management, processes and activities to manage these risks in accordance with TCFD. AP2 is also a committed owner regarding these issues (at general shareholders' meetings, for instance) and has investment strategies that address climaterelated risks and opportunities.

The listed portfolio's carbon footprint

The absolute carbon footprint for AP2's equity portfolio in 2019 is 1.6 (1.7) million tCO₂e. The 3 per cent drop in footprint is

due to changes in holdings that contributed a decrease of 10 per centage points. The companies emissions increased and contributed an increase of seven per centage points. The relative carbon emission is 11 tCO $_2$ e/SEK million, which can be compared to 2018's intensity of 13 tCO $_2$ e/SEK million. If the footprint is instead related to the ownership share of the companies' turnover, the carbon intensity is 14 tCO $_2$ e/SEK million, which can be compared to 2017's intensity of 15 tCO $_2$ e/SEK million.

This year AP2 is reporting its carbon footprint broken down into Sweden, developed markets and emerging markets. There is a considerable difference in the carbon intensity of developed and emerging markets. The portfolio companies in emerging markets are the least carbon efficient. The Fund's portfolio of companies in emerging markets, is approximately 20 tCO₂e/SEK million both for carbon emissions in relation to

turnover and market value. The corresponding figure for the Fund's portfolio of companies in developed markets is 11 $\rm tCO_2 e/SEK$ million and for Sweden 7 $\rm tCO_2 e/SEK$ million.

The indicators that show where the change in carbon emissions comes from, indicate that while the companies in the Fund's Swedish portfolio have become more carbon-efficient, the carbon emissions have increased overall in 2019. The Fund's change in holdings in the Swedish equity portfolio has led to a higher carbon footprint for this portfolio, both overall and in terms of portfolio-weighted carbon intensity. The cause of this is that the Fund has increased its holdings in SSAB. SSAB is a steel company that accounts for approximately 10 per cent of Sweden's emissions. It is working actively on developing processes that will enable steel production without the use of coal. See also article in AP2's Annual Report 2019, page 24.

In the Fund's global portfolio, the reduced carbon footprint does not derive from actual reductions in emissions from the company's operations, but from the changes in the Fund's holdings. The companies' overall emissions have increased and they have become less carbon efficient.

The table on page 42 specifies all the indicators for the various markets.

AP2 uses data from MSCI ESG Research in calculating the carbon footprint. For AP2's carbon footprint data is available for 96 per cent of the equity portfolio, of which 61 per cent is reported and 39 per cent is estimated. This carbon footprint has been calculated for listed equities, which make up approximately 38 per cent of the Fund's total capital.

Carbon footprint in other asset classes

AP2's ambition is to eventually present a carbon footprint that includes all asset classes. For 2019, the Fund has calculated the carbon footprint from listed equities, timberland, farmland and traditional real estate. This means that 56 (51) per cent

of AP2's Fund capital is measured according to a carbon indicator.

AP2's non-listed real estate companies have a carbon intensity of 0.6 (0.7) tCO $_2$ e/SEK million based on market value. The reduction in carbon intensity is primarily due to the increase in market valuation. Energy consumption and carbon emissions per quare meter are the same as in 2018.

The Fund conducts dialogue with timberland managers on the calculation of carbon storage and carbon emissions. Two of the Fund's managers, New Forests and Nuveen, have calculated the total carbon storage in their forests. AP2's share of carbon storage is 11.5 million tCO_2e .

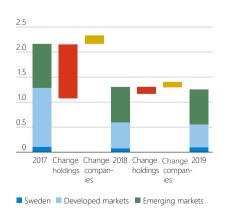
During the year AP2's farmland managers have calculated the investments' carbon footprint. Performing this type of calculation is complex and there is an academic debate about choice of method. Following discussions with leading industry experts and academic institutions, a method has been developed. It is based on direct inflows and outflows (e.g. fuel, ferti-

liser, chemicals and harvest) for the land and includes 70 different production systems with combinations of region, type of crop and production method. Emissions are calculated for each production system and summed up to a total figure for the portfolio.

The farmland carbon storage 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). AP2's share of carbon emissions amounts to 71 000 tonnes CO₂e a year and AP2's share of carbon storage is 6.25 million tonnes CO₄e.

In 2016, the Fund performed a sectorial analysis of the private equity investments' carbon footprint using carbon data from listed companies in different sectors and geographical areas, since data for non-listed companies is very limited. The analysis showed that countries and sectors responsible for heavy carbon emissions are not over-represented. The carbon footprint is in line with MSCI World DM.

The listed equity portfolio's total carbon footprint (million tonnes of CO₂)



"AP2's ambition is to eventually present a carbon footprint that includes all asset classes"



Corporate governance

Shareholders' commitment to and interest in the companies' long-term development is an important prerequisite for better value growth. As a long-term asset owner, Andra AP-fonden has a very important function in the global capital markets. The Fund is a responsible owner and works actively on issues relating to professional corporate governance, good ethics and environmental considerations as well as developing good practice in asset management issues.

A large proportion of AP2's capital is invested in Swedish and foreign companies, making the Fund a significant shareholder. The Fund is also non-political and independent, both in terms of ownership spheres and in its unique position among Swedish authorities, which allows the Fund to act as a committed and long-term owner.

The general meeting is the most important forum for shareholders to exercise their influence. Being able to exercise one's right as a shareholder to vote at the meeting is one of the most important ways of influencing a company. AP2 is therefore active at both Swedish and foreign general meetings. AP2's activities relating to listed companies include active participation before and at Swedish and foreign AGMs and a dialogue with boards and management teams in the Fund's portfolio companies.

AP2 also promotes good corporate governance by cooperating with other owners on matters of principle and actively contributes to the development of policies, regulations and standards.

Against the background of the revised rules which came into effect on 1 January 2019 and according to which the AP Funds have increased requirements on being an active owner, the Fund has produced a new strategy for the corporate governance work.

Issues in focus

The Fund intends to comply with the rules on required information imposed by the revised Shareholder right directive. AP2

monitors developments in EU Sustainable Finance, even though the AP Funds are not subject to these regulatory frameworks. The Fund has noticed an increased focus on transparency and reporting in the new regulations.

During the year, AP2 continued to focus on remuneration issues and a number of discussions were held with boards concerning the structure of incentive schemes to achieve improvements.

For many years, AP2 has emphasised the importance of an increased proportion of women on boards of listed companies, which receives particular consideration when the Fund is involved in nomination work. The Fund also believes that the nomination committees should establish a specific long-term plan for ensuring a good board composition including factors such as gender, age, background, experience and expertise.

Diversity

During the year, AP2 continued to focus in particular on diversity, and above all on the proportion of women on boards. This was followed up for each of the companies whose general meeting the Fund intended to attend. At general meetings, the Fund votes against proposed boards with no female members.

The Fund's Index of Female Representation for 2019 shows that the proportion of women on boards is now 34 per cent. Read more about the Index of Female Representation on pages 38-39.

Individual elections

In the last couple of years, AP2 has been involved with the issue of individual elections of board members in Swedish companies. The Fund wants every shareholder's vote to be counted and therefore calls on companies with a high proportion of foreign shareholders to make it possible for those shareholders to elect board members individually. The Fund notes that more companies now both word their notices to attend general meetings and reach decisions at the meetings in such a way that members are elected individually.

Incentive scheme

In 2019, the Fund voted against proposed incentive schemes in 9 (4) Swedish companies because the proposals either contained matching shares or were otherwise subsidised without specific goal-determined performance requirements. AP2 set out its views on this at these general meetings. The Fund's corporate governance policy states that "AP2 considers that socalled matching shares should be linked to clear targets (performance). AP2 does not consider continued employment and investment on one's own behalf to constitute performance that should in and of itself give entitlement to matching shares. If matching shares are not performancebased, this must be specifically justified".

Response to consultation

During the year, AP2 stood behind the consultation reponse from the Swedish

Institutional Investors Association (IÄF) regarding the proposal for a change in the code, which among other things covers rules for remuneration guidelines and remuneration reports in the light of the updated shareholders' rights directive.

Corporate governance in Swedish companies

Swedish AGMs

The Fund holds shares in around 150 Swedish companies. For practical reasons, the Fund has determined that it is not possible to attend and vote at all the general meetings in the Swedish equity portfolio. In total, AP2 voted at 85 general meetings in Swedish listed companies in 2019.

For many years, AP2 and other institutional owners have maintained a good, constructive dialogue with the Swedish listed companies, including with regard to many of the issues addressed at the general meetings. AP2 publishes a separate general meeting report for Swedish companies annually every June, by which time the majority of Swedish general meetings have been held. Read the report in full on the Fund's website.

Nomination committees

AP2 is keen to be represented on nomination committees in companies, as this gives it an important opportunity to exercise its influence as an owner. The Fund's policy is to accept any request for nomination committee assignments. The Fund's corporate governance group decides who will represent the Fund based on who is best suited to the assignment.

Because nomination committees are often made up of the three to five largest shareholders in a company, AP2's nomination committee assignments vary depending on the Fund's holdings in the companies. Before the 2019 AGM season, AP2 was represented on the nomination committees of IAR Systems as chair, and in Better Collective, Coor Service Management, Immunicum, Kindred, Kungsleden, Midsona,

Opus Group and Resurs Holding. Before the 2020 AGM season, AP2 is represented on the nomination committees of IAR Systems as chair, and in Better Collective, Coor Service Management, Genovis, Kambi, K-Fastigheter, Opus Group, Resurs Holding and Trelleborg.

Corporate governance in foreign companies

Foreign general meetings

To improve corporate governance in the foreign holdings, the Fund, together with AP1, AP3 and AP4, has had a joint electronic voting platform since 2008, based on the Funds' corporate governance policies. Most issues are dealt with automatically via the voting platform, but some issues, such as remuneration, are sent to the funds for manual assessment. Each fund makes its own decision on how it will vote.

In foreign markets, the Fund mainly votes in companies in the following eleven countries: Australia, Canada, France, Germany, Italy, Japan, the Netherlands, Switzerland, Spain, the UK and the USA. The main selection criterion for the companies in which the Fund votes is the MSCI global equity index. There are also other criteria, such as a dialogue between the Fund and the company on a particular issue and/or the Fund's submission of a shareholder proposal to the meeting.

In 2019, AP2 voted at 865 foreign general meetings. The Fund uses an external party for the practical voting procedure and votes in writing (proxy voting) using the electronic voting platform. Each month, the Fund publishes a detailed report of how the Fund has voted in the foreign companies. Read more at the company's website.

Letters to foreign companies

Together with other international investors, the Fund has been engaged in a number of owner dialogues with companies over the course of the year. In order to further improve the communication with the Fund's foreign portfolio companies, AP2

writes annual letters to some 50 companies explaining the Fund's view of committed ownership and the importance of exercising voting rights. In these letters, the Fund also explains its reasoning for not supporting the boards' recommendations on certain points. The letters have resulted in additional contact with the companies by letter, but also via telephone meetings.

Collaboration with other investors

In addition to the cooperation between the AP Funds on the Council of Ethics, AP2 is also a member of and supports various initiatives in Sweden and internationally in the areas of the environment, ethics and corporate governance The Fund also collaborates with other investors to influence new legislation, particularly within corporate governance. These collaborations are becoming increasingly important in order to influence and bring about change, and thereby to improve shareholder value in the long term.

In 2019, AP2, together with a group of other European asset owners, has continued the dialogue primarily with US companies regarding high remuneration. Read more about AP2's membership and initiatives at the Fund's website.

Attendance at general meetings

The Fund selects the companies whose general meetings it will attend on the basis of a number of criteria:

- Companies that are among the Fund's 20 largest holdings.
- Companies in which the Fund's share of voting rights is at least 1.0 per cent.
- Companies in which the Fund is among the ten largest shareholders.
- Companies with controversial issues on their agendas.

Diversity

Diversity, and particularly increasing the proportion of women on boards and in executive management teams, was one of the first governance issues on which the Fund began to focus. Since then, the Fund has contributed to a positive development in this area through, among other things, dialogues with companies regarding the selection process for boards and executive management teams. Today the Fund has also investments linked to diversity and equality, and diversity is one of the factors in the Fund's internally developed ESG index.

Index of Female Representation

With its annual Index of Female Representation, AP2 aims to spread knowledge, contribute to dialogue and objective debate and, above all, increase the proportion of women on boards and in executive management teams. The Fund believes that a broader recruitment basis contributes to diversity, which has a positive influence on boards and executive management. With greater diversity of background and experience, the right conditions and leadership, groups will be more innovative and creative, which in turn creates prosperous companies. Since 2003, the Fund

has conducted the study together with Nordic Investor Services measuring the proportion of women at middle-management level, in executive management teams, and on boards of listed companies. Information from the Index of Female Representation is used in the Fund's corporate governance work and is followed up at the annual general meetings that the Fund attends over the course of the year.

The Index of Female Representation for 2019 shows that the proportion of female board members in companies listed on Nasdaq Stockholm is continuing to rise and is now at 34.0 (33.9) per cent. Pro-

portion of women in executive management teams is also increasing and amounted to 24.0 (23.2) per cent at the year's measurement. On the boards of primary listed Large Cap companies, the percentage of women is 41.0 per cent, excluding the CEO position. For the first time more than 10 per cent of the listed companies' boards is chaired by a woman. Nomination committees with women is positively correlated with boards that have a higher proportion of women. Companies without no nomination committees have a lower proportion of women on the board than other companies.

Read the full report on AP2's website.

Percentage of women on the Boards and Executive management teams of listed companies, 2002-2019





Diversity in internally developed indices

At the beginning of 2018, AP2's quantitative department transferred the internally managed global equity capital to two internally-developed multi-factor indices, one for developed markets and one for emerging markets. In the index construction exposure to various ESG factors such as equality and the proportion of women in leading positions is included. The new indices are fully in line with AP2's mission since they are expected to provide higher returns at lower risk while considering sustainability aspects. They are an important part of the Fund's work on integrating sustainability into investment decisions.

An evaluation of the rate of return requires a time period of at least five years, but there are indications that the factor of the proportion of women in the company from a global perspective has contributed to a positive return in the Fund's multi-factor indices. The effects has been stronger in developed markets compared to emerging markets.

Read more about AP2's in-house work on diversity in the Annual Report. Read more about diversity in corporarte governance on page 36.

Investments that focus on diversity

To increase the access to capital for women entrepreneurs and promote lending in emerging countries, AP2 has invested USD 30 million in the Women Entrepreneurs Dept Fund (WEDF), which is part of Women Entrepreneurs Opportunity Facility (WEOF). WEOF is a partnership between Goldman Sachs 10,000 Women and IFC (International Finance Corporation). IFC is one of five institutions at the World Bank. Through the investment, AP2 can contribute to economic

growth in emerging markets, with focus on sustainability and women's entrepreneurship. Women in emerging countries are an underutilized resource and thereby investments in small and mediumsized enterprises owned by women helps to stimulate growth. The initiative also enables the Fund to develop skills in diversity issues.

AP2 has invested in a social bond issued by the World Bank that focuses on equality issues. The purpose of the bond is to increase knowledge on equality issues in general and to work for the rights of all women and girls, and thereby to promote economic growth, reduce poverty and create conditions for a more sustainable society. The bond is in line with the UN's 17 Sustainable Development Goals where equality is one of them.

Initiatives in diversity

In its work on increasing diversity, AP2 was one of 65 international investors to sign an initiative targeted at some 1 200 global companies. The initiative calls on companies to strengthen their sustainability work and increase transparency on it. Gender equality is one of the identified prerequisites for increasing global development and is one of the UN's Sustainable Development Goals. In the petition, investors pledge their support to

UN Women Empowerment Principles (WEP). WEP is made up of seven principles for greater gender equality and is supported by the UN Global Compact.

During the year, AP2 joined the jury of Women's Board Award, a prize aimed at increasing the proportion of women chairs at companies and strengthening the boards' focus on diversity. The award ceremony took place in Gothenburg in January 2020.

In 2019 Andra AP-fonden decided to make human rights one of the Fund's focus areas. The Fund works actively to integrate human rights into its analysis and decision processes, with the ambition of implementing the UN Guiding Principles on Business and Human Rights.

For a couple of years now, AP2 has been focusing on further developing the Fund's integration of human rights into the asset management. In 2019 it was decided to make human rights one of the Fund's focus areas. As a long-term investor, it is important that AP2 acts to protect and create value while also promoting sustainable development. Promoting human rights is crucial for the UN's Sustainable Development Goals being attained. Actively working on these issues is in line with AP2's mission to manage the Fund's assets in an exemplary manner.

AP2's links to human rights

In its role as investor, AP2 can be linked to a negative impact through its own operation and its business relationships. The Fund's assessment is its most salient risks of negative impact on human rights exist in the

Fund's holdings. AP2 can be directly linked to, or possibly even contribute to, these risks through its investments. As AP2's asset management shall create the greatest possible benefit for the pensioners, the Fund invests globally to achieve a favourable risk spread. This means that the number of risks that AP2 is exposed to through its holdings may be considerable, which the Fund works to address in accordance with its values.

Organisation and steering

AP2's policy on human rights and its corporate governance policy constitute the governing documents for the Fund's human rights work. The work is led by a steering group consisting of the Fund's General Counsel, the Head of Communication, Senior Strategist and carried out by a working group. The CEO has ultimate responsibility for the work. The

Fund's activities are continuously reported to the executive management and board of directors.

Implementation of human rights policy

AP2 conducts continuous internal training on human rights to ensure that all employees understand the Fund's policy. To implement the policy, the Fund refines existing routines. The work of developing a due diligence process for human rights is on-going, which includes risk identification and risk management, follow-ups and external reporting.

Risk identification and risk management of portfolio companies

AP2 carries out a norm-based screening twice a year for listed holdings in its internal equity portfolios and in the external discretionary mandates. The screening, which

AP2's process for risk identification and risk management of listed holdings



40

"The ambition is that AP2 shall implement UN's Guiding Principles on Companies and Human Rights"

is performed by an external consultant, identifies portfolio companies that are assessed to have violated international conventions and guidelines adopted by Sweden. The consultant assists both with the investigation of the factual circumstances and dialogues with the companies where misconducts have been observed. The companies' work is continuously followed up during the dialogue according to an action plan. If the contacts with the portfolio company fail to give a satisfactory outcome, AP2 shall, after an overall stance decide if the company should be excluded from the Fund's holdings.

In some cases, AP2 also applies a proactive risk identification to identify potential risks in its holdings. The Fund intends to refine its proactive risk identification and thereafter, form a structured and efficient process for the preemptive work.

Dialogue is one of AP2's key tools for influencing portfolio companies to take responsibility for their human rights risks. The Fund holds both proactive and reactive dialogues with companies. As collaboration with other investors is a means to make these dialogues successful, they are mainly conducted via the Council on Ethics of the AP Funds.

Collaboration with others

Human rights issues are often complex and global, and are thus best handled in joint consultation with other players. AP2 supports and collaborates in several initiatives on human rights. In 2019 AP2 was represented by a delegate in the UN-supported project "Financial Sector Commission on Modern Slavery and Human Trafficking". The commission was made up of 25 delegates tasked with producing a roadmap with the goal of eliminating modern forms of slavery and human trafficking by 2030. The roadmap was presented to the UN General Assembly in September 2019. AP2 was also represented at the EU conference "Business and Human Rights, Towards A Common Agenda for Action", arranged for informed stakeholders from the EU Council, together with the organisation Shift.

External managers

Approximately 19 per cent of AP2's assets are managed by external portfolio managers. The integration of sustainability factors including human rights is factored in the selection of managers. The managers' work is followed up and evaluated annually. For external managers who have invested in portfolio companies or in regions where the risk of breaches of international conventions is assessed to be high, the Fund conducts a close, active dialogue to ensure that the managers integrate sustainability factors in their asset management and that they understand the Fund's policy on human rights.

Report on human rights

The UN Guiding Principles on Business and Human Rights (UNGPs) are a global standard that form a framework defining the way countries and companies should act in order to eliminate the adverse impact they may have on human rights. According to these principles, companies are required to have a policy for human rights in place, a continuous due diligence process for addressing human rights risks and a process for remediation.

AP2 is actively working to implement the guiding principles in its activities. The Fund was one of the world's first investors to publish a report on work in accordance with the UN Guiding Principles Reporting Framework (UNGPRF). For more information about the Fund's work, read the report on human rights at AP2's website.

Sustainability data

Climate/Environment

Carbon footprint of the listed equity portfolio, Scope 1 and 2

Metrics	2019	2018	2017
1. Total carbon emissions (mn tCO ₂ e)	1.6	1.7	2.6
Sweden	0.1	0.1	0.2
Developed markets	0.6	0.7	1.4
Emerging markets	0.9	0.9	1.1
Change in the portfolio's total carbon emissions from the preceding year (%)	-3		
- of which the change related to changes in the portfolio holdings (% units)	-10		
– of which the change related to changes in the companies' emissions (% units)	7		
2. Relative carbon emissions (tCO ₂ e/SEK m)	11	13	18
Sweden	4	4	5
Developed markets	9	11	19
Emerging markets	19	22	32
3. Carbon intensity (tCO ₂ e/SEK m)	14	15	28
Sweden	7	7	10
Developed markets	11	12	31
Emerging markets	20	24	37
4. Weighted average carbon intensity (TCFD) (tCO₂e/SEK m)	14	16	24
Sweden	5	5	6
Developed markets	15	16	27
Emerging markets	21	23	23
Change in the portfolio's carbon intensity (TCFD) from the preceding year (%)	-7		
- of which the change related to changes in the portfolio holdings (% units)	-8		
– of which the change related to changes in the companies' emissions (% units)	1		
Market value of the Fund's portfolio covered by CO ₂ e data (SEK billion)	144.1	130.5	142.4
Proportion of share capital for which data is available (%)	96	97	92

- 1. Total carbon emissions. Total of owned share of portfolio companies' individual carbon emissions.
- 2. Relative carbon emissions. Total of owned share of portfolio companies' individual carbon emissions in relation to the portfolio's market value.
- 3. Carbon intensity. Total of owned share of portfolio companies' individual carbon emissions in relation to the total of owned share of the portfolio companies' turnover.
- 4. Weighted average carbon intensity (TCFD). The metric adds together each portfolio company's individual carbon intensity, i.e. a company's carbon emissions in relation to 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.

 CO_2 e (carbon dioxide equivalent) is a unit of measurement that makes it possible to compare the climate impact of different greenhouse gases. Source: MSCI ESG Research/Andra AP-fonden.

Certification of timberland

	Number of hectares	Proportion, %
Certified timberland in accordance with the FSC and/or PEFC	106 455	93
Timberland in the process of certification in accordance with the FSC and/or PEFC	4 096	4
Land that is sustainably managed in accordance with the FSC and/or PEFC, but that cannot be certified	910	1
Other: Land taken up by e.g. roads, buildings and other non-productive areas, or land that has not yet been planted	2 474	2

The figures in this table are correct as at 31 December 2018.

Environmental data

	2019	2018	2017
Internal environmental indicators			
Electricity, kWh	128 300	126 000	135 000
Renewable electricity, %	100	100	100
Copying paper, purchased (A4), kg	191	315	350
Number of printouts	70 900	107 000	159 000
Business travel			
Proportion of train journeys between Gothenburg and Stockholm, %	97	88	91
Greenhouse gas emissions from:			
Rail, domestic, tonnes of CO ₂ e	0	0	0
Air, domestic, tonnes of CO ₂ e	1	5	5
Air, abroad, tonnes of CO ₂ e	187	169	172

Corporate governance

Nomination committees in which Andra AP-fonden participated prior to the 2019 annual general meetings

Company	Proportion of women on the Board, %	Number of newly elected women	Total change compared to previous year
Better Collective	20	0	-
Coor Service Management	43	0	0
Immunicum	40	0	0
IAR Systems	20	0	-2
Kindred	29	0	0
Kungsleden	50	0	-1
Midsona	33	0	0
Opus Group	43	0	0
Resurs Holding	38	1	1

voted in foreign companies in 2019, number

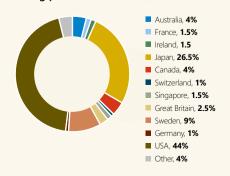
Board or shareholder proposals on which Andra AP-fonden

Area	Board proposals	Shareholder proposals
Auditors, financial reporting, formalities, etc.	1 033	0
Board of Directors	7 955	18
Remuneration issues	984	40
Capital structure	317	1
Group structure, agreements, acquisitions, etc.	81	0
Shareholders' rights/governance	85	191
Sustainability	0	57
Other	2	2
Total	10 457	309

Voting at annual general meetings in 2019

	Number
Number of votes, Sweden	85
Number of votes, foreign	865
Agenda items, foreign	10 766

Voting per market in 2019, %



Disclosure

GRI-standard

This Sustainability Report has been prepared in accordance with GRI Standards, Core Level. GRI is an international framework for reporting on an organisation's activities in the area of sustainability and includes environmental, social and economic aspects. The page references refer to AP2's Annual Report 2019 (AR) and Sustainability Report 2019 (SR).

GRI 101: Foundat	ion		
GRI 102: General	Disclosures		
	ORGANISATIONAL PROFILE		
	102-1 Name of organisation	Andra AP-fonden	
	102-2 Activities, brands, products, and services	AR p. 10-23	AP2 markets no products or services. The Fund manages pension assets in the Swedish national pension system.
	102-3 Location of head office	SR - outside cover	
	102-4 Location of operations	SR - outside cover	
	102-5 Ownership and legal form	AR p. 94-97	
	102-6 Markets served	www.ap2.se	AP2's only office is in Gothen- burg, but invests globally.
	102-7 Scale of the organisation	AR p. 47, 78	
	102-8 Information on employees and other workers	AR p. 30-33, 47, 78	
	102-9 Supply chain	www.ap2.se	
	102-10 Significant changes to the organisation and its supply chain	AR p. 20-23	
	102-11 Precautionary principle or approach	AR p. 62-68	
	102-12 External initiatives	AR p. 31, SR p. 5, 7, 10, 14, 30, 37, www.ap2.se	
	102-13 Membership of associations	SR p. 5,7, 10, 14, 19, 20, 30, www.ap2.se	
	STRATEGY		
	102-14 Statement from senior decision-maker	AR s. 4-7	
	ETHICS OCH INTEGRITY		
	102-16 Values, principles, standards, and norms of behaviour	AR p. 14, 30, 40, 42, SR p. 2-5, 20, 23, 28, 40-41, www.ap2.se	
	GOVERNANCE		
	102-18 Governance structure	AR p. 43, 47, SR s. 36-37, 43	
	STAKEHOLDER ENGAGEMENT		
	102-40 List of stakeholder groups	SR p. 6	
	102-41 Collective bargaining agreements	AR p. 33, 79	
	102-42 Identifying and selecting stakeholders	SR p. 6	

Page reference/URL Comments

44

102-43 Approach to stakeholder engagement	SR p. 6
102-44 Key topics and concerns raised	SR p. 6
REPORTING PRACTICE	
102-45 Entities included in the consolidated financial statemen	s AR p. 49-58
102-46 Defining report content and topic Boundaries	AR p. 74-75
102-47 List of material topics	SR p. 6
102-48 Restatements of information	-
102-49 Changes in reporting	-
102-50 Reporting period	AR - inside cover, 88
- 102-51 Date of most recent report	AR - inside cover
102-52 Reporting cycle	AR - inside cover
102-53 Contact point for questions regarding the report	AR & SR - outside cover
102-54 Claims of reporting in accordance with the GRI Standards	AR p. 1, 40, SR s. 1, 44
102-55 GRI content index	SR p. 44-46
102-56 External assurance	AR p. 45, 87

45

MATERIAL TOPICS

GRI 200 Economic Standard Series

	ANTI-CORRUPTION	
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary	AR p. 33 SR p. 14
	103-2 The management approach and its components	AR p. 41, SR p. 5
	103-3 Evaluation of the management approach	AR p. 41, SR p. 5
GRI 205: Anti-corrup- tion 2017	205-2 Communication and training about anti-corruption policies and procedures	AR p. 33
	205-3 Confirmed incidents of corruption and actions taken	AR p. 41, SR p. 5

	205-3 Confirmed incidents of corruption and actions taken	AR p. 41, SR p. 5
GRI 300 Environmenta	l Standard Series	
	ENERGY	
GRI 103: Management		
Approach	103-1 Explanation of the material topic and its Boundary	AR p. 42-44, SR p. 28-34
	103-2 The management approach and its components	AR p. 41, SR p. 5, 28-34
	103-3 Evaluation of the management approach	AR p. 41, SR p. 5, 9
GRI 302: Energy 2017	302-1 Energy consumption within the organisation	AR p. 3, 47, SR p. 42
	EMISSIONS	
GRI 103: Management		
Approach	103-1 Explanation of the material topic and its Boundary	AR p. 42-44, SR p. 28-34
	103-2 The management approach and its components	AR p. 41, SR p. 5, 28-34
	103-3 Evaluation of the management approach	AR p. 41, SR p. 5, 28-34
GRI 305: Emissions 2017	305-1 Direct (Scope 1) GHG emissions	AR p. 3, 47, SR p. 42
	305-2 Energy indirect (Scope 2) GHG emissions	AR p. 3, 47, SR p. 42

GRI 400 Social Standard Series EMPLOYMENT GRI 103: Management Approach 103-1 Explanation of the material topic and its Boundary AR p. 30-33, 41, SR p. 5 103-2 The management approach and its components AR p. 30-33, 41, SR p. 5 103-3 Evaluation of the management approach AR p. 30-33, 41, SR p. 5 GRI 401: Employment 401-1 New employees hires and employee turnover AR p. 41, 47 2017 401-3 Parental leave AR p. 31 **DIVERSITY AND EQUAL OPPORTUNITY** GRI 103: Management 103-1 Explanation of the material topic and its Boundary Approach AR p. 30-33, SR p. 38-39 103-2 The management approach and its components AR p. 41, SR p. 5 AR p. 41, 47, SR p. 5, 9, 103-3 Evaluation of the management approach 38-39 GRI 405: Diversity and Equal Opportunity 2017 405-1 Diversity of governance bodies and employees AR p. 47, 78 NON-DISCRIMINATION GRI 103: Management Approach 103-1 Explanation of the material topic and its Boundary AR p. 30-33, 41 103-2 The management approach and its components AR p. 41, SR p. 5 103-3 Evaluation of the management approach AR p. 41, SR p. 5 "GRI 406: Non-discrimina-406-1 Incidents of discrimination and corrective actions tion 2017" AR p. 41, SR p. 5 **HUMAN RIGHTS ASSESSMENT** GRI 103: Management Approach 103-1 Explanation of the material topic and its Boundary AR p. 45, SR p. 40-41 AR p. 41, SR p. 5, 103-2 The management approach and its components www.ap2.se AR p. 41, SR p. 5, 103-3 Evaluation of the management approach www.ap2.se "GRI 412: Human Rights Assess-412-1 Operations that have been subject to human rights ment 2017" reviews or impact assessments SR p. 40-41, www.ap2.se 412-2 Employee training on human rights policies or procedures AR p. 3, 31, www.ap2.se

"During the year the Fund decided to clarify its approach to the role that climate change plays in asset management"



Climate Report 2019

According to TCFD's recommendations

In 2019 Andra AP-fonden continued the work of integrating climate aspects into risk assessments and investment decisions, a task which is becoming increasingly important. During the year the Fund decided to clarify its approach to the role that climate change plays in asset management by introducing a new investment belief: "Climate change is a system risk". During 2019 has also called upon companies and investors in different contexts to report in accordance with TCFD. This is the Fund's third TCFD report.

In the wake of the UN climate panel's special report in 2018 on the effects of global warming of 1.5°C it has become even clearer that a rapid, strong transition is required. In order to stabilise the climate, net emissions need to be zero in around the year 2050. Because the temperature increase depends on the volume of greenhouse gases emitted over time, it is important that emissions are reduced as quickly as possible. An important tool for driving development on reducing emissions is to increase transparency and reporting on the climate, for both companies and investors.

As a long-term investor, it is clear that AP2's asset management both needs to take into account risks and take advantage of opportunities resulting from climate change and contribute to the transition to a society with net-zero greenhouse gas emissions. As early as 2016 AP2 published its approach to climate change. The report clarifies that the Fund's ambition is to develop its portfolio to be in line with the Paris Agreement, and this is being achieved by integrating climate analysis into the investment processes and, based on the Fund's mission, by contribution to a transition.

In April 2015, the Financial Stability Board (FSB) received the following mandate from the G20: "Convene public and private sector participants to review how the financial sector can take account of climate-related issues". In December 2015, the FSB set up a Task force on Climate-related Financial Disclosures (TCFD), which was commissioned to

develop recommendations for reporting that should help players in the financial market understand their climate-related risks and opportunities.

In June 2017, the TCFD presented its recommendations on climate-related information. It is a general framework for all types of organisations, with additions for certain sectors and for asset owners and asset managers. Briefly, reporting in accordance with the TCFD should include: 1) how climate issues are dealt with by the organisation governing bodies (the board and management teams), 2) what the organisation's strategy is concerning climate change and the transition to a low-fossil economy, 3) a description of the organisation's climate-related risks and opportunities and 4) information about the metrics and targets used by the organisation. In December 2019, 930 organisations were registered as TCFD supporters. Read more at the website www.fsb-tcfd.org

One important aspect pertaining to climate-related risks is that they cannot be eliminated completely. However, in portfolio management it is possible to consider and reduce exposure to climate risks because different asset classes, sectors and geographies are exposed to different types of climatic risks and on different time horizons. Identification of climate-related risks and opportunities is therefore central to the TCFD's framework.

TCFD divides climate risks into two groups: transition risks and physical risks. Transition

risks are divided into regulatory risks, technological risks, market risks and reputation risks. Physical risks are divided into acute and systematic. On the opportunity side there are: resource efficiency, renewable energy, products/services, markets and resilience².

For AP2, climate-related risks and opportunities can have a financial impact that involves changes in the strategic portfolio, changes in investment strategies for individual asset classes, divestment from companies/securities and dialogues with companies and decision-makers. AP2 supports the TCFD's framework as it will increase company transparency and give investors the information they need to assess the companies climate risks and opportunities. This is also an important tool for the Fund's own work, as it provides a framework for describing and communicating the Fund's climate work.

AP2 began implementing the recommendations in the autumn of 2017 and published its first report at the beginning of 2018. In the work of analysing its climate activities, the Fund has used the proposals contained in the TCFD recommendations for all sectors and in the specific guidance given to asset owners (Appendix 1). In 2019 the Fund developed the governance of its sustainability work and has gone even further to integrate sustainability into analysis and investment processes with a special focus on climate. This report provides a description of AP2 's climate work based on the framework and gives examples of what the Fund can do to develop its work on climaterelated risks and opportunities.

TCFD's framework

Governance

Governance around climaterelated risks and opportunities

Strategy

Actual and potential impacts of climaterelated risks and opportunities on the organisation's business, strategy, and financial planning

Risk Management

The processes used to identify, assess, and manage climate-related risks and opportunities

Metrics and targets

The metrics and targets used to assess and manage relevant climate-related risks and opportunities

Governance

The section on governance includes describing how management assesses and handles climate risks and opportunities and what knowledge and supervision the Board has in these issues.

The Board's supervision of climaterelated risks and opportunities

AP2 is an independent government agency and shall manage fund assets in an exemplary manner through responsible investment and responsible ownership. The asset management shall be of the greatest possible benefit for the pension system. In the asset management, special emphasis must be given to how sustainable development can be promoted without compromising on the overall objective regarding return and risk. AP2 is governed by the law and is a government agency under the Swedish Parliament. The Government appoints the Fund's board members. Every year the Swedish Government submits a report to the Riksdag about the AP Funds' activities, which includes an evaluation of the Funds' sustainability work.

According to the Act governing the operation of the AP Funds, the Board shall set the objectives for the Fund and the overall framework for activities in an annual business plan, which includes investment beliefs, strategic portfolio and sustainability policy. The business plan is followed up by the Board and executive management and are reported in the annual and half-year reports.

The Fund's asset management is based on the investment beliefs adopted by the Board. In 2019 these were reviewed to ensure that the Fund's approach to sustainability in general, and climate change in particular, is reflected in an accurate manner. The review resulted in two new beliefs:

"Sustainability pays off" and "Climate change is a system risk". The Board establishes the strategic portfolio at least once a year as part of the Fund's business plan. In the strategic asset allocation, AP2 has a long-term perspective of 30 years. The strategic portfolio is based on the Fund's ALM (Asset and Liability Management) analysis. In 2019 climate aspects have been taken into account and influenced the forward-looking assumptions used in the ALM analysis.

The Board takes decisions on all index changes. In the documents that AP2 prepares for decisions on possible index changes, an ESG analysis is performed, which includes an analysis of how the change will affect the carbon footprint. Climate aspects are thereby included in the Fund's evaluation of new indices/index changes. Several of the indices the Fund uses have sustainability characteristics. The Fund's internally developed indices for global equities is designed based on traditional financial risk factors and factors related to sustainability including climate.

AP2 has a process for continuously keeping the Board informed about the Fund's sustainability work, where climate-related issues are included. The Board has the opportunity to discuss ESG and climate issues at each meeting. The Board receives a yearly climate report containing information on the various activities of the Fund in relation to the climate. The entire Board has also received training in ESG, in which climate was included.

Since 2013, AP2 has continuously worked to identify companies with financial climate risks. In October 2014 the first analysis of fossil energy companies was presented to the Board, which then took the decision to divest from companies based on the AP2 criteria. The Board made a corresponding decision on power companies in 2015. AP2 follows up these decisions every two years with an analysis of whether additional companies are to be divested or whether companies should be re-included as they are no longer considered to have a significant financial climate risk. The Board also receives a return analysis regarding divestments.

The role of management in assessing and managing climate-related risks and opportunities

AP2's executive management team, the Fund's chief strategist and senior sustainability analyst are responsible for the strategic sustainability work, and implementation and follow-ups. They have regular meetings to discuss and anchor the Fund's sustainability work. Climate is an important sustainability area and also one of the Fund's four focus areas.

In March 2019 AP2 performed a reorganisation and the Fund's sustainability analysts are now part of the asset management's strategy department. With this change the Fund's senior sustainability analyst became part of the executive asset management team. In 2019 this team has performed a number

"The executive asset management team has during 2019 performed a number of activities to increase its knowledge and expertise in climate issues"



of activities to increase its knowledge and expertise in climate issues.

All senior executives have a responsibility for taking climate issues into account according to their various roles. Climate-related risks and opportunities for investments are included in the responsibility of the Chief Investment Officer. The Head of Performance and Risk Management has a responsibility for developing the way the Fund measures its sustainability performance in relation to a base portfolio. The senior sustainability analyst has a responsibility for informing and communicating the Fund's ESG work to the Board and for developing the Board's knowledge and expertise in climate issues.

Since the Fund is a small organisation, where several senior executives are directly involved in climate work, the executive management is judged to have a good knowledge of the work that is taking place. Thus, the Fund has god opportunities to assess and manage climate-related risks and opportunities.

The analysis of climate-related investment opportunities is initiated by the asset management team. When an investment is identified, it is handled in accordance with the Fund's normal investment process. AP2's business plan clarifies who is responsible for the Fund's various activities. An internal working group performs market and corporate analyses of sectors in which the Fund has deemed to have significant financial climate risks.

Future work

AP2 will continue to develop and clarify information and processes regarding the supervision and assessment of climaterelated risks and opportunities.

Strategy

The section on strategy includes reporting on current and potential impacts of climate-related risks and opportunities in organisations' business, strategy and financial planning. For Andra AP-fonden as a asset owner, this means that risks and opportunities shall be identified and described based on the Fund's investment strategy.

Climate-related risks and opportunities

The importance of climate change for the world's economic development is expected to continue growing. It affects the conditions for all kinds of human activity from forestry and farming, to industry and how cities function. Moreover, countries and industries differ in terms of how well they can manage the changes. Certain countries are particularly exposed due to their geographic locations while other have economies that is dominated by industries which is some cases need to be phased out or strongly restricted.

AP2 mainly works on a very long-term perspective, specifically 30 years, in line with the Fund's mandate and role in the public pension system. This long-term perspective is reflected in the choice of strategic portfolio, which includes both the long-term distribution of capital over various broad asset classes as well as strategies that determine the distribution within each asset class of individual securities. The strategic portfolio and its return shall provide as great a benefit to the pension system as possible – a goal that the Fund may not disregard.

Given AP2's long-term investment horizon it is crucial to take climate aspects into account in investment decisions. This needs to be done all the way from the highest strategic level to the individual investment. This is also reflected in the investment beliefs, one of which is the belief that "sustainability pays off". AP2 regards particular climate

change as a long-term risk in the Fund's portfolio and therefore also in the pension system. This applies not only to individual industries and companies but also to broad asset classes such as equities and bonds through their potential impact on the global economy. This is also reflected in the investment beliefs, through the belief that "climate change is a system risk". The Fund's ambition is to develop a sustainable strategic portfolio in line with the Paris Agreement. The Fund works both to take into account and reduce the financial climate risk and actively contribute to the transition.

Climate risks and opportunities also exist in the short- and medium-term perspective. In the shorter term, the transition to a low carbon society also means investment opportunities, e.g. companies in renewable energy, while assets that are not deemed to be sustainable pose a risk. Already today, extreme weather is factored into AP2's investments in traditional real estate (see page 58).

In 2019 AP2 has developed a new sustainability strategy. The strategy is based on the statutory mandate and the Fund's investment beliefs. The strategy also reflects the Fund's vision and values. Investment beliefs set the outer framework for the Fund's approach to sustainability in asset management. In addition, a number of more specific sustainability principles have been adopted.

AP2's six sustainability principles are:

- . AP2 integrates sustainability in all investment processes.
- AP2 actively seeks for investments that contribute to sustainable development.
- AP2 works on the basis of the focus areas.
- 4. AP2 uses dialogue as a tool.
- 5. AP2 takes a scientific approach.
- 6. AP2 seeks to be a leader within sustainability.

The sustainability strategy is based on these principles and its aim is to specify activities aimed at reaching the overall goal of a sustainable strategic target portfolio, which is also in line with the Paris Agreement.

The strategy also includes metrics for analysing of how the Fund's sustainability work affects return and risk and what impact the Fund's work has on the real economy.

Influence of climate-related risks and opportunities

Climate change is expected to have a major impact on long-term returns. AP2's goal is therefore to develop the portfolio in line with the Paris Agreement. This is achieved by integrating climate analysis into the investment process and by, based on the Fund's mission, contributing to the transition into a 1.5°C society. The Fund also has an ambition to integrate other areas of sustainability in the management of all types of asset, where the form of the integration is

adapted to the respective asset class and the conditions that apply.

In 2019, therefore, the risks that climate change entails have been integrated into the ALM analysis, the Fund's tool for finding the right strategic portfolio. ALM is short for Asset and Liability Management. This has resulted in climate risks now being considered in the ALM analysis' forward-looking assumptions and will have an impact on the choice of strategic portfolio. The portfolio represents the asset composition which is assessed to be best equipped to achieve the goal for AP2's investment activities in a 30-year horizon. Long-term assumptions about return and risk for the various assets, as well as how these returns relate to the development of the social economy and demography, are very central to the analysis. The ALM analysis' is based on the expected negative impact on economic growth in a scenario where sufficient global measures are not taken and the global temperature increase is 3°C instead of being limited to around 1.5°C which is the actual requirement. The assessed negative consequences on expected economic growth in such a scenario and, in the long run, on the return on financial assets, is based on academic research in the area.

AP2 has since 2013 had a working group to identify regulatory transition risks and to identify and divest from companies with significant climate risk. The working group has so far focused on

the asset classes and sectors that are deemed to pose the most risk from a financial perspective: listed equities and company bonds in fossil companies and power companies. The working group develops criteria for assessing financial climate risk and analyses the assets accordingly. The analysis has resulted in divestments from 80 companies for financial reasons.

The Fund's internal management of listed global equities has for some time deviated from the traditional market value indices in the choice of benchmark indices. The Fund has further developed the model used for the creation of the benchmark index by introducing new factors related to ESG, where carbon intensity is an indicator. This has been done within the framework of a multifactor model that combines factors rela-

ted to ESG with more traditional financial factors. These indices were implemented in spring 2018, which means that the carbon footprint was reduced, compared with previous indices, by about 40 per cent in the index for developed markets and about 30 per cent in the index for emerging markets. Accordingly, the global equity portfolio has a reduced climate risk as it has less exposure to, for example, changes in the market price of carbon emissions. The multi-factor model is under continuous development.

In 2019, AP2 has been working on further development of the equity indices but also on creating similar indices for the credit portfolio. The aim is, as with the equity indices, to create a multifactor index which has a clear sustainability characteristic and at least the same risk-adjusted return as the current port-

AP2's Investment beliefs

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

folio. Hopefully these credit indices will be launched in 2020.

Since 2008, the Fund has invested in green bonds, as part of the listed fixed-income portfolio, which are expected to contribute positively to the climate transition. Since 2015, green bonds have been a separate asset class in the strategic portfolio. In 2019, the Fund also decided to increase its strategic allocation from 1.0 to 3.0 per cent, which is equivalent to more than SEK 11 billion. AP2 has the last few years also invested in social bonds.

The sustainability risks are becoming increasingly important for the management of government bonds in emerging markets. AP2 has, as a first step, chosen to change to external created indices from JP Morgan which integrate sustainability factors.

In the non-listed portfolio, the Fund sees the opportunities to actively contribute to the climate transition. For the portfolio of traditional real estate, energy issues are important in the short-, medium

and long-term. The Fund's holdings have long been working on reducing energy consumption in its properties. In 2010, the Fund began broadening of its realestate portfolio to timberland and farmland. The main purpose of the investments was to achieve increased diversification in the wake of the financial crisis, but the investments also have a strong link to climate.

Forest areas where the expected regrowth is significantly higher than the felling volume can act as carbon sinks. There are possibilities for selling such carbon credits. The role of forests as carbon sink may be more important in the longer term both as a living forest and by increasing the use of wood as a raw material in construction, for instance. In the portfolio of private equity funds, AP2 has since many years invested in funds focusing on renewable energy. The Fund has recently been looking for opportunities to invest in smaller companies and funds with a focus on sustainability. In 2019 AP2 also decided

to make an allocation to sustainable infrastructure, i.e. infrastructure assets that contribute to sustainable development in line with the Paris Agreement.

Resilience of different climaterelated scenarios

During 2019, AP2 has been investigating how different climate scenarios can be included in the choice of overall strategic asset allocation. As part of the Fund's strategic roadmap, the Fund's objective is to develop a new, sustainable strategic target portfolio by 2020. A sustainable strategic portfolio means a strategic portfolio that, by having integrated sustainability into underlying sub-decisions, can better achieve the overall goal to be of the greatest possible benefit to the pension system in the long term. The integration of sustainability is necessary for achieving that goal. A sustainable strategic portfolio, without compromising the overall goal, also promotes sustainable development.



During 2018, AP2 was very active in IIGCC's (Institutional Investor Group on Climate Change) work on scenario analysis. and helped IIGCC publish its report "Navigating climate scenario analysis: A guide for institutional investors" which aims to increase knowledge about scenario analysis. The report is available on IIGCC's website www.iigcc.org

In 2019 AP2 took part in a number of seminars arranged by IIGCC to increase the knowledge about scenario analysis. In 2019 IIGCC initiated an initiative, "Paris Aligned Investment Initiative", to show how investors can develop their portfolios to be in line with the Paris Agreement. In total, 60 of IIGCC's members participate in this initiative.

The purpose of the initiative is:

- To creat definitions for key terms related to developing portfolios in line with the Paris Agreement and create a consensus about them among investors.
- 2. Analyse potential methods that could be used to assess different asset classes
- 3. Give investors an understanding of the implications of developing portfolios in accordance with the Paris Agreement by testing approaches and methodologies for real portfolios and to analyse financial characteristics, risks and opportunities associated with developing portfolios in accordance with the Paris Agreement.

The initiative has four working groups; government bonds, listed equities and corporate bonds real estate and strategic asset allocation. Representatives from AP2 participate in the steering group and in the working groups for government bonds and real estate.

Future work

Climate continues to be high up on AP2's agenda and the implementation of TCFD is part of the Fund's on-going work. In 2020 focus will be on implementing the new sustainability strategy with a strong focus on climate. Among other things, the Fund is further developing its internal indices with a sustainability profile with the ambition of complying with the criteria of EU Paris Aligned Benchmark. Asset management works actively, in different ways, to include climate risks and opportunities in its analyses and to find investment opportunities for different asset classes. Integrating climate analysis into the overall ALM analysis will continue to be developed. The Fund also intends to further develop views on what are significant climate risks and opportunities for more asset classes/sectors/ geographies and their time horizons.



Scenario analysis

A scientific-based approach is important. One of Andra AP-fonden sustainability principles is to implement a scientific approach. In the Fund's work with climate scenarios, the point of departure is the UN climate panel's (IPCC) reports. IPCC is tasked with compiling the scientific knowledge about climate change, consequences and possible solutions and delevering this climate information to the world's governments.

The IPCC's special report on Global warming at 1.5°C, published in October 2018, was prepared at the request of the United Nations Framework Convention on Climate Change, UNFCCC. This request is included in the Paris Agreement. The report describes the effects of global warming at 1.5°C, and related emission pathways of greenhouse gases, in order of strengthen the global ability to meet the threat from climate change, to establish targets in sustainable development and efforts to eradicate poverty.

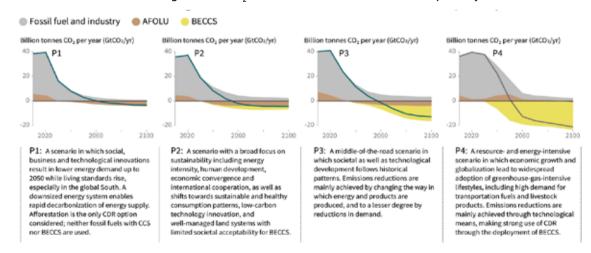
The report indicates major differences between 1.5°C and 2°C global warming. The main message is that warming at

1.5°C will have serious consequences for a lot of people, for the environment and for the ecosystems. A high climate ambition for the near future, with reduced emissions, is crucial for being able to manage both the climate issue and for increasing the possibilities for achieving the UN Sustainable Development Goals.

The IPCC states that there are a number of alternatives for limiting global warming at 1.5°C but it requires rapid measures. One significant difference between these scenarios is whether or not a temporary excess of the warming level is permitted. In scenarios of 1.5°C with no or limited excess of the warming level,

the anthrop global net carbon emissions (emissions caused by humans) by around 45 per cent from 2010's level until 2030 and reach net zero in around 2050. In scenarios where a high excess is permitted, it is possible to wait with emission reductions until 2030, but then a strong decrease in emissions and a sizeable uptake of carbon dioxide (negative emissions) will be required. In the report, four examples of 1.5°C scenarios that uses different strategies for reducing emissions and different technologies for removing carbon dioxide from the atmosphere, from planting new forests to the technical capture and storage of carbon dioxide.

Breakdown of contributions to global net CO₂ emissions in four illustrative model pathways



Source: Figure SPM.3b from IPCC, 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V, P, Zhai, H-D, Potrizer | Syan

R.P.C. Former, D. Roberts, J. Skea,
P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press.

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

In 2016 AP2 published its approach to climate change, in which the Fund states that the ambition is to develop the portfolio in line with the Paris Agreement. What does developing the portfolio in line with the Paris Agreement entail and how can the Fund report on the portfolio's development? The first step is to decide which scenario AP2 compares the portfolio against when reporting. AP2 has chosen the most conservative of IPCC's 1.5°C scenarios (P1 in the figure on the previous page) due to the uncertainty regarding the threshold effects and possibilities for achieving a large-scale carbon dioxide capture in the near future (10 years). In this scenario, greenhouse gas emissions shall be reduced by 50 per cent by 2030 compared with 2010 and by by 82 per cent by 2050.

AP2 works both on integrating climate risk analysis into investment processes and with actively searching for investment that contributes to the transition.

The work of analysing climate risks has resulted in the Fund divesting from 80 companies in coal, oil and gas, and coalbased electricity production. That institutional investors such as AP2 factor in climate risks in their analyses and also divest from companies could entail an increase in the cost of capital for companies with a high exposure to climate risks. The Fund has reduced its exposure to carbon-intensity companies by employing carbon intensity as a parameter in the internally developed multi-factor indices for global equities.

As AP2's portfolio comprises several mandates in different asset classes, multiple sets of indicators need to be created. An internal work was launched for this in 2019 and AP2 is also active in IIGCC's initiative Paris Aligned Investments (see page 55).

The reporting for listed equities is where the Fund has made the biggest progress. The Fund will be monitoring

the direst changes in carbon emissions from portfolio companies. As a first step the Fund is introducing a metric that will clarify how large a portion of the change in the carbon footprint is due to the portfolio companies having changed their emissions and how large a portion is due to a change in the companies' holdings. AP2 has elected to only include the companies' direct emissions (Scope 1), as it is these emissions that the companies have full control over. Another reason why the Fund, in this metric, elected not to include indirect emissions from energy (Scope 2) is that there are two different methods for calculating Scope 2, location based and market based, and that many companies are reporting two sets of figures for Scope 2. In the "location based" method the calculation is based on an energy mix in the country or region. In the "market based" method the calculation is based on emissions from energy purchased by the company. The supplier that AP2 employs for carbon dioxide data has elected to use "location based" data for all companies, even for those who report in accordance with the market-based method. Accordingly, if a company buys renewable electricity it will not be reflected in the Scope 2 data that AP2 receives. In AP2's follow-up of the equity portfolio's development in relation to the Paris Agreement, therefore, only Scope 1 data is used. Please note that AP2's carbon footprint reporting is based on Scope 1 and 2, as before, see page 42. The chart below shows the development in the listed equity portfolio's total carbon footprint in 2017-2019 (Scope 1).

Threshold effects

A threshold is the critical point at which a major change happens instantly that would have a major negative impact on the climate, such as the if the polar ice caps melted or if the permafrost were to thaw. Once a threshold is crossed there is a risk of a domino effect, as the various threshold effects are interlinked. This would create a risk of a "hot-house earth", when earth goes from being a carbon sink to a carbon source.

Steffen et al (2018), Trajectories of the Earth System in the Anthropocene, PNAS, Vol 115, No 33 and Rochha et al (2018), Cascading regime shifts within and across scales, Science 21 Dec 2018, Vol 362, Issue 6421, pp 1379-1383.

Due to AP2 having changed its holdings and reduced its exposure to carbon intensive companies the carbon footprint for the portfolio is reduced. The companies in which AP2 has invested have increased their emissions overall. This means that the Fund has reduced its climate risk but atmospheric emissions have increased. AP2 has also calculated how the companies contributed to the change in the portfolio's carbon intensity (portfolio-weighted in relation to turnover, Scope 1). In 2019, the equity portfolio's carbon intensity decreased from approximately 11.5 to 10.5 tCO₃e/SEK million, a decrease of 0.94 tCO₂e/SEK million. The Fund's change in equity holdings in 2019 has resulted in an exposure towards less carbon-intensive companies which contributed a decrease by 1.10 tCO₃e/SEK million. Portfolio companies in which AP2 had holdings at the end of 2019 increased their carbon intensity, which contributed 0.16 tCO₃e/SEK million. See table at page 65.

For AP2's portfolio to develop in line with the Paris Agreement, the companies need to reduce their total emissions and become less carbon intensive. By reporting the companies' contributions to change in

the investment portfolios' carbon footprint in this manner, the Fund contributes to increased transparency. If more investors begin reporting changes in the carbon footprint, this will hopefully result in all listed companies reporting carbon dioxide data and will increase the pressure on companies to reduce their emissions.

AP2 is aware that this is only a first step and that further indicators for listed equities will need to be produced to get an idea of how the equity portfolio is developing in relation to the Paris Agreement.

Real estate

Real estate is an asset class where physical climate risks are apparent, both acute risks such as extreme weather events and systematic as for example rise in sea level. The transition to a low-carbon society also offers great opportunities as properties can contribute to direct reductions in carbon emissions by converting to renewable energy, install solar panels for self-produced electricity, utilising the technology development to reduce energy use and greenhouse gas emissions throughout a property's life cycle.

The transition of the real estate sector is important as it accounts for almost 30 per cent of global greenhouse gas emissions, and for almost 40 per cent of energy consumption.

Climate and energy issues have long been in focus in AP2's dialogues with its non-listed real estate companies. AP2's companies act on different markets: Vasakronan in Sweden, Cityhold Office Partnership in Europe and US Office Holdings in the USA. The companies work in different ways to reduce their climate impact and climate risk. AP2 organises annually a sustainability day for its non-listed real estate companies in order to increase collaboration on sustainability issues between the companies and discuss sustainability indicators. At the meeting in 2018, climate issues were in focus.

Nuveen Real Estate, which is AP2's manager of Cityhold, has worked with climate scenarios in 2018 to identify and assess the properties' physical climate risks. Vasakronan has reduced carbon emissions from energy consumption in its properties and transportation by over 95 per cent since 2006. The company continues its climate work with finding solutions to reduce climate impact by for example building office properties in wood.

Cityhold Office Partnership

Cityhold was formed in 2015 by AP2, AP1 and the American pension fund TIAA. The real estate portfolio is valued at approximately EUR 2.3 billion and consists of 15 quality office properties in London, Paris, Munich, Hamburg and Amsterdam.

Nuveen Real Estate manages the company and provides investment and management services.

To better understand what potential impact physical climate risks may have on the real-estate portfolio, Nuveen Real Estate has used Verisk Maplecroft Cli-

The listed equity portfolio's total carbon footprint (million tonnes of CO₂)



mate Change Vulnerability Index. This index evaluates the impact of extreme weather events and the effects of climate change over the next thirty years. Physical climate risks that they identified as relevant to real estate are extreme weather as: flooding, hurricanes, storms, forest fires and drought.

The index combines exposure to the effects of climate change with society's sensitivity to these climate stressors and the capacity of the countries to adapt. It comprises three components:

- Climate Change Exposure Index
 assesses the degree to which locations
 are exposed to the physical impacts of
 climate extremes and future changes in
 climate over the next three decades.
- Climate Change Sensitivity Index assesses the human population's susceptibility to the impacts of extreme climate related events and projected climate change. Sensitivity is a function of a population's existing physical, social and livelihood circumstances, with the index examining aspects of sensitivity related to health, poverty, knowledge, infrastructure, conflict, agriculture, and population and resource pressure.
- Climate Change Adaptive Capacity
 Index assesses the present abilities of a
 country's institutions, economy and
 society to adjust to, or take advantage of,
 existing or anticipated stresses resulting
 from climate change. The index focuses
 on the structural, gradually changing factors that determine adaptive capacity,
 and is thus likely to also be broadly representative of a country's future climate
 change adaptation capabilities.

The properties in the Cityhold Office Partnership are all rated as having low vulnerability to climate change. In addition to helping Nuveen Real Estate's to understand its real-estate portfolio's current exposure and resilience against climate change, this index has also proved to be a valuable tool at the point of asset acquisition, providing an insight into the level of risk over the next 30 years.

Nuveen Real Estate asseses that, transition risks and opportunities will, in the short to medium term, have a more significant impact on real-estate markets than physical climate risks on real estate in Europe. The reason for this is current demand in the market for sustainable and energy-smart real estate. This applies to both investors and tenants. Legal changes regarding energy efficiency and requirements on climate-neutral real estate are being introduced both at EU level and in individual countries. Rapid technological development for lighting, sensors, monitoring of energy, ventilation, heating and cooling, which enables cost and resource-efficient operation of real estate. The development of cost-effective renewable energy further contributes to enabling climate neutrality. Nuveen Real Estate set a target to reduce the energy intensity of its global real-estate portfolio by 30 per cent by 2030, compared with 2015. Cityhold's properties have reduced their energy intensity in line with this goal. Nuveen is investigating what investments would be required to get the properties climate-neutral.

Vasakronan

Vasakronan is Sweden's largest real-estate company with a portfolio consisting of 174 office and retail properties in Stockholm, Gothenburg, Malmö, Lund and Uppsala. Vasakronan is owned by AP1, AP2, AP3 and AP4.

Vasakronan works systematically and purposefully to reduce negative environmental and climate impact during the entire life cycle of the properties, from planning, design and construction stages via management, rebuilding and demolition.

Vasakronan has also carried out an

analysis of climate risks and reached approximately the same conclusion as Nuveen, i.e. that there are no major risks in the medium term with regard to a change in climate and raised sea levels. However, there is a vulnerability linked to extreme weather, for which reason the company has identified so-called low cost/no cost measures to be taken in connection with new production, major rebuilding projects and regular maintenance operations. Examples of such measures are that roof constructions are being reviewed to cope with higher rainfall, snow loads and wind effects. Preparing for temporary floods is another measure taken in buildings that are in locations with a higher risk of flash floods.

With regard to transition risks and opportunities, Vasakronan has already come a long way. Since 2009, the company has halved its energy use and has for ten years been buying climate neutral and/or renewable energy for all properties. A large part of the real-estate portfolio has also been environmentally certified, 85 per cent. It is not just the management of properties that must be made climate neutral; building work must also become climate-neutral. Building works today have a high climate load, where the use of concrete causes high emissions due to cement production. Emissions also occur as a consequence of transport to and from the workplace and from the working machines used. Vasakronan is therefore working to reduce its material use in construction projects and to change to materials with a low climate impact. In Uppsala, Vasakronan is building an 11 000 square metre office building in wood, a material that binds carbon dioxide instead of generating emissions.

Risk management

In the section on risk management, the organisation shall describe how they identify, assess and manage climate-related risks and opportunities and how these are integrated into the overall risk management of the organisation. Asset owners shall also describe dialogue activities with portfolio companies and how the total portfolio is positioned towards a transition to a low carbon economy.

The organisation's process for identifying and assessing climate-related risks

Since 2013 AP2 has had a process for identifying and assessing financial climate risks. It began with an analysis of how these risks are priced by the market. As the Fund considered that stronger policy measures were likely to be expected and that the price of renewable energy would be more on a par with fossil energy, the Fund considered that fossil energy companies and power companies were sectors with the highest climate-related financial risk. For coal companies, the Fund made an analysis at sector level, for other companies an analysis has been carried out at company level. If the market has priced climate risk correctly, the financial climate risk is small even if the company's climate risk is high. In the analyses that AP2 makes to identify which companies are to be divested, an analysis of the value of the share is made in relation to the company's climate risk.

In 2019 climate issues have been in focus in the financial sector, due, among other things, to the work within EU Sustainable Finance. AP2 is not directly affected, but this work will hopefully simplify and improve the possibilities for asset owners and asset managers to identify and assess climate-related risks. The Fund's executive management team and the executive asset management team are following developments.

TCFD divides climate risks into: 1) transition risks which in turn are divided into regulatory, technological, market and reputation risks and 2) physical climate risks are divided into acute and systematic. In the work on TCFD during the autumn of 2017, AP2's starting point was the TCFD's categorisation to

identify climate risks deemed relevant for assessing risks in the AP2 's listed equity portfolio. Table 1, on page 61-62, shows the risks that TCFD gives as examples and the potential financial impact they may have.

As an asset owner, what is described as a transition risk can also be an opportunity. For example, AP2 believes that it would be positive to have a market carbon pricing that reflects external costs. This would give the market signals which means that it could price the assets more correctly. As the Fund has already identified climate as a financial risk and, to a certain extent, reduced this risk, such a change is expected to be positive financially for the Fund. Tables 1 and 2 show the climate risks and opportunities that the TCFD addresses in its recommendations, as well as the potential financial impact the TCFD describes and the potential financial impact that these may have for AP2.

Dialogues with companies and decision-makers

In addition to investing in sustainable strategies, AP2 has dialogues with companies and decision-makers to influence the transition to a low-fossil society. AP2 has in recent years, together with other investors, presented a number of shareholder proposals on climate to several fossil energy companies (BP, Shell, Statoil) and the mining sector (Glencore, Rio Tinto, Anglo American). In addition to the shareholder proposals, the Fund also uses its voting rights to support other investors' shareholder proposals on climate. Over the past year, the Fund has noted that many company boards undertake to improve their climate reporting both

in terms of emissions and in evaluation of the companies' projects/activities regarding climate scenarios.

AP2 is an active member of PRI (Principles for Responsible Investment) and IIGCC (Institutional Investor Group on Climate Change), both of which do a lot of work on corporate dialogues. In December 2017, a major international company dialogue initiative was launched, Climate Action 100+, which is a five-year global initiative with the 100 (+50) companies that have the largest carbon dioxide emissions (Scope 1-3). AP2 is responsible, together with Öhmans, for one of these company dialogues. The goal of these dialogues is that the companies shall reduce their emissions, improve their climate reporting (in accordance with TCFD) and ensure that the company boards have a clear responsibility and supervision with regard to climate. AP2's company dialogues are carried out at different levels depending on what the purpose is. Major initiatives are initiated with a letter to the chair and CEO, then the dialogue continues with the persons who directly work with the issues that the dialogue refers to.

Exercising voting rights at general meetings is another way of communicating with companies. During 2019, the Fund voted at 865 (816) foreign general meetings in 842 (800) companies in 22 (30) countries. Of a total of 309 (311) shareholder proposals, 57 (64) proposals, 18 (20) per cent, referred to sustainability issues. In the field of sustainability, 27 (20) were related to climate (climate change, the two degree scenario, greenhouse gas emissions or renewable energy).

Political measures are required to limit the global temperature increase in line with the

Table 1A Examples of potential transition risks (adapted from the TCFD's Table 1A)

Transition risks	Potential financial impacts on companies	Potential financial impact on AP2
Policy and Legal		
 Increased pricing of GHG emissions Enhanced emissions-reporting obligations Mandates on and regulation of existing products and services Exposure to litigation 	 Increased operating costs (e.g., higher compliance costs, increased insurance premiums) Write-offs, asset impairment, and early retirement of existing assets due to policy changes Increased costs and/or reduced demand for products and services resulting from fines and judgments 	Higher price for carbon, climate regulations and reporting is generally speaking financially positive for AP2 as a universal owner. If the cost of carbon is internalised, this results in a more effective market. The challenge for AP2 lies in identifying which classes of asset/sectors/companies are winners and losers, respectively, as the regulatory requirements increase.
Technology		
 Substitution of existing products and services with lower emissions options Unsuccessful investment in new technologies Costs to transition to lower emissions technology 	 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 fuel reserves and the companies that have assets that are dependent on fossil energy for their products/services. The challenge for AP2 lies in assessing which technologies will succeed and at what rate and how new technologies will affect classes of asset, sectors, companies and securities.
Market		
 Changing customer behavior Uncertainty in market signals Increased cost of raw materials 	 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) 	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. The challenge is the same as for technological risks.
Reputation		
 Shifts in consumer preferences Stigmatization of sector Increased stakeholder concern or negative stakeholder feedback 	 Reduced revenue from decreased: 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 share-holder 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. For AP2, it is important to manage the pension assets in a way that maintains or reinforces the public's confidence in the pension system.

Paris Agreement. The IIGCC also holds and coordinates dialogues with decision-makers by presenting the investors' requirements on policy measures, that enable increased investments in climate-smart solutions. Among other things, the IIGCC,

together with a number of other investor organisations, has published a document, Global Investor Statement on Climate Change, which describes how investors can contribute and what expectations investors have on governments. More than

630 investors have signed this document. AP2 has, along with about 200 global investors, urged the governments of the G7 and G20 countries to live up to the Paris Agreement, push for rapid implementation and express their continued support for this work.

Within the EU in 2019, there have been a number of reports and directives enabling a transition to the goal of reaching climate neutrality by 2050. To further support the EU in setting a net zero target by 2050, the IIGCC sent an open letter to the EU's leaders in December 2019. AP2's CEO was one of 46 investors who signed. The letter seems to have had a positive effect as the EU Commission's Chair referred to the letter in an interview on German TV.

AP2's processes for managing climaterelated risks

The Fund's executive management, together with the Head of the strategy department and the Fund's senior sustainability analyst are responsible for the strategic sustainability work and implementation and follow-up. The on-going work is managed by the Fund's various departments. AP2 has an established process for financial climate risks for listed

equities. Sustainability aspects are integrated in the Fund's business plans.

AP2 works to make ESG information more accessible. The Fund has developed a tool (through Power Business Intelligence) to make climate data accessible for the internal portfolio managers of listed equity mandates. The climate data used in this tool consists of various indicators and metrics from MSCI ESG. In 2019, focus has been on producing metrics for determining whether or not changes in the carbon footprint are due to changes in the portfolios or to changes in the companies emissions.

Integration of processes for identifying, assessing and managing climaterelated risks in the organisation's overall risk management

In the Fund's risk system there is now ESG data available to enable sustainability analyses of the Fund's portfolio. In 2019, a tool was developed that makes carbon footprint data available on a daily basis for the internal listed equity mandates.

The Fund is developing an indicator for the Fund's sustianbility performance against the base portfolio that constitutes the basis of the Fund's evaluation of the chosen strategic portfolio.

Future work

One of the priority objectives in 2020 for the Fund's Risk Management team is to develop an overall Fund analysis on financial sustainability risks. AP2 plans to work on scenario analysis to identify climate risks and opportunities and continue to seek relevant ways of identifying, assessing and managing climate-related risks in the organisation's overall risk management. AP2's dialogues with companies continue in 2020, including through the Climate Action 100+ initiative.

62

Table 2 Examples of potential climate-related opportunities (adapted from the TCFD's Table A2)

Climate-related opportunities	Potential financial impacts on companies	Potential financial impacts on AP2
Resource efficiency		
 Use of more efficient modes of transpor Use of more efficient production and distribution processes Use of recycling Move to more efficient buildings Reduced water usage and consumption 	 efficiency gains and cost reductions) Increased production capacity, resulting in increased revenues Increased value of fixed assets (e.g., highly 	It is beneficial to AP2 for companies to work with climate-related opportunities in a way that increases shareholde value. By integrating ESG factors into investment analyses and processes, the Fund is able to identify companies that are resource efficient.
Energy source		
 Use of lower-emission sources of energ Use of supportive policy incentives Use of new technologies Participation in carbon market Shift toward decentralized energy generation 	 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 favor lower-emissions producers) Reputational benefits resulting in increased demand for goods/services 	
Products and services		
 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 	to adaptation needs (e.g., insurance risk	
Markets		
 Access to new markets Use of public-sector incentives Access to new assets and locations needing insurance coverage 	 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		
 Participation in renewable energy pro- grams and adoption of energyefficiency 	Increased market valuation through resilience planning (e.g., infrastructure, land,	

- grams and adoption of energyefficiency measures
- Resource substitutes/diversification
- lience 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

Metrics and targets

In the metrics and targets section, the organisation shall report on metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is significant.

Metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process

Tables 1 and 2 describe the risks and opportunities provided by the TCFD in its recommendations, the financial impact they may have and the possible financial impact for AP2. In 2017, the Fund identified a number of metrics and indicators for climaterelated risks and opportunities for the listed equity portfolio, divided into transition risks, physical climate risks and climate opportunities according to the metrics and indicators that the Fund has access to via MSCI ESG Manager. In 2019, an evaluation of the overall indicators that were previously identified was performed. The conclusion is that it is difficult using indicators to understand changes in a portfolio.

In 2019, AP2 has developed a tool that makes energy and carbon data for listed equities more available for the Fund's analysts and portfolio managers.

AP2's ambition is to develop the portfolio in line with the Paris Agreement. The UN climate panel IPCC's 1.5°C scenario with limited overshoot is the Fund's point of departure for assessing the portfolio's development. According to the P1-scenario, emissions must be reduced by 50 per cent in 2030 compared with 2010 and by 82 per cent in 2050. See page 56.

Based on this, it is AP2's ambition to reduce the portfolio's carbon footprint by influencing companies to reduce their carbon emissions in line with the Paris Agreement. In order to monitor this development, AP2 will from 2019, report

the development of its equity portfolios' direct emissions (Scope 1) split into the change in the portfolio's holdings and companies' emissions.

AP2's annual carbon footprint for portfolio holdings will be calculated on 31 December using the latest available carbon data for the companies' direct emissions (Scope 1) and indirect emissions from energy (Scope 2). AP2 calculates and reports its listed equity portfolios on the basis of metrics 1, 2 and 3. Portfolio weighting is used for metric 4.

Exposure to carbon risk is reported using the four following indicators:

1. Total carbon emissions

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

2. Relative carbon emissions

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

3. Carbon intensity

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

4. Portfolio-weighted carbon intensity (TCFD)

The metric adds together each portfolio company's carbon intensity, i.e. a company's individual carbon emissions in relation to turnover, weighted according to each individual company's share in the portfolio. In 2019, the AP Funds also agreed to report the change of the equity portfolios' carbon emissions. There are two reasons for the change in the carbon footprint of the AP Funds' portfolios. The change can be caused by alterations in the portfolio holdings, and by the changes in the companies' carbon emissions.

It has not previously been possible to discern the causes of change in the carbon footprint. The AP Funds have now developed their reporting systems and will in 2019 for the first time report the changes in "Total carbon emissions" and "Portfolio-weighted carbon intensity" over time. The calculations are made using the formulae that are listed at AP2's website, as well as more information about carbon footprints and formulae for other metrics.

Disclosure regarding greenhouse gas (GHG) emissions, Scope 1, Scope 2, and, if appropriate, Scope 3 and the related risks

Listed equities

Since 2014, AP2 has annually reported the carbon footprint of the listed equity portfolio. The Swedish AP Funds all agreed in 2015 to use the same methodology and metrics and then selected three metrics for carbon footprints that are all based on the Fund's ownership share. To be in line with the TCFD's recommendations, the AP Funds also included carbon intensity as a weighted average in their reporting for 2017, since it is the measurement that the TCFD recommends. The carbon footprint

Metrics	2019	2018	2017
1. Total carbon emissions (mn tCO ₂ e)	1.6	1.7	2.6
Sweden	0.1	0.1	0.2
Developed markets	0.6	0.7	1.4
Emerging markets	0.9	0.9	1.1
Change in the portfolio's total carbon emissions from the preceding year (%)	-3		
– of which the change related to changes in the portfolio holdings (% units)	-10		
– of which the change related to changes in the companies' emissions (% units)	7		
2. Relative carbon emissions (tCO₂e/SEK m)	11	13	18
Sweden	4	4	5
Developed markets	9	11	19
Emerging markets	19	22	32
3. Carbon intensity (tCO₂e/SEK m)	14	15	28
Sweden	7	7	10
Developed markets	11	12	31
Emerging markets	20	24	37
4. Weighted average carbon intensity (TCFD) (tCO₂e/SEK m)	14	16	24
Sweden	5	5	6
Developed markets	15	16	27
Emerging markets	21	23	23
Change in the portfolio's carbon intensity (TCFD) from the preceding year (%)	-7		
– of which the change related to changes in the portfolio holdings (% units)	-8		
– of which the change related to changes in the companies' emissions (% units)	1		
Market value of the Fund's portfolio covered by CO ₂ e data (SEK billion)	144.1	130.5	142.4
Proportion of share capital for which data is available (%)	96	97	92

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

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

 CO_2 e (carbon dioxide equivalent) is a unit of measurement that makes it possible to compare the climate impact of different greenhouse gases. Source: MSCI ESG Research/Andra AP-fonden.

in AP2's equity portfolio continues to decrease, but the decrease is smaller than last year. The reason is the implementation in 2018 of new multifactor indices for global equities, which take into account the companies' carbon dioxide intensity, among other things. The relative carbon emissions in 2019 decreased by 16 (28) per cent. The carbon intensity decreased in 2019 by 7 (46) per cent and the portfolio-weighted carbon intensity (TCFD)

decreased by 12 (33) per cent. The combined carbon emissions decreased by 3 per cent between 2018 and 2019. Changes in holdings contributed a decrease of 10 percentage points while companies contributed an increase of 7 percentage points. The portfolio-weighted carbon intensity decreased by 7 per cent, with changes in holdings contributing a decrease of 8 percentage points and companies an increase of 1 percentage point.

In total, all the four metrics for the listed equity portfolio in 2019 show that AP2 continues to reduce its carbon footprint and its exposure to carbon-intensive companies. The new metrics that show the change in carbon emissions make it clear that the reduction comes from changes in the Fund's holdings, not from actual decreases in emissions from the companies' activities.

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

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

^{4.} Weighted average carbon intensity (TCFD). The metric adds together each portfolio company's individual carbon intensity, i.e. a company's carbon emissions in relation to turnover, weighted according to each individual company's share of the portfolio.

The figure on page 58 shows the socalled transition change in overall carbon emissions (Scope 1) which shows the changes in holdings and the company's emissions divided into (Sweden, Developed markets and Emerging markets). It is mainly the Fund's changes in holdings that have precipitated a lower carbon footprint.

Other asset classes

AP2's ambition is to be able to eventually present a carbon footprint that includes all asset classes. For 2019, the Fund has calculated the carbon footprint from listed equities, timberland and farmland and traditional real estate. This means that 56 (51) per cent of AP2's fund capital is measured according to a carbon indicator.

AP2's non-listed real-estate companies have a carbon intensity of 0.6 (0.7) tCO₂e/SEK million based on market value. The reduction in carbon intensity is primarily due to the increase in market valuation. Carbon intensity per square metre remains unchanged at 0.04 tonnes/m². The energy intensity is also the same, 164 kWh/m².

The Fund conducts dialogue with timberland managers on the calculation of carbon storage and carbon emissions.
Two of the Fund's managers, New Forests and Nuveen, have calculated the total carbon storage stored in their forests. AP2's share of the carbon storage is 10.5 (10.4) million tCO₂e.

During the year AP2's farmland managers have calculated the investments' carbon footprint. Performing this type of calculation is complex and there is an academic debate concerning different methods. Following discussions with leading industry experts and academic institutions, a method has been developed. It is based on direct in and outflows (e.g. fuel, fertiliser chemicals and harvest) at farm level and includes 70 different production systems with combinations of region, type of crop and production method. Emissions are calculated for each production system and summed up to a total figure for the portfolio.

The farmland's carbon storage is also estimated but only for the Brazilian farmland and the large areas that have been set aside for conservation purposes as Legal Reserves (LR) and Permanent Protection Areas (PPA). AP2's share of carbon emissions amounts to 71 000 tonnes CO₂e a year and AP2's share of this carbon storage is 6.25 million tCO₃e.

In 2016, the Fund performed a sectorial analysis of the private equity investments' carbon footprint using carbon dioxide data from listed companies in different sectors and geographical areas, since data for non-listed companies is very limited. The analysis showed that countries and sectors responsible for heavy carbon emissions are not overrepresented. The carbon footprint is in line with MSCI World.

AP2's goal to manage climate-related risks and opportunities and performance against targets

AP2's vision is "World-class management". To achieve this vision, the Fund is working actively to integrate sustainability into analysis and investment processes. The Fund's ambition is to have a portfolio that is in line with the Paris Agreement. The TCFD's recommendations are seen as a tool in the Fund's work to operationalise its climate ambition.

AP2 works continuously to improve risk information at mandate, asset class and fund level. In order to follow up the financial impact of divestment decisions, the AP2's department for performance analysis has developed a methodology for comparing the return for MSCI World Developed Markets and MSCI Emerging Markets, excluding and including the divested companies. The financial contributions of the divestments from autumn 2014 to 31 December 2019 after excluding these companies from the index, have been positive at 2.65 per cent. At year-end, the divestments represented 1.67 per cent of MSCI World DM. See also page 29.



Annex 1

Andra AP-fonden has in its implementation of TCFD's recommendations used the suggestions presented both for all sectors and the specific guidance to asset owners.¹

Governance

Disclose the organisation's governance around climate-related risks and opportunities.

a) Describe the board's oversight of climate-related risks and opportunities.

- Processes and frequency by which the board and/or board committees (e.g., audit, risk, or other committees) are informed about climate-related issues.
- Whether the board and/or board committees consider climaterelated issues when reviewing and guiding strategy, major plans of action, risk management policies, annual budgets, and business plans as well as setting the organization's performance objectives, monitoring implementation and performance, and overseeing major capital expenditures, acquisitions, and divestitures
- How the board monitors and oversees progress against goals and targets for addressing climate-related issues.

b) Describe management's role in assessing and managing limate-related risks and opportunities.

- Whether the organization has assigned climate-related responsibilities to management-level positions or committees; and, if so, whether such management positions or committees report to the board or a committee of the board and whether those responsibilities include assessing and/or managing climate-related issues.
- 2. Description of the associated organizational structure(s),
- Processes by which management is informed about climaterelated issues.
- 4. How management (through specific positions and/or management committees) monitors climate-related issues.

Strategy

Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material. For AP2 as an asset owner it means that risks and opportunities shall be identified and described based on the Fund's investment strategy

a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.

Organizations should provide the following information:

 A description of what they consider to be the relevant short-, medium-, and long-term horizons, taking into consideration the useful life of the organization's assets or infrastructure and the fact that climate-related issues often manifest themselves over the medium and longer terms.

- ii) Specific climate-related issues for each time horizon (short, medium, and long term) that could have a material financial impact on the organization and distinguish whether the climate-related risks are transition or physical risks.
- iii) A description of the process(es) used to determine which risks and opportunities could have a material financial impact on the organization.
- Organizations should consider providing a description of their risks and opportunities by sector and/or geography, as appropriate. In describing climate-related issues, organizations should refer to Tables A1 and A2 (Example on climate-related risks and opportunities and their potential financial impact).

b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.

 Asset owners should describe how climate-related risks and opportunities are factored into relevant investment strategies. This could be described from the perspective of the total fund or investment strategy or individual investment strategies for various asset classes.

c) Describe the resilience of the organization's strategy, taking into consideration different climate related scenarios, including a 2°C or lower scenario.

- Organizations should describe how resilient their strategies are
 to climate-related risks and opportunities, taking into consideration a transition to a lower-carbon economy consistent with a
 2°C or lower scenario and, where relevant to the organization,
 scenarios consistent with increased physical climate-related risks.
- 2. Organizations should consider discussing:
 - i) Where they believe their strategies may be affected by climate-related risks and opportunities.
 - ii) How their strategies might change to address such potential risks and opportunities.
 - iii) The climate-related scenarios and associated time horizon(s) considered.
- Asset owners that perform scenario analysis should consider providing a discussion of how climate-related scenarios are used, such as to inform investments in specific assets.

Risk Management

Disclose how the organization identifies, assesses, and manages climaterelated risks. Asset owners should also describe dialogues with portfolio companies and how the total portfolio is positioned towards a transition towards a low-carbon economy.

a) Describe the organization's processes for identifying and assessing climate related risks.

An important aspect of this description is how organizations determine the relative significance of climate-related risks in relation to other risks.

- Organizations should describe whether they consider existing and emerging regulatory requirements related to climate change (e.g., limits on emissions) as well as other relevant factors considered.
- Organizations should also consider disclosing the following:
 i) Processes for assessing the potential size and scope of identified climate-related risks.
 - ii) Definitions of risk terminology used or references to existing risk classification frameworks used.
- Asset owners should describe, where appropriate, engagement activity with invested companies to encourage better disclosure and practices related to climate-related risks to improve data availability and asset owners' ability to assess climate-related risks.

b) Describe the organization's processes for managing climate related risks.

- Organizations should describe their processes for managing climate-related risks, including how they make decisions to mitigate, transfer, accept, or control those risks.
- In addition, organizations should describe their processes for prioritizing climate-related risks, including how materiality determinations are made within their organizations.
- In describing their processes for managing climate-related risks, organizations should address the risks included in Tables A1 and A2, as appropriate.
- 4. Asset owners should describe how they consider the positioning of their total portfolio with respect to the transition to a lower-carbon energy supply, production, and use. This could include explaining how asset owners actively manage their portfolios' positioning in relation to this transition.

c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

Organizations should describe how their processes for identifying, assessing, and managing climate-related risks are integrated into their overall risk management.

Metrics and targets

Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.

a) Disclose the metrics used by the organization to assess climaterelated risks and opportunities in line with its strategy and risk management process.

- Organizations should provide the key metrics used to measure and manage climate related risks and opportunities, as described in Tables A1 and A2.
- 2. Organizations should consider including metrics on climate-

- related risks associated with water, energy, land use, and waste management where relevant and applicable.
- Where climate-related issues are material, organizations should consider describing whether and how related performance metrics are incorporated into remuneration policies.
- 4. Where relevant, organizations should provide their internal carbon prices as well as climate-related opportunity metrics such as revenue from products and services designed for a lower-carbon economy. Metrics should be provided for historical periods to allow for trend analysis. In addition, where not apparent, organizations should provide a description of the methodologies used to calculate or estimate climate-related metrics.
- 5. Asset owners should describe metrics used to assess climate-related risks and opportunities in each fund or investment strategy. Where relevant, asset owners should also describe how these metrics have changed over time. Where appropriate, asset owners should provide metrics considered in investment decisions and monitoring.

b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.

- Organizations should provide their Scope 1 and Scope 2 GHG emissions and, if appropriate, Scope 3 GHG emissions and the related risks. GHG emissions should be calculated in line with the GHG Protocol methodology to allow for aggregation and comparability across organizations and jurisdictions. As appropriate, organizations should consider providing related, generally accepted industry-specific GHG efficiency ratios.
- GHG emissions and associated metrics should be provided for historical periods to allow for trend analysis. In addition, where not apparent, organizations should provide a description of the methodologies used to calculate or estimate the metrics.
- Asset owners should provide the weighted average carbon intensity, where data are available or can be reasonably estimated, for each fund or investment strategy. In addition, asset owners should provide other metrics they believe are useful for decision making along with a description of the methodology used.

c) Describe the targets used by the organization to manage climaterelated risks and opportunities and performance against targets.

- Organizations should describe their key climate-related targets such as those related to GHG emissions, water usage, energy usage, etc., in line with anticipated regulatory requirements or market constraints or other goals. Other goals may include efficiency or financial goals, financial loss tolerances, avoided GHG emissions through the entire product life cycle, or net revenue goals for products and services designed for a lower-carbon economy.
- In describing their targets, organizations should consider including the following:
 - i) Whether the target is absolute or intensity based.
 - ii) Time frames over which the target applies, base year from which progress is measured.
 - iii) Key performance indicators used to assess progress against targets.

Where not apparent, organizations should provide a description of the methodologies used to calculate targets and measures.



"The **sustainability work** implemented by **AP2** derives from the nature of its **mission** and involves acting over the **long term**, to **protect** and **add value to its invested assets** – based on an economic, environmental and social perspective."



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