

The Swedish National Pension (AP) Funds' common indicators for reporting the carbon footprint of investment portfolios

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Climate change is central to the AP Funds as long-term asset owners

The AP Funds are long-term owners and managers of Swedish pension assets. The Funds have a responsibility to safeguard the value of national pensions for current and future pensioners by managing their pension assets in a long term responsible and sustainable manner.

Climate change and its consequential effects are one of the biggest systematic risks to the value of long-term assets. The climate change currently taking place is assessed to be mainly due to emissions from fossil fuels significantly increasing the concentration of greenhouse gases in the earth's atmosphere. This results in the rise in average land and sea temperatures, which has far-reaching consequences for the conditions for plants, wildlife and people. Limiting climate change is therefore crucial for a stable future economic growth and thereby for the AP Funds' ability to perform their mission over the long-term. In order to attain the Paris Agreement targets, absolute emissions of greenhouse gases need to drop sharply and reach a net level of zero by 2050.

Transparency and the reporting of climate risks both by companies and investors is an

important part of the AP Funds' sustainability approach. Increased understanding of climate risks is important in order to manage these risks in the AP Funds' investments, and in joining other investors in contributing to a solution to the global climate challenge. Through transparent reporting using common indicators on the carbon footprint of fund assets,¹ the AP Funds aim to highlight certain aspects of climate risk, including the asset portfolio sensitivity to a market price of CO₂. In the AP Funds' view, common indicators facilitate understanding and comparability².

Common indicators for the carbon footprint of investment portfolios

There is a rapid development in how companies and investors measure and report on climate risks, which the AP Funds welcome. Already in 2015 the AP Funds introduced three common indicators to show their investments' carbon footprint. The global reporting recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) was introduced in 2017. The AP Funds support and report in line with the TCFD recommendations and have since 2017 supplemented their carbon reporting with

¹The term carbon footprint is used as an umbrella term to cover all the below-listed methods for measuring and reporting the carbon emissions of investment portfolios.

² The AP Funds have different investment strategies and allocate capital in different ways, which means the carbon footprints of the funds' portfolios vary in size.

TCFD's indicator for carbon footprint calculations.

The AP Funds' annual carbon footprints are calculated based on portfolio holdings per December 31 using the latest available carbon data for direct emissions (Scope 1) and indirect emissions from energy (Scope 2). The First, Second, Third and Fourth AP Funds calculate and report the carbon footprint of their listed equity portfolio shareholdings. The Sixth AP Fund reports these metrics for its non-listed holdings. The AP Funds also report the share of capital covered by the carbon footprint, and the extent to which it is based on reported or estimated emission data.

The carbon footprint 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 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' revenue.
- 4. Weighted average carbon intensity (TCFD)**
The metric adds together each individual portfolio company's carbon intensity, i.e. a company's carbon emissions in relation to revenue, weighted according to each individual holding's market value share in the portfolio.

Reporting changes in the carbon emissions of investment portfolios

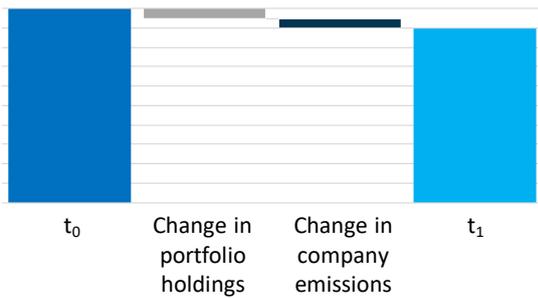
There are two reasons for a change in the carbon footprint of the AP Funds' portfolios. The change can be caused both by changes in

portfolio holdings, and by changes in companies' carbon emissions.

By making adjustments to the portfolio, by selling companies with high carbon emissions and buying companies with low emissions, for example, the AP Funds can reduce the total carbon footprint of their portfolios. Such changes would reduce a portfolio's exposure to fluctuations in the price of carbon, for example, reducing the portfolio's climate-related risk. But at the same time there is no change in the total emissions of atmospheric carbon emissions, and the climate risk for the world has not been affected by the fund's transactions.

Not until companies reduce their emissions will the amount of carbon released to the atmosphere decrease and eventually halt, thereby enabling a limitation of climate change disruptions. As active owners the AP funds use various means to influence their portfolio companies, to adjust and reduce their carbon emissions. Through dialogue with companies, often in collaboration with other global investors, the AP Funds request companies to report on climate risks, and on how the risks are managed, in accordance with TCFD. The AP Funds also address climate related risks and opportunities through active ownership (e.g. at the annual general meeting) and through investment strategies developed to take climate change into account.

It has not previously been possible to discern the causes of change in the carbon footprint. The AP Funds have now developed their disclosure and will as of 2019 also report the changes in "Total carbon emissions" and "Portfolio-weighted carbon intensity" over time, see illustration below. Calculations are based on the formulas provided in Appendix 1.



Limitations of portfolio carbon footprints

The AP Funds measure and report on their investments' carbon footprint as part of their broader commitment to climate change issues, including using specific investment strategies and active ownership. By requesting information on carbon emissions from portfolio companies, the pressure on companies to measure, report and reduce their emissions increases. Portfolio carbon footprints are also requested by the funds' stakeholders and recommended by the TCFD. Carbon footprints can also be used for assessing certain climate-related financial risks such as a price of carbon.

The indicators have limitations to their usability for measuring the investments' total climate risk and climate impact. As an example, for Scope 1 and 2, reported emission data from companies is not complete and needs to be estimated in varying degrees, only

certain asset classes are covered, savings in emissions through products and services are not included and information about fossil fuel reserves are not included.

In the AP Funds' view, the carbon footprint is one of several ways to continuously assess investments from a climate perspective. The AP Funds will keep promoting the development of carbon and climate disclosures.

About the AP Funds

The First, Second, Third, Fourth and Sixth AP Funds ("AP Funds") manage pension assets in the national income pension system. The First, Second, Third, and Fourth AP Funds have the same mission and invest in e.g. listed equities, fixed income, property and other alternative investments in Sweden and globally. Capital is transferred to the AP Funds if there is a surplus in the national income pension system and transferred from them when there is a deficit in pension payments. The Sixth AP Fund invests only in non-listed companies but is a closed fund, which means that no new capital enters or leaves the fund. For more information, please visit www.apfonderna.se.

Appendix 1: Formulas for carbon footprint indicators

Terms

MV_i Market value of portfolio holding in company i (MSEK)

PV Portfolio value of AP Funds' total holdings (MSEK)

$$PV = \sum_{i=1}^n MV_i$$

PA_i Portfolio share in AP Funds' portfolio for company i (%)

$$PA_i = \frac{MV_i}{PV}$$

BV_i Company value (market value of all issued equities) for company i (MSEK)

t_0 Base year for evaluation over limited period

t_1 End year for evaluation over limited period

$Turnover_i$ Revenue of company i (MSEK)

$Emissions_i$ Total Scope 1 and Scope 2 emissions by company i (tCO₂e). The latest available data is used, which is usually one year old in relation to periods t_0 and t_1

1. Total carbon emissions (tCO₂e)

Total of owned share of individual portfolio companies' carbon emissions. Measured in tonnes of CO₂ equivalents (tCO₂e). The common international term is "Total Carbon Emissions".

This metric is used for measuring the total emissions of carbon equivalents that a portfolio's underlying holdings give rise to. On the other hand, this metric is not suitable for comparing portfolios of varying size.

$$\sum_{i=1}^n \frac{MV_i}{BV_i} * Emissions_i$$

Change in portfolio's total carbon emissions over time due to changes in the portfolio's holdings:

$$\sum_{i=1}^n \left(\frac{MV_{i,t_1}}{BV_{i,t_1}} - \frac{MV_{i,t_0}}{BV_{i,t_0}} \right) * Emissions_{i,t_0}$$

Change in portfolio's total carbon emissions over time due to changes in the companies' emissions:

$$\sum_{i=1}^n \frac{MV_{i,t_1}}{BV_{i,t_1}} * (Emissions_{i,t_1} - Emissions_{i,t_0})$$

2. Relative carbon emissions (tCO₂e/MSEK)

Total of owned share of individual portfolio companies' carbon emissions in relation to the portfolio's market value. Measured in tonnes of CO₂ equivalents per MSEK (tCO₂e/MSEK). The common international term is "Carbon Footprint".

The metric enables comparisons of carbon emissions between portfolios of varying size. This metric, however, is sensitive to stock market trends as carbon emissions are measured in relation to the portfolio's market value.

$$\frac{\sum_{i=1}^n \frac{MV_i}{BV_i} * Emissions_i}{PV}$$

3. Carbon intensity (tCO₂e/MSEK)

Total of owned share of individual portfolio companies' carbon emissions in relation to the total of the owned share of the portfolio companies' revenue, i.e. the Harmonic Mean. Measured in tonnes of CO₂ equivalents per MSEK (tCO₂e/MSEK). The common international term is "Carbon Intensity".

This metric enables comparisons of carbon emissions in relation to revenue between portfolios regardless of size. As emissions are estimated in relation to the companies' revenue, this metric is relevant for assessing how effective the portfolio companies are at aggregate level. The metric is relatively stable and unaffected by stock market trends.

$$\frac{\sum_{i=1}^n \frac{MV_i}{BV_i} * Emissions_i}{\sum_{i=1}^n \frac{MV_i}{BV_i} * Turnover_i}$$

4. Weighted average carbon intensity (TCFD)(tCO₂e/MSEK)

The metric adds together the individual portfolio companies' carbon intensity, i.e. a company's carbon emissions in relation to their revenue, weighted according to each company's share of the portfolio, the Arithmetic Mean. Measured in tonnes of CO₂ equivalents per MSEK (tCO₂e/MSEK). The common international term is "Weighted Average Carbon Intensity".

This metric is suitable to use in conjunction with portfolio structuring and to understand the portfolio's risk exposure. It is, however, sensitive to market trends for individual portfolio companies and sectors.

$$\sum_{i=1}^n PA_i * \frac{Emissions_i}{Turnover_i}$$

Change in portfolio-weighted carbon intensity over time due to changes in portfolio holdings:

$$\sum_{i=1}^n (PA_{i,t_1} - PA_{i,t_0}) * \frac{Emissions_{i,t_0}}{Turnover_{i,t_0}}$$

Change in portfolio-weighted carbon intensity over time due to change in company's emissions:

$$\sum_{i=1}^n PA_{i,t_1} * \left(\frac{Emissions_{i,t_1}}{Turnover_{i,t_1}} - \frac{Emissions_{i,t_0}}{Turnover_{i,t_0}} \right)$$