

# PUBLICA's climate-efficient equity index



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# 1 Climate change harbours multiple risks, and PUBLICA aims to reduce them

PUBLICA invests exclusively in the interest of its active members and pension recipients. Using appropriate risk limitation strategies, we aim to generate a market return that ensures the fulfilment of our mandate over the long term. Environmental, social and governance considerations are factored into investment decisions, but without negatively affecting the expected risk-adjusted return.

Investing necessarily involves taking risks. PUBLICA avoids risks where they are not expected to be compensated by the market or where their scope and consequences cannot be assessed. Risks that are difficult to assess and can lead to tangible financial losses for PUBLICA can also be found in the area of ESG (environmental, social and governance) criteria. PUBLICA conducts a strategic risk analysis every year to identify them. Potential risks are prioritised, analysed in detail and, as far as possible, avoided or reduced by means of appropriate measures.

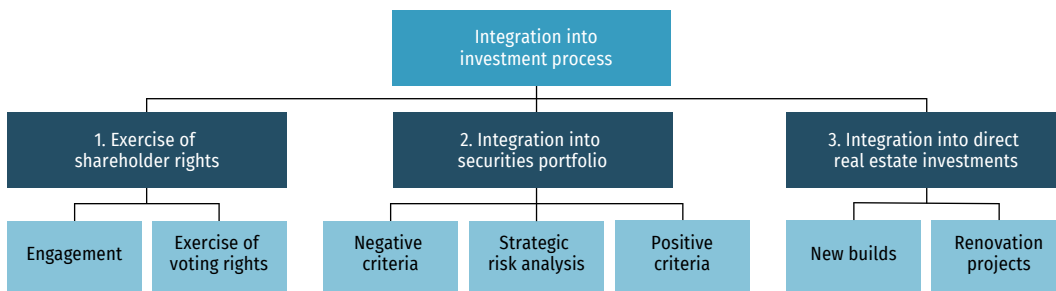


Diagram: The three pillars of PUBLICA's responsible investment policy, of which the strategic risk analysis is a part.

Climate risks were systematically investigated for the first time in 2015, at which point coal producers were excluded. In addition, the Swiss Association for Responsible Investments, SVVK-ASIR, launched a climate-specific dialogue process with CO<sub>2</sub>-intensive companies. PUBLICA is a founding member of SVVK-ASIR.

The impact of climate change on investments was comprehensively analysed once again in 2018. The results led to the creation of a climate-efficient equity index, which was approved by the Investment Committee in December 2019 and given the green light for implementation by the Board of Directors in January 2020.

The climate-efficient equity index has thus become a component of responsible investment, where we take account of ESG criteria.

## 2 A climate-efficient equity index creates opportunities and reduces risks

The climate-efficient equity index aims to optimise climate-related financial risks and opportunities. It gives PUBLICA an effective steering tool that enables it to underweight investments in firms with negative exposure, and overweight those in the companies that are best prepared for climate risks or have technologies and business models to reduce greenhouse gas emissions. As a result, climate-related opportunities and risks are factored in and a range of climate scenarios taken into account. The climate-efficient equity index is thus a comprehensive approach. A clearly defined index is also scalable, transparent and adaptable.

### Various climate scenarios are taken into account

The impact of climate change on the environment, companies, and investors' portfolios depends heavily on the trend in global warming. The following scenarios are conceivable:

Scenario	Description	Potential impact on portfolio
<b>No measures to limit climate change</b> ("business as usual")	Governments do not implement the goals agreed at the 2015 UN Climate Change Conference in Paris. Greenhouse gas emissions rise due to global economic growth.	Physical risks: substantial Transition risks: low Unrestrained climate change reaches tipping points, causing extensive damage to buildings and production facilities as a result of extreme weather and rising sea levels.
<b>Disorderly transition</b> (limited or late action)	Uncoordinated measures adopted at short notice take companies and investors by surprise.	Physical risks: high Transition risks: high Climate change reaches tipping points and causes financial losses. At the same time, companies and consumers face additional taxes and duties.
<b>Orderly transition</b> (swift and effective action)	Globally coordinated, broad-based measures give actors enough time to adapt their behaviour.	Physical risks: moderate Transition risks: moderate Globally coordinated and prudently implemented measures successfully limit climate change. Companies and investors are able to bear the costs of adjustment.

Table: Potential impact of various climate scenarios on the portfolio

The risks that companies are exposed to depend on how fast and effectively governments can implement their measures to reduce greenhouse gas emissions. If little action is taken, emissions will rise and the pace of climate change will accelerate. In the long term, this will lead to increased physical risks such as extreme heat, extreme cold and extreme weather. If effective action is taken quickly, the main issue will be transition risks, such as taxation of CO<sub>2</sub>e emissions.

## Greenhouse gas emissions in gigatonnes per year

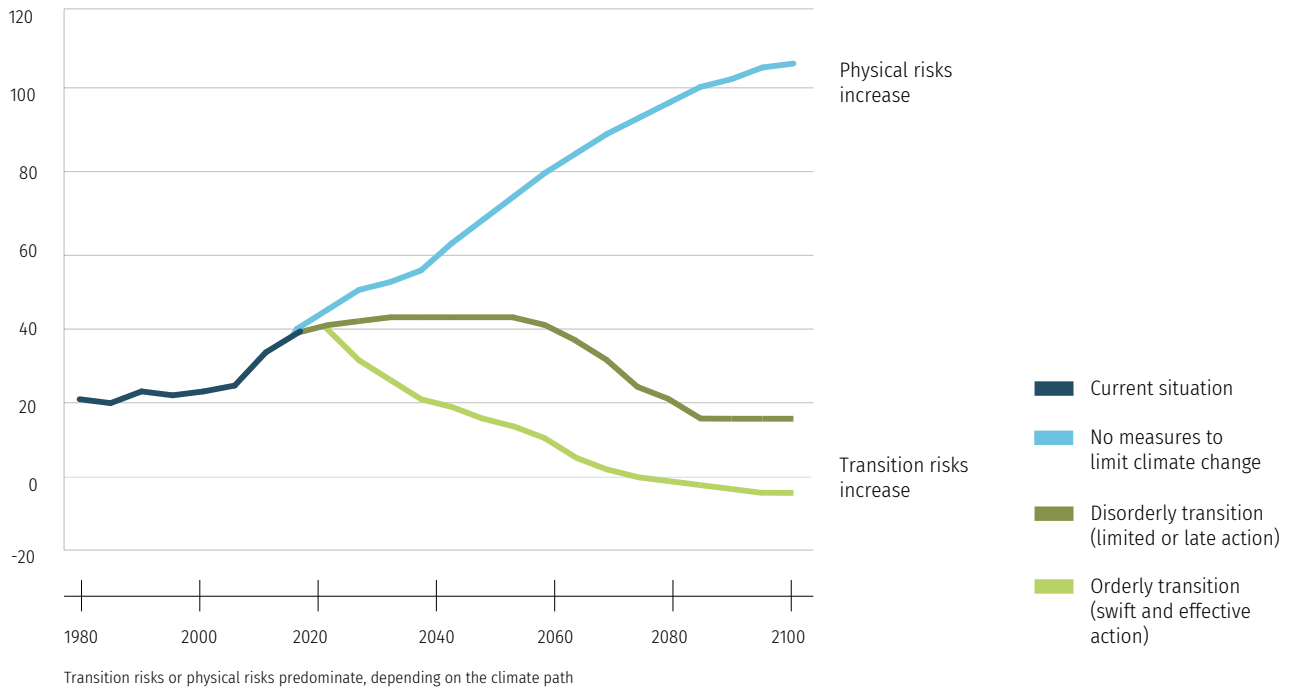


Chart: Various climate scenarios (illustrative)

## The challenges of climate change for investors

### Potential errors in corporate valuations:

We normally assume that financial markets are efficient, in other words that publicly available information is priced into shares and bonds. Climate change is an exception: the time horizon is very long, and the interactions between climate changes, political decisions and corporate valuations are extremely complex. For this reason, efficient pricing is not always possible. We therefore assume that the long-term opportunities and risks associated with climate change are not adequately reflected in today's share prices. This is confirmed by academic studies.

### Potential misvaluations due to failure to consider different climate scenarios:

Investors should take account of a number of possible climate scenarios and distinguish between regulatory risks (taxes, bans, etc.) and physical risks (weather-related damage to buildings, production outages, etc.) for companies.

### Climate change creates winners and losers:

The objective of moving towards an economy with lower greenhouse gas emissions also brings opportunities for companies in the form of new technologies, services and products. A comprehensive analysis should therefore also cover the risks and opportunities for companies.

### 3 The parameters of the climate-efficient equity index cover a range of climate scenarios

PUBLICA's climate-efficient equity index is based on a number of parameters. The most important key figure is the aggregated climate value-at-risk, which is made up of three components:

- **Parameter 1:** The expected costs of taxation of CO<sub>2</sub>e emissions over a 30-year period (Scope 1–3) are compared with the company's market capitalisation. This ratio acts as a risk measure for potential regulation to achieve the goals of the Paris Agreement.
- **Parameter 2:** This is based on an innovative patent analysis covering almost 100 million patents registered worldwide in more than 400 categories, all of which are aimed at reducing greenhouse gas emissions. The potential earnings over a 30-year period are simulated in relation to the company's market capitalisation. This captures the opportunities that regulation opens up for innovative and adaptable companies.
- **Parameter 3:** Changes in climate are increasingly leading to interruptions to business as well as damage to production facilities and office premises. Parameter 3 includes the expected costs consequent on this. Climate-related advantages such as higher crop yields due to milder temperatures are also taken into account. All a company's locations are included when calculating parameter 3.

The aggregated climate value-at-risk is the sum of these three components. It thus reflects not only risks from the transition to a climate-compatible society [parameter 1], but also opportunities [parameter 2], and physical risks and opportunities [parameter 3].

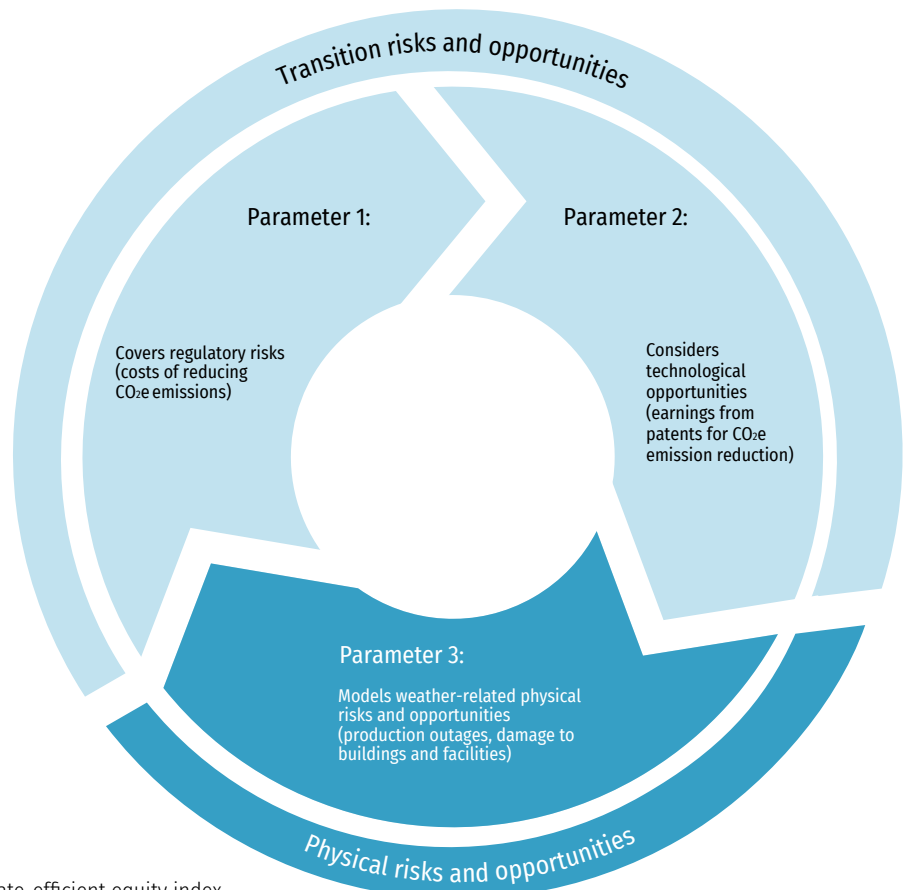


Diagram: The three parameters of the climate-efficient equity index

## 4 Climate data are calculated independently

The climate data used in the climate-efficient equity index are predominantly future-oriented and based on official figures from governments and international organisations such as the International Energy Agency (IEA), the Potsdam Institute for Climate Impact Research (PIK) and the United Nations Environment Programme (UNEP). The approach is strongly model-driven and less dependent on information supplied by companies. This is to ensure that all firms are treated using the same criteria with regard to climate valuation. Systematic errors in the models and data are accepted, on the assumption that these will decrease over time as the models and data sources improve. This approach allows a very wide range of companies to be covered – a very important consideration for PUBLICA, which has equity investments in over 50 countries and approximately 9,000 firms.

## 5 The result of an optimisation process

An optimisation process significantly improves PUBLICA's equity strategy as it relates to opportunities and risks associated with climate. Measured in terms of certain attributes, the new index is also "better" (i.e. more efficient) than the original index: in other words, it exhibits lower climate-related risks and higher climate-related opportunities. The improvement of the three parameters and the aggregated climate value-at-risk in the individual equity portfolios is shown in the table below. The differing requirements for the minimum improvement in the various regions reflect the different circumstances in the markets concerned.

	<b>Parameter 1: Reduction in transition risks</b>	<b>Parameter 2: Increase in transition opportunities</b>	<b>Parameter 3: Reduction in physical risks / increase in opportunities</b>	<b>Aggregated climate value-at-risk</b>
Equities Switzerland	10%	10%	10%	30%
Equities Europe ex Switzerland	30%	30%	30%	30%
Equities North America	50%	50%	50%	50%
Equities Pacific	50%	50%	50%	50%
Equities emerging markets	50%	50%	50%	50%

Table: Improvement in climate efficiency in the individual portfolios compared with the original index

The focus when constructing the climate-efficient equity index is on strict risk management. One condition is that it should deviate only to a limited extent from PUBLICA's original equity strategy. While optimised and non-optimised indices can differ substantially when it comes to individual securities, those securities are limited to the small number that are especially climate-(in)efficient. Nevertheless, the absolute risk of the climate-efficient equity index is comparable with that of the original strategy.

No securities are excluded during the optimisation of climate-related risks and opportunities. Exclusions are carried out earlier, on the basis of the defined negative criteria in the responsible investment strategy. Remaining invested in less climate-efficient companies enables PUBLICA to influence them, for example through dialogue aimed at persuading them to act in a more climate-compatible way.

## 6 Summary

Climate efficiency results from an improvement of up to 50% in each of the three parameters described over the equity portfolio as a whole, without the expected risk/return ratio being worse than that of the original equity index. PUBLICA's entire equity portfolio was progressively moved over to a climate-efficient strategy by the end of 2021. The climate-efficient equity index is a further steering tool enabling PUBLICA, through its investments, to respond effectively to the challenges of climate change.

Both the input data and the models are constantly evolving. PUBLICA monitors these developments in close collaboration with the index provider MSCI, and continually adjusts the methodology without changing its essential features. The same applies to the requirements for the minimum improvement in accordance with the aggregated climate value-at-risk. It is to be expected that achieving the goals will become more difficult from year to year.

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