



# ALPORA Index Methodology

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## 1 INTRODUCTION

### 1.1 INDEX OBJECTIVE

The ALPORA Indices are a family of equity indices designed to measure the innovation performance stocks trading on various exchanges worldwide. The family is composed of a wide range of indices based on innovation efficiency and sustainability across different sizes, industries, and regions. The indices are equal weighted, innovation weighted or weighted according to their market capitalization.

### 1.2 HIGHLIGHTS AND INDEX FAMILY

ALPORA indices are unique and thus enable the development of a wide range of financial products. The measurement of innovation efficiency and sustainability is scientifically based. likewise, the selection of the innovation theme indices follows a scientifically based calculation of the annual emerging technologies.

The following indices are part of the ALPORA index family:

#### 1.2.1 INNOVATION INDICES

- **ALPORA INNOVATION EUROPE INDEX 30**  
The ALPORA INNOVATION EUROPE INDEX 30 includes the 30 most innovation-efficient companies within Western Europe. The ALPORA INNOVATION EUROPE INDEX 30 is a cross-industry index with annual recomposition. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA INNOVATION GLOBAL INDEX 30**  
The ALPORA INNOVATION GLOBAL INDEX 30 includes the 30 most innovation-efficient companies within the developed global World (according to MSCI classification). The ALPORA INNOVATION GLOBAL INDEX 30 is a cross-industry index with annual recomposition. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA INNOVATION ASIA INDEX 30**  
The ALPORA INNOVATION ASIA INDEX 30 includes the 30 most innovation-efficient companies within the developed countries in Asia-Pacific (according to MSCI classification). The ALPORA INNOVATION ASIA INDEX 30 is a cross-industry index with annual recomposition. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA INNOVATION EMERGING MARKETS INDEX 30**  
The ALPORA INNOVATION EMERGING MARKETS INDEX 30 includes the 30 most innovation-efficient companies within the developed countries in the emerging markets (according to MSCI classification). The ALPORA INNOVATION EMERGING MARKETS INDEX 30 is a cross-industry index with annual recomposition. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.

### 1.2.2 SUSTAINABLE INNOVATION INDICES

- **ALPORA SUSTAINABLE INNOVATION EUROPE INDEX 30**  
The ALPORA SUSTAINABLE INNOVATION EUROPE INDEX 30 includes the 30 most innovation-efficient and sustainable companies within Western Europe. The ALPORA SUSTAINABLE INNOVATION EUROPE INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA SUSTAINABLE INNOVATION GLOBAL INDEX 30**  
The ALPORA SUSTAINABLE INNOVATION GLOBAL INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification). The ALPORA SUSTAINABLE INNOVATION GLOBAL INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA SUSTAINABLE INNOVATION ASIA INDEX 30**  
The ALPORA SUSTAINABLE INNOVATION ASIA INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed countries in Asia-Pacific (according to MSCI classification). The ALPORA SUSTAINABLE INNOVATION ASIA INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA SUSTAINABLE INNOVATION EMERGING MARKETS INDEX 30**  
The ALPORA SUSTAINABLE INNOVATION EMERGING MARKETS INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed countries in the emerging markets (according to MSCI classification). The ALPORA SUSTAINABLE INNOVATION EMERGING MARKETS INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.

### 1.2.3 THEMATIC INNOVATION INDICES

- **ALPORA SUSTAINABLE MATERIALS INNOVATION INDEX 30**  
The ALPORA SUSTAINABLE MATERIALS INNOVATION INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification) in the field of sustainable materials. Sustainable materials are materials, such as man-made fibers, made from renewable and naturally degradable raw materials are increasingly being explored to build sustainable production chains. The ALPORA SUSTAINABLE MATERIALS INNOVATION INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.

- **ALPORA CLEAN MOBILITY INNOVATION INDEX 30**  
The ALPORA CLEAN MOBILITY INNOVATION INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification) in the field of clean mobility. Clean mobility describes networked infrastructure (e.g., autonomous driving and autonomously charging cars/buses) which enables new as well as climate-neutral mobility approaches. The ALPORA CLEAN MOBILITY INNOVATION INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA SMART CITY INNOVATION INDEX 30**  
The ALPORA SMART CITY INNOVATION INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification) in the field of smart cities. Smart city activities include holistic digital concepts such as the mobility transformation for cities that continuously are being developed. The ALPORA SMART CITY INNOVATION INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA SUSTAINABLE AGRICULTURE INNOVATION INDEX 30**  
The ALPORA SUSTAINABLE AGRICULTURE INNOVATION INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification) in the field of sustainable agriculture. Sustainable agriculture activities focus on climate-compatible solutions for agribusiness in the context of biodiversity and sustainable food production. The ALPORA SUSTAINABLE AGRICULTURE INNOVATION INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA CARBON EMISSION REDUCTION INNOVATION INDEX 30**  
The ALPORA CARBON EMISSION REDUCTION INNOVATION INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification) in the field of sustainable agriculture. Sustainable agriculture activities focus on climate-compatible solutions for agribusiness in the context of biodiversity and sustainable food production. The ALPORA CARBON EMISSION REDUCTION INNOVATION INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA GREEN MANUFACTURING INNOVATION INDEX 30**  
The ALPORA GREEN MANUFACTURING INNOVATION INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification) in the field of green manufacturing. Green manufacturing activities focus on new approaches and solutions for establishing environmentally friendly operations within a national economy. The ALPORA GREEN MANUFACTURING INNOVATION INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a

combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.

- **ALPORA GENOMIC INNOVATION INDEX 30**  
The ALPORA GENOMIC INNOVATION INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification) in the field of genomic development. Disease patterns and patterns within genetics are continuously being investigated using modern process techniques in gene sequencing. Cell and molecular biology are researching new drugs or therapies for hereditary diseases or cancer. The ALPORA GENOMIC INNOVATION INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA ROBOTICS INNOVATION INDEX 30**  
The ALPORA GENOMIC INNOVATION INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification) in the field of robotics. The ALPORA GENOMIC INNOVATION INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.
- **ALPORA CYBER SECURITY INNOVATION INDEX 30**  
The ALPORA CYBER SECURITY INNOVATION INDEX 30 includes the 30 most innovation-efficient and sustainable companies within developed global World (according to MSCI classification) in the field of cybersecurity. New technologies are used to develop security-related and highly specific applications, for example, to track impeccable supply chains. The ALPORA CYBER SECURITY INNOVATION INDEX 30 is a cross-industry index with annual recomposition. Sustainability is ensured by a combination of sustainability negative and positive filtering. Industries such as tobacco, alcohol, weapons, gambling, pornography are excluded per se to ensure a sustainable universe. Innovation efficiency is measured using ALPORA's Innovation Capability Analytics methodology.

## 2 ELIGIBILITY CRITERIA

### 2.1 ELIGIBILITY FACTORS

Securities must meet the following eligibility factors to be considered eligible for index consideration. As applicable, the measurement date for determining whether all eligibility criteria are met for the index is the day prior to the announcement date.

**Domicile:**

The domicile of the company has to be according to the description of the regional focus of

the index. The domicile of the company must be according to the description of the regional focus of the index. Further details can be found in the index-factsheet for every index.

**Listing:**

A primary listing on public exchanges is required.

**Organizational Structure:**

The issuing company must have the following organizational structure and share type:

- Corporations (including equity)
- Common stock (i.e., shares)

## 3 INDEX CALCULATION

### 3.1 INDEX CONSTRUCTION CRITERIA

To carry out the index construction, companies must meet the following criteria.

**Market capitalization:**

The companies must have a market capitalization of at least €500 million. This ensures that the companies are of sufficient size to be able to realize stable sales.

**Number of employees:**

The companies must have a headcount of at least 250 employees. This ensures that the companies are of sufficient size and that skills are distributed more widely within the company. A focus on a few key people can thus be reduced.

**R&D spending:**

Companies must have an annual R&D budget of at least €1 million. This ensures that companies drive their own innovation activities. Micro-enterprises without significant innovation activities are excluded in this way.

**Industries:**

In general, companies in the financial sector are excluded, as measurability of innovation efficiency cannot be guaranteed there with existing models.

Other sectors are excluded depending on the focus of the respective ALPORA index. Detailed information on the industries included can be found in the respective index factsheets.

### 3.2 CALCULATION APPROACH

The ALPORA indices measure the innovation efficiency of quoted companies based on an Input-Output-Model. An efficient Frontier Analysis on Innovation is used as analytical basis to evaluate the efficiency of the company specific generation of innovations. The Frontier Analysis allows the measurement of the efficiency without specifying the production function

(Cooper et al., 2007; Cantner et al., 2007). Moreover, this measurement of the innovation efficiency helps to identify levers consisting of input and output slacks in order to improve the innovation capability in a company.

The innovation efficiency is defined as follows,

$$\text{Innovation Efficiency}_i = \frac{\sum_{r=1}^s p_{ri} y_{ri}}{\sum_{j=1}^m q_{ji} x_{ji}} = \frac{\text{Outputs}_i}{\text{Inputs}_i}$$

where  $x_{ji}$  describes the number of inputs  $j$  deployed in the innovation process and  $y_{ri}$  describes the amount of realized outputs  $r$  for one single company  $i$ . The aggregation of inputs and outputs is done by using the weighting factors  $p_{ri}$  (outputs) and  $q_{ji}$  (inputs) (Cantner et al., 2007; Drake et al., 2006).

The Model maximizes the efficiency measure of each company by solving a maximization problem using common methods from Operations Research (basically Charnes-Cooper-Transformation, Simplex Algorithm under additional constraints). In doing so for each company weighting factors are determined for every single input and output indicator. These input and output indicators remain purely quantitative. Therefore, the calculated efficiency score for each company in the sample is characterized by a maximum of objectivity. One main advantage of the DEA approach is that a target is identified for each inefficient company. Based on the calculated efficiency scores in the next step the approach constructs an efficient frontier which represents the best-practice observations.

Furthermore, the approach enables ALPORA to identify company specific input and output slacks. These slacks are company specific inefficiencies of single inputs or outputs. In other words: If a company shows slacks regarding one input indicator this means that the company is indicated by an overflow of this input indicator compared to the other companies of the sample.

### 3.3 INDEX MAINTENANCE

#### **Yearly Update:**

Each index is updated once a year regarding its composition. The latest annual reports for the respective companies in the universe are evaluated to construct a new index on this basis. The exact readjustment date can be found in the respective index factsheet.

#### **Deletions:**

Deletions occur under the following conditions:

- A company is deleted from the index if it is involved in a merger, acquisition, or significant restructuring such that it no longer meets the eligibility criteria.
- A company delisted because of a merger, acquisition or other corporate action is removed at a time publicly announced, normally at the close of the last day of trading or expiration of a tender offer. Constituents that are halted from trading may be kept in the index until trading resumes, at the discretion of the Index Committee.
- Any company that is removed from an ALPORA index must wait a minimum of one year from its index removal date before being reconsidered as a replacement candidate.

### 3.4 WEIGHTING

The index is weighted as follows:

Companies assigned to the index are not equally weighted. The weights are calculated from the innovation efficiency score. A company with a score of 100% has the highest weight, companies in the list of top 30 with lower scores obtaining linear adjusted weights. Different weighting of different industries is neither necessary nor foreseen.

### 3.5 RECONSTITUTION AND REBALANCING RULES

The index follows an annual reconstitution and quarterly rebalancing schedule. The new portfolio becomes effective at the close of the last Friday of June each year. This day is called the 'Effective Day.' The security selection and portfolio creation process start on March 1st.

### 3.6 INDEX DATA

#### **Calculation return Types:**

ALPORA AG calculates multiple return types which vary based on the treatment of regular cash dividends. The classification of regular cash dividends is determined by ALPORA.

- Price Return (PR) versions are calculated without adjustments for regular cash dividends.
- Gross Total Return (TR) versions reinvest regular cash dividends at the close on the ex-date without consideration for withholding taxes.

In the event there are no regular cash dividends on the ex-date, the daily performance of all two indices will be identical.

## 4 EDITORIAL

### 4.1 CONTACT DETAILS

ALPORA is an investment analytics company, which creates new products, based on the most innovative companies in different sectors and regions. Our offering includes a unique, transparent, and scientifically based evaluation model, which allows a variety of tailor-made solutions for our customers. ALPORA is incorporated in Switzerland with its registered office at:

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