

## **GUIDELINE**

# **Solactive Human Capital World MV Index**

Version 1.0 dated August 31<sup>st</sup>, 2017



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This document contains the underlying principles and regulations regarding the structure and the operating of the Index. Solactive AG shall make every effort to implement regulations. Solactive AG does not offer any explicit or tacit guarantee or assurance, neither pertaining to the results from the use of the Index nor the Index value at any certain point in time nor in any other respect. The Index is merely calculated and published by Solactive AG and it strives to the best of its ability to ensure the correctness of the calculation. There is no obligation for Solactive AG – irrespective of possible obligations to issuers – to advise third parties, including investors and/or financial intermediaries, of any errors in the Index. The publication of the Index by Solactive AG is no recommendation for capital investment and does not contain any assurance or opinion of Solactive AG regarding a possible investment in a financial instrument based on this Index.

# Introduction

This document is to be used as a guideline with regard to the composition, calculation and management of the Solactive Human Capital World MV Index. Any changes made to the guideline are initiated by the Committee specified in section 1.6. The Index is calculated and published by Solactive AG.

## 1 Index Specifications

The Solactive Human Capital World MV Index (the “**Index**”) is an Index of Solactive AG and is calculated and distributed by this provider.

The Index is designed to track the performance of Developed Markets companies with a comparably high dividend yield and, at the same time, construct a portfolio which exhibits low volatility and avoids excesses sector concentration.

The Index is calculated as Price Return (PR), Net Total Return (NTR) and Gross Total Return (GTR).

The Index is published in Euro (EUR).

### 1.1 Index Name and Identifier

Name	ISIN	RIC	Bloomberg Ticker	Currency	Return Type
Solactive Human Capital World MV Index	DE000SLA3UH0	.SOHUMAN	SOHUMAN	EUR	PR
Solactive Human Capital World Low Risk NTR Index	DE000SLA3UV1	.SOHUMANN		EUR	NTR
Solactive Human Capital World Low Risk GTR Index	DE000SLA3UW9	.SOHUMANG		EUR	GTR

### 1.2 Initial Value

The Index is based on 100 at the close of trading on the start date of January 1<sup>st</sup>, 2002.

### 1.3 Distribution

The Index is published via the price marketing services of Boerse Stuttgart AG and is distributed to all affiliated vendors. Each vendor decides on an individual basis as to whether he will distribute/display the Index via his information systems.

### 1.4 Prices and Calculation Frequency

The price of the Index is calculated on each Business Day based on the prices on the respective Exchanges on which the Index Components are listed. The most recent prices of all Index Components are used. Prices of Index Components not listed in the Index Currency are translated using spot foreign exchange rates quoted by Reuters. Should there be no current price available on Reuters, the most recent price or the Trading Price on Reuters for the preceding Business Day is used in the calculation. The daily Index Closing Level is calculated using Reuters/WMCO closing spot rates as at 4pm London time.

The Index is calculated every Business Day from 9:00am to 10:30pm, CET. In the event that data cannot be provided to Reuters or to the pricing services of Boerse Stuttgart AG the Index cannot be distributed. Any incorrect calculation is adjusted on a retrospective basis.

## **1.5 Weighting**

On each Adjustment Day, each Index Component of the Index is weighted according to the procedure described in section 2.1.

## **1.6 Decision-Making Process**

A Committee composed of staff from Solactive AG is responsible for decisions regarding the composition of the Index as well as any amendments to the rules (in this document referred to as the "**Committee**"). The future composition of the Index is set by the Committee on the Selection Days. The Committee shall also decide about the future composition of the Index and the implementation of any necessary adjustments if any Extraordinary Events should occur.

Members of the Committee can recommend changes to the guideline and submit them to the Committee for approval if there are regulatory reasons for changing the guideline.

## **1.7 Publication**

All specifications and information relevant for calculating the Index are made available on the <http://www.solactive.com> web page and sub-pages.

## **1.8 Historical Data**

Back-tested data prior to the launch of the Index is available until April 20<sup>th</sup>, 2001. Historical data will be maintained from the launch of the Index, August 30<sup>th</sup>, 2016.

## **1.9 Licensing**

Licenses to use the Index as the underlying value for derivative instruments are issued to stock exchanges, banks, financial services providers and investment houses by Solactive AG.

## 2 Composition of the Index

### 2.1 Selection of the Index Components

The initial composition of the Index as well as any ongoing adjustment is based on the following rules:

Based on the criteria outlined in Chapter 4, the Index Calculator determines the Selection Pool of securities which are eligible for inclusion in the Index. On each Selection Day, the Index selection is determined following the steps below:

1. Assign each security to one of the three Regions (North America, Europe, Asia Pacific) based on their country of listing.
2. Rank the securities from the Selection Pool by dividend yield. The dividend yield is computed as the estimated dividend per share as provided by Factset, divided by the unadjusted closing price, both measured in the underlying's own currency. Out of all the securities in the Universe, 25% of the securities with the highest dividend yield are selected. Denote this number by  $n_{pre}$ .
3. In case there are less than 10% stocks from each Region, the next best (in terms of dividend yield) stocks from the underrepresented Region are added until there are at least 10% stocks from each region. Denote the final number of selected stocks as  $n$ .
4. Based on the resulting  $n$  securities of the first two selection steps, an optimization algorithm determines weights for the securities which would lead to minimal portfolio volatility.

$$\min_w w' \Sigma w$$

Subject to the constraints:

$$\sum_{i=1}^n w_i = 1$$

$$\sum_{i=1}^n y_i = 50$$

$$w^{\min} * y_i \leq w_i \leq w^{\max} * y_i, \quad i = 1, \dots, n$$

$$\sum_{i \in S(j)} w_i \leq 0.33, \quad i = 1, \dots, n$$

$$0.1 \leq \sum_{i \in R(j)} w_i \leq 0.5, \quad i = 1, \dots, n$$

$$y_i \in \{0,1\}, \quad i = 1, \dots, n$$

Where:

$w$  = n-dimensional vector of weights with generic element  $w_i$

$\Sigma$  = n-by-n-dimensional variance-covariance matrix (using 125 daily returns) based on Trading Prices adjusted for splits and spin-offs

$w^{\max}$  = the maximum weight of each stock (5%)

$w^{\min}$  = the minimum weight of each stock (1%)

$S(j)$  = the set of securities belonging to sector j.

$R(j)$  = the set of securities belonging to region j

If the optimizer fails to find a feasible solution to the above problem, the dividend yield filter is increased by 1% and the above problem is solved again. This procedure is iterated until the dividend yield filter is increased to 50%.

The resulting weights of the optimization problem are the weights  $w_i^{\text{target}}$  for  $i=1,\dots,n$ .

## 2.2 Ordinary Adjustment

The composition of the Index is ordinarily reviewed every quarter, 2 Trading Days prior to the scheduled Adjustment day. The composition of the Index is adjusted on the Adjustment Day.

The Index is rebalanced quarterly over a ten-day period to ensure that rebalance transactions stay below the Average Daily Value Traded. Beginning on the Business Day immediately following the Adjustment Day, and continuing over the next nine Business Days, defined as the Rebalancing Period, the target weights of the constituents of the Index on the  $m^{th}$  day are set as follows:

$$w_i^{target}(t_0 + m) = w_i(t_0) + \frac{m * (w_i^{target} - w_i(t_0))}{M}, 0 < m \leq 10$$

where

$t_0$  = Adjustment Day

$w_i(t_0)$  = Percentage Weight of security i at the Adjustment Day. For the avoidance of doubt, if a security i is not an Index Component on the Adjustment Day,  $w_i(t_0)$  is zero.

$w_i^{target}$  = Target Weight of security i after the completion of the Rebalancing Period.

$w_i^{target}(t)$  = Target Weight of security i on Business Day t.

$m$  =  $m^{th}$  day of the Rebalancing Period

$M$  = Total number of Business Days in the Rebalancing Period, i.e. 10

For the historic Index values before the launch of the Index, m was set to 1.

The first adjustment will be made in October 2017 based on the Trading Prices of the Index Components on the Adjustment Day.

Solactive AG shall publish any changes made to the Index composition on the Selection Day and consequently with sufficient notice before the Adjustment Day.

## 2.3 Extraordinary Adjustment

If a company included in the Index is removed from the Index between two Adjustment Days due to an Extraordinary Event, the weight of the respective company will be split proportionally amongst the remaining companies. The Index is adjusted on the same day. This is announced by Solactive AG after the close of business on the day on which the new composition of the Index was determined by the Committee.

## 3 Calculation of the Index

### 3.1 Index Formula

The Index is an index whose value on a Business Day is equivalent to the sum over all Index Components of the products of (a) the Number of Shares of the Index Component and (b) the Trading Price of the Index Component at the respective index currency.

$$Index_t = \sum_{i=1}^n x_{i,t} * p_{i,t}$$

with:

$Index_t$  = Solactive Human Capital World MV Index on Business Day t rounded to 2 decimal places

$p_{i,t}$  = Price of Index Component i on Business Day t converted into the Index Currency

$x_{i,t}$  = Number of Shares of the Index Component i on Business Day t, calculated as follows

If t falls into the Rebalancing Period, the Number of Shares  $x_{i,t}$  is calculated as follows

$$x_{i,t} = \frac{w_i^{target}(t) * Index_{t-1}}{p_{i,t-1}},$$

Otherwise, besides any adjustments due to Corporate Actions,

$$x_{i,t} = x_{i,t-1}.$$

### 3.2 Accuracy

The value of the Index will be rounded to two decimal places.

Trading Prices will be rounded to four decimal places.

### 3.3 Adjustments

Indices need to be adjusted for systematic changes in prices once these become effective. This requires the new Number of Shares of the affected Index Component to be calculated on an ex-ante basis.

This procedure ensures that the first ex quote can be properly reflected in the calculation of the Index. This ex-ante procedure assumes the general acceptance of the Index calculation formula as well as open access to the parameter values used. The calculation parameters are provided by Solactive AG.

Any delay in calculating the new Number of Shares of an Index Component would create problems. Therefore the procedure described above is the most appropriate.

### 3.4 Dividends and Other Distributions

Dividends cause an adjustment of the Number of Shares of the corresponding Index Component. The new Number of Shares is calculated as follows:

$$x_{i,t} = x_{i,t-1} * \frac{p_{i,t} + D_{i,t}}{p_{i,t}}$$

with

$x_{i,t}$  = Number of Shares of the Index Component i on Business Day t

$D_{i,t}$  = Payment on Business Day t multiplied by the Dividend Correction Factor of the respective country

$p_{i,t}$  = Price of Index Component i on Business Day t

Cash Dividends are adjusted in the Net Total Return version of the Index following the same formula described above. All dividend payments are adjusted in the index on the respective ex-dividend date.

### 3.5 Corporate Actions

#### 3.5.1 Principles

Following the announcement by a company included in the Index of the terms and conditions of a corporate action the Index Calculator determines whether such corporate action has a dilution, concentration or other effect on the price of the Index Component.

If this should be the case the Index Calculator shall make the necessary adjustments to the affected Index Component and/or the formula for calculating the Index and/or to other terms and conditions of this document that he deems appropriate in order to take into account the dilution, concentration or other effect and shall determine the date on which this adjustment shall come into effect.

Amongst other things the Index Calculator can take into account the adjustment made by an Affiliated Exchange as a result of the corporate action with regard to option and futures contracts on the respective share traded on this Affiliated Exchange.

#### 3.5.2 Capital Increases

In the case of capital increases (from the company's own resources or through cash contributions) the new Numbers of Shares are calculated as follows:

$$x_{i,t} = x_{i,t-1} * \left( 1 + \frac{p_{i,t} - B}{p_{i,t}} * BV \right)$$

with:

$x_{i,t}$  = Number of Shares of Index Component i on the ex date

$x_{i,t-1}$  = Number of Shares of Index Component i on the day prior to the ex date

$p_{i,t}$  = Closing price on the ex date

$B$  = Price of rights issue

$BV$  = Subscription ratio

$B = 0$  if capital is increased from the company's own resources.

#### 3.5.3 Capital Reductions



In the case of capital reductions, the new Number of Shares is determined as follows:

$$x_{i,t} = x_{i,t-1} \frac{1}{H_{i,t}}$$

$H_{i,t}$  = Reduction ratio of the company on day t

$x_{i,t}$  = Number of Shares of the affected Index Component on the day of the distribution

$x_{i,t-1}$  = Number of Shares of the affected Index Component on the day prior to the distribution

### 3.5.4 Share Splits and Par Value Conversions

In the case of share splits and par value conversions it is assumed that the prices change in ratio to the number of shares or to the par values. The new Number of Shares is calculated as follows:

$$x_{i,t} = x_{i,t-1} \frac{N_{i,t-1}}{N_{i,t}}$$

$N_{i,t}$  = New par value of security class i (or former number of shares)

$N_{i,t-1}$  = Former par value of security class i (or new number of shares)

$x_{i,t}$  = Number of Shares of the affected Index Component on the day of the distribution

$x_{i,t-1}$  = Number of Shares of the affected Index Component on the day prior to the distribution

### 3.6 Calculation of the Index in the Event of a Market Disruption Event

In the event of a Market Disruption Event, Solactive AG calculates the Index value, taking into account the market conditions prevailing at this point in time, the last quoted Trading Price for each of the Index Components as well as any other conditions that it deems relevant for calculating the Index value.

## 4 Definitions

“**Adjustment Day**” is the Trading Day which falls two Trading Days after the Selection Day.

An “**Affiliated Exchange**” is with regard to an Index Component an exchange, a trading or quotation system on which options and futures contracts on the Index Component in question are traded, as specified by the Index Calculator.

“**Average Daily Value Traded**” means, in respect of a share, the sum of Daily Value Traded over a specified period divided by the number of Business Days that fall in the specified period.

A “**Business Day**” is every weekday other than a Saturday or a Sunday unless a Market Disruption event occurs.

“**Daily Value Traded**” means, in respect of a security and of a Business Day, the product of (i) the Trading Price of the security in the Index Currency, and (ii) the volume traded (measured as a number of shares) of the security.

“**Dividend Correction Factor**” is calculated as 1 minus the applicable withholding tax rate and/or other applicable tax rate currently prevalent in the respective country. The table can be accessed on the Solactive corporate website using the following URL: <http://www.solactive.com/news/documents/>

“**Exchange**” is, in respect of the Selection Pool and every Index Component, the respective primary exchange where the Index Component has its primary listing. The Committee may decide to declare a different stock exchange the “Exchange” for trading reasons, even if the company is only listed there via a Stock Substitute.

In particular an “**Extraordinary Event**” is

### 1. **Merger:**

With regard to an Index Component a “**Merger**” is

- i. a change in the security class or a conversion of this share class that results in a transfer or an ultimate definite obligation to transfer all the shares in circulation to another legal person,
- ii. a merger (either by acquisition or through forming a new structure) or a binding obligation on the part of the issuer to exchange shares with another legal person (except in a merger or share exchange under which the issuer of this Index Component is the acquiring or remaining company and which does not involve a change in security class or a conversion of all the shares in circulation),
- iii. a takeover offer, exchange offer, other offer or another act of a legal person for the purposes of acquiring or otherwise obtaining from the issuer 100% of the shares issued that entails a transfer or the irrevocable obligation to transfer all shares (with the exception of shares which are held and controlled by the legal person), or
- iv. a merger (either by acquisition or through forming a new structure) or a binding obligation on the part of the issuer of the share or its subsidiaries to exchange shares with another legal person, whereby the issuer of the share is the acquiring or remaining company and it does not involve a change in the class or a conversion of the all shares issued, but the shares in circulation directly prior to such an event (except for shares held and controlled by the legal person) represent in total less than 50% of the shares in circulation directly subsequent to such an event.

### 2. **Takeover bid**

A “**Takeover bid**” is a bid to acquire, an exchange offer or any other offer or act of a legal person that results in the related legal person acquiring as part of an exchange or otherwise more than 10% and less than 100% of the voting shares in circulation from the issuer of the Index Component or the right to acquire these shares, as determined by the Index Calculator based on notices submitted to public or self-regulatory authorities or other information considered by the Index Calculator to be relevant.

### 3. **Delisting**

An Index Component is **“delisted”** if the Exchange announces pursuant to the Exchange regulations that the listing of, the trading in or the issuing of public quotes on the Index Component at the Exchange has ceased immediately or will cease at a later date, for whatever reason (provided delisting is not because of a Merger or a Takeover bid), and the Index Component is not immediately listed, traded or quoted again on an exchange, trading or listing system, acceptable to the Index Calculator,

### 4. **Nationalisation**

**“Nationalisation”** is a process whereby all shares or the majority of the assets of the issuer of the shares are nationalised or are expropriated or otherwise must be transferred to public bodies, authorities or institutions.

### 5. **Insolvency**

**“Insolvency”** occurs with regard to an Index Component if (A) all shares of the respective issuer must be transferred to a trustee, liquidator, insolvency administrator or a similar public officer as result of a voluntary or compulsory liquidation, insolvency or winding-up proceedings or comparable proceedings affecting the issuer of the Index Components or (B) the holders of the shares of this issuer are legally enjoined from transferring the shares.

The Trading Price for this Index Component on the day the event came into effect is the last available market price for this Index Component quoted on the Exchange on the day the event came into effect (or, if a market price is not available for the day the event came into effect, the last available market price quoted on the Exchange on a day specified as appropriate by the Index Calculator), as determined by the Index Calculator, and this price is used as the Trading Price of the particular Index Component until the end of the day on which the composition of the Index is next set.

In the event of the Insolvency of an issuer of an Index Component the Index Component shall remain in the Index until the next Adjustment Day. As long as a market price for the affected Index Component is available on a Business Day, this shall be applied as the Trading Price for this Index Component on the relevant Business Day, as determined in each case by the Index Calculator. If a market price is not available on a Business Day the Trading Price for this Index Component is set to zero. The Committee may also decide to eliminate the respective Index Component at an earlier point in time prior to the next Adjustment Day. The procedure in this case is identical to an elimination due to and Extraordinary Event.

The **“Index”** refers to the Solactive Human Capital World MV Index where MV stands for minimum volatility.

The **“Index Calculator”** is Solactive AG or any other appropriately appointed successor in this function.

**“Index Component”** is each security currently included in the Index or, during a Rebalancing Period, each security currently included in the index and to be included in the index during the Rebalancing Period.

The **“Index Currency”** is Euro (EUR).

A **“Market Disruption Event”** occurs if

1. one of the following events occurs or exists on a Business Day prior to the opening quotation time for an Index Component:

A) trading is suspended or restricted (due to price movements that exceed the limits allowed by the Exchange or an Affiliated Exchange, or for other reasons):

- 1.1. across the whole Exchange; or
- 1.2. in options or futures contracts on or with regard to an Index Component or an Index Component that is quoted on an Affiliated Exchange; or
- 1.3. on an Exchange or in a trading or quotation system (as determined by the Index Calculator) in which an Index Component is listed or quoted; or

B) an event that (in the assessment of the Index Calculator) generally disrupts and affects the opportunities of market participants to execute on the Exchange transactions in respect of a share included in the Index or to determine market values for a share included in the Index or to execute on an Affiliated Exchange transaction with

regard to options and futures contracts on these shares or to determine market values for such options or futures contracts; or

2. trading on the Exchange or an Affiliated Exchange is ceased prior to the usual closing time (as defined below), unless the early cessation of trading is announced by the Exchange or Affiliated Exchange on this Business Day at least one hour before

(aa) the actual closing time for normal trading on the Exchange or Affiliated Exchange on the Business Day in question or, if earlier.

(bb) the closing time (if given) of the Exchange or Affiliated Exchange for the execution of orders at the time the quote is given.

**“Normal exchange closing time”** is the time at which the Exchange or an Affiliated Exchange is normally closed on working days without taking into account after-hours trading or other trading activities carried out outside the normal trading hours; or

3. a general moratorium is imposed on banking transactions in the country in which the Exchange is resident if the above-mentioned events are material in the assessment of the Index Calculator, whereby the Index Calculator makes his decision based on those circumstances that he considers reasonable and appropriate.

**“Number of Shares”** is in respect of an Index Component and any given Business Day the number or fraction of shares included in the Index. It is calculated for any Index Component as the ratio of (A) the Percentage Weight of an Index Component multiplied by the Index value and (B) its Trading Price.

**“Percentage Weight”** of an Index Component is the ratio of its Trading Price multiplied by its Number of Shares divided by the Index value.

**“Rebalancing Period”** is a period of 10 Trading Days after the Adjustment Day.

**“Region”** is one of the following three classifications: Europe, North America, Asia-Pacific.

**“Sector”** is one of the following ten FactSet classifications: Consumer Services, Finance, Energy, Technology, Industrials, Utilities, Consumer Non-Durables, Basic Materials, Consumer Durables, Healthcare.

**“Selection Day”** is the first Business Day of January, April, July and October.

**“Selection Pool”** is determined on a quarterly basis on the Selection Days. It includes those companies that are part of the Universe (as described below) and fulfill the following conditions:

Companies with a minimum Average Daily Value Traded of at least EUR 5mn over the previous 6 months and the previous month ( $\min(ADV_{6m}, ADV_{1m}) > 5mn$ ).

**“Stock Substitute”** includes in particular American Depository Receipts (ADR) and Global Depository Receipts (GDR).

A **“Trading Day”** is in relation to the Index or an Index Component a Trading Day on the Exchange (or a day that would have been such a day if a market disruption had not occurred), excluding days on which trading may be ceased prior to the normal Exchange closing time. The Index Calculator is ultimately responsible as to whether a certain day is a Trading Day with regard to the Index or an Index Component or in any other connection relating to this document.

With regard to an Index component (subject to the provisions given above under “Extraordinary Events”) the **“Trading Price”** in respect of a Business Day is the closing price on this Business Day determined in accordance with the Exchange regulations. If the Exchange has no closing price for an Index Component, the Index Calculator shall determine the Trading Price and the time of the quote for the share in question in a manner that appears reasonable to him.

The **“Universe”** is the World Human Capital Universe provided by Vigeo Eiris on the first Business Day of each rebalancing month. The securities for the universe are selected with respect to following criteria:

- (a) VigeoEiris ESG score of at least 30/100
- (b) VigeoEiris ESG score greater than their sector peers per geographical area (EUR; AP; NAM; MEA)
- (c) No companies on the warning list or with a severity critical
- (d) No major involvement in Armament, Tobacco, Gambling, Nuclear, Pornography, Alcohol
- (e) VigeoEiris People score of at least 30/100
- (f) VigeoEiris People score greater than their sector peers per geographical area (EUR; AP; NAM; MEA)
- (g) Implication in production or extraction of Coal must be lower than 10% of the company turnover, as assessed by Vigeo;
- (h) Implication in production or extraction of Tar sands and oil shale must be lower than 10% of the company turnover, as assessed by Vigeo;

**“Vigeo Eiris”** is a global provider of environmental, social and governance research to investors and corporates. Vigeo Eiris provides research and solutions for sustainable value creation. For more information, please visit: <http://www.vigeo.com/csr-rating-agency/fr/3-1-investisseurs-et-gestionnaires-d-actifs>

## **5 Appendix**

### **5.1 Contact Data**

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### **5.2 Calculation of the Index – Change in Calculation Method**

The application by the Index Calculator of the method described in this document is final and binding. The Index Calculator shall apply the method described above for the composition and calculation of the Index. However it cannot be excluded that the market environment, supervisory, legal, financial or tax reasons may require changes to be made to this method. The Index Calculator may also make changes to the terms and conditions of the Index and the method applied to calculate the Index, which he deems to be necessary and desirable in order to prevent obvious or demonstrable error or to remedy, correct or supplement incorrect terms and conditions. The Index Calculator is not obliged to provide information on any such modifications or changes. Despite the modifications and changes the Index Calculator will take the appropriate steps to ensure a calculation method is applied that is consistent with the method described above.