

## **GUIDELINE**

# **SOLACTIVE Atlantic Quality INDEX**

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This document contains the underlying principles and regulations regarding the structure and the operating of the Solactive Atlantic Quality 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 Atlantic Quality Index. Any changes made to the guideline are initiated by the Committee specified below. The SOLACTIVE Atlantic Quality Index is the sole property of Solactive AG. The SOLACTIVE Atlantic Quality Index is calculated and published by Solactive AG. The name “Solactive” is copyrighted.

## 1 INDEX SPECIFICATIONS

The SOLACTIVE Atlantic Quality Index is a fixed-quantity price return index. The determination of the weights is based on two Reference Baskets (“Underlying Reference Baskets (EU/US)”). Detailed information regarding the Reference Baskets can be found below. The same disclaimers and legal information apply as for the SOLACTIVE Atlantic Quality Index.

### 1.1 Short name and ISIN

The SOLACTIVE Atlantic Quality Index is distributed under ISIN DE000SLA08U5; the WKN is SLA08U. The Bloomberg Ticker is SOLAQ Index.

### 1.2 Initial value

The Solactive Atlantic Quality Index is based on 1000 at the close of trading on 23rd June 2005

### 1.3 Distribution

The SOLACTIVE Atlantic Quality Index is published via the price marketing services of Boerse Stuttgart AG and is distributed to all affiliated vendors.

### 1.4 Prices and calculation frequency

The SOLACTIVE Atlantic Quality Index is calculated every Calculation Date at 22:30 pm CET for the same Business day. The index is calculated on any calendar day except on the 1st of January and 25th of December.

### 1.5 Weighting

The SOLACTIVE Atlantic Quality Index is equally weighted across selected underlying components (as defined below).

The weighting methodology may be amended by the Committee if required due to legal framework.

### 1.6 Decision-making bodies

A Committee composed of Solactive AG employees is responsible for decisions regarding the composition of the SOLACTIVE Atlantic Quality Index as well as any amendments to the rules (hereinafter referred to as the “Committee” or the “Underlying Strategy Basket Committee”). The Committee will also decide about the future composition of the SOLACTIVE Atlantic Quality Index if any extraordinary event (see below) occurs and the implementation of any necessary adjustments. Any Member of the Committee can recommend at any time changes to the composition of the Underlying Strategy Basket or to the guideline and submit them to the Committee for approval.

## **1.7 Publication**

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

## **1.8 Historical data**

Historical backtested data are available starting 23rd June 2003. The index was first calculated on 12th Oct 2015.

## **1.9 Licensing**

Licences to use the Underlying Strategy Basket 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 components of the SOLACTIVE Atlantic Index are reviewed every quarter. The selection of the underlying components and the calculation of the underlying reference baskets are defined below

### **2.2 Ordinary adjustment**

The index is a fixed quantity index whose numbers of shares are rebalanced quarterly. The new quantities are calculated on the index review date, which is the last calculation day of each quarter minus five calculation days. The quantities become effective COB on the index rebalancing day, which is the day falling five calculation days after the index review day.

### **2.3 Extraordinary adjustment**

If a company included in the SOLACTIVE Atlantic Quality 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 SOLACTIVE Atlantic Quality Index is adjusted on the same day. The index contains at least 20 stocks. If more than 5 stocks are to be removed from the index between two Adjustment Days the stocks following the 25th highest non-null reference weighted underlying will be added to the index (see subparagraph 3.1.1.2). 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 for the SOLACTIVE Atlantic Quality Index

The SOLACTIVE Atlantic Quality Index is a fixed-quantity Euro denominated index whose value reflects the value of the selected underlying components.

As a formula:

$$IL_t = \sum_i NOSH_{i,t^*} * Price_{i,t} / FX_{c(i),t}$$

Where

$IL_t$  is the index level as of Calculation Date t.

$t^*$  is the index rebalancing date prior to t.

$NOSH_{i,t^*}$  is the number of shares of underlying component i as of Calculation Date  $t^*$ .

$Price_{i,t}$  is the closing level of underlying component i at Calculation Date t.

i is the number of underlying components in the Long or Short unhedged Underlying Strategy Basket.

$c(i)$  is the currency in which underlying component i is denominated.

$FX_{c(i),t}$  is the exchange rate to convert one EUR into units of currency  $c(i)$  at Calculation Date t.

The number of shares are calculated according to the following formula:

If t is a rebalancing date, then

$$NOSH_{i,t} = \frac{w_{i,t_{review}} * IL_{t_{review}}}{(Price_{i,t_{review}} / FX_{c(i),t_{review}})} \frac{IL_t}{IL_t^{hypo}}$$

Where

$$IL_t^{hypo} = \sum_i NOSH_{i,t}^{prelim} * Price_{i,t} / FX_{c(i),t}$$

and

$$NOSH_{i,t}^{prelim} = \frac{w_{i,t_{review}} * IL_{t_{review}}}{(Price_{i,t_{review}} / FX_{c(i),t_{review}})}$$

If t is not a rebalancing date, then

$$NOSH_{i,t} = NOSH_{i,t-1}$$

Where

$w_{i,t_{review}}$  is the weight of underlying component i in the SOLACTIVE Atlantic Quality Index on the review date immediately preceding calculation date t. Please refer to section 3.1 for the computation of the weights.

#### 3.1.1 Weight determination

##### 3.1.1.1 Calculation of the weights for the Long unhedged Underlying Strategy Basket

The number of stocks are selected from a union of the EU and US reference baskets. The following four criteria are applied:

1. Free float market cap  $\geq$  1 Billion EUR
2. 6 month ADV  $\geq$  5 Million EUR

3. Piotroski score  $\geq 7$
4. No stocks with industry “Financial”

The Piotroski score is defined as the number of criteria that a company meets and can range from 0 to 9:

- Positive earnings (Net Income) in the current year (1 point)
- Positive operating cash flow in the current year (1 point)
- Higher return on assets (ROA) in the current period compared to the ROA in the previous year (1 point)
- Last year operating cash flow exceeds net income (quality of earnings) (1 point)
- Lower “Long Term Debt / Total Assets” ratio in the current period compared to its value in the previous year (1 point)
- Higher current ratio compared to the previous year (1 point)
- Number of new shares issued in the last year compared to the previous year (1 point if this number is decreasing)
- A higher gross margin compared to the previous year (1 point)
- A higher asset turnover ratio (Total Revenue / Total Assets) compared to the previous year (1 point)

After these four selection steps the weights for the Long Unhedged Underlying Strategy Baskets are calculated on each basket review date for the Long Unhedged Underlying Strategy Basket. The vector of reference weights for the underlying components in the Universe as of basket review date,  $w_{t_{basket}^{Ref}}^{Ref}$ , is the solution to the following optimization problem:

$$\begin{aligned}
 & \max_w \quad w' * Est\_Div_{t_{Rev}} \\
 & s. t. \quad \sum_i w_i = 1 \\
 & \quad w_i \in [0; 0.04] \\
 & \quad \sqrt{w' * VC_{t_{Rev}} * w} \leq rvc * ReferenceVol_{t_{Rev}}
 \end{aligned}$$

Where

$Est\_Div_{t_{Rev}}$  is the vector of estimated dividend yields of the underlying components in the Universe (each denominated in its original currency) as of basket review date  $t$ . Estimated dividend yields are computed from a dedicated data provider. It is in the sole discretion of the index owner to change the source for the calculation of the estimated dividend yield.

$VC_{t_{Rev}}$  is the variance-covariance matrix of the returns of the underlying components in the Universe (each denominated in its original currency) as of basket review date  $t_{Rev}$ . A generic element (i,j) of VC is calculated according to the following formula

$$VC_{t_{Rev}}(i, j) = \frac{1}{250} \sum_{k=0}^{249} (r_{i, t_{review}-k} - \bar{r}_{i, t_{review}-k}) (r_{j, t_{review}-k} - \bar{r}_{j, t_{review}-k})$$

where

$$r_{i, t_{review}-k} = \ln \left( \frac{Price_{i, t_{review}-k}}{Price_{i, t_{review}-k-3}} \right) \sqrt{\frac{365}{Act(t(t-k-3), t(t-k))}}$$

$$\bar{r}_{i, t-k} = \frac{1}{250} \sum_{k=0}^{249} r_{i, t-k}$$

$rv$  is the relative volatility constraint which is set to 65%. In case no solution does respect constraint of the optimization problem, then Relative Volatility Constraint shall be increased by 5%. This procedure is repeated until a solution to the optimization problem is found or if Relative Volatility Constraint is equal to 100%.

$ReferenceVol_{t_{Rev}}$  is the volatility of the European Reference Basket (as defined below) as of basket review date  $t_{Rev}$ . It is calculated according to the following formula:

$$ReferenceVol_{t_{Rev}} = \sqrt{\frac{1}{120} * \sum_{k=0}^{120} \left( \sqrt{\frac{365}{Act(t(t-k-3), t(t-k))}} * \ln \left( \frac{RB_{t_{Rev}-k}}{RB_{t_{Rev}-k-3}} \right) \right)^2}$$

Where

$RB_{t_{Rev}-k}$  is the level of the EU Reference Basket as of Calculation Date  $t_{Rev} - k$ .

$Price_{i,t_{review}-k}$  is the price of underlying component i as of Calculation Date  $t_{review} - k$ .

$Act(t(t-k-3), t(t-k))$  is the number of calendar days between Calculation Date t-k-3 (included) and t-k (excluded).

### 3.1.1.2 Calculation of the weights for the SOLACTIVE Atlantic Quality Index

The 25 highest non-null reference weighted underlying components (the selected underlying components) according to the reference weights as calculated above receive an equal weight of 4%, where non-null weight is defined as any weight higher than 0.01%. All other underlying components receive a weight of 0%.

### 3.1.2 Calculation of the Reference Baskets

There is one Reference Baskets underlying the SOLACTIVE Atlantic Quality Index:

- the Europe Reference Basket

The Europe Reference Basket is comprised of the 600 biggest free-float capitalization shares (each of them an underlying component) in the European Universe (as defined below). It is a capitalization-weighted price return basket denominated in EUR which is rebalanced quarterly. On the basket review date, new number of shares are calculated which become effective at the close of the basket rebalancing date (5 calculation days after the review date). As the basket is price return, the prices considered in the calculation are not adjusted for regular cash (but for irregular cash and rights issues).

“European Universe” means all securities that are part of the Solactive GBS Developed Markets Europe Investable Universe USD Index PR (ISIN: DE000SLA8DV6 on a Basket Review Date.

“American Universe” means all securities that are part of the Solactive GBS United States Investable Universe Index PR (ISIN: DE000SLA8D10 on a Basket Review Date.

The “Universe” consists of the union of the “European Universe” and the “American Universe”.

For avoidance of doubt, the Universe is reviewed on a quarterly basis (the basket review date).

“Eligible Country” means the United States and any European country considered as developed by the Underlying Strategy Basket Calculation Agent. As of the Underlying Strategy Basket Launch Date, the list of Eligible Countries is the following: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States. Such list may be updated from time to time by the Underlying Strategy Basket Calculation Agent in order to insure that it remains consistent over time with the definition of developed countries as determined by the Underlying Strategy Basket Calculation Agent.

## 3.2 Accuracy

The SOLACTIVE Atlantic Quality Index is rounded to two decimal places.

## 3.3 Dividends and other distributions

As the index is price return, dividends are not reinvested in the index.

## 3.4 Corporate actions

Corporate actions are treated according to the standard treatment of corporate actions for price return indices according to the following document: <https://www.solactive.com/documents/equity-index-methodology/>.

## 3.5 Calculation of the Index in the event of a market disruption



An Index is not calculated in the event of a Market Disruption Event. If the Market Disruption Event continues over a period of eight Trading Days, the Index Calculator 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

Calculation Date: All weekdays except 25<sup>th</sup> of December and 1<sup>st</sup> of January

Index Rebalancing Date: The last Calculation Day of each quarter

Index Review Date: The Calculation Date which falls five Calculation Dates before the Strategy Rebalancing Date.

Basket Rebalancing Date: The last Calculation Day of each quarter

Basket Review Date: The Calculation Date which falls five Calculation Dates before the Strategy Rebalancing Date

Underlying component: All shares belonging to the Universe as defined above

Selected Underlying components: All underlying components with the 25 highest reference weights

Reference weights: The solution to the optimization problem defined in Section 3.1.1.1

## **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.