Guide for IDX LQ45 Low Carbon Leaders
(Appendix of IDX Announcement No.: Peng-00280/BEI.POP/11-2022 dated 9 November 2022)

1. INDEX INFORMATION

1.1. General Information

Index Name	**IDX LQ45 Low Carbon Leaders**
Index Code	IDXLQ45LCL
Description	An index that aims to reduce the portfolio weighted average carbon intensity by 50% compared to the LQ45 (parent index) and exclude coal production companies while maintaining LQ45 index sectoral availability.
Methodology	Capped Adjusted Free Float Market Capitalization Weighted On each periodic review, the constituent weight is capped so the highest weight in the index is no more than 15%.
Base Date	November 2, 2020 (Base Value = 100)
Launch Date	November 11, 2022

1.2. General Selection Criteria

Universe	All the constituents of LQ45 which disclose Scope 1 and Scope 2 greenhouse gas (GHG) emissions data on the current period sustainability report.
Selection	1. Exclude companies that are classified in coal production industry based on IDX-IC 2. Adjusting weight of companies in the corresponding sector according to their carbon intensity. 3. Remove stocks with highest carbon intensity if Portfolio Weighted Average Carbon Intensity is still higher than 50% compared to the LQ45 (parent index).

2. INDEX MAINTENANCE

2.1. Periodic Evaluation

	Major Evaluation	**Minor Evaluation**
Evaluation Period	January and July	April and October
Effective Date	Third trading day of February and August	Third trading day of May and November
Process / Purposes	Select the stocks of index constituents.	
	- To adjust of changes in the number of listed shares. - Adjust stock weights based on their free float ratios. - Adjust stock weights based on their tilt Carbon Intensity factor. - Adjust the stock weights based on the cap.	
Announcement	5 exchange days or later prior to the effective date.	

2.2. Incidental Evaluation

Besides the periodic evaluation, incidental evaluation can be done at any time if there are significant changes in the number of shares, delisting, or if there is any other information that has significant impact on an index constituent.

3. CONSTITUENT SELECTION PROCESS

3.1. Universe

Stock selection universe used for IDX LQ45 Low Carbon Leaders index are constituents of LQ45 which disclose Scope 1 and Scope 2 greenhouse gas (GHG) emissions data on the current period sustainability report, with the following conditions:

- January Major Evaluation: using LQ45 constituents that will be effective in February of the same year.

- July Major Evaluation: using LQ45 constituents that will be effective in August of the same year.

3.2. Coal Industry Stock Exclusion

From the LQ45 stocks that have Scope 1 and Scope 2 GHG emission data, the next process is to exclude stocks that are classified as coal producers based on the IDX-IC industry. Exceptions are made in the coal producing industry because even though they have

relatively small Scope 1 and Scope 2 GHG emission values compared to other sectors, coal producers contribute quite high emissions from Scope 3 or indirect emissions from the company's supply chain, such as the use of fuel and energy for each company activities.

3.3. Calculation of Carbon Intensity

Carbon Intensity is defined as the total value of Scope 1 and Scope 2 GHG emissions (Ton CO2e) relative to revenues (billion Rupiah). The total value of GHG emissions is obtained from the Sustainability Report disclosed by the Listed Company.

The Carbon Intensity of each stock is calculated as follows:

$$Carbon\ Intensity_i = \frac{Scope\ 1\ Carbon\ Emission_i + Scope\ 2\ Carbon\ Emission_i}{Revenue_i}$$

Where:

$Scope\ 1\ Carbon\ Emission_i$	=	$Scope$ 1 carbon emission of stock i
$Scope\ 2\ Carbon\ Emission_i$	=	$Scope$ 2 carbon emission of stock i
$Revenue_i$	=	Revenue based on the latest published full year financial statements of stock i

3.4. Calculation of Carbon Intensity Tilt Factor

3.4.1. Calculation of Carbon Intensity Z-score

After obtaining the Carbon Intensity form each stock, then the standardization process is carried out using the Z-score. Z-score Standardization ensures that these variables can be compared with each other. Z-score is calculated using the mean and standard deviation of Carbon Intensity of selected stock in the same sector of IDX-IC. If a stock is the only stock in a sector, the Z-score of that stock will be 0.

The z-score of carbon intensity (variable i) is calculated using the following formula:

$$Z_i = -\frac{(x - \mu_i)}{\sigma_i}$$

Where:

Z_i	=	Stock's z-score of variable i
x	=	value of variable i of stock
μ_i	=	the average value of variable i from stocks in the same sector
σ_i	=	the standard deviation value of variable i from stocks in the same sector

3.4.2. Calculation of Carbon Intensity Tilt Factor

After obtaining *Z-score Carbon Intensity* ($Z_{Carbon\ Intensity}$), Carbon Intensity tilt factor for each stock is calculated as follows:

$$Carbon\ Intensity\ TF_i = \begin{cases} 1 + Z_{Carbon\ Intensity_i}, & \text{jika } Z_{Carbon\ Intensity_i} \geq 0 \\ \dfrac{1}{1 - Z_{Carbon\ Intensity_i}}, & \text{jika } Z_{Carbon\ Intensity_i} < 0 \end{cases}$$

Where:

$Carbon\ Intensity\ TF_i$	=	tilt factor of stock i
$Z_{Carbon\ Intensity_i}$	=	Z-score Carbon Intensity of stock i

Furthermore, the Carbon Intensity tilt factor value is rounded up to two decimal places.

4. METHODOLOGY OF INDEX CALCULATION

4.1. Index Calculation Formula (Weighting Method)

The index uses "Capped Adjusted Free Float Market Capitalization Weighted" methodology. This method adds carbon intensity adjustment to the market capitalization besides the free float. Moreover, the weight capping process of the index constituents is also applied. Carbon Intensity factor is defined as the Carbon Intensity tilt factor calculated based on the Z-score of the carbon emissions relative to revenue of the constituent compared to other constituents from the same sector. The index calculation formula is as follows:

$$Index = \frac{\sum_{i=1}^{n} (Market\ Cap_i \times Free\ Float\ Ratio_i \times Carbon\ Intensity\ Tilt\ Factor_i)}{Base\ Market\ Cap} \times 100$$

Where:

Market Cap$_i$	=	Total listed shares × market price of stock i
Free Float Ratio$_i$	=	Ratio of number of free float shares to the total listed shares of stock i
Carbon Intensity Tilt Factor$_i$	=	Carbon Intensity tilt factor of stock i
n	=	Number of index constituents
Base Market Cap$_i$	=	Market capitalization on the Base Date (adjusted in the evaluation period if there are any changes in the number of shares for the index)

4.2. Process of Adjusting Stock Weight Based on Free Float Ratio and Carbon Intensity Tilt Factor

At each evaluation period, the weight of each stock is evaluated based on the value of the free float ratio. There is no technical difference in weight adjustment between major evaluation and minor evaluation. In the major evaluation, this process is preceded by the selection of the index constituents. Furthermore, adjustments to the carbon intensity factor will be made using the carbon intensity value.

4.2.1. Calculation of Free Float

The free float ratio of each stock is calculated based on the ratio of the free float to the total listed shares. The free float definition used follows the definition in Rule Number I-A concerning the Listing of Shares and Equity-Type Securities Other Than Stock Issued By The Listed Company. Afterwards, the percentage value of the free float ratio is rounded to two decimal places.

4.2.2. Calculation of Free Float and Carbon Intensity Tilt Factor Adjusted Market Capitalization

The free float and carbon intensity tilt factor adjusted market capitalization of each stock is calculated as follows:

$$MC_i = P_i \times S_i \times FF_i \times TF_i$$

Where:

MC_i	=	Free float and carbon intensity tilt factor adjusted market capitalization of stock i
P_i	=	Price of stock i
S_i	=	Total listed shares of stock i
FF_i	=	Free float ratio of stock i
TF_i	=	Carbon intensity tilt factor of stock i

4.2.3. Calculation of Stock Weight

The weight of each stock is calculated as follows:

$$Weight_i = \frac{MC_i}{\sum_{i=1}^{n} MC_i}$$

Where:

MC_i	=	Free float and carbon intensity tilt factor adjusted market capitalization of stock i
n	=	Number of constituents
$\sum_{i=1}^{n} MC_i$	=	Total Free float and carbon intensity tilt factor adjusted market capitalization of all constituents

4.3. Stock Weight Capping

During the evaluation period, both major evaluation and minor evaluation, the number of shares is also adjusted to ensure the weight of a stock in the index does not exceed the specified cap.

If there is no constituent that has a weight exceeding the cap, then this step is not necessary. But if there is one or several stocks that have a weight of more than the cap, then the process of adjusting stock weight by capping is applied as follows:

4.3.1. Determining the Number of Capped Stocks

In this process, the number of stocks with weights above the cap are determined. The number of capped stocks is equal to s and the number of uncapped stocks = t = 1-s.

4.3.2. Calculating the Free Float and Carbon Intensity Tilt Factor Adjusted Market Capitalization of Capped Stocks

If MC_s is the total free float and carbon intensity tilt factor adjusted market capitalization of capped stocks and c is the cap, then:

$$MC_s = \frac{s \times c}{1 - (s \times c)} \times MC_t$$

Where:

MC_s	=	Total free float and carbon intensity tilt factor adjusted market capitalization of all capped stocks
MC_t	=	Total free float and carbon intensity tilt factor adjusted market capitalization of all uncapped stocks
s	=	Number of capped stocks
c	=	Cap

4.3.3. Calculating the Capped Free Float and Carbon Intensity Tilt Factor Adjusted Market Capitalization

If $MC_{i\,s}$ is the free float and carbon intensity tilt factor adjusted market capitalization of a capped stock, then:

$$MC_{i.s} = \frac{1}{s} \times MC_s$$

4.3.4. Calculating the Number of Shares for the Index

The adjusted number of shares for index (Adj. S_i) of a stock is calculated by rounding the stock's free float and carbon intensity tilt factor adjusted market capitalization divided by the stock price, as the following formula:

$$\text{Adj. } S_i = \left[\frac{MC_i}{P_i}\right]_{rounded}$$

If a stock is a capped stock, MC_i is equal to $MC_{i.s}$.

4.3.5. Calculating Final Stock Weight

The final weight of each stock is calculated as follows:

$$\text{Weight}_i = \frac{\text{Adj. } MC_i}{\sum_{i=1}^{n} \text{Adj. } MC_i}$$

$$\text{Adj. } MC_i = \text{Adj.} S_i \times P_i$$

Where:

Weight_i	=	Weight for stock index i
$\text{Adj. } MC_i$	=	Market capitalization of stock i after adjustment of free float, carbon intensity tilt factor and capping.
$\sum_{i=1}^{n} \text{Adj. } MC_i$	=	Total market capitalization of all stocks after adjustment of free float, carbon intensity tilt factor and capping.
n	=	Number of constituents

The weight adjustment process is complete if each index constituent does not exceed the cap. The adjustment process should be repeated if there is still any stock that have a weight of more than the cap as a result of the preceding weight adjustment in other stocks.

4.4. Portfolio Weighted Average Carbon Intensity (PWACI) Adjustment Process

4.4.1. Calculation of *Portfolio Weighted Average Carbon Intensity* (PWACI)

The IDX LQ45 Low Carbon Leaders Index aims to reduce PWACI by 50% compared to LQ45 as the parent index. Portfolio Weighted Average Carbon Intensity (PWACI) is defined as Carbon Intensity in Tons of CO2e / Billion Rupiah multiplied the weighted of each constituent.

The Portfolio Weighted Average Carbon Intensity is calculated as follows:

$$PWACI_i = Carbon\ Intensity_i \times Weight_i$$

$$Weight_i = \frac{Adj.MC_i}{\sum_{i=1}^{n} Adj.MC_i}$$

Where:

Bobot_i	=	Weight for stock index i
$\text{Adj.} MC_i$	=	Market capitalization of stock i after adjustment of free float, carbon intensity tilt factor and capping

$\sum_{i=1}^{n} \text{Adj. MC}_i$	=	Total market capitalization of all stocks after adjustment of free float, carbon intensity tilt factor and capping
n	=	Number of constituents

Meanwhile, the PWACI value which is used as a reference for emission reduction uses constituents from the LQ45 index which discloses Scope 1 and Scope 2 emission data and has excluded constituents in the coal producing sector based on IDX-IC (referred as LQ45a), with the following formula:

$$PWACI\ LQ45a_i = Carbon\ Intensity_i \times Weight\ LQ45a_i$$

$$Weight\ LQ45a_i = \frac{MC\ LQ45a_i}{\sum_{i=1}^{n} MC\ LQ45a_i}$$

Where:

$Weight\ LQ45a_i$	=	Weight for LQ45a stock index i
$MC\ LQ45a_i$	=	Market capitalization of LQ45a stock i after adjustment of free float, carbon intensity tilt factor and capping
$\sum_{i=1}^{n} MC\ LQ45a_i$	=	Total market capitalization of all LQ45a stock after free float, carbon intensity tilt factor and capping
n	=	Number of constituents

4.4.2. Portfolio Weighted Average Carbon Intensity (PWACI) Adjustment

The PWACI adjustment process is carried out with the following steps:

1. Calculate the value of %PWACI relative to LQ45 as the parent index with the following formula:

$$\%PWACI = \frac{\sum_{i=1}^{n} PWACI_i}{\sum_{i=1}^{n} PWACI\ LQ45a_i} \times 100\%$$

where:

$\sum_{i=1}^{n} PWACI_i$	=	Total Portfolio Weighted Average Carbon Intensity all stocks after adjustment of free float, carbon intensity tilt factor and capping
$\sum_{i=1}^{n} PWACI\ LQ45_i$	=	Total Portfolio Weighted Average Carbon Intensity all LQ45a stocks after adjustment of free float, carbon intensity tilt factor and capping
n	=	Number of constituents

2. The %PWACI adjustment process is complete if the result meets the specified target which is $\leq 50\%$ and these stocks are selected as the constituents of the IDX LQ45 Low Carbon Leaders index.

3. However, if the %PWACI result is still greater than the specified target or > 50%, then adjustments are made by reducing the number of selected constituents starting from the constituent with the highest Carbon Intensity compared to all constituents.

4. To maintain the representation of constituents in each sector, the reduction of constituents with the highest Carbon Intensity is not carried out in sectors that only have 1 constituent.

5. The PWACI adjustment process should be repeated until %PWACI is obtained in accordance with the specified target, which is ≤ 50% compared to the parent index.

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