

INDEX RULE BOOK

Euronext® Core Europe PAB 50

Version 22-01

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indices.euronext.com

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1. GENERAL

This document is applicable to the Euronext Core Europe PAB 50 ("Index Family"), which consists of all the Indices as mentioned in the Reference Table.

The Index Family is designed to reflect the price level trends in the trading of shares listed in Europe.

Euronext Paris is the Administrator of this Index Family. The Expert Committee acts as Independent Supervisor of the Index Family.

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VERSION NOTES

Version	Effective date	New or changed parts	Reference/announcement
21-01	15-12-2021	restyled version in view of newly published Calculation and Corporate Actions rulebooks	
22-01	13-01-2022	Addition of 4% Decrement	

2. INDEX REVIEWS

2.1 REVIEW FREQUENCY AND RELEVANT DATES

Review frequency: Annual

Review Effective Date: After the market close of the third Friday of December.

Review Cut-Off Date: After the market close of November.

Review Announcement Date: At least five days before the Review Effective Date.

Review Weighting Announcement Date: Two days before the Review Effective Date.

2.2 INDEX METHODOLOGY PRINCIPLES

2.2.1 General Methodology Objectives

The Index seeks compliance with Paris Aligned Benchmark (PAB) objectives.

The Index targets 50 constituents after exclusion process. Compliance with PAB is aimed to via weight adjustments following core selection and preliminary weights.

The weight of the highest Weighted Carbon Intense stock in the index is diminished up to 30% and rebalanced to less Carbon Intense companies. We reiterate this process with a second company if needed and so on, until the index is compliant with the PAB Carbon Intensity requirements.

2.2.2 Data Partner

Vigeo Eiris (V.E) provides research datapoints related to EGS, Energy transition, Carbon exposure, Controversies and Activity involvement.

2.2.3 Climate Impact sections

Grouping of companies based on NACE section classification (Annex I to EC Regulation No 1893/006) into two sections:

- High Climate Impact section
 - NACE Sections A to H and Section L
- Low Climate Impact section
 - NACE Section that are not part of the High Climate Impact section

NACE Section	NACE Section Name	Climate Impact Section Group
A	AGRICULTURE, FORESTRY AND FISHING	High
B	MINING AND QUARRYING	High
C	MANUFACTURING	High
D	ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLIES	High
E	WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	High
F	CONSTRUCTION	High
G	WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	High

H	TRANSPORTATION AND STORAGE	High
I	ACCOMMODATION AND FOOD SERVICE ACTIVITIES	Low
J	INFORMATION AND COMMUNICATION	Low
K	FINANCIAL AND INSURANCE ACTIVITIES	Low
L	REAL ESTATE ACTIVITIES	High
M	PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	Low
N	ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	Low
O	PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	Low
P	EDUCATION	Low
Q	HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	Low
R	ARTS, ENTERTAINMENT AND RECREATION	Low
S	OTHER SERVICE ACTIVITIES	Low
T	ACTIVITIES OF HOUSEHOLDS AS EMPLOYERS; UNDIFFERENTIATED GOODS- AND SERVICES-PRODUCING ACTIVITIES OF HOUSEHOLDS FOR OWN USE	Low
U	ACTIVITIES OF EXTRATERRITORIAL ORGANISATIONS AND BODIES	Low

2.3 REVIEW SELECTION

Step 1: Index Universe

The Index Universe consists of the Companies included in the Euronext Eurozone 300 index, with Main Listing in France (XPAR), Germany (XETR), The Netherlands (XAMS), Belgium (XBRU) or Luxembourg (XLUX). At reviews this means included in the Index after the Review Effective Date.

The Investable Universe consists of the Companies included in the Index Universe excluding those that don't have Carbon Emission Data.

Step 2: Eligibility screening at reviews

Step2a: Eligibility Screens

The following Companies are not eligible:

- Companies facing critical controversies with regards to UNGC principles, revenue linked to tobacco production or controversial weapons (cluster munitions and anti-personnel landmines) as determined by V.E.
- Companies with a 3 months ADTV of less than €10m on the market of reference
- Companies with Involvement above 0% in Coal, 10% in Oil, 10% in Natural Gas and Electricity producers with lifecycle GHG Emissions higher than 100Gco2/kWh as determined by V.E
- Companies with an ESG score below 30 as determined by V.E.

Step2b: Worst in Class Exclusions

The Companies that are left after Step 2b are ranked on Energy Transition score as provided by V.E., in case of equal Energy Transition score the Companies with the highest Free Float Market Capitalization will rank higher. The 30% lowest ranking Companies (rounded down) are not eligible.

Step 3: Selection Ranking

Eligible Companies are ranked on their Free Float Market Capitalization on the Review Cut-Off Date.

Step 4: Selection of constituents at the reviews

The 50 highest ranking Companies are selected.

2.4 PERIODICAL WEIGHTING UPDATE

Weighting method

The index is Non-Market Capitalisation weighted, based on PAB weighting procedure.

The Weighting Factors are explained in the following paragraphs.

Number of shares

The new weightings are calculated such that each constituent will have the weight in accordance with the outcome of the weighting procedure detailed in 2.5.

The Number Of Shares are determined based on the closing prices of the Companies to be included in the Index on the Review Weightings Announcement Date.

Free Float factor

The Free Float Factor is not applicable for this Index Family.

Capping Factor

The Capping Factor is not applicable for this Index Family.

2.5 WEIGHT CALCULATION

PAB indices must comply with exposure constraints to sectors linked to climate impact. This will be achieved via proportional adjustments of the Preliminary Index Weights that were computed in sections above.

Each stock in the Index selection is assigned to a NACE Letter Section. Companies belonging to NACE Sections A to H and L (subject to change in line with regulation) will be collectively referred to as High Climate Impact Section (HCIS). The rest of stocks in the Index selection will be referred to as Low Climate Impact Section (LCIS).

The Preliminary Index Weights will be aggregated and grouped by the two Climate Impact Sections. The same will be done with weights of the Investable Universe. Depending on the comparison of these weights, the index preliminary weight may or may not be adjusted, as described in the following two sections. Options 1 and 2 outlined below are mutually exclusive and only one of them will be true at any given Index Review.

Option 1)

If the sum of Preliminary Index Weights in the HCIS is *lower* than the sum of weights in the HCIS of the Investable Universe, adjustments will be performed. The objective is to increase the exposure of the index to the HCIS and make it at least equivalent to the exposure of the Investable Universe.

Ex:	Index Preliminary Weights	Investable Universe	Adjustments Needed to Index Preliminary Weights?
High Climate Impact Section	60%	70%	Yes, +10%
Low Climate Impact Section	40%	30%	Yes, -10%

- Preliminary weights will be multiplied by an Adjustment Ratio where AR_i is the Adjustment Ratio depending on the Climate Section (i) of the corresponding stock whose weight is being adjusted, according to the following definition

Value of i	Climate Section Name	AR_i
HCIS	High Climate Impact	$AR_{HCIS} = \frac{MIU_{HCIS}}{PREL_{HCIS}}$ <p>where</p> <p>MIU_{HCIS} = Weight of HCIS in the Investable Universe</p> <p>$PREL_{HCIS}$ = Preliminary Index Weight of HCIS</p>
LCIS	Low Climate Impact	$AR_{LCIS} = \frac{MIU_{LCIS}}{PREL_{LCIS}}$ <p>where</p> <p>MIU_{LCIS} = Weight of LCIS in the Investable Universe</p> <p>$PREL_{LCIS}$ = Preliminary Index Weight of LCIS</p>

Option 2)

If the sum of Preliminary Index Weights in the HCIS is *higher or equal* than the sum of weights in the HCIS of the Investable Universe, no adjustments will be performed.

Ex:	Index Preliminary Weights	Investable Universe	Adjustments Needed to Index Preliminary Weights?
High Climate Impact Section	80%	70%	No
Low Climate Impact Section	20%	30%	No

2.5.1 Climate Impact Section-Adjusted Preliminary Weights

Following the process above, the weights of the index will be referred to as Climate impact Section-Adjusted Preliminary Weights. This is for differentiation purposes and consistency, even if no adjustments were made due to Option 2. Once the total weights of the two sections are established, they are locked and will not change on aggregate, even if individual stock weights within each of these sections can be adjusted further to comply with decarbonization objectives, as described in the next section.

2.5.2 Decarbonization objectives

2.5.3 Carbon Intensity calculation and targets

Euronext will calculate the Carbon Intensity (CI) (see Step 2 below) for each of the companies in the Index as well as for each company in the Investable Universe.

The target metric for decarbonization objectives is the Weighted Average Carbon Intensity (WACI) (see Step 3 below). The following two objectives need to be respected at the same time – they form the **PAB Double Cap**.

i) Carbon Intensity reduction of the Index vs the Investable Universe of at least 50%

- The WACI of the Index each year will be compared to the WACI of the Investable Universe

ii) Year-on-year self-decarbonization trajectory of the Index¹

- During the review in base year Euronext will calculate the WACI of the Index and calculate a decreasing trajectory of carbon intensity target for future years, with 7% annual geometrical decrease
- This self-decarbonization trajectory will be made public

Ex:	Index WACI Trajectory	Trajectory Formula
Base Year T	1000	WACI _T
Year T+1	930	(1 - 0.07) * WACI _T
Year T+2	864.9	(1 - 0.07) ² * WACI _T

2.5.4 Weight adjustments to achieve decarbonization objectives

Climate Impact Section-Adjusted Preliminary Weights (see section above) will be further adjusted iteratively, one company at a time, until the WACI of the Index complies with the targets. This process is described in the following steps.

Step 1: Initialize the Temporary Index weights

- The initial stock weights used for the Index in this iterative process are set to be the Climate Impact Section-Adjusted Preliminary Weights

Step 2: Establish the CI and weighted CI of all companies individually

- For each stock in Index and in the Investable Universe calculate:

$$CI = \frac{\text{Sum of Emissions}}{\text{Enterprise Value incl. Cash}}$$

- Emissions are Scope 1+2+3 carbon emission, provided by VE²
- Enterprise Value incl. Cash = Market capitalization + Debt

- For Index:

$$\text{Stock-level weighted CI} = CI * \text{Temporary Index weight}$$

- For Investable Universe:

$$\text{Stock-level weighted CI} = CI * \text{FFMC weight}$$

¹ Trajectory calculation only applicable since the publication of the index

² Carbon intensity of stocks not covered by Scope 3 VE data is estimated with sector medians

Step 3: Establish the WACI of the Index and the Investable Universe

- Both follow a generic calculation for a portfolio of stocks
- $WACI \text{ of Portfolio} = \sum \text{Stock-level weighted CI}$

Step 4: Establish the targets for decarbonization objectives

- Target 1 = $50\% * WACI \text{ of Investable Universe in the year of the review}$
- Target 2 = WACI value of the self-decarbonization trajectory in the year of the review
 - N.B.: Target 2 in Base Year (2021) is not applicable, applies only from Base Year + 1
- The minimum of Target 1 and Target 2 is the PAB Double Cap

Step 5: Compare the WACI of the Index from Step 3 with the PAB Double Cap from Step 4

- Condition: WACI of the Index needs to be lower or equal to the PAB Double Cap
 - If this condition is satisfied, stop with the process, no more adjustments to the Temporary Index weights are done and they become the final index weights, proceed to Step 11
 - If this condition is *not* satisfied, continue with the process

Next steps comprise the iterative process itself and are only executed if the condition in Step 5 is not satisfied.

Step 6 [Outer Loop]: Determine the candidate stock for reduction of Temporary Index weight

- 1st iteration only
 - Choose the company with the highest weighted CI
- 2nd - 5th iteration
 - Choose the company with the highest weighted CI subject to it being different from stocks already chosen in the 1st-5th iteration
- Principle - perform loops in batches of 5 iterations where stocks will be selected based on highest weighted CI but always at least 5 different stocks will be chosen successively (6th-10th iter., 11th-15th iter. and so on) until the targets are met
 - N.B.: As a consequence of these rules and as an example of permissible action, if stock has had its weight reduced in the first batch (1st-5th iteration), its weights can be further reduced in the next batches if it happens to still have the highest weighted CI at any point

Step 7 [Inner Loop]: Decrease the Temporary weight of the candidate stock from Step 6

- First decrease of -10%
- If PAB targets not met (Step 10), further 2 decreases, each of -10%, for an aggregated maximum reduction of -30%

Ex:	Weight of Stock ABC
Temporary weight when entering Step 7	4%
Temporary weight after -10%	$3.6\% = 4\% \times (1 - 0.1)$
Temporary weight after -20%	$3.2\% = 4\% \times (1 - 0.2)$
Temporary weight after -30%	$2.8\% = 4\% \times (1 - 0.3)$

Step 8: Determine stocks eligible for rebalancing the weight decreased in Step 7

Companies with the following attributes are eligible for weight increase rebalancing:

- Same Climate Impact Section as stock from Step 6
- Lower CI (*not* necessarily weighted CI) compared to stock from Step 6
- No weight reduction so far within the current batch
 - N.B.: this in no way contradicts the further 10% decrements in Step 7 as the stocks being eligible for weight rebalancing are by definition different from the stock in step 7
- Not capped

Step 9: Rebalance the weight taken in Step 7 to eligible companies from Step 8

- The weight redistribution is proportional to $1/(\text{FFMC})$, taking into account only the FFMC of the eligible companies, subject to the following constraints:
 - If a stock reaches one of the weight limits before the reallocation of the weight corresponding to its proportion according to the $1/(\text{FFMC})$ principle, the weight is capped at maximum and the excess weight that was not allocated is distributed among the rest of the eligible stocks using the $1/(\text{FFMC})$ principle again, excluding the FFMC of the capped stock

Step 10: Compare the new WACI of the re-weighted Index against the PAB Double Cap

- Condition: WACI of the Index needs to be lower or equal to PAB Double Cap
- If this condition is satisfied, stop with the iterations and proceed to Step 11
- If this condition is *not* satisfied, continue with the iterations
 - If the weight in stock in Step 7 has been decreased *less than 3 times* within this instance of the inner loop
 - Stay within the inner loop, go back to Step 7 and decrease the weight by further 10%
 - If the weight in stock in Step 7 has been decreased *3 times* within this batch of iterations
 - Keep the rebalanced weights, exit the inner loop and go back to Step 6 to select a different stock

Step 11: Final weights, publish index and the final WACI

In case the algorithm above does not converge to a solution, stock selection from Step 5.6 is modified such as the stock with the highest Carbon Intensity is replaced by the largest FFMC eligible stock with lower Carbon intensity. Sections 5.6 and 5.7 are then performed again. This might continue iteratively until the index meets all the objectives.

3. REFERENCES

Index name	Isin code	Mnemo	Bloomberg Code	Reuters code	Base date	Base value	Publication since	Index Type
Euronext Core Europe PAB 50	FR0014003PU4	CPABP	CEPAB5P	.CPABP	1 Jan 2010	1000	2 Jun 2021	Price Return
Euronext Core Europe PAB 50 NR	FR0014003PP4	CPABN	-	.CPABN	1 Jan 2010	1000	2 Jun 2021	Net Return
Euronext Core Europe PAB 50 GR	FR0014003PN9	CPABG	CEPABG	.CPABG	1 Jan 2010	1000	2 Jun 2021	Gross Return
Euronext Core Europe PAB 50 Decrement 5%	FR0014003PV2	CPAB5	CEPAB50	.CPAB5	1 Jan 2010	1000	2 Jun 2021	Decrement 5% on NR
Euronext Core Europe PAB 50 Decrement 4%	FRCLIM000015	CPAB4	CEPAB4	.CPAB4	1 Jan 2010	1000	13 Jan 2022	Decrement 4% on NR

3.1 BASE CURRENCY

The Base Currency of this index family is Euro.

3.2 PUBLICATION

The opening index level is disseminated at the same time as the first index level. The index is calculated based on the most recent prices of transactions concluded on the relevant markets. The level of the index is in principle published every 15 seconds. The index is calculated from 09:00 hours until Euronext Markets stop regular daytime trading on the days when the Euronext Markets are open for trading.

The closing level is the last level disseminated on the trading day.

4. ESG DISCLOSURES

EXPLANATION OF HOW ESG FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY	
Item 1. Name of the benchmark administrator.	Euronext Paris
Item 2. Type of benchmark	Equity Benchmark
Item 3. Name of the benchmark or family of benchmarks.	Euronext Core Europe PAB 50 Index
Item 4. Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	Yes
Item 5. If the response to Item 4 is positive, please find below the ESG factors that are taken into account in the benchmark methodology and how they are used for selection, weighting and exclusion	
a) List of combined ESG factors	<p>Exclusion:</p> <ul style="list-style-type: none"> • Companies facing critical controversies with regards to UNGC principles • Companies involvement in controversial weapons (Cluster munitions, Anti-personnel mines) • Companies involved in production of tobacco • Companies involved in Coal, Oil, Natural Gas and Electricity producers with lifecycle GHG Emissions higher than 100Gco2/kWh • Companies with an ESG score below than 30 • Companies not covered by VE research on Carbon Emissions <p>Weighting:</p> <ul style="list-style-type: none"> • Weighting based on Free Float Market Capitalization. • Further weighting adjustments to meet PAB objectives. If the weights stemming from the core methodology and alignment of High Carbon Impact sections do not satisfy the decarbonization targets, we proceed to an iterative reweighting of the constituents. The weight of the highest Weighted Carbon Intense stock in the index is diminished up to 30% and rebalanced in in its Super-sector, to less Carbon Intense companies. We reiterate this process with a second company if needed and so on, until the index is compliant with the PAB Carbon Intensity requirements.
b) List of environmental factors considered:	Refer to a)

c) List of social factors considered:	Refer to a)
d) List of governance factors considered:	Refer to a)
Item 6. Data and standards used.	
<p>a) Data input.</p> <p><i>(i) Describe whether the data are reported, modelled or, sourced internally or externally.</i></p> <p><i>(ii) Where the data are reported, modelled or sourced externally, please name the third party data provider.</i></p>	<p>V.E</p> <ul style="list-style-type: none"> • ESG score • VE research on Carbon Emissions • United Nations Global Compact (UNGC) screening • Controversial weapons involvement <p>Fossil fuel involvement</p>
<p>b) Verification of data and guaranteeing the quality of those data.</p> <p><i>Describe how data are verified and how the quality of those data is ensured.</i></p>	<p>V.E</p> <p>Vigeo-Eiris represents and warrants that to the best of its knowledge the Methodology is robust and reliable, rigorous, and capable of validating and verifying including, but not limited to, the following:</p> <ul style="list-style-type: none"> • Shall promptly correct any errors made in its computations of the Data and inform Euronext thereof, immediately. • Periodically review the Methodology • Has clear written rules identifying how and when discretion may be exercised when deviating from the methodology • Will inform Euronext prior to making any material change to the Methodology and will provide Euronext with the rationale for such change.
<p>c) Reference standards</p> <p><i>Describe the international standards used in the benchmark methodology.</i></p>	<p>V.E</p> <p>The methodology behind ESG performance indicators and the assessment of controversies severity is based on the following international standards:</p> <ul style="list-style-type: none"> • Global Reporting Initiative (GRI) • OECD Guidelines for Multinational Enterprises, and sectorial guidance • G20/OECD recommendations on Corporate governance • UN Conventions and recommendations, • UN Global Compact Principles • UN Sustainable Development Goals • ILO Conventions, including the core ones, and recommendations • TFCO recommendations • Paris Agreement (UNFCCC)
<p>Information updated on: 29th of November 2021</p>	

Overview of Rulebooks and other documents applicable for Euronext Indices

The following documents, all available on or via the following link: <https://www.euronext.com/en/indices/index-rules> should be read in conjunction with this document or provide other relevant information for the reader.

BENCHMARK STATEMENT

The Benchmark Statement identifies the primary features of an index family or families of indices in the context of the EU Benchmark regulation. For ESG based indices it also contains disclosure of ESG factors and reporting of scores.

COMPLIANCE STATEMENT

The Compliance Statement provides details, for both significant and non-significant benchmarks, for which provisions the Administrator has chosen not to apply, and offers an explanation as to why it is appropriate not to apply each provision.

GOVERNANCE EURONEXT INDICES

The purpose of the 'Governance Euronext Indices' is to describe the role and responsibilities of each of the governance bodies that are part of the Benchmark Administrators of Euronext.

RULEBOOK OF EACH FAMILY OF INDICES

Each index is part of an index family that shares the basis for selection (universe) and which is managed in a comparable way. A separate rulebook is provided for each index family that will describe the specific features of that index family as well as specific elements of each index within that family.

INDEX CALCULATION AND PERIODICAL REVIEW Euronext Indices

The Methodology Euronext describes all common aspects that apply for the

- periodical reviews, and
- the calculation of indices

EURONEXT INDICES CORPORATE ACTION RULES

- treatment of corporate actions

of indices provided by Euronext Indices.

EURONEXT ESG PROVIDERS METHODOLOGIES

An overview of various methods applied by providers of ESG scorings and labels

PROCEDURES EURONEXT INDICES

These rulebooks describe the various procedures that are applied for all Euronext Indices:

- Correction Policy
- Announcement Policy
- Complaints Procedure
- Consultations Procedure
- Procedure For Cessation of Indices

RULES OF PROCEDURE INDEPENDENT SUPERVISORS

For each Independent Supervisor Euronext publishes a 'Rules of Procedure' that describes the responsibilities and composition of each Independent Supervisor.

BENCHMARK OVERSIGHT COMMITTEE CHARTER

The Benchmark Oversight Committee Charter describes the role and responsibilities of the Benchmark Oversight Committee.