



iBoxx MSCI EUR High Yield Paris Aligned Capped TCA Index

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1 iBoxx MSCI EUR High Yield Paris Aligned Capped TCA

The iBoxx MSCI EUR High Yield Paris Aligned Capped TCA is designed to reflect the performance of EUR denominated sub-investment grade corporate debt and conform to the minimum standards required of European Union (EU) Paris-Aligned Benchmarks (PABs), as set out in the Commission Delegated Regulation (EU) 2020/1818 of 17 July 2020, which is aimed at transitioning toward a lower-carbon based economy.

The iBoxx MSCI EUR High Yield Paris Aligned Capped TCA is an integral part of the global Markit iBoxx index families, which provide the marketplace with accurate and objective indices by which to assess the performance of bond markets and investments.

The iBoxx MSCI EUR High Yield Paris Aligned Capped TCA ("the index") is rebalanced once a month at month-end (the "rebalancing date") and consists of sub-investment grade EUR denominated bonds issued by corporate issuers from developed countries and rated by at least one of three rating services: Fitch Ratings, Moody's Investors Service, or S&P Global Ratings.

The index applies ESG filters to high yield bonds with a remaining time to maturity of more than 1 year and an issuer notional of at least EUR 250m. Issuers are screened out that breach ESG standards and product involvement screens on Thermal Coal, Adult Entertainment, Alcohol, Gambling, Tobacco, Controversial Weapons, Nuclear Weapons, Conventional Weapons, Civilian Firearms, Nuclear Power, Genetically Modified Organisms and Cannabis Recreational as captured by MSCI ESG Research. Issuers in breach of the UN Global Compact or with notable controversies related to its operations and/or products with a severe social or environmental impact are also not eligible for the index. In addition, ESG tilt and momentum factors are applied.

The index follows the minimum requirements set by EU PABs and follows a specified decarbonisation trajectory, detailed in section *EU Climate Transition*. In order to meet the required decarbonisation targets, on each rebalancing date, bond weights are determined through an optimisation process. This optimisation process is outlined in further detail in section *Optimisation of Bond Weights*.

The bonds in the iBoxx MSCI EUR High Yield Paris Aligned Capped TCA must meet all the criteria described below as of the close of business three business days prior to the rebalancing date provided that the relevant bond data can be verified, at Markit Indices Limited's sole discretion, as of such date ("bond selection cut-off date"). The new index composition becomes effective on the first business day of the next month (the "composition month").

All iBoxx indices are priced based on multiple data inputs. The iBoxx MSCI EUR High Yield Paris Aligned Capped TCA follows the pricing methodology as described in the document Markit iBoxx Pricing Rules publicly available under Methodology on www.ihsmarkit.com.

This document covers the index selection rules and calculation methodology.

2 Selection Criteria

The following selection criteria are applied to select the constituents for the iBoxx MSCI EUR High Yield Paris Aligned Capped TCA:

- Bond Type
- Credit Rating
- Time to Maturity
- Amount Outstanding
- ESG Criteria
- Classification

2.1 Bond type

In particular, bonds with the following characteristics are included:

- fixed coupon bonds (“plain vanilla bonds”)
- zero coupon bonds
- floating rate notes with EURIBOR or €STR as a reference interest rate (including overall/base rate floors at 0% and/or regulatory caps set at the rate defined by the usury laws of the relevant jurisdiction)
- sinking funds with known redemption schedules
- bonds with American and European call options
- bonds with poison put options
- bonds with make-whole call or tax changes call provisions
- event-driven bonds such as rating and registration-sensitive bonds
- pay-in-kind bonds
- callable perpetuals
- callable Fixed-to-floater bonds
- financial subordinated debt with a contingent conversion feature at the point of non-viability, in line with the capital adequacy requirements of Basel III

The following bond types are specifically excluded from the index:

- structured notes (CDO, CLO)
- index-linked notes
- bonds with redemption linked to an entity other than the issuer
- optionally and mandatory convertible bonds
- floating rate with base/overall floors that are not set at 0% or with caps that are not regulated by the usury laws of the relevant jurisdiction
- subordinated bank or insurance debt with mandatory contingent conversion features that are based on an observable trigger
- retail bonds and private placements

For retail bonds and private placements, publicly available information is not always conclusive and the classification of a bond as a retail bond or a private placement will be made at IHS Markit's discretion based on the information available at the time of determination. IHS Markit may consult with the specific Index Advisory Committees to review potential retail bonds or private placements. Any bond classified as retail or private placement is added to the list of excluded private placements and retail bonds. The list is published on www.ihsmarkit.com for future reference and to ensure decision's consistency.

In instances where a new bond type is not specifically excluded or included according to the published index rules, IHS Markit will analyse the features of such securities in line with the principles set out in 2.1 of this guide. IHS Markit may consult the specific Index Advisory Committees. Any decision as to the eligibility or ineligibility of a new bond type will be published and the index rules will be updated accordingly.

2.2 Credit Rating

All bonds in the iBoxx MSCI EUR High Yield Paris Aligned Capped TCA must have an iBoxx Rating of sub-investment grade.

Ratings from the following three credit rating agencies are considered for the calculation of the iBoxx Rating:

- Fitch Ratings
- Moody's Investor Service
- S&P Global Ratings

Sub-investment grade is defined as BB+ or lower from Fitch Ratings or S&P Global Ratings and Ba1 or lower from Moody's Investor Service, but not in default.

If a bond is rated by more than one of the above agencies, then the iBoxx rating is the average of the provided ratings. The rating is consolidated to the nearest rating grade. Rating notches are not used.

All ratings must be above D (default). If a bond is distressed or rated “defaulted” by any agency (D by Fitch Ratings or S&P Global Ratings, or no longer rated by Moody’s Investor Service), if it trades flat or a debt restructuring has been offered to the bondholders, the bond is no longer eligible for the iBoxx MSCI EUR High Yield Paris Aligned Capped TCA and is removed at the next rebalancing.

All split-rated bonds considered high yield are included in the Markit iBoxx EUR High Yield cum crossover index.

For more information on how the average rating is determined, please refer to the *iBoxx Rating Methodology* document. The methodology can be found on www.ihsmarkit.com under *Methodology*.

2.3 Issuer eligibility

Only EUR denominated debt from corporate issuers is eligible, independent of country of risk or origin.

2.4 Time to maturity

All bonds must have a remaining time to maturity of at least one year at rebalancing. The time to maturity is calculated from the rebalancing date to the assumed workout date of the bond, by using the day count convention of the bond.

The workout date for a bond is determined based on the bond features as follows:

- For plain vanilla bonds, the expected workout date is the final maturity date
- For dated and undated callable financial hybrid capital bonds, the workout date is assumed to be the first call date
- For non-financial hybrid capital bonds with an interest rate reset, the workout date is assumed to be the first reset date
- For soft bullets, the expected workout date is determined using the first call date
- For senior callable bank bonds, the first call date will be considered as the workout date if the call date is more than 11 months prior to the final maturity. In case the first call date is 11 months or less prior to the maturity date, the final maturity date will be assumed as the workout date to calculate the time to maturity

2.5 Amount outstanding

The minimum required amount outstanding is EUR 250 million. The cutoff date to determine the amount outstanding is three business days before the rebalancing.

2.6 ESG

Minimum exclusions are required for an index to qualify as an EU Paris-aligned Benchmark. These are described in Article 12 of the Commission Delegated Regulation (EU) 2020/1818 of 17 July 2020, contained in the EU delegated acts within the [Official Journal of the European Union, L 406, 3 December 2020](#) ("Regulations").

The Index goes beyond the minimum to use additional exclusion criteria.

2.6.1 MSCI ESG Business Involvement Screening

Issuers with exposure to the following activities are excluded using the following thresholds:

- *Adult Entertainment*
 - > derives 5% or more revenue from the production of Adult Entertainment material, or;
 - > derives 15% or more revenue from Adult Entertainment material.
- *Alcohol*
 - > derives 5% or more revenue from the production of Alcohol-related products, or;
 - > derives 15% or more revenue from Alcohol-related products.
- *Cannabis Recreational*
 - > produce and/or retail cannabis for recreational use.
- *Civilian Firearms*
 - > involved in the production of civilian firearms, or;
 - > derives 5% or more revenue from civilian firearms.
- *Controversial Weapons*
 - > involved in the production/ownership of chemical or biological weapons or related components, depleted uranium weapons, blinding lasers, non-detectable weapons, incendiary weapons, or;
 - > has industry tie to the manufacturing of landmines, except those for safety purposes, or;
 - > has industry tie to cluster bombs.
- *Conventional Weapons*
 - > derives 5% or more revenue from the production of Conventional Weapons, or;
 - > derives 15% or more revenue from weapons systems, components, and support systems and services.

- *Gambling*
 - > derives 5% or more revenue from ownership or operation of Gambling-related activities, or;
 - > derives 15% or more revenue from Gambling-related activities
- *Genetically Modified Organisms*
 - > derives 5% or more revenue from genetic engineering-related business activities.
- *Nuclear Power*
 - > generates 5% or more of its total electricity from nuclear power, or;
 - > has 5% or more of installed capacity attributed to nuclear sources, or;
 - > derives 15% or more revenue from Nuclear Power-related activities.
- *Nuclear Weapons*
 - > manufactures nuclear warheads and/or whole nuclear missiles, or;
 - > manufactures components for nuclear-exclusive delivery platforms, or;
 - > provides auxiliary services related to nuclear weapons, or;
 - > manufactures components that were developed or are significantly modified for exclusive use in nuclear weapons, or;
 - > manufactures components that were not developed or not significantly modified for exclusive use in nuclear weapons but can be used in nuclear weapons, or;
 - > manufactures or assembles delivery platforms that were developed or significantly modified for the exclusive delivery of nuclear weapons, or;
 - > manufactures or assembles delivery platforms that were not developed or not significantly modified for the exclusive delivery of nuclear weapons but have the capability to deliver nuclear weapons.
- *Tobacco*
 - > involved in the production of Tobacco products, or;
 - > derives 5% or more revenue from Tobacco products.

2.6.2 MSCI Climate Change Metrics

- Thermal Coal
 - > companies with an industry tie to thermal coal, in particular reserve ownership, production and power generation. Companies that derive some annual revenues (>0%) from thermal coal
- Evidence of Thermal Coal Reserves
 - > companies that provide evidence of owning thermal coal including those that own less than 50% of a reserves field. Evidence of owning reserves includes companies providing the exact

volume of reserves, and companies making a statement about their ownership of reserves.

Thermal coal is used to fire power plants that produce steam for electricity and industrial uses.

- Evidence of Total Coal Reserves
 - > companies that provide evidence of owning coal reserves, including those that own less than 50% of a reserves field. Evidence of owning reserves includes companies providing the exact volume of reserves, and companies making a statement about their ownership of reserves.
- Evidence of Metallurgical Coal Reserves
 - > companies that provide evidence of owning metallurgical coal, also sometimes referred to as coking coal reserves, including those that own less than 50% of a reserves field. Evidence of owning reserves includes companies providing the exact volume of reserves, and companies making a statement about their ownership of reserves.
- Oil & Gas
 - > companies deriving 10% or more revenue from oil and gas-related activities, including distribution/retail, equipment and services, extraction and production, petrochemicals, pipelines and transportation and refining but excluding biofuel production and sales and trading activities
- Power Generation
 - > companies deriving 50% or more revenue from thermal coal-based power generation, liquid fuel-based power generation and natural gas-based power generation

2.6.3 MSCI ESG Controversies

- **Controversy Score**
 - > all companies that are involved in very serious controversies involving the environmental, social, or governance impact of their operations and/or products and services. In particular, companies with an MSCI ESG Controversies Score of 0 are excluded.
- **Environmental Controversy Score**
 - > all companies involved in serious controversies related to land use and biodiversity, toxic spills and releases, energy and climate change, water management, operational non-hazardous waste, the environmental impact of products and services, and management of supply chain environmental impact. Companies with an MSCI ESG Environment - Controversy Score greater than 1 are excluded.
- *UNGC Compliance*
 - > all companies that are not in compliance with the United Nations Global Compact principles. Companies with an MSCI ESG rating of 'Fail' are excluded.

At rebalance, all MSCI ESG Research data used is as of the cut-off date (t-2). Corporate issuers that have incomplete MSCI ESG Research data coverage for the above screening criteria as of the bond selection cut-off date are excluded from the index.

3 Bond classification

All bonds are classified based on the principal activities of the issuer and the main sources of the cash flows used to pay coupons and redemptions. In addition, a bond's specific collateral type or legal provisions are evaluated. Hence, it is possible that bonds issued from different subsidiaries of the same issuer carry different classifications.

The issuer classification is reviewed regularly based on updated information received by IHS Markit, and status changes are included in the index at the next rebalancing if necessary.

Where the sector classification of a specific entity is not very clear due to the diversified business of the entity, decision will be made at IHS Markit's discretion. IHS Markit will assign the IHS Markit classification according to its evaluation of the business risk presented in the security prospectus and annual reports, if available. IHS Markit will also compare the classification to peers in the potential sectors and may consult with the Index Advisory Committees. Membership lists including classification are published on the FTP server and in the *Indices* section on www.ihsmarkit.com for registered users.

3.1 Corporates

Bonds issued by public or private corporations. Corporate bonds are further classified into Financials and Non-Financials bonds and then into their multiple-level economic sectors, according to the issuer's business scope. The category insurance-wrapped is added under Financials for corporate bonds whose timely coupon and/or principal payments are guaranteed by a special mono-line insurer such as AMBAC or MBIA. The sector overview is shown in Table 1 below.

Table 1: Overview of Markit iBoxx Corporates Sectors

	Economic Sector	Market Sector	Market Sub-Sector
Financials	Core Financials	Banks	Banks
		Insurance	Life Insurance
			Nonlife Insurance
	Financial Services	Financial Services	General Financial
			Equity Investment Instruments
			Nonequity Investment Instruments
		Insurance-wrapped	*
Real Estate	Real Estate	Real Estate Investment & Services	
		Real Estate Investment Trusts	
Non-Financials	Basic Materials	Basic Resources	Forestry & Paper
			Industrial Metals
			Mining

Economic Sector	Market Sector	Market Sub-Sector
	Chemicals	Chemicals
Consumer Goods	Automobiles & Parts	Automobiles & Parts
	Food & Beverage	Beverages
		Food Producers
	Personal & Household Goods	Household Goods
		Leisure Goods
Personal Goods		
		Tobacco
Consumer Services	Education	Academic & Educational Services
	Media	Media
	Retail	Food & Drug Retailers
		General Retailers
	Travel & Leisure	Travel & Leisure
Health Care	Health Care	Health Care Equipment & Services
		Pharmaceuticals & Biotechnology
Industrials	Construction & Materials	Construction & Materials
	Industrial Goods & Services	Aerospace & Defense
		Electronic & Electrical Equipment
		General Industrials
		Industrial Engineering
		Industrial Transportation
Support Services		
Oil & Gas	Oil & Gas	Alternative Energy
		Oil Equipment / Services & Distribution
		Oil & Gas Producers
Technology	Technology	Software & IT Services
		Technology Hardware & Equipment
Telecommunications	Telecommunications	Integrated Telecommunications
		Wireless Telecommunications
Utilities	Utilities	Electricity
		Gas / Water & Multiutilities

3.2 Additional classification

Corporate debt is further classified into senior and subordinated debt. Bank senior debt structure additionally differentiates between Bail-in and Preferred bonds. The Bail-in classification captures all senior notes which are subject to write-down or conversion into a subordinated instrument on the occurrence of a resolution event, as well as senior bank debt issued by bank holding companies.

Hybrid capital issued by banking and insurance institutions is further detailed into the respective tiers of subordination.

The market information on the tier of subordination for insurance capital is often less standardized and clear than the equivalent issues by banks. In these cases, the classification is based on the maturity, coupon payment and deferral provisions of the bond from the offering circulars of the bonds. The table below displays the seniority classification of debt issued by both financial and non-financial sectors.

Table 2: Overview of seniority levels

Market Sector	Seniority Level 1	Seniority Level 2	Seniority Level 3	
Bank	SEN	Preferred	*	
		Bail-in	*	
	SUB	T2 (post-Jan '13 issuances)	T2 callable	
			T2 non-callable	
		T2 (pre-Jan '13 issuances)	LT2 callable	
			LT2 non-callable	
			UT2	
		T1	T1 step	
			T1 non-step	
		Insurance	SEN	*
SUB	T3		*	
	T2 dated		T2 dated callable	
			T2 dated non-callable	
	T2 perpetual		*	
	T1		*	
Other sectors	SEN	*	*	
	SUB	Other	Hybrid** Non-hybrid	

** Bonds will be required to fulfil the following criteria to be considered hybrids:

- Subordinated
- Deferrable coupons
- First non-call period \geq 5 years
- Either perpetual or 'long-dated', where 'long-dated' is defined as $>$ 25 years of the time to maturity at issuance

4 Index calculation

4.1 Static data

Information used in the index calculation is sourced from offering circulars and checked against standard data providers.

4.2 Bond prices

For more details please refer to the *Markit iBoxx Pricing Rules* document, available in the *Methodology* section of the iBoxx Documentation page on www.ihsmarkit.com.

4.3 Parent Index

The Parent Index is the starting index universe of bonds (prior to ESG screening and optimisation) as defined by the above steps, as well as further applying an issuer cap of 3%.

4.4 Rebalancing Process

The index is rebalanced monthly on the last business day of the month. Any inclusion after the index cut-off day (t-3) will not be considered in the rebalancing process, but will become effective at the end of the following month. New bonds issued are taken into account if they are publicly known to settle until the last calendar day of the month, inclusive, and if their rating and amount outstanding has become known at least three trading days before the end of the month.

Two business days before the end of each month, the rating and amount information for the constituents is updated and the list is adjusted for all rating and amount changes which are known to have taken place three business days before the end of the month which could also result in exclusion of the bond. However, if bonds which are part of broader EUR indices become eligible into the index two business days prior to rebalancing because of rating and/or amount changes, will be included in the index.

Two business days before the end of the month the final index membership list for the following month is published at the close of business.

4.5 Index Weights

Index bond weights are determined by the following process:

1. ESG Rating tilt and momentum factors are applied to bond weights
2. Emission limits are determined

3. Optimisation is used to determine the final bond weights at each rebalancing

4.6 ESG Tilt

An ESG Rating tilt factor based on MSCI ESG Research is applied on the weight of the underlying bonds according to the following table:

ESG Rating	Rating Tilt Factor
AAA	1.75
AA	1.50
A	1.25
BBB	1
BB	1/1.25
B	1/1.50
CCC and Below	1/1.75

4.7 ESG Momentum

The following ESG ratings momentum factor based on MSCI ESG Research is applied to the weight of the underlying bonds according to the following table.

ESG Rating Momentum	Momentum Factor
Positive	2
Neutral	1
Negative	0.5

A 12-month lookback period is used:

- If a bond's ESG rating has improved over the period, it is considered to be showing positive momentum
- If the bond's ESG rating stays the same over the period, it is considered neutral
- If a bond's ESG rating has dropped over the period, it is considered to be showing negative momentum
- If a bond does not have an ESG rating in the lookback window and gets assigned an ESG rating, it is considered neutral

4.8 Profile Index

The bond selection after applying the above steps to the Parent Index constitute the Profile Index. Weights of the Profile Index are scaled to 100%.

4.9 Index data

The calculation of the index is based on bid prices. New securities are included in the index at their respective ask prices when they enter the index. In the event that no price can be established for a particular security, the index continues to be calculated based on the last available price. This might be the case in periods of market stress, or disruption as well as in illiquid or fragmented markets. If the required inputs become impossible to obtain, IHS Markit may consult market participants prior to the next rebalancing date. Decisions are made publicly available on a timely basis and IHS Markit may refer back to previous cases.

The index is transaction cost adjusted.

The rebalancing takes place after close of market on the last trading day of a rebalancing month.

4.10 Emission Limits

Minimum decarbonisation requirements for an index to qualify as an EU Paris-aligned Benchmark are described in Article 7 & Article 11 of the *Regulations*.

In line with these requirements, the decarbonisation trajectory of iBoxx MSCI EUR High Yield Paris Aligned Capped TCA is determined by maximum limits on greenhouse gas (GHG) emissions at each rebalance date. This is achieved by measuring index emissions as the *weighted average absolute GHG emissions* in tonnes of CO2 equivalent.

On each index rebalance date after the base date (defined below), the index emissions must be:

- at least 50% lower than the Parent Index emissions (Relative Emissions Limit)
- reduced by at least 7% on average per annum compared to index emissions a year ago (Self-decarbonisation Emissions Limit)

Data Source

Scope 1, Scope 2 and Scope 3 GHG emissions data is provided by MSCI ESG Research as below;

Factor Name	Description
Carbon Emissions - Scope 1 (metric tons)	A company's most recently reported or estimated Scope 1 GHG emissions
Carbon Emissions - Scope 2 (metric tons)	A company's most recently reported or estimated Scope 2 GHG emissions
Carbon Emissions - Scope 3 Reported (metric tons)	A company's most recently reported Scope 3 GHG emissions

Phase-in schedule for Scope 3 emissions data

EU Regulation provides a timeline for the phase-in of Scope 3 data by EU sector. It allows the calculation of issuer emission levels using only Scope 1 and 2 emissions, until the scheduled mandatory phase-in date for Scope 3 emissions, which varies by EU sector.

The Parent index follows this approach by requiring only Scope 1 & 2 data for issuers initially. Once an EU sector is required to use Scope 3 data, Scope 3 data will be used to calculate total issuer emissions. If at that time an issuer is missing Scope 3 data, it will use interpolated values as defined below.

If an EU sector is not phased-in, the Parent index will not use Scope 3 data for this sector.

Interpolating missing values

Data coverage for Scope 1, 2 and 3 data may be incomplete. The following section outlines how missing values are treated.

- Treatment of possible outliers in reported Scope 3 GHG emissions data:
 - > Due to outliers across issuers' reported Scope 3 GHG emissions, it is necessary to identify and correct outliers when estimating carbon emissions for issuers with no data coverage.
- Outlier Identification:
 - > An issuer's Scope 3 GHG emissions are labelled as an outlier if the normalised distance between its emissions and other issuers in the Parent Index, is more than three standard deviations.
 - > An issuer's Scope 3 ratio (illustrated below), used to determine Average Scope 3 Sector Ratios, is not used if the normalised distance between its Scope 3 ratio and other issuers in the Parent Index, is above three standard deviations.
- Outlier Correction:
 - > Scope 3 emissions levels that are outliers will be replaced by estimated levels using the Average Scope 3 Sector Ratio, if the estimated emissions are lower than the outlier. This approach avoids 'inflating' emissions estimates. We take this conservative approach as higher emissions estimates would lead to a higher emissions target, thereby limiting emissions reduction in the Index.

Parent Index:

Scope 1 and 2:

If an issuer has no Scope 1 or 2 data, it is assigned the average emission level for each Scope. This is calculated using GHG emissions of all covered issuers, equally weighted, in the same sector.

Scope 3:

Estimation process:

- If there is no Scope 3 data for an issuer, an *Average Scope 3 Sector Ratio* shall be calculated for each sector, using only issuers that **do** have data for Scope 1, 2 & 3 emissions.

$$\text{Average Scope 3 Sector Ratio} = \frac{\sum_i^n \frac{\text{Scope3}_i}{\text{Scope1}_i + \text{Scope2}_i}}{n}$$

- The *Average Scope 3 Sector Ratio* is used to estimate Scope 3 emissions for issuers missing Scope 3 data as follows:

$$\text{Estimated Scope 3 Emission} = \text{Avg Scope 3 Sector Ratio} \times (\text{Scope1}_{\text{Issuer}} + \text{Scope2}_{\text{Issuer}})$$

Only Issuers that are being phased-in will have Scope 3 estimation applied.

Final Index:

Scope 1 and 2:

Issuers that do not have data coverage for Scope 1 and Scope 2 GHG emissions before estimation is applied are not eligible.

Scope 3:

Issuers that do not have data coverage for Scope 3 GHG emissions before estimation is applied will be eligible if they are part of an EU sector that is phased-in, and at least 50% of the issuers in that EU sector have Scope 3 data.

Self-decarbonisation trajectory base date

A base date is required in order to calculate the decarbonisation trajectory of the index. At index launch, the base date is set to 31 December 2020. There may be updates to the base date during the life of the index due to changes in methodology or changes in underlying ESG/GHG emissions data. Please refer to the Appendix for a log of any methodology changes.

Index emissions limit calculation

- The Parent index emissions are calculated as follows:

$$\text{Parent Index Emissions} = \sum_i^n (\text{Scope}1_i + \text{Scope}2_i + (\text{Scope}3_i \times \text{Flag}_i)) \times \text{Bond Weight}_i.$$

- The "Flag" variable is equal to 1 if the issuers' sector is required by the phase-in, else it is set to 0.
- The emissions limit implied by the 50% emission reduction relative to the Parent index is determined as follows:

$$\text{Relative Emissions Limit} = \text{Parent Index Emissions} \times (1 - 0.5)$$

- The emissions limit implied by the 7% annual self-decarbonisation is determined as follows:

$$\text{Base Date Emissions Limit} = \min(\text{Parent Index Emissions}_{\text{BaseDate}} \times (1 - 0.5), \text{Index Emissions}_{\text{BaseDate}})$$

$$\text{Emissions Reduction Factor} = (1 - 0.07)^{\frac{\text{Months Since Base Date}}{12}}$$

$$\text{Self-Decarbonisation Emissions Limit} = \text{Base Date Emissions Limit} \times \text{Emissions Reduction Factor}$$

- On each rebalancing date, the Index Emissions Limit is determined as follow:

$$\text{Index Emissions Limit} = \min(\text{Relative Emission Limit}, \text{Self-Decarbonisation Emissions Limit})$$

Safety Buffer for the Self-decarbonisation Trajectory

In between consecutive index rebalances, Index Emissions may vary and could possibly breach limits of the defined Self-decarbonisation Trajectory. This potential variance is due either from updates to emissions data, occurring in between consecutive rebalancing dates and or movements in the bond market affecting the index's bond weights. Emissions data updates and bond market movements can therefore change the index's weighted average emissions level in between rebalance dates. These possible intra-month deviations are considered to be acceptable as they are brief in nature, and are rectified within at most one calendar month. However, to further reduce the possibility of breaching the self-decarbonisation Trajectory between index rebalances, the Index Emissions Limit at each rebalancing shall be reduced by 2.5%, creating a 'buffer' margin and Final Index Emission Limit.

$$\text{Final Index Emissions Limit} = \text{Index Emission Limit} \times (1 - 0.025)$$

4.11 Optimisation of Bond Weights

Once the target emissions of the index are determined, bond weights are optimised using convex Optimisation, subject to the following:

Objective	Description
Minimize the difference of final index weights to Profile Index weights	The objective function of the optimisation is to minimise the weight difference of the final index's bond weights to those of the Profile Index while meeting the below constraints.
Constraint	Description

Objective	Description
Maximum Sector Deviation to Profile Index <= 1%	Bond weights of the index are rescaled after applying ESG Screens and then 'tilted', this process is outlined in sections <i>ESG Tilt</i> and <i>ESG Momentum</i> . This Profile Index is used to determine sector ranges for the final index. For example, if the Utilities sector has 4% weight in the Profile Index, the allowable range for Utilities in the final index will be 3% to 5%, inclusive.
Index Emissions <= min(Relative Emissions Limit, Self-Decarbonisation Emissions Limit)	The Relative Emissions Limit and the Self-Decarbonisation Emissions Limit values are determined according to the process in section <i>EU Climate Transition</i> . The minimum of these two is set as the maximum emissions limit for the current rebalance.
Issuer Cap <= 3%	The maximum weight of any single issuer in the index.
Bond Weight >= 0.01%	Applied after each Optimisation run, this is the smallest bond weight permitted for the index. Bonds below this threshold will be removed after each Optimisation and weight redistributed until this criteria is met.
Country of Risk Maximum Cap: 20%	The maximum combined weight allowed to be exposed to a single country of risk.
Constraint Relaxations	Description
Maximum Sector Deviation to Profile Index: 20% relative to starting value	If the Optimiser cannot find a solution within the current set of constraints, it will relax the <i>Maximum Sector Deviation to Profile Index</i> by 20%. For example, if the constraint is initially set at 1%, for the first relaxation it will increase the constraint to 1.2% and rerun the Optimisation, then to 1.44%, 1.73% and so on, until a solution is found.

4.12 Index calculus

For specific index formulas please refer to the *Markit iBoxx Bond Index Calculus* document, available in the *Methodology* section of the iBoxx Documentation page on www.ihsmarkit.com.

4.13 Index calculation in foreign currency

All indices are calculated in EUR.

4.14 Index and analytics weights

The iBoxx MSCI EUR High Yield Paris Aligned Capped TCA is market-value-weighted. The amount outstanding of a bond is only adjusted within the rebalancing process.

All calculations are based on the adjusted amount outstanding that reflects the outstanding bond notional at the last rebalancing. The bond prices relate to the nominal value of 100.

4.15 Treatment of the special intra-month events

Data for the application of corporate actions in the index may not be fully or timely available at all times, e.g. the final call prices for make-whole calls or the actual pay-in-kind percentage for PIK-payment options. In such cases, IHS Markit will estimate the approximate value based on the available data at the time of calculation.

4.15.1 Funged bonds

Bonds may be issued in several tranches. The different tranches are initially legally separate and therefore trade independently for a certain period. On and after the funge date, the tranches will be combined into one bond, i.e. the parent tranche will contain the original security, as well as the additional notional(s) from the new tranche(s). After the funge date, the prices for both the securities are the same, because they constitute one uniform bond. This is reflected in the indices as follows:

4.15.1.1 Parent and new tranche are both index constituents

- After the funge date, the price from the parent tranche is used for the funged tranche; no price for the funged bond
- Funged tranche leaves the index at the next rebalancing and parent amount outstanding increases accordingly

4.15.1.2 Parent is an index constituent, but the new tranche is not

- No special intra-month treatment necessary
- Parent amount outstanding increases at the next rebalancing

4.15.1.3 Parent is not an index constituent but the new tranche is

- No special intra-month treatment necessary
- Funged tranche leaves the index; parent tranche enters the index at the next rebalancing

4.15.2 Full redemptions: exercised calls, puts and buybacks

If a bond is fully redeemed intra-month, the bond effectively ceases to exist. In all calculations, the redeemed bond is treated as cash based on the last price, the call price or repurchase price, as applicable. The redemption factor, redemption and the redemption price are used to treat these events in the index and analytics calculation. In addition, the clean price of the bond is set to the redemption price, and the interest accrued until the redemption date is treated as an irregular coupon payment.

4.15.3 Bonds trading flat of accrued

If a bond is identified as trading flat of accrued, the accrued interest of the bond is set to 0 in the total return index calculation and is excluded from the calculation of all bond and index analytical values.

Bonds will be considered trading flat of accrued in any of the following situations:

- a bond has been assigned a default rating and/or
- issuer has announced a failure to pay a coupon and/or
- issuer has announced an intention not to make a payment on an upcoming coupon (grace period).

4.15.4 Multi-coupon bonds

Some bonds have pre-defined coupon changes that lead to a change in the annual coupon over the life of the bond. In all instances, the coupon change must be a fixed amount on top of a fixed coupon, i.e. floating coupon bonds are not eligible for the indices. The two main categories of bonds are step-up bonds and event-driven bonds.

- **Step-up bonds:** These are bonds with a pre-defined coupon schedule that cannot change during the life of the bond. The coupon schedule is used in all bond calculations.
- **Event-driven bonds:** These are bonds whose coupon may change upon occurrence (or non-occurrence) of pre-specified events, such as rating changes, e.g. rating-driven bonds, failure to register (register-driven bonds), or failure to complete a merger (merger-driven bonds). In the calculation of the indices and the analytics, the coupon schedule as of the calculation date is used. That is to say, any events occurring after the calculation date are ignored in the determination of the applicable coupon schedule. *Example of an event-driven bond:* A bond's rating changes on 31 December 2003 from A- to BBB+ and the coupon steps up from 6% to 6.25% from 1 March 2004 onward. The coupon dates are 1 October and 1 April each year. The correct coupon schedule for the bond and index calculations is date dependent. The index calculation on 20 December 2003 uses the 6% coupon for the whole life of the bond, while the calculation on 31 January 2004 uses a 6% coupon for the current coupon period to 29 February 2004, and a 6.25% coupon for all later interest payments. The index calculation on 20 March uses a 6% coupon until 29 February, a 6.25% coupon for the remainder of the current coupon period and a 6.25% coupon for all future coupon payments. The index calculation after 1 April uses a 6.25% coupon.

4.15.5 Ex-dividend conventions

Some markets have ex-dividend conventions. Ex-dividend means that the next coupon is detached from the bond several days in advance of the coupon payment date. The date on which the next coupon is detached is the ex-dividend date and the period between the ex-dividend date and the coupon payment date is the ex-dividend period. If a bond is in the ex-dividend period, the next coupon payment will not be paid to a buyer of this bond, but will be paid to the original bond holder.

The indices and analytics calculations take ex-dividend conventions into account. During the ex-dividend period, the accrued interest of the bond is negative, while the next coupon payment is held separate in the variable coupon adjustment. If the bond enters the index during the ex-dividend period, then the next coupon payment and the coupon adjustment will not accrue to the index. However, if the bond was already in the index, the next coupon payment needs to be included in the total return calculations. This is controlled via the ex-dividend indicator which is 0 if the bond enters the index during the current ex-dividend period and 1 if not. The same treatment is also applied to all analytics

calculation, i.e. the first cash flow is excluded from the calculations if the bond enters during the current ex-dividend period.

4.16 Index history

The Index history starts on 31 December 2020. The index have a base value of 100 on that date.

4.17 Settlement conventions

All iBoxx indices are calculated using the assumption of T+0 settlement days.

4.18 Calendar

IHS Markit publishes an index calculation calendar in the *iBoxx Calendars* section of the iBoxx Documentation page on www.ihsmarket.com. This calendar provides an overview of the index calculation holidays of the iBoxx bond index families in a given year.

4.19 Publication of the Index

The iBoxx MSCI EUR High Yield Paris Aligned Capped TCA is calculated as end-of-day index and distributed once daily after market close.

Bond and index analytical values are calculated end of day Monday to Friday using that day's closing prices. In addition, bond and index analytical values are calculated using the previous trading day's closing prices on the last calendar day of each month if that day is not a regular trading day as well as on common bank holidays as published in the iBoxx index calculation calendar. This index calculation calendar is available on www.ihsmarket.com under *iBoxx Calendars*. Index data is also available from the main information vendors.

Closing index values and key statistics are published at the end of each calculation day in the *Indices* section on www.ihsmarket.com for registered users.

4.20 Data publication and access

The table below summarises the publication of iBoxx MSCI EUR High Yield Paris Aligned Capped TCA in the *Indices* section of the IHS Markit website www.ihsmarket.com for registered users and on the FTP server.

Frequency	File Type	Access
Daily	Underlying file – Bond level	IHS Markit FTP Server
	Indices file – Index level	IHS Markit FTP Server / IHS Markit website / Bloomberg for index levels only
Every Friday, T-4, T-3, & T-2	Forwards file	IHS Markit FTP Server
Monthly	End of Month Components	IHS Markit FTP Server / IHS Markit website

Below is a summary of the IDs for each publication channel:

Index Name	Version	ISIN	SEDOL	BBG	RIC
iBoxx MSCI EUR High Yield Paris Aligned Capped TCA	TRI	GB00BL0BJ354	BL0BJ35	IBXXEPAT	.IBXXEPAT
iBoxx MSCI EUR High Yield Paris Aligned Capped TCA	CPI	GB00BL0BJ461	BL0BJ46	IBXXEPAC	.IBXXEPAC

4.21 Annual index review

The rules for the index are reviewed at least once per year during the public annual index review consultation process to ensure that the index provides a balanced representation of the EUR denominated debt market. Decisions made following feedback from market participants, the annual index review and External Advisory Committees (EAC) will be published on www.ihsmarkit.com shortly after the EAC meetings have been held. The publication will contain a detailed overview and timelines for implementation of any rules changes.

5 Summary of key ESG factors

Explanation of how ESG factors are reflected in the key elements of the benchmark methodology	
Item 1: Benchmark administrator	IHS Markit Benchmark Administration Ltd. ('IMBA UK')
Item 2: Type of benchmark	Fixed income corporate benchmark
Item 3: Name of benchmark or family of benchmarks	iBoxx MSCI EUR High Yield Paris Aligned Capped TCA
Item 4: Are there in the portfolio of the benchmark administrator any EU Climate Transition Benchmarks, EU Paris-aligned Benchmarks, benchmarks that pursue ESG objectives or benchmarks that take into account ESG factors	Yes
Item 5: Does the benchmark methodology take into account ESG factors	Yes
Item 6a: List of Environmental factors considered	<p>Exclusion driven by exposure to the following factors:</p> <ul style="list-style-type: none"> ● Thermal coal ● Evidence of Thermal and Metallurgical coal reserves ● Oil & Gas ● Power Generation <p>See section 'ESG' of this guide for details</p>
Item 6b: List of Social factors considered	<p>Exclusion driven by exposure to the following factors:</p> <ul style="list-style-type: none"> ● Controversial weapons ● Nuclear weapons ● Weapons ● Civilian firearms ● Tobacco ● Adult entertainment ● Alcohol ● Gambling ● Nuclear power ● Genetically modified organisms ● Cannabis recreational <p>See section 'ESG' of this guide for details</p>
Item 6c: List of Governance factors considered	<p>Exclusion driven by exposure to the following factors:</p> <p>N/A</p>
Item 6d: List of any other overall ESG factors	<p>Exclusion driven by additional factors:</p> <ul style="list-style-type: none"> ● Controversy Score ● Environmental Controversy Score ● UNGC Compliance <p>See section 'ESG' of this guide for details</p>
Item 7: Hyperlink to ESG factors information	iBoxx MSCI EUR High Yield Paris Aligned Capped TCA
Item 8a(i): Source of input	Data is sourced externally from MSCI ESG Research LLC ("MSCI ESG Research")
Item 8a(ii): Data input	MSCI ESG Research relies on a proprietary methodology informed by a range of data sources.

a) Reported data

- Corporate documents: annual reports, proxy filings, environmental and social reports, securities filings, websites and Carbon Disclosure Project responses.

Externally sourced data

- Government data: central bank data, U.S. Toxic Release Inventory, Comprehensive Environmental Response and Liability Information System (CERCLIS), RCRA Hazardous Waste Data Management System, etc. We continue to assess the value of other, similar information sources, particularly for European companies.
- Popular, trade, and academic journals: accessed through websites, subscriptions and searches of online databases.
- News media: major news publications globally, including local-language sources across a range of markets.
- Relevant organizations and professionals: reports from and interviews with trade groups, industry experts and nongovernmental organizations familiar with the companies' operations and any related controversies

b) Modelled data

For climate-related metrics, when data is not disclosed by companies, MSCI ESG Research uses proprietary GHG emission estimation model (full methodology is available for MSCI ESG Research clients).

c) Internally sourced data

For international standards and global norms violations, MSCI ESG Research uses data reported via media sources and NGO reports. MSCI ESG Research's assessment of this data is informed by international standards and global norms definitions.

For top level scores (ESG Ratings, Environmental, Social and Governance pillars), MSCI ESG Research estimates macro-level risk exposure for companies' based on the type and location of operations, distribution of products. Data sources used in the exposure calculations include, but not limited to:

- Comprehensive Environmental Data Archive (CEDA)
- US Department of Energy; International Council on Clean Transportation
- Lamont-Doherty Earth Observatory, Columbia University
- Organization of Economic Co-Operation and Development (OECD)
- Canadian Industrial Water Survey
- University of New Hampshire's Water Systems Analysis Group (country data)
- Hoekstra, A.Y. and Mekonnen, M.M. (2011)
- Ecorisk
- World Development Indicators (WDI)
- Annual Change of Forest Resources – Food and Agriculture Organization (FAO)
- World Wildlife Fund (WWF)
- US EPA's Toxics Release Inventory (TRI)
- Risk-Screening Environmental Indicators (RSEI)
- US Bureau of Labor Statistics (BLS)
- International Labour Organization (ILO)

- US Occupational Health & Safety Administration (OSHA)
- UK Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- International Chemical Secretariat (ChemSec) Substitute It Now (SIN) List
- International Monetary Fund (IMF)
- World Health Organization (WHO)
- UN Principles for Responsible Investments (UN PRI)
- World Resource Institute (WRI)
- Consultative Group to Assist the Poor (CGAP)
- US Census Bureau Current Population Survey Supplement
- World Bank Governance Indicators (WGI)
- Transparency International (TI)
- World Bank (WB)
- SNL Financial
- Thomson Financial

Item 8b: Verification and quality of data

MSCI ESG Research relies on multiple steps to review the quality of the analysis as well as the consistency of the methodology and the ratings signal. Four groups are responsible for quality review: Industry and Team Leads; the ESG Ratings Methodology Committee; the ESG Methodology Committee; and the Quality Review Committee.

MSCI ESG Research is committed to robust and transparent communication with all issuers in our coverage universe. This commitment includes:

- A data review process that allows companies to comment on the accuracy of company data for all MSCI ESG Research reports.
- Free access for issuers to published versions of all their MSCI ESG Research company reports.
- Direct communication with a company concerning specific company ESG performance.
- A timely response to company-initiated requests to discuss their MSCI ESG Research reports.

Companies are invited to participate in the data review process prior to the annual update of their ESG rating. At that time, companies have the opportunity to review and comment on the facts contained in their existing MSCI ESG Ratings report, as well as to provide MSCI's ESG Research team any additional ESG information, if they wish. In addition, MSCI ESG Research analysts may follow up directly with a company to clarify questions concerning ESG performance data.

Due to publication schedules and the extent of the MSCI ESG Ratings coverage universe, companies normally receive the newly updated ratings data to review at their convenience at the time of rating publication. All published companies automatically receive the data review reports, as long as MSCI ESG Research has accurate contact information. We are committed to updating a company profile as required in a timely manner and will consider comments and feedback at any time. This process is also in accordance with the objective of frequently updating company reports with the latest available information as provided by companies. Please note that updates to ESG data will not necessarily result in changes to a company's ESG rating.

Companies are monitored on a systematic and ongoing basis, including daily monitoring of controversies and governance events. New information is reflected in reports on a weekly basis and significant changes to scores trigger analyst review and re-rating.

Companies also receive an in-depth review at least annually. For companies in the MSCI ACWI, annual ratings are updated with their industry peers. All other companies are updated within a 12-month timeframe of their previous rating assessment, typically with their industry peers.

Item 8c: International reference standards	MSCI ESG Research does not explicitly mandate reporting along specific disclosure standards. Commonly utilized disclosure frameworks for data collected and used by MSCI ESG Research include GRI, SASB, UN Global Compact; and, for specific performance indicators, GHG Protocol, and applicable ISO standards.
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Additional Disclosure requirements for EU Climate Transition and EU Paris-Aligned Benchmarks

Item 9a: Forward-looking year-on-year decarbonization trajectory	7%
Item 9b: Degree to which the IPCC decarbonisation trajectory (1.5°C with no or limited overshoot) has been achieved on average per year since creation	9.3%
Item 9c: Overlap between the benchmark and its investable universe, using the active share at asset level	54.1%

Disclosure of the alignment with the objectives of the Paris Agreement

Item 10a: Does the benchmark align with the target of reducing carbon emissions or the attainment of the objectives of the Paris Agreement	Yes
Item 10b: The temperature scenario, in accordance with international standards, used for the alignment with the target of reducing GHG emissions or attaining of the objectives of the Paris Agreement	1.5°C with no or limited overshoot
Item 10c: Name of the provider of the temperature scenario used for the alignment with the target of reducing GHG emissions or the attainment of the objectives of the Paris Agreement	The Special Report on Global Warming of 1.5°C from the Intergovernmental Panel on Climate Change (IPCC)
Item 10d: Methodology used for the measurement of the alignment with the temperature scenario	Refer to the Emission Limits section of this guide.
Item 10e: Hyperlink to the website of the temperature scenario used.	https://www.ipcc.ch/sr15/

Information updated on	Reason
6 January 2022	Annual update to decarbonisation trajectory disclosures

6 Governance and regulatory compliance

IHS Markit Benchmark Administration Limited (IMBA UK) is the Index Administrator of iBoxx indices. Information on IMBA UK's governance and compliance approach can be found [here](#). This document covers:

- Governance arrangements, including external committees
- Input data integrity
- Conflicts of interest management
- Market disruption and Force Majeure
- Methodology changes and cessations
- Complaints
- Errors and restatements
- Reporting of infringements and misconduct
- Methodology reviews
- Business continuity

More details about IMBA UK can be found on the [Administrator's website](#).

7 Changes to the iBovx MSCI EUR High Yield Paris Aligned Capped TCA

31 August 2022	Transaction Cost Adjustment methodology and index name
30 June 2022	MSCI ESG Research data cut-off (t-2) applied
6 January 2022	Annual update to decarbonisation trajectory disclosures
22 December 2021	Launch of iBovx MSCI EUR High Yield Paris Aligned Capped TCA

8 Further information

Glossary of key terms

The Markit iBoxx Glossary document of key terms is available in the *Methodology* section of the iBoxx *Documentation* page on www.ihsmarket.com.

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