



Guide to the NMX Equity Indices
2015

Designed to represent
Alternative Asset Classes.



Guide to the NMX Equity Indices

LPX Group

2015

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The Guide sets out the ground rules for the construction and maintenance of the NMX index family. The objective is to design, create and maintain a series of high quality indices, which can be used as benchmarks by the global investment community and as an underlying for tailored financial products.

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1 General Index Information

The NMX Equity Index Series is the first to reflect the risk and return characteristics of the core infrastructure universe. The index design ensures that only core infrastructure companies are considered. The compilation methodology is based on objective criteria and allows for the identification of infrastructure companies, which are characterized by a natural monopoly market position (i.e., companies, which own and operate a physical infrastructure network).

The index family contributes to the investment process by serving as a relevant and adequate performance benchmark and as an effective research tool. Moreover, the index family provides a basis for investment vehicles. The NMX index family fulfils the needs of institutional and private market participants. Thereby, the design, development and delivery of the NMX indices ensure that they are investable, tradable and transparent being key factors that underlie their commercial success.

1.1 NMX - Natural Monopoly Index Family

The NMX - Natural Monopoly Index Series consists of global and regional indices, which are outlined in the following. The composition of the indices in terms of eligible index constituents follows the rules as described in Section 2.

NMX Composite

The NMX Composite tracks the performance of the largest and liquid core infrastructure companies. The basis for the choice of constituents is the liquidity analysis presented in Section 2.3.

NMX30 Infrastructure Global

The NMX30 Infrastructure Global tracks the performance of the 30 largest and liquid core infrastructure companies. The basis for the choice of constituents is the liquidity analysis presented in Section 2.3.

NMX Infrastructure Asia

The NMX Infrastructure Asia tracks the performance of the largest and liquid core infrastructure companies, which are listed on a stock exchange in Australasia. The basis for the choice of constituents is the liquidity analysis presented in Section 2.3.

NMX Infrastructure Europe

The NMX Infrastructure Europe tracks the performance of the largest and liquid core infrastructure companies, which are listed on a stock exchange in Europe. The basis for the choice of constituents is the liquidity analysis presented in Section 2.3.

NMX Infrastructure America

The NMX Infrastructure America tracks the performance of the largest and liquid core infrastructure companies, which are listed on a stock exchange in America. The basis for the choice of constituents is the liquidity analysis presented in Section 2.3.

1.2 Reference Date, Weighting and Cap

The reference date (base date) is chosen such that a minimum of 10 initial constituents is ensured. NMX indices are calculated according to the calculation algorithm described in Section 3 of this Guide. In order to limit the weight of individual constituents in the indices, a cap (the variable is defined as "CAP" in this Guide) is set for the market capitalisation of any single constituent of the index (see Section 3 for details). If the number of constituents of an index is 15 or more, a cap of 15% or less is implemented for any single constituent (see Table 1 for the current cap of the respective index). An overview of the characteristics of the NMX indices is presented in Table 1.

Table 1: Characteristics of the NMX Index Family

Index	Maximum Constituents	Reference date	CAP	Chaining date
NMX Composite ^a	80	31.12.1998	10%	14.06 and 14.12
NMX30 Infrastructure Global ^a	30	31.12.1998	10%	14.06 and 14.12
NMX30 Infrastructure Global USD ^{a,b}	30	31.12.1998	10%	14.01 and 14.04 14.07 and 14.10
NMX Infrastructure Asia	n/a	31.12.1998	10%	14.06 and 14.12
NMX Infrastructure Europe	n/a	31.12.1998	10%	14.06 and 14.12
NMX Infrastructure America	n/a	31.12.1998	10%	14.06 and 14.12

^a Please refer to Section XX, which describes the diversification rule of the respective index.

^b The capping methodology for NMX30 Infrastructure Global USD is outlined in Section 3.3.

1.3 Prices

Official closing prices from the primary stock exchange of the respective index constituent security are used for the calculation of the NMX indices. The previous day's value of all indices is calculated and published on a daily basis. In the event of a suspension during trading hours, the last price determined before such a suspension is used for subsequent calculations. If such suspension occurs before the start of trading, the closing price of the previous day is used. In the event of an exchange holiday, the closing prices from the previous day are used. LPX Group publishes the indices for every day except for Saturdays and Sundays. The index holidays are communicated in advance via appropriate channels.

1.4 Calculation Frequency

LPX Group also offers real-time prices for all NMX indices, which are available via the data providers Thomson Reuters and Bloomberg. For details on the underlying data provider mnemonics refer to Section 7. LPX Group also offers customized closing files for clients and product partners that are tailored to their special needs.

1.5 Country Allocation

The NMX base universe includes companies that are traded at exchanges worldwide. The base universe is continuously reviewed and new eligible companies are added in accordance to Section 2.1. The universe of eligible index constituents of the NMX index series are traded on the following stock exchanges.²

Table 2: Eligible Index Constituents - Global Stock Exchanges

Country	Exchange
Australia	Australian Securities Exchange
Austria	Vienna Stock Exchange
Belgium	Euronext
Brazil	Bovespa
Chile	Santiago Stock Exchange
Canada	Toronto Stock Exchange
Denmark	Copenhagen Stock Exchange
Finland	Helsinki Stock Exchange
France	Euronex
Germany	Deutsche Boerse Xetra, FWB
Great Britain	London Stock Exchange)
Greece	Athens Exchange
Hong Kong	Stock Exchange of Hong Kong
India	National Stock Exchange, Mumbai Stock Exchange
Indonesia	Jakarta Stock Exchange
Ireland	Irish Stock Exchange
Italy	Borsa Italiana
Japan	Tokyo Stock Exchange, JASDAQ
Malaysia	Malaysian Stock Exchange
Netherlands	Euronext
New Zealand	New Zealand Stock Exchange
Philippines	Philippine Stock Exchange
Singapore	Singapore Exchange
South Africa	Johannesburg Stock Exchange
Korea	Korea Exchange
Spain	Madrid Stock Exchange
Sweden	Stockholm Stock Exchange
Switzerland	SIX Swiss Exchange
Turkey	Istanbul Stock Exchange
USA	New York Stock Exchange, NASDAQ, American Stock Exchange

²LPX Group reserves the right to add further exchanges to the list above.

1.6 Currency Conversion

The foreign exchange rates used in the calculation of the NMX Natural Monopoly Equity indices are the WM/Reuters Closing Spot Rates, compiled by the WM Company. At short intervals before and after 16:00h London (UK) time, representative bid and offer rates against the US dollar for some 112 currencies are selected from a wide range of contributing banks and foreign exchange dealers. In the event that WM/Reuters Closing Spot Rates are not published by the WM Company, the previous day's rates will be used to calculate the NMX index series.

1.7 Error Correction Policy

The objective is to maintain the NMX indices to the highest standards of accuracy and integrity, using reliable data sources and following best practice in statistical and operational procedures. Where material errors occur in data or in calculation procedures, these are corrected promptly. However, LPX Group is conscious of the risk of damaging the confidence of users through the frequent publication of amendments where trivial statistical errors have occurred that do not materially affect the accuracy of the published index series.

2 Choice of Index Constituents

2.1 Methodology

The NMX base universe is a subset of the global equity universe and is determined using a multi-step approach that ensures the identification of basic infrastructure companies ("core infrastructure"), which are eligible for inclusion in the NMX base universe.

1. Identification of listed companies, which operate in the field of infrastructure. These companies form the NMX raw universe.
2. Screening of the raw universe on a single constituent basis in order to identify network operating companies (core infrastructure companies). A company is considered as core infrastructure when the company owns, operates or manages one of the following infrastructure networks as described in Table 3.³
3. Balance sheet analysis in order to measure the revenue contribution of network operations. Eligible companies for inclusion in the NMX base universe show a minimum network revenue contribution of at least 50%.⁴

LPX Group checks regularly whether a company currently in the base universe is still an eligible constituent or whether new companies that have previously not been considered should be included.

³Typically the company owns the core infrastructure assets or operates or manages the assets under a long-term concession.

⁴LPX Group reserves the right to exclude companies where the standardized measurement of infrastructure network revenue contribution is not feasible.

Table 3: Types of Infrastructure

The table outlines the infrastructure universe by industry sector level. It is distinguished between infrastructure sectors and subsectors. The term *Basic infrastructure* refers to infrastructure network facilities, which are eligible for index inclusion. *Infrastructure-related Services* refer to transportation, maintenance and construction services in the field of infrastructure and are not eligible for inclusion. Representative examples are provided. *Social Infrastructure* is not covered by the definition of infrastructure in the means of the NMX infrastructure index series.

Sector	Subsector	Basic Infrastructure	Infrastructure-Related Services (not eligible for inclusion)
Energy	Network Gas-Oil	Gas-Oil pipelines	Gas-Oil extraction and refinery, maintenance services
	Network Energy	Grid networks	Electricity generation, construction and maintenance companies
Transport	Airport	Airport sites, runways	Airlines, passenger, cargo, and ground handling services
	Port	Berth, harbor facilities	Shipping lines, cargo services
	Toll Road	Road, tunnels, bridges	Passenger/freight transportation, cleaning services
Water	n/a	Water pipes, sewer lines	Sanitation supplies, water chemicals
ICT	n/a	ICT networks, satellites	ICT service providers, ICT supplies

2.2 Constituent Selection

Table 3 presents the infrastructure industry sectors, which are eligible for inclusion in the index. The focus lies companies which own, manage or operate a basic infrastructure facility. Infrastructure-related service companies and social infrastructure is not considered for inclusion in the NMX index series.

Within the sector *Energy* the focus is on basic infrastructure network facilities in the field of energy transmission and distribution. The following energy subsectors are considered:⁵

- *Network Gas-Oil* refers to a supra-regional pipeline infrastructure network. The Network Gas-Oil services comprise the transmission of LNG or crude oil from an extraction installation or shipping port to a storage facility that serves as a central distribution point.
- *Network Energy* refers to a regional or supra-regional electricity grid network. The Network Energy services comprise the transmission of high-voltage electricity through gridlines from power plants to demand centers (e.g., substations and transformers) that reduce high voltage for final distribution.

Within the *Transport* sector, it is distinguished between land transport (Road), air transport (Airport) and water transport (Port). Typically, agents choose among these three modes of infrastructure transportation for any sort of passenger and freight transportation between two locations.⁶ The following Transport subsectors are considered.

⁵Within the Energy sector, Energy conglomerates are excluded from the NMX universe. These kind of companies typically operate through the whole value chain spectrum (e.g. extraction, refinery, generation, transmission & distribution, etc.) and hence measurement of network revenue contribution is not feasible.

⁶To some extent, the different modes of transportation are competitive and interdependent.

- *Airport* can be divided into landside and airside areas. The physical assets from the landside area include parking lots, train stations, and access roads. The airside area includes all areas that are accessible and relevant to aviation including runways, control towers, and hangars. Airport services comprise management of infrastructure facilities, ground handling (passenger and cargo), and airside handling.
- *Port* can be divided into landside and waterside areas. The physical assets comprise everything needed to handle bulk cargo to and from commercial vessels. Port facilities include berths, container gantry cranes, storage facilities, and road and rail transport from and to the port. Port services include traffic control, navigation services, and storage and logistics.
- *Road* refers to primary road networks used for supra-regional and transit traffic. The infrastructure network includes roads, tunnels, and bridges, and is typically a closed system with connection to secondary road networks. Road services consist of giving agents access to a primary road network used for passenger and freight transportation.

The *Water* sector comprises water transportation through distribution networks and waste water systems (e.g., water catchment facilities and sewage systems). Water services include the transportation of water and distribution to final consumers, as well as storage, water catchment, and waste water treatment. In contrast to the Energy and Transport sectors, a subsector disaggregation of the sector Water is not useful because a single supplier generally provides the physical infrastructure assets and services.

The *Information and Communication Technology (ICT)* sector refers to all physical networks required for the transmission of data, such as copper cable networks, fiber networks, and wireless technologies utilizing the radio frequency spectrum (e.g., microwave and satellite). ICT infrastructure services include the entire spectrum on which broadcasting and telecommunication services are based.

2.3 Liquidity Analysis (LA)

The composition of the NMX indices is the result of a regularly occurring liquidity analysis (LA). Therefore, liquidity is defined as how often and in what volume a company is traded on an exchange. Annual averages are used for the individual criteria for liquidity (see Section 2.3). These criteria ensure the ability to replicate the indices. The following ratios are calculated within the framework of this analysis.

Ratios

The specific liquidity ratios are:

- a maximum average bid-ask spread (BAS)
- an average minimum market capitalisation [mEUR] (MV)
- an average minimum trading volume per trading day measured relative to the market capitalisation (TV)
- a minimum trade continuity (CT)

Rankings

It is determined, which companies fulfil the criteria from Section 2.3. Afterwards two ranking lists are put together:

- Ranking that is oriented to market capitalisation (A): The companies that fulfil the criteria are brought into a ranking list according to their market capitalisation (at the time of the liquidity analysis).
- Ranking that is oriented to the average (relative or absolute) trading volume (B): The companies that fulfil the criteria are brought into a ranking list according to their average trading volume. The average trading volume is calculated with the daily data of the previous year (see Section 2.3). A high rank is allocated to a company with a high average trading volume, while a low rank attends with a low average trading volume.

Criteria

The following table summarizes the criteria that are applied to each of the indices. In the event a company does not fulfil one of the criteria, the company is not eligible for inclusion in the respective index, which means that the criteria are so-called “KO criteria”.⁷

Table 4: Ratios of Liquidity Analysis

Index Name	BAS	MV	RTV ^a	CT	Ranking ^b
NMX Composite	2.0%	EUR 100m	0.10%	95%	A
NMX30 Infrastructure Global	2.0%	EUR 1000m	0.10%	95%	A
NMX30 Infrastructure Global USD	2.0%	EUR 1000m	0.10%	95%	A
NMX Infrastructure Asia	2.0%	EUR 100m	0.10%	95%	A
NMX Infrastructure Europe	2.0%	EUR 100m	0.10%	95%	A
NMX Infrastructure America	2.0%	EUR 100m	0.10%	95%	A

^a For the NMX30 Infrastructure Global, the minimum average daily trading volume (ADTV) (i.e., $RTV \times MC$) for each constituent is mEUR 1.5.

^b Ranking that is oriented to the market capitalisation (at the time of the liquidity analysis) refers to Ranking A; Ranking that is oriented to the average (relative or absolute) trading volume refers to Ranking B.

Diversification Rules

The NMX equity index construction methodology ensures a high degree of infrastructure sector diversification. Specifically, the following diversification rules apply for the NMX Composite index and the NMX30 Infrastructure Global index. The diversification rules apply one week prior to each ordinary chaining date as outlined in Table 1.

- The NMX Composite consists of the 80 largest instruments, which are part of the universe set forth in Section 2.2. The following infrastructure sector bounds apply (i) by number of constituents and (ii) by weighting one week prior to each ordinary chaining date. The infrastructure sectors are outlined in Table 3. First, one week prior to each ordinary chaining date, the number of constituents is determined in such a way that the following infrastructure sector bounds hold by number of constituents in percentages: 40% Energy, 30% Transport, 20% Water and 10% ICT.⁸ Second, the market capitalization of every constituent, which is part of a specific infrastructure sector cluster (i.e., Energy, Transport, Water, ICT) is capped proportionally in such a way that the following aggregated infrastructure sector weights hold (one week prior) to each ordinary chaining date: 40% Energy, 30% Transport, 20% Water and 10% ICT.
- The following infrastructure sector bounds apply for the NMX30 Infrastructure Global Index in accordance to the infrastructure sectors outlined in Table 3. The composition of the NMX30 Infrastructure Global index is determined in such a way that every *infrastructure sector* represents a minimum of 10% and maximum of 50% of total constituents. Furthermore, it is ensured that for every infrastructure sector cluster (i.e., Energy, Transport, Water, ICT) a minimum of 20% of *infrastructure subsector* constituents are included.

⁷LPX Group reserves the right to deviate from these criteria.

⁸In case there is not a sufficient number of constituents of an infrastructure sector cluster, a successor is chosen from another infrastructure sector cluster.

Time and Frequency of the Liquidity Analysis

The liquidity analysis is carried out twice a year on the first trading day in December and June on every year. Potential index changes become effective at the respective index chaining date for each index is presented in Table 1. Underlying minimum data history for the liquidity analysis is 1 year of financial market data.

Ordinary Adjustment

An ordinary adjustment of the NMX indices takes place after each LA. Specifically, it takes place half-yearly (quarterly) on the respective chaining date (see Table 1) of each index. Companies that no longer fulfil one of the “KO criteria” from Section 2.3 are replaced. In such a case, the successor is the company with the highest rank better than “ n ”⁹ that was not previously included in the index, where “ n ” indicates the number of companies in the respective index. The rank is determined from the ranking lists mentioned in 2.3.

Table 5: Ranking-Supported Adjustments

Index	R1	R2	R3
NMX Composite	$[n \times 1.2]$	n	$[\frac{n}{2}]$
NMX30 Infrastructure Global	$[n \times 1.2]$	n	$[\frac{n}{2}]$
NMX30 Infrastructure Global USD	$[n \times 1.2]$	n	$[\frac{n}{2}]$
NMX Infrastructure Asia	$[n \times 1.2]$	n	$[\frac{n}{2}]$
NMX Infrastructure Europe	$[n \times 1.2]$	n	$[\frac{n}{2}]$
NMX Infrastructure America	$[n \times 1.2]$	n	$[\frac{n}{2}]$

A constituent of the index that is ranked in the respective ranking list at R1 or worse is replaced, assuming a constituent exists, which is ranked at R2 or better in the ranking list. A non-index-constituent that is ranked at R3 or better in the respective ranking list is included in the index, if a company currently in the index has a lower rank than R2. Concerning the NMX Composite, the adjustment procedure is slightly different. All basic infrastructure companies (i.e., defined in Section 2.1) that fulfil the liquidity ratios as given in Table 4 become constituents of the index since there is no maximal number of constituents. Consequently no ranking-supported adjustments occur in this case. At the end of the process of ordinary adjustments, there is a new constituent list for the respective index. At the same time, a new ranking list of possible successors is created. These ranking lists are created using the same method as those mentioned in Section 2.3, i.e., those companies (not currently in the index) with the highest market capitalisation or with the highest trading volume get the top rank and are therefore the first candidates to advance in in case of an ordinary adjustment (see Section 2.3). The integration of extraordinary adjustments into the calculation of the indices is explained in Section 4.2 of this Guide. Dealing with ordinary adjustments during the calculation of the indices is defined in Section 4.1 of this Guide.

⁹ $[x]$ denotes the largest integer smaller than x .

Extraordinary Adjustment

Adjustments due to extraordinary events will also be carried out:

Constituent Replacement due to a Delisting Constituents that have applied for a de-listing at an exchange or for whom bankruptcy proceedings have been adjudicated will be taken out of the index effective not later the day when the security is last traded at an exchange. In case the security is removed before that date, LPX Group will communicate the change in index composition in advance via appropriate channels. Specifically, the company with the highest rank of the successor list (see Section 2.3) will succeed in the index.

Merger of Two Index Constituents If an existing index constituent is acquired for eligible shares (or a combination of eligible shares and cash) by another index constituent, the existing constituent is deleted on the effective date of acquisition. The company with the highest rank of the successor list (see Section 2.3) will succeed in the index.

Merger of an Index Constituent with a Non-Index Constituent If an existing index constituent is acquired for eligible shares (or a combination of eligible shares and cash) by a quoted non-constituent, the merged company is continued in the index if eligible in all other respects of this Guide. If the requirements defined in Section 2.1 are not fulfilled, the merged company is replaced by the company with the highest rank of the successor list.

Dealing with extraordinary adjustments within the calculation of the indices is defined in Section 4.2 of this Guide. LPX Group reserves the right to deviate from the said rules for ordinary or extraordinary adjustment in exceptional cases.

3 Calculation Methods

3.1 Index Formulae (Single Stock Distribution Reinvestment)

The calculation of the NMX indices follows the following formula:¹⁰

$$I_t^{TR} = K_t^{TR} \times \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t} \times C_{i,t}^{TR}}{\sum_{i=1}^{n_0} p_{i,0} \times aa_{i,0} \times w_{i,0}} \times Basis_0^{TR} \quad (1)$$

$$I_t^{PI} = K_t^{PI} \times \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t} \times C_{i,t}^{PI}}{\sum_{i=1}^{n_0} p_{i,0} \times aa_{i,0} \times w_{i,0}} \times Basis_0^{PI} \quad (2)$$

TR, PI	Total Return, Price Index
I_t^{TR}, I_t^{PI}	Index level (TR, PI)
K	Index-specific chaining factor
n	Number of constituents in the index
p	Price in local currency
w	Exchange rate
aa	Capped number of shares (constant between chaining dates)
C	Current adjustment factor
$Basis$	Index-specific constant value
t	Index of time (daily)
i	Index of index constituents

¹⁰The formulae described in Section 3.1 apply to all NMX indices.

3.2 Cap

One week before each chaining date, the weight of any constituent (i.e., the number of shares aa_i) is determined in such a way that “Current CAP” holds for every index constituent, as defined in Table 1. Between each chaining date, which occurs semi-annually or quarterly, depending on the respective index, aa_i remains constant. This methodology is applied to all NMX index series except for the NMX30 Infrastructure Global USD, which is treated in accordance to the methodology as described in Section 3.3. The chaining dates are outlined in Table 1.

3.3 Free-float adjusted Cap

For the NMX30 Infrastructure Global USD, an extended capping methodology applies. For each ordinary chaining, which is conducted on a quarterly basis, the “Free Float factor” for each index constituent security is determined based on publicly available information. The free-float adjusted market capitalization is determined for each index constituent security and ranked in descending order. In case that the sum of weights of the index constituents that show a weight greater than 4.8% exceeds 45% (hereinafter referred to as “Limit”), the weight of the first stock, which causes the breach of the Limit, is capped to 4.5%. This process is conducted iteratively until the Limit holds. The excess of the free-float adjusted market capitalization of the capped index constituents is allocated value-weighted to the remaining stocks of the index, which show an index weight smaller than 4.5%. In case this reallocation process leads to a weight greater than 4.5% for a constituent security (i.e., the first stock that is not capped to 4.5%), the stock is capped to 4.5% until the Limit holds and none uncapped stock after reallocation shows a weight greater than 4.5%.

3.4 Corporate Actions

For the calculation of the NMX indices the following corporate actions are taken into account. Specifically, the adjustment factors are defined for both price (PI) and total return (TR) index. The following formulae is applied for the adjustment factors:

$$C_{i,t}^{TR} = a_{i,t}^{TR} \times b_{i,t}^{TR} \times e_{i,t}^{TR} \times f_{i,t}^{TR} \quad (3)$$

$$C_{i,t}^{PI} = a_{i,t}^{PI} \times b_{i,t}^{PI} \times e_{i,t}^{PI} \times f_{i,t}^{PI} \quad (4)$$

$$E_{i,t} = b_{i,t}^{PI} \times e_{i,t}^{PI} \times f_{i,t}^{PI} \quad (5)$$

where the auxiliary factors a, b, e, f , for both the price (PI) and total return (TR) version are defined in the following paragraphs.

Cash Dividends and Special Distributions

Cash dividends include regular dividends (denoted by D and expressed per share on the ex date), as well special cash dividends. Other special distributions include bonus shares from another company as well as spin-offs (denoted by SD and expressed per share on the ex date). For the TR indices all cash dividends and special distributions are included in the calculation. The following formulae apply to the auxiliary factor a :

$$a_{i,t}^{TR} = \begin{cases} 1, & \text{if } t = 1 \\ a_{i,t-1}^{TR} & \text{if } t \neq k, D_{i,t} = 0, SD_{i,t} = 0 \\ \left(1 + \frac{(1-Q)D_{i,t}}{p_{i,t-1} - (1-Q)D_{i,t}}\right) \times a_{i,t-1}^{TR} \text{ or } \left(1 + \frac{(1-Q)SD_{i,t}}{p_{i,t-1} - (1-Q)SD_{i,t}}\right) \times a_{i,t-1}^{TR}, & \text{if } t \neq k, D_{i,t} \neq 0 \text{ or } SD_{i,t} \neq 0 \end{cases} \quad (6)$$

$$a_{i,t}^{PI} = \begin{cases} 1, & \text{if } t = 1 \\ a_{i,t-1}^{PI} & \text{if } t \neq k, SD_{i,t} = 0 \\ \left(1 + \frac{(1-Q)SD_{i,t}}{p_{i,t-1} - (1-Q)SD_{i,t}}\right) \times a_{i,t-1}^{PI} \text{ or } \left(1 + \frac{(1-Q)SD_{i,t}}{p_{i,t-1} - (1-Q)SD_{i,t}}\right) \times a_{i,t-1}^{TR}, & \text{if } t \neq k, SD_{i,t} \neq 0 \end{cases} \quad (7)$$

with

k Index of chaining dates

Q Denotes the flat withholding tax of 25 %. Deviations: For the NMX30 US Index (i.e., NMX30UT Index), Q denotes the flat withholding tax of 15 %, except for US incorporated instruments, where $Q = 0$

Stock Splits and Reverse Splits

This section does not only include stock splits, but also reverse splits (stock consolidation). The split ratio is denoted by SPR on the ex date. The auxiliary adjustment factor b is calculated according to the following formulae

$$b_{i,t}^{TR} = \begin{cases} 1, & \text{if } t = 1 \\ b_{i,t-1}^{TR} & \text{if } t \neq k, SPR_{i,t} = 1 \\ SPR_{i,t} \times b_{i,t-1}^{TR} & \text{if } t \neq k, SPR_{i,t} \neq 0 \end{cases} \quad (8)$$

$$b_{i,t}^{PI} = b_{i,t}^{TR} \text{ for all } i,t \quad (9)$$

Bonus Shares of the same Company

Bonus shares from the same company are treated equivalently as a stock split. The variable B denotes the number of bonus shares per share held on the ex date. The auxiliary adjustment factor b is calculated according to the following formulae

$$e_{i,t}^{TR} = \begin{cases} 1, & \text{if } t = k \\ e_{i,t-1}^{TR} & \text{if } t \neq k, B_{i,t} = 0 \\ (1 + B_{i,t}) \times e_{i,t-1}^{TR} & \text{if } t \neq k, B_{i,t} \neq 0 \end{cases} \quad (10)$$

$$e_{i,t}^{PI} = e_{i,t}^{TR} \text{ for all } i,t \quad (11)$$

Subscription Rights

Subscription rights are not taken into account by LPX Group until the ex date, where the value of the subscription rights is reinvested in the company according to the subscription rate ratio SRR leading to the same amount of invested capital than before the transaction. The auxiliary adjustment factor f is calculated according to the following formulae

$$f_{i,t}^{TR} = \begin{cases} 1, & \text{if } t = k \\ f_{i,t-1}^{TR} & \text{if } t \neq k, SRR_{i,t} = 1 \\ SRR_{i,t} \times f_{i,t-1}^{TR} & \text{if } t \neq k, SRR_{i,t} \neq 0 \end{cases} \quad (12)$$

$$f_{i,t}^{PI} = f_{i,t}^{TR} \text{ for all } i,t \quad (13)$$

An representative example is presented below:

	Formulae	Constituent
Shares to be issued	(1)	1000
Old number of shares	(2)	3000
Share price _{t-1}	(3)	100
Issue price of new shares	(4)	80
Subscription ratio	(5)	3
Expected share price after the issue	(6) = [(1) × (4) + (2) × (3)] ÷ [(1) + (2)]	95
Value of subscription right (share price dilution)	(7) = [(3) - (6)]	5
Number of shares in the index	(8)	3000
Value of subscription rights	(9) = [(7) × (8)]	15000
Number of additional shares	(10) = [(9) ÷ (6)]	157.89
Correction factor	(11) = [(10) + (8)] ÷ (8)	1.052632

Table 6: Example: Subscription Rights

Other Corporate Actions

Any corporate actions, which have not been outlined in the aforementioned sections, but which will be taken into account for the calculation of the NMX index series, are communicated in advance via appropriate channels.

4 Chaining

An overview on the ordinary chaining dates of the NMX index series is provided in Table 1.

4.1 Ordinary Chaining

On every calculation day, LPX Group determines a chaining factor. The index-specific chaining factor K is calculated as follows:

$$K_t^{TR} = \begin{cases} 1, & \text{if } t = 0 \\ \frac{TRIndex}{ZW_{t=j}} & \text{if } t = j + 1 \\ K_{t-1}^{TR} & \text{if } t \neq j + 1, t \neq 0 \end{cases} \quad (14)$$

$$K_t^{PI} = \begin{cases} 1, & \text{if } t = 0 \\ \frac{PIIndex}{ZW_{t=j}} & \text{if } t = j + 1 \\ K_{t-1}^{PI} & \text{if } t \neq j + 1, t \neq 0 \end{cases} \quad (15)$$

Thereby, the index is calculated with the old index composition at a chaining date, while the intermediate value ZW is calculated with the new index composition. The intermediate value is calculated as follows:

$$ZW_{t=j}^{TR} = \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t}}{\sum_{i=1}^{n_t} p_{i,0} \times w_{i,0} \times aa_{i,0}} \times Basis_0^{TR} \quad (16)$$

$$ZW_{t=j}^{PI} = \frac{\sum_{i=1}^{n_t} p_{i,t} \times w_{i,t} \times aa_{i,t}}{\sum_{i=1}^{n_t} p_{i,0} \times w_{i,0} \times aa_{i,0}} \times Basis_0^{PI} \quad (17)$$

4.2 Extraordinary Chaining

In case of an extraordinary adjustment, as defined in Section 2.3, LPX Group applies the following procedure:

Constituent Replacement due to a Delisting

The amount currently invested in the index of company i being replaced is completely shifted to successor j . In this general case, no chaining takes place since only a transfer of invested capital occurs. In case a constituent with a high weight is replaced by a successor with a high potential weight, there can be a deviation from this practice, whereby an adjustment of the weights of all index constituents takes place, meaning an analogous procedure to an ordinary chaining. Before each replacement LPX Group will communicate which of the two procedures are applied.

Merger of two Index Constituents

A new company (successor) must be included in the index due to the merger of two index constituents. This new inclusion requires an adjustment of the weights of all index constituents or an extraordinary chaining.

Merger of an Index Constituent with a Non-index Constituent

The capital invested in the index from the acquiring company remains unchanged. At the next regular chaining date, the number of shares will be adjusted. If the stock is not created by the retention of the listing of one of the old companies, the new company will be included in the index, whereby the invested capital of the company already represented in the index will be transferred. The number of shares will not be adjusted until the next regular chaining date. In the event the business purpose of a company after the merger no longer represents the definition of a core infrastructure company (described in Section 2.1), a replacement and an extraordinary chaining is applied.

5 Amendments

The Guide will be checked revised on a regularly basis by LPX Group. Moreover, the index calculation is monitored by an index committee, which ensures that the composition and calculation of the NMX index family are objective and transparent.

6 Data Vendor Codes

The NMX index series is disseminated via major data vendors. An overview on the various data vendor codes is depicted in the following table.

Table 7: Data Vendor Codes

Total Return TR						
	CCY	Base Date	Valor CH	ISIN	Bloomberg	Reuters
NMX Composite TR	EUR	31.12.98	3221286	CH0032212869	NMXICGTR	.NMXICGT
NMX Composite TR (CHF)	CHF	31.12.98	3221359	CH0032213594	NMXICGTC	
NMX30 TR	EUR	31.12.98	3221370	CH0032213701	NMXI30TR	.NMXI30T
NMX30 TR (CHF)	CHF	31.12.98	3221377	CH0032213776	NMXI30TC	
NMX30 USD TR	USD	31.12.98		DE000SLA4XT7	NMX30UT	.NMX30UT
NMX Asia TR	EUR	31.12.98	3221385	CH0032213859	NMXIASTR	.NMXIAST
NMX Asia TR (CHF)	CHF	31.12.98	3221392	CH0032213925	NMXIASTC	
NMX Europe TR	EUR	31.12.98	3221394	CH0032213941	NMXIEUTR	.NMXEUT
NMX Europe TR (CHF)	CHF	31.12.98	3221401	CH0032214014	NMXIEUTC	
NMX America TR	EUR	31.12.98	3221424	CH0032214246	NMXIAMTR	.NMXIAMT
NMX America TR (CHF)	CHF	31.12.98	3221428	CH0032214287	NMXIAMTC	
Price Index PI						
	CCY	Base Date	Valor CH	ISIN	Bloomberg	Reuters
NMX Composite PI	EUR	31.12.98	3221433	CH0032214337	NMXICGPI	.NMXICGP
NMX Composite PI (CHF)	CHF	31.12.98	3221438	CH0032214386	NMXICGPC	
NMX30 PI	EUR	31.12.98	3221444	CH0032214444	NMXI30PI	.NMXI30P
NMX30 PI (CHF)	CHF	31.12.98	3221446	CH0032214469	NMXI30PC	
NMX30 USD PI	USD	31.12.98		DE000SLA4XP5	NMX30UP	.NMX30UP
NMX Asia PI	EUR	31.12.98	3221450	CH0032214501	NMXIASPI	.NMXIASP
NMX Asia PI (CHF)	CHF	31.12.98	3221453	CH0032214535	NMXIASPC	
NMX Europe PI	EUR	31.12.98	3221457	CH0032214576	NMXIEUPI	.NMXIEUP
NMX Europe PI (CHF)	CHF	31.12.98	3221460	CH0032214600	NMXIEUPC	
NMX America PI	EUR	31.12.98	3221491	CH0032214915	NMXIAMPI	.NMXIAMP
NMX America PI (CHF)	CHF	31.12.98	3221493	CH0032214931	NMXIAMPC	

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