Photo: View of cement facility, FICEM archives 2025

Guidelines for Estimation of the Cost of Equity in the Cement Industry

Reference document for climate mitigation projects 2025, V1.0

La Federación Interamericana del Cemento – FICEM – represents the producers, institutes, and associations of the Cement Industry in Latin America and the Caribbean.

Published by:
Federación Interamericana del Cemento

Registered offices
Calle 118#9 -52 oficina 206
Bogota, Colombia
T +57 1 658 2978

Website: https://ficem.org
Contact: rpareja@ficem.org

Author:
Luis Alberto de la Torre, Lead Consultant.
E: ladelatorre@devitec-esg.com

Peer-review:
Ricardo Pareja, Director of Climate Action and Innovation
E: rpareja@ficem.org

Aldo Cerda, Climate Advisor
E: aldo.cerda@scx.cl

Version
1.0

Cite as:
De la Torre, L., Pareja, R., Cerda, A. (2025). Guidelines for Estimation of the Cost of Equity in the Cement Industry. Retrieved from: https://www.ficem.org/publicaciones/

FICEM is responsible for the content of this publication. July 2025.

Content

Table

Figures

Abbreviations

ARCH	Autoregressive Conditional Heteroskedasticity
CAPM	Capital Asset Pricing Model
CX	CEMEX ticker symbol at the NY Stock Exchange
CCSU	Carbon Capture Storage and Utilization
GHG	Greenhouse gases
EXP	Eagle Materials Incorporated, ticker symbol at the NY Stock Exchange
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial processes and product use
MRV	Measurement, Reporting, and Verification
NAI	Non-Annex I (Parties to the UNFCCC)
NC	National Communication
NDC	Nationally Determined Contribution
LT-LDS	long-term low emissions development strategy
RFR	Risk Free Rate
RDF	Refuse Derived Fuel
RE	Renewable Energy
SDGs	Sustainable Development Goals
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme (now UN Environment)
UNFCCC	United Nations Framework Convention on Climate Change
USLM	United States Lime & Minerals Inc., ticker symbol at the NY Stock Exchange

1. About FICEM and its role in the fight against global climate change

FICEM is an organization with a strong commitment to promoting the exchange of experiences and fostering initiatives that lead to the sustainable development of the cement industry. Its activities cover more than 29 countries, covering south America, Spain and Portugal, as shown in Figure 1.

Figure 1. Countries where FICEM operates
(Source: FICEM website, 2025)

Since its creation in 19XX, these activities have been organized around the following goals:

- To be the spokesperson for the regional cement and concrete industry in different settings.
- To be the regional platform for training and the exchange of experiences and knowledge in the sector.
- To regionally lead the global agenda for sustainability, carbon neutrality, and the circular economy of cement and concrete by 2050.
- Define high-impact, regionally scalable projects and initiatives in line with the Sustainable Development Goals (SDG-2030).
- To be the technical and innovation benchmark recognized by industry, governments, and multilateral organizations.
- Construct studies and research that position the industry and the product as a necessary agent for the development of a sustainable and resilient region.
- Develop the necessary alliances to achieve these objectives.

Climate change is one of the key drivers of our actions. Our map of decarbonization has established objectives to help our associates promote the co-processing of residues as alternative fuels, reduce the clinker content using slags and fly ash, and optimize the use of clinker, cement, and concrete in the construction industry. In numbers, our ambition is to achieve a minimum of 50% co-processing, with a target of 60% participation by clinkers, and reduce the content of cement for concrete making to 21% by 2050, all in line with a circular economic mindset.

2. Purpose of this Guideline

According to the IPCC estimations in 2022, the GHG emissions of Latin America reached a level of 4.7GtCO2e disaggregated as follows: AFOLU (47%), Energy (43%), Industry (4%) and Waste (6%). All these emissions represent 8% of the global emissions to the atmosphere and the industrial emissions are low if compared to land use or land change. A zooming in the industrial emissions confirms a share of 3% of the Latin American emissions due to the cement production activity, low to the global average of 7%, explained by the consumption if compared to developed economies. In a long-term perspective the need for more infrastructure and housing will push the demand and the emissions of our operations, consequently our sector has taken a preventive and responsible approach to adapt our sector to the latest trends of decarbonization and be an important Actor in this activity.

To manage this complex, our association has developed a roadmap, as shown in Figure 2. This is a plan agreed by our best technicians and further by our executive boards. This plan focusses on a permanent reduction of emissions from a potential BAU of 214 MtCO2e to neutrality using four groups of measures. First, 19% reduction in design, construction and production of concrete which implies better engineering practices and transportation modes. Second, 23% of the production facilities innovate their processes with higher thermal efficiency, new additives, new raw materials, reducing fossil fuels presence, incorporating alternative cleaner fuels, adding renewable biomass and green hydrogen (pink or green). Third, 42%, based on a significant use of Carbon Capture and Storage plus Utilization (CCSU) which today is costly but viable in the next decades, and combined with nature-based solutions and avoided methane. Fourth, a 8% use of renewable electricity. Finally, another 8% based on mineralization of concrete.

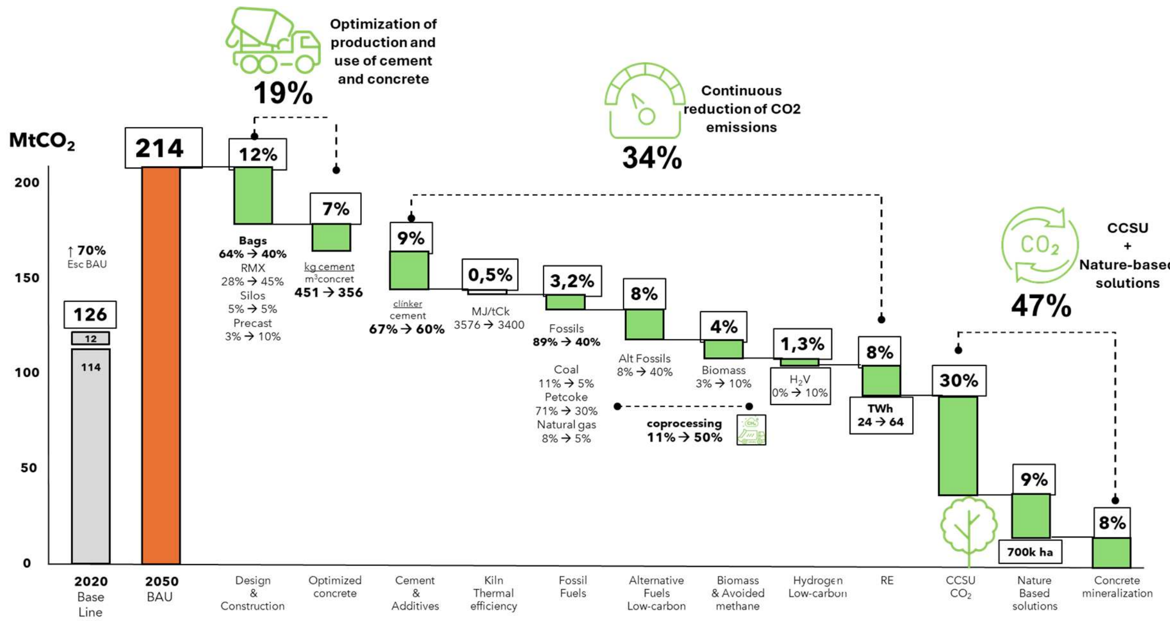


Figure 2. Decarbonization Road Map 2050
(Source: FICEM, 2025)

In this challenging set of activities, there is an immediate opportunity through the incorporation of alternative fuels such as biomass or refuse derivatives and avoided methane. These are expensive and complex activities that require support of climate financing when available. The start of the Paris Agreement Article 6.4 has opened a mechanism that could collaborate to generate many projects and the intention of this guideline is to support critical part of the administrative process of this type of project, specifically the demonstration of additionality.

3. Climate Projects Financing: Additionality under Article 6.4 Paris Agreement

Climate financing is one of the most important tools for promoting the transformation of our global energy systems and improving the conservation and reforestation of lands, which have a direct impact on the net balance of CO_{2e} emissions. Over the last three decades, significant development has occurred in various ways to support climate projects. By definition, most climate projects are activities that are difficult to implement, novel, and often in the pilot stage, with low market penetration. The level of risk is obviously high, and project developers face numerous barriers to securing financing at competitive levels; in the case of developing economies, this situation is further complicated.

Among the many solutions that have built their position in the market such as multilateral funds, and voluntary mechanisms, the work of UNFCCC has paved the way in concepts and regulations to avoid perverse incentive and assure of cash flow that creates confidence in the environmental integrity of the emissions reductions of the climate project and trust in the process.

The most important concept behind these standards, which was part of the Kyoto Protocol financing and is now under the umbrella of Article 6.4 of the Paris Agreement, is the demonstration of “additionality” of the funding through the carbon credits generated by the mechanism. The requirement is a rigorous demonstration of the consideration of the benefits from the money generated by Article 6.4 as strictly necessary in the decision to implement the project. Most projects at the corporate level go through a financial assessment of their return at the board level, and this board has the duty of care and due diligence to assess the project versus a benchmark of profitability according to the risk of the enterprise, the market context, and the operational lifetime of the assets in the project. When the project financing does not pass this initial screening and there is a significant climate impact due to energy efficiency, cleaner energy use, or the impact of nature-based solutions, climate financing can be a potential source of funding that can shape the project.

The process is not only about approaching the financial benchmark; there is a procedure managed by the secretariat of the UNFCCC that covers an assessment of the regulatory context in the host country, as well as an analysis of lock-in risk to assess technological and market aspects. Moreover, three routes are used to confirm the demonstration of additionality. The analysis of lock-in risk ensures alignment with the long-term goals of the Paris Agreement, consistency with the host country´s long-term low emissions development strategy (LT-LDES) and seeks the most efficient technologies.

The first type of analysis combines an assessment of “common” practice to confirm market penetration and state-of-the-art technologies versus barriers or investment analysis. This type of analysis can be conducted through simple cost analysis, benchmarking analysis, or investment comparison analysis. In almost all cases, a financial reference for the cost of equity is necessary for preparing the levelized cost of a process or assessing the financial attractiveness of an asset during its lifetime.

The second approach is the use of a performance-based approach, which is a suitable choice for homogeneous products or highly standardized services. This approach requires the preparation of a set of indicators as a proxy for the likelihood of additionality, such as emissions intensity, market penetration, or other unique features (UNFCCC, 2025).

The following figure summarizes all the approaches. In practice, investment analysis has become the most popular due to the increased availability of economic information, which facilitates a transparent demonstration of returns.

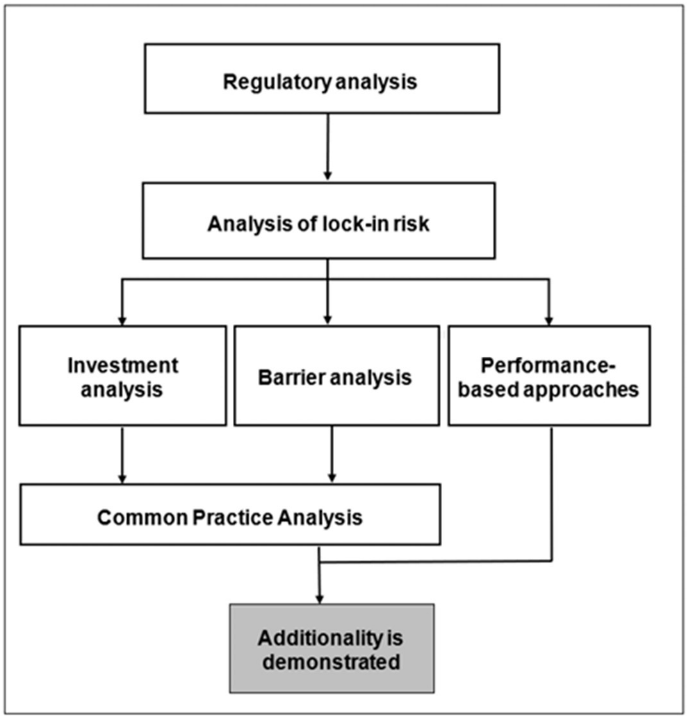


Figure 3. Flowchart of the approaches to demonstrate additionality (Source: UNFCCC, 2025)

4. The Capital Asset Pricing Model

In simple terms, the Capital Asset Pricing Model, or CAPM, is a model that explains the relationship between the expected return and the risk of investing in stocks. The Figure below shows this model, which has the following set-up:

$$Ke = RFR + B*(Rm-RFR)$$

Where:

Ke = expected return on equity or security

RFR =Risk-free rate

B = beta or slope of the security

Rm = market return

"(Rm-RFR)" is also known as the risk premium on an individual security and a function of its systematic risk, measured by the covariance with the market.

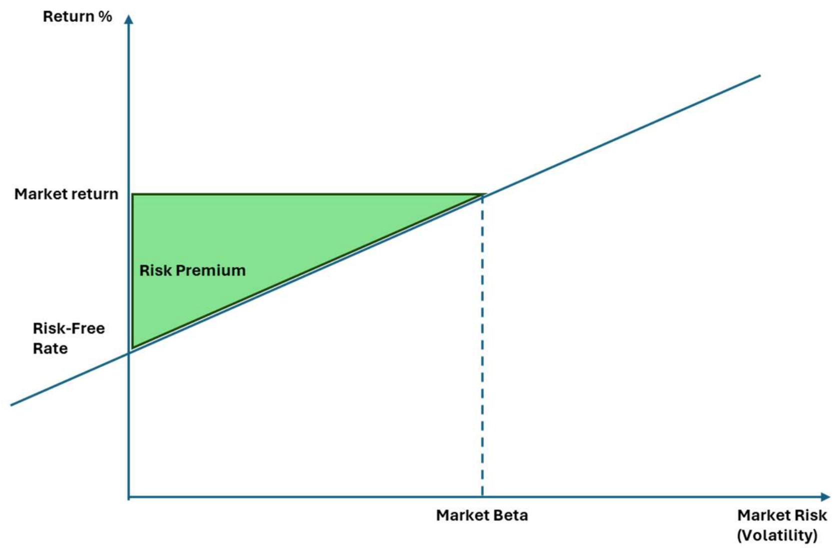


Figure 4. The CAPM model in a chart
(Source: own elaboration)

This model is central for market portfolio analysis and also individual project assessment, and its rationale is easy to follow. The model, like any model, has some assumptions to make it more suitable for computing and comparison with other benchmarks:

- The market has many investors high enough to make them behave competitively (as price takers)
- The investors are risk-averse and demand additional returns for bearing a risk
- All investors are working on a long-term basis
- The access to the securities is low (zero entry barriers)
- No taxes and commissions
- There is a homogeneous perception of the market risk
- Investors can shorten any asset or hold any fraction of an asset

The application of the models has evolved over time. Companies, governments, investors, and regulators have deployed CAPM to determine the cost of capital, measure performance by investment portfolios and their managers, and as a guide to asset allocation and investment planning (Ming, 2021). This paper will focus on the regulatory CAPM, which is one of its most demanded uses to estimate the cost of capital or equity for shareholders.

The model was developed by William Sharpe in 1964 and John Lintner (1965), resulting in a Nobel Prize in Economics for Sharpe in 1990. The model has many assumptions that make it difficult to use directly in any market unless it has the size, dynamics, and strong regulations of the US market.

Indeed, most of the data used by Sharpe corresponded to the US stock exchanges. The CAPM builds on the model of portfolio choice developed by Harry Markowitz (1959). In his model, an investor selects a portfolio at time t-1 that produces a stochastic return at t. This model assumes that investors are risk-averse and manage their analysis through the mean and variance of their one-period investment return. As a result, investors choose “mean-variance-efficient” portfolios. Sharpe and Lintner add a complete agreement on the joint distribution of asset returns from t-1 to t, and borrowing and lending at a risk-free rate, which is the same for all players and independent of the volume of transactions (Fama & French, 2004).

Today, there are more sophisticated models for the same purpose, but the CAPM maintains a strong position in the financial sector and has established itself as a financial benchmark to support decisions on whether to invest, assessing various options. The simplicity, the lack of evidence against the performance of the CAPM, and the high complexity of alternative models maintain the CAPM as the preferred option for assessing projects in the US and extending the analysis to other contexts, while also considering additional risk.

5. The Cost of Equity for the Cement Industry

The cost of equity must be a value that represents the expectation of investors who will invest in projects with a climate change impact, considering the associated technological and operational risks. The typical investment could involve a change in the supply of alternative fuels to the kiln, such as green hydrogen, which entails the installation of water processing facilities for desalinating seawater, electrolyzers, and a source of renewable energy to ensure low or zero CO_2 emissions. Other investments could include switching to fuels based on Refuse Derived Fuel (RDF) from municipal waste or tires or utilizing biomass to achieve a lower carbon intensity and generate emission reductions. In all the examples, there is a risky change of operational conditions of the kiln and preheaters, impact on the lifetime of the refractory insulation, a need to install new feeding systems for the new type of fuel, and the uncertainty of producing renewable sources of cleaner energy compared to a reliable mining of coal.

Therefore, the computation of the cost of equity must consider this level of risk and take into account an investment spanning lifetime of several decades.

The next methodology determines a value suitable for climate investments.

STEP 1: Determine the risk-free rate for your proposal of Ke

In most CAPM approaches, the best value for this purpose is the U.S. Treasury security with a 10-year maturity. Figure 4 shows the behavior of this paper from 1965 to the present. Its geometric average since its creation to present is around 3.31% (Damodaran, 2025).

Figure 5. Historical values of the US Treasury Security at 10 years maturity since 1965
(Source: Federal Reserve Economic Data, Federal Reserve Bank of St. Louis 2025)

This type of asset has a long-standing reputation as a practically zero-risk instrument since 1928, and it maintains that profile even in times of recession, crisis, such as COVID-19, or global stress due to general economic downturns or wars. The US market has never defaulted this type of instrument even during its worst crisis and that is why many economies takes important quantities of this instrument in their treasure operations or as international reserve.

In Figure 5, if we zoom in on the period from 2015 to July 2025 and add the average of the last two decades, the value shows peaks of over 15%. It is currently moving around 4% after 2020, during a period of recovery following the global sanitary crisis. The regression of the data in this period shows a function with low slope type RFR = 0.0006*Time-25.29 and a squared R = 0.3496

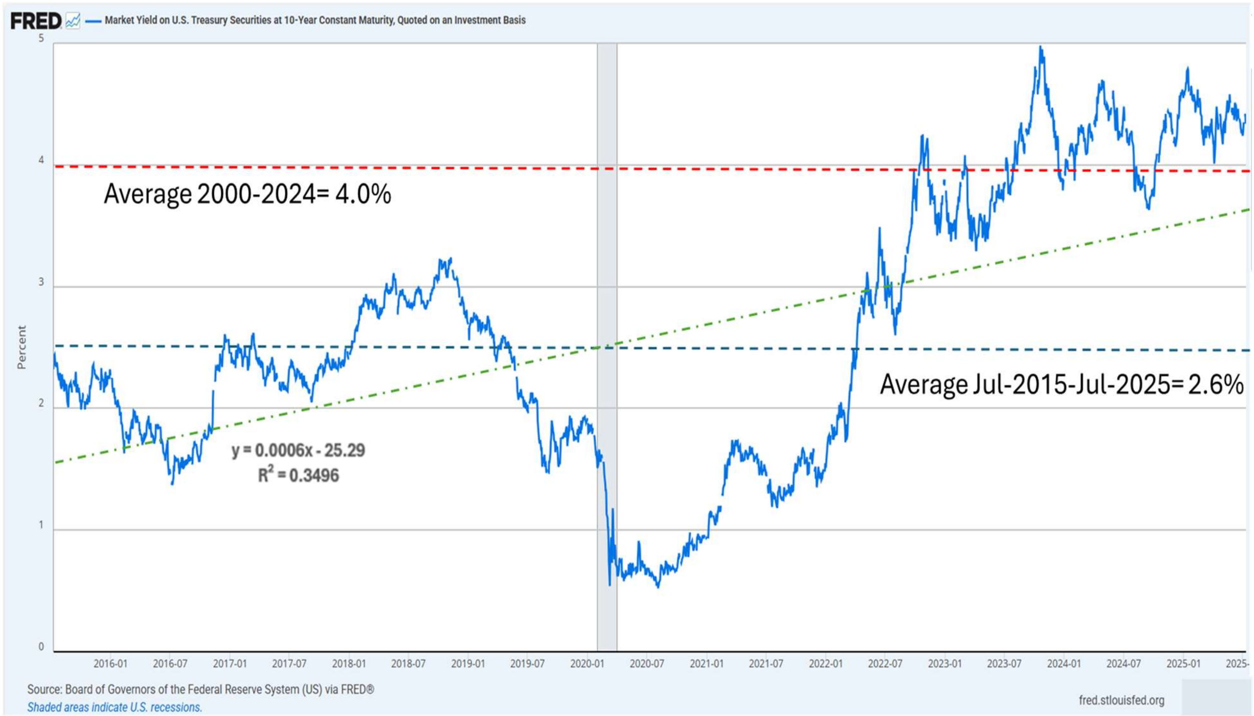


Figure 6. Historical values of the US Treasury Security at 10 years maturity since 2015 (Source: Federal Reserve Economic Data, Federal Reserve Bank of St. Louis 2025)

To perform the exercise of a Ke looking forward two decades, the forecasted value should be closer to the historical value. 3.31% should work, as this factor is exposed to economic shocks, and the longer the series, the better the value.

STEP 2: Determine the Beta

The first step in computing the beta is to determine a benchmark that represents the market or a specific sector. For the cement industry, suitable proxies include the S&P 500, which represents the US market, or the Dow Jones Industrial Average (Ticker symbol: "DJI") to select only industrial firms. The alternative to DJI is the ticker of the S&P 500, which is "SPY".

The next step is the selection of stocks that have at least a couple of decades in a US-based stock exchange, such as the New York Stock Exchange.[1] In this paper, we have selected three corporations that are listed as CX, USLM, and EXP, all of which are producers of clinker and/or quicklime.

Then, we will calculate the correlation of each stock with the market benchmark, in this case, the DJI. Financial information is usually available on the internet; however, a mandatory process is required to capture the time series of the stock each day, using the value at the end of each day. Microsoft Excel offers the function STOCK HISTORY (Company Symbol; Start Date; End Date) to download this information using an official Ticker Symbol. In our exercise, we will use STOCK

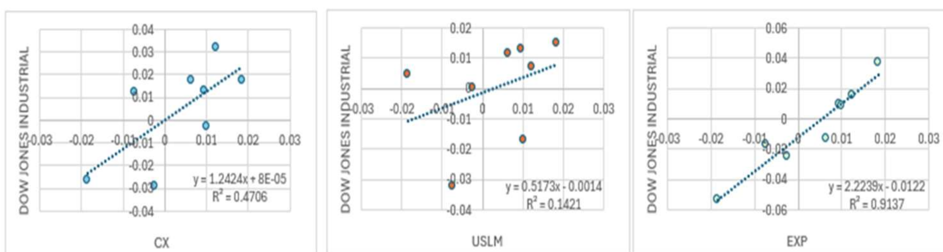
[1] See https://www.nyse.com/index

HISTORY (DJI; 01/01/2015; 30/06/2025). This procedure will generate 2,673 fields of information, including the date and value of the stock, in two columns. Add a third column to compute the daily variation of the stock using the code: Cell = IF (OR (G36=0; G35=0); 0; G36/G35-1), which will compute the variation of prices of two consecutive days, cells G35 and G36.

Repeat this procedure for each stock. Ensure that all times are complete and aligned with the dates, as we will correlate them. Aligning the times in the same spot each day is necessary to avoid inconsistency.

The beta is a direct analysis comparing the DJI (now, the market) to each stock (e.g., CX), using the Microsoft function = SLOPE (H35:H2673; D35:D2673) to compute the beta, which is also the slope of the X-Y correlation between the DJI and CX. Figure 7 displays the market and the three stocks, along with their results, in the header.

Another way to compute the beta is to use the covariance between the stock and the market, calculated with the function =COVARIANCE.P(H35:H2673; D35:D2673), and the variance of the market, calculated with the function =VARP (D35:D2673). The simple ratio of covariance and variance will provide a similar value to the slope function. See the results in Figures 7 and 8.



		BETA	1.365	BETA	0.926	BETA	1.334
BETA AVG		Variance	0.000125	Variance	0.000125	Variance	0.000125
(X1, X2, X3)	1.21	Covariance	0.000170	Covariance	0.000115	Covariance	0.000166
		Cov/Var	1.365	Cov/Var	0.926	Cov/Var	1.334

Industrial Market benchmark

Market	DJI	
Start date	1/01/2015	
End date	30/06/2025	Daily CHG

Stock X1

Company	CX	
Start date	1/01/2015	
End date	30/06/2025	Daily CHG

Stock X2

Company	USLM	
Start date	1/01/2015	
End date	30/06/2025	Daily CHG

Stock X3

Company	EXP	
Start date	1/01/2015	
End date	30/06/2025	Daily CHG

Date	Close		Date	Close		Date	Close		Date	Close	
2/01/2015	$ 17,832.99		2/01/2015	$ 8.77		2/01/2015	$ 14.39		2/01/2015	$ 77.06	
5/01/2015	$ 17,501.65	(1.9%)	5/01/2015	$ 8.53	(2.6%)	5/01/2015	$ 14.46	0.5%	5/01/2015	$ 72.96	(5.3%)
6/01/2015	$ 17,371.64	(0.7%)	6/01/2015	$ 8.64	1.2%	6/01/2015	$ 14.00	(3.2%)	6/01/2015	$ 71.71	(1.7%)
7/01/2015	$ 17,584.52	1.2%	7/01/2015	$ 8.92	3.2%	7/01/2015	$ 14.10	0.7%	7/01/2015	$ 72.80	1.5%
8/01/2015	$ 17,907.87	1.8%	8/01/2015	$ 9.08	1.8%	8/01/2015	$ 14.31	1.5%	8/01/2015	$ 75.54	3.8%
25/06/2025	$ 42,982.43	(0.2%)	25/06/2025	$ 6.74	(2.9%)	25/06/2025	$ 99.02	0.0%	25/06/2025	$ 200.93	(2.4%)
26/06/2025	$ 43,386.84	0.9%	26/06/2025	$ 6.83	1.3%	26/06/2025	$ 100.34	1.3%	26/06/2025	$ 202.99	1.0%
27/06/2025	$ 43,819.27	1.0%	27/06/2025	$ 6.81	(0.3%)	27/06/2025	$ 98.64	(1.7%)	27/06/2025	$ 204.77	0.9%
30/06/2025	$ 44,094.77	0.6%	30/06/2025	$ 6.93	1.8%	30/06/2025	$ 99.80	1.2%	30/06/2025	$ 202.11	(1.3%)

Figure 7. Calculation of Beta for three long-term stocks at the New Stock Exchange (Source: own elaboration)

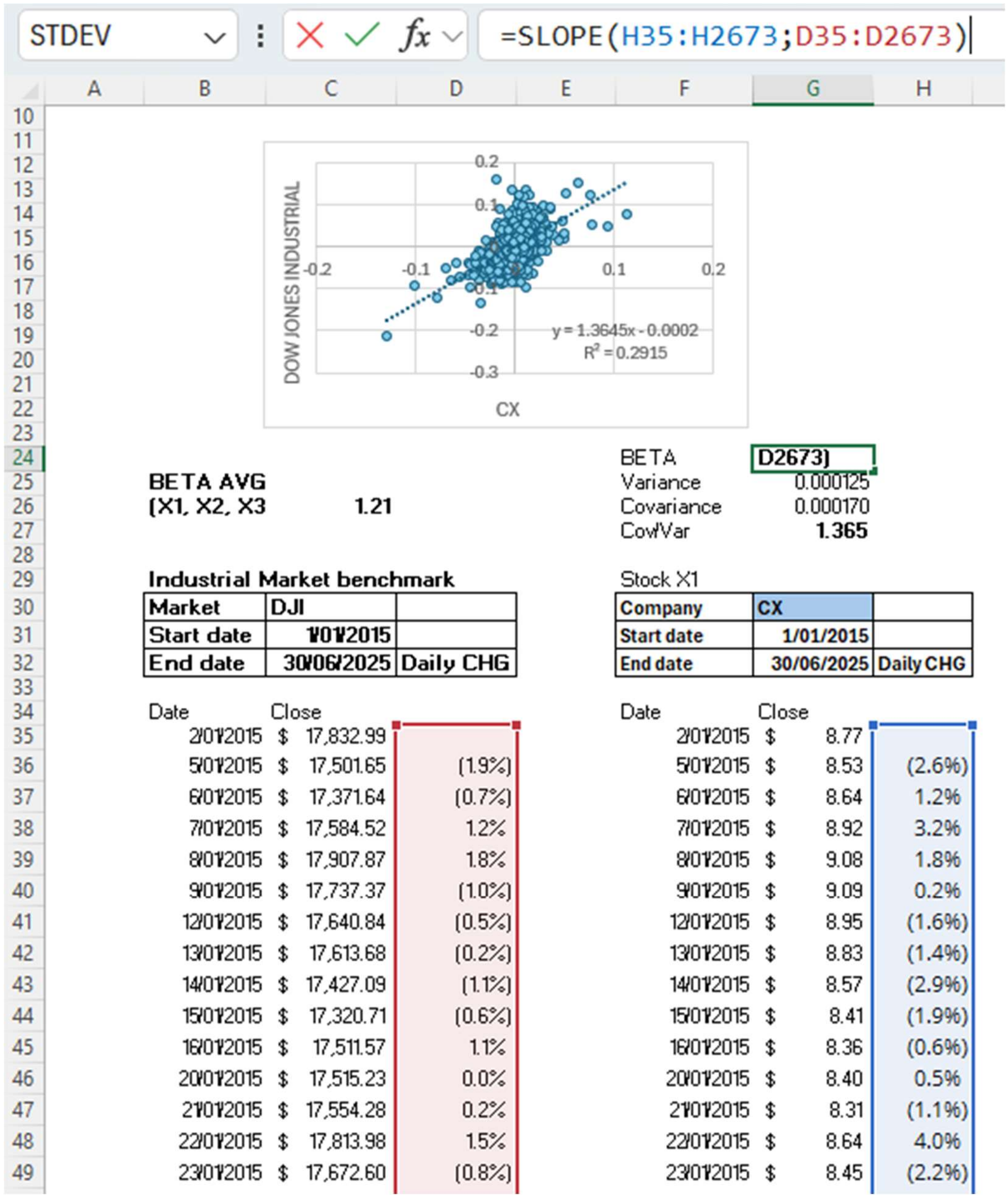


Figure 8. Zooming of the operation to calculate BETA on a spreadsheet for a single stock (Source: own elaboration)

The resulting betas are representative of the market, with an average value of 1.21, which will be used to compute the expectation of the equity return. The US Stocks markets have around a dozen enterprises of the sector with multiple operations of cement, quicklime production and integrated with concrete mixing and delivery.

STEP 3: Determine the Market Premium

Figure 1 shows the statistics of the most significant instruments of the American market since 1928 (Damodaran, 2025). The analysis is conducted using both arithmetical and geometric approaches on the returns.

Table 1. The U.S. market risk premium historical return.
Source: Damodaran website at NYU, 2024.

Period	S&P500 Stocks	3-month T.Bill	T. Bond 10-y	Baa Corp. Bond	Real Estate	Gold
Arithmetic Average Historical Return (AAHR)						
1928-2024	11.79%	3.36%	4.79%	6.90%	4.41%	6.75%
1975-2024	13.55%	4.30%	6.52%	8.94%	5.43%	7.56%
2015-2024	14.11%	1.78%	0.57%	3.81%	6.98%	8.70%

Geometric Average Historical Return (GAHR)						
1928-2024	9.94%	3.31%	4.50%	6.62%	4.23%	5.12%
1975-2024	12.26%	4.25%	6.05%	8.62%	5.28%	5.42%
2015-2024	12.98%	1.76%	0.27%	3.44%	6.89%	8.03%

Risk Premium -AAHR			**Standard Error**	
Period	Stocks - T.Bills	Stocks - T.Bonds	Stocks - T.Bills	Stocks - T.Bonds
1928-2024	8.44%	7.00%	2.01%	2.12%
1975-2024	9.25%	7.03%	2.30%	2.67%
2015-2024	12.34%	13.54%	5.04%	4.01%
Risk Premium -GAHR				
Period	Stocks - T.Bills	Stocks - T.Bonds		
1928-2024	6.63%	5.44%		
1975-2024	8.02%	6.22%		
2015-2024	11.22%	12.71%		

Suppose we select the last decade and compute the recent market dynamics after the sanitary crisis, deducting the Treasury Bill as the risk-free rate from the returns of the S&P 500 portfolio. In that case, the theoretical market prime is 12.71% (cell shaded in blue). This value is more than twice the values of the periods 1929-2024 and 1975-2024, which experienced other crises, such as international wars and the oil crisis (cells shaded in yellow). Consequently, with a conservative approach, the best solution is to take the full historical expectation of 5.44%. Note that the analysis provides values using both arithmetic average historical returns and geometric average historical returns; both perspectives are valid but may differ by approximately 500 basis points.

Other experts in the field, such as The Credit Suisse Global Investment Returns Yearbook 2023 (Credit Suisse, 2023), inferred that investors expect an equity premium (relative to bills) of around

3.5% on a geometric mean basis and, by implication, an arithmetic mean premium of approximately 5%. The CFA Research Foundation (2023) stated that the equity risk premium is not directly observable and challenging to measure. Still, whatever the risk-free rate happens to be, stocks tend to generate annual returns that are 3% to 7% higher, depending on the time horizon.

STEP 4: Determine the Country Risk Premium

The computation of a country's risk premium has been a concern of many financial experts and institutions since the creation of stock exchanges. It is motivated by a more globalized world where investments are located in contexts with additional risks to market competitiveness. Today it is very common to see complex and detailed analysis of a country that incorporates the political risk due to stability of governments, the economic structure and how sensitive is this structure to global shocks, the general prospects of growth, the general government debt burden (one of the key parameters for some agents), the fiscal flexibility to manage an economy, off shore and contingent liabilities, monetary flexibility, external liquidity and external debt burden (Standard & Poor's, 2008). In line with the concerns previously explained, Annex I provides a direct selection of the amount of additional risk to be added to a project.

The perspective involves transferring the relative risk of a market to a project, where the expectation is set using ideal conditions of a developed and well-regulated economy, as per the CAPM, and accounting for the additional value if the project is undertaken in an economy with high risk and a different context. In the case of climate projects, specifically, the typical risks include the novelty status of new cleaner technologies, the supply chain of new cleaner energy sources, and the lack of local capacities to manage the changes and maintain operations, ensuring the environmental integrity of the emissions reductions.

Finally, if a climate project is developed in a cement facility in a developing economy such as Mexico, the final computation would be as follows:

Rik-free rate = 3.31%
Market premium = 5.44%
Sector Beta = 1.21
Country Risk = 2.82%

$$Ke_{USA} = RFR_{USA} + BETA_{sector} * (\text{Market Premium}) \quad \ldots\ldots(1)$$
$$Ke_{USA} = 3.31\% + 1.21 * (5.44\%)$$

$$Ke_{adjusted} = KeUSA + \text{Country Risk}_{MEXICO} \quad \ldots\ldots(2)$$
$$Ke_{adjusted} = 9.9\% + 2.82\% = 12.7\%$$

The expectation of equity or Ke = 12.71% represents the value for assessing standalone projects, assuming investors pay 100% of the capital expenses through a single legal entity. There is no inclusion of debt because the level of debt depends on many other variables that the firm manages during its lifetime.

6. Summary – Key messages

At the climate project level, additionality requires a robust benchmark to assess the impact of carbon credits, with traceability of all parameters involved in the project's economics. The prescribed Ke is conservative, and the computation of country risk is also a mature procedure that makes the Ke reliable for further use in the project finance appraisal. Most, if not all, elements of climate financing are managed and stored in ERPs and are subject to multiple levels of auditing, which reinforces the conclusion about the impact of climate financing.

On the other hand, there are alternative methods to CAPM, more sophisticated and requiring the use of specialized software and a higher level of knowledge in advanced mathematics. Autoregressive Conditional Heteroskedasticity (ARCH) and its generalized version (GARCH) constitute valuable tools to model the stocks as time series and build an expectation of equity. The use of multifractal analysis is another option to the CAPM and is capable of analyzing volatility and human behavior, beyond macroeconomic frameworks, specifically to build efficient frontiers for stocks.

Finally, the future of climate financing is expected to intensify the use of artificial intelligence in this decade. This prospective use makes the use of CAPM more attractive, with reviews and realignment based on direct and transparent data from the stock market.

7. Annexes

Annex I Country Risk Premium and Moody's rating: FICEM Associates

Source: Damodaran website at NYU, 2024.

Country	Moody's rating	*Country Risk Premium*
Argentina	Caa3	14.80%
Bolivia	Ca	17.75%
Brazil	Ba1	3.70%
Chile	A2	1.25%
Colombia	Baa3	3.25%
Costa Rica	Ba3	5.32%
Cuba	Ca	17.75%
Dominican Republic	Ba3	5.32%
Ecuador	Caa3	14.80%
El Salvador	B3	9.61%
Guatemala	Ba1	3.70%
Honduras	B1	6.66%
Mexico	Baa2	2.82%
Nicaragua	B2	8.14%
Panama	Baa3	3.25%
Paraguay	Baa3	3.25%
Peru	Baa1	2.36%
Portugal	A3	1.77%
Spain	Baa1	2.36%
Trinidad and Tobago	Ba2	4.45%
Uruguay	Baa1	2.36%
Venezuela	C	26.33%

8. Bibliography

Credit Suisse (2023). *Global Investment Returns Yearbook 2023 Summary Edition*. Publication of the Credit Suisse Research Institute. https://d1e00ek4ebabms.cloudfront.net/production/uploaded-files/CS%20YB%20summary%20edition%202023-963909e8-472f-47a6-afdf-486f352af84d.pdf

CFA Institute (2023). *Revisiting the equity risk premium*. Publication of the CFA Research Foundation. https://rpc.cfainstitute.org/en/research/foundation/2023/revisiting-equity-risk-premium-2021

Damodaran, A. (2024) Country Risk: Determinants, Measures, and Implications – The 2024 Edition, Stern School of Business. https://pages.stern.nyu.edu/~adamodar/pdfiles/papers/countryrisk2024formatted.pdf

Fama, E. & French, K. (2004). The capital asset pricing model: theory and evidence. *Journal of Economic Perspectives*, *18(3),* 25-46. https://doi.org/10.1257/0895330042162430

International Energy Agency (2022). *Net zero by 2050*: *Special report*. IEA. Retrieved from: https://www.iea.org/reports/net-zero-by-2050

NACD (2015). *Governance Guidelines*. National Association of Corporate Directors. https://www.nacdonline.org/about/board-of-directors/governance-guidelines/

Ming, J. (2021). The Capital Asset Pricing Model. *Encyclopedia 1 (3)*, 915-933 https://doi.org/10.3399/encyclopedia1030070

Project Management Institute (2021), *PMBOK: A guide to the project management body of knowledge, 7th edition.* https://www.pmi.org/

UNFCCC (2025). Standard A6.4-STAN-METH-003; Demonstration of additionality in mechanism methodologies, version 01.2 https://unfccc.int/process-and-meetings/bodies/constituted-bodies/article-64-supervisory-body/rules-and-regulations#Forms