FII INSTITUTE
Future Investment Initiative Institute
Impact on Humanity

Inclusive ESG Framework and Scoring Methodology for Emerging Markets

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Validation Report

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I. Executive Summary

This report documents the results of the quantitative validation of the FII Institute inclusive ESG (IE) scoring methodology developed by Future Investment Initiative Institute (FII Institute) in coordination with EY. The purpose of the score generated by the scoring model, amongst others, is to help inform investors, rating agencies and other ESG Market Participants (such as regulators and stock exchanges) in their investment decision-making process and help drive ESG investment into Emerging Markets (EMs). The report should be read in conjunction with the following documents for a proper understanding of the conclusions:

a) A pdf deck presenting the FII Institute inclusive ESG scoring methodology
b) An excel model capturing the inclusive ESG scoring methodology prototype
c) A pdf deck explaining the FII Institute inclusive ESG scoring methodology case studies

The nature of the scoring methodology is a non-predictive model (development is not based on historical data nor empirically driven), hence a combination of validation techniques is used. These include:

- Constant feedback from investors and representatives of standard setter organizations
- Feedback from EY internal ESG and Emerging Economy subject matter experts
- Quantitative validation (limited and non-exhaustive)
- Qualitative validation (through case studies on a shortlisted sample pool of EM and DM large cap companies)

The focus of this validation report is on the quantitative validation (blue box in Figure 1). A summary of the validation objective and approach is described in Figure 1.

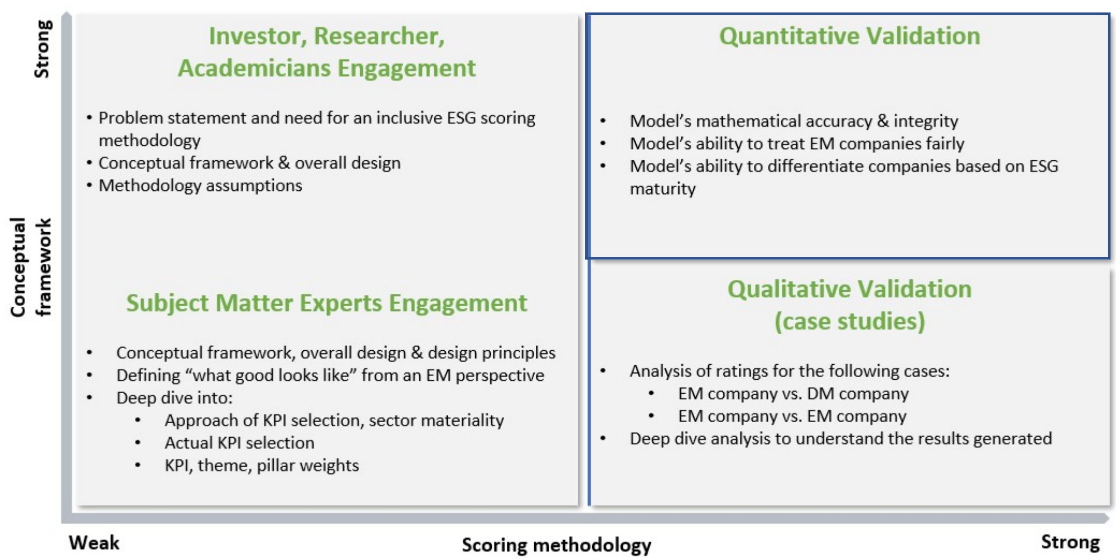

Figure 1: Range of validation techniques

A list of quantitative validation tests performed on the scoring methodology is illustrated in Table 1.

#	Test	Description of the test	Results
1	Model's mathematical accuracy & integrity	Validating whether the model performs the calculations accurately by reflecting actual ESG maturities	Satisfactory
2	Model's ability to rank order* companies	Model's ability to treat EM companies fairly and without a bias	Satisfactory
		Model's ability to differentiate companies based on ESG maturity	Satisfactory
3	Model weights	Impact of the weight distribution on the mathematical integrity of the model	Satisfactory

Table 1: Validation description and results

* Rank ordering reflects scoring model's ability to differentiate companies based on their respective ESG maturity and rank them relative to other companies' ESG maturity in a consistent manner.

The analysis performed and the outcome do not represent any type of formal assurance of the model performance with respect to any regulatory requirements. The results for the tests have been satisfactory. However, they have been undertaken in a controlled environment on a limited pool of randomly selected companies that are Market Cap leaders in their respective EM countries.

This is the first generation of the inclusive ESG scoring methodology and the following considerations should be considered in future review and validation cycles:

1. **Key performance indicators (KPI) used in the model**: Annual review of KPIs to keep them commensurate with "what good looks like" in an emerging market.
2. **Possible values of KPIs**: Currently all the KPIs have a binary value, however with time as more ESG data is used to refine the thresholds for KPIs, a set of gradient values as thresholds may become a possibility.
3. **Objectivity in defining the KPIs**: The current model has certain KPIs which are subjective in nature, however as the enhanced testing and applicability of this scoring improves with time, the subjective nature of questions can be worked upon to become as objective as possible.
4. **Theme weights**: The current methodology uses SASB sector materiality to assign theme weights (the distribution is as equal weights for relevant themes). However, gradient theme weights could be further developed once sufficient performance data is gathered.

II. Test 1 – Test of scoring model's mathematical accuracy & integrity

The following tests are performed to validate the mathematical accuracy and integrity of the FII Institute inclusive ESG scoring methodology:

i. Review of all the formulae in the excel model
ii. Review of the KPI weights and their application
iii. Review of the theme weights and their application
iv. Review of the pillar weights and their application
v. Review of country adjustment factors and their application
vi. Calculation of scores at the following levels:
   a. ESG KPI
   b. ESG Theme
   c. ESG Pillar
vii. Application of the sector materiality on the theme weights and KPI weights
viii. Review of all the above with the FII Institute inclusive ESG scoring methodology document.

Based on the results obtained during the above tests, it was concluded that the FII Institute inclusive ESG scoring methodology is mathematically accurate.

III. Test 2.1 – Test of model's ability to rank order companies

The objective of this test is to validate the rank ordering ability of the scoring model i.e. whether the scoring model is able to differentiate companies based on their respective ESG maturity and rank them relative to other companies' ESG maturity in a consistent manner.

A. Test 2.1 Rank ordering ability for a pool of companies from EM and respective DM peers

The purpose of this test is to validate the following:

- The ability of FII Institute inclusive ESG scoring methodology to differentiate companies based on performance rather than their location.
- The ability of FII Institute inclusive ESG scoring methodology to treat the EM companies fairly rather than giving them an undue higher rating.

A.1 Selection sample pool of EM Companies to facilitate the testing

A pool of 40 companies was created based on the following principles:

1. Companies from 4 countries used for FII Institute inclusive ESG scoring methodology development (i.e. India, Brazil, Kenya and Saudi Arabia)
2. Companies from 4 sectors used for FII Institute inclusive ESG scoring methodology development (i.e. Information Technology, Manufacturing, Real Estate and Metals and Mining)
3. Companies with highest market cap and listed on a stock exchange
4. Companies rated by at least two rating agencies i.e. Market Leading ESG Rating 3 (R3) and Market Leading ESG Rating 4 (R4).

To identify the EM companies, the following criterion have been used to ascertain the market capitalization for each company:

- Large Cap Companies: Market cap > USD 10bn
- Mid Cap Companies: Market cap between USD 2bn and USD 10bn
- Small Cap Companies: Market cap between USD 300mn and USD 2bn
- Micro Cap Companies: Market cap < USD 300mn

26 companies were selected for further testing based on availability of ESG performance data, described in Table2.

No.	Company Name	Market Capitalization (USD)	Country	Sector	R3 Score	R4 Score
1	Company Z	175,802,000,000	India	Information technology	14.2	83
2	Company J	100,379,520,000	Saudi Arabia	Metals & Mining	28.5	65
3	Company P	96,624,000,000	India	Information technology	15.4	88
4	Company K	61,085,520,000	Saudi Arabia	Information technology	21.6	60
5	Company C	52,338,000,000	India	Information technology	26.6	60
6	Company Q	45,448,000,000	Brazil	Manufacturing	22.5	51
7	Company L	41,602,000,000	India	Information technology	13.3	64
8	Company F	36,234,000,000	India	Manufacturing	27.5	72
9	Company X	34,871,760,000	Saudi Arabia	Metals & Mining	42	46
10	Company R	23,446,000,000	Brazil	Manufacturing	23.4	58
11	Company G	20,193,120,000	Saudi Arabia	Metals & Mining	44.8	-
12	Company Y	15,979,000,000	Brazil	Information technology	19.5	57
13	Company S	15,884,000,000	Brazil	Manufacturing	51.5	79
14	Company B	13,420,000,000	India	Manufacturing	34.4	76
15	Company T	13,399,920,000	Saudi Arabia	Manufacturing	34,3	70
16	Company D	12,376,000,000	Kenya	Information technology	23.8	49
17	Company AZ	11,651,244,000	India	Real Estate	16.8	68
18	Company M	7,139,520,000	Saudi Arabia	Information technology	31.9	26
19	Company U	6,517,000,000	Brazil	Metals & Mining	48.2	-
20	Company E	6,251,000,000	Brazil	Information technology	18.8	77
21	Company V	4,821,840,000	Saudi Arabia	Manufacturing	45	58
22	Company N	1,501,000,000	Brazil	Real Estate	16.3	38
23	Company H	1,089,972,000	Kenya	Manufacturing	-	-
24	Company W	436,696,000	Kenya	Manufacturing	-	-
25	Company I	25,636,000	Kenya	Metals & Mining	-	-
26	Company O	1,325,116	Kenya	Real Estate	-	-

Table 2: Companies development universe

Table 3 presents a summarized version of Table 2, highlighting the diversity of the sample EM companies selection pool.

Company by sector and market cap	Brazil	India	Kenya	Saudi Arabia
Information technology	**2**	**4**	**1**	**2**
Large	1	4	1	1
Medium	1			1
Manufacturing	**3**	**2**	**2**	**2**
Large	3	2		1
Medium				1
Small			2	
Metals & Mining	**1**		**1**	**3**
Large				3
Medium	1			
Micro			1	
Real Estate	**1**	**1**	**1**	
Large		1		
Micro			1	
Small	1			

Table 3: Distribution of the development group

Out of the above 26 companies, external rating agencies ESG related score availability revealed that only 22 companies were scored by both R3 and R4. We have focused on these companies and they were further ranked from best to worst using scores from both the rating agencies. The divergence between the ranks using scores from both the rating agencies was calculated and presented in Table 4.

No.	Company Name	Market Capital (USD)	Country	Sector	Rank based on score in previous table		Divergence in ranking
					R3	R4	
1	Company Z	175,802,000,000	India	Information technology	2	2	0
2	Company J	100,379,520,000	Saudi Arabia	Metals & Mining	14	9	5
3	Company P	96,624,000,000	India	Information technology	3	1	2
4	Company K	61,085,520,000	Saudi Arabia	Information technology	8	11	3
5	Company C	52,338,000,000	India	Information technology	12	11	1
6	Company Q	45,448,000,000	Brazil	Manufacturing	9	16	7
7	Company L	41,602,000,000	India	Information technology	1	10	9
8	Company F	36,234,000,000	India	Manufacturing	13	6	7
9	Company X	34,871,760,000	Saudi Arabia	Metals & Mining	18	18	0
10	Company R	23,446,000,000	Brazil	Manufacturing	10	13	3
12	Company Y	15,979,000,000	Brazil	Information technology	7	15	8
13	Company S	15,884,000,000	Brazil	Manufacturing	20	3	17
14	Company B	13,420,000,000	India	Manufacturing	17	5	12
15	Company T	13,399,920,000	Saudi Arabia	Manufacturing	16	7	9
16	Company D	12,376,000,000	Kenya	Information technology	11	17	6

17	Company AZ	11,651,244,000	India	Real Estate	5	8	3
18	Company M	7,139,520,000	Saudi Arabia	Information technology	15	20	5
20	Company E	6,251,000,000	Brazil	Information technology	6	4	2
21	Company V	4,821,840,000	Saudi Arabia	Manufacturing	19	13	6
22	Company N	1,501,000,000	Brazil	Real Estate	4	19	15

Table 4: External agencies ranking

Table 5 presents a summary of the divergence observed in the ranking of the companies in Table 4.

Divergence type	Count
No divergence	2
Minor	16
Material	2

Table 5: Divergence of ranks between rating agencies

In Table 5, the following definitions have been used:

- No divergence: Rank of a company is same based on score of R4 and R3
- Minor divergence: Divergence between rank of a company based on score of R4 and R3 is less than +/- 10 ranks
- Major divergence: Divergence between rank of a company based on score of R4 and R3 is more than +/- 10 ranks

The objective behind the divergence analysis is to select companies which ranked differently on R3 and R4 based on their respective scores. For this analysis, although all companies were scored using the FII Institute inclusive ESG scoring methodology and for validation purposes, only 6 of them were selected and formed a pair of companies with their respective DM companies (presented in Table 6 and 7) for each divergence category explained above (Table 5)

No.	Company Name	Market Capital (USD)	Country	Sector	IE Score
1	Company Z	175,802,000,000	India	Information technology	75.73
2	Company S	15,884,000,000	Brazil	Manufacturing	75.72
3	Company B	13,420,000,000	India	Manufacturing	73.62
4	Company D	12,376,000,000	Kenya	Information technology	67.2
5	Company X	34,871,760,000	Saudi Arabia	Metals & Mining	57.54
6	Company N	1,501,000,000	Brazil	Real Estate	38.22

Table 6: Inclusive scoring of companies the sub-group

A.2 Selection of peer companies from DM

To proceed with the test, peers are shortlisted for the EM companies from the developed market, described in Table 7.

Emerging Market companies			Developed Market peers	
Company	**Country**	**Sector**	**Company**	**Country**
Company Z	India	Information technology	Company AC	Ireland
Company X	KSA	Materials and mining	Company AD	Canada
Company S	Brazil	Manufacturing	Company AE	England
Company B	India	Manufacturing	Company A	France
Company D	Kenya	Information technology	Company AA	Sweden
Company N	Brazil	Real Estate	Company AB	United States

Table 7: Developed Market peer companies

The sample of peer DM companies were selected based on the following:

1. Geographic diversity (i.e. one company each from Ireland, England, France, Sweden, United States and Canada).
2. Diversity in market capitalization relative to their EM peers (for some EM companies, DM peer companies had a similar market capitalization level and for other EM companies, DM peer companies had significantly different market capitalization level)
3. Diversity in divergence of rating by both rating agencies for an EM company relative to its peer DM company (for example (i) Company Z has been rated better than Company AC by R4 whereas R3 rates Company AC better than Company Z (ii) Company X has been rated worse than Company AD by both R4 and R3)

A summary of ESG scores of all 12 companies (6 EM and 6 DM) from both rating agencies is explained in Table 8.

Emerging Market companies			Developed Market peers		
Company	**R3**	**R4**	**Company**	**R3**	**R4**
Company Z	14.2	83	Company AC	9.7	76
Company X	42	46	Company AD	19.7	84
Company S	51.5	80	Company AE	27.5	77
Company B	34.4	76	Company A	26.7	83
Company D	23.8	49	Company AA	18.8	74
Company N	16.3	37	Company AB	9.7	53

Table 8: Developed Market peer companies' ratings

The companies have been selected to cover a wide range of Market Cap i.e. a range between 1.6 Bn and 224 Bn USD. Table 9 represents the ranking between the FII Institute inclusive ESG scoring methodology, R3 and R4. Companies marked in the same color indicate EM and its peer DM company.

Company	Country	Sector	R3	R4	IE	DM/EM
Company AA	Sweden	Information technology	5	8	1	DM
Company AC	Ireland	Information technology	1	6	2	DM
Company AD	Canada	Materials and mining	6	1	3	DM
Company Z	India	Information technology	3	2	4	EM
Company S	Brazil	Manufacturing	12	4	5	EM
Company AE	UK	Manufacturing	9	5	6	DM

Company B	India	Manufacturing	10	6	7	EM
Company A	France	Manufacturing	8	2	8	DM
Company D	Kenya	Information technology	7	10	9	EM
Company X	KSA	Materials and mining	11	11	10	EM
Company N	Brazil	Real Estate	4	12	11	EM
Company AB	USA	Real Estate	2	9	12	DM

Table 9: DM Vs. EM Ranking

A.3 Validating the Rank Ordering Ability

For comparative reasons, while applying the inclusive methodology for DM companies, the country materiality is disregarded for consistency in comparing the differences presented in Table 10.

Company	R3	R4	IE
Company Z	2	-4	3
Company S	3	-1	-2
Company B	2	4	-1
Company D	2	2	8
Company X	5	10	7
Company N	2	3	-1

Table 10: DM Vs. EM Rating - Difference

The difference in ranking explained in Table 10 approach:

- R3 ranked Company Z as 3rd and Company AC its peer as 1st thus the difference is 2 ranks presented for Company Z
- R4 ranked Company S as 4th and its peer Company AE as 5th thus the difference is 1 rank presented for Company S
- Same approach applied for the inclusive methodology
- Each positive difference shows that the rating ranked the DM company better than EM
- Each negative difference shows that the rating ranked the EM company better than DM

A.3.1 Case 1:

Exploring instances wherein Inclusive ESG Scoring Methodology has ranked EM companies as similar or even slightly better than their DM counterparts, but external rating agencies rank DM companies better.

Case 1 description:

Company S and Company AE (part of sample pool for testing inclusive ESG scoring methodology)

	Ranking			
	R3		R4	IE
Company	Food Products	Global	Food & Tobacco	-
Company S	574/588	14508/14786	26/371	75/ 100
Company AE	100/588	7659/14786	31/371	74/ 100

Table 11: Ranking Company S Vs. Company AE

- Company S is based in Sao Paulo Brazil, engaged in processing chicken, beef and pork. Its peer from the Developed Market is Company AE headquartered in London England, involved in food processing, production of yeast, sugar, enzymes and other ingredients.

- Company S is observed to be rated relatively lower as compared to its DM counterpart on its ESG performance by external ESG ratings (e.g. R3 and R4)

- A deeper introspection across ESG practices on GHG management and impact on natural ecosystem for both the companies is revealed in Table 12

<table>
<tr><th></th><th>Company S</th><th>Company AE</th></tr>
<tr><td rowspan="2">How committed is the company to bring down its GHG footprint</td><td>- Company S has set itself a Net Zero Target for 2040
- The company is working on developing an action plan, supported by science-based targets, consistent with the criteria established by the Science-Based Targets initiative (SBT)
- The company reports its emission footprint on all scopes (Scope 1, 2, 3)
- Company has identified multiple initiatives to reduce its GHG footprint
- The company is monitoring and disclosing its performance in terms of GHG reduction (e.g. 20% 2019-2020)
- The company is engaging its value chain partners on GHG reduction measures.</td><td>- Company AE businesses and segments have specific targets in line with the goals of the Paris Climate Agreement.
- Company AE wishes to achieve Net Zero target in their own operations by 2030.
- The company is disclosing its GHG emission footprint and performance improvement across all scopes
- Company AE is also engaging its value chain partners on GHG footprint reduction.</td></tr>
<tr><td colspan="2">The initiatives, performance, and management commitment towards GHG reduction for both these companies is quite similar and hence in reality, they should be ranked closer to each other on this theme.</td></tr>
<tr><td rowspan="2">How committed is the company to reduce its impact on natural ecosystem</td><td>- The company has a formal position statement to curb its impact on nature and biodiversity management
- The company reports its impact on biodiversity, soil, water, etc.</td><td>- The organization has a documented forests policy and commodity specific sustainability policies (e.g., palm oil, timber products cattle products, etc.) and the company's CDP Report Forests discloses their environmental impacts</td></tr>
<tr><td colspan="2">- While both the companies have secured the essentials in terms of managing impact on natural ecosystem, Company AE has taken a lead in disclosing its performance with popular international frameworks (CDP).
- Hence the rankings for both the companies should be similar with Company AE slightly better than Company S, in case external disclosures using global frameworks are given due credit.</td></tr>
</table>

Table 12: Introspection, Company S Vs. Company AE

Based on above observation, both Company S and Company AE are noticed to have checked across all the right parameters with Company AE taking a slightly mature approach by adopting and disclosing on global frameworks such as CDP. The above is a selective representation, almost similar performance is observed by both the companies on other ESG themes.

However, based on their practices, the difference in their ESG rankings should not vary considerably. Using the FII Institute inclusive ESG scoring methodology, a similar ranking is observed for both the companies, which strengthens the fact that the inclusive ESG scoring methodology gives due importance to actual performance against ESG themes, hence reducing any perceived biases.

This example illustrates that FII Institute inclusive ESG scoring methodology is not biased towards EM companies, rather it is a performance driven scoring methodology, when companies meet the essential criteria, they are able to secure a similar rank.

A.3.2 Case 2:

How would a company, that is in the early stages of its ESG journey and performance, be scored by external rating agencies and by the inclusive ESG scoring methodology?

Case 2 description:

Company X and Company AD (part of sample pool for testing inclusive ESG scoring methodology)

- Company X operations and businesses are structured into five strategic business units, Gold and base metals, Phosphate, Industrial Minerals and Aluminum. It is a large mining company in the Middle East and its operations are spread across the Saudi geography. Its peer, Company AD is a Canadian based company, engaged in mining and development of minerals such as copper and zinc.

- The sector represented by this company (Metals and Mining) is a sensitive sector from an ESG perspective. Metals and Mining have a direct impact on natural ecosystem, regional ecology and holds a relatively higher carbon footprint. On the social side, the sector involves considerable supply chain activities and is manpower dependent – which brings focus on numerous Human capital and community related aspects.

- Company X is noticed to be rated relatively lower as compared to its DM counterpart (e.g., Company AD, Canada) on its ESG performance.

	Ranking			
	R3		R4	IE
Company	**Sector***	**Global**	**Metals & Mining**	**-**
Company X	65/123	13366/14786	239/550	57/100
Company AD	2/168	3329/14786	13/550	81/100

Table 13: Company X Vs. Company AD

*Both companies' sector is Metals & Mining with R4 whereas R3 sector for Company X is Precious metals and Diversified Metals for Company AD (explaining the difference in the denominator)

- A deeper introspection across key ESG practices for both companies is revealed in Table 14

	Company X	**Company AD**
How committed is the company to bring down its GHG footprint	The company did not set GHG reduction targets but has initiatives for emission reduction and it reports on scope 1 and 2 emissions only	Have short, medium and long-term targets. Committed to work with its customers and transportation providers to reduce emissions downstream from the business.
How committed is the company to reduce its impact on natural ecosystem	The company did not assess the impact of its supply chain on nature, including biodiversity and land use with no formal position statement on its impact on nature and biodiversity management	Conducts an assessment on the impact of its supply chain on nature, and has a policy of its impact on nature and biodiversity management
How committed is the company towards the social and HSE welfare of its employees and community	The company is not engaged in initiatives that promote the employees' mental health and emotional wellbeing, has no HSE targets/KPIs and did not undertake any HSE/ OHS risk assessment	Continues to have open conversations about the impact of the ongoing pandemic on mental health and well-being, committed with its set HSE targets/KPIs and undertake an HSE/ OHS risk assessment

Table 14: Introspection, Company X Vs. Company AD

Based on the observations in Table 14, it is noticed that Company X still has a journey to cover to perform better in key material topics for metals and mining companies. Based on this performance exhibited by Company X, one would expect it to rank amongst the nascent or moderately mature companies and not amongst the leaders.

A similar ranking outcome is demonstrated by R4, R3 and FII Institute.

This example illustrates that FII Institute inclusive ESG scoring methodology is not biased towards EM companies, rather it is a performance driven scoring methodology, when companies do not meet the essential criteria, they are not able to secure a high rank.

A.3.3 Case 3:

How would a company, that is significantly mature on its ESG journey and performance, be scored by external rating agencies and by the inclusive ESG scoring methodology?

Case 3 description:

Company AA and Company D (part of sample pool for testing inclusive ESG scoring methodology)

- Company AA is a telecommunication company located in Stockholm Sweden, its peer from EM is Company D operating in Kenya.
- The sector represented by these companies is a moderately sensitive sector from an ESG perspective.
- Company AA is observed to have a significant advantage in terms of ESG ranking over Company D, wherein both the companies are quite mature on their ESG maturity.

	R3 ranking		R4 Ranking	IE
Company	Telecom	Global	Telecom	-
Company D	63/229	5554/14786	101/260	67/100
Company AA	25/229	2881/14786	24/260	100/100

Table 15: Ranking Company D Vs. Company AA

- Both companies are similar but Company AA has an edge, which is reflected in FII Institute inclusive ESG scoring methodology. Hence, the inclusive methodology did not skew Company D proving it is not being biased towards EM. While both companies have a similar ESG profile, Company AA holds an edge of ESG over Company D in certain areas. The FII Institute identified this relative performance and ranks Company AA better than Company D which proves that this methodology is not biased towards EM.

	Company D	Company AA
How committed is the company to bring down its GHG footprint	Focused to become a net zero emitting company by 2050. In 2019, the company registered a carbon reduction targets with the Science-based Targets Initiative (SBTi).	Set industry leading science-based targets to reduce greenhouse gas emissions and reduced emission in operations (scope 1 and 2) by more than 90% since 2019
	Demonstrated commitment to protecting and restoring nature in September 2020 when the company signed up to Business for Nature's Call	

How committed is the company to reduce its impact on natural ecosystem	to Action. This involved joining more than 560 businesses from 54 countries calling on governments to act with courage and urgency by putting nature in front and center of policy making. This is in line with recognition that without nature conservation Company D will not be able to meet the 1.5C climate target set out in the Paris Climate Agreement of 2015 or prevent a catastrophic loss of biodiversity.	No formal position statement (policy, code or statement) on its impact on nature and biodiversity management was identified
How committed is the company towards the social and HSE welfare of its employees and community	There are company initiatives that promote culture of safety/ train employees on HSE aspects	There are company initiatives that promote culture of safety/ train employees on HSE aspects

Table 16: Introspection, Company D Vs. Company AA

IV. Test 2.2 Model's ability to differentiate companies based on ESG maturity

The objective of this test is to validate whether the model holds the ability to differentiate companies based on their ESG maturity in a consistent manner. Additionally, the model should be able to demonstrate different evolution pathways for companies with different ESG maturity.

This test is data intensive and given that the information under study is for less than 30 companies, a dataset of 27,000 fictitious companies was created. The description of the approach used to create the dataset for validation is presented in Table 17.

- **ESG maturity buckets**: Defining 9 ESG maturity buckets as follows:

Number of KPIs answered as "yes" in each Pillar i.e. "E", "S" and "G"								
B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	B_9
10%	20%	30%	40%	50%	60%	70%	80%	90%

Table 17: Percentage of "yes" answers

Table 18 presents the number of KPIs in each Pillar.

ID	Pillar	KPI – Count
E	Environmental	35
S	Social	39
G	Governance	20

Table 18: Pillars KPIs count

Based on Table 18, consider a single sample/ fictitious company in Bucket i (where 1 < i < 9), the resulting "yes" answers for the number of KPIs in each bucket is indicated in table 19.

		Number of KPIs answered as "yes"								
Pillar	**KPI – Count**	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	B_9
Environmental	35	4	7	11	14	18	21	25	28	32
Social	39	4	8	12	16	20	23	27	31	35
Governance	20	2	4	6	8	10	12	14	16	18
Total	94	10	19	29	38	48	56	66	75	85

Table 19: Number of "yes" answers in each bucket

Hence, any fictitious company that belongs to bucket 1 indicates that it is performing on exactly 10% of the KPIs. The ESG maturity of the company (indicated by its score) will depend on which KPIs it is performing well as different weights are assigned to KPIs and themes.

- **Number of companies**: 27,000 fictitious companies are created (i.e. 3,000 companies for each bucket from 1 to 9 as explained in Table 17). KPI dataset for all the fictitious companies was created using random function to avoid any bias in creation of the dataset, hence "yes" across % (% depending on the bucket for which iteration was being generated) of KPIs were randomly produced and distributed across all 94 KPIs.

- **ESG scores for fictitious companies**: Based on the KPI dataset generated, all 27,000 companies were scored using the FII Institute inclusive ESG scoring methodology.

Illustration of bucket 1 companies' ESG scores:

Figure 2 is a graphical representation of scores of 3,000 companies in bucket 1 generated using the above approach.

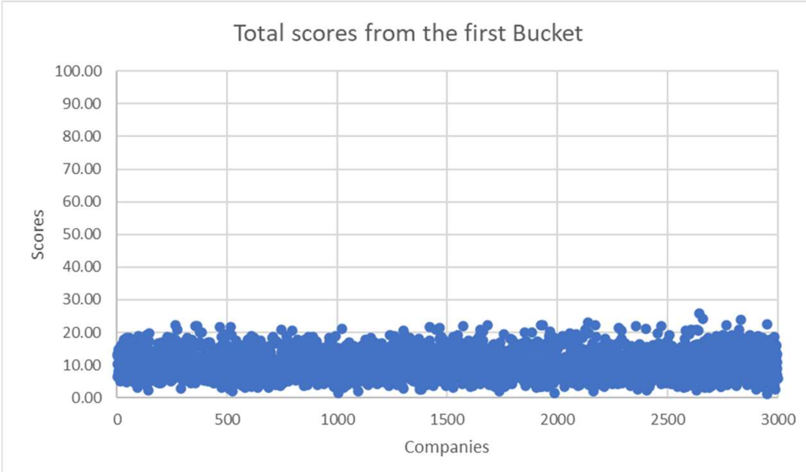

Figure 2: Random creation of 3,000 companies KPIs within Bucket 1

Based on the analysis of 3,000 fictitious companies in bucket 1, the lowest score is 1.16 and the highest score is 25.8. This shows that the fictitious companies were able to target all material themes as well as non-material themes since the group contains both ranges of a low score and a high score given that all 3,000 companies have "yes" answers only for 10% of the KPIs.

Similar observation is noticed across all the remaining buckets. Hence, for the benefit of the reader, the remaining results are not presented in this paper.

Validation test and results:

Table 20 presents the scores out of 27,000 fictitious companies at different percentiles, median and mean within each ESG maturity buckets.

Statistics/Bucket	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	B_9
5th percentile	5	12	21	30	40	49	60	71	83
25th percentile	8	16	26	36	46	56	66	77	88
Median	10	20	30	40	51	60	70	80	91
Mean	11	20	30	40	51	60	70	80	90
75th percentile	13	24	34	45	55	64	74	83	93
90% percentile	16	27	38	48	59	68	77	86	95
95th percentile	17	29	41	51	61	70	79	88	96

Table 20: Final scores of all Buckets

Table 20 summarizes what would be the score of a least mature company within a bucket (for example company at 5th percentile in bucket 1 would have a score of 5) and what would be the score of a company that is highly mature within a bucket (for example, company at 95th percentile in bucket 1 would have a score of 17 i.e. 3 times higher than least mature company in that same bucket).

Conclusion 1: The above results show that the model is able to differentiate companies based on their ESG maturity in a consistent manner.

The score evolution of a company is analyzed with a particular maturity as it transitions from bucket 1 to 2, 2 to 3, …, 8 to 9 i.e. by calculating the rate of increase in the score across all the journey and the results are presented in Table 21.

Statistics/Bucket	Scores difference between buckets (Group-G)							
	G_1	G_2	G_3	G_4	G_5	G_6	G_7	G_8
	B_2-B_1	B_3-B_2	B_4-B_3	B_5-B_4	B_6-B_5	B_7-B_6	B_8-B_7	B_9-B_8
5th percentile	140%	75%	43%	33%	23%	22%	18%	17%
25th percentile	100%	63%	38%	28%	22%	18%	17%	14%
75th percentile	85%	42%	32%	22%	16%	16%	12%	12%
90th percentile	69%	41%	26%	23%	15%	13%	12%	10%
95th percentile	71%	41%	24%	20%	15%	13%	11%	9%

Table 21: Rate of change in scores between buckets

The results of the analysis are presented in Figure 3.

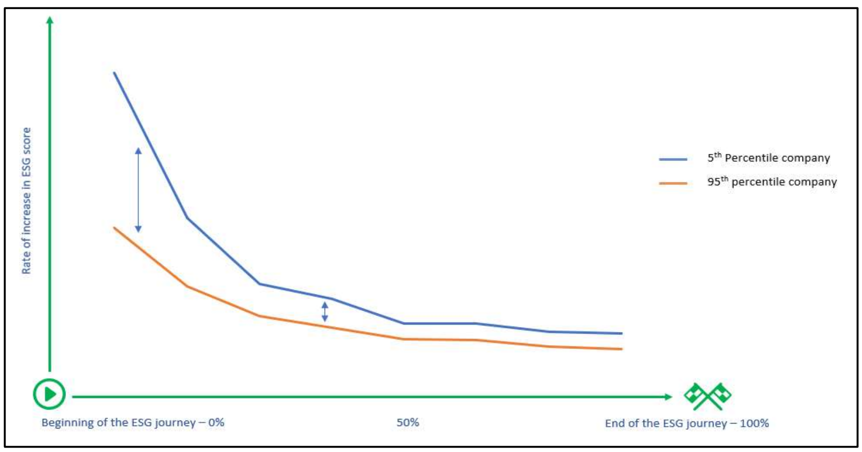

Figure 3: Rate of change results

Observations from Figure 3:

1. Rate of increase in score of companies with longer journey to target state (i.e. 5th percentile company) demonstrates a steep non-linear downward curve i.e. initially scores increase significantly and the pace gets slower as company matures.
2. Rate of increase in score of companies with shorter journey to target state (i.e. 95th percentile company) demonstrates a flattish curve given that they are already high on ESG maturity.
3. Gap between scores of a less mature company (i.e. 5th percentile company) & a more mature company (i.e. 95th percentile company) keeps reducing through to the target state which is expected.

Conclusion 2: The above results indicate that companies are being scored correctly as per the relevant maturity and the evolution pathways of the companies follow an expected trend i.e. minor improvement from a less mature company pushes the rating significantly until slows down as the company reaches target state.

Important note to consider:

The above analysis is conducted using sector and country materiality of Information Technology in India, to analyze the remaining materiality originating from other sectors and countries. Further analysis is conducted in parallel for Information Technology companies in Brazil, Manufacturing companies in Brazil, Real estate companies in Kenya and Metals and Mining companies in Saudi Arabia which are presented in the appendix. The results presented a similar conclusion as noted above.

V. Test 2.3 Weights distribution analysis

The objective of this test is to validate whether weights at KPI, Theme and Pillar levels used in the FII Institute inclusive ESG scoring methodology is scoring companies correctly as per the relevant maturity and the evolution pathways of the companies is following an expected trend. In order to perform the test, the trends in rating of 27,000 fictitious companies are compared (dataset used is the same dataset from Test 2.2) using:

- The model weights across KPIs, Themes and Pillars, and
- Possible permutation and combinations of equally distributed weights across KPIs, Themes and Pillars

Following is the table summarizing the different scenarios that were used to conduct this test:

Scenarios	KPI	Theme	Pillar
Scenario 0	FII Institute inclusive ESG scoring methodology weights	FII Institute inclusive ESG scoring methodology weights	FII Institute inclusive ESG scoring methodology weights
Scenario 1	Weights distributed equally	FII Institute inclusive ESG scoring methodology weights	FII Institute inclusive ESG scoring methodology weights
Scenario 2	FII Institute inclusive ESG scoring methodology weights	Weights distributed equally	FII Institute inclusive ESG scoring methodology weights
Scenario 3	FII Institute inclusive ESG scoring methodology weights	FII Institute inclusive ESG scoring methodology weights	Weights distributed equally
Scenario 4	FII Institute inclusive ESG scoring methodology weights	Weights distributed equally	Weights distributed equally
Scenario 5	Weights distributed equally	Weights distributed equally	FII Institute inclusive ESG scoring methodology weights
Scenario 6	Weights distributed equally	FII Institute inclusive ESG scoring methodology weights	Weights distributed equally
Scenario 7	Weights distributed equally	Weights distributed equally	Weights distributed equally

Table 22: Scenarios - weights distribution analysis

Scenario 0 represents the actual FII Institute inclusive ESG scoring methodology weights across the KPIs, Themes and Pillars. All other scenarios are a different permutation and combination. Analysis covered the above 8 scenarios for companies with different levels of ESG maturities (i.e. 5th percentile company to 95th percentile company). Following are the results of rate of evolution of the ESG score for the 5th percentile company to 95th percentile company.

	5th Percentile								
Statistics/Bucket	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	B_9
Scenario 0	4.64	11.93	21.07	29.98	40.36	49.29	60.17	71.03	83.11
Scenario 1	5.63	13.7	23.21	32.64	43.25	51.99	62.72	73.59	85.38
Scenario 2	7.04	15.32	24.84	34.1	44.3	53.5	64.02	74.25	86.05
Scenario 3	4.66	11.84	21.03	30.1	40.52	49.25	60.3	71.19	83.56
Scenario 4	7.49	15.81	25.74	34.92	45.47	54.39	64.93	75.19	86.84
Scenario 5	8.57	17.54	27.34	36.79	46.9	55.91	66.4	76.4	87.56
Scenario 6	5.8	13.32	23	32.31	42.65	51.4	62.15	73	85.22
Scenario 7	8.89	17.84	28.08	37.42	47.67	56.53	67.22	77.06	88.3

Table 23: Weights scenario analysis scores – 5th percentile

Statistics/Bucket	Scores difference between buckets – 5th percentile (Group-G)							
	G_1	G_2	G_3	G_4	G_5	G_6	G_7	G_8
	B_2-B_1	B_3-B_2	B_4-B_3	B_5-B_4	B_6-B_5	B_7-B_6	B_8-B_7	B_9-B_8
Scenario 0	257%	177%	142%	135%	122%	122%	118%	117%
Scenario 1	243%	169%	141%	133%	120%	121%	117%	116%
Scenario 2	217%	162%	137%	130%	121%	120%	116%	116%
Scenario 3	254%	178%	143%	135%	122%	122%	118%	117%
Scenario 4	211%	163%	136%	130%	120%	119%	116%	115%
Scenario 5	205%	156%	135%	127%	119%	119%	115%	115%
Scenario 6	230%	173%	140%	132%	121%	121%	117%	117%
Scenario 7	201%	157%	133%	127%	119%	119%	115%	115%

Table 24: Rate of change in scenarios scores between buckets – 5th percentile

	95th Percentile								
Statistics/Bucket	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	B_9
Scenario 0	17.28	29.03	40.61	51.01	61.07	69.69	79.27	87.82	95.91
Scenario 1	15.31	26.51	37.79	47.93	58.36	67.2	77.3	86.14	95.04
Scenario 2	14.53	25.62	36.28	46.59	56.97	65.8	75.65	84.56	93.56
Scenario 3	17.57	28.96	40.51	51.05	61.2	69.59	79.46	87.87	95.94
Scenario 4	14.14	24.81	35.76	45.74	56.33	65.09	75.14	83.99	93.45
Scenario 5	12.95	23.41	34.18	44.06	54.47	63.13	73.24	82.47	91.95
Scenario 6	16.13	27.08	38.59	48.71	59.09	67.65	77.83	86.57	95.2
Scenario 7	12.65	22.84	33.79	43.43	54.08	62.63	73	82.15	92

Table 25: Weights scenario analysis scores – 95th percentile

Statistics/Bucket	Scores difference between buckets – 95th percentile (Group-G)							
	G_1	G_2	G_3	G_4	G_5	G_6	G_7	G_8
	B_2-B_1	B_3-B_2	B_4-B_3	B_5-B_4	B_6-B_5	B_7-B_6	B_8-B_7	B_9-B_8
Scenario 0	168%	140%	126%	120%	114%	114%	111%	109%
Scenario 1	173%	143%	127%	122%	115%	115%	111%	110%
Scenario 2	176%	142%	128%	122%	116%	115%	112%	111%
Scenario 3	165%	140%	126%	120%	114%	114%	111%	109%
Scenario 4	175%	144%	128%	123%	116%	115%	112%	111%
Scenario 5	181%	146%	129%	124%	116%	116%	113%	111%
Scenario 6	168%	142%	126%	121%	114%	115%	111%	110%
Scenario 7	181%	148%	129%	125%	116%	117%	113%	112%

Table 26: Rate of change in scenarios scores between buckets – 95th percentile

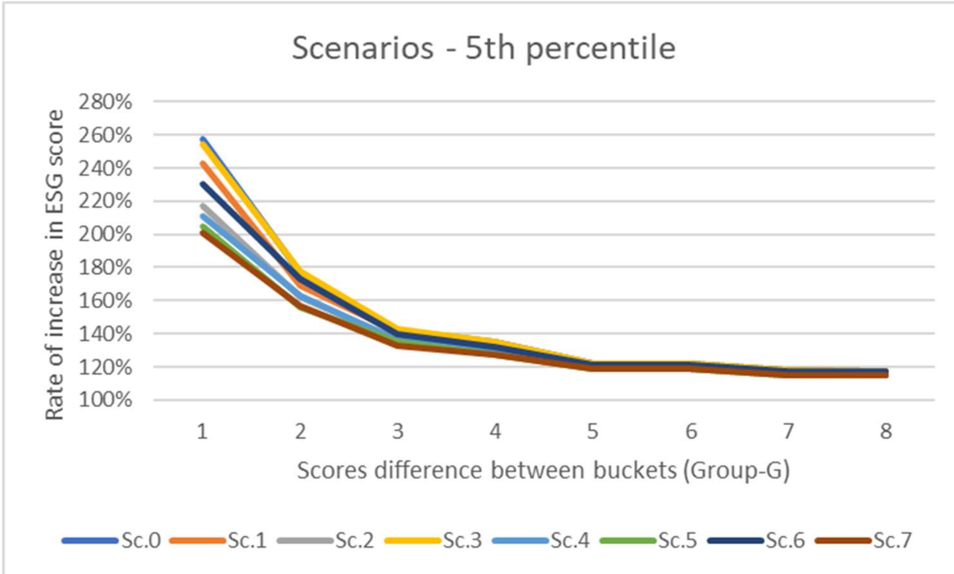

Figure 4: Rate of change in scenarios scores between buckets – 5th percentile

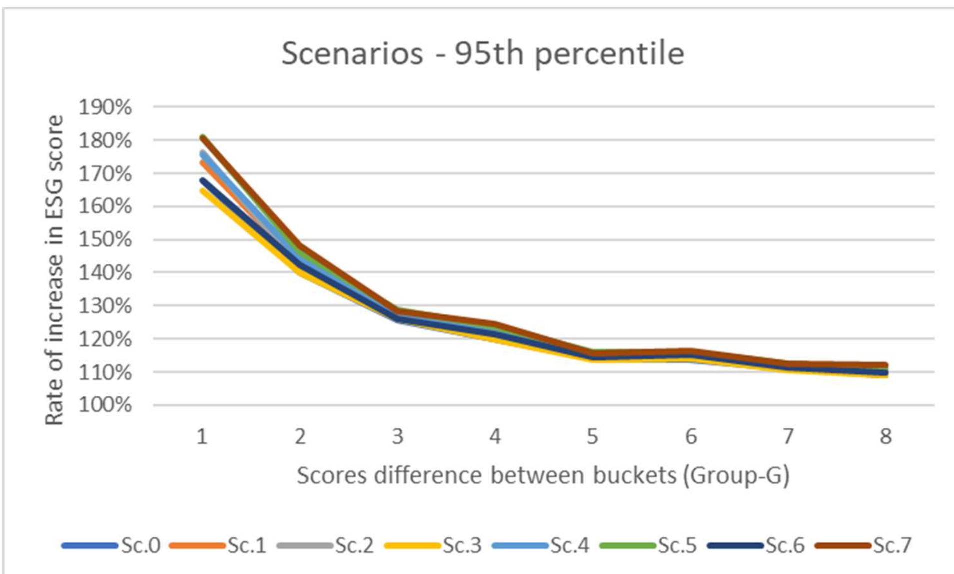

Figure 5: Rate of change in scenarios scores between buckets – 95th percentile

Below are the observations from this analysis:

- In Figure 4, the rate of increase in score of companies with a longer journey to target state (i.e. 5th percentile company) demonstrates a steep non-linear downward curve i.e. initially scores increase significantly and the pace gets slower as company matures for scenario 0.
- In Figure 5, the small difference between both scenarios 0 and 3 makes them similar in terms of differentiation across the ESG journey (same results after bucket 1).

To conclude the above analysis, the overlapping scenarios between figures 4 and 5 is scenario 0 indicating that the used weights in the model are showing the intended results in terms of maturity behavior.

And, for whichever company that has a larger journey to cover from an ESG perspective to reach full maturity, it demonstrates a significant improvement potential in its score than a company which is relatively mature.

Thus, scenario 0 (used weights in the model) for both least and most mature companies conserve the gap between scores of a less mature company (i.e. 5^{th} percentile company) and a more mature company (i.e. 95^{th} percentile company) keeps reducing through to the target state which is expected.

VI. Model limitations and future improvements

Subject	Objective	Assumptions/ Parametric Limitations	Future Improvement
KPI Weight Building Blocks	• The purpose of this step is to identify how to weight shortlisted KPIs. • There are two key design principles, that translate into design of KPI weights: a. Output and Outcome indicators are more important and essential to demonstrate performance - than Input and Activity indicators b. KPI weights should ultimately reflect what 'good looks like' in EM markets in select sectors	In the current version of the approach, the KPI Weight ratios have been decided based on subjective analysis and discussion with Subject Matter Experts on "what should be the right way to weight performance" against shortlisted themes.	• While designing an approach to translate what good looks like to weight ESG KPIs, we have developed a unique model. • However, going forward, few KPI's (such as GHG reduction target setting or child labor prevention etc.) should be kept as non-negotiable, high priority, irrespective of the level of practice in EM countries. This modification can be attempted in future versions of this approach. • The assessment of what good looks like – is currently based on raw data of 32 large cap listed companies. Enhancing the sample size of assessment can further fine tune the weight distribution across the KPIs

Subject	Objective	Assumptions/ Parametric Limitations	Future Improvement
KPI Weight Design Output	• Arrive at KPI weights based on priority and maturity level of the KPIs • Score KPI-company combinations	KPI Weight ratios are subjective and are based on logical direction of the weights rather than science-based values	• **Potential:** incorporation of gradient values of possible answers for KPIs instead of binary "Yes" and "No" values • **Limitations:** a. Inconsistencies in assigning gradient scores to KPIs given their difference in quantitative and qualitative levels b. Leading to additional layer of application of subjectivity when scoring gradient values
Sector Materiality influence	Identify sector specific material themes and derive theme weights	• In current version of approach, SASB has been used to define sector wise materiality • SASB's materiality map is binary - leading to equal weightage across all material themes since gradience is unavailable	• **Potential:** The future version of this approach can incorporate gradient sector-theme materiality weights similar to the likes of Refinitiv and MSCI rather than binary level of "SASB" materiality weights • **Limitations:** To arrive at gradient materiality weights requires assessment of large sample of high quality ESG data.
Country influence	Identify country level adjustment to weights or scores	• The choice of priority SDGs for each country is based on national strategy. UN strategy and Subject matter Expert inputs. • The choice of weights % as of now are a result of subjective analysis, which can improve using large sample of high quality ESG data.	• **Potential:** a. This is one approach to include the country-company relationship as part of ESG scoring b. There can be other alternative approach as well. The approach is modular to incorporate other approaches. • **Limitations:** a. The mapping of KPI's with target SDG's can be improved with extensive company and country wide consultation. b. The current process of including a country layer on ESG scores might provide a boost in score in same direction to all companies in a particular sector in a country

VII. Data used by EY for performing validation

Following is the data used by us for performing the validation for the tests as indicated below:

- 6 EM (out of 26 companies used to derive what good looks like) and 6 DM companies
- Model KPIs 94 points and weights reflecting EM relevance.
- 16 Themes that matter most to EMs
- Creation of 27,000 fictitious companies in terms of randomness in KPIs inputs

VIII. Appendix

- Country: Brazil, Sector: Information Technology

	Scores difference between buckets							
Statistics/Bucket	B_2-B_1	B_3-B_2	B_4-B_3	B_5-B_4	B_6-B_5	B_7-B_6	B_8-B_7	B_9-B_8
5th percentile	6.54	8.78	8.70	10.24	9.43	10.71	11.36	12.40
25th percentile	8.40	9.81	9.83	10.04	9.47	10.39	10.89	11.52
Median	9.64	10.55	9.94	10.38	9.19	10.60	9.93	10.64
Average	9.41	10.37	9.88	10.36	9.21	10.24	9.94	10.40
75th percentile	10.64	10.69	10.38	10.62	9.09	9.98	9.44	9.34
90th percentile	11.42	11.30	10.15	11.13	8.64	9.54	8.66	8.11
95th percentile	12.09	11.76	10.57	10.42	8.46	9.34	8.25	7.65

- Country: Brazil, Sector: Manufacturing

	Scores difference between buckets							
Statistics/Bucket	B_2-B_1	B_3-B_2	B_4-B_3	B_5-B_4	B_6-B_5	B_7-B_6	B_8-B_7	B_9-B_8
5th percentile	8.21	9.62	8.98	10.27	8.99	10.89	10.30	11.92
25th percentile	9.01	10.27	9.45	10.50	8.86	10.88	9.80	11.21
Median	9.51	10.59	9.62	10.76	8.71	10.66	9.52	10.59
Average	9.61	10.48	9.59	10.58	8.80	10.65	9.44	10.60
75th percentile	10.25	10.88	9.71	10.69	8.68	10.56	9.00	10.12
90th percentile	10.75	10.95	9.91	10.56	9.02	10.08	8.74	9.54
95th percentile	11.07	11.02	10.04	10.57	8.98	9.91	8.57	9.11

- Country: Kenya, Sector: Real estate

	Scores difference between buckets							
Statistics/Bucket	B_2-B_1	B_3-B_2	B_4-B_3	B_5-B_4	B_6-B_5	B_7-B_6	B_8-B_7	B_9-B_8
5th percentile	7.09	10.03	8.43	10.61	8.82	11.61	9.73	12.94
25th percentile	8.27	10.78	8.88	11.01	8.68	11.22	9.58	11.92
Median	8.95	11.36	8.99	11.08	8.88	10.85	9.29	11.10
Average	8.83	11.28	8.97	11.05	8.62	10.98	9.06	11.05
75th percentile	9.55	11.77	9.29	11.22	8.41	10.85	8.65	10.26
90th percentile	9.99	12.13	9.24	11.34	8.28	10.59	8.00	9.55
95th percentile	10.07	12.29	9.23	11.25	8.23	10.32	7.93	9.09

- Country: Saudi Arabia, Sector: Metals and Mining

	Scores difference between buckets							
Statistics/Bucket	**B_2-B_1**	**B_3-B_2**	**B_4-B_3**	**B_5-B_4**	**B_6-B_5**	**B_7-B_6**	**B_8-B_7**	**B_9-B_8**
5th percentile	8.12	9.41	9.26	10.12	8.56	11.26	10.39	12.33
25th percentile	8.82	10.38	9.25	10.68	8.70	11.01	9.76	11.49
Median	9.53	10.80	9.54	10.68	8.80	10.59	9.47	10.80
Average	9.44	10.73	9.49	10.72	8.64	10.67	9.36	10.76
75th percentile	10.08	11.09	9.71	10.99	8.45	10.49	8.93	10.19
90th percentile	10.27	11.64	9.70	11.17	8.40	10.23	8.37	9.65
95th percentile	10.66	11.77	9.80	10.87	8.50	10.10	8.22	9.10