CECP'S ESG FACTOR ANALYSIS

INTRODUCTION

Corporate actions are rapidly increasing to embrace the principles of stakeholder capitalism. *Investing in Society* uses a framework to organize how we observe changes in the corporate sector: Priorities, Performance, People, Planet, and Policies (the five "Ps"). How much are these actions influencing performance on Environmental, Social, and Governance (ESG) data across the sector?
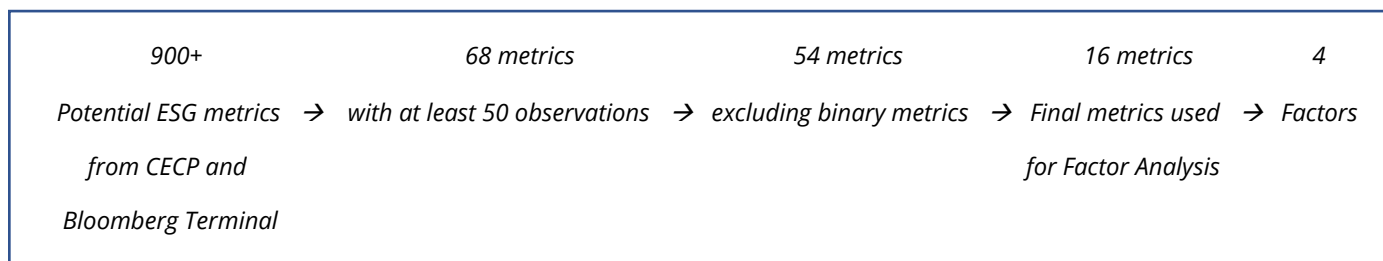
While keeping with past years' five "Ps" framework, CECP developed a new method to better understand the current state of corporate purpose. For the first time, CECP performed ESG Factor Analysis to examine to what degree metrics are interconnected (or not) with each other and ultimately, determine indicators of positive or negative performance. Corporate leaders can use this analysis to explain *more specifically* how the state of corporate purpose is improving or worsening.

This year, Priorities included corporate responses to Covid-19, recent developments in corporate purpose, and predictions about the near future in the corporate sector. There are few widespread data points that could potentially be included in a Factor Analysis for this type of information but mostly, data was lacking on Priorities. Therefore, CECP's thought leadership and literature review provides a stronger explanation of sector-wide changes rather than the Factor Analysis. That explains why readers do not see Priorities in the ESG Factor Analysis.

CECP's ESG Factor Analysis includes a Methodology Summary, Key Highlights, Conclusions, Key Highlights Extended, Full Methodology, and Appendix.

METHODOLOGY SUMMARY

Factor analysis is a robust way to determine indicators of positive or negative performance. CECP assessed over 900 financial and ESG metrics to produce a Factor Analysis. The Factor Analysis helps understand whether the financial and ESG variables have similar patterns of responses, and whether these variables "hang together" to create a construct. Lack of data availability reduced the number of variables that could be used for the analysis to only 68 metrics which in turn were reduced to 54 continuous metrics when removing binary variables (with values of Yes or No). Out of the remaining 54 metrics only 16 had all requirements for a congruent Factor Analysis.

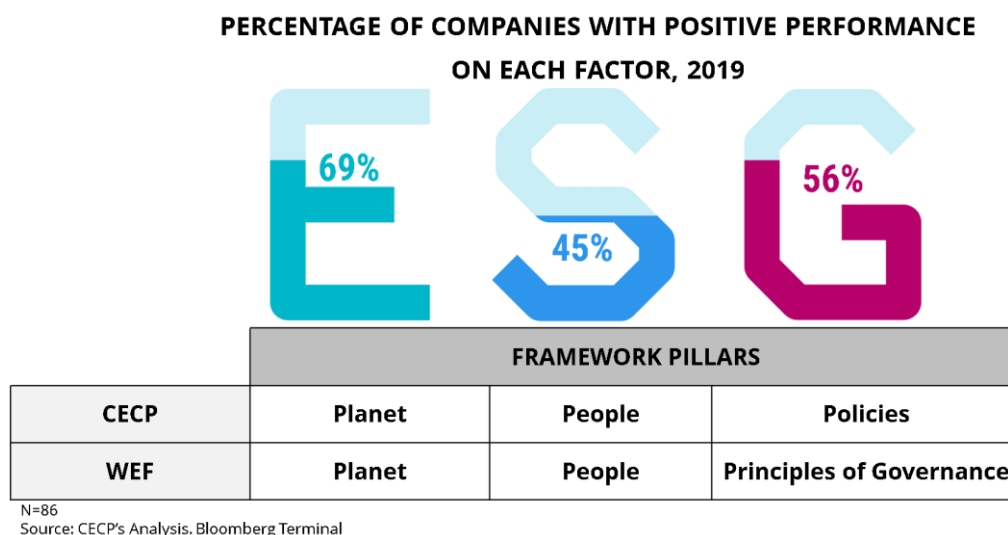| 900+		68 metrics		54 metrics		16 metrics		4
Potential ESG metrics	→	with at least 50 observations	→	excluding binary metrics	→	Final metrics used	→	Factors
from CECP and								for Factor Analysis
Bloomberg Terminal								

The basic assumption of all factor analysis is that for a collection of observed variables there are a set of *underlying* variables called **factors**, that can explain the interrelationships among those variables. This statistical analysis checks for similarities among variables and groups them into factors (composite variables). These factors reduce variables with latent and tacit similarities into factors or components.

In the end, the analysis gives an indication of what unobserved factor each variable is measuring more strongly. This helps understand whether a given metric is measuring the ESG pillar it is supposed to. For instance, is the Percentage of Women in the Workforce a better predictor of social improvement or better corporate governance? Each section of the report will show the reader which metrics were grouped more strongly into each ESG factor and will also provide a score of the corporate sector's performance on those factors overall.

The Factor Analysis produced coefficients used to calculate scores for each of the four factors for each company. Scores helped to get a sense of a company's placement or ranking on the factors. In the end, each company got four scores, (one for each of the four factors). The Factor Analysis calculated the proportion of companies that obtained scores greater than zero, which is an indicator of positive or negative performance on each factor.

Figure 1: Sector-wide Performance: ESG Factor Analysis

PERCENTAGE OF COMPANIES WITH POSITIVE PERFORMANCE ON EACH FACTOR, 2019

69% 45% 56%

FRAMEWORK PILLARS		
CECP	Planet	People	Policies
WEF	Planet	People	Principles of Governance

N=86
Source: CECP's Analysis. Bloomberg Terminal

Companies can also use these findings to explore which variables have more weight in each resulting factor, which metrics need more disclosure, and which might need more action taken. The analysis showed that, particularly, the lack of disclosure on social (People) and governance (Policies) metrics hinders a better understanding of which variables within these categories could affect the resulting factors. Each variable needs to be measured for all companies in order to be included in a Factor Analysis. This makes the analysis particularly challenging since there are many disparately and not-widely-reported social and governance metrics.

KEY HIGHLIGHTS

- Planet (Environment): 69% of companies obtained positive weighted ESG Factor Scores on Planet.
    - Factor Scores greater than zero in this case are associated with having better environmental impact than their counterparts with negative scores.
- People (Social): 45% of companies obtained positive weighted ESG Factor Scores on People.
    - Factor Scores greater than zero in this case are associated with having greater diversity in the workforce and on boards of directors.
- Policies (Governance): 56% of companies obtained positive weighted ESG Factor Scores on Policies.
    - Factor Scores greater than zero in this case are associated with having better compensation accountability practices in the workplace.

- Only 16% of companies had ESG Factor Scores that were consistent with better ESG practices in **all three factors**, including Planet, People, and Policies.
- Alternatively, separate from the above ESG Factor Analysis, 70% of companies had positive ESG practices when only assessing binary variables (Yes or No answers). The performance was not substantially different between each ESG pillar.
    - Examples of binary ESG variables include "Was ESG Linked to Executives Bonus?", "Is there a CSR Sustainability Committee?", and "Is there a Water Policy?"

CONCLUSIONS

The ESG Factor Analysis reinforces that major frameworks are grouped in a congruent way, such as the framework developed by CECP (five "Ps"). The metrics could be optimally condensed in just four composite variables (factors), which were in line with Performance, Planet, People, and Policies. However, the analysis showed there is greater degree of overlap when it comes to certain metrics explaining more than one dimension. For instance, a specific diversity metric could be heavily correlated with both social and corporate governance.

The analysis also revealed that one of the key challenges resides in the lack of disclosure of ESG metrics from the corporate sector. For instance, the social (People) factor needs more disclosure and data availability from large corporations on variables such as Employee Turnover, Training Spending per Employee, Community Spending, and Total Social Investment, a crucial field that CECP collects and conducts research on. On the other side, the governance (Policies) factor needs more disclosure and data availability on variables such as Percentage of Minorities in Management Positions and in the Workforce.

It seems that there is more clarity in terms of what to measure regarding environmental metrics. This clarity may help corporations focus their efforts and attain better environmental outcomes compared to social and governance metrics as reflected in the Figure Sector-wide Performance: ESG Factor Analysis. Reporting of environmental metrics can be connected to a company's permission to operate, more regulations, new processes for waste reduction, and cost saving strategies. Social and governance factors appear to have less consistently disclosed data and a slower improvement compared with environment. This is validated by CECP's *Global Impact at Scale* report that shows how resources targeted at environmental efforts are growing more than those targeted at social initiatives.

Governance metrics covers topics often times more difficult to measure, such as compensation transparency and tracking representation of minority groups in the workforce. However, when only analyzing ESG binary variables with less range of interpretation (*e.g.*, whether a company has an Equal Opportunity Policy or not), there is little difference in achievement among environmental, social or governance metrics (companies fulfilled approximately 70% of positive practices in each area).

KEY HIGHLIGHTS (EXTENDED)

PERFORMANCE

CECP's ESG Factor Analysis showed that variables associated with financial performance and economic distribution, had a very high correlation with each other and grouped into a common underlying factor. Although financial metrics were included in the calculation of the Factor Analysis, the main analysis centered on Planet, People, and Policies.

PLANET

CECP's ESG Factor Analysis showed that 69% of companies in fiscal year 2019 had Factor Scores greater than zero for the Planet factor, or in other words, had a positive impact on the environment, as opposed to all other companies that had Factor Scores less than zero, which implies a negative impact on the environment in terms of this composite variable. The Planet factor was inferred from the higher factor loading of metrics such as Total Greenhouse Gas Emissions, Energy Consumption, Electricity Used, and ESG Disclosure Score had on a common factor. The common denominator of these variables is that they reflect a larger use of environmental resources (larger environmental impact). It's notable that ESG Disclosure had a factor loading that went in the same direction than all other environmental resources. This may be due to the need of companies that have a larger environmental impact to report and disclose data associated to the larger use of natural resources.

PEOPLE

CECP's ESG Factor Analysis showed 45% of companies in fiscal year 2019 had Factor Scores greater than zero for the People factor. In other words, these companies' values showed greater weight and correlation with diversity, as opposed to companies with Factor Scores less than zero. The People factor was inferred from the higher factor loading that metrics such as the Percentage of Women in the Workforce and Percentage of Women on Boards had on a common factor. This could be an indicator of a composite factor (variable grouping) that affects metrics associated with People or diversity. The Percentage of Women in the Workforce is actually included as part of Bloomberg's ESG database Social metrics, specifically as an indicator of diversity. Although Bloomberg's ESG database categorizes the Percentage of Women on Boards as a governance variable, the resulting People factor can be interpreted more as a social (People) measure of diversity. Previous iterations and testing to find the optimal number of factors revealed that other diversity variables tended to group with the Percentage of Women on Boards and Percentage of Women in the Workforce. However, those other diversity variables (*e.g.*, Percentage of Disabled in Workforce, Number of Employees) did not make it to the final combination of four factors that minimized the variance across all variables. Nevertheless, those other diversity variables give a sense of which variables were somehow associated with the remaining two diversity variables.

POLICIES

CECP's ESG Factor Analysis showed that 56% of companies in fiscal year 2019 had Factor Scores greater than zero for the Policies factor. In other words, these companies' values showed a greater weight and correlation with practices that improve compensation transparency and accountability among large corporations. The Policies factor was inferred from the higher factor loading that metrics such as the Percentage of Independent Directors on Compensation Committees, Size of Compensation Committee, and Number of Compensation Committee Meetings had on a common factor. The common denominator of these variables is that they reflect better mechanisms for compensation accountability and for mitigating the lack of transparency.

FULL METHODOLOGY

ESG FACTOR ANALYSIS

CECP performed a Factor Analysis to explore the interconnection among financial and environmental, social, and governance (ESG) metrics and assess how companies are performing as a sector on each of those broader dimensions.

What is Factor Analysis?

CECP's ESG Factor Analysis helps understand whether the financial and ESG variables have similar patterns of responses, and whether these items "hang together" to create a construct. The basic assumption of all factor analysis is that for a collection of observed variables there are a set of *underlying* variables called **factors**, that can explain the interrelationships among those variables. This statistical analysis checks for similarities among variables and groups them into factors (composite variables). These factors reduce variables with latent and tacit similarities into factors or components. In the end, the analysis gives an indication of what unobserved factor each variable is measuring more strongly.

Sample and Tested Variables

The list of companies included the entire Fortune 1000 ranking plus over 400 other companies headquartered outside the United States during fiscal year 2019. There were over 68 ESG and financial metrics that had some degree of data availability from a universe of close to 900 ESG and financial metrics from the Bloomberg Terminal. The selection of metrics was also based on frameworks including CECP's five "Ps" (Priorities, Performance, Planet, People, and Policies) that are in line with ESG frameworks (see Appendix A for a full list of initial tested variables). These metrics were also in line with other frameworks such as the World Economic Forum's (WEF) list of metrics and disclosures encapsulated in their four pillars: Principles of Governance, Planet, People, and Prosperity. Factor analysis can only be performed with variables that are available for every single observation (company) in the sample. Therefore, the biggest challenge for this exploratory analysis was the lack of data. For instance, continuous variables such as the number of Customer Complaints and Paper Consumption had 2019 data available for only 12 and 37 companies respectively, out of the sample described above. The initial list of potential 68 metrics was reduced to 54 continuous metrics when removing binary variables (with values of Yes or No). For this exploratory phase, binary variables were excluded since it would require a different type of correlation matrix calculation for Factor Analysis. However, a separate analysis was carried out just on those binary variables (see findings in the Highlights in More Detail section). Out of the remaining 54 metrics only 16 had all requirements for a congruent Factor Analysis. One of those requirements is how much variation can each factor explain for all the set of 16 variables in discussion (factor loading). Factor loading shows the level of association between each variable and each resulting factor. In other words, it is the correlation coefficient between the variable and the factor. This further reduced the sample to 86 companies.

Determination of number of factors

As described before, factor loadings represent both the weight each variable has on each factor but also the correlation between the variables and the factor. Factor loadings are like correlations in that they can range from -1 to 1; the closer to -1 or 1, the more that factor affects the variable. The factor loading values that each of the 16 variables received helped to determine and interpret what underlying factor was affecting each group of variables at a higher degree (*e.g.,* environmental impact, compensation accountability, diversity) (See Rotated Component Matrix in Appendix B). Each variable obtained different factor loadings under each of the 4 factors. For instance, financial variables had factor loadings close to 1 under a first factor, and this first factor was clearly an indicator of

Performance or economic prosperity. Certain environmental variables had factor loadings closer to 1 and greater than all other variables under a second factor. This factor is thus an indicator of environmental impact. Variables related to transparency in compensation had higher factor loadings than all other variables under a third factor which are indicators of compensation transparency. Two variables related to participation of women on boards and in the workforce reflected a fourth factor which are indicators of diversity at work.

After many iterations and testing different combination and number of factors that could explain most variance across all variables, four factors surfaced and explained up to 67% of the variance across all 16 variables (A value greater than 60% is desired according to general statistical standards). A Kaiser-Meyer-Olkin (KMO) and Bartlett's statistical test also confirmed the suitability of this sample with this set of variables (See Appendix B for statistical significance values).

Generating Factor Scores

CECP's ESG Factor Analysis produced coefficients used to calculate scores for each of the four factors for each company. Scores helped to get a sense of a company's placement or ranking on the factors. In the end, each company got four scores, (one for each of the four factors). These scores were derived from a 16 x 4 matrix of 64 coefficients (16 coefficients for each factor). Each score is standardized and describes how strongly each company is associated with every single factor. The signs of scores have been transformed so that scores greater than zero indicate a positive direction towards a better performance in either environmental, social, or governance factors. In this case, scores greater than zero indicate a higher association with that factor and negative scores indicate a lower association with that factor. CECP's ESG Factor Analysis calculated the proportion of companies that obtained scores greater than zero, which is an indicator of positive performance on each factor. Therefore, a company with a score of 2 on factor 2 (Planet), would mean that such company is making a better use of environmental resources than a company with a negative score. Alternatively, a company with a score of 0.9 on factor 3 (Policies), would mean that such company has better compensation transparency than companies with scores less than zero on this factor. These proportions can be also tracked in time to assess progress.

STAKEHOLDER SCORECARD

The increasing interest in Environmental, Social, and Governance (ESG) metrics is reflected in CECP's Stakeholder Scorecard. This tool helps evidence how the private sector aims to improve their performance among an increasing number of financial and ESG indicators. The Stakeholder Scorecard compares the performance of companies in the Fortune® 500 in the last three fiscal years (2019 versus 2017). Fortune magazine is a registered trademark of Time Inc. Monetary figures are measured in nominal US Dollars. Data is retrieved from CECP's dataset and the Bloomberg Terminal database. Green growth rates indicate a favorable change. In limited cases, percentage point change replaces growth rate, "pp" corresponds to percentage point changes that evidence deltas between metrics reflecting percentages. Year-over-year calculations are based on a three-year matched- set data. Fortune companies include companies from all nine industries from the Bloomberg Terminal.

ASSESSED METRICS

List of Assessed Financial and Environmental, Social, and Governance (ESG) Metrics from the Bloomberg Terminal LP

Main Category	Field Category	Metric	Binary Metric	Remaining Metric	Final Metrics Used for Factor Analysis
Financial	Financial	Revenue	No	Yes	Yes ✓
Financial	Financial	Pre-Tax Income	No	Yes	Yes ✓
Financial	Financial	Number of Employees	No	Yes	
Financial	Financial	EBITDA	No	Yes	
Financial	Financial	Historical Market Capitalization	No	Yes	Yes ✓
Financial	Financial	Assets Under Management	No	Yes	
Financial	Financial	EBITDA / Revenue	No	Yes	
Financial	Financial	Cash Paid for Taxes	No	Yes	Yes ✓
Financial	Financial	Enterprise Value / EBITDA	No	Yes	
Financial	Financial	ROI	No	Yes	
ESG	Environmental	Total GHG Emissions (Th Tonnes)	No	Yes	Yes ✓
ESG	Environmental	Total Water Use	No	Yes	
ESG	Environmental	Water Policy	~~Yes~~		
ESG	Environmental	Water Policy	~~Yes~~		
ESG	Environmental	Total Waste (Th Tonnes)	No	Yes	
ESG	Environmental	Waste Recycled (Th Tonnes)	No	Yes	
ESG	Environmental	Waste Reduction Policy	~~Yes~~		
ESG	Environmental	New Products - Climate Change	~~Yes~~		
ESG	Environmental	Travel Emissions (Th Tonnes)	No	Yes	
ESG	Environmental	Total Energy Consumption (MWh)	No	Yes	Yes ✓
ESG	Environmental	Electricity Used - MWh	No	Yes	Yes ✓
ESG	Environmental	Paper Consumption (Th Tonnes)	No	Yes	

Main Category	Field Category	Metric	Binary Metric	Remaining Metric	Final Metrics Used for Factor Analysis
ESG	Environmental	Environmental Fines (Amount)	No	Yes	
ESG	Environmental	Investments in Operational Sustainability	No	Yes	
ESG	Environmental	Environmental Supply Chain Management	~~Yes~~		
ESG	Environmental	Sustainable Packaging	~~Yes~~		
ESG	Environmental	GRI Criteria Compliance	~~Yes~~		
ESG	Environmental	% Sites Certified	No	Yes	
ESG	Environmental	Global Reporting Initiatives Checked	~~Yes~~		
ESG	Environmental	UN Global Compact Signatory	No	Yes	
ESG	Social	Community Spending	No	Yes	
ESG	Social	% Women in Workforce	No	Yes	Yes ✓
ESG	Social	Total Community Investment	No	Yes	
ESG	Social	Employee Engagement	No	Yes	
ESG	Social	Social Supply Chain Management	~~Yes~~		
ESG	Social	Employee Turnover %	No	Yes	
ESG	Social	Number of Customer Complaints	No	Yes	
ESG	Social	Training Spending per Employee	No	Yes	
ESG	Social	Training Policy	~~Yes~~		
ESG	Social	Employee CSR Training	~~Yes~~		
ESG	Social	% Suppliers Audited	No	Yes	
ESG	Social	% Employees Unionized	No	Yes	Yes ✓
ESG	Social	% Women in Management	No	Yes	
ESG	Social	% Minorities in Management	No	Yes	
ESG	Social	% Minorities in Workforce	No	Yes	
ESG	Social	% Disabled in Workforce	No	Yes	
ESG	Social	Workforce Accidents - Employees	No	Yes	
ESG	Social	Fair Remuneration Policy	No	Yes	

Main Category	Field Category	Metric	Binary Metric	Remaining Metric	Final Metrics Used for Factor Analysis
ESG	Governance	CSR/Sustainability Committee	~~Yes~~		
ESG	Governance	% Women on Board	No	Yes	Yes ✓
ESG	Governance	Executive Compensation Linked to ESG	~~Yes~~		
ESG	Governance	Lobbied in Support of Gender Equality	No	Yes	
ESG	Governance	Member of Gender Equality Organizations	No	Yes	
ESG	Governance	Donates to Gender Equality Organizations	No	Yes	
ESG	Governance	Unconscious Bias Training for Managers	No	Yes	
ESG	Governance	Offers a Return to Work Program	No	Yes	
ESG	Governance	Offers Paid Paternity Leave for United States	No	Yes	
ESG	Governance	Percent Goal for Women of Total New Hires	No	Yes	
ESG	Governance	BGEI Score	No	Yes	
ESG	Governance	Say On Pay Provision	No	Yes	
ESG	Governance	Size of Compensation Committee	No	Yes	Yes ✓
ESG	Governance	% of Ind Directors on Compensation Committee	No	Yes	Yes ✓
ESG	Governance	Number of Compensation Committee Meetings	No	Yes	Yes ✓
ESG	Governance	Compensation Committee Meeting Attendance %	No	Yes	Yes ✓
ESG	Governance	Outside Compensation Advisors Appointed	~~Yes~~		
ESG	Governance	ESG Linked Compensation for Board	No	Yes	
ESG	Executive Compensation	Total Compensation Paid to Executives	No	Yes	Yes ✓
ESG	Scores	ESG Disclosure Score	No	Yes	Yes ✓

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APPENDIX B

STATISTICAL TESTS

Total Variance Explained

Extraction Method: Principal Components Analysis (PCA). Four components that explain 66.468% of total variance were extracted through a Rotated Component Matrix. Sample: 86 companies.

Total Variance Explained

Number of Factors	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.902	30.635	30.635	4.902	30.635	30.635	4.680	29.251	29.251
2	2.840	17.751	48.386	2.840	17.751	48.386	2.485	15.533	44.784
3	1.597	9.979	58.365	1.597	9.979	58.365	1.874	11.713	56.497
4	1.296	8.102	66.468	1.296	8.102	66.468	1.595	9.970	66.468
5	1.126	7.035	73.502						
6	.894	5.585	79.087						
7	.771	4.816	83.903						
8	.690	4.310	88.213						
9	.630	3.938	92.151						
10	.500	3.124	95.275						
11	.404	2.525	97.800						
12	.241	1.505	99.305						
13	.106	.662	99.968						
14	.004	.027	99.994						
15	.001	.005	99.999						
16	.000	.001	100.000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix

Rotated Component Matrix: A cutoff value of 0.35 was used to identify high factor loadings.

Rotated Component Matrix[a]

Metric	Number of Factors			
	1	2	3	4
Revenue	.990			
Pretax Income	.977			
Historical Market Capitalization	.945			
% Women in Workforce				.836
% of Women on Board				.566
ESG Disclosure Score		.484		
Cash Paid for Taxes	.983			
% Employees Unionized		.429		
Size of Compensation Committee			.431	
% of Ind Directors on Compensation Committee			.791	
Number of Compensation Committee Meetings			.358	.548
Compensation Committee Meeting Attendance %				
Total Compensation Paid to Executives	.826			
Total GHG Emissions (Th Tonnes)		.863		
Total Energy Consumption (MWh)		.863		
Electricity Used - MWh		.622		

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 4 iterations.

KMO and Bartlett's Tests

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.708** (Value above 0.60 are desired. That is the case for this model)
Bartlett's Test of Sphericity	Approx. Chi-Square	**1915.338**
	df	**120**
	Sig.	**0.000** (a value less than 0.05 rejects the null hypothesis that this model has a correlation matrix equivalent to an identity matrix, which would indicate that the 16 metrics are unrelated and therefore unsuitable for structure detection. In other words, this model of 16 metrics is suitable