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TAILORING FUND SELECTION TO DIVERSE INVESTORS: INTEGRATING FINANCIAL AND SUSTAINABILITY PERFORMANCE

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Abstract. This study explores the integration of financial and Environmental, Social, and Governance (ESG) criteria in the evaluation of investment funds within the energy equity sector, considering both short and long-term investor perspectives. Based on the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), a multi-criteria decision model, this analysis includes scenarios tailored to investors prioritizing financial returns and those focused on sustainability. The findings reveal that investors' subjective preferences influence fund rankings, highlighting the need for adaptive classification systems. Finally, a customizable investment tool aligned with diverse investor priorities is proposed.

Keywords: investment funds, ESG criteria, financial performance, TOPSIS, energy equity sector, investor preferences.

JEL Classification: G1, G24, Q4.

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1. Introduction

Investment funds have become increasingly popular as investment assets (Aasheim et al., 2022; Barberà-Mariné et al., 2020; Otero-González & Durán-Santomil, 2021). In Europe, the assets in investment funds have increased from 16 trillion in 2012 to 27.7 trillion in 2022 (EFAMA, 2023). Furthermore, the importance of incorporating Environmental, Social, and Governance (ESG) criteria has grown in recent years. Currently, around 50% of the total assets managed in Europe have some sort of ESG investment approach applied to them (EFAMA, 2023). Therefore, tools that facilitate investors' decision-making are crucial, considering their preferences and the inherent imprecision of available information in most cases.

The energy sector is especially significant for sustainable investments for several reasons. First, it is dominated by large companies where social and governance issues are of significant importance. Second, it is one of the potentially most polluting sectors, giving it a greater environmental responsibility. Lastly, it also bears the greatest responsibility for transitioning to renewable energy.

In this context of greater need to integrate ESG criteria into the investment process, different providers of information on the return-risk of companies and aspects linked to their sustainability are available, including Morningstar, Sustainalytics, RobecoSAM, VigeoEiris, and MSCI. Based on this information, different ratings have been created and published. However, these are not always consistent with each other (Berg et al., 2022; Lee & Suh, 2022; Widyawati, 2020). As Berg et al. (2022) highlighted, there is generally a low correlation between ESG ratings from different providers, indicating a lack of convergence. These inconsistencies arise from differences in the selected indicators, the employed data sources, and the applied weighting to each indicator. Moreover, the absence of a common standard and the limited transparency about the definition and assessment of ESG quality hinder the comparability of results. Consequently, a single investment fund may receive significantly different ESG scores depending on the provider, which highlights the methodological discrepancies across rating systems and makes it difficult for investors to choose between different funds.

One of the main suppliers of ratings for investment funds is Morningstar (Ben-David et al., 2022; Blake & Morey, 2000; Chang et al., 2024; Del Guercio & Tkac, 2008). The company has established two prominent ratings: the Morningstar Rating, which evaluates the fund's quality by considering its risk-return ratio; and Morningstar Sustainability Rating, which assesses the fund's level of risk associated with ESG issues. Some studies have demonstrated that Morningstar ratings play a key role in investment decisions, performance and fund flows (Aasheim et al., 2022; Ammann et al., 2019; Barberà-Mariné et al., 2020; Blake & Morey, 2000; Del Guercio & Tkac, 2008; Tosun & Moon, 2025). Moreover, investors often rely on Morningstar ratings as simplified decision-making signals (Ammann et al., 2019; Ben-David et al., 2022).

However, to the best of our knowledge, no current rating combines both financial and non-financial criteria into a single score. Thus, as suggested by Lee and Suh (2022), a tool that complements the sustainability rating with the financial rating is required. Another limitation associated with the Morningstar rating is that it uses long-term variables. Hence, this rating is not useful for a short-term investor.

This work develops an instrument that allows investors to construct their own funds rating, considering the following characteristics:

- A rating that combines both financial and ESG criteria. As mentioned, only separate ratings currently exist for both criteria;
- Considers the existence of short and long-term investors (Modigliani & Sutch, 1966). Since current ratings are constructed using long-term variables, they are valid for investors with a long-term investment horizon. Meanwhile, this work proposes two ratings, one using long-term and the other using short-term financial variables – since the ranking results do not necessarily coincide. A fund that is well positioned in the long term may not be well positioned in the short term, and vice versa;
- Considers subjectivity of investors, since some may be more or less biased towards financial factors than ESG factors in their decision-making. Current ratings assess the performance of one set of these factors. This study proposes not only a rating that combines both criteria, but also one that allows investors to weigh each of the two criteria, financial or ESG, based on their subjective judgement when constructing the rating.

In summary, this paper contributes to existing practice by offering a methodology for constructing investment fund ratings that attempts to address the aforementioned gaps, combining both financial and ESG criteria. Two ratings are constructed while considering the investor's planning horizon (short- or long-term). The proposed methodology allows investors to construct their personal rating based on their preferences regarding financial or ESG factors.

Specifically, the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), a multi-criteria decision model, is used to rank funds by combining ESG criteria with performance and risk metrics (Kannan et al., 2014; Martín et al., 2018), offering a more complete tool for fund selection.

This paper is structured as follows. The theoretical framework is reviewed in Section 2. The data and methodology used are presented in Section 3. Section 4 provides the results of the proposed model to include financial and non-financial criteria. Section 5 discusses the main findings of this paper. And, in the last section, the conclusions are presented.

2. Theoretical framework

Investment ratings serve as indicators of the performance, risk and quality associated with investment funds (Oehler et al., 2018). Morningstar's ratings are based on a methodology that considers factors such as historical performance, risk-adjusted returns, and expense ratios. However, the specific criteria used in these ratings are not fully transparent. Furthermore, these ratings are more suitable for long-term investors, as they include returns and volatilities over 3, 5, and 10 years.

Some studies have examined the impact of Morningstar ratings on mutual fund flows and investor decision-making. Del Guercio and Tkac (2008), Armstrong et al. (2019), and Otero-González et al. (2022) found a significant association between changes in Morningstar ratings and abnormal cash flows. Moreover, Aasheim et al. (2022) highlighted the asymmetric response of fund flows to Morningstar ratings, particularly favoring top-rated funds.

Another strand of the literature contrasts the performance and/or risk obtained by an investment fund with a high (or low) rating. However, a consensus regarding the conclusions remains absent.

Blake and Morey (2000) concluded that a low rating generally indicates lower future profitability. However, no evidence suggests that the highest-rated funds (5 stars) outperform those rated with 3 or 4 stars. Furthermore, Morey (2005) added that when a fund achieves a 5-star rating, the increase in inflows becomes more complex to manage and, consequently, the fund's performance decreases.

Conversely, more recent studies like Otero-González and Durán-Santomil (2021) and Armstrong et al. (2019) found that mutual funds with 4- and 5-star ratings consistently outperform those with 1- and 2-star ratings. However, Otero-González et al. (2022) added that funds with high ratings perform poorly in terms of risk. Similarly, Aasheim et al. (2022) provided evidence supporting the predictive power of the star rating system, effectively guiding investors towards funds with a higher likelihood of outperforming in the future.

Given the lack of consensus, some works criticize these types of ratings. Oehler et al. (2018) highlighted the need to add information, besides past performance, that may be more valuable to investors. In this sense, Carluccio et al. (2023) noted that the Morningstar Rating is based on a measure of risk-adjusted performance, overlooking other factors such as managerial efficiency or skills. Hence, the authors proposed a rating system, where only funds that outperform the benchmark can received good ratings. However, Otero-González and Durán-Santomil (2021) argued that fund selection based only on quantitative ratings excludes qualitative factors that can explain future performance. The authors proposed a model that incorporates both quantitative and qualitative information.

Meanwhile, growing investor and regulatory attention to socially responsible investing has driven the investment fund industry to offer products that focus on ESG criteria (Chang et al., 2024; Pacelli et al., 2023; Popescu et al., 2021; Tosun & Moon, 2025; Widyawati, 2020). ESG ratings are among the most popular tools for assessing the sustainability of investment funds (Popescu et al., 2021; Dolvin et al., 2019). In 2016, Morningstar launched the Morningstar Sustainability Rating to meet this growing demand. This rating provides an assessment of a mutual fund's ESG performance relative to its peers. As with financial ratings, questions have been raised about the formulation of this rating and aggregation of different scores in this rating (Escrig-Olmedo et al., 2010, 2019).

Ammann et al. (2019) provided empirical evidence of retail investors' strong interest in sustainable investment strategies. Specifically, investors tend to invest in funds with the highest Morningstar Sustainability Rating while withdrawing funds from lower rates. Similarly, Ferriani (2023) concluded that the same relationship highlighted the importance of transparency and comparability among sustainability measures.

Regarding the relationship between performance and ESG rating, some studies have shown that the financial performance is not affected by the ESG rating (Dolvin et al., 2019; Pacelli et al., 2023; Steen et al., 2020). However, Dolvin et al. (2019) found a significant difference in the ESG scores between small and large-cap funds, with smaller funds having lower scores. Similarly, Steen et al. (2020) analyzed the fund market in Norway; while filtering through a homogeneous sample in terms of geographic area, they found significantly higher returns for the top ESG quintiles. Therefore, research findings may vary depending on the sample analyzed. Moreover, this heterogeneity in results can be attributed to the lack of consensus in defining ESG characteristics, attributes, and standards, resulting divergent opinions among rating agencies (Berg et al., 2022; Billio et al., 2021; Escrig-Olmedo et al., 2010, 2019; Popescu et al., 2021; Widyawati, 2020).

Some studies have developed methods to improve ESG ratings. Cabello et al. (2014) proposed a method for ranking mutual funds that integrates environmental considerations. The authors suggested that future research can integrate the derived environmental scores into a more comprehensive multi-objective portfolio selection model, which includes traditional financial objectives. Recently, Sorrosal-Forradellas et al. (2023) proposed an improved methodology for computing Morningstar Sustainability Rating by considering all assets in the portfolio, including those unscored with ESG.

Given the gap identified in the existing literature, the aim of this paper is to develop a comprehensive rating framework that integrates both financial and non-financial criteria. The guiding propositions supporting the research are based on the idea that the prioritization of investment funds is influenced by the investor's profile, and long-term investors attribute greater importance to ESG criteria compared to short-term investors, who tend to rely predominantly on traditional financial metrics in their decision-making processes.

3. Data and methodology

3.1. Data

The study data were extracted from the Morningstar database in December 2023 and include a global sample of funds classified within the "Equity Energy Sector". Portfolios within this sector primarily invest across various industries, including alternative energy, coal exploration, oil and gas, pipelines, natural gas services, and refineries. This sector is particularly significant due to its direct impact on the sustainability of energy practices and its potential to generate significant returns for investors interested in the clean energy transition.

The variables and scores provided by Morningstar are used without assuming their ratings, as a combined rating approach should not be simply derived from the combination of the Morningstar Rating and Morningstar Sustainability Rating.

Given the study objectives, a ranking system tailored to the specific need of different investor typologies should be developed. Therefore, the financial variables considered vary depending on the investment horizon, considering both short and long-term perspectives.

For short-term investors, the financial variables used are:

- *Annual Return (Return1)*: percentage change in a fund's value over one year;
- *Three-year Annual Return (Return3)*: annualized percentage change in a fund's value over three years;
- *Standard Deviation (Volat1)*: annual return volatility;
- *Three-year Standard Deviation (Volat3)*: return volatility over three years;

For long-term investors, similar metrics apply over extended periods:

- *Five-year Annual Return (Return5)*: annualized percentage change over five years;
- *Ten-year Annual Return (Return10)*: annualized percentage change over ten years;
- *Five-year Standard Deviation (Volat5)*: return volatility over five years;
- *Ten-year Standard Deviation (Volat10)*: return volatility over ten years.

The justification for using financial variables over 1 and 3 years for short-term investors, and over 5 and 10 years for long-term investors lies in the typical investment horizons and risk tolerance of these investor profiles. Short-term investors often seek quick returns and are more sensitive to recent performance and volatility. Conversely, long-term investors focus on sustained growth and stability over extended periods, making long-term performance and risk measures more relevant to their decision-making process. Additionally, as has been commented, one limitation of Morningstar's ratings is their use of risk-adjusted returns over 3, 5, and 10 years, which overlooks the criteria relevant to short-term investors.

The non-financial variables remain fixed for both short- and long-term profiles, as the investment horizon does not limit these measures.

- *Historical Corporate Sustainability Score (HCS)*: This score, provided by Morningstar, is calculated as a weighted average of the last 12 months available data. It provides an overall assessment of ESG aspects and indicates the level of overall sustainability risk.

To ensure detailed information, historical scores for each ESG pillar were calculated, as this information is not provided by Morningstar in a disaggregated form. In all three cases, a higher score denotes a higher level of risk exposure.

- *Historical Portfolio Environmental Risk Score (E)*: this score evaluates the environmental risks associated with an investment fund's portfolio holdings, considering factors such as carbon footprint, resource utilization, pollution, and environmental controversies.
- *Historical Portfolio Social Risk Score (S)*: this score assesses the social risks associated with an investment fund's portfolio holdings, considering factors such as labor practices, product safety, customer satisfaction, and social controversies.
- *Historical Portfolio Governance Risk Score (G)*: this score measures the governance-related risks linked to an investment fund's portfolio holdings, examining factors such as board structure, executive compensation, shareholder rights, and regulatory compliance.

For long-term analysis, data from 68 funds in the sector were available, whereas for short-term analysis, data from 96 funds were employed. The difference in the sample sizes was due to the lower availability of long-term data.

3.2. Methodology

To choose between different investment funds, investors have to consider various characteristics that define them (both financial and non-financial). Ordering funds according to all their characteristics or variables requires a multi-criteria decision model such as the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS). Then it is necessary to establish some kind of weighting to prioritize the set of variables.

3.2.1. Ponderation methods

The Criteria Importance Through Intercriteria Correlation (CRITIC) method assigns weights by prioritizing variables with higher variability (standard deviation) and lower correlation. This method ensures a data-driven, unbiased approach to weight assignment (Diakoulaki et al., 1995).

Following other studies that combine CRITIC and TOPSIS (Haleem et al., 2021; Stankovic et al., 2021, among others), the weights w_j were obtained as follows:

The values of the variables were normalized between the range [0, 1]:

$$c_{ij} = \frac{x_{ij} - \min\left(x_{1j}, x_{2j}, \ldots, x_{mj}\right)}{\max\left(x_{1j}, x_{2j}, \ldots, x_{mj}\right) - \min\left(x_{1j}, x_{2j}, \ldots, x_{mj}\right)}, \quad (1)$$

where x_{ij} is the value of the variable $j = 1,\ldots q,$ for the fund $i = 1,\ldots,m$.

The standard deviation of the normalized values c_{ij}, named S_j, and correlation matrix between all variables were calculated. If the elements of the correlation matrix are denoted by r_{jk}, the weights can be obtained as follows:

$$w_j = \frac{\omega_j}{\sum_{j=1}^{q} \omega_j}, \quad (2)$$

where $\omega_j = S_j \times \sum_{k=1}^{q} \left(1 - r_{jk}\right)$ for $j = 1,\ldots q$.

To address the diverse preferences and objectives of different investors, in addition to the CRITIC method, two more scenarios were considered:

Financial Investor Profile (FIP): The FIP scenario was tailored for investors who prioritize financial performance, assigning 70% of the weight to financial variables, and 30% to non-financial variables. Note that this allocation was chosen as an example and could have been set at other percentages.

Sustainability-focused Investor Profile (SFIP): The SFIP scenario caters to investors with a strong preference for sustainability. In this case, 70% of the weight was assigned to extra-financial variables, and 30% to financial variables.

3.2.2. Technique for Order of Preference by Similarity to Ideal Solution

The Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) is a widely used multi-criteria decision model (Kannan et al., 2014; Martín et al., 2018; Yoon & Hwang, 1995) which selects the alternative closest to the ideal solution (solution that represents the best value of each variable), and furthest from the anti-ideal solution (solution representing the worst value of each variable).

Among the multi-criteria decision models, TOPSIS was chosen for several reasons. First, because of its ability to efficiently handle multiple criteria. This has allowed TOPSIS to be applied in a satisfactory way in many different fields (Behzadian et al., 2012). Thanks to its development based on a double distance (to the ideal and anti-ideal solutions), it provides a clear ranking of alternatives based on a value that simultaneously reveals about the best and the worst alternatives (Shih et al., 2007; Diaz-Balteiro et al., 2017). It has a simple and straightforward computational procedure, is intuitive, and is easy to understand and comprehend (Behzadian et al., 2012; Miç & Antmen, 2021).

Moreover, TOPSIS has been demonstrated to be a useful methodology for the analysis of mutual funds' behaviour. Muruganandan and Sharma (2024) applied TOPSIS to help investors identify mutual funds with good behaviour over time, considering the persistence of mutual fund performance, and TOPSIS' ability to connect performance and risk factors. Stankevičienė and Petronienė (2019) compared the risk-adjusted performance of bond mutual and bond exchange traded funds using TOPSIS. TOPSIS was also applied by Bilbao-Terol et al. (2014) to assess sovereign bond funds in terms of sustainability. Meanwhile, this research develops an approach to identify optimal portfolios, allowing investors to demonstrate their preferences in terms of ESG factors and financial objectives, and adopted the TOPSIS method as well.

Specifically, the following steps were carried out:

Transformation of variables: the values of variables Volat1, Volat3, Volat5, Volat10, E, S, G and HCS were transformed into negative values. This change in sign was to interpret the maximum value of the variable as the best one in all cases. Specifically, for these variables, a high value indicates a greater risk; hence if the sign is negative, the lowest initial values will be the largest.

Normalization: If x_{ij} is the value of variable j for the fund i, its normalized value, x_{ij}^n, follows the expression (3):

$$x_{ij}^n = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}}, \tag{3}$$

where m is the number of funds.

Weighted Normalization: The normalized values were modified by the weight assigned to each variable, $w_j, j = 1,\dots q$. Here, $q = 8$. The weighted normalized value for each fund i and variable j is expressed as follows:

$$v_{ij} = x_{ij}^n \times w_j. \tag{4}$$

Ideal and Anti-ideal Solutions: The ideal and anti-ideal solutions were formed with the maximum and minimum values, respectively, of the weighted normalized values. If v_j^+ denotes the maximum value of v_{ij} for each $j = 1,\dots q$, and v_j^- denotes its corresponding minimum value, the ideal solution (IS) and the anti-ideal solution (AIS) can be written as follows:

$$IS = \left(v_1^+, v_2^+, \dots, v_q^+\right); \tag{5}$$

$$AIS = \left(v_1^-, v_2^-, \dots, v_q^-\right). \tag{6}$$

Distance Calculation: The distance between the characteristics of each fund to the IS vector, called S_i^+, and distance to the AIS vector, called S_i^-, are calculated using the Euclidean distance:

$$S_i^+ = \sqrt{\sum_{j=1}^{q} \left(v_{ij} - v_j^+\right)^2}; \tag{7}$$

$$S_i^- = \sqrt{\sum_{j=1}^{q}\left(v_{ij} - v_j^-\right)^2}. \tag{8}$$

Satisfaction index: The closeness coefficient or satisfaction index for the fund i $\left(SAT_i\right)$ was calculated from Eqs. (7) and (8) as follows:

$$SAT_i = \frac{S_i^-}{S_i^+ + S_i^-}. \tag{9}$$

When the distance to the anti-ideal solution is 0, the satisfaction index is also 0. Conversely, if the ideal solution has been achieved, $S_i^+ = 0$. Hence, $SAT_i = 1$; that is, the highest satisfaction.

Ranking: The funds were ranked based on their satisfaction index, from highest to lowest.

To address the varying investment horizons, the TOPSIS methodology was applied to both short- and long-term investors.

4. Results

As mentioned in section 3, the analysis considers two different sets of variables, distinguishing between short- and long-term investor perspectives. The investment horizon significantly affects the criteria used in decision-making. Revelli and Viviani (2014) highlighted that the financial performance of socially responsible investing is affected by the investment horizon.

4.1. Short-term investors

To determine the final order of preference for the funds included in the sample, TOPSIS requires assigning weights to each variable. The CRITIC method is the only one that involves computing the weights. The other two scenarios, FIP and SFIP, use weights that should be arbitrarily determined by the investor based on their preferences.

Regarding CRITIC method, it considers the standard deviation of each variable (Table 1) and correlation matrix among them (Table 2).

Table 1. Standard deviations of the normalized variables

Return1	Return3	Volat1	Volat3	E	S	G	HCS
0.228	0.221	0.151	0.126	0.220	0.181	0.258	0.223

Table 2. Correlation matrix

	Return1	Return3	Volat1	Volat3	E	S	G	HCS
Return1	1							
Return3	0.51240	1						
Volat1	0.40930	0.36435	1					
Volat3	0.29751	–0.1664	0.78459	1				
E	0.06410	–0.6020	–0.2809	0.11214	1			
S	0.32397	–0.0441	–0.2112	–0.11989	0.72677	1		
G	0.47036	0.08266	0.13312	0.11895	0.66619	0.79855	1	
HCS	–0.19433	–0.8412	–0.38559	0.18582	0.71901	0.18012	0.06725	1

Notably, financial risk variables (Volat1 and Volat3) exhibit the lowest standard deviation. Table 2 reveals a strong negative relationship between Return3 and HCS. This fact, along with the relatively low correlation of these two variables with the others, justifies the values of the weights obtained. In other words, the variables with the lowest weights are the two volatilities, while the variables with the lowest correlation have the highest impact (0.178 and 0.170 for Return3 and HCS, respectively). The weights used for each criterion are shown in Table 3.

Table 3. Weights assigned to each variable

	Return1	Return3	Volat1	Volat3	E	S	G	HCS
CRITIC	0.122	0.178	0.097	0.076	0.129	0.101	0.126	0.170
FIP	0.175	0.175	0.175	0.175	0.075	0.075	0.075	0.075
SFIP	0.075	0.075	0.075	0.075	0.175	0.175	0.175	0.175

In the FIP scenario, the investor distributes the weights by assigning 70% to the financial variables (equally weighted among these four variables) and the remaining 30% is equally distributed among the four sustainability variables. In the SFIP scenario, the investor makes the reverse allocation.

These weights are used to calculate the normalized values for each fund, which in turn provide the ideal and anti-ideal solutions for each criterion. The values of the ideal and anti-ideal solutions are detailed in Table 4. To homogenize the interpretation of the maximum and minimum values for all variables in the TOPSIS method, variables where high values indicate high risk (Volat1, Volat3, E, S, G and HCS) are converted into negative values. This adjustment allows the ideal solution to represent the best values across all criteria, while the anti-ideal solution represents the worst performance.

Table 4. Ideal (IS) and anti-ideal (AIS) solutions

	Return1	Return3	Volat1	Volat3	E	S	G	HCS
CRITIC								
IS	0.0278	0.0467	–0.0049	–0.004	–0.0016	–0.0020	–0.0010	–0.0116
AIS	–0.0253	–0.0148	–0.0279	–0.0212	–0.0289	–0.0141	–0.0188	–0.0270
FIP								
IS	0.0399	0.0459	–0.0089	–0.0092	–0.0010	–0.0015	–0.0006	–0.0051
AIS	–0.0362	–0.0145	–0.0501	–0.0485	–0.0168	–0.0105	–0.0112	–0.0119
SFIP								
IS	0.0171	0.0197	–0.0038	–0.0039	–0.0022	–0.0034	–0.0014	–0.0119
AIS	–0.0155	–0.0062	–0.0215	–0.0208	–0.0393	–0.0244	–0.0260	–0.0278

As expected, the values of the return variables for the ideal solution are higher in the FIP scenario than in the SFIP scenario, while the volatilities are lower. Conversely, the values of E, S, G and HCS are lower in the SFIP scenario, indicating a focus on reducing sustainable risks.

The ranking of funds is calculated based on their satisfaction index, derived from their proximity to the ideal solution and distance from the anti-ideal solution. Table 5 provides a comparative analysis of the means of the variables for the funds in each quartile, segmented by the weighting criteria. The full list is available in Appendix Table A1.

Table 5. Comparative analysis of funds

	Mean	Return1	Return3	Volat1	Volat3	E	S	G	HCS
CRITIC	1Q	15.64	27.05	13.46	21.03	7.65	5.80	2.76	29.65
	2Q	6.36	24.00	18.13	25.92	12.45	7.30	5.76	30.01
	3Q	0.84	18.33	17.82	23.62	12.14	7.54	6.05	28.04
	4Q	–10.92	–8.66	21.92	23.63	5.82	6.80	5.31	21.97
FIP	1Q	16.26	25.67	13.27	20.72	7.22	5.74	2.70	29.27
	2Q	6.47	22.58	16.82	23.72	12.75	7.48	5.95	29.69
	3Q	0.13	19.79	17.53	23.89	12.41	7.59	6.05	28.54
	4Q	–10.94	–7.32	23.73	25.88	5.69	6.63	5.18	22.17
SFIP	1Q	16.91	22.04	15.19	21.35	6.05	5.32	2.48	27.73
	2Q	1.91	7.16	19.99	22.58	7.00	6.72	4.88	23.26
	3Q	–1.67	12.21	18.06	23.99	10.82	7.25	5.84	27.48
	4Q	–5.23	19.30	18.11	26.29	14.20	8.15	6.66	31.21

Note: * Each quartile contains 24 funds.

Clearly, a greater similarity exists between the characteristics of the funds when the CRITIC method and FIP scenario are considered. These two criteria orders consider the two returns (one and three years). The return values decrease across the quartiles, becoming negative for the fourth quartile. Volatility has no clear influence. Interestingly, in both criteria, the first and fourth quartiles have lower means in terms of ESG risks compared to the second and third quartiles. The fact that the first quartile has lower risks is encouraging (the better the financial results, the better the sustainable behavior). However, this result contrasts with the fact that the funds in the fourth quartile have better sustainable scores than those in the second and third quartiles. Moreover, the fourth quartile has the lowest risk as measured by the HCS.

The SFIP scenario, which prioritizes sustainability, exhibits a clearer pattern of increasing sustainability scores across the quartiles (except HCS in the first quartile). Additionally, for this criterion, the mean of the annual return decreases across the quartiles, with a greater difference between the first and second quartiles compared to the other criteria, and the mean being negative in the last two quartiles. The three-year annual return does not follow the same pattern, showing the highest value in the first quartile, followed by the fourth. This is due to the presence of a fund with the worst sustainability performance (highest E, S, G and HCS values) but also the highest three-year annual return, which is exceptionally high (58.50%), in the fourth quartile.

Finally, with the aim of comparing the orders obtained by the different criteria, Table 6 presents the comparison of the positions of the same fund according to each criterion. The mean of the difference between the positions is calculated for all funds in the sample and for those within each quartile. To determine the composition of the groups, the CRITIC order is used as the baseline for comparisons with the other two criteria, while the FIP order is used when it is compared with the SFIP scenario.

Similar to Table 5, Table 6 indicates that the order of funds by TOPSIS using the CRITIC method aligns more closely with the FIP scenario (mean difference of about 5 positions out of 96) than with the SFIP scenario (mean difference of nearly 22 positions). However, within the first quartile, the differences are significantly smaller. Consequently, each investor's subjective criteria, including whether they place greater weight on financial or sustainable criteria, are crucial for any classification. Therefore, these classifications should be as adaptive as possible to accommodate varying investor preferences.

Table 6. Differences in position between order criteria

Mean*	CRITIC versus FIP	CRITIC versus SFIP	FIP versus SFIP
All funds	4.792	21.688	21.333
1Q group	1.667	8.458	6.708
2Q group	8.750	26.958	23.417
3Q group	6.708	24.417	27.917
4Q group	2.042	26.917	27.292

Note: * Mean (in absolute value) of the differences between positions comparing two criteria.

4.2. Long-term investors

Although the sustainability variables are the same as those used in the short-term analysis, the differences in the financial variables and a reduced sample size have led to changes in the final preferences.

The standard deviations (Table 7) of all sustainability variables are higher than those for returns and volatilities over the long-term (5 and 10 years). Table 8 reveals an almost perfect positive correlation between the two volatilities and a significant positive relationship between the 5-year and 10-year annual returns. Additionally, a strong positive correlation exists among the three sustainability variables, corresponding to the E, S, and G factors. Meanwhile, the S and G variables are negatively correlated with all financial variables.

Table 7. Standard deviations of the normalized variables

	Return5	Return10	Volat5	Volat10	E	S	G	HCS
Standard deviation	0.157	0.150	0.152	0.150	0.240	0.196	0.265	0.223

Table 8. Correlation matrix

	Return5	Return10	Volat5	Volat10	E	S	G	HCS
Return5	1							
Return10	0.76979	1						
Volat5	0.13343	0.59596	1					
Volat10	0.10834	0.60480	0.98947	1				
E	–0.01095	0.15494	0.07315	0.10504	1			
S	–0.11716	–0.18051	–0.33746	–0.30272	0.74290	1		
G	–0.13171	–0.17006	–0.26334	–0.23350	0.73265	0.86961	1	
HCS	0.04703	0.35703	0.44808	0.45508	0.74061	0.22750	0.16879	1

Following the methodology outlined in section 3, the weights based on CRITIC, FIP and SFIP scenarios are detailed in Table 9.

Table 9. Weights assigned to each variable according to the different criteria

	Return5	Return10	Volat5	Volat10	E	S	G	HCS
CRITIC	0.119	0.089	0.099	0.096	0.131	0.146	0.195	0.124
FIP	0.175	0.175	0.175	0.175	0.075	0.075	0.075	0.075
SFIP	0.075	0.075	0.075	0.075	0.175	0.175	0.175	0.175

The weights obtained using the CRITIC method assign a greater emphasis to sustainability variables (60% overall) compared to the financial variables. Each of the four for sustainability variables exceed those assigned to returns and volatilities. By the definition of the scenarios used in this study, the weights for the FIP and SFIP criteria are identical to those for short-term investors.

The values of the ideal and anti-ideal solutions, against which each fund is compared to determine its satisfaction index, are calculated using Eqs. (5) and (6) and are presented in Table 10.

Table 10. Ideal (IS) and anti-ideal (AIS) solutions

	Return5	Return10	Volat5	Volat10	E	S	G	HCS
CRITIC								
IS	0.0350	0.0295	–0.0044	–0.0039	–0.0018	–0.0033	–0.0018	–0.0099
AIS	–0.0111	–0.0381	–0.0293	–0.0268	–0.0324	–0.0236	–0.0326	–0.0230
FIP								
IS	0.0515	0.0579	–0.0078	–0.0071	–0.0010	–0.0017	–0.0007	–0.0059
AIS	–0.0163	–0.0749	–0.0516	–0.0486	–0.0185	–0.0122	–0.0125	–0.0139
SFIP								
IS	0.0221	0.0248	–0.0033	–0.0031	–0.0024	–0.0040	–0.0016	–0.0139
AIS	–0.0070	–0.0321	–0.0221	–0.0208	–0.0432	–0.0284	–0.0292	–0.0323

Notably, the values of the ideal and anti-ideal solutions obtained using the CRITIC method are closer to the SFIP scenario than to the FIP scenario. Specifically, the Euclidean distance between the ideal solution for CRITIC and SFIP is 0.01436, while this figure increases to 0.03355 when comparing CRITIC to the FIP scenario. This difference is even more pronounced for the anti-ideal solution, with a distance of 0.01946 between CRITIC and SFIP, and almost three times the distance between CRITIC and FIP scenario (0.05623).

The 68 funds in the sample are ranked based on the satisfaction index calculated for the CRITIC, FIP, and SFIP criteria, with their positions detailed in Appendix Table A2.

As with the results for short-term investors, a comparative analysis of the mean values of the variables was performed, considering the quartile of the funds ranked according to all three criteria. The results are shown in Table 11.

For all three criteria, the 3-year and 10-year annual returns decrease across the quartiles. The range between the mean returns for the first and forth quartiles are slightly smaller in the SFIP scenario. Moreover, these differences between the mean returns of the first and fourth quartiles are significantly smaller in the long-term than in the short-term, likely due to the lower sensitivity to annual return fluctuations over long periods. Notably, the mean of the five-year annual returns is positive across all quartiles. Conversely, as expected, volatility is higher over longer horizons (5 and 10 years) compared to shorter ones (1 and 3 years). For long-term investors, funds in the fourth quartile exhibit higher volatilities, and thus, are riskier, though a clear pattern does not emerge for the other quartiles.

Table 11. Comparative analysis of funds

	Mean*	Return5	Return10	Volat5	Volat10	E	S	G	HCS
CRITIC	1Q	16.30	7.13	27.64	23.19	5.37	5.93	4.45	23.46
	2Q	9.70	2.31	29.42	24.46	7.47	6.57	4.01	26.60
	3Q	9.89	1.60	31.20	25.97	14.20	7.93	6.49	31.05
	4Q	5.91	–3.09	36.39	30.44	13.97	7.54	6.23	31.03
FIP	1Q	16.18	7.82	25.28	21.40	6.54	6.88	5.55	21.88
	2Q	12.33	2.81	32.20	26.61	10.95	6.78	4.86	30.95
	3Q	8.08	0.71	30.09	25.29	11.87	7.39	5.47	29.71
	4Q	5.21	–3.39	37.08	30.76	11.65	6.93	5.29	29.60
SFIP	1Q	15.80	6.62	29.04	24.11	5.00	5.61	4.09	23.67
	2Q	9.31	2.60	26.76	22.43	7.25	6.88	4.31	25.75
	3Q	8.42	0.26	32.55	27.26	12.95	7.47	6.04	29.88
	4Q	8.27	–1.53	36.29	30.27	15.81	8.01	6.74	32.83

Note: * Each quartile contains 17 funds.

All sustainability variables increase across quartiles under the SFIP scenario. A similar trend is observed for the other two criteria, although it is less pronounced.

Comparing the quartiles globally, including both financial and extra-financial variables, the CRITIC method is the only one where the best mean values for all the variables are obtained in the first quartile. In the FIP scenario, the S and G variables perform slightly better in the second quartile than in the first. Meanwhile, in the SFIP scenario, volatilities (both at 5 and 10 years) show better values in the second quartile. In this long-term analysis, the CRITIC method yields results more aligned with the SFIP scenario than with financial preferences, as in the FIP scenario.

Finally, Table 12 shows the differences in fund rankings based on the satisfaction index and according to the weighting method used in the TOPSIS methodology.

Table 12. Differences in position between the order criteria

Mean*	CRITIC versus FIP	CRITIC versus SFIP	FIP versus SFIP
All funds	7.706	4.176	11.441
1Q	4.2356	2.471	5.412
2Q	12.118	3.647	14.176
3Q	10.059	5.941	13.471
4Q	4.412	4.647	12.706

Note: * Mean (in absolute value) of the differences between positions comparing two criteria.

Clearly, the CRITIC method and SFIP criteria yield results that are closer together compared to when the preference order is determined from a more financial perspective. Furthermore, when comparing CRITIC with the FIP scenario, the smallest differences are observed in the first and fourth quartiles, while the middle quartiles exhibit greater heterogeneity. In contrast, when comparing SFIP with the other two criteria, the first quartile remains the most homogeneous, with the differences in positions for the same fund increasing in the other quartiles.

5. Discussion

This study contributes to the literature on sustainable finance by examining the impact of ESG criteria and investor preferences on fund selection.

Morningstar is one of the most influential data providers in the fund industry, and its ratings -both traditional and sustainability focused- are widely used by investors to inform allocation decisions (Del Guercio & Tkac, 2008; Aasheim et al., 2022). Investors' reliance on Morningstar ratings justifies the choice of adopting their sustainability metrics (HCS and ESG scores).

One of the key findings of this study is the strong negative relationship observed between financial returns over a three-year horizon and the HCS. However, it is important to note that this negative relationship is specific to the medium-term analysis, as the correlation between HCS and financial returns becomes slightly positive over longer five- and ten-year horizons. These results align with prior findings by Popescu et al. (2021) and Das et al. (2018), who recognized the complexities of managing ESG risks and their variable impact over different timeframes.

Another outcome of this analysis is that the subjective criteria used by investors, specifically, the weight they assign to financial versus sustainability factors, have an important impact on fund rankings. The results also indicate differences between short- and long-term investors. Short-term investors tend to prioritize financial performance metrics over sustainability measures. This is reflected in the similarity between the rankings produced by the CRITIC method and the FIP scenario. In contrast, the analysis shows that long-term investors exhibit a clear focus toward sustainability criteria. In this instance, the CRITIC method generates rankings that are more closely aligned with the SFIP scenario than with purely financial preferences. This finding is consistent with Velte (2022), which examined 34 papers focused on long-term investors out of 66 papers analyzing the relationship between sustainability and institutional investors. Furthermore, the author found that most of these studies highlight a positive effect of ESG factors when investors have a long-term horizon.

Furthermore, the variability in the importance of ESG factors across different scenarios (FIP vs SFIP) reinforces the conclusions of Cabello et al. (2014), who pointed out the adaptability of multicriteria decision-making methods to diverse investor profiles.

However, the limitations of standardized ESG metrics must also be addressed. As highlighted by Widyawati (2020) and Berg et al. (2022), there is a lack of convergence between ESG ratings from major agencies, which limits the comparability of sustainability assessments. Sorrosal-Forradellas et al. (2023) also identified this issue, and their findings support the idea that incomplete ESG rating coverage may lead to biased evaluations. The results presented in this study are consistent with this line, as the weight given to the HCS score in different decision-making scenarios reflects the influence of ESG data coverage and aggregation methods on fund assessment outcomes.

All of these considerations emphasize the necessity for advanced decision-making tools, such as multicriteria methods. As demonstrated by the results of this study, these methods can integrate financial and non-financial criteria in a flexible and transparent way (Cabello et al., 2014; Eccles et al., 2017). Eccles et al. (2017) argue that investor preferences are frequently not well-reflected in available tools. Thus, this study confirms that the assessment of sustainability in investment funds must go beyond simplified ratings. This is especially relevant as the sustainable investment landscape continues to evolve, driven by regulatory changes (especially within the European Union), and growing empirical evidence on the relationship between ESG risks and long-term value creation (Popescu et al., 2021).

6. Conclusions

This study examines the integration of financial and Environmental, Social and Governance (ESG) criteria in the evaluation of investment funds, with a particular focus on the energy equity sector. Using the Technique for Order Preference by Similarity to Ideal Solution, a multi-criteria decision model, both short- and long-term investor profiles are analyzed to understand how different weighting scenarios – financial versus sustainable investor profiles – affect fund rankings.

The findings suggest that investor preferences, particularly the balance between financial returns and sustainability considerations, play a crucial role in determining fund rankings. For short-term investors, financial performance measures such as annual returns and volatility are the dominant factors in fund evaluation, as evidenced by the close alignment between the Criteria Importance Through Intercriteria Correlation (CRITIC) methodology and Financial Investor Profile scenario. Thus, investors with a short-term horizon are primarily driven by immediate financial results, with sustainability concerns playing a secondary role.

For long-term investors, ESG criteria become more important. The alignment of the CRITIC methodology with the Sustainability-focused Investor Profile scenario in the long-term analysis suggests that sustainability factors become increasingly important over longer investment horizons. This is consistent with the broader trend in the investment community, where long-term growth and stability are increasingly linked to strong ESG performance.

Overall, the study highlights the necessity of developing adaptive and customisable investment evaluation tools that can accommodate different investor priorities. Integrating both types of criteria provides a more comprehensive perspective on fund performance, which is highly relevant in today's investment landscape. Furthermore, a distinction should also be made according to the investment horizon, as this influences the investor's decision.

Next, this study has some limitations. First, the analysis was applied to a sample of a specific sector (equity energy), which may limit the generalizability of the conclusions to other sectors or broader investment categories. Second, the sustainable variables are obtained from the Morningstar database. Morningstar updates the values of these variables with an annual frequency. Consequently, investors may not have the most recent information to make their decisions.

Future research should focus on further refining these multi-criteria decision tools to better accommodate the complex and dynamic nature of investor preferences, particularly in high-impact sectors as energy. This can ensure that both financial performance and sustainability are appropriately reflected in investment decisions, ultimately contributing to more responsible and effective investment strategies.

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M. Teresa Sorrosal-Forradellas: Conceptualization, Methodology, Formal analysis; Laura Fabregat-Aibar: Conceptualization, Data curation, Writing – Original draft; M. Glòria Barberà-Mariné: Conceptualization, Supervision, Writing – Reviewing and Editing; Antonio Terceño: Conceptualization, Supervision; Writing – Reviewing and Editing.

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APPENDIX

Table A1. Order of the funds (short-term investor)

Name	CRITIC	FIP	SFIP
Invesco SteelPath MLP Alpha Plus	1	1	3
Hennessy Midstream Investor	2	2	7
MainGate MLP	3	5	4
Invesco SteelPath MLP Income	4	4	1
Invesco SteelPath MLP Select 40	5	3	2
Invesco SteelPath MLP Alpha	6	6	6
Goldman Sachs MLP Energy Infras	7	7	5
Eagle Energy Infrastructure	8	9	8
Recurrent MLP & Infrastructure	9	8	17
Catalyst Energy Infrastructure	10	11	11
Center Coast Brookfield Midstream Foc	11	10	9
MainStay Cushing® MLP Premier	12	12	12
Virtus Duff & Phelps Sel MLP & Engy	13	19	16
PGIM Jennison MLP	14	17	10
Tortoise Energy Infrastructure	15	15	13
GS Energy Infrastructure Fd	16	14	15
Canoe Energy Portfolio	17	20	63
Spirit of America Energy	18	18	22
Schroder ISF Global Energy B	19	13	51
PIMCO GIS MLP & Engy Infr E Inc	20	16	38
Westwood Salient MLP & Engy Infras	21	22	14
Cohen & Steers Future of Energy	22	25	28
Samsung Glb Clean Energy Fdr Eq-FoF 2 C5	23	21	18
Canoe Energy Income Portfolio	24	26	72
White Fleet II Energy Champions	25	31	42
Tortoise Energy Infrastructure and Inc	26	23	21
Hennessy Energy Transition Investor	27	34	58
BNPP Energie & Industrie Europe ISR	28	24	27
GS Global Envn Transition Eq-X Cap	29	29	70
Fidelity Natural Resources Fund	30	32	67
Pictet-Clean Energy Transition R	31	27	20
GS NA Engy & Engy Infras Eq	32	37	54

Continued Table A1

Name	CRITIC	FIP	SFIP
Fidelity Select Energy Portfolio	33	41	81
Ninepoint Energy Series A	34	61	96
Fidelity Advisor Energy	35	43	83
Vanguard Energy Index Admiral	36	47	84
Rydex Energy	37	48	64
Rydex Energy Services	38	69	19
Samsung Clsc Glb Cln Erg FdrEq-FoF C Hdg	39	30	23
CI Global Energy Corporate	40	45	75
Vanguard Energy Inv	41	28	68
EIP Growth and Income Investor	42	35	29
Cavanal Hill World Energy	43	42	49
Samsung Glb Clean Energy Fdr Eq-FoF 1	44	33	24
JNL/Mellon Energy Sector	45	55	93
Eurizon Azioni Energia E Mat Prime	46	36	59
DNB Miljøinvest	47	38	26
BGF World Energy E2	48	40	79
Invesco Energy	49	52	94
Guinness Atkinson Global Energy	50	44	86
BlackRock Energy Opportunities Inv	51	49	88
Transamerica Energy Infrastructure	52	50	25
Franklin Natural Resources N	53	62	66
CIBC Energy	54	53	87
Delaware Climate Solutions	55	68	45
Guinness Global Energy	56	58	90
WS Guinness Global Energy I	57	59	91
BGF Sustainable Energy	58	51	32
Montepio Euro Energy FIMAA	59	39	60
SG Actions Energie	60	66	74
Oil Equipment&Svcs UltraSector Pro Svc	61	85	30
Raiffeisen-Energie-Aktien R T	62	54	44
TBF SMART POWER	63	63	35
RBC Global Energy Fund	64	64	95
Robeco Smart Energy M2- Cap	65	65	34
SG Actions Energie Europe	66	46	55
Mediolanum Ch Energy Eq Evolt	67	56	89

End of Table A1

Name	CRITIC	FIP	SFIP
Dynamic Energy Income	68	60	80
Integrity Mid-North American Resources	69	67	65
KBI Global Energy Transition	70	70	31
Dynamic Strategic Energy	71	57	85
DNB Renewable Energy	72	71	37
Swedbank Robur Transition Energy	73	75	33
Argenta-Fund Responsible Utilities R Dis	74	74	40
Guinness Sustainable Energy	75	76	36
Caixagest Energias Renováveis FIAMA	76	72	39
MORE Global Clean Energy	77	73	41
Allianz Smart Energy AT	78	78	48
Brookfield Glb Rnw & SusInf	79	77	47
Raiffeisen-SmartEnergy-ESG-Aktien	80	84	46
Ecofin Engy TransitionUCITS E	81	79	61
Handelsbanken Hållbar Energi A1 NOK	82	83	43
Dynamic Energy Evolution	83	80	57
LSF Solar & Sustainable Energy	84	82	73
Schroder Glbl Engy Transition L GBP	85	86	50
Vontobel Energy Revolution	86	81	71
Schroder ISF Glbl Engy Tnstn B	87	87	53
Storebrand Renewable Energy	88	91	52
LUX IM ESG Green Energy DXL	89	88	62
s Generation T	90	92	56
Quaero Capital Accesbl Cl Eng	91	94	69
Kiwoom Future Energy Equity	92	89	77
Alpha Glb New&Renewbl Engy Fdr Eq	93	90	76
MiraeAsset Glb Clean Infra Fdr Eq	94	93	78
Luxembourg Selection Active Solar	95	96	82
Renta 4 Megatendencias AH Y En Sos	96	95	92

Table A2. Order of the funds (long-term investor)

Name	CRITIC	FIP	SFIP
Handelsbanken Hållbar Energi A1 NOK	1	2	1
DNB Miljøinvest	2	1	3
KBI Global Energy Transition	3	4	2
DNB Renewable Energy (SEK)	4	3	4
Robeco Smart Energy M2- Cap	5	5	7
Guinness Sustainable Energy	6	8	6
Samsung Glb Clean Energy Fdr Eq-FoF 2	7	6	9
BGF Sustainable Energy	8	7	12
Invesco SteelPath MLP Income	9	26	5
Pictet-Clean Energy Transition	10	10	11
LSF Solar & Sustainable Energy	11	9	20
Luxembourg Selection Active Solar	12	13	15
Invesco SteelPath MLP Select 40	13	28	8
s Generation	14	16	10
MainGate MLP	15	34	13
EIP Growth and Income Investor	16	18	19
MiraeAsset Ret Pens Clean Infra Fdr Eq	17	11	16
MiraeAsset Glb Clean Infra Fdr Eq 2	18	14	18
Invesco SteelPath MLP Alpha	19	39	14
Eagle Energy Infrastructure	20	37	17
MiraeAsset Clean Infra Focus Fdr Eq	21	17	22
Tortoise Energy Infrastructure TR	22	29	21
MiraeAsset Global Clean Infra Fdr Eq	23	19	24
Kiwoom Future Energy Equity 1	24	21	27
Tortoise Energy Infrastructure and Inc	25	32	31
Montepio Euro Energy FIMAA	26	12	33
MainStay Cushing® MLP Premier	27	43	25
Eurizon Azioni Energia E Mat Prime	28	15	34
TBF SMART POWER	29	25	30
Westwood Salient MLP & Engy Infras	30	46	29
Invesco SteelPath MLP Alpha Plus	31	60	23
Center Coast Brookfield Midstream Foc	32	58	28
Fidelity Natural Resources Fund	33	22	38
Swedbank Robur Transition Energy	34	45	26
SG Actions Energie Europe	35	23	36
CI Global Energy Corporate	36	24	41

End of Table A2

Name	CRITIC	FIP	SFIP
Ninepoint Energy Series	37	20	59
Caixagest Energias Renováveis FIAMA	38	56	32
Fidelity Select Energy Portfolio	39	30	45
SG Actions Energie	40	35	40
Vanguard Energy Index Admiral	41	31	47
Vontobel Energy Revolution	42	51	37
Fidelity Advisor Energy	43	33	49
RBC Global Energy Fund	44	27	48
BNPP Energie & Industrie Europe ISR	45	50	35
GS Global Envn Transition Eq-X Cap	46	38	43
Raiffeisen-Energie-Aktien	47	54	39
Canoe Energy Portfolio	48	42	50
JNL/Mellon Energy Sector	49	36	55
Franklin Natural Resources	50	53	42
CIBC Energy	51	41	54
WS Guinness Global Energy I	52	40	56
Dynamic Energy Income	53	49	53
Vanguard Energy Inv	54	44	52
Integrity Mid-North American Resources	55	61	44
BlackRock Energy Opportunities Inv	56	48	60
Canoe Energy Income Portfolio	57	47	58
BGF World Energy	58	55	61
Mediolanum Ch Energy Eq Evolt	59	52	62
Rydex Energy	60	63	57
Guinness Global Energy	61	57	63
Guinness Atkinson Global Energy	62	59	65
Invesco Energy	63	62	67
Delaware Climate Solutions	64	65	51
Dynamic Strategic Energy	65	64	66
Rydex Energy Services	66	67	46
Schroder ISF Global Energy	67	66	68
Oil Equipment&Svcs UltraSector Pro Svc	68	68	64