

Comparison of ESG disclosure quality between traditional energy and new energy companies

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Abstract. Today, almost all major energy companies publish information about their Environmental, Social, and Governance (ESG) practices. However, it remains unclear whether there is a real difference in the quality of these documents between companies selling fossil fuels and those selling clean technologies. This study uses a transparent and repeatable content analysis method to compare the ESG disclosure quality of 10 traditional energy companies and 34 new energy companies. This study compares each company along four dimensions: the number and types of reporting frameworks adopted, changes in MSCI ESG ratings from 2023 to 2025, the format of key sustainability forms, and a small number of outcome indicators such as total greenhouse gas emissions and board gender. Descriptive results indicate that new energy companies adopt a broader portfolio of frameworks (61.8% use three or more frameworks, compared to 40.0% for traditional companies), are more likely to reach MSCI top-tier levels (33.3% vs. 0.0% in 2025), and more likely to include Scope 3 emissions in their carbon neutrality commitments (70.6% vs. 10.0%). However, the study also finds that traditional companies improved their average MSCI scores faster over three years, and all 10 companies had ESG committees at the board level. The study therefore argues that broader disclosure shouldn't be read as proof of genuinely better performance.

Keywords: ESG disclosure, energy transition, reporting framework, MSCI rating, content analysis

1. Introduction

1.1. Why ESG disclosure has become a standard expectation

Twenty years ago, it was unusual for companies to openly discuss their carbon emissions. But now, the opposite is true: large listed companies that remain silent have become outliers. ESG reporting was originally a voluntary PR activity, but now it is close to a basic requirement for any company hoping to secure funding from international investors. In 2023 the ISSB released its first two standards, IFRS S1 [1] and S2 [2], and more governments said they'd fold them into national law.

The regulators' concern about this matter is quite simple. ESG information is meant to show investors risks that do not appear in the regular income statement. For example, a coal company burdened with significant unpriced carbon risks, or a battery manufacturer relying on unstable mineral supplies, may look good this year but could find itself in real trouble ten years later. Disclosure is precisely the tool that allows these slowly

accumulated risks to become apparent early. It also makes businesses comparable: if everyone reports the same content in the same way, investors can compare them side by side.

Comparability is the last of those commitments, and it is where the problem starts. That is exactly why this project was undertaken. In reality, companies will choose which frameworks to follow, which data to publish, and which documents to include. This leads to two companies in the same industry ultimately producing sustainability reports that are almost incomparable. So a meaningful question is: how much does the company disclose, how consistent is it, and what standards is it based on?

1.2. Why choose the energy industry

The energy sector was selected for three reasons. First, its impact on climate change is almost greater than any other industry's. Since energy production and use account for about three-quarters of global greenhouse gas emissions, development in this sector determines whether climate goals can be met. Second, energy is the foundation of all other industries: it powers the electricity, heat, and fuel required by all sectors.

Traditional energy companies, the coal, oil, and gas producers, sell products that regulators want to reduce. New energy companies, the manufacturers of solar, wind, nuclear, battery, and hydrogen energy, are often seen as winners in the energy transition. That is because their main products are the ones regulators hope to increase. If external pressures, internal governance, and business models shape how companies report, then these two groups of companies will present different faces, so comparing them should help bring out the differences.

1.3. The gaps this study tried to fill

There is a large body of literature on ESG disclosures, but most studies treat all companies as a large whole; MSCI only asks whether disclosures increase over time. In fact, MSCI ratings reflect a company's ability to handle financially significant ESG risks relative to its peers [3]. A company may score high for proper risk management, yet emit large amounts of carbon. In other words, a strong rating is not the same as a small footprint, and this study keeps that distance in view.

1.4. Research questions

This paper sets out to answer four questions:

RQ1. Do new energy companies use broader ESG disclosure frameworks than traditional energy companies?

RQ2. Between 2023 and 2025, will the MSCI ESG ratings of these two groups show different trends?

RQ3. Did the two groups of companies adopt different reporting strategies, placing ESG information into different types of documents?

RQ4. Where there are differences in disclosures between the two groups, do they also differ in the direction of measurable outcomes?

1.5. Contributions and dispositions of this article

This study built a hand-collected dataset covering the 2023-2025 period, forty-four global energy companies, and eleven rating agencies, using a simple Observe, Interpret, and Reflect structure. Each figure in this article can be traced back to public company reports or public rating pages.

It should also be clear what this study did not do. This study does not run significance tests, and does not treat new energy firms as better companies. The study describes a pattern in disclosure behavior, then deliberately argues that it should not be overinterpreted. Section 2 explains the data and code, Section 3

presents findings, Section 4 interprets and lists aspects of the study's own data that contradict the simple narrative, and Section 5 provides the conclusion.

2. Data and methods

2.1. Sample construction

The sample covers 44 energy companies. The sample began with the Fortune Global 500 and Fortune China 500 lists, then selected firms that meet these criteria: (a) companies primarily engaged in energy production, energy equipment, or energy-related industrial gases; (b) they publish enough English or Chinese material for coding. Each company is categorized as either traditional or new energy based on its main revenue source. Ultimately, 10 traditional enterprises (accounting for 22.7% of the sample) and 34 new energy companies (accounting for 77.3%) were selected.

This imbalance is not accidental, and it needs to be said plainly. There are indeed few large, purely traditional energy companies capable of publishing readable reports, and this study focuses more on the new energy side, so more search effort was devoted to that area. The result is that each percentage of the traditional group moves by 10 points, so one company is 10%. Readers should keep this in mind when referencing traditional group data. Table 1 shows the sample composition. This is stated openly because many readers will be tempted to treat the two groups as equally reliable samples, and they are not.

Table 1. Sample composition (*n* = 44)

Grouping	Number of enterprises	Sample proportion	Median Income (million USD)	Median profit (million USD)	Median profit margin
Traditional energy	10	22.7%	125,024.8	7,468.9	5.9%
New energy	34	77.3%	37,645.0	1,849.4	4.1%
Total	44	100.0%	Not applicable	Not applicable	Not applicable

Note: Financial data refers to figures from the most recent reporting year in the dataset. Use the median instead of the mean.

Table 1 presents useful information before looking at any ESG figures. The median revenue of traditional companies in the sample was about \$125 billion, more than three times that of new energy companies at \$37.6 billion, and they were more profitable, with a median profit margin of 5.9% versus 4.1%. This is important for interpreting what follows. Larger, wealthier companies usually have larger reporting teams and more funding for appraisal, so traditional groups should have an advantage in producing high-quality reports. But later on, the opposite was discovered, so scale cannot be used as an explanation.

2.2. Variables and coding rules

Each company is coded according to four variable sections. Table 2 shows the coding scheme. For all frame and report type variables, the coding is binary (1 = Present, Blank = None or Not Found). This keeps things simple enough for another student to repeat, which mattered more to this study than a fancier scale.

Table 2. Coding scheme

Plate	Variable	Coding rules
A. Frame coverage	GRI, United Nations SDGs, ISSB, SASB, TCFD, GHG Protocol; and the involvement of CDP and EcoVadis	If the company mentions this framework in its 2025 report or rating page, it is 1; Otherwise, leave it blank
B. Rating trajectory	MSCI ESG ratings for 2023, 2024, and 2025 (CCC to AAA); Additionally, ten other rating agencies are listed for reference	Transcription letter grade according to published values; Convert to a 1-7 numerical scale to calculate the mean
C. Reporting strategy	Independent sustainability reports, ESG reports, CSR reports, other environmental reports, ESG content included only in the annual report (2023-2025)	Each document type actually published in the year is recorded as 1
D. Goals and Outcomes	Carbon peak years, carbon neutrality years, and scope; Greenhouse gas emissions; Energy use; Water intake volume; Waste recycling rate; The number of workers lost their lives; Proportion of female employees; Proportion of female directors; Board attendance rate; ESG Committee	Enter based on enterprise report value; The year and scope are extracted from the target text

For MSCI ratings, this study averages letter grades by converting the seven-point scale to numbers: CCC = 1, B = 2, BB = 3, BBB = 4, A = 5, AA = 6, AAA = 7. According to MSCI's own statement [3], this study labels AA and AAA as leaders, A, BBB, and BB as average, and B and CCC as laggards. The practice is relatively rough, though: the jump from BB to BBB is not necessarily the same as from AA to AAA, so the study only shows the direction of change, not a precise measure.

2.3. Data analysis methods

Analysis follows a three-step process this study calls Observe, Interpret, and Reflect. In the observe phase, the study only reports proportions, medians, and before-and-after comparisons, without interpreting them. In the interpret phase, the study proposes possible causes for what is observed. In the reflect phase, the study deliberately looks for where its own explanation might be wrong, and where the data breaks the neat story. This final step ultimately becomes the most valuable part of the analysis, and Section 4.4 is dedicated to discussing it.

All the analysis here is descriptive. When a distribution skews, the study uses the median instead of the mean, and always states how many firms sit behind each percentage, because a rate based on four firms is far less trustworthy than one based on thirty-four.

2.4. Data quality and issues found in the dataset

It must be acknowledged that checking errors in the study's own spreadsheets turned out to be one of the most useful parts of the work.

First, uneven coverage. Of the 10 traditional companies, only 8 have MSCI ratings for 2025, and only 4 have disclosed total water withdrawal. Each percentage reported for these variables is based only on the

companies actually disclosed, meaning the companies with the worst data may simply be missing. This is a survivor bias that quietly beautifies the group missing more data.

Second, the way the firms were sorted is debatable. The study placed several so-called new energy companies, including Chevron, TotalEnergies, and Eni, in that group even though they are really integrated oil and gas giants with a growing renewable business. Placing them in the new energy group makes the group appear larger and possibly more mature, since oil giants have been publishing sustainability reports for decades. A stricter classification may narrow some of the gaps this study reports.

Third, the study found a genuine duplicate. TotalEnergies shows up twice: once under its English name and once under the Chinese name Total, with different revenue figures attached. Fourth, some outcome fields mixed units: the industrial waste recycling rate was sometimes a decimal (0.95), sometimes a percentage (82.35), and the energy use column mixed MWh, GWh, and tons of standard coal. Before analysis, the study rescaled the ratio field to the 0-1 scale and completely removed the energy use column because it could not reliably standardize.

3. Results

3.1. Frame overlay (RQ1)

The first question asks whether new energy firms use a broader disclosure framework, and the study draws on established standards such as the GRI Standards [4]. The short answer is yes, but the gap is smaller than expected, and it is not consistent across all frameworks. Table 3 shows the details.

Table 3. ESG disclosure framework adoption status, 2025

Frame	Traditional ($n = 10$)	New Energy ($n = 34$)	Gap (percentage points)
GRI standards	6 (60.0%)	27 (79.4%)	+19.4
United Nations SDGs	10 (100.0%)	29 (85.3%)	-14.7
ISSB (IFRS S1/S2)	3 (30.0%)	13 (38.2%)	+8.2
SASB	1 (10.0%)	13 (38.2%)	+28.2
TCFD	5 (50.0%)	21 (61.8%)	+11.8
GHG Protocol	6 (60.0%)	23 (67.6%)	+7.6
Average frame quantity	3.10	3.71	+0.61
Businesses using more than three frameworks	4 (40.0%)	21 (61.8%)	+21.8
CDP participates	4 (40.0%)	19 (55.9%)	+15.9
EcoVadis participated	0 (0.0%)	16 (47.1%)	+47.1

There is a clear exception that goes in the opposite direction. All 10 traditional companies mentioned the United Nations Sustainable Development Goals, with 85.3% of new energy companies. At first glance this looks like a rebuttal to what was expected. But on closer thought, it is not, because the SDGs are the easiest items on the list to achieve. Mentioning the SDGs only requires companies to specify which of the 17 goals their work supports, with no audited figures, no fixed indicators, and no external verification. In contrast, SASB requires industry-specific figures [5], while EcoVadis requires companies to submit evidence to third parties for their own ratings. So this pattern is better described as a difference in the kind of framework each group chooses. New energy companies prefer frameworks that facilitate comparison, while traditional

companies tend to favor frameworks that allow storytelling rather than numeric display, and that preference shows up even in small choices, like whether a target includes Scope 3 or stops at the factory gate.

Looking at Table 3, new energy companies lead in five out of six core frameworks. The largest gap occurred at SASB (38.2% vs. 10.0%) and EcoVadis, and the gap was complete: 16 new energy companies participated, while not a single traditional company participated. Overall, 61.8% of new energy companies use three or more frameworks, compared to 40.0% of traditional enterprises. New energy companies use an average of 3.71 frameworks, compared to 3.10 for traditional enterprises.

ISSB adoption rates were low in both groups (30.0% and 38.2%). Since the ISSB aims to serve as a global baseline, most companies in the sample will remain in a transition phase in 2025, and repeating this study in two or three years may yield very different results.

3.2. MSCI rating levels and changes (RQ2)

The second question is about MSCI ratings [3]. Table 4 tracks rating changes for firms rated in both 2023 and 2025.

Table 4. MSCI rating changes, 2023 to 2025

Indicators	Tradition	New energy
Number of companies evaluated in both 2023 and 2025	6	24
Upgrade	5 (83.3%)	10 (41.7%)
and did not change	1 (16.7%)	11 (45.8%)
Downgrade	0 (0.0%)	3 (12.5%)
2023 Average Score (CCC=1 to AAA=7)	2.57	4.44
2025 average score	3.50	4.88
Changes in average scores	+0.93	+0.44

In the sample, none of the traditional companies were downgraded within three years, and five out of six were upgraded. China Petroleum & Chemical Corporation was upgraded from BB to BBB, China National Petroleum Corporation from B to A (a three-level jump), and China Resources Group and China Energy Investment Group both upgraded from BB to A. Meanwhile, three new energy companies were downgraded, including Panasonic, which was downgraded from AAA to AA. Looking at the numbers, the traditional group increased by 0.93 points, while the new energy group increased by 0.44 points.

However, a reminder is needed here. Moving from B to BB is easier than from AA to AAA: the first step only needs basic policies, and the second needs genuinely industry-leading performance.

3.3. Reporting strategy (RQ3)

The third question asks whether the two groups package their ESG messages differently. Table 5 shows the document types released in 2025.

Traditional companies concentrate disclosures in one place: 70.0% publish a single independent sustainability report, and only one in ten relies solely on annual reports. New energy companies are dispersing their information into more formats: 32.4% publish dedicated ESG reports, compared to 10.0% for traditional companies; 26.5% additionally published thematic environmental reports.

Table 5. Types of ESG publications to be published in 2025

Types of publications	Traditional (<i>n</i> = 10)	New Energy (<i>n</i> = 34)
Independent sustainability report	7 (70.0%)	21 (61.8%)
Specialized ESG reporting	1 (10.0%)	11 (32.4%)
CSR reporting	2 (20.0%)	1 (2.9%)
Other thematic environmental reports	2 (20.0%)	9 (26.5%)
ESG content is included only in the annual report	1 (10.0%)	10 (29.4%)

Note: Each column totals more than 100%, because a firm can issue several documents in the same year.

In the last row, nearly 30% of new energy companies (29.4%) only include ESG information in their annual reports, while traditional companies account for 10%. That is a real weakness, since the ESG section in an annual report is usually shorter than in a standalone report, less structured, and less likely to get outside review. This shows the new energy group is not uniformly strong. It fits a simple explanation: reporting costs money, and firms under financial pressure cut it first. A group can lead on average and still have a weak tail, which is exactly why this study reports the percentages and not just the headline.

The CSR reporting format has almost disappeared among new energy companies (2.9%, or one group), and the CSR label has declined in both groups between 2023 and 2025. This looks more like a name change than a real one: firms are renaming corporate social responsibility to sustainability or ESG, which shows that document types capture both behaviour change and fashion change with equal ease.

3.4. Carbon targets

Goals lie between disclosure and performance: they are statements rather than results. Carbon targets of this kind are exactly what the TCFD recommendations ask companies to set [6], and the CDP climate disclosure platform is a common place to publish them. Table 6 compares them.

Table 6. Carbon peaking and carbon neutrality commitments

Commitment	Traditional (<i>n</i> = 10)	New Energy (<i>n</i> = 34)
Carbon peaking targets have been set	7 (70.0%)	30 (88.2%)
Carbon neutrality targets are set	9 (90.0%)	34 (100.0%)
The carbon neutrality targets include Scope 3	1 (10.0%)	24 (70.6%)
The interval between peak and neutralization is ≤ 20 years	1 in 7 (14.3%)	23 out of 30 (76.7%)
Median interval between peak and neutralization	30 years	20 years

Almost every company in the sample had made some form of net zero commitment, so the headline numbers could not really separate the two groups. The differences are reflected in the details. Only one traditional company has a neutral target for Scope 3, while new energy companies have 70.6%. Scope 3 covers emissions generated by the supply chain and the actual use of products by customers, which for an oil company represents almost all of its emissions. So a neutrality target that leaves out Scope 3 ignores most of an oil company's emissions.

The time gap also points in the same direction. The median of traditional enterprises gives themselves 30 years to go from peak to neutrality; the median interval for new energy companies is 20 years. Among traditional energy companies with two targets, only 14.3% set intervals of 20 years or less, while 76.7% of

new energy companies set an interval of 20 years or less. Shorter intervals mean stricter emission reductions and less room for delay.

3.5. Outcome metrics (RQ4)

The fourth question asks whether disclosure gaps line up with measurable outcomes. Table 7 shows the indicators used.

Table 7. Environmental, social, and governance outcome indicators

Indicators	Tradition	New energy	Number of disclosed companies (news/new)
Total greenhouse gas emissions, average (million tons CO ₂ e)	106.85	39.79	10 / 33
Total greenhouse gas emissions, median (million tons CO ₂ e)	119.60	17.25	10 / 33
Water Withdrawal, Median (million cubic meters)	522.70	22.03	4 / 27
Industrial waste recycling rate, median	79.5%	95.0%	8 / 34
Enterprises with a recycling rate of over 80%.	50.0%	85.3%	8 / 34
Number of work-related deaths, average per company	2.20	1.26	10 / 34
Companies reporting zero fatalities	20.0%	61.8%	10 / 34
Proportion of female employees, median	25.2%	30.2%	10 / 34
Proportion of female directors, median	16.0%	33.3%	10 / 33
Board meeting attendance rate, average	99.4%	96.8%	10 / 33
A board-level ESG Committee is established	100.0%	91.2%	10 / 34

In terms of environment, the gap is large and stable. Traditional enterprises emit an average of 106.85 million tons of CO₂ equivalent, while new energy companies emit 39.79 million tons. The median difference is even greater (119.6 million tons versus 17.25 million tons), indicating that new energy data is elevated by a few large outliers, rather than being overall. In terms of waste, 85.3% of new energy enterprises recycle at least 80% of industrial solid waste, compared to 50.0% for traditional enterprises. The main gap reflects the business activities of the two groups, not the quality of their management.

Social and governance indicators further illustrate the issue: traditional enterprises average 2.20 work-related deaths per year, with only 20.0% reporting zero fatalities, while new energy companies average 1.26 deaths per year and 61.8% report zero fatalities. That is certainly tied to the nature of the work: underground mining and offshore drilling are more dangerous than factory assembly. In terms of board gender balance, the gap is the largest in the table: the median proportion of women on new energy boards is 33.3%, compared to 16.0% in traditional ones, a twofold increase.

Then comes the last line, which breaks from everything above. All 10 traditional firms have ESG committees at board level; new energy firms account for only 91.2%. Board attendance at traditional companies is also slightly higher (99.4% vs. 96.8%). In other words, the traditional group slightly leads in two metrics measuring formal governance structures rather than environmental outputs.

4. Discussion

4.1. Observation: comprehensive explanation of four dimensions

Overall, three of these four questions point in the same direction. New energy companies have adopted more frameworks, especially those with higher requirements and higher MSCI ratings. Traditional companies concentrate disclosures in a single independent report, relying on the easiest framework and narrower targets. Traditional companies improved their MSCI scores twice as fast as new energy companies between 2023 and 2025, and all had ESG committees at board level.

4.2. Explanation: reasons for the differences between the two groups of corporate behaviors

The most convincing explanation available is that the two groups are answering to different audiences. New energy companies are selling a story about the future, and its value largely depends on whether investors believe it. For them, ESG disclosure is close to core marketing: a solar manufacturer with a high score on EcoVadis can use that score to win supply contracts from European buyers, who themselves are also bound by supply chain reporting.

There is a simpler explanation for the rapid rise in MSCI ratings for traditional businesses. Among the sample, six out of ten traditional enterprises are Chinese state-owned enterprises, and in 2024, China imposed mandatory sustainability reporting rules for major listed companies. Companies starting from a lower point and suddenly required to publish structured data can quickly jump several levels by simply disclosing the information they already hold internally. So rating changes and actual performance have to be read separately. This reads less like better management than like a deadline, and it warns against mistaking a rising rating for a falling emission. This pattern is not unique to the present sample. Hyusein and Cek [7], comparing US energy and renewable firms over 2013-2023, likewise report that the two groups are not cleanly separable on ESG and that disclosure behavior varies more than fundamentals would predict, which lends external support to the framework gap documented above. The reading is also consistent with recent Chinese evidence: Yang et al. [8] show that within China's mixed mandatory-voluntary disclosure regime, environmental disclosure affects fossil-fuel and renewable energy firms differently, while Li et al. [9] find that mandatory ESG disclosure in China materially improves information transparency and lowers default risk—the channel through which formerly low-disclosing state-owned enterprises can climb several rating levels once reporting is required.

4.3. Reflection: four reasons to be cautious

The first is the number and construction of samples. The ten traditional companies represent a very small group, and the sample was not randomly selected; the sample includes companies that had published readable reports. Each percentage of traditional energy companies moves by 10 points when adding or removing a company. So none of this should be read as true for the whole industry.

The second is the missing data issue mentioned in Section 2.4. Only 4 out of 10 traditional companies disclose water intake, and just 8 have MSCI ratings for 2025. So the comparison of outcomes rests on firms willing to be measured. That selection quietly favors the firms already confident in their own data.

Third, conceptually, the most important point is that this study has always measured disclosures, sometimes as performance. MSCI ratings measure a company's ability to handle financially significant ESG risks relative to its peers [3]. A company can hold an AA rating while emitting far more carbon than a company in another industry rated BB. Disclosure breadth and ESG performance are linked but fundamentally different. This distinction is reinforced by Berg et al. [10], whose analysis of major ESG ratings shows substantial divergence

across rating agencies; a high or rapidly rising score therefore reflects a particular rater's methodology as much as underlying performance, so cross-company rating gaps should be read with that caveat in mind.

Fourth is the classification issue. As mentioned earlier, the new energy group includes integrated oil giants such as Chevron, TotalEnergies, and Eni, which operate large-scale fossil fuel businesses outside of renewables. If the comparison is re-run with a stricter definition, limited to pure renewables and storage, the disclosure gap narrows and the emissions gap widens.

4.4. Two unresolved contradictions

Finally, there are still two specific contradictions in the outcome itself.

Contradiction One: Level and Trend. The gap between the two sets of data for 2025 looks significant, but the trend is not obvious: MSCI average score +0.93 versus +0.44. Whether to call the industry severe differentiation or rapid convergence depends on which side of the data is emphasized. Both claims hold for the same data, so readers should be skeptical of any study reporting only one of them. The same divide appears outside China as well: Monteiro et al. [11], in a content analysis of Brazilian energy firms, similarly find traditional companies stronger on short-term financial returns and renewable firms stronger on ESG adherence, suggesting the disclosure-structure pattern documented here is not confined to one market.

Contradiction Two: Disclosure and Structure. New energy companies disclose more but are less likely to have board-level ESG committees, and 29.4% only include ESG information in their annual reports. Strong external communication and weak internal management can coexist. This combination is exactly the model expected for companies primarily driven by the market rather than internal risk management.

5. Conclusion

This study compared the quality of ESG disclosures between 10 traditional energy companies and 34 new energy companies, examining four aspects: framework coverage, MSCI rating trajectory, reporting strategies, and measurable outcomes.

On RQ1, new energy firms really do use a broader mix of frameworks: 61.8% use three or more, against 40.0% for traditional firms, and their biggest edge is on the frameworks that demand verification and comparable data, with Eco Vadis participation at 47.1% versus zero. On RQ2, new energy companies are expected to hold significantly higher MSCI ratings by 2025: 33.3% have reached the leader tier, and none are laggards, while traditional companies have 0% and 25%, respectively; however, traditional companies have doubled their average rating improvement rate over three years, so the gap is narrowing. On RQ3, traditional companies put everything into a single independent sustainability report (70.0%), while new energy companies are spread across more formats, 29.4%, reported only in annual reports. On RQ4, new energy companies perform better on most measurable outcomes, with average greenhouse gas emissions of about one-third and board gender balance doubled, but traditional companies lead in governance.

The central argument is that the disclosure gap between the two groups is real, but it should not be interpreted as proof that new energy companies are better managed or even cleaner in every aspect. A large part of the environmental gap comes from the actual business activities of the two groups of companies, rather than their management level. The rapid catch-up by traditional companies shows that once disclosure becomes mandatory, the gap narrows rapidly, which itself shows that part of the original gap was simply the willingness to report. Once reporting becomes mandatory, the easy part of the gap closes, leaving the harder question of who actually performs better.

It should be acknowledged that the initial expectation was that green companies would win in every metric, and the most surprising result was that traditional companies led on governance committees. That single line changed how the data were read, because it showed that disclosure and governance are not the same achievement.

Future work could push this study further in three ways: use a stricter, more defensible definition of new energy; weight frameworks by the level of verification they require instead of counting them equally; and keep tracking these firms to see whether the convergence observed between 2023 and 2025 holds after ISSB adoption spreads.

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Appendix A. The sample includes companies

Table A1. Traditional energy companies ($n = 10$)

Serial number	Company	MSCI 2023	MSCI 2025
1	Sinopec Co., Ltd. (Sinopec)	BB	BBB
2	Saudi Aramco	None	None
3	ExxonMobil	BBB	BBB
4	Gazprom	CCC	None
5	China Resources Group	BB	A
6	China National Petroleum Corporation (CNPC)	B	A
7	Shandong Energy Group	None	CCC
8	China Coal Energy Group	B	BB
9	National Energy Investment Group	BB	A
10	Jinneng Holding Group	None	CCC

Table A2. New energy enterprises ($n = 34$)

Serial number	Company	MSCI 2023	MSCI 2025
11	CATL	A	AA
12	BYD	A	AA
13	JinkoSolar	A	BBB
14	Sunwoda	A	BBB
15	Tesla	BBB	BBB
16	Total Energy	A	A
17	Panasonic	AAA	AA
18	NextEra Energy	AA	AA
19	Chevron	A	A
20	Linde	AA	AAA
21	Air Liquide Group	A	A
22	Air Products	A	A
23	Eni	A	A

Table A2. Continued

24	Hyundai Motor	BBB	A
25	Siemens Energy	BBB	BBB
26	Cummins	AA	AAA
27	Bosch	B	BB
28	China Power Construction	B	BB
29	China Energy Construction Corporation	BB	A
30	Tianhe Guangneng	None	None
31	Sungrow Power Supply	None	None
32	JA Solar Technology	None	None
33	LONGi Green Energy	None	None
34	Tongwei Group	None	None
35	GCL system integration	None	None
36	Total Energy (Repeat Record)	AA	AA
37	Engie	AA	AA
38	Goldwind Technology	None	None
39	State Power Investment Corporation	None	None
40	China Three Gorges Group	BB	BBB
41	EDF	None	None
42	China General Nuclear Power Group	BB	None
43	Dongfang Electric	CCC	BB
44	NRG Energy	BB	BB

Note: None indicates that no public MSCI ESG ratings were found for that year. Article 36 is a repeat record of TotalEnergies discussed in Section 2.4, which is retained here to ensure transparency. Several firms in this table (Chevron, TotalEnergy, Eni) are integrated oil and gas giants tagged as new energy in the source data; see Section 4.3.