

MASTER THESIS – FINANCE MAJOR

IMPACT OF ESG INFORMATION ON SELL-SIDE ANALYSTS
VALUATION OF OIL AND GAS COMPANIES – CASE OF
TOTAL ENERGIES

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Abstract

Our paper's aim was to investigate the reaction of sell-side analysts to negative ESG news from a valuation standpoint in the context of an individual company in the controversial oil and gas industry. This would help us better understand the treatment and impact on value of these key information. We found out that broker notes were not always transparent on how they incorporate ESG related news and clear on if and how the firm's ESG commitments were considered in forecasts and target prices, even if we found that they often touch upon the subject in a general presentation of the ESG landscape of the firm. From a conjoint analysis of negative ESG events with forecasts, we found out that the former had marginal effect on target prices and EPS below a certain threshold but become associated with downside revisions from a certain materiality level.

Acknowledgment

We are thankful to our supervisor, Derrien François, who helped us to get in depth knowledge of the research area and support us throughout the TotalEnergies case study.

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1. Introduction

1.1. Background and motivation

ESG is the consideration of environmental, social and governance factors, alongside financial factors, in decision-making by corporations, investors and other stakeholders such as customers, suppliers, employees and the community at large.

Below, we described what each of the aspects of this three-fold assessment concretely entails:

- **Environmental factors:** How is a company performing in terms of environmental impact, especially towards carbon emissions, energy consumption, water management, contamination and pollution and other material environmental related issues
- **Social factors:** How is a company managing relationships with its employees, suppliers, customers, and the communities in which it operates
- **Governance:** How is a company handling important structural, policy and behavioural matters, including executive pay, board composition, ethics, transparency, and shareholder rights

Today, ESG is encompassing a wider range of considerations and gaining more and more scrutiny in investments decision making. The increased focus on ESG is driven by multiple stakeholders.

➤ **Sources of capital: public and private markets**

Public markets as they pressured to act on ESG related matters:

- More than 50% of institutional investors have dedicated internal ESG teams
- More than 60% of institutions have developed proprietary ESG rating systems

The traditional simplistic exclusion approach (i.e. exclusion of tobacco, military companies) is being replaced by active engagement methodology.

Besides, there is an increased pressure from Private Equity LPs and Infra funds to include ESG criteria to investment criteria. ESG is considered as a valuable tool to identify business risk that might impact value. Therefore, there have been multiple launches of ESG focused funds among which:

- Blackstone Impact Investing
- Bain Capital Double Impact
- EQT Longer Hold Impact

➤ **ESG standards setting bodies, rating agencies and governance bodies:**

It is estimated that there are over 600 ESG raters globally including:

- MSCI
- Dow Jones Sustainability
- Bloomberg
- ISS
- Sustainalytics

As ESG standard setting bodies, major players include:

- Global Reporting Initiative (GRI)
- Sustainability Accounting Standards Board (SASB)
- Task Force On Climate-Related Financial Disclosures (TCFD)
- The UN

Regarding the governance bodies, directors must discharge their fiduciary duties, protect shareholder value and ensure ESG initiatives are well implemented. Disclosure obligations are increasing whether through regulation or investor pressure.

➤ **Community and special interest groups:**

Advocacy groups, municipal investors, unions, and investor coalitions proliferate and become louder in the ESG conversation.

Consumer and employee-focused initiatives have also grown in voicing their concerns to boards.

Therefore, ESG awareness is increasing among a wide range of stakeholders, and it is not a niche issue anymore. According to Bloomberg intelligence, ESG assets under management is expected to reach \$41 trln by 2022 and could exceed \$50 trln by 2025.

While ESG is receiving increasing attention, the issue of how much ESG information matters for firm value and performance is still extensively debated.

ESG considerations are more and more frequent. How they are concretely reflected in valuation and assessment of firms' value however is still discussed. This issue drew the attention of other students' master theses such as those of Aino-Maria Pöyhiä's: "*Sell-side analysts' valuation method choices and the role of ESG information in renewable energy valuations*"¹, where she came to the conclusion that analysts did not use ESG information explicitly as a direct input of valuation models from which they derive target prices.

ESG related aspects could potentially influence the valuation model inputs implicitly through the evaluation of risks or if the firm was likely to face litigation. ESG factors could influence the EV/EBITDA multiple allowed for the firm, or the discount rate.

As per Aino-Maria, ESG information did not impact the target price in valuations, but would implicitly influence model inputs (e.g., through the discount rate). ESG information was only factored in valuations when the effects of issues materialised: through litigation.

However, contrasting Campbell & Slack (2011)² who found analysts to disregard ESG-consideration, the empirical evidence testified especially Nordic analysts to be more likely to consider ESG-information in their analysis and to have the ability to affect the stock recommendation, supporting the findings of Luo et al. (2015)³; implying ESG information to be valuation relevant.

We want to update the beliefs regarding the influence of ESG on analysts' recommendation for Total Energies and therefore better understand the link between ESG news and valuation for an oil and gas European major.

1.2. ESG in the Oil, Gas & Energy Industry

The Lazard Climate Center demonstrated, in December 2021, that “investors are actively pricing in risk from emissions profile, though the effect is currently small: a widespread P/E discount based on carbon emissions is observed”. Changes in emissions profile can have an impact on valuation, especially in some sectors and market cap categories.

They observed that sectors with the largest annual increases in emissions are discounted the most: the energy sector, with an annual average of 3,874,034 metric tons of CO₂ emissions through the period 2016-2019, is the most discounted.

They showed that the average P/E appreciation based on a hypothetical 10% reduction in emissions was 0.79%.

Knowing the high sensitivity of the sector to environmental news, we would like to investigate the mechanism that links ESG news to the sell-side analyst valuation and the expected financial performance of an oil & gas European major: Total Energies.

We focused our analysis on the impact of negative ESG news on the valuation of Total Energies.

1.3. Research goals and question

Most of the cited research papers on the subject argue for a non-null correlation between a firm’s ESG policies and financial performances. The direct causation is often hard to establish so as the mechanisms through which ESG translates into financial performance (Hong et al. (2012)⁴).

Prior research papers document correlational evidence and attempt to identify specific mechanisms through which ESG might affect cash-flows or discount rates. Globner (2021)⁵ finds that RepRisk negative ESG informational shocks predict negative future stock returns, suggesting underreaction by the stock markets. Derrien et al. (2021)⁶ investigated the channels through which ESG incidents affect firm value and shows that the main channel is a cash-flow channel.

While they worked on the impact of ESG news on firm value for multiple companies in various sector, this paper focuses on the influence of ESG news on sell-side analysts' valuation of an oil, gas and energy company: TotalEnergies and try to assess if the same methodological approach can be valid at the scale of a single company.

We then asked and tried to answer thorough the paper the following research question: **How does environmental, social and governance information influence sell-side analysts' valuation of oil, gas and energy companies: Case of TotalEnergies?**

2. Theoretical Background

2.1. Analysts' equity market role

Equity analysis refers to the professional activity of issuing investment advice to institutional investors, generally consisting in recommendation to buy, sell or hold stock from a particular company. This translates into the regular issuance of detailed reports and analyses on investment opportunities institutional investors may be interested in.

To this end, equity analysts based their forecasts and recommendations on fundamental analysis of stocks, rationally examining and integrating their inputs on both intrinsic factors - related namely to firms' operations, strategy, and governance among others - and external ones, from the broader global macroeconomic context to country focus regulations. They also carry out quantitative approach, performing financial modelling and valuation work that should lead to a precise and objective forecast on companies key financial KPIs, especially the target prices clients may use to determine whether a stock is undervalued or overvalued.

With core skills ranging from valuation and financial modelling to data visualization and corporate strategy, equity analysts often focus on a particular industry: Consumer, healthcare, TMT, energy, industry, financial institutions inter alia. This organization is rightly based on the view that each sector is ran by its own dynamics, rules, and behaviours

that equity analysts should have the experience to integrate and navigate to make sensible recommendations.

Equity analysis is an historical and highly organized activity with strategic importance for investment banks. As key sources of information and trigger to a wide range of economic decisions, they have also been widely covered in economic literature. We will thus focus, as part of the next sections, on how this activity is practically put in place and the reasons for its significance in financial markets and economics.

2.1.1 Equity analysis landscape recent evolution

Equity research services can be provided by brokerages firms or independent providers. These players, depending on their nature and size, express interests on different swaths of the markets, with large brokerage firms focusing more often on highly profitable large cap companies with the potential to bring investment banking deals or trade profits and less sizable ones and boutiques covering the other companies. The choice of one stock or the other in the coverage also seems to be affected by less evident levers such as share price as there is empirical evidence that the number of analysts following a stock is inversely proportional with its share price. (Brennan, Hughes 19917)

It is however worth noting that the relevance of this stratification has been put in question by MifiD II, a European rule imposing on asset managers since 2018 the duty to pay for research separately from trade execution and fund managers to pay for research themselves (or charge clients - limited partners - separate fees for research they purchase).

Back to the 1960s and 1970s in fact, fixed brokerage commissions paid by investment managers to brokerage firms made extra services one of the most prominent incentives to choose between brokers. These bundled brokerage agreements were still the norm in the market before MifiD II. This diverted the competition between brokerage firms from the quality of trade execution to the quality and the quantity of the research provided.

Today, there are evidence that a new paradigm in research activity organization is emerging from this mutation. Fees have come down as the result of the new norm, as fund managers need to report explicitly to their fund investors. Also, the amounts paid to brokerage firms for research is

proven to be less than the reduction in the commissions that happened because of the norm, what may be interpreted as the proof of the hazardous use of research made previously.

We may also note that the race to the bottom happening with research fees, since they have been unbundled with the trade commissions, may benefit large brokerage firms that are would be able to provide low fees, backed by their trade execution activity. Evidence suggests in fact that fund managers tend to prioritise the cheapest research they could access.

2.1.2 Market role of equity research

Equity research is playing a pivotal role in the markets acting as a key intermediary between investors and companies they cover.

It covers an important information gap by putting relevant information at the disposition of the market and thus contributing to an enhanced efficiency. Even when information is accessible, getting them in a timely manner, navigating their complexity and giving them the right interpretation would require unbearable financial and human capital costs to all the investors intervening on the market. Equity analysts help bringing cost efficiency in the gathering and analysing of company information by acquiring and digesting them before contributing to spill them to the variety of market participants. This approach of bringing ready to use or at least ready to process information ease the task of trading on the markets. This use of equity research has direct implication on financial fundamentals: There are evidence that for companies with wide analysts' coverage, difference of forecasts among individual analysts are less important in magnitude and less subject to important revisions. This has a direct impact on investors following of a given stock but more importantly on the estimation risk they bear, by closing the wedge of information asymmetry between companies and investors and thus helping to decrease the cost of capital (Lang & Lundholm, 1996⁸). In the same sense, they are evidence that companies with low coverage also experience lower liquidity and higher volatility around earnings. There are thus clear positive externalities around the production of equity

research with benefits being enjoyed by companies and thus the whole society.

For SMEs in particular, coverage can be a game changer and help building a healthy ecosystem around them. This positive impact is seen so significant that it is being used by policymakers. European Commission's economic analysis on Capital Markets Union (CMU) did emphasize in the Mid-Term Review of the Capital Markets Union Action Plan (2017) that equity research is of paramount importance for SMEs which are less well known by investors and on which information can be difficult to find. In addition to bring to light opportunities that may be otherwise overlooked, equity research has a second critic opinion on companies reported data that can be useful in forming a comprehensive opinion leading to investment decisions.

Besides, firms are not completely passive in the process of being covered. Accessibility and clarity in the information made available is an important incentive for equity analysts to cover them in an effort to reduce their costs (Lang & Lundholm, 1996). The attractive advantages of wide analysts' coverage for companies touched upon in precedent paragraphs make this voluntary effort to increase coverage worthy for companies.

Equity analysts build their recommendation on a rational approach based on information and make a wide use of valuation as part of it. Being the foundation of the recommendations they issue, they have a paramount importance in equity research. We will thus closely look at how they are sourced and of the use they make of it. We will also focus on understanding the valuation techniques that are commonly used by equity analysts.

2.2. Information sources and information used in valuation

2.2.1 Valuation methods

Forecasting and valuation they undergird is a crucial part of analysts work as they form the rational basis on which their recommendations are done. To perform these tasks, one of the key issues for them is to make choices

among the several methods available. Understanding these decisions and bringing data on the methods finally retained has long been a key topic in research as it is knowledge with direct use for equity analysts and portfolio managers as a benchmark they may use. Investors are also interested in knowing how the recommendations they follow are made and how do they compare with other recommendations.

A study from Jerald E. Pinto (CFA Institute), Thomas R. Robinson (AACSB International), John D. Stowe (Ohio University) entitled “Equity Valuation: A Survey of Professional Practice”⁹, 2015 reports the results of a scientific survey of the valuation methods used by equity analysts.

Exhibit 3
Valuation Approaches: Global Ranking¹⁰

| In evaluating individual equity securities, which of the following approaches to valuation do you use? N=1980 | Percent of Respondents | Percentage of Cases Respondents Use Each of the Approaches* (mean) |
|--|------------------------|---|
| A market multiples approach | 92.8 | 68.6 |
| A present discounted value approach | 78.8 | 59.5 |
| An asset-based approach | 61.4 | 36.8 |
| A (real) options approach | 5.0 | 20.7 |
| Other approach | 12.7 | 58.1 |

*Note: Given that a respondent uses an approach, he or she is asked for the percentage of valuation cases in which the approach is used. Thus, this column reports conditional frequencies.

Over the 1980 analyst sample, an important 92.8% said to make a use of market multiple approach. Present discounted value also revealed to be particularly popular among equity analysts with 78.8% of respondents being using it, followed by an asset-based approach. The real options based approach seemed however marginally used despite its important academic coverage. The “Other approach” included in declining frequency: technical analysis and momentum specifically and (proprietary) quant models/analysis; LBO analysis; (precedent) transaction multiples and M&A deal comps; sum-of-the parts valuation; multifactor models; free cash flow yield; and cash flow return on investment (a registered trademark of HOLT, a unit of Credit Suisse).

For each approach, analysts who used them were further asked about the frequency at each they use them giving key information on if analysts consider a particular method as essential or only suitable in a particular context. In this regard, market multiple and present discounted value approaches seem to be widely used while asset-based approach and real options less common. In the other approach category, market multiples,

present discounted value, asset-based, and real options have average frequencies of 64%, 47%, 23%, and 1%.

The study also showed interestingly that depending on the location, the methods chosen can be different. The present discounted value approach for example, as well as the asset-based approach seems to be significantly less used in the Americas compared to Asia Pacific and EMEA. Similarly, the use of the real options approach has more traction in Asia Pacific than in EMEA and Americas

**Exhibit 4
Regional Differences in Valuation Practice**

| In evaluating equity securities, in what percentage of cases do you use each of the following approaches to valuation? | | | | | |
|--|---------------------------|-----------------------------------|----------------------|-------------------------|----------------|
| REGION | Market multiples approach | Present discounted value approach | Asset-based approach | (Real) options approach | Other approach |
| Americas | 92.6 | 73.9 | 59.5 | 4.6 | 13.6 |
| Asia Pacific | 92.6 | 86.9 | 70.3 | 7.4 | 7.9 |
| EMEA | 93.5 | 89.0 | 62.5 | 4.9 | 12.8 |

2.2.2 Information use as part of valuation

By valuing a company, equity analysts can conclude on whether a company share is undervalued, overvalued or correctly priced. This seems in contradiction with the efficient market hypothesis but stay theoretically acceptable given it is widely admitted that stock prices may not react to market movements immediately or not integrate complex information among others.

The forecast used as part of these valuation seem to be part of a continuum of research (Day (1986)¹⁰). In fact, analysts generally have in place a set of forecasts and use incoming information to revise them. Annual reports are one of the major sources of the information used in this process. The different ways they are incorporated by analysts can help understanding better their belief regarding information and their use. The table below (Day, 1986) indicates the occurrence of specific items from annual reports in analysts' analysis.

Day made a difference between approaches carried out by analysts related to how they take information into account. She concludes that the treatment made of numbers from the report depends on the familiarity with the sector. Indeed, analysts more knowledgeable about a particular industry tended to rework more the figures

| <i>Item or area used</i> | <i>Number of analysts</i> | | |
|------------------------------------|---------------------------|------------------|--------------|
| | <i>Spec.</i> | <i>Non-Spec.</i> | <i>Total</i> |
| Chairman's statement | 4 | 3 | 7 |
| Funds flow statement | 4 | 2 | 6 |
| Segment information | 2 | 3 | 5 |
| Dividend history | 2 | 2 | 4 |
| Growth trends | 2 | 1 | 3 |
| Earnings per share | 1 | 2 | 3 |
| Capital expenditure | 2 | 1 | 3 |
| Gearing | 2 | 1 | 3 |
| Price/earnings ratio | 1 | 1 | 2 |
| CCA return on capital | — | 1 | 1 |
| Capital structure history | — | 1 | 1 |
| CCA depreciation | — | 1 | 1 |
| CCA dividend cover | — | 1 | 1 |
| CCA (generally) | — | 1 | 1 |
| Wide use made of almost everything | 1 | 2 | 3 |

2.2.3 Valuation process

According to Palepu and al (2012)¹¹, despite difference in approaches of analysts, they generally agree on a two-step analysis. First, they conduct what the authors call a forecasting exercise. These forecasts are about various financial KPIs. They are made based on both internal factors such as their understanding of the firm's strategic orientations but also external ones, related to the economy in particular. These forecasts are made comprehensively to keep an eye on the consistency of drivers that may be logically linked. For example, projecting growth in sales or earnings over the time cannot be done without bearing in mind, on one hand, the immediate or indirect financing requirements of such growth and thus the leverage increase or equity capital infusions that may be needed as part of it and on the other end the investments in working capital and plant assets that would be required. Most of the time however, these linked forecasts are tied to the evolution of a few key drivers usually linked to the nature

of the business. The growth in sales and profit margins are typical drivers used as part of this process.

For Palepu and al (2012), analysts should focus on forecasting condensed financial statements and not try to recreate granular accounting financial statements as it is done as part of the company's financial reporting. This aims at keeping only the necessary assumptions about the future of the firm, and to focus on making them as objective as possible rather than having a line-by-line forecast approach that would entail unnecessary metrics that the analyst may be not in a position to forecast effectively. Besides, they consider that condensed financial statements are generally sufficient for analysis and decision making and approach financial forecasting with this framework.

They also suggest as a starting point for any forecast to use the time-series behaviour of the various measures of firm performance, as they suggested the mean-reverting behaviour of sales growth and return on equity seen in the market should hold for individual companies over time. They also acknowledge the importance of several other factors that the analyst should consider in making forecasts. These include an understanding of implications of the three levels of analysis that precede prospective analysis – strategy, accounting, and financial performance – and of macroeconomic considerations.

The second step of the approach is the actual valuation of the company, that they define as the process by which forecasts of performance are converted into estimates of price. As we saw, a variety of valuation techniques are employed in practice, and even there are some which are particularly common there is no single one which takes precedence on the others. As they all have their own characteristics, strengths, and limits and that there are some advantages to carry out a multi criteria approach.

2.3. ESG information in valuations

Investor demands have contributed to increase the amount of voluntary disclosure of ESG-related information (Orens & Lybaert, 2007¹²; Jemel et

al., 2011¹³) through annual report, sustainability reports, interim reports and newspapers to name a few.

A debate both for and against the incorporation of ESG news to financial models started to emerge with arguments on its effect to economic performance – and decision usefulness (Campbell & Slack, 2011; Jemel et al., 2011).

Research papers document the value relevance of ESG factors and firm performance (Cerin, 2010¹⁴). Yet, there has been a lack of knowledge in how analysts use such information (Nielsen & Noergaard, 2011¹⁵).

Derrien and al. (2021) investigate how sell-side analysts adjust their earnings forecasts after ESG incidents. Based on a global sample, they demonstrated significant downward revisions on the short and long-term earnings forecasts following these events, translating all the negative impact of ESG incidents on firm value, implying no change in discount rate. On top of that, they show that earning forecast revisions reflect lower expectations on future sales rather than higher future costs and were able to provide evidence of superior forecast quality from analysts fully reflecting ESG news in their short- and long-term previsions. We chose their approach as a theoretical and methodological basis for the quantitative aspect of the answer to our research question as our study also aims at putting in evidence the effects of ESG incidents on firm value through the analysis of revisions of earning forecasts. This approach is of interest for us as despite recent enthusiasm around the subject, the mechanisms and levers through which ESG incidents affect firm value are still relatively uncovered. Our paper brings originality to the extent that we are applying the methodology to one firm in particular, an oil and gas major, what will allow us to test the relevance of this approach at an individual firm level.

2.4. Summary

In this theoretical background, we tried to sum up and support with literature our understanding of the equity research landscape before having a look at valuation, trying especially to dive on the methods and

tools used and how the process is unfolded concretely. This would help us in the assessment of the valuation methodology shifts that may be induced by ESG issues. Then, we examined the links between valuation and ESG information in literature, especially the one documented by Derrien and al. (2021) that is the basis for the quantitative analysis in our work.

Concretely, we saw first that valuation methods are the object of many research surveys aiming at understanding how common they were used in practice by equity analysts. Results from a study of Gerald E. Pinto (CFA Institute), Thomas R. Robinson (AACSB International), John D. Stowe (Ohio University) named Equity Valuation put in evidence a strong dominance of market multiple approach, followed by present discounted value and asset-based approach.

Regarding how information was accounted for in the valuation process, we learned that analysts generally have in place a set of forecasts and that they revise based on new information, often coming from annual reports (Day, 1986).

This is part of a broader two-step valuation framework defined by Palepu and al (2012) starting from the forecasting of main financial KPIs to the actual valuation that translates the information into an estimate of a fair price for the assets.

Finally, thanks to the results of Derrien and al. (2021), we know that on average sell-side analysts take into account ESG incidents and adjust accordingly their earnings forecasts as they expect them to translate in lower sales.

Our work is applying what we learned from valuation processes and combine it with the regression-based approach of Derrien and Al. to make a qualitative and quantitative analysis of what can be the eventual firm value effect on TotalEnergies of negative ESG news, using as a proxy sell-side analysts' valuation.

3. Data and methodology

3.1. Data

3.1.1. RepRisk and ESG scores

The ESG data are coming from RepRisk, producing daily indicators about negative ESG-related incidents at the firm-level. The data, going back to January 2007, is classified among 19 distinct issues.

Indeed, for each news, RepRisk is associating each news with related UN Global Compact (UNGC) principles or/and with related Sustainability Accounting Standard Board (SASB) issues.

For TotalEnergies ESG news, the related UNGC principles and SASB issues are reported in **Table 1**.

Table 1: List of ESG issues for TotalEnergies

This table reports the issues that RepRisk retains. One RepRisk incident could be associated with multiple issues.

| Environmental | Social | Governance |
|---|--|---|
| Climate change, GHG emissions, and global pollution | Human rights abuses and corporate complicity | Corruption, bribery, extortion and money laundering |
| Products (health and environmental issues) | Freedom of association and collective bargaining | Anti-competitive practices |
| Impacts on landscapes, ecosystems and biodiversity | Forced labor | Executive compensation issues |
| | Child labor | Fraud |
| | Discrimination in employment | Misleading communication |

| | |
|--|------------------|
| Local participation issues | Tax evasion |
| Poor employment conditions | Tax optimization |
| Social discrimination | |
| Violation of international standards | |
| Violation of national legislation | |
| Impacts on communities | |
| Controversial products and services | |
| Supply chain issues | |
| Products (health and environmental issues) | |

News about climate change, pollution, waste, etc, are classified as Environmental issues. Social issues, child labor, human rights abuses, etc, fall into the Social issues category. Executive compensation, corruption, etc, are related to governance issues.

One incident can be associated with multiple issues, and therefore can belong to two or more E/S/G groups. **Table 2** shows the distribution of incidents by types.

Table 2: Distribution of ESG incidents by types

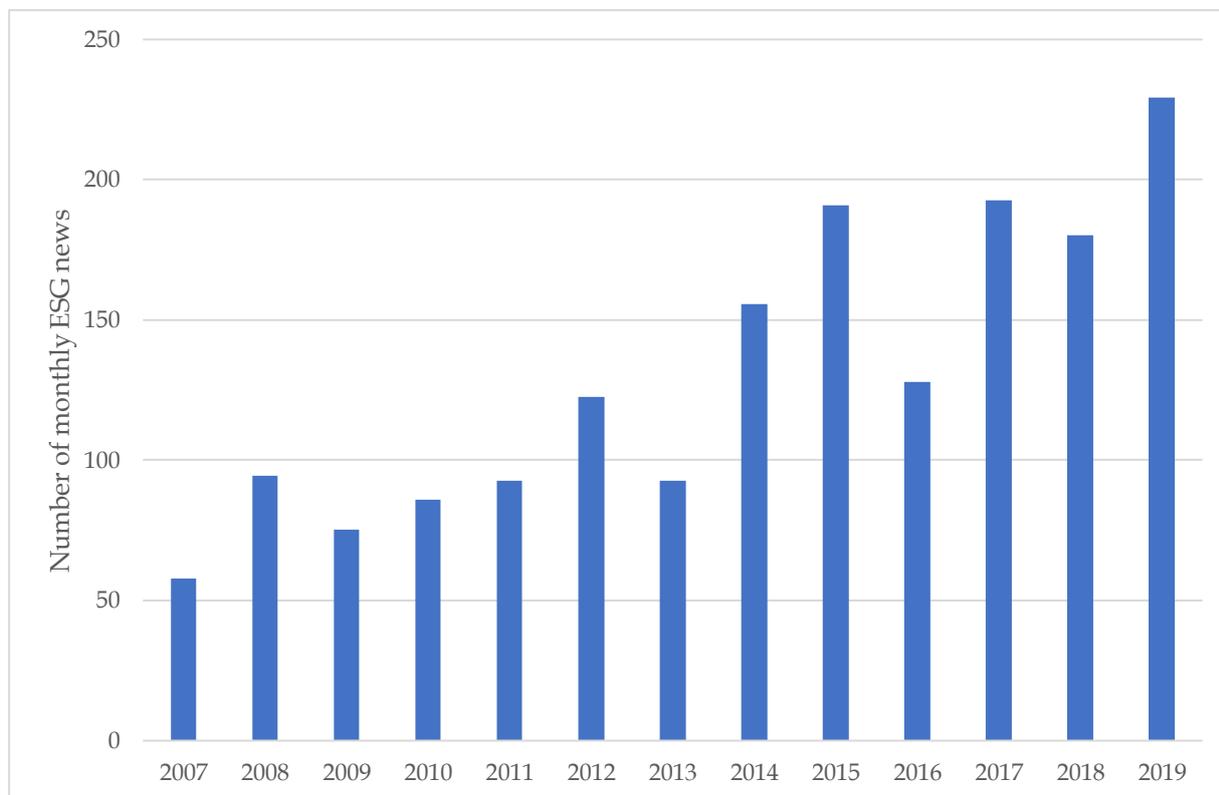
This table reports the distribution of ESG incidents by types. E, S and G indicates environment, social, and governance incidents respectively.

| Percent | E | S | G |
|---------|---|---|---|
| 46% | 1 | 0 | 0 |
| 22% | 0 | 1 | 0 |
| 11% | 0 | 0 | 1 |
| 2% | 1 | 0 | 1 |
| 10% | 1 | 1 | 0 |
| 4% | 0 | 1 | 1 |
| 4% | 1 | 1 | 1 |

Around 50% of the incidents are environmentally linked while 20% of the incidents are associated with two or more E/S/G categories. **Figure 1** shows the average number of monthly news by year.

Figure 1: Number of RepRisk ESG news for TotalEnergies by time

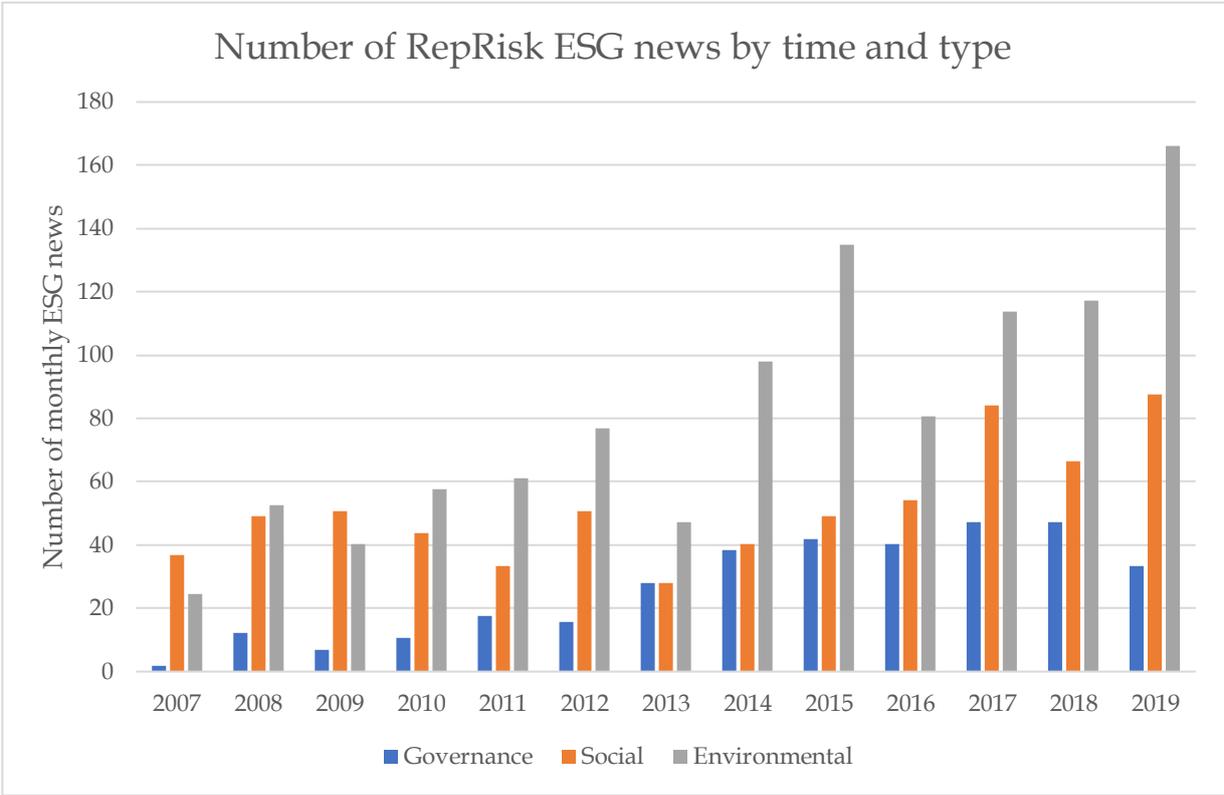
This graph shows the monthly average number of ESG news recorded by RepRisk for TotalEnergies from 2007 to 2019.



The number of ESG news recorded by RepRisk increases with time. Around 50 ESG news were recorded by RepRisk per month in 2007 while this number increases to more than 225 per month in 2019.

Figure 2: Number of RepRisk ESG news for TotalEnergies by types

This graph shows the monthly average number of ESG news recorded by RepRisk for TotalEnergies from 2007 to 2019, classified between E, S and G. One incident can be associated with multiple issues, and therefore can belong to two or more E/S/G groups



Events related to environmental issues are the most populated in the RepRisk data for TotalEnergies. At the beginning of the sample there are more social than environmental incidents, while at the end of the sample there are more environmental incidents.

In addition, RepRisk categorizes the ESG incidents based on their novelty, reach, and severity. Novelty, reach, and severity of incidents are on a scale

from one to three, where three represent the most novel, most influential or most severe incidents.

As per RepRisk, novel, reach and severe incidents are defined as those with Reprisk novelty, reach and severity measures are equal or larger than 2. Therefore, we determined among our 21903 incidents, the number of novel or reach or severe incidents as per the definition of RepRisk.

Table 3: Summary statistics of reach, novel and severe incidents

This table reports the number of reach, severe and novel incidents (i.e. incidents that have respectively a index number of reach, novelty or severity higher or equal to 2) and the proportion of those incidents in the total population of incidents. Some incidents can be novel, reach or severe at the same time.

| | Number | % compared to all news |
|-----------------|---------------|-------------------------------|
| Reach | 8379 | 38% |
| Novelty | 15981 | 73% |
| Severity | 12327 | 56% |

3.1.2. RepRisk vs other ESG scores

We regressed the ESG score from Refinitiv on the monthly average number of ESG news collected by RepRisk.

Table 4: Regression of ESG Score from Refinitiv on ESG RepRisk incidents

This table reports the results of regressing changes in annual ESG combined score, annual ESG score and annual controversies score from Refinitiv on the number of average monthly ESG incidents per year found by RepRisk. We have 11 observations (from 2007 to 2019, we removed one extreme data point)

T-statistics are in parenthesis, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

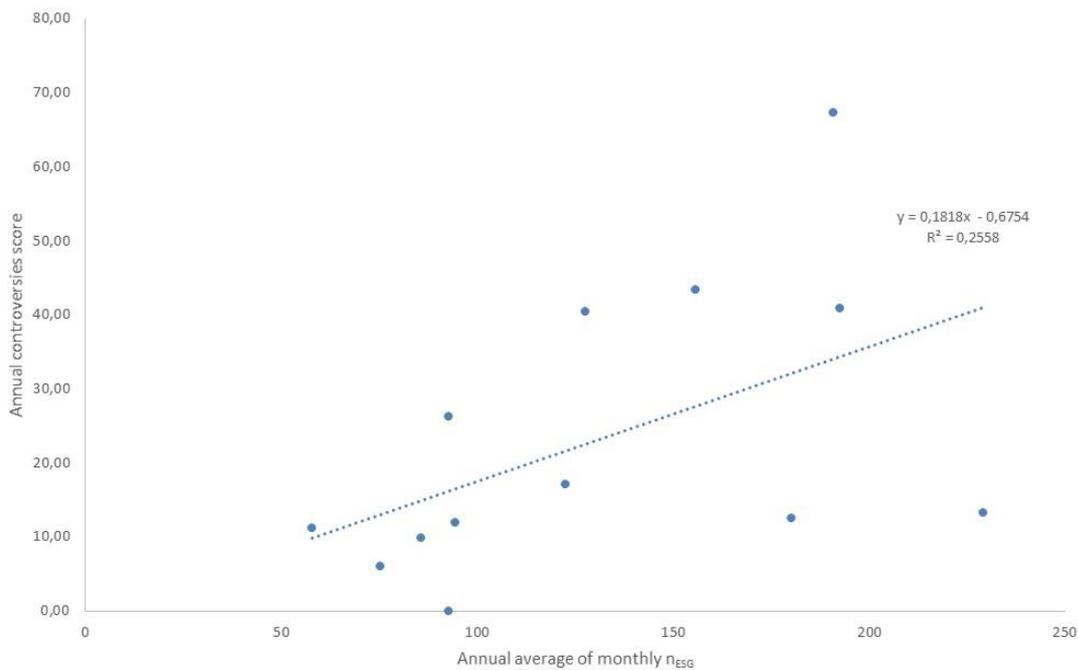
| ΔESG Combined Score | ΔESG Score | ΔControversies Score |
|--------------------------------|-------------------|---------------------------------|
| 0,0004 | 0,0001 | 0,0001 |
| (-0,60) | (0,34) | (0,03) |

We can see that there is no significant connection between ESG score on Refinitiv and ESG-related news identified by RepRisk. This finding could suggest that ESG news-related data plays a lesser role in the construction of Refinitiv ESG scores for TotalEnergies.

However, we can see in the figure below that the controversy score from Refinitiv seems to be positively correlated with the ESG-news identified by RepRisk. This suggest that the ESG incidents from RepRisk started to be incorporated into the controversies score from Refinitiv, even if this is not statistically evident as per the regression.

Figure 3: Correlation between the controversies score from Refinitiv and the number of ESG news identified by RepRisk

This graph shows that there is a positive correlation between the average monthly number of ESG news identified by RepRisk per year and the annual controversies scores from Refinitiv.



As we have a higher amount of data from RepRisk than from Refinitiv and as ESG scores correspond to aggregated information, we prefer to use RepRisk “raw” data to conduct our analysis.

3.1.3. IBES

Analyst forecasts of earnings per share (EPS) and price target (PTG) have been collected. EPS forecasts are at 1-year and 2-year horizons. We decided to focus on those three KPIs (EPS 1y, EPS 2y, PTG 12m) to understand both the short-term and medium-term influence of ESG news on the financial performance of TotalEnergies.

PTG is the price level forecasted by the analysts within a 12-month time horizon.

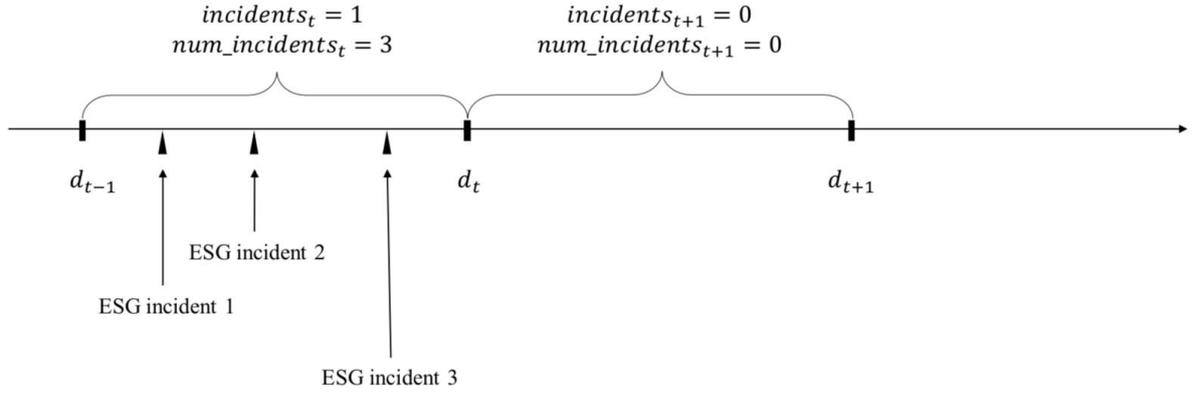
The monthly consensus forecasts have been used: they are summarised on the Thursday before the third Friday every month.

To match monthly IBES consensus forecasts with RepRisk data, we use the same methodology as Derrien and Al. (2021) by aggregating all the RepRisk ESG incidents between two summary statistics dates to monthly level, as shown in **Figure 4**.

Specifically, for two consecutive consensus forecast summary statistics dates d_{t-1} and d_t , we consider ESG incidents published at dates within $[d_{t-1}, d_t)$ as the number of ESG incidents in month t , and we create a variable that counts the number of incidents in month t (n_{ESG}).

Figure 4: Timing of ESG news and analyst forecasts

This figure illustrates the timing of how analyst forecasts and RepRisk ESG incidents are matched. d_{t-1} , d_t , and d_{t+1} are three consecutive IBES consensus forecast dates. All ESG incidents reported during $(d_{t-1}, d_t]$ are aggregated and matched to month t .



➤ **Key variable construction**

Our analysis focuses on changes in the forecasts. For EPS forecast $F_t \text{EPS}_T$ made at month t for horizon T (either FY2022 or FY2023), we define the change in the EPS forecast as:

$$\Delta \text{EPS}_{T,t} = \frac{\text{EPS}_{T,t}}{\text{EPS}_{T,t-1}} - 1$$

Similarly, the change in PTG is defined as:

$$\Delta \text{PTG}_{12m,t} = \frac{\text{PTG}_{12m,t}}{\text{PTG}_{12m,t-1}} - 1$$

There are 19 EPS forecasts observations for FY2022, 6 EPS forecasts observations for FY2023 and 155 PTG forecasts observations.

In the full sample, 3% of observations do not have ESG incidents and 97% of observations have at least 1 ESG incident.

Table 5 reports the summary statistics of the main variables we use in the analysis.

Table 5: Summary Statistics

This table reports the summary statistics of the main variables used in our analysis from 2007 to 2019 for TotalEnergies.

| | <i>Obs.</i> | <i>Mean</i> | <i>S. D.</i> | <i>P1</i> | <i>P25</i> | <i>P50</i> | <i>P75</i> | <i>P99</i> |
|---------------------|-------------|-------------|--------------|-----------|------------|------------|------------|------------|
| <i>EPS FY2022</i> | 19 | 6.05 | 0.28 | 5.82 | 5.82 | 5.88 | 6.27 | 6.67 |
| <i>ΔEPS FY 2022</i> | 18 | -0.2% | 4.8% | -5.7% | 0.0% | 0.0% | 0.0% | 13.1% |
| <i>EPS FY2023</i> | 6 | 6.50 | 0.57 | 6.12 | 6.13 | 6.16 | 6.76 | 7.43 |
| <i>ΔEPS FY 2023</i> | 5 | -3.7% | 5.4% | -9.8% | -6.9% | -1.4% | 0.4% | 1.0% |
| <i>PTG</i> | 155 | 51.79 | 6.43 | 44.78 | 47.17 | 49.33 | 57.26 | 65.94 |
| <i>ΔPTG</i> | 154 | 0.0% | 1.6% | -2.0% | -0.8% | 0.1% | 0.8% | 3.2% |

3.2. Research structure

3.2.1. Qualitative approach / Event study – Review of analysts’ comments on ESG announcements from historical broker notes

We carried out a qualitative analysis of broker notes’ content with the aim of understanding the impact of ESG related news on analysts' views on Total stock. In particular, we tracked any explicit reference to these events, the description made of their impacts and how they were incorporated in analysts’ views and in the price target through valuation.

To this end, we shortlisted a sample of ESG events related to shareholders agreements on their ambitious energetic transition strategy, to the renaming of the organisation viewed as the symbol of their deep strategic shift toward a broader vision of energy, beyond oil and gas, to the scandal on the alleged transformation of a Yemenite site into a prison and to various prosecutions from civil society and NGOs on the group's duty of care.

We also carried out keyword-based research on the notes available on Refinitiv. Indeed, we tracked the occurrence of words such as "ESG" in the notes' titles and content gathering notes with such mentions before reading them in full trying to have a grasp on how these topics were treated and understanding if they and by which means they were taken into account in valuations

3.2.2. Quantitative approach - Review of target prices and forecasts adjustments following ESG news

➤ Analysis of Δ PTG and the $n_{ESG, t}$

We started by looking at the correlation between Δ PTG and the variable $n_{ESG, t}$, returning the number of ESG incidents identified by RepRisk in month t . We did the analysis for a sample of data going from Feb. 2007 to Dec. 2019.

After clearing the data, we categorized the $n_{ESG, t}$ data points into families ($Cat_{ESG, t}$) from 0 to 9, from the month with the lowest number of ESG incidents (<30) to the month with the highest number of incidents (>250).

This categorization allowed us to see some trends in the data. We, then, conducted panel regressions to evaluate the significance of these trends.

➤ Analysis of Δ PTG and the $n_{ESG, t}$ lagged

Then, we followed the same methodology as before but with a new variable $n_{\text{ESG},t-6}$ correlated with ΔPTG . We looked into the impact of the number of incidents six-month ago affects EPS forecasts and price targets trying to assess whether precedent ESG shocks actually have trigger stronger and delayed forecasts revisions.

➤ **Analysis of ΔPTG and the $n_{\text{ESG},t}$ with reach, severity, or novelty ≥ 2**

We replicated the regression of PTG revisions on n_{ESG} but by only considering the points for which the reach, severity, or novelty of the news were equal or higher than 2.

➤ **Analysis of ΔEPS and the $n_{\text{ESG},t}$**

We evaluate the correlation between EPS forecasts revisions and $n_{\text{ESG},t}$. Given the very low amount of data, we decided to stay at the graphical level of our analysis.

4. Qualitative approach: Broker's comments on ESG news

As stated previously, our qualitative analysis of broker notes' was made to understand the impact of ESG related news on analysts' views on Total stock.

Sampling 5 significant ESG events, we found no mention of these specific events in the broker notes we accessed through Refinitiv.

These results are consistent with those of a master thesis from Aino-Maria Pöyhiä (2017) on Neste, a Finnish oil refining and marketing company. Interviewing equity analysts on ESG-issues, the study found out they only granted them secondary importance despite the company was operating in the highly mutating context of renewable energy and oil sectors. There was no indication of ESG influence on valuation method choices and price

target. In many cases, analysts acknowledged a marginal use of environmental social and governance information explicitly as a direct input incorporated in valuation models allowing to derive target prices. The analysts however said ESG related aspects could potentially influence the valuation model inputs implicitly through the evaluation of risks or if the firm was likely to face litigation and related cash outflows.

To the question of the significance of these issues in their recommendation methodology, some answers were:

“Not very much to be honest. I mean I'm conscious they are important for a number of investors, but it doesn't really impact my valuation. Generally, no impact on stock recommendation, unless we think that there is a major issue around that theme that could make financial repercussions for the company. That would encourage us to make it more negative. I'd say it's more to do with financial consequences than ESG itself.”

“I think they will be important, are they important enough for investors to invest or not to invest in the stock? I think at the moment – no. It doesn't change my opinion on the earnings outlook for the next ten years. It could change my opinion on the discount rate that we should be using. Because Neste is seen good at ESG factors, maybe that discount rate is a bit lower as a result, which could explain some of the share price performance.”

This seems to explain the inexistence of a rigorous and individual ESG event analysis in notes as we can see for other corporate announcements related to M&A or earnings among others. However, compared to the situation in 2017 previously described, we could find at least in our notes samples the description of the general ESG landscape of TotalEnergies and comments on them.

The impacts were not always quantitatively described but were at least touched upon in the notes. They appear under different shapes and forms.

➤ Synthetic ESG snapshot

Barclays | TotalEnergies

ESG Snapshot: TotalEnergies (TTE FP)

TICKER Overview

Identify:

There are 3 factors materially influencing the investment recommendation: 1) Energy transition, 2) Low carbon investments and 3) Safety incidents.

Impact:

Our valuation for Total is set using a resource profile that is consistent with a 1.5-degree scenario. We also incorporate a lower willingness by capital markets for fossil fuels through a 3pp higher cost of capital than pre COP-21. Partly offsetting this is the value we include for the growing low carbon business at EUR22/sh. This makes up c30% of our price target and is based on plans and assets we can already identify.

Our scenario analysis in European Energy: When worlds collide - introducing sustainability scenarios showed that if we were to fully incorporate the company's ambition to reduce its net carbon footprint by 35% in 2040 at \$40/ton of carbon, this could add a further EUR15/sh to our valuation.

Future:

The ambition of net zero has gained momentum across society, governments and investors alike. Energy companies are at the heart of the debate given the greenhouse gas emissions associated with their products, but also their ability to be part of the solution through low carbon solutions such as hydrogen, biofuels and renewables. Key to this debate will be capital allocation.

Engage: 3 key ESG questions for company engagement

- Why does Total only aim to achieve net zero emission from scope 3 in Europe and not globally?
- Are you concerned about the forecasts for natural gas demand if the world does not move towards carbon pricing?
- Do you think that digitalisation has a role in the energy transition?

Strategy & Ambition:

- Aims net zero across operations worldwide by 2050 or sooner.
- Net zero across all production and energy products used in Europe by 2050 or sooner
- Reduce average carbon intensity by 60% or more worldwide by 2050 vs 2015 with an interim aspiration of 15% reduction by 2030 and 35% by 2040.

Key ESG Metrics

| | 2018 | 2019 | 2020 | |
|---|------|------|------|---|
| Environmental | | | | |
| Carbon intensity of energy products used by the group's customers, base 100 in 2015 | 95 | 94 | 90 | Total reduced carbon intensity by about 10% since 2015 in part through increase in LNG sales and increased electricity sales. Total aims to reduce intensity by 15% by 2030 but has not been explicit about what would be needed to get to these targets but it is likely that investments in cleaner energy and carbon sinks have to rise. |
| Scope 1&2 emissions intensity for Upstream activities (kgCO2e/boe) | 20 | 19 | 18 | |
| Social | | | | |
| Sabotage spills, no | 74 | 57 | 50 | The number of hydrocarbon spills declined in 2019, but volume of spill increased. Total attributed the increase in volume of spill to a large spill from the Ile-de-France pipeline in Autouillet. TRIR also fell to 0.81 per million hours worked, down 11% y/y. |
| Total recordable injury rate | 0.91 | 0.81 | 0.74 | |
| Governance | | | | |
| Non-French senior executives, % | 32.1 | 34.1 | 36.3 | Being a global player, Total put in place measures to internationalize the management where non-French nationals represent 36% of senior executives' positions. Another key factor is the increasing share of women in senior leadership positions, which is now at 26%. |
| Women as senior executives, % | 21.6 | 23.0 | 25.7 | |

Source: Company data, Barclays research

Source: Barclays research

Total Energy Services - ESG Tear Sheet

Bottom Line

Total Energy Services has not released a formal ESG report and/or developed a framework for its ESG strategy. That said, the company's well servicing division is participating in the Government of Canada's wellsite rehabilitation program, and we expect should continue to make strong contributions in this regard. Additionally, Total's long history of engaging with Indigenous groups (including several formal partnerships) is positive.

Exhibit 1: ESG Themes & Initiatives

| Climate Change | Health and Safety | Water Management | Stakeholder Engagement | ESG Governance |
|--|---|---|---|---|
|  <p>Key Initiatives</p> <ul style="list-style-type: none"> Participated in the development of Helium in SW Saskatchewan, as well as carbon capture, RNG, and micro LNG projects. Contract Drilling (CDS) segment upgraded several rigs with walking systems and bi-fuel capacity. Compression (CPS) segment developed proprietary mobile large horsepower gas compression units (the NOMAD), which significantly reduces site disturbance and transportation emissions. Rentals (RTS) segment upgraded much of its light tower fleet with LED lights. <p>Our Take</p> <ul style="list-style-type: none"> TOT has not formally disclosed Scope 1 or 2 emissions although it has made strides to improve its fleet and facilities. |  <p>Key Initiatives</p> <ul style="list-style-type: none"> Management compensation is tied to various HSE metrics. TOT targets a TRIF of <math>-2.50</math>, with higher compensation being paid for better performance. Additionally, no bonuses are paid if the company experiences a fatality. CPS division collaborated with customers on noise abatement solutions for rigs in populated areas. <p>Our Take</p> <ul style="list-style-type: none"> It is positive to see TOT's compensation tied to various metrics, although we like to see formal safety statistics disclosed. |  <p>Key Initiatives</p> <ul style="list-style-type: none"> TOT participates in the Canadian government's wellsite rehabilitation funding through its well servicing division. RTS segment developed large capacity water pump that displaces trucks in the transportation of produced water/liquids. RTS segment's rental equipment and expertise in handling pollutants are utilized in many industries beyond oil and gas. Currently involved in a project in BC where equipment is being utilized to contain highly toxic fluids located by an abandoned pulp and paper mill. <p>Our Take</p> <ul style="list-style-type: none"> TOT has not formally disclosed environmental statistics or policies, although its contribution to wellsite rehabilitation is positive. |  <p>Key Initiatives</p> <ul style="list-style-type: none"> Total recently established a partnership with the Aboriginal Skilled Workers Association to increase effectiveness of Indigenous recruitment efforts. Formal business partnerships and marketing alliances with Indigenous communities, representing communities from Treaty 6, 7 & 8 lands, the North West Territories and North Dakota, USA (see link below). The company also holds an Indigenous Relations representative (Dale Swampy), who is President of the National Coalition of Chiefs. TOT has also engaged in various charitable/community organizations through its Indigenous partnerships. <p>Our Take</p> <ul style="list-style-type: none"> TOT has a long history of engaging with various Indigenous groups and is one of the leading companies in our coverage group in this regard. |  <p>Key Initiatives</p> <ul style="list-style-type: none"> Globe and Mail's Report on Business (ROB) recognized TOT as a 2021 recipient of its Women Lead Here program. Management holds ~6% of the company's outstanding common shares and is thus well aligned with shareholders. President and CEO, Dan Halyk has increased his ownership position in the company from ~3% in 2018 to ~5% currently. <p>Our Take</p> <ul style="list-style-type: none"> Management is well aligned with shareholders, with growing ownership of its outstanding common shares |

Source: BMO Capital Markets

Exhibit 2: ESG Disclosure Analysis^{1,2}

| | % of Peers That Do | | % of Peers That Do | | % of Peers That Do |
|--------------------------------|--------------------|-------------------------------|--------------------|---------------------------------|--------------------|
| Sustainability report? | 56% | Disclosures in line with GRI? | 11% | GHG emissions reduction target? | 44% |
| Audited sustainability report? | 33% | Reporting to CDP? | 6% | Water use? | 33% |
| Disclosures in line with SASB? | 39% | Scope 1 GHG emissions? | 22% | Board-level oversight of ESG? | 72% |
| Disclosures in line with TCFD? | 11% | Scope 2 GHG emissions? | 22% | ESG discussion in MD&A? | 72% |

Source: BMO Capital Markets

Source: BMO Capital Markets

➤ Q&A on ESG commitments from the firm



TotalEnergies SE

Key ESG questions

This section is intended to highlight key ESG discussion points relevant to this company, as well as our views on the outlook. Both the questions we highlight and our responses will evolve over time as the dialogue between management, analysts and investors continues to advance. We welcome any feedback on the topics.

What are the most material ESG issues facing this company?

Our view

With the Energy sector, much of the focus is on the 'E' given the business is highly carbon intensive. TotalEnergies has committed to carbon intensity targets similar to peers, implying a shift in business mix over time. TTE has been an early mover within low carbon, with multiple acquisitions in recent years. At the same time, the company has also committed to continued growth in hydrocarbons, primarily gas, over the coming years.

Does the company integrate ESG considerations into its strategy?

Similar to peers, TTE has issued a number of targets around its climate ambitions, which include a 40% reduction in Scope 1 & 2 emissions by 2030 vs a 2015 baseline, and being a net zero business by 2050 or sooner. TTE has also been more open than many peers around the emissions profiles of its future upstream growth projects, with both its potential oil and LNG projects being below industry averages. We welcome this greater disclosure. Further, as TTE's portfolio is more weighted to developing markets, we expect there to be greater focus on community engagement and sustainability issues than some of its peers.

What is diversity like at board / management level?

TTE's board of directors is chaired by CEO Patrick Pouyanne, and while this is the norm in certain geographies, we would prefer to see these roles split for independent oversight. The board consists of thirteen people, the majority of which are French nationals, with six women present on the board. There are no ethnic minority representatives on the board.

How does the company's ESG strategy and stance differentiate versus its peers?

TTE has positioned itself at the forefront of low carbon investments, with multiple renewable acquisitions across solar, wind and even battery technologies recently. While TTE's carbon intensity targets are not dissimilar to peers, the company remains committed to its energy production over the next decade, primarily through gas in hydrocarbons, as well as some growth in renewable fuels, alongside its low carbon electricity plans. The key attraction for investors is that so far, TTE has been able to continue with its plans while maintaining its dividend.

How is the management team compensated, and how does this differ versus peers?

TTE's compensation structure includes a combination of base salary, short-term and long-term incentives compensation, similar to its peer group. The annual bonus scorecard includes a variety of measures including safety (20%), emissions (10%) and other financial metrics. For its LTIP, TTE uses performance shares with a three-year vesting period, followed by a two-year holding period. This is similar to the peer group in timing, but we think a three-year vesting period is too short given the investment timelines of the industry.

Are there any other considerations at the company-specific level to highlight?

TTE's portfolio has a greater weighting to developing nations than many of its peers, which can lead to issues around security, relationships with native populations, and countries with nascent oil and gas industries. This can bring significant challenges to developing and operating projects.

Source: RBC Capital Markets

Qualitative comments and analyses imbedded in notes and linked with other value creation levers

“Black or greening? This business is very clearly moving in a positive direction maybe we are simply naïve. But it’s really hard not to like what Total is doing and the direction it’s taking. That shareholders are set to be more handsomely rewarded for the establishment of greater longevity just adds to our sense of well-being. Supported by its ability to take advantage of price volatility in both gas and electricity these were clearly good results with management’s growing confidence in strategy and direction underlined by its decision to raise the dividend by 5% and commit to some USD2bn of buy-backs, with more we suspect likely into H2 2022. We raise our estimates and price target modestly and look forward to a year in which the momentum building in Total’s clearly ‘greening’ portfolio will we believe prove increasingly apparent in its financials.”

Source : BNP Paribas – Exane

5. Quantitative approach: Regression

The regression analysis that we carried out was designed to provide a figure-based understanding of how analysts following the Total stock revise their earnings forecasts, as well as their price target previsions, based on negative ESG news on the company as defined by RepRisk.

For the PTG, the explained variable is the change in the consensus of Total’s EPS forecasts between two consecutive months t-1 and t relatively to the absolute value of the consensus EPS forecast in month t-1.

$$\Delta PTG_{12m,t} = \frac{PTG_{12m,t}}{PTG_{12m,t-1}} - 1$$

Using the fact analysts make their forecasts for different time horizons (1 year and 2 year) and making our regression on these different forecasts horizons allow us to quantify how persistent in time are the effects of the negative ESG news on analysts forecasts.

For the EPS, the explained variable is the change in the consensus of Total’s EPS forecasts between two consecutive months t-1 and t relatively to the absolute value of the consensus EPS forecast in month t-1.

$$\Delta EPS_{FY22,t} = \frac{EPS_{FY22,t}}{EPS_{FY22,t-1}} - 1$$

$$\Delta EPS_{FY23,t} = \frac{EPS_{FY23,t}}{EPS_{FY23,t-1}} - 1$$

We tried to evaluate the relation between those variables and the monthly number of ESG incidents, given by n_{ESG} . Indeed, $n_{ESG, t}$ is returning the number of ESG incidents identified by RepRisk in month t.

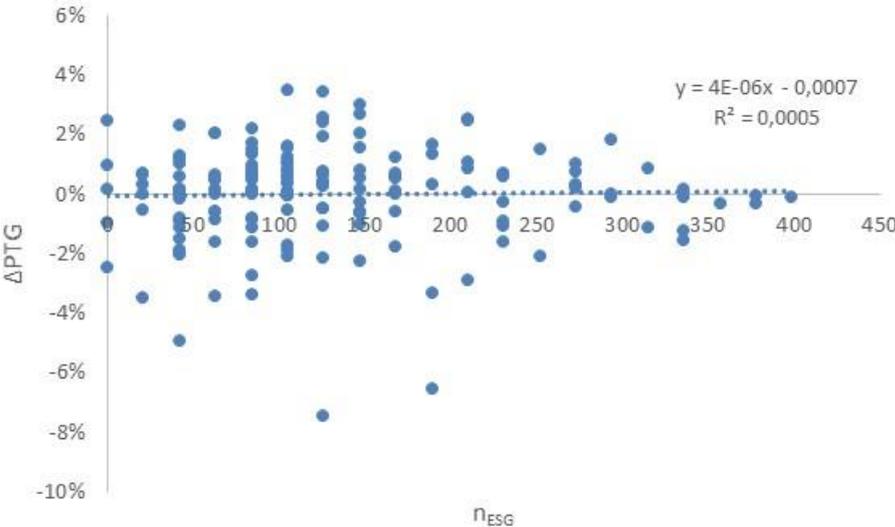
5. 1.Price target revisions

5.1.1. $\Delta P TG_{12m}$ as a function of n_{ESG}

First, we plotted the evolution of $\Delta P TG_{12m}$ with n_{ESG} .

Figure 5: Evolution of $\Delta P TG$ with n_{ESG}

This figure shows the evolution of $\Delta P TG$ with n_{ESG} . We have a total of 154 data points (i.e. 155 months observed between Feb. 2007 and Dec. 2019 and then 154 $\Delta P TG$ computed).

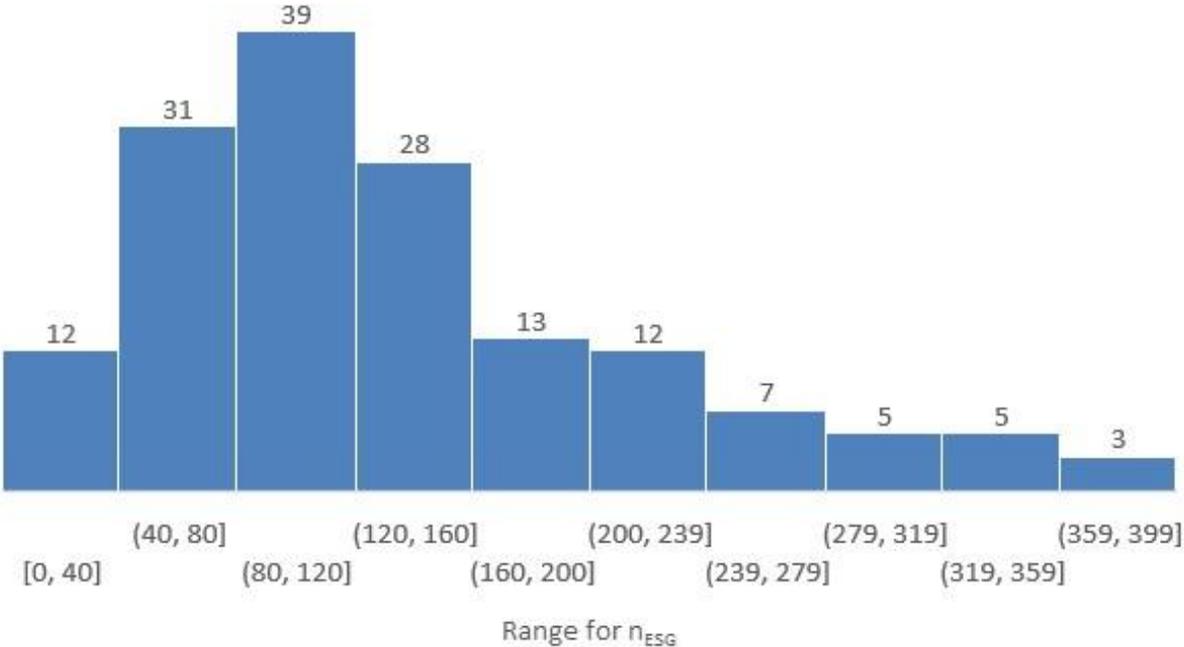


No clear tendency can be extrapolated from this figure. Therefore, we decided to analyse the variable $n_{ESG,t}$, returning the number of ESG incidents identified by RepRisk in month t .

Figure 6 gives the distribution of $n_{ESG,t}$ for the timeframe Feb. 2007 to Dec. 2019.

Figure 6: Distribution of $n_{ESG,t}$

This histogram shows the distribution of the variable $n_{ESG,t}$, returning the number of ESG incidents identified by RepRisk in month t . We have 155 data points (i.e. 155 months observed between Feb. 2007 and Dec. 2019).



We decided to create clusters by gathering the n_{ESG} data into 10 categories with the condition that each cluster does not have more than 15% of the total amount of data. **Table 6** shows the adopted distribution.

Table 6: Clusters and categories of n_{ESG}

This table describes the adopted clusters for the 155 n_{ESG} data. We created 10 categories/clusters making sure that no category has more than 15% of the total amount of data.

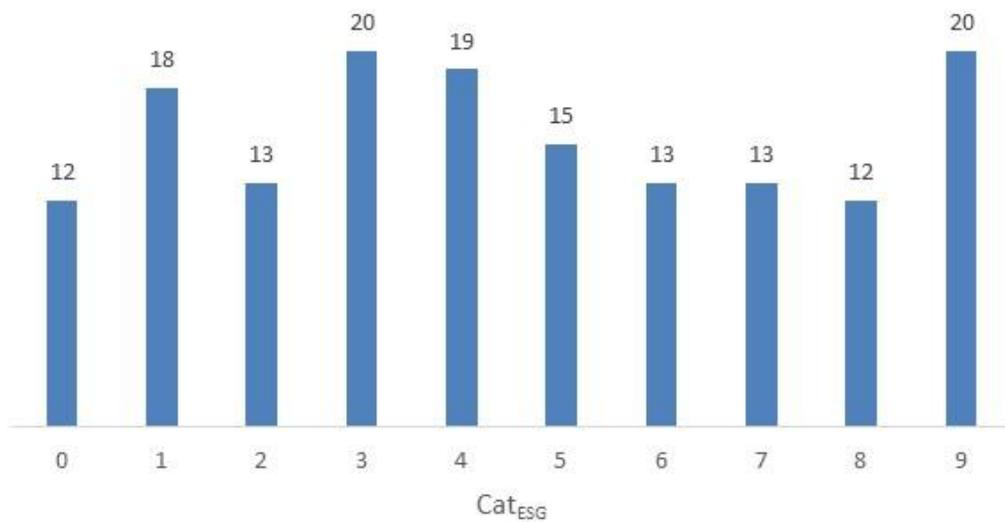
| Category | Range n_{ESG} | Number of months | % total |
|----------|-----------------|------------------|---------|
| 0 | [0, 30] | 12 | 8% |
| 1 |]30, 60] | 18 | 12% |
| 2 |]60, 70] | 13 | 8% |
| 3 |]70, 90] | 20 | 13% |
| 4 |]90, 110] | 19 | 12% |
| 5 |]110, 130] | 15 | 10% |
| 6 |]130, 150] | 13 | 8% |
| 7 |]150, 190] | 13 | 8% |
| 8 |]190, 250] | 12 | 8% |
| 9 | > 250 | 20 | 13% |

Therefore, we created a new variable Cat_{ESG} returning, for each month between Feb. 2009 to Dec. 2019, a number between 0 to 9, corresponding to the ESG category of the month.

Figure 7 shows the distribution of Cat_{ESG} .

Figure 7: Distribution of $Cat_{ESG, t}$

This histogram shows the distribution of the variable $Cat_{ESG, t}$, returning the ESG category of the month t . We have 155 data points (i.e. 155 months observed between Feb. 2007 and Dec. 2019).

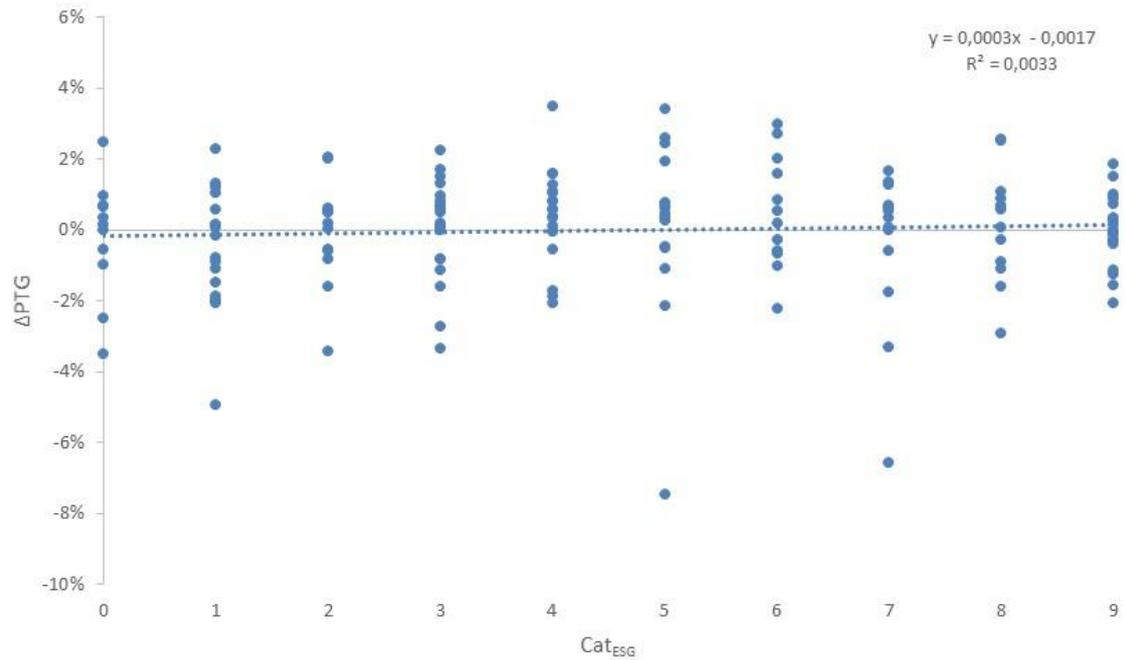


5.1.2. $\Delta\text{PTG}_{12\text{m}}$ as a function of Cat_{ESG}

We first plotted $\Delta\text{PTG}_{12\text{m}}$ as a function of Cat_{ESG} . By construction, the higher the category, the higher the number of ESG incidents observed during the month. Therefore, a month categorized 1 can be considered as a “good” month for TotalEnergies as the number of ESG incidents is low, and in this case between 31 and 60. A month categorized 9 is very “bad” for TotalEnergies as there is more than 250 ESG incidents found by RepRisk for this month.

Figure 8: PTG revisions as a function of ESG months categories

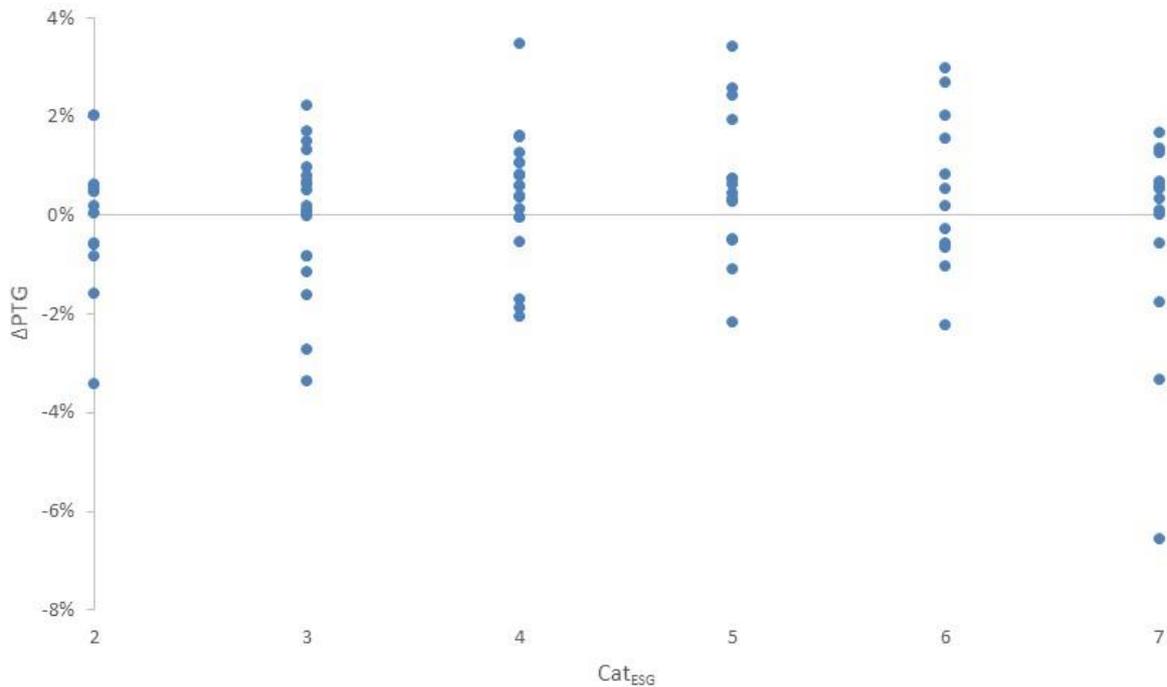
This graph shows the evolution of analysts’ revisions with the ESG category of the previous month observed. There are a total of 154 analysts’ revisions and months observed.



We can see that there is no strong tendency. However, if we removed the first two categories and the two last one, we observe a first positive correlation followed by a negative one. We also removed one point that appeared to be an outlier: Δ PTG of -7% for a Cat_{ESG} 5 month.

Figure 9: PTG revisions as a function of months ESG categories

This graph shows the evolution of analysts' revisions with the ESG category of the previous month observed. We removed the points associated to the categories 0, 1, 8 and 9. There are a total of 92 analysts' revisions and months observed.



Therefore, we decided to observe the relation of ΔPTG with those two groups of ESG month categories.

Figure 10: PTG revisions as a function of months ESG categories (2, 3, 4)

This graph shows the evolution of analysts' revisions with the ESG category of the previous month observed in the categories 2, 3 and 4. There are a total of 52 analysts' revisions and months observed. We observe a positive correlation between ΔPTG and ESG month category.

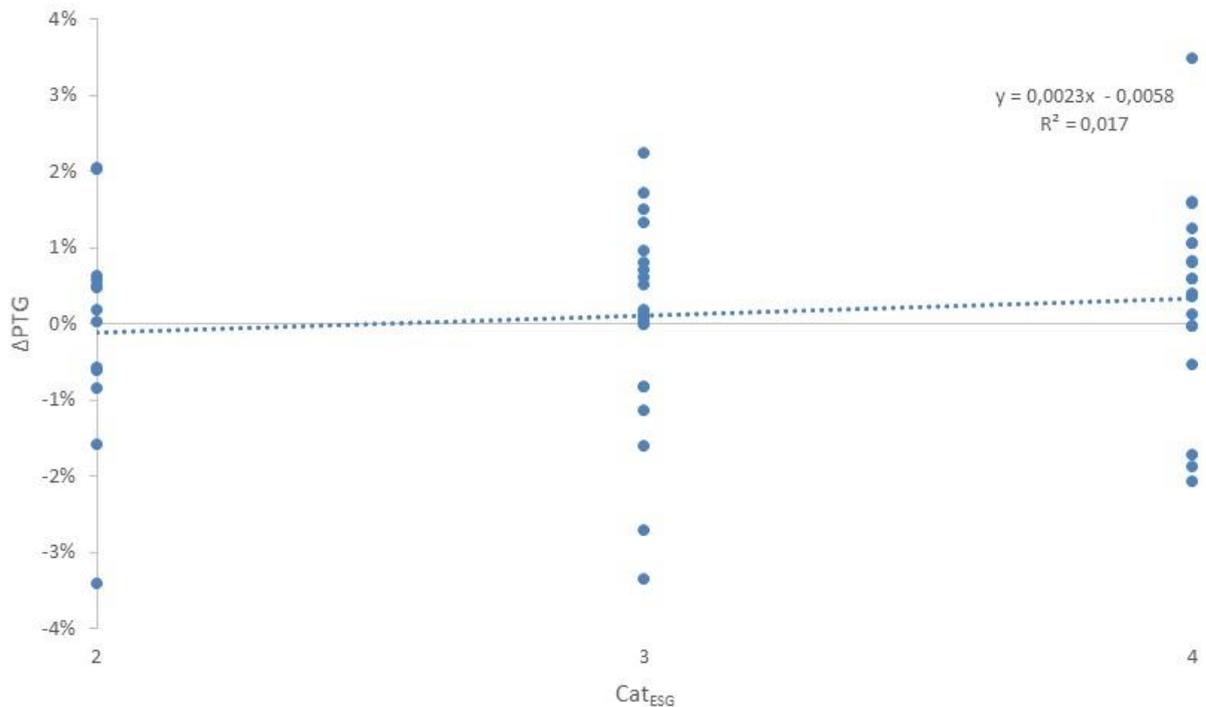
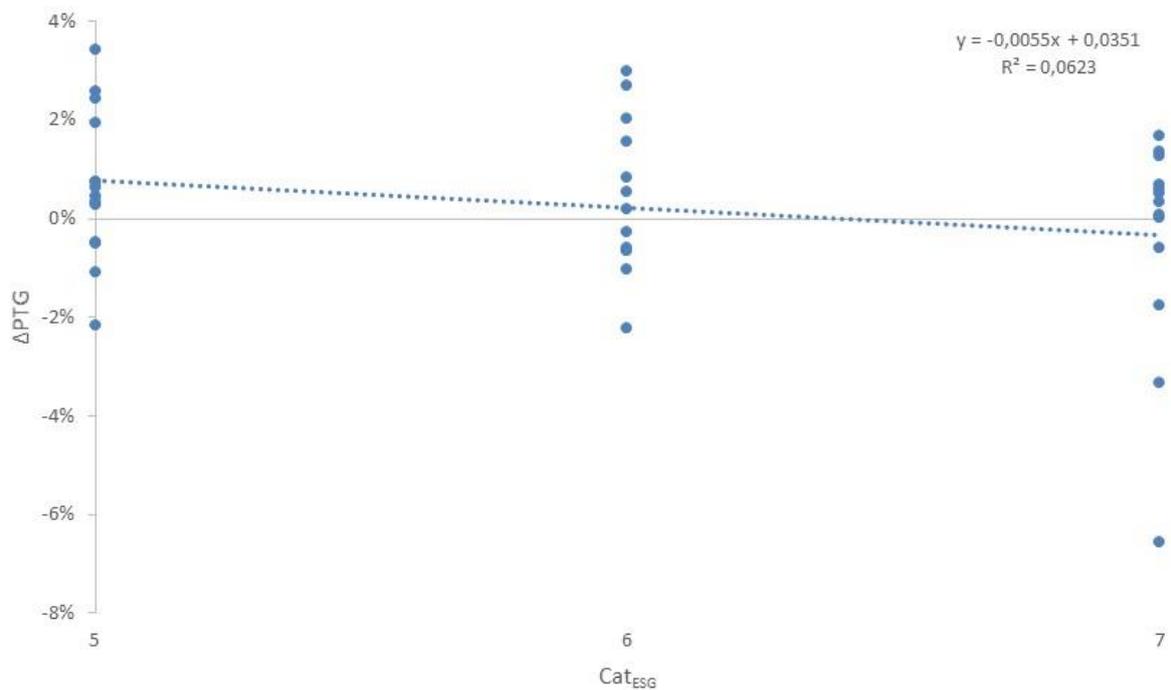


Figure 11: PTG revisions as a function of months ESG categories (5, 6, 7)

This graph shows the evolution of analysts' revisions with the ESG category of the previous month observed in the categories 5, 6 and 7. There are a total of 41 analysts' revisions and months observed. We observe a negative correlation between ΔPTG and ESG month category.



As showed on the graph, surprisingly, we observed a positive but insignificant correlation between Δ PTG and ESG month category 2, 3, 4 i.e., the months with number of ESG incidents comprised between 60 and 110. This tendency can be explained among others by the fact that below a certain threshold ESG incidents are deemed by analysts not relevant enough to trigger downside revisions of their PTG. However, for months in categories 5, 6 and 7 displaying from 110 to 190 negative ESG events, we notice and insignificant but negative correlation between Δ PTG and ESG month category. In these cases, we can assume that the negative correlation when there is a significant number of negative ESG events, is due to the fact analysts consider them impactful enough to affect the firm PTG and revise accordingly their previsions downside.

The variety of events that can affect the firm between to revisions make it difficult however to link them directly to the negative ESG events and draw statistically significant conclusions but beyond a certain level there is a nascent tendency shown by our graph.

5.1.3. Panel regressions

We then decided to create a few indicator variables to regress $\Delta PTG_{12m,t}$ on them. We created 6 indicator variables:

- $Indic_{2,t}$ that take on value 1 if month t is in $Cat_{ESG} 2$, 0 otherwise
- $Indic_{3,t}$ that take on value 1 if month t is in $Cat_{ESG} 3$, 0 otherwise
- $Indic_{4,t}$ that take on value 1 if month t is in $Cat_{ESG} 4$, 0 otherwise
- $Indic_{5,t}$ that take on value 1 if month t is in $Cat_{ESG} 5$, 0 otherwise
- $Indic_{6,t}$ that take on value 1 if month t is in $Cat_{ESG} 6$, 0 otherwise
- $Indic_{7,t}$ that take on value 1 if month t is in $Cat_{ESG} 7$, 0 otherwise

For panel B, those variables are defined as below:

- $Indic_{2,t}$ that take on value 2 if month t is in $Cat_{ESG} 2$, 0 otherwise
- $Indic_{3,t}$ that take on value 3 if month t is in $Cat_{ESG} 3$, 0 otherwise
- $Indic_{4,t}$ that take on value 4 if month t is in $Cat_{ESG} 4$, 0 otherwise
- $Indic_{5,t}$ that take on value 5 if month t is in $Cat_{ESG} 5$, 0 otherwise
- $Indic_{6,t}$ that take on value 6 if month t is in $Cat_{ESG} 6$, 0 otherwise
- $Indic_{7,t}$ that take on value 7 if month t is in $Cat_{ESG} 7$, 0 otherwise

Table 8: Reaction of PTG to ESG incidents

This table reports the results of regressing changes in consensus PTG on ESG incidents. We have 92 observations.

In Panel A, the 6 independent indicators variables take on a value of 1 if

- Between 61 and 70 incidents happened in month t , 0 otherwise: for $Indic_2$
- Between 71 and 90 incidents happened in month t , 0 otherwise: for $Indic_3$
- Between 91 and 110 incidents happened in month t , 0 otherwise: for $Indic_4$
- Between 111 and 130 incidents happened in month t , 0 otherwise: for $Indic_5$
- Between 131 and 150 incidents happened in month t , 0 otherwise: for $Indic_6$

- Between 151 and 190 incidents happened in month t, 0 otherwise: for Indic₇

In Panel B, the 6 independent indicators variables take on:

- Value of 2 if between 61 and 70 incidents happened in month t, 0 otherwise: for Indic₂
- Value of 3 if between 71 and 90 incidents happened in month t, 0 otherwise: for Indic₃
- Value of 4 if between 91 and 110 incidents happened in month t, 0 otherwise: for Indic₄
- Value of 5 if between 111 and 130 incidents happened in month t, 0 otherwise: for Indic₅
- Value of 6 if between 131 and 150 incidents happened in month t, 0 otherwise: for Indic₆
- Value of 7 if between 151 and 190 incidents happened in month t, 0 otherwise: for Indic₇
-

t-statistics are in parenthesis, * p<0. 1, ** p<0. 05, *** p<0. 01

| <i>Panel A: Adjusted R Square -0,018</i> | | | | | | |
|--|-------------|--------------|---------------|---------------|---------------|--|
| Indic 2 | Indic 3 | Indic 4 | Indic 5 | Indic 6 | Indic 7 | |
| [61;70] = 1 | [71;90] = 1 | [91;110] = 1 | [111;130] = 1 | [131;150] = 1 | [151;190] = 1 | |
| -0,005 | -0,004 | 0,000 | 0,002 | 0,000 | -0,009 | |
| (-0,74) | (-0,72) | (-0,05) | (0,41) | N/A | (-1,37) | |

| <i>Panel B: Adjusted R Square 0,017</i> | | | | | | |
|---|-------------|--------------|---------------|---------------|---------------|--|
| Indic 2 | Indic 3 | Indic 4 | Indic 5 | Indic 6 | Indic 7 | |
| [61;70] = 2 | [71;90] = 3 | [91;110] = 4 | [111;130] = 5 | [131;150] = 6 | [151;190] = 7 | |
| 0,000 | 0,000 | 0,002* | -0,001 | 0,001 | 0,000 | |
| N/A | (0,09) | (1,68) | (-0,52) | (0,77) | (-0,39)x | |

Panel A shows that the effects of ESG incidents on Δ P_{PTG} are statistically insignificant, even for the worst months in terms of ESG. This result confirms the intuition we got from the qualitative approach that there is only a marginal mention made of ESG events in the broker notes. Target price revisions are taking into account a whole bunch of factors beyond ESG ones, even for the periods where there are a lot of negative ESG events. In a case of a single company like Total, revisions by analysts are

periodic (semi-annual on average) and not aligned with ESG events which are thus not directly linkable with the analysts' revisions.

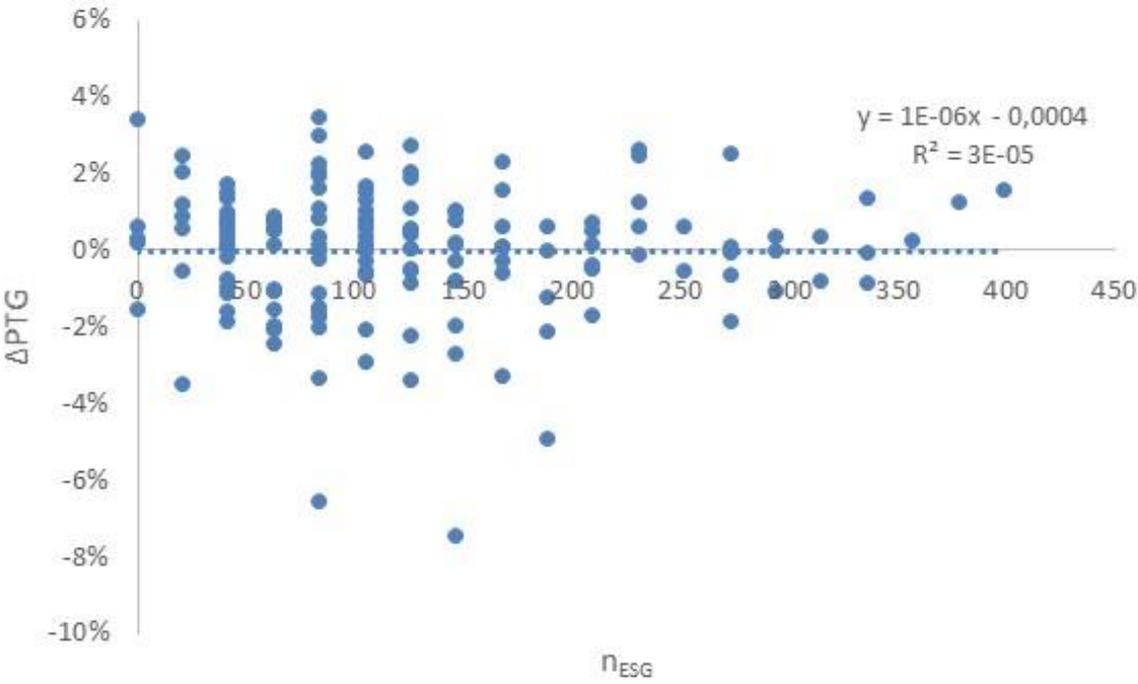
5.1.4. ΔPTG_{12m} and n_{ESG} lagged

5.1.4.1. ΔPTG_{12m} as a function of n_{ESG} lagged

First, we plotted the evolution of ΔPTG_{12m} with n_{ESG} lagged.

Figure 12: Evolution of ΔPTG with n_{ESG} lagged

This figure shows the evolution of ΔPTG with n_{ESG} lagged. We have a total of 150 data points (i.e. 150 months observed between Feb. 2007 and Jul. 2019 and then 150 ΔPTG computed).



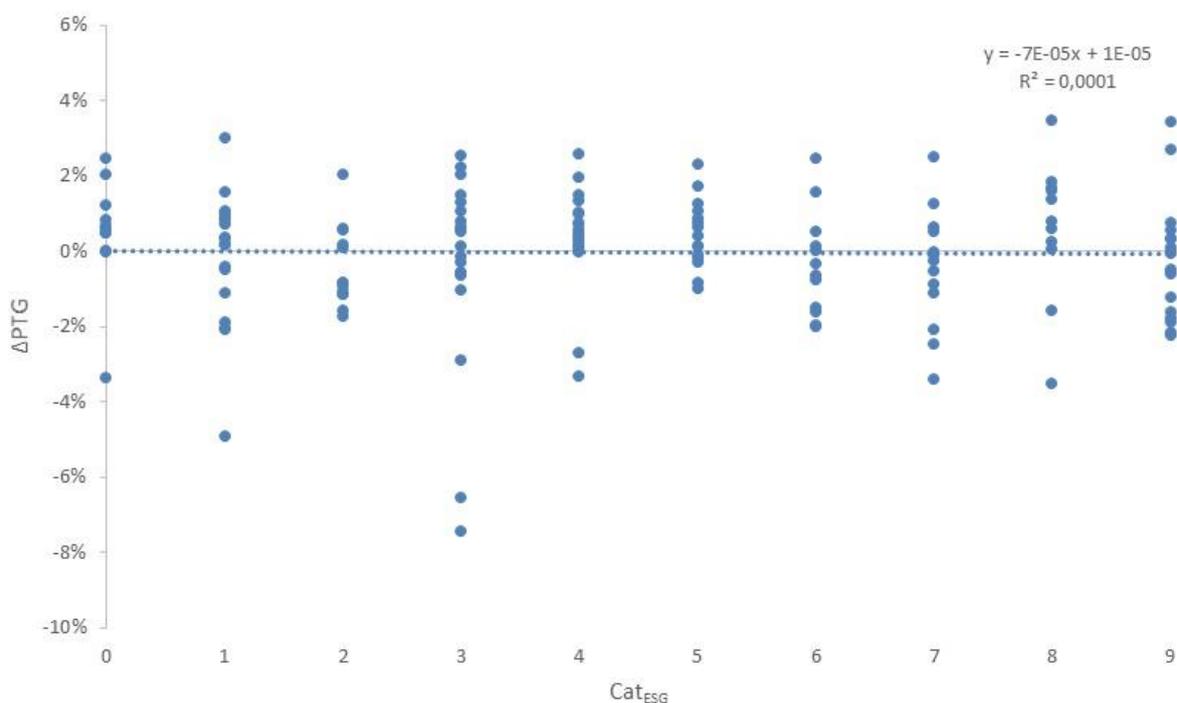
This new graph aimed at identifying an eventual link not between the revision of the target price and the indicator variables depending on the number of negative ESG news in the period itself but with a 6m lagged n_{ESG} variable, taking the value of the number of ESG incidents that happened 6 months sooner, in an effort incorporate the irregularity in target price revisions by analysts. This approach, as the previous one, did not allow us to identify a statistically significant pattern.

5. 1. 4. 2. $\Delta\text{PTG}_{12\text{m}}$ as a function of Cat_{ESG} lagged

We then plotted $\Delta\text{PTG}_{12\text{m}}$ as a function of Cat_{ESG} lagged with categories keeping the same definition as previously i.e. categorizing the months depending on ESG incidents occurrence but with a lag of 6m to account for brokers notes irregularities.

Figure 13: PTG revisions as a function of ESG months categories lagged

This graph shows the evolution of analysts' revisions with the ESG category of the month observed 6 months ago. There are a total of 150 analysts' revisions and months observed.

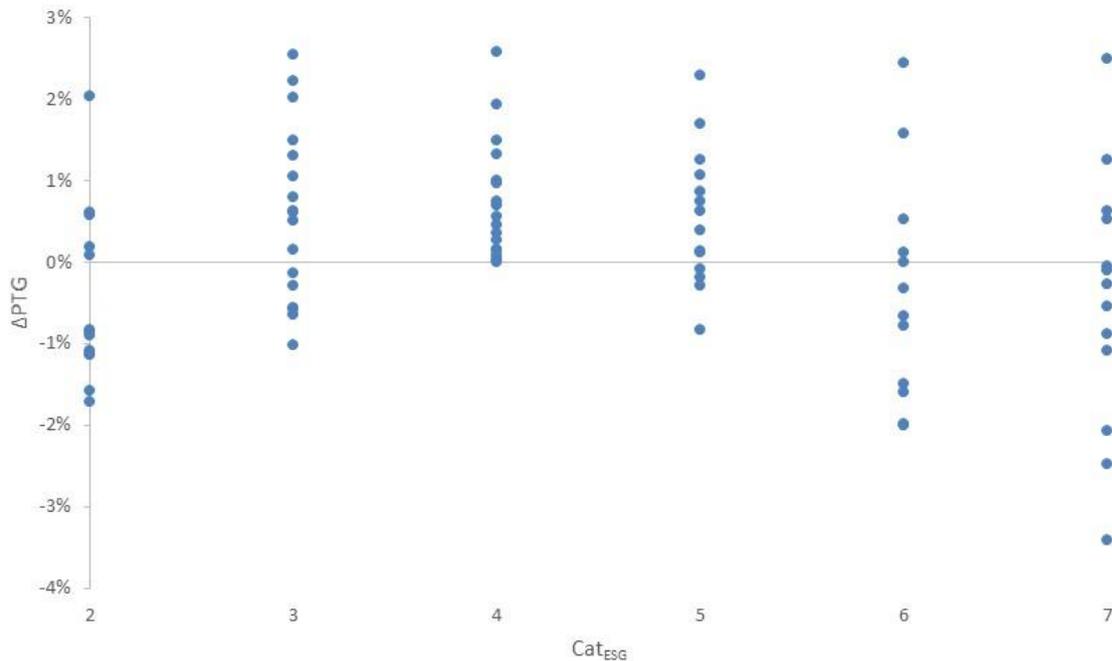


There is no statistically significant correlation to point out between the PTG revisions and lagged Cat_{ESG} .

Figure 14: PTG revisions as a function of months ESG lagged categories

This graph shows the evolution of analysts' revisions with the ESG category of the month observed 6 months ago. We removed the points

associated to the categories 0, 1, 8 and 9. There are a total of 86 analysts' revisions and months observed.

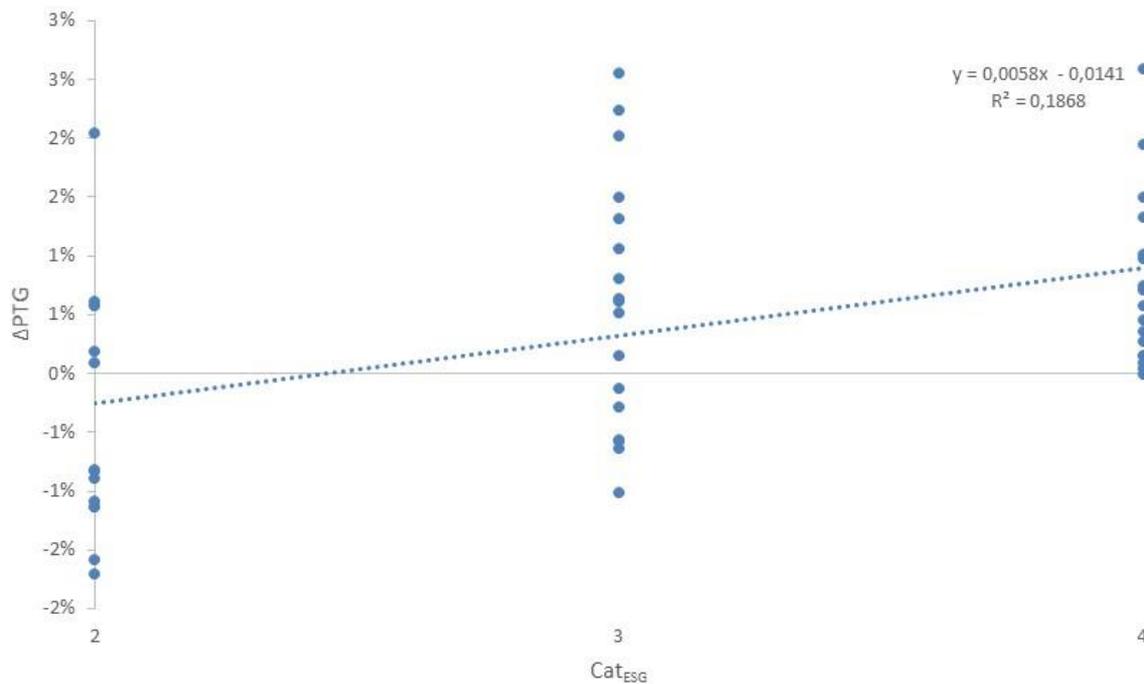


However, if we removed the categories 0, 1, 8 and 9, we observe a first positive correlation followed by a negative one. We also removed 5 points that appeared to be outliers:

- Δ PTG of -7% for a Cat_{ESG} 5 month
- Δ PTG of -7% for a Cat_{ESG} 3 month
- Δ PTG of -3% for a Cat_{ESG} 4 month
- Δ PTG of -3% for a Cat_{ESG} 3 month
- Δ PTG of -4% for a Cat_{ESG} 4 month

Figure 15: PTG revisions as a function of months lagged ESG categories (2, 3, 4)

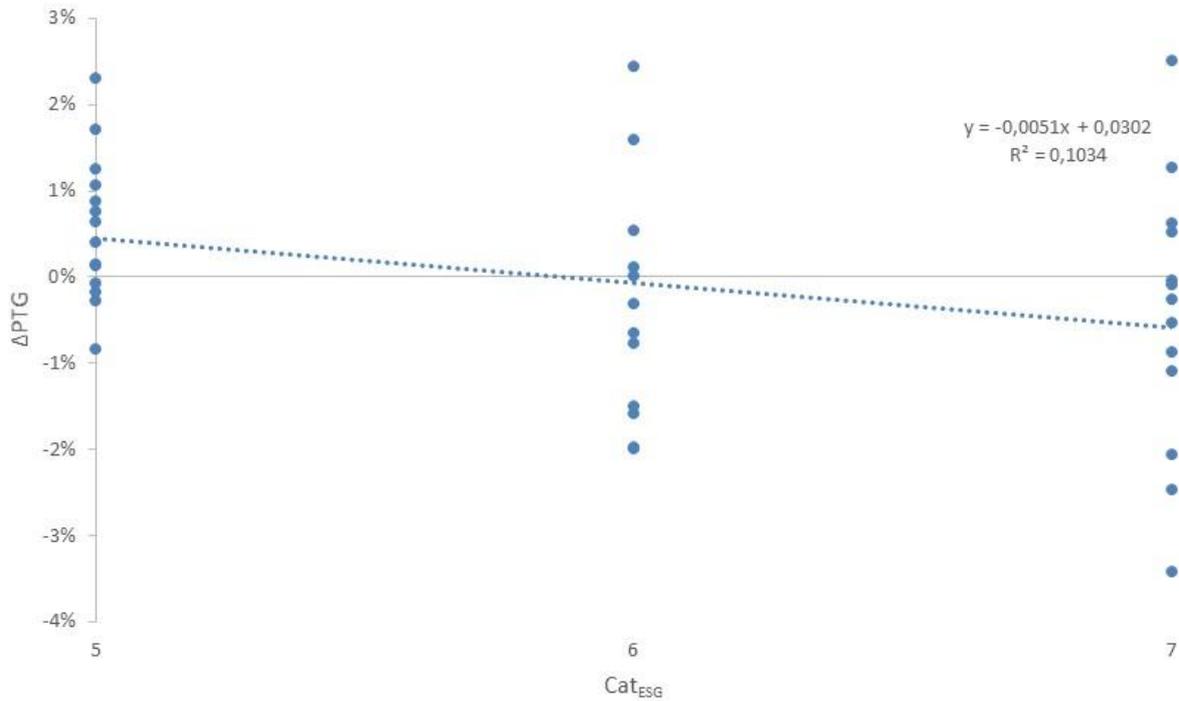
This graph shows the evolution of analysts' revisions with the lagged ESG category of the month observed in the categories 2, 3 and 4. There are a total of 47 analysts' revisions and months observed. We observe a positive correlation between Delta PTG and lagged ESG month category.



The graph displays a surprising positive correlation between Δ PTG and lagged ESG month category 2, 3, 4 i.e., with a R square coefficient of up to 0,19. These months with numbers of incidents below 110 represent on our scale those with the least hurdles for Total from an ESG point of view and logically seem to be those with the most PTG upward revisions. However, we also observe a more astonishing positive correlation between Δ PTG and the lagged ESG categories. As we supposed for the previous finding, we think this tendency can be explained among others by the fact that below a certain threshold ESG events have a marginal impact on analysts' valuation of the company. We think they could even factor in the short-term positive impact on profitability of borderline behaviour on the firm rather than considering their long term well documented negative impact.

Figure 16: PTG revisions as a function of months lagged ESG categories (5, 6, 7)

This graph shows the evolution of analysts' revisions with the lagged ESG category of the month observed in the categories 5, 6 and 7. There are a total of 39 analysts' revisions and months observed. We observe a negative correlation between Delta PTG and ESG month category.



ESG months categories 5, 6 and 7 are the worse for Total in terms of ESG incidents. There are periods when the firm face the most serious build-up of bad ESG events. For these months, we observed through this lagged approach a negative correlation between Delta PTG and ESG month category. These clearly bad ESG months analysts cannot escape to analysts who accordingly revise PTG downside.

5. 1. 4. 3. Panel regressions: lagged n_{ESG}

We decided to regress $\Delta PTG_{12m,t}$ with the 6 variables $Indic_{2/3/4/5/6/7,t-6}$. We chose this 6-month period to factor in the fact analysts may take time to revise their forecasts.

Table 9: Reaction of PTG to lagged ESG incidents

These tables report the results of regressing changes in consensus PTG on lagged ESG incidents. We have 86 observations.

Panel A': Adjusted R Square 0.130

| Indic_{2, lagged}]61;70] = 1 | Indic_{3, lagged}]71;90] = 1 | Indic_{4, lagged}]91;110] = 1 | Indic_{5, lagged}]111;130] = 1 | Indic_{6, lagged}]131;150] = 1 | Indic_{7, lagged}]151;190] = 1 |
|--|--|---|--|--|--|
| 0.000 | 0.011** | 0.012*** | 0.010** | 0.001 | 0.000 |
| (0.04) | (2.54) | (2.92) | (2.35) | (0.25) | N/A |

Panel B': Adjusted R Square 0.130

| Indic_{2, lagged}]61;70] = 2 | Indic_{3, lagged}]71;90] = 3 | Indic_{4, lagged}]91;110] = 4 | Indic_{5, lagged}]111;130] = 5 | Indic_{6, lagged}]131;150] = 6 | Indic_{7, lagged}]151;190] = 7 |
|--|--|---|--|--|--|
| 0.000 | 0.003 | 0.003*** | 0.002** | 0.000 | 0.000 |
| N/A | (2.50) | (2.88) | (2.31) | (0.21) | (-0.04) |

Panel A and B shows fat better results that those achieved with the sheer regression of PTG revisions on ESG categories that the effects of ESG incidents. This confirms the fact that analysts consider ESG news with a delay linked to the fact they do not revise their forecasts on a continual basis. The low R square obtained confirms once again the intuition we got from the qualitative approach that there is only a marginal mention and consideration made of ESG events in the broker notes.

5.1.5. ΔPTG_{12m} and n_{ESG} selected based on reach, novelty and severity

We evaluated the correlation of ΔPTG_{12m} with n_{ESG} but by only selecting the data for which the news was considered reach, novel or severe as per the definition given by RepRisk.

The figures below show the correlation of revisions of PTG with the monthly number of those news.

Figure 17: Evolution of ΔPTG with $n_{ESG, reach \geq 2}$

This figure shows the evolution of ΔPTG with $n_{ESG, reach \geq 2}$.

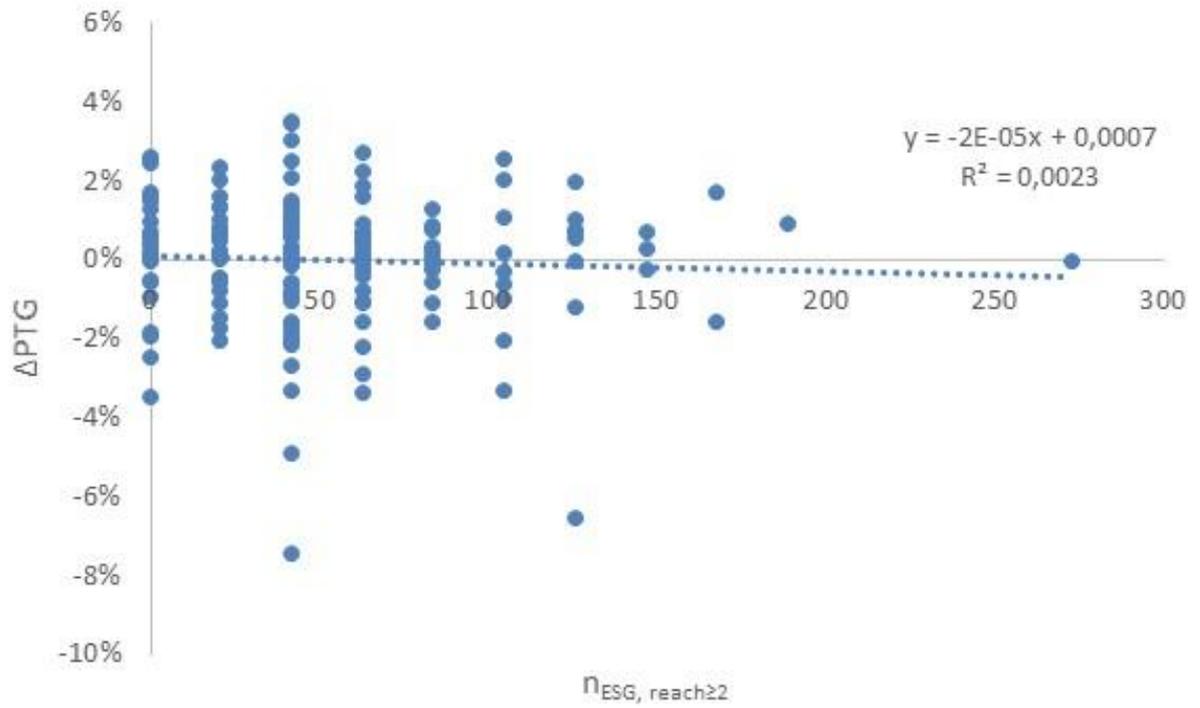


Figure 18: Evolution of ΔPTG with $n_{\text{ESG, novelty} \geq 2}$

This figure shows the evolution of ΔPTG with $n_{\text{ESG, novelty} \geq 2}$.

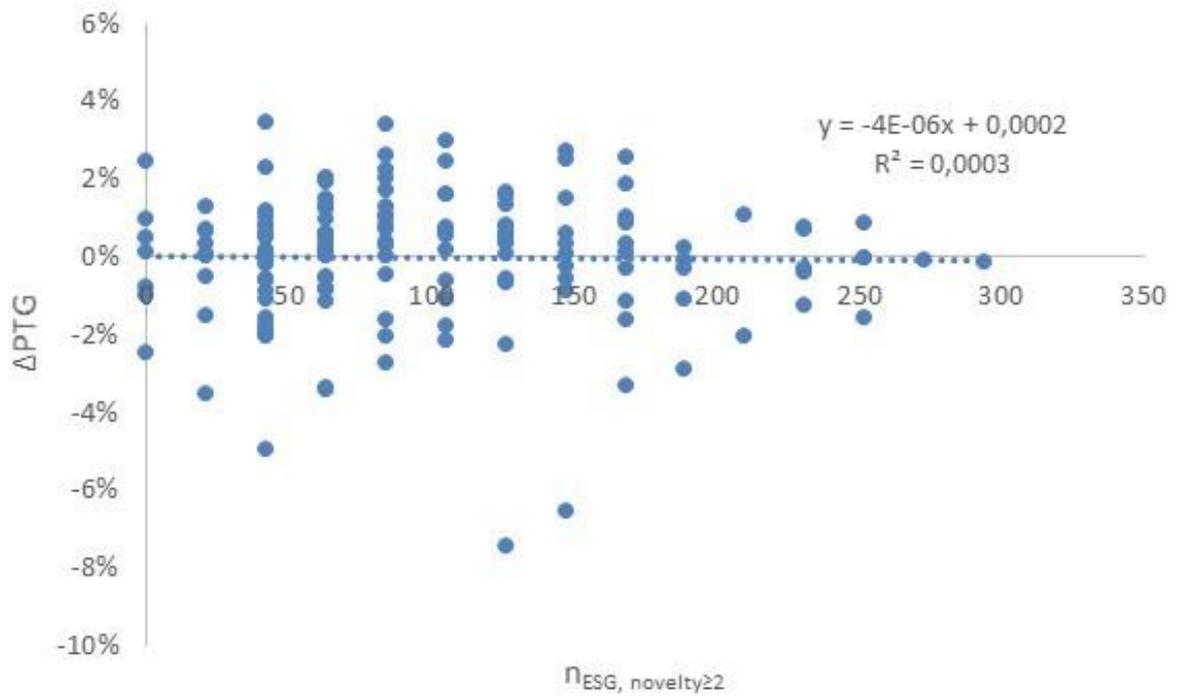
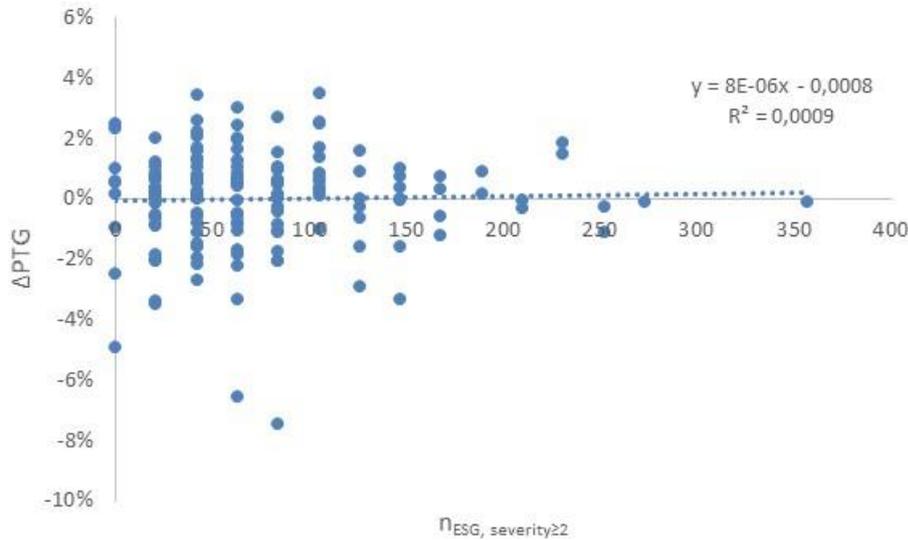


Figure 19: Evolution of Δ PTG with $n_{ESG, severity \geq 2}$

This figure shows the evolution of Δ PTG with $n_{ESG, severity \geq 2}$.



We did not identify from any clear tendency from these graphs. To evaluate the significance of those observations, we regressed Δ PTG with the 3 types of n_{ESG} data points.

Table 10: Reaction of PTG to ESG incidents – by reach, novelty and severity

These tables report the results of regressing changes in consensus PTG on ESG incidents. We have 154 observations.

*t-statistics are in parenthesis, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$*

| Reach | Novelty | Severity |
|-----------|-----------|----------|
| -0,000018 | -0,000004 | 0,000008 |
| (-0,60) | (-0,21) | (0,38) |

5.2. EPS forecasts revisions

We started by plotting $\Delta EPS_{FY22, t}$ and $\Delta EPS_{FY23, t}$ with $n_{ESG, t}$.

Figure 20: Evolution of ΔEPS_{FY22} with n_{ESG}

This figure shows the evolution of ΔEPS_{FY22} with n_{ESG} . We have a total of 18 data points (i.e. 19 months observed between Jun. 2018 and Dec. 2019 and then 18 ΔPTG computed).

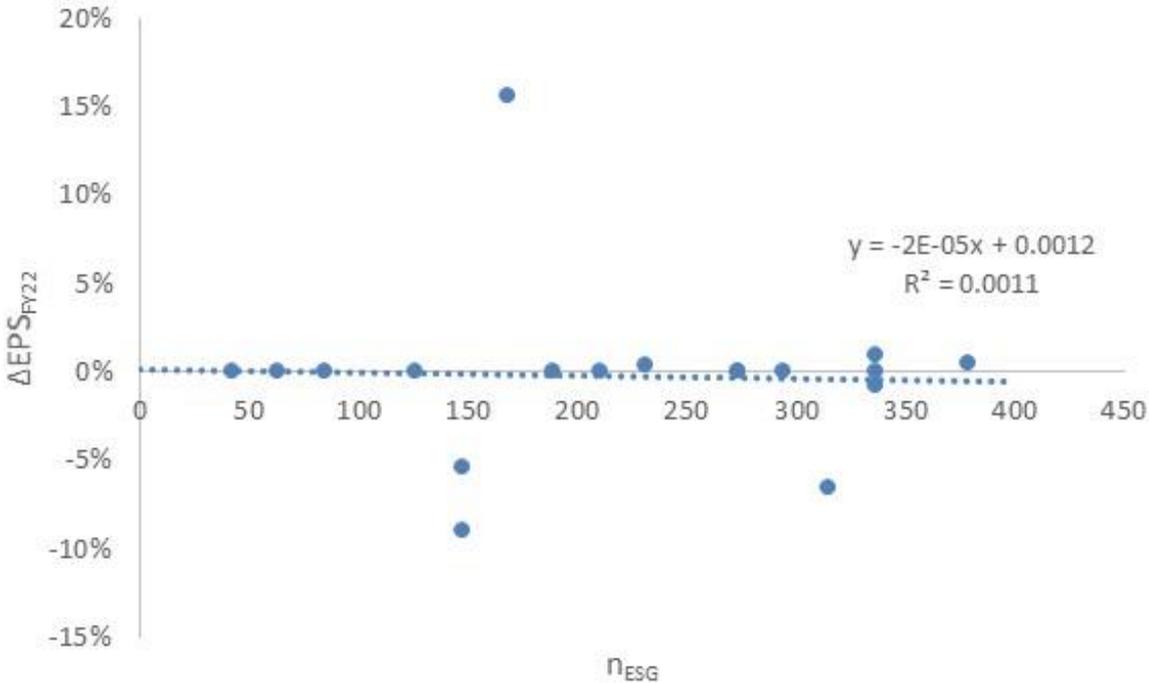
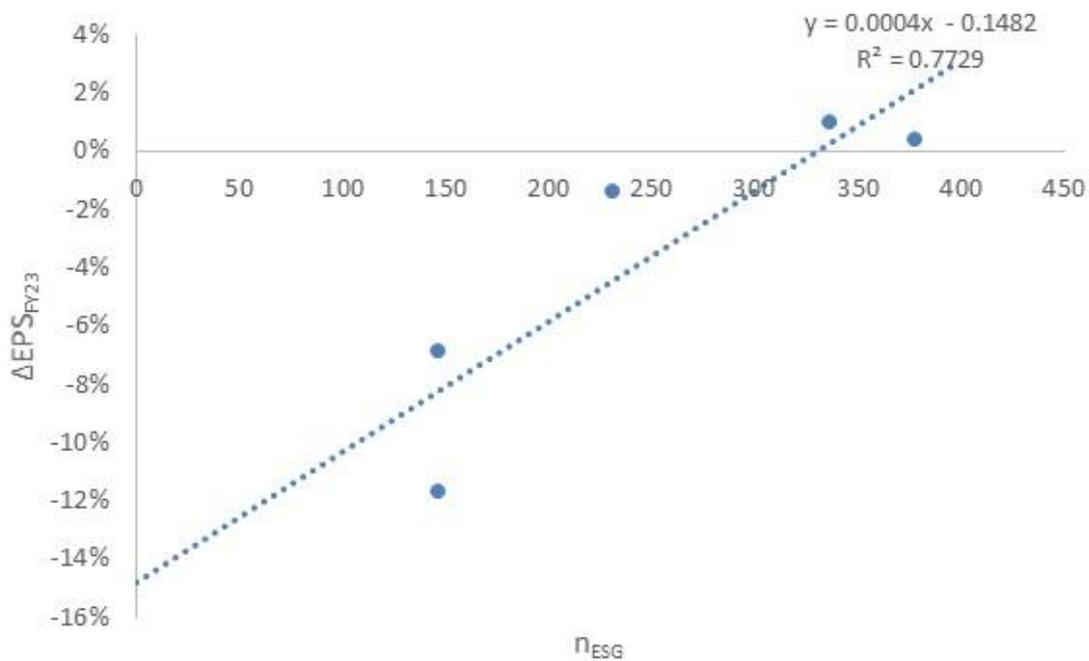


Figure 21: Evolution of ΔEPS_{FY23} with n_{ESG}

This figure shows the evolution of ΔEPS_{FY23} with n_{ESG} . We have a total of 5 data points (i.e. 6 months observed between Jul. 2019 and Dec. 2019 and then 5 ΔPTG computed).



We observe a surprising positive correlation between $\Delta\text{EPS}_{\text{FY22}}$ and $\Delta\text{EPS}_{\text{FY23}}$ and n_{ESG} but the number of data points 18 points for $\Delta\text{EPS}_{\text{FY22}}$ and 5 points for $\Delta\text{EPS}_{\text{FY23}}$ is not significant enough to make any meaningful conclusion from those observations

6. Conclusion

In this paper, we wanted to evaluate both qualitatively and quantitatively the impact of ESG news on the valuation of an oil and gas companies like TotalEnergies.

We first analysed the occurrences of ESG topics in sell-side analyst notes.

Then, by taking the sell-side analysts' forecasts as proxies for the future earnings of the company, we were able to define a methodology to quantify the influence of ESG news on valuation.

Qualitatively, we concluded that analysts are aware of ESG but they are not clear on the mechanisms of incorporation of those news in their valuation models. The ESG notes are often standardized and empty of useful information.

Quantitatively, we have been able to regress both the revisions of PTG and EPS on the monthly number of ESG news (nESG) collected by RepRisk from 2007 to 2019 for TotalEnergies.

We focused our analysis on PTG revisions given the low number of EPS forecast revisions.

After several graph analyses where the correlation between Δ PTG and nESG were not clear, we decided to categorize the months based on the variable nESG. This methodology allowed us to see some tendencies and correlation when regressing Δ PTG with months categories (CatESG).

Firstly, Δ PTG seems to increase with CatESG: we interpreted this surprising positive trend by the fact below a certain threshold, negative ESG news have limited impact on analysts' views, who may even focus on the short-term positive profitability effect of these news, ignoring there demonstrated long-term negative disadvantages.

In a second time, when nESG crosses a certain threshold, we find out that Δ PTG is negatively correlated with CatESG. This goes well with our prior hypothesis that bad ESG news should negatively impact the valuation of a company, especially in the oil and gas landscape. The difference with prior hypothesis is that this relation seems to hold only after passing a threshold in the number of negative ESG news: we explained by the fact analysts start to price the negative effects of bad ESG news when they became obvious.

To assess the significance of those observations we conducted linear regressions and statistics tests and we have seen that those conclusions were not significant, mainly due to the relatively low number of accessible data.

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