

Chapter: ESG Stewardship, Gender, and the Energy Transition

Book: Just Energy Transition

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Abstract

As the global energy sector undergoes a fundamental transformation, understanding the drivers of the future workforce is essential for ensuring a just transition that is inclusive and sustainable. This research explores the intersection of gender and the energy transition by analyzing how environmental, social, and corporate governance (ESG) stewardship influences early-career employment preferences in the energy sector. To connect values to employment choices, the chapter uses an embedded choice experiment of 1,068 University of Houston students, in which respondents selected between hypothetical job offers that varied on sector (renewables, natural gas, oil), starting salary, and third-party-assessed ESG stewardship (ESG leader, meets minimum standards, criticized for not meeting standards). Results show that ESG considerations play an important role in employment preferences: respondents are substantially more likely to select job offers from firms with stronger ESG records and from firms working in the renewable energy sector, even when doing so requires accepting lower salaries. However, female students were significantly more likely than their male counterparts to choose companies recognized as ESG leaders. Female students placed significantly greater weight on ESG credentials and lower weight on salary than men, but nevertheless ranked attributes in the same order: ESG stewardship, salary, and industry. To attract and retain a diverse and inclusive workforce, energy companies must prioritize transparent ESG monitoring and leadership, aligning corporate values with those of the next generation of energy sector workers. Moreover, the results suggest that credible ESG performance and governance are practical strategies to improve women's representation in the energy sector.

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1 Introduction

The global energy industry is undergoing significant transformation. The transition toward lower-carbon sources of energy is changing not only how energy is produced and consumed, but also the structure of employment and the types of skills demanded by the energy industry. Recent evidence shows that employment growth in the the energy sector is increasingly concentrated in clean energy, including renewable energy, electrification, and energy efficiency (International Energy Agency, 2024; International Energy Agency, 2025). These changes create new employment opportunities, but also raise important questions about who will participate in the future energy workforce and what characteristics make energy companies attractive to prospective workers.

Gender is particularly important in this context. Women remain substantially underrepresented in the energy sector, representing around 20 percent of the global energy workforce, compared with roughly 40 percent of the overall global workforce (International Energy Agency, 2024; International Energy Agency, 2025). Although female representation is higher in renewable energy, important gender gaps remain, particularly in technical and leadership positions (Arias et al., 2023; Pearl-Martinez and Stephens, 2016). The expansion of clean energy employment alone may therefore not be sufficient to produce a more gender-diverse energy workforce. Understanding the employment preferences of prospective workers, and whether these preferences differ by gender, is important for assessing the labor-market implications of the energy transition.

At the same time, ESG considerations have become increasingly relevant to the energy sector. Energy companies face growing expectations regarding their environmental performance, social responsibility, and corporate governance. While much of the existing literature examines ESG from the perspective of investors, firm performance, or corporate leadership, ESG practices may also influence the ability of firms to attract workers. Previous research shows that corporate social performance can affect employer attractiveness and employment decisions (Greening and Turban, 2000; Rohde et al., 2022; Turban and Greening, 1997). However, less is known about how prospective workers value ESG stewardship in the energy sector and how these preferences compare with more traditional employment characteristics such as salary.

This chapter examines the role of ESG stewardship in shaping employment preferences in the energy sector, with particular attention to gender differences. We address three questions. First, do prospective workers prefer employment at energy companies with stronger ESG stewardship? Second, how important is ESG relative to salary and the industry in which the company operates? Third, do these preferences differ between women and men.

To address these questions, we use an original survey of 1,068 students at the University of Houston that includes an embedded choice experiment. Respondents choose between hypothetical employment opportunities that vary randomly across three characteristics: the company’s industry (natural gas, oil drilling, or renewable energy), starting salary, and ESG stewardship. This experimental design allows us to identify the casual effect of each attribute on

employment choice and to examine whether these effects differ by gender.

The results show that ESG stewardship is an important determinant of employment preferences. Respondents are substantially more likely to choose companies that meet ESG standards and especially companies recognized as ESG leaders. They also prefer renewable-energy companies to natural gas companies and are less likely to select employment in oil drilling. Importantly, the magnitude of the ESG effects is large relative to the effects of salary. Respondents are willing to trade higher starting salaries for stronger ESG performance. We also find important gender differences. Women respond more strongly than men to ESG leadership and less strongly to increases in salary.

The findings contribute to the literature on the labor-market dimensions of the energy transition by highlighting that the transition involves not only changes in the composition of jobs, but also changes in what prospective workers value in an employer. The results also contribute to the literature on gender and the energy transition by showing that corporate ESG practices may matter for the ability of energy companies to attract women. In this regard, ESG stewardship may represent not only a measure of corporate environmental and social performance, but also an important component of workforce recruitment during the energy transition.

The remainder of the chapter is structured as follows. Section 2 reviews the related literature. Section 3 presents the theoretical framework and hypotheses. Section 4 describes the survey, choice experiment, and empirical strategy. Section 5 presents the empirical results. Section 6 concludes.

2 Literature Review

The transition to a sustainable energy future is often framed as a technological shift from fossil fuel to low-carbon energy sources. However, a growing body of literature emphasizes that this transformation extends beyond technological substitutions and includes changes in labor markets, occupations, and workforce (Bowen et al., 2018; Curtis et al., 2024; Hanna et al., 2024; Vona et al., 2018). In this regard, the transition reshapes not only the demand for the skills but also the distribution of opportunities across different demographic groups, including gender (Carley and Konisky, 2020; Gatto, 2022; Pearl-Martinez and Stephens, 2016; Santero-Sánchez et al., 2025).

Recent evidence highlights that the expansion of clean energy technologies is becoming a major driver of job creation worldwide. According to the International Energy Agency (International Energy Agency, 2024; International Energy Agency, 2025), employment growth in the energy sector is increasingly concentrated in clean energy segments such as renewables, electrification, and energy efficiency, while fossil fuel sectors show more modest growth. At the same time, wages in energy-related occupations are rising, by reflecting an increase in competition for skilled workers. This suggests that the energy transition is generating new economic opportunities and also intensifying skill shortages in key areas.

The energy transition is characterized by significant occupational restructuring. Bowen et al. (2018), using U.S. O*NET occupational data, show that the shift toward a green economy does not simply generate net job gains or losses, but rather involves a substantial reallocation of labor across occupations, with many “green” jobs requiring only partial adjustments in tasks and skills. Vona et al. (2018), exploiting variation in environmental regulation across U.S. metropolitan and non-metropolitan areas over the period 2006–2014, demonstrate that environmental regulation primarily affects the composition of labor demand by increasing the need for technical and managerial green skills, rather than altering aggregate employment levels. Using large-scale microdata on more than 130 million job transitions in the United States over the period 2005–2021, Curtis et al. (2024) document that workers are increasingly transitioning from carbon-intensive to low-carbon occupations, although these transitions are uneven across individuals, with older and less-educated workers facing greater barriers.

These findings point to important frictions in labor reallocation. Greenspon and Raimi (2024), focusing on labor markets in the United States, show that skill mismatches between fossil fuel workers and emerging green jobs limit mobility across occupations. Hanna et al. (2024), based on a systematic review of 121 studies across multiple regions, find that employment gains in low-carbon sectors do not necessarily offset job losses in fossil fuel industries, particularly in the short run. Bray et al. (2022), drawing on a systematic literature review and a case study of 38 Local Enterprise Partnerships in England, argue that achieving a “just” transition depends critically on expanding skill provision and supporting re-skilling, while Rutovitz et al. (2025), based on survey-based employment projections for Australia’s electricity sector, show that employment projections in renewable energy sectors remain highly uncertain, complicating workforce planning. These workforce challenges are also relevant to the U.S. energy sector, where changes in technology, skills, and worker preferences are reshaping the profile of the future oil and gas workforce (Kennedy and Pinto, 2019).

Gender inequality remains a persistent feature of energy labor markets. Despite accounting for a substantial share of the global labor force, women remain significantly underrepresented in the energy sector. According to the IEA recent reports (International Energy Agency, 2024; International Energy Agency, 2025), women represent less than 20% of the global energy workforce, well below the economy-wide average. The renewable energy sector performs relatively better, where women account for approximately one-third of employment and around 40% in solar photovoltaics (International Renewable Energy Agency, 2026). However, these shares still fall short of parity.

Moreover, gender disparities are particularly pronounced in technical and leadership roles. Women are disproportionately concentrated in administrative and non-technical occupations, while their representation declines sharply in STEM-related roles and senior management positions. Evidence from Arias et al. (2023), based on a sample of 102 renewable energy generation companies across six Latin American and Caribbean countries, shows that even in renewable energy companies, where female participation is increasing, women remain

concentrated in lower-skilled positions and are underrepresented in decision-making roles. Similarly, Pearl-Martinez and Stephens (2016), based on a quantitative and policy-oriented analysis of the renewable energy workforce, emphasize that structural barriers including hiring practices, workplace norms, and limited access to training continue to constrain women’s participation in the clean energy workforce. More recent evidence highlights that these disparities persist within the dynamics of the transition. Santero-Sánchez et al. (2025), using labor market data for Spain, find that women face a lower probability of employment in energy transition-related jobs. Related evidence from hydrocarbon-dependent economies shows that changes in oil revenues can also reshape women’s labor market participation (Mohtadi et al., 2025). In a different context, Emmons Allison et al. (2019), based on interviews with women working in renewable energy sectors in the United States and Canada, show that while women are highly motivated and engaged, they face structural barriers related to workplace norms and access to leadership networks.

Parallel to these developments, ESG considerations have become increasingly important in shaping how firms respond to environmental and social concerns and the interests of a broader set of stakeholders. While there is no single definition of ESG, its three dimensions generally capture firms’ environmental impacts, their relationships with employees and society, and the governance structures through which corporate decisions are made. In this sense, ESG extends the evaluation of corporate performance beyond traditional financial outcomes and provides a broader framework for assessing firms’ environmental and social practices. ESG considerations have become particularly relevant in the energy sector, where firms face increasing pressure from investors, consumers, employees, regulators, and society to respond to concerns surrounding climate change, emissions, and the transition away from fossil fuels. The fossil-fuel divestment movement, for example, demonstrates how environmental concerns can influence investment decisions and place pressure on energy companies to respond to changing stakeholder expectations (Grady-Benson and Sarathy, 2016).

Another body of research investigates the relationship between gender diversity in leadership and ESG performance, although the evidence remains mixed. Several studies document a positive association between board gender diversity and ESG outcomes (Bear et al., 2010; Bernardi and Threadgill, 2011; Landry et al., 2016; Post et al., 2011; Setó-Pamiés, 2015; Zhang et al., 2013), suggesting that firms with greater female representation tend to engage more actively in socially responsible activities. More recent firm-level evidence provides stronger support for this relationship. Liu (2018), using a panel of S&P 1500 firms in the United States over the period 2000–2015, finds that firms with higher female board representation exhibit significantly fewer environmental violations. Atif et al. (2021), based on a panel of 1,491 U.S. firms over 2008–2016, show that renewable energy consumption is positively associated with the presence of women on corporate boards, with evidence supporting a critical mass effect. Kyaw et al. (2022), using international firm-level data, further document that firms with gender-diverse boards are more likely to achieve improvements in emissions performance relative to their industry peers.

Recent studies also emphasize the importance of institutional and contextual factors in shaping these relationships. Issa (2023), using firm-level data from 13 European countries over the period 2006–2021, shows that board gender diversity is positively associated with clean energy adoption, although this relationship is moderated by ESG controversies. At the macro level, Ko and Leung (2025), using a cross-country panel of 97 countries from 1995 to 2020, find that higher gender inequality is associated with weaker ESG performance, particularly in the governance dimension, suggesting that institutional barriers to women’s participation have broader implications for sustainability outcomes.

However, the relationship between gender and ESG outcomes is not uniform across studies. Glass et al. (2016), based on firm-level evidence from the United States, find that the positive effect of female board representation on environmental performance depends on CEO gender. Aabo and Giorici (2023), using alternative ESG datasets (Refinitiv versus Bloomberg), show that empirical results are sensitive to measurement choices. In particular, they find no significant association between CEO gender and ESG scores using Refinitiv data, but a positive and statistically significant relationship when using Bloomberg data. In addition to firm-level outcomes, the transition is also shaped by social attitudes and preferences. Survey evidence from the United States shows that attitudes toward climate change, carbon management, and related sustainability policies vary across individuals and political groups (Buttorff et al., 2020; Buttorff et al., 2021). Thomas et al. (2022), based on a survey experiment of 1,591 individuals in Alberta, Canada, show that public support for energy transition policies depends on economic expectations, political identity, and belief about climate change.

Despite this growing body of work, relatively little attention has been paid to the interaction between ESG stewardship, gender and labor market outcomes in the context of the energy transition. While existing studies focus primarily on firm-level ESG performance and leadership composition, fewer contributions examine how ESG characteristics influence individuals’ employment preferences, particularly across gender groups. This represents an important gap, given that the energy transition is not only reshaping production systems but also redefining the attractiveness of jobs and sectors. In particular, ESG stewardship may have implications beyond firm’s relationships with investors and consumers. If prospective workers consider the environmental and social practices of the firms when evaluating potential employers, ESG performance may also affect firms’ ability to attract and retain the workforce required for the energy transition. This provides the basis for examining whether individuals value employment in firms with stronger ESG stewardship and whether these preferences differ across gender groups.

3 ESG and Workforce Choices

Employment decisions and workforce choices involve a combination of pecuniary and non-pecuniary considerations. Although compensation represents an

important determinant of job choice, individuals may also consider other characteristics of the employer, including its reputation, organizational values, working environment, and environmental and social practices. In this regard, decisions may reflect not only the financial returns associated with a job but also the extent to which the characteristics and values of an employer align with those of prospective employees. In the context of the energy transition, these considerations may be particularly important because prospective workers are choosing not only among employers, but also among firms operating in industries that differ considerably in their environmental impacts and their position within the transition toward a lower-carbon economy.

ESG stewardship provides one mechanism through which these non-pecuniary characteristics may enter employment decisions. Stronger ESG stewardship may signal that a company places greater emphasis on environmental responsibility, transparency, and broader stakeholder interests. This argument is consistent with earlier findings showing that corporate social performance can affect firms' reputations and their attractiveness to prospective employees (Greening and Turban, 2000; Turban and Greening, 1997). More recent experimental evidence also suggests that organizational missions and sustainability-oriented characteristics can influence employment preferences (Rohde et al., 2022). If prospective workers value these characteristics, firms demonstrating stronger ESG stewardship should become relatively more attractive as potential employers. This effect may be particularly relevant in the energy sector, where firms' environmental practices are highly visible and closely connected to broader concerns surrounding climate change and decarbonization. Accordingly, we expect that:

Hypothesis 1: Prospective employees are more likely to select jobs in energy companies with stronger ESG stewardship practices.

The importance of ESG stewardship can also be evaluated relative to monetary compensation. If ESG represents a valued non-pecuniary characteristic of employment, prospective workers may be willing to accept some reduction in compensation in exchange for working for a company with stronger environmental and social practices. Existing experimental evidence provides support for such trade-offs. Burbano (2016), using randomized field experiments in online labor markets, shows that information about an employer's social responsibility can reduce workers' wage requirements, suggesting that workers may be willing to exchange some pecuniary compensation for non-pecuniary characteristics associated with socially responsible employers. In this case, the relevant question is not only whether individuals prefer firms with stronger ESG stewardship, but whether this preference remains when they face a trade-off between ESG characteristics and starting salary. We therefore hypothesize that:

Hypothesis 2: Prospective employees are willing to trade off higher starting salaries for employment in energy companies with stronger ESG stewardship practices.

Employment preferences may also depend on the industry in which a company operates. The energy transition is characterized by a shift toward lower-carbon sources of energy, while oil, natural gas, and renewable energy occupy different positions in this process. The industry itself may therefore influence the attractiveness of an employment opportunity independently of the ESG practices of an individual company. This distinction is important because a company can demonstrate relatively strong ESG stewardship while continuing to operate in a carbon-intensive sector. Prospective employees may therefore evaluate both the environmental stewardship of the individual employer and the broader position of its industry within the energy transition. Based on this argument, we expect:

Hypothesis 3: Prospective employees are more likely to select jobs in lower-carbon energy sectors, particularly renewable energy, relative to more carbon-intensive energy sectors.

These preferences may also differ between gender groups. As discussed in the literature review, women remain substantially underrepresented in the energy workforce, while a growing body of evidence links female representation with stronger environmental and social outcomes. A related literature also documents gender differences in environmental attitudes and preferences (Xiao and McCright, 2015; Zelezny et al., 2000). These differences may also extend to employment decisions. If women place relatively greater weight on environmental responsibility and other non-pecuniary characteristics associated with ESG stewardship, improvements in ESG performance may generate a larger increase in employer attractiveness among women. We therefore expect that:

Hypothesis 4a: The positive effect of stronger ESG stewardship on employment preferences is greater among women than among men.

Gender differences may also emerge in how prospective workers evaluate ESG stewardship relative to monetary compensation. In particular, the relative importance assigned to additional salary may differ if women and men place different weights on the non-pecuniary characteristics of potential employers. If women place greater relative value on ESG stewardship, they may be more willing to accept lower compensation in exchange for employment in firms that demonstrate stronger ESG practices. This leads to our final hypothesis:

Hypothesis 4b: Women are more willing than men to trade off higher starting salaries for stronger ESG stewardship.

4 Data and Empirical Strategy

The empirical analysis uses an original survey of University of Houston students between March 7 and April 22, 2022 (see Buttorff et al., 2022 for an earlier

descriptive report based on the survey). The University of Houston provides a useful setting for this study because it is located in a major energy region where oil and gas, natural gas, and renewable energy firms compete for early-career labor. Students in this setting are not only survey respondents; many are prospective entrants into the technical, managerial, policy, and professional labor markets that will shape the energy transition.

Respondents were recruited by email from large-enrollment courses across several fields, including American government, energy and sustainability, engineering, petrophysics, data structures, geology, chemistry, and physics. The cleaning process excluded preview sessions, incomplete responses with less than 98 percent survey progress, respondents who declined consent, and respondents who indicated that they were minors and therefore could not legally consent. The final conjoint analysis uses 1,068 respondents with valid experimental choice data. The sample is relevant for studying prospective energy-sector workers, but it should not be interpreted as representative of all workers, all college students, or even all University of Houston students. But the sample does capture employment preferences among students in a university with a strong tradition in training students on energy related topics, located close to the energy economy, and preparing to enter occupations in the energy sector and jobs affected by the energy transition.

Table 1: Respondent descriptive statistics

Characteristic	Category	N	Percent
Gender	Male	582	54.5
Gender	Female	462	43.3
Gender	Prefer to self-describe/not to say	24	2.2
Race/ethnicity	White	234	21.9
Race/ethnicity	Black or African American	102	9.6
Race/ethnicity	Hispanic or Latino/a	323	30.2
Race/ethnicity	Asian or Pacific Islander	308	28.8
Race/ethnicity	Other	34	3.2
Race/ethnicity	Two or more	67	6.3
Age	18–20	414	38.7
Age	21–23	388	36.3
Age	24+	267	25.0
Field of study	Natural Sciences & Engineering	292	27.3
Field of study	Business management/administration	414	38.8
Field of study	Social sciences and other	362	33.9
Texas background	Life-long Texan	639	59.8
Texas background	Moved from another state	159	14.9
Texas background	Moved from another country	270	25.3
Household income	Less than \$60,000	503	47.4
Household income	\$60,000 or more	559	52.6

Notes: Percentages are calculated within nonmissing responses for each item.

The choice experiment asked respondents to compare and choose among hypothetical job opportunities at energy companies, varying the industry where the company operates, the company’s environmental stewardship practices, and the proposed starting salary for each of the job profiles presented. On the industry attribute levels, we asked respondents about working for a (1) renewable energy, (2) natural gas, or (3) oil drilling companies. Starting salary attribute levels were (1) \$75,000, (2) \$80,000, and (3) \$85,000, bench-marked to entry level wages in the energy sector. There were also three attribute levels for environmental stewardship practices: (1) recognized as being a leader in ESG monitoring, disclosure, and management for their sector by an independent watchdog organization; (2) meets minimum standards for ESG monitoring, disclosure, and management for their sector according to an independent watchdog organization; and (3) criticized for not meeting ESG monitoring, disclosure, and management standards for their sector by an independent organization.

The final profile-level data contain 10,656 observations, corresponding to 5,328 paired-choice tasks. The primary outcome is an indicator equal to one if the profile was chosen. The secondary outcome is the respondent’s appeal rating for each profile on a seven-point scale. Table 2 reports the realized profile counts and unconditional choice shares. These descriptive shares are not causal estimates, but they provide a useful summary of the experimental design and the distribution of observed choices.

Table 2: Descriptive statistics for conjoint experiment

Attribute level	Occurrence	Chosen	
	No.	No.	%
<i>Industry</i>			
Oil drilling company	3,507	1,469	41.9
Natural gas company	3,534	1,693	47.9
Renewable energy company	3,615	2,166	59.9
<i>Starting salary</i>			
\$75,000	3,563	1,303	36.6
\$80,000	3,593	1,803	50.2
\$85,000	3,500	2,222	63.5
<i>ESG stewardship</i>			
Criticized for not meeting ESG standards	3,544	1,003	28.3
Meets minimum standards for ESG	3,637	1,948	53.6
Recognized as ESG leader	3,475	2,377	68.4

Before turning to the experimentally revealed trade-offs, we first examine whether ESG-related stewardship practices were already salient in respondents’ stated employment preferences. Table 3 shows that large shares of students rated ESG-related employer characteristics as important or very important, including ethical standards, minority representation, pollution reduction, green-

house gas management, and board-level ESG oversight. These responses suggest that ESG considerations are relevant to how students evaluate prospective employers. However, stated preferences alone do not reveal how these characteristics are weighted when respondents simultaneously face differences in salary and industry.

Table 3: Importance of ESG-related attributes in employment decisions

Attribute	Important or Very Important (%)
Ethical standards of products, services, and marketing practices	79.9
Ethical standards of procurement and supply chain management	77.0
Representation of minorities	73.2
Efforts to mitigate and reduce contribution to air, water, and soil pollution	72.0
Efforts to lower greenhouse gas emissions and manage environmental footprint	69.3
Disclosure of board’s oversight of ESG issues, measurement strategy, and targets	68.2
Recycling standards and policies	66.4

Source: Authors’ calculations from the UH Energy–Hobby School ESG Student Survey (2022).

The stated employment preferences also reveal potentially important gender differences. As shown in Figure 1, women are more likely than men to report that environmental responsibility is a top employment priority (46 versus 36 percent), that company ESG policies matter in evaluating an employer (69 versus 63 percent), and that they would be willing to accept a lesser role or salary for stronger ESG performance (44 versus 34 percent). These patterns are consistent with the expectations developed in Hypotheses 4a and 4b, but remain descriptive. The conjoint experiment allows us to examine whether such differences persist when ESG stewardship, salary, and industry are varied simultaneously.

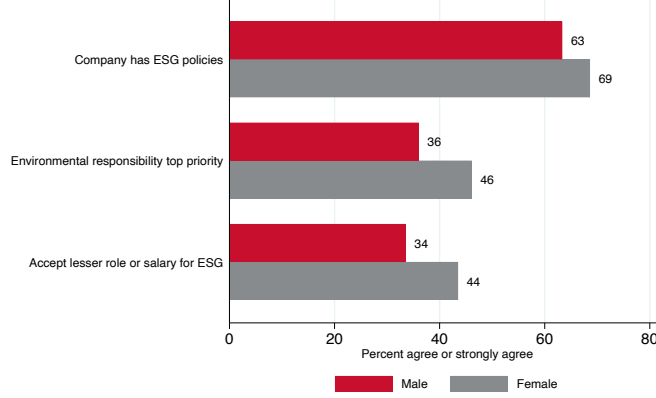


Figure 1: Stated ESG-related employment preferences by gender

4.1 Empirical Strategy

The randomized conjoint design allows us to estimate how industry, starting salary, and ESG stewardship independently affect the probability that a job profile is selected. Our primary quantities of interest are average marginal component effects. In this setting, an average marginal component effects represents the average change in the probability that a profile is chosen when one experimentally assigned attribute level changes relative to a reference category, averaging over the randomized distribution of the other attributes. Because the three profile attributes were independently randomized, these estimates can be interpreted as the average causal effects of the experimentally assigned job characteristics within the conjoint experiment.

We estimate the average marginal component effects using a linear probability model (LPM):

$$Choice_{itj} = \beta_0 + \beta_1 Industry_{itj} + \beta_2 Salary_{itj} + \beta_3 ESG_{itj} + \delta_t + \varepsilon_{itj}, \quad (1)$$

where $Choice_{itj}$ equals one if respondent i selects profile j in choice task t , and zero otherwise. The terms $Industry_{itj}$, $Salary_{itj}$, and ESG_{itj} denote sets of indicators for the experimentally assigned levels of each attribute. The reference categories are a natural gas company, a \$75,000 starting salary, and a company criticized for not meeting ESG standards. The term δ_t represents task-order fixed effects, which account for possible differences in choice behavior across the five rounds of the experiment. Standard errors are clustered at the respondent level to account for repeated choices by the same individual.

This specification provides the main tests of Hypotheses 1–3. Positive coefficients on stronger ESG stewardship indicate that respondents are more likely to select employers with stronger ESG practices, while the salary coefficients capture the effect of higher compensation on employment choice. The industry

coefficients allow us to compare employment preferences across natural gas, oil drilling, and renewable energy companies. Because all three attributes enter the experiment simultaneously and are independently randomized, the ESG coefficients capture the effect of ESG stewardship while averaging over differences in salary and industry, and similarly for the other attributes.

Gender constitutes our primary source for the heterogeneity analysis. Hypotheses 4a and 4b imply that women and men may respond differently to ESG stewardship and compensation. Rather than relying only on average marginal component effects estimated separately by gender, we formally test these differences using a pooled interaction specification:

$$\begin{aligned} \text{Choice}_{itj} = & \alpha_0 + \alpha_1 \text{Industry}_{itj} + \alpha_2 \text{Salary}_{itj} + \alpha_3 \text{ESG}_{itj} \\ & + \gamma_1 (\text{Industry}_{itj} \times \text{Female}_i) + \gamma_2 (\text{Salary}_{itj} \times \text{Female}_i) \quad (2) \\ & + \gamma_3 (\text{ESG}_{itj} \times \text{Female}_i) + \delta_t + \varepsilon_{itj}. \end{aligned}$$

The interaction terms test whether the effects of the randomized attributes differ systematically between female and male respondents. In particular, the interactions between gender and ESG stewardship provide the formal test of whether stronger ESG practices generate a larger increase in employer attractiveness among women, while the salary interactions assess whether women and men place different weights on additional compensation. We report both level-specific interaction estimates and joint tests across the levels of each attribute. Respondents who self-describe their gender or prefer not to report it remain in the descriptive analysis but are excluded from the male–female interaction models because of the small number of observations in these categories. We additionally examine gender-specific marginal means as a complementary way of comparing choice probabilities across attribute levels without relying exclusively on subgroup average marginal component effects comparisons.

We complement the probability estimates with a conditional logit model based on the paired-choice structure of the experiment (Buttorff et al., 2026). Each respondent-task combination constitutes a choice set containing two alternative job profiles, exactly one of which is selected. The conditional logit model can be represented within a random-utility framework as:

$$U_{itj} = X'_{itj}\theta + \eta_{itj}, \quad (3)$$

where U_{itj} denotes the latent utility respondent i derives from profile j in task t , and X_{itj} contains the experimentally assigned industry, salary, and ESG attributes. Respondents are assumed to select the profile that provides the greater utility within each paired choice set. We use the conditional logit estimates as an alternative discrete-choice specification and assess whether the direction and statistical significance of the results are consistent with the probability-scale average marginal component effects estimates. Because conditional logit coefficients are expressed on a log-odds scale, we do not compare their magnitudes directly with the average marginal component effects.

Several additional analyses assess the robustness and substantive interpretation of the main results. First, we use respondents’ ratings as an alternative outcome to examine whether the randomized attributes affect broader evaluations of the job profiles in a manner consistent with the forced-choice results. We also examine whether the randomized attribute assignments are balanced across task order and respondent characteristics and assess the sensitivity of the estimates to alternative specifications. Field-of-study and political-ideology analyses are treated as exploratory heterogeneity checks rather than as primary hypothesis tests.

Finally, we use two complementary approaches to make the magnitude of the estimated effects easier to interpret. First, we calculate the relative importance of each conjoint attribute from the range of its estimated effects. This measure provides a descriptive summary of the relative contribution of each experimentally varied dimension to model-implied employment preferences and should not be interpreted as a separate causal estimation.

Second, we examine the trade-off between compensation and non-pecuniary job characteristics using model-predicted choice probabilities for selected combinations of industry, salary, and ESG stewardship. We also estimate a continuous-salary specification to express selected ESG and industry effects in salary-equivalent terms. The similarly equal estimated effects of moving from \$75,000 to \$80,000 and from \$80,000 to \$85,000 support treating salary as approximately linear over the experimental range for this purpose. These salary-equivalent estimates are interpreted as implicit trade-offs within the experimental choice setting rather than as literal willingness-to-pay measures.

5 Results

Figure 2 presents the average marginal component effects for the full sample, while Table 4 reports the corresponding linear probability model and conditional logit estimates. Because industry, salary, and ESG stewardship were independently randomized across job profiles, these estimates provide the principal tests of H1–H3.

ESG stewardship produces the largest changes in the probability that a job profile is selected. Relative to a company criticized for failing to meet ESG standards, a company that meets minimum ESG standards is 26.1 percentage points more likely to be chosen, while a company recognized as an ESG leader is 41.2 percentage points more likely to be selected. Both estimates are statistically significant at the 1 percent level. These results provide strong support for H1 within our sample: respondents place substantial value on stronger ESG stewardship when evaluating energy-sector employment opportunities.

Starting salary also has a large and monotonic effect on employment choice. Relative to a starting salary of \$75,000, an offer of \$80,000 increases the probability that a profile is selected by 13.7 percentage points, while an offer of \$85,000 increases it by 27.4 percentage points. The approximately equal incremental effects associated with the two \$5,000 salary increases also suggest that

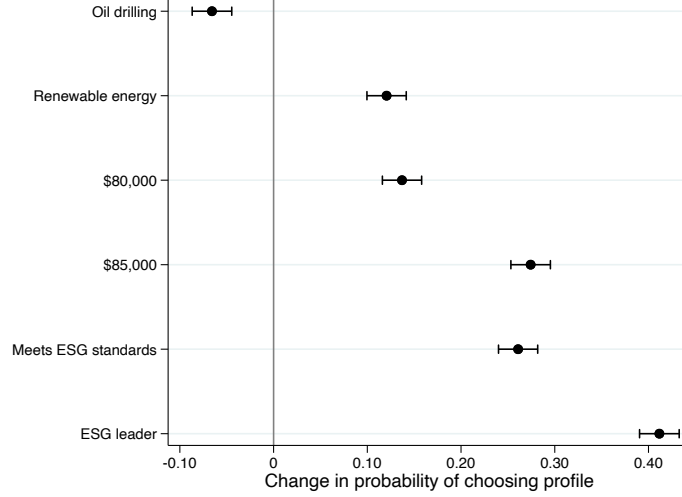


Figure 2: Average marginal component effects, full sample

Notes: Reference categories are: (1) *Industry*: Natural gas; (2) *Starting salary*: \$75,000; (3) *ESG stewardship*: Criticized for not meeting ESG standards.

respondents respond approximately linearly to salary over the range considered in the experiment.

Industry matters independently of both compensation and firm-level ESG performance. Relative to a natural gas company, employment at an oil drilling company reduces the probability that a profile is selected by 6.6 percentage points. In contrast, employment at a renewable energy company increases the probability of selection by 12.1 percentage points. These estimates support H3 and indicate that respondents distinguish not only among firms according to their ESG stewardship but also among the broader energy sectors in which those firms operate.

The conditional logit estimates in Table 4 provide an alternative specification that explicitly accounts for the paired-choice structure of the experiment. The direction and statistical significance of the estimates are unchanged: ESG leadership, meeting minimum ESG standards, higher salaries, and renewable-energy employment increase the likelihood that a profile is selected, while oil-drilling employment reduces it. Because conditional logit coefficients are expressed on a log-odds scale, their magnitudes should not be compared directly with the probability-scale average marginal component effects. Their consistency nevertheless indicates that the substantive findings are not driven by the linear probability specification.

The estimates reveal a clear ordering in the magnitude of the experimentally induced changes in employment preferences. Moving from poor ESG performance to ESG leadership produces a larger change in choice probability than

Table 4: Baseline employment-choice models

	Linear probability model	Conditional logit
Oil drilling company	-0.066*** (0.011)	-0.388*** (0.063)
Renewable energy company	0.121*** (0.011)	0.705*** (0.065)
\$80,000 salary	0.137*** (0.011)	0.755*** (0.064)
\$85,000 salary	0.274*** (0.012)	1.586*** (0.080)
Meets minimum ESG standards	0.261*** (0.012)	1.427*** (0.072)
Recognized as ESG leader	0.412*** (0.012)	2.317*** (0.097)
Observations	10,656	10,656
Respondents	1,068	1,068
Choice sets	5,328	5,328
Task-order fixed effects	Yes	Choice-set strata
Standard errors	Clustered by respondent	Clustered by respondent
Coefficient scale	Probability	Log odds

Notes: Standard errors are in parentheses. The Linear probability model specification includes task-order fixed effects and respondent-clustered standard errors. The conditional-logit model conditions on the respondent-task choice set. Reference categories are natural gas, \$75,000, and criticized for not meeting ESG standards. Logit coefficients are on a log-odds scale and should not be compared directly in magnitude with probability-scale. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

either moving from the lowest to the highest salary or moving across energy industries. This pattern is summarized in Figure 3.

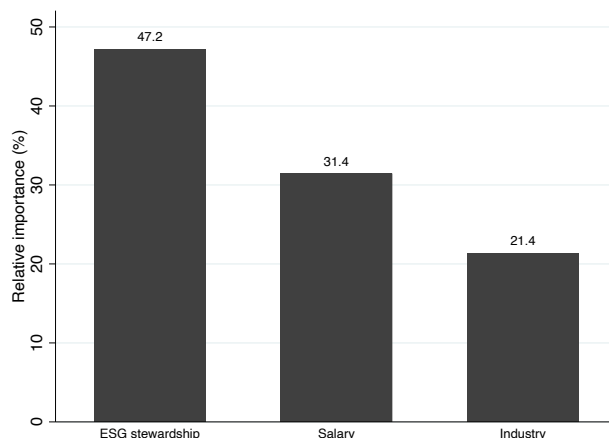


Figure 3: Relative importance of job attributes

ESG stewardship accounts for 47.2 percent of the model-implied range in employment preferences, compared with 31.4 percent for salary and 21.4 percent for industry. Because this measure is constructed from the ranges of the estimated attribute effects, it should be interpreted as a descriptive summary of their relative importance rather than as a separate causal estimation.

The magnitude of the ESG effects raises a more substantive question: whether respondents are willing to trade higher compensation for stronger ESG stewardship. Figure 4 addresses this question by comparing predicted choice probabilities for selected combinations of industry, salary, and ESG performance. To illustrate these substantive effects it is worth looking at the probabilities of choosing different jobs.

The comparison is particularly striking when ESG performance and salary move in opposite directions. A renewable-energy company recognized as an ESG leader but offering the lowest salary of \$75,000 has a predicted choice probability of approximately 65.3 percent. By comparison, an oil-drilling company criticized for failing to meet ESG standards but offering the highest salary of \$85,000 has a predicted choice probability of only 33.0 percent. Thus, despite a \$10,000 salary disadvantage, the renewable-energy ESG-leader profile is approximately twice as likely to be selected.

A natural gas company that meets minimum ESG standards and offers \$80,000 has a predicted choice probability of 51.9 percent, while a renewable-energy ESG leader offering \$85,000 reaches 92.8 percent. These comparisons provide substantive support for H2: respondents are willing to trade higher starting salaries for employment opportunities associated with stronger ESG stewardship.

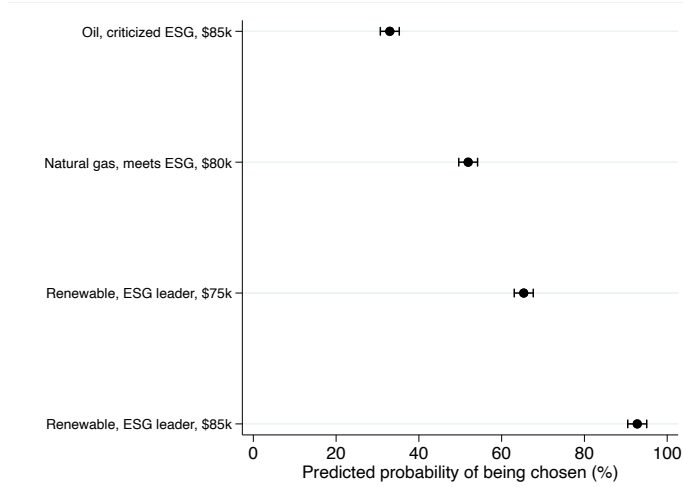


Figure 4: Selected predicted job-offer trade-offs

The continuous-salary specification provides a complementary way of expressing these trade-offs. Table 5 converts the estimated effects into salary equivalent values by treating salary as approximately linear over the experimental range.

Table 5: Implicit salary-equivalent trade-offs

Contrast	Estimate	SE	95% CI
Meets minimum ESG standards	\$9,513	\$534	[\$8,466, \$10,559]
Recognized as ESG leader	\$15,008	\$701	[\$13,633, \$16,383]
Renewable energy company	\$4,396	\$430	[\$3,554, \$5,239]
Oil drilling company	-\$2,397	\$403	[-\$3,187, -\$1,606]

Notes: Estimates convert model coefficients into salary-equivalent values using salary coded in \$5,000 units. The calculation imposes linearity across the three salary levels and should be interpreted as an implicit salary trade-off, not as literal willingness to pay.

Meeting minimum ESG standards is associated with an implicit salary equivalent of approximately \$9,513 (95% CI: \$8,466–\$10,559), while ESG leadership is associated with approximately \$15,008 (95% CI: \$13,633–\$16,383). The corresponding estimate for employment in renewable energy is approximately \$4,396, whereas oil drilling carries an implicit salary penalty of approximately \$2,397.

These estimates reinforce the conclusion from the predicted-profile comparisons: respondents place economically meaningful value on non-pecuniary characteristics of prospective employers, particularly ESG stewardship. At the same time, the salary-equivalent estimates impose linearity on salary over the relatively narrow \$75,000–\$85,000 experimental range. They should therefore be interpreted as implicit salary trade-offs within the experimental choice setting

rather than as literal willingness-to-pay estimates or valuations that necessarily generalize beyond the salary range considered here.

Gender constitutes the chapter’s primary source for analyzing heterogeneity in job conditions. Table 6 reports the pooled interaction estimates that provide the formal tests of H4a–H4b. Male respondents are the reference group, and the female interaction terms indicate whether the corresponding average marginal component effects differs for women.

Table 6: Gender heterogeneity in employment-choice

	Male	Female interaction	Interaction SE	Interaction p-value	Implied female
Oil drilling company	-0.050	-0.034	0.023	0.143	-0.084
Renewable energy company	0.121	0.003	0.023	0.912	0.123
\$80,000 salary	0.167	-0.062	0.023	0.007	0.106
\$85,000 salary	0.327	-0.112	0.024	< 0.001	0.215
Meets minimum ESG standards	0.254	0.019	0.024	0.423	0.273
Recognized as ESG leader	0.385	0.063	0.025	0.010	0.448
Observations	10,416				
Respondents	1,044				
Task-order fixed effects	Yes				
Joint test: Industry $\times$ Female	$p = 0.253$				
Joint test: Salary $\times$ Female	$p < 0.001$				
Joint test: ESG $\times$ Female	$p = 0.029$				

Notes: Estimates from a pooled linear probability model model interacting each randomized attribute with a female indicator and including task-order fixed effects. Standard errors are clustered by respondent. Male respondents are the reference group. Respondents in the self-describe/not-say gender category are excluded from this male-female interaction model. Reference categories are natural gas, \$75,000, and criticized for not meeting ESG standards.

Both male and female respondents respond positively to stronger ESG stewardship, higher salaries, and renewable-energy employment. However, the relative importance of ESG stewardship and compensation differs substantially by gender. Among male respondents, being recognized as an ESG leader increases the probability that a profile is selected by 38.5 percentage points. The corresponding effect among female respondents is 44.8 percentage points. The female interaction is therefore 6.3 percentage points and is statistically significant ($p = 0.010$). In contrast, the gender difference associated with merely meeting minimum ESG standards is considerably smaller and is not statistically significant.

The joint test of the ESG-by-female interactions is statistically significant ($p = 0.029$). The evidence therefore indicates that gender differences in responses to ESG are concentrated particularly at the highest level of ESG stewardship. Women are significantly more responsive than men to employers recognized as ESG leaders, providing support for H4a.

Gender differences in salary preferences are even more pronounced. Among men, increasing the starting salary from \$75,000 to \$80,000 raises the probability that a profile is selected by 16.7 percentage points, compared with 10.6

percentage points among women. At \$85,000, the corresponding effects are 32.7 percentage points for men and 21.5 percentage points for women. The female interaction terms are -6.2 percentage points for the \$80,000 offer ($p = 0.007$) and -11.2 percentage points for the \$85,000 offer ($p < 0.001$). The salary-by-female interactions are also jointly significant ($p < 0.001$).

By contrast, there is considerably less evidence that women and men respond differently to the industry itself. The renewable-energy effect is nearly identical across the two groups: 12.1 percentage points among men and 12.3 percentage points among women. The oil-drilling penalty is somewhat larger among women (-8.4 percentage points) than among men (-5.0 percentage points), but the difference is not statistically significant. The industry-by-female interactions are not jointly significant ($p = 0.253$). The central gender differences therefore concern the relative weight placed on ESG stewardship and compensation rather than systematically different preferences across energy industries.

Figure 5 presents the gender-specific average marginal component effects and illustrates these differences in substantive terms. Formal claims about differences between women and men, however, are based on the pooled interaction tests reported in Table 6.

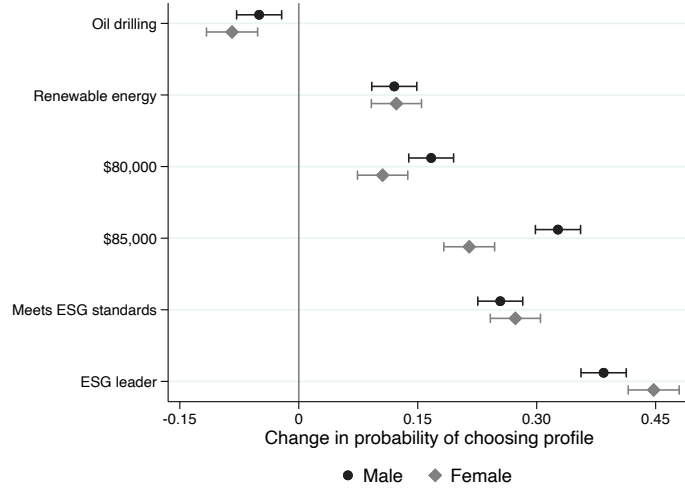


Figure 5: Average marginal component effects by gender

Figure 6 provides a complementary descriptive summary. Women and men rank the three attributes in the same order, ESG stewardship first, salary second, and industry third, but assign substantially different relative weights to them.

ESG stewardship accounts for 51.5 percent of the model-implied attribute range among women, compared with 43.6 percent among men. Conversely, salary accounts for 24.7 percent among women but 37.1 percent among men. Industry accounts for 23.8 percent and 19.3 percent, respectively.

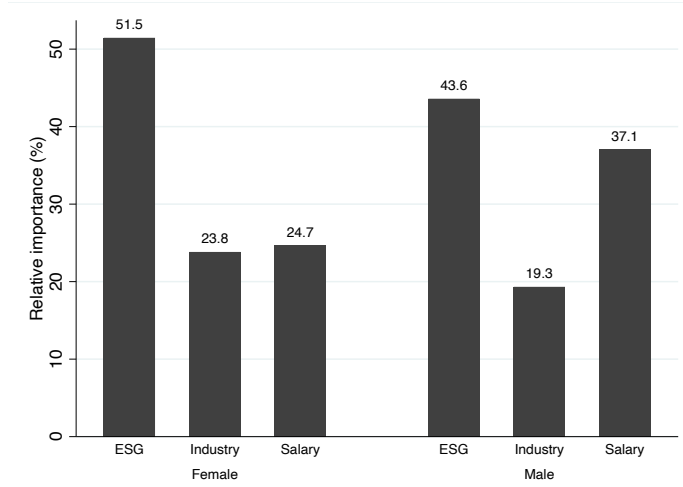


Figure 6: Relative importance of job attributes by gender

These results provide support for H4b. Women are not insensitive to compensation; higher salaries substantially increase the attractiveness of employment opportunities for both women and men. Rather, women place greater relative weight on ESG stewardship and less relative weight on incremental salary. In combination with the stronger female response to ESG leadership, this suggests that credible ESG performance may be particularly important for firms seeking to attract women into the energy workforce.

The main findings are robust to several alternative specifications and sample restrictions. Table 7 summarizes these checks.

Table 7: Robustness checks for key employment-choice conclusions

Check	Coefficient scale	ESG leader	Salary 85k	Renewable	Oil drilling	N profiles
Conditional logit	Log odds	2.317	1.586	0.705	-0.388	10,656
Appeal-rating mixed linear model	Rating scale	1.291	0.647	0.346	-0.152	10,654
Task-order controls	Probability	0.412	0.274	0.121	-0.066	10,656
Valid choice pairs only	Probability	0.412	0.274	0.121	-0.066	10,656
Exclude Natural Sciences & Engineering	Probability	0.421	0.287	0.128	-0.068	7,742
Exclude Business management/administration	Probability	0.421	0.260	0.119	-0.077	6,524
Exclude Social sciences and other	Probability	0.392	0.275	0.114	-0.053	7,046

Notes: Entries report the coefficient for each key attribute level in the corresponding robustness specification. Probability-scale entries are LPM estimates; rating-scale entries are from the seven-point appeal-rating model; logit entries are log-odds coefficients. Coefficients should be compared by sign and robustness of substantive ordering, not by magnitude across scales.

The conditional logit specification produces the same direction and statistical significance as the baseline probability model, indicating that the main conclusions are not sensitive to using an alternative model for the paired-choice structure. The seven-point appeal-rating outcome also produces the same substantive ordering: stronger ESG stewardship, higher salary, and renewable-energy em-

ployment increase the attractiveness of a profile, whereas oil-drilling employment reduces it.

The results are also insensitive to alternative treatments of the experimental data. Including task-order controls and restricting the analysis to valid paired choices leave the baseline estimates essentially unchanged. In addition, leave-one-field-of-study-out analyses show that the main results are not driven by respondents from a particular disciplinary group. When natural sciences and engineering students are excluded, the ESG-leader estimate is 0.421; excluding business students yields an estimate of 0.421; and excluding social sciences and other fields yields an estimate of 0.392. In each case, the signs and substantive ordering of the ESG, salary, renewable-energy, and oil-drilling effects remain consistent with the baseline estimates.

These checks indicate that the central conclusions are robust across alternative outcomes, model specifications, and sample compositions. Stronger ESG stewardship remains a substantial predictor of employment choice; respondents continue to value higher salaries and renewable-energy employment while discounting oil-drilling employment; and the central gender results show that women place relatively greater weight on ESG stewardship and less weight on additional compensation.

6 Discussion and Conclusion

The energy transition is changing not only how energy is produced and consumed, but also the workforce that will support this transformation. This chapter examines whether ESG stewardship impacts employment preferences among prospective workers in the energy sector and whether these preferences differ between women and men. Using an original survey and choice experiment analysis among University of Houston students, we find that ESG stewardship plays an important role in employment decisions.

The results show that respondents are more likely to choose employment opportunities at companies with stronger ESG stewardship. They also prefer renewable energy companies and job offers with higher starting salaries, while job opportunities in oil drilling are less attractive. The effect of ESG stewardship is large relative to the effect of salary. Respondents are willing to trade higher starting salaries for employment at companies with stronger ESG performance.

We also find important difference between women and men. Both groups value stronger ESG stewardship and higher salary, but women place relatively greater weight on ESG and less weight on additional salary. In particular, women respond more strongly to companies recognized as ESG leaders. However, we find little evidence of gender differences in preferences across energy industries. These findings suggest that ESG practices may be particularly relevant for energy companies seeking to attract a more gender-diverse workforce.

These results should be interpreted in light of the study’s setting. Our original sample consists of students at a large university located in a major U.S. energy region and should not be viewed as a representative of the broader labor

force. Future research could examine whether similar preferences energy among workers at different career stages, across regions, and in actual employment decisions. Nevertheless, how energy companies operate and how prospective workers perceive their environmental and social practices, may also shape who is willing to work for them. In this regards, ESG stewardship may be an important factor of attracting and retaining the workforce needed for a more inclusive and just energy transition.

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