Gender Diversity and Climate Innovation

The Sasakawa Peace Foundation

December 1, 2020
Contents

Section 1. Executive Summary ................................................................. 1
Section 2. Background – why gender and climate ........................................ 2
Section 3. Gender and climate ................................................................. 3
   3.1. Gender diversity – status of the market ......................................... 3
   3.2. Gender and climate governance ...................................................... 5
   3.3. Gender and climate performance .................................................... 9
Section 4. Gender and innovation .......................................................... 14
   4.1. Gender and innovation ................................................................. 14
   4.2. Oil and gas sector ........................................................................ 15
Section 5. Gender and climate innovation case studies ................................. 19
   5.1. Shell: gender diversity drives new businesses .................................. 21
   5.2. Alibaba: gender diversity at the core of the business ...................... 23
   5.3. Lendlease: gender diversity shaping corporate culture .................... 25
   5.4. Sony: diversity policy bringing out the best in people ................. 27
Section 6. Recommendations ................................................................... 31
Appendices ............................................................................................ 32
Appendix A. Data coverage, definition, gender data .................................. 32
About us ................................................................................................. 35
Table of figures

Figure 1: Correlation between gender diversity and climate innovation ........... 1
Figure 2: Scope of the research: hypothesis .................................................. 2
Figure 3: Average ratio of gender diversity at companies ................................ 3
Figure 4: Correlation between % women in management and % women in workforce 3
Figure 5: Share of companies with higher than 30% women on board ............ 5
Figure 6: Global average: environmental disclosure score by % women on board category .............................................................. 6
Figure 7: Electric utilities: environmental disclosure score by % women on board category .............................................................. 6
Figure 8: Oil and gas: environmental disclosure score by % women on board category 6
Figure 9: Mining sector: environmental disclosure score by % women on board category 6
Figure 10: Average environmental disclosure and % women on board by G20 country .............................................................. 7
Figure 11: Top 5 sectors on environmental disclosure and its diversity at board level .............................................................. 8
Table of tables

Table 1: Top 5 countries on women on board, in management, in workforce (2019) 4
Table 2: Case study summary on gender diversity driving climate innovation . 20
Table 3: Shell’s performance in gender diversity and climate innovation ........ 21
Table 4: Shell Ventures clean tech investments (select)................................. 22
Table 5: Shell downstream innovation.......................................................... 23
Table 6: Alibaba’s performance in gender diversity and climate innovation .... 23
Table 7: Lendlease performance in gender diversity and climate innovation ... 25
Table 8: Sony performance in gender diversity and climate innovation .......... 27
Table 9: Sony’s action plan in different areas related its environmental goals 29
Table 10: Top 6 companies by % women on board........................................ 32
Section 1. Executive Summary

Gender diversity is now recognized as an important element of global corporate strategy. While the share of female leaders in the global corporate boardroom is increasing, the relationship between gender diversity, climate performance and innovation has not been widely discussed. This analysis, studied more than 11,700 companies globally, finds that a critical mass of 30% women on the board makes a key difference to climate governance and innovation.

- **Women on the board**: The number of companies with more than 30% women on the board of directors has increased eightfold in just over a decade, from 2% in 2009 to 16% today.
- **Early adopters** of the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) show better gender diversity and higher transparency on climate-related data than peers. These international initiatives play a prominent role in climate governance and climate strategies in the near-term and in lowering emissions in the long-term.
- **Legislation and reporting** requirements accelerate disclosure on gender diversity and climate change. European countries have made significant progress in introducing legislated targets on female representation on corporate boards and voluntary initiatives since 2011 while Asian nations are lagging on diversity disclosure and performance.
- Leading integrated **oil companies** that have decarbonization strategies and are invested in digitalization activities also have higher female representation on the board. Gender diversity, however, does not directly contribute to lowering emissions and expanding digitalization.
- **Public corporate commitments** to shared gender diversity benchmarks will also prove valuable, by allowing companies to benchmark to global peers. Companies should consider setting longer-term diversity goals in the same fashion that they set goals for financial performance and climate. Financial markets can then evaluate the commitments.
- Increased and **standardized disclosure** of gender diversity will be essential, and will ultimately enable companies and financial markets to better assess the linkages between diversity and business performance. Data and benchmarks will allow markets to back-test the relationships between gender diversity and performance.

**Figure 1: Correlation between gender diversity and climate innovation**

Source: BloombergNEF. Note: Dark green = positive correlation, light green = somewhat positive.
Section 2. Background – why gender and climate

The ongoing climate crisis is an urgent challenge for humanity. Corporations and investors from across the world are stepping up their efforts to tackle climate change and lead the way toward a greener future. We see trends toward their transition everywhere, from investors signing up for Task Force on Climate-related Financial Disclosures (TCFD) recommendations to corporations committing to the Science Based Targets Initiative.

Businesses, large and small, are innovating in clean energy, carbon capture technologies and circular economy adoption. While progress is being made, most businesses have faltered in deploying the full potential of human capital by failing to embrace gender diversity. Women are listed in less than 11% of patent applications related to energy sector while 25% is average ratio of female employees in workforce in energy companies.

A gender-diverse workforce will bring in more experiences, knowledge, and skills to the table. As diverse teams consider issues from multiple perspectives, they are likely to emerge with solutions that all stakeholders of society find acceptable. They are less prone to engage in groupthink and make better decisions by keeping long-term implications in view. Overall, gender diversity in workforce is a vital pre-requisite to drive innovations for clean energy transition and implement strategies for timely climate action. In this report, we make a case for this by studying the state of gender diversity among listed companies across the world, and its implications for climate action and innovation.

The objective of this research is to examine the influence of gender diversity on climate governance, climate performance, innovation and climate innovation. The first three sections are the results of quantitative analysis on 1) gender and climate governance, 2) gender and climate performance and 3) gender and innovation. The last section is a case study on four leading companies on 4) gender diversity and climate innovation.

Figure 2: Scope of the research: hypothesis

Source: The Sasakawa Peace Foundation
Section 3. Gender and climate

Climate change and gender diversity are counted as key responsibilities that the board of directors take on and monitor within any organization. However, the extent to which firms take on such responsibility depends on the firm’s governance practices, among other considerations.

This section analyzes the relationship between gender and climate governance and performance by looking at disclosed data by companies.

3.1. Gender diversity – status of the market

Gender diversity at 11,700 companies covered in this research (see A.1 for data coverage) has improved in the past three years. In particular, the female ratio of board of directors has increased by 2.8 percentage points to 16.1% in 2019 (Figure 3). However, higher female representation at board is not correlated with other diversity metrics such as share of female managers and employees. Instead, gender diversity at management level strongly correlates with female employee rates (Figure 4). Gender diverse companies with more female leaders in management position can create diverse teams and bring in diverse opinion in discussions, which may end up retaining more female employees.

Gender diversity policy

It is important to note that country’s gender-related policies heavily influence gender diversity performance of companies. European countries have made significant progress in introducing legislated targets as well as voluntary initiatives and quotas on female representation on the corporate board since 2011. Within European Union member countries, 11 have introduced different types of laws, including Belgium, France, Italy, the Netherlands, Spain, Portugal, Denmark, Finland, Greece, Austria and Slovenia. Therefore, companies headquartered in these
countries or with business operations there have been maintaining high levels on gender diversity on the board.

Table 1: Top 5 countries on women on board, in management, in workforce (2019)

<table>
<thead>
<tr>
<th>Ranking</th>
<th>% women on board (data in 2010)</th>
<th>% women in management (data in 2010)</th>
<th>% women in workforce (data in 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>France, 44.1% (12.7%)</td>
<td>Philippines, 50.0% (10%)</td>
<td>Israel, 53.7% (15.2%)</td>
</tr>
<tr>
<td>2</td>
<td>Norway, 38.3% (35.9%)</td>
<td>Israel, 46.0% (15.2%)</td>
<td>Philippines, 49.5% (10.0%)</td>
</tr>
<tr>
<td>3</td>
<td>Sweden, 35.5% (23.3%)</td>
<td>Nigeria, 32.0% (9.6%)</td>
<td>Poland, 43.9% (11.3%)</td>
</tr>
<tr>
<td>4</td>
<td>Italy, 35.0% (4.1%)</td>
<td>Malaysia, 31.9% (6.1%)</td>
<td>Thailand, 43.8% (9.9%)</td>
</tr>
<tr>
<td>5</td>
<td>Belgium, 34.2% (10.1%)</td>
<td>New Zealand, 31.6% (11.5%)</td>
<td>South Africa, 43.6% (14.7%)</td>
</tr>
</tbody>
</table>

Source: Bloomberg Terminal. Note: countries that had less than 10 companies in the coverage were excluded in this table. Green represents increase of more than 30 percentage points.

Voluntary initiatives including the 30% Club are somewhat influencing leading companies to put gender diversity as high priority for business strategy. The 30% Club was launched in 2010, aiming to increase gender diversity at the board and senior management level in 13 locations globally including U.K., U.S., Australia, Hong Kong, Japan and Middle East and North Africa. While the level of activity differs by location, the club believes 30% represents a critical mass for enabling minority groups to impact boardroom dynamics.

The combination of legislation, voluntary policy, quotas and initiatives like 30% Club has pushed up the share of companies with more than 30% female members on the board. It reached 16% in 2019 from less than 2% in 2009.
3.2. Gender and climate governance

As companies with more than 30% females on board are increasing, we examined whether such gender diverse companies are also better at climate governance. In this study, environmental disclosure scores were used as an indicator to measure commitment that a company has on disclosing environmental data, including emissions. The more data a company discloses, the higher the environmental disclosure score, and the better the climate governance.

The results suggest that companies with more than 30% women on board had better climate governance globally in the past four years (Figure 6). This trend has been observed in electric utilities, oil and gas and mining sectors (Figure 7, Figure 8, Figure 9). Other than the 30% or higher category, the correlation differs by sector. Mining is the only sector that showed positive correlation across all the categories, meaning the higher percentage of women representation on a board, the better the environmental disclosure. But, other two sectors and global average saw the category of 0-10% women on board as second highest for environmental disclosure score (Figure 6, Figure 7, Figure 8) because the level of disclosure is affected by environmental reporting requirements in local markets and gender diversity policy discussed earlier.
Gender Diversity and Climate Innovation

December 1, 2020

Climate governance drivers

We identified three drivers that influence environmental reporting and data transparency, namely country policy, shareholder pressure and international initiatives.

- Some jurisdictions set environmental disclosure guidelines and regulations stricter than others. For example, France has legislation on additional reporting beyond finance for all companies with over 500 employees since 2013. Globally 24 stock exchanges require sustainability reporting for listed companies, including Hong Kong, India, France, and South Africa, while 55 stock exchanges have issued voluntary guidelines. Environment Ministry’s in countries like Japan has set reporting guidelines on greenhouse gas emissions and energy consumption. In markets like Japan and South Korea, lack of strict gender diversity policy but relatively robust environmental reporting guidelines affect the overall results of the relationship between gender diversity and environmental disclosure, just like electric utilities and oil and gas sector (Figure 10). The average percentage of women on board for Japan is 5.9% while its average environmental disclosure score is 20.4. Japan accounts for 19% of the

Figure 6: Global average: environmental disclosure score by % women on board category

Figure 7: Electric utilities: environmental disclosure score by % women on board category

Figure 8: Oil and gas: environmental disclosure score by % women on board category

Figure 9: Mining sector: environmental disclosure score by % women on board category
total universe of over 2,200 companies covered in this analysis. Similar profile of high environmental score and very low share of women on board was seen in Argentina, Chile, Mexico and Russia among G20 countries excluding EU.

Figure 10: Average environmental disclosure and % women on board by G20 country

Source: Bloomberg Terminal. Note: bubble size = number of companies, sample size for G20 countries = 9014. Country environmental scores and % women on board are average of companies based in a given country. Gender and climate governance leaders: France, Italy, Germany, South Africa, U.K., Canada, Australia Climate governance laggards: U.S. Gender laggards: Russia, Turkey, Mexico, Brazil, Japan, Argentina Gender and climate governance laggards: China, India, South Korea, Indonesia, Saudi Arabia

- Another factor could be stakeholder pressure from investors, NGOs, consumers and local communities pile on companies in sectors with larger environmental impact. This has been pushing up transparency of climate change activities and its related data for companies in oil and gas, mining and electric utilities. Consumer facing sectors such as cosmetics and auto manufactures also tend to have good environmental disclosure. Five sectors: oil and gas, mining, electric utility, cosmetics and auto manufacturing, have the highest environmental disclosure score (Figure 11).
Figure11: Top 5 sectors on environmental disclosure and its diversity at board level

Source: Bloomberg Terminal, Note: bubble size = number of companies, total sample size = 10875

- International initiatives such as Task Force on Climate-related Financial Disclosures (TCFD), Climate Action 100+ and Science based targets (SBTs) have also improved environmental disclosure for member companies or member candidate companies. Average environmental disclosure score for TCFD members since 2017 was 46 while that of latest joiners was 40 up from 37 in 2017 (Figure 12). Early TCFD adopters also showed greater gender diversity on their boards. The average share of female members on the board was 31% for companies that joined TCFD in 2017, compared to 16% for non-adopters (Figure 13). Academic studies also suggest that boards that reach a critical mass of three or more female directors and where women actively participate in board committees, the levels of climate related disclosures are consistently superior. On the other hand, in boards where the share of women is low, diversity will have limited influence on improving board outcomes.

Figure 12: TCFD members and climate governance

Source: TCFD, BloombergNEF, Bloomberg Terminal

Figure 13: TCFD members and % women on board

Source: TCFD, BloombergNEF, Bloomberg Terminal
The level of involvement of the board of directors in climate governance is key in managing climate risk and opportunities. When the board of directors governs environmental reporting directly, such as by setting a sustainability committee that can directly report to the board, environmental disclosure is higher than companies without such an arrangement (Figure 14).

Climate governance is much more robust when the board of directors or executives compensation links to sustainability goals. Compensation is a clear driver for the board to get involved in sustainability activities and make progress toward the goals. Currently, more than 700 companies have set directors’ compensation linking to sustainability goals and have higher environmental disclosure score than companies without (Figure 14).

Figure 14: Environmental disclosure score by different sustainability governance structure

Source: Bloomberg Terminal. Note: CSR is corporate social responsibility.

3.3. Gender and climate performance

The previous section showed that gender diverse firms have better environmental reporting and climate governance than their peers. Gender diverse firms also make more investments in renewable power generation and energy efficiency improvement, according to a study by Haas School of Business, University of California, Berkeley. The study suggested that the presence of more women corporate directors encourages proactive pursuit of sustainable business practices and opportunities.

Board diversity seems to help reducing emissions to some extent. Globally, the growth rate of emissions from companies with more than 30% female board members was only 0.6% compared to 3.5% for the companies without any female board members (Figure 15). As discussed in the previous section, gender diverse companies have set clear climate governance strategies and disclosed environmental data. This suggests that companies with better climate governance could utilize environmental data that is measured, verified and reported to identify emission reduction potential. Climate change governance could be an important stepping stone to lower emissions in the long-term.
This hypothesis is supported by data from TCFD members. Emission reduction by TCFD members that have more than 20% women on their board has been greater than companies with less than 20% women on their board (Figure 16). And early adopters of TCFD with higher gender diversity on their board have performed better (Figure 13).

![Figure 15: Global average: emission growth and board diversity](image)

- Emission growth 2016-2018
  - 7.5%
  - 6.0%
  - 4.5%
  - 3.0%
  - 1.5%
  - 0.0%
  - -1.5%
  - -3.0%

- % women on board
  - 0%
  - 0-10%
  - 10-20%
  - 20-30%
  - >30%

Source: Bloomberg Terminal
Note: gender data is from FY2017.
Sample size = 2800

![Figure 16: TCFD members: emission growth and board diversity](image)

- Emission growth 2016-2018
  - 7.5%
  - 6.0%
  - 4.5%
  - 3.0%
  - 1.5%
  - 0.0%
  - -1.5%
  - -3.0%

- % women on board
  - 0%
  - 0-10%
  - 10-20%
  - 20-30%
  - >30%

Source: TCFD, Bloomberg Terminal.
Note: gender data is from FY2017.
Sample size = 403

Higher emitting sectors such as oil and gas companies, show limited correlation between emission reduction and board diversity. It is probably because lowering emission in oil and gas sector is harder than others, and the sector emission reduction data is still limited. Yet, 50 electric utilities that have reduced emissions between 2016 and 2018 have relatively high women representation on board, on average at 20.7%. While emission reductions have been slower for oil and gas sectors compared to electric utilities, major integrated oil companies like Shell and BP with higher female share on their board have set aggressive decarbonization targets. It is likely that emission reduction from oil and gas companies is just a matter of more time. The next section discusses oil and gas sector and its decarbonization strategy more in detail.

![Figure 17: Electric utilities: relationship between emission growth and board diversity](image)

- Emission growth 2016-2018
  - R² = 0.0301

- % women on board in 2017
  - 0%
  - 10%
  - 20%
  - 30%
  - 40%
  - 50%

Source: BloombergNEF, Bloomberg Terminal.
Note: sample size = 89

![Figure 18: Integrated oil and gas: relationship between emission growth and board diversity](image)

- Emission growth 2016-2018
  - R² = 0.067

- % women on board in 2017
  - 0%
  - 10%
  - 20%
  - 30%
  - 40%
  - 50%

Source: BloombergNEF, Bloomberg Terminal.
Note: n=25
n=89
Oil and gas companies decarbonization strategy

Oil and gas companies are facing a number of regulatory and commercial challenges that are putting pressure on them to set decarbonization strategies not only for their operations, but also for the products they sell to consumers.

Investor engagement on climate change issues has increased significantly since the 2015 Paris Agreement. Shareholders in Shell, BP, Exxon Mobil, Chevron and Equinor have asked the companies to release more information on their strategy to manage climate risk and set targets for emission reduction and investment in clean energy. Those companies are being obligated to disclose their forward-looking strategies to deal with the transition risks and environmental impact of their operations and products. Return on capital in the oil sector has been declining for a number of years. It is therefore prudent for companies to seek out other opportunities, many of which are in low carbon technologies.

The table below summarizes the low carbon targets and memberships for selected companies.

Figure 19: Decarbonization-related targets and initiatives for major oil and gas companies

Source: BloombergNEF, company reports. Note: Blue indicates low carbon targets, green shows memberships.

While goals to reduce scope 1 and scope 2 emissions are an important part of a company’s strategy, with potential impact on project feasibility and the cost of producing oil and gas, scope 3 targets point to the broader strategic vision being pursued by management and provide a signal to investors regarding the direction of future investment decisions.

We have identified seven European oil and gas companies that have announced scope 3 targets: Shell, BP, Total, Equinor, Eni, Repsol and OMV. U.S. oil companies have set no scope 3 vision with the exception of Occidental Petroleum that announced a net-zero target including scope 3 emissions.
While gender diversity may not be the sole driver of climate performance, integrated oil companies that have set clear scope 3 emissions strategy and made significant progress in reducing scope 1 and scope 2 emissions seem to have higher female representation at the board. These include companies such as Shell, Eni and Repsol (Figure 21, Figure 22). Diversity at the workplace, including female managers (Figure 23) and employees (Figure 24), will play a prominent role in expanding decarbonization strategies to the products they sell to consumers, meaning lowering scope 3 emissions. Women can lead downstream innovation with good understanding of customers. This topic is discussed more in the case study section.
Figure 23: Top 10 integrated oil companies by % women in management

<table>
<thead>
<tr>
<th>Company</th>
<th>% Women in Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repsol</td>
<td></td>
</tr>
<tr>
<td>Suncor</td>
<td></td>
</tr>
<tr>
<td>Equinor</td>
<td></td>
</tr>
<tr>
<td>OMV Petrom</td>
<td></td>
</tr>
<tr>
<td>Shell</td>
<td></td>
</tr>
<tr>
<td>Lukoil</td>
<td></td>
</tr>
<tr>
<td>BP</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Galp</td>
<td></td>
</tr>
<tr>
<td>OMV</td>
<td></td>
</tr>
</tbody>
</table>

Source: Bloomberg Terminal. Note: OMV Petrom based in Romania.

Figure 24: Top 10 integrated oil companies by % women in workforce

<table>
<thead>
<tr>
<th>Company</th>
<th>% Women in Workforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galp</td>
<td></td>
</tr>
<tr>
<td>Lukoil</td>
<td></td>
</tr>
<tr>
<td>BP</td>
<td></td>
</tr>
<tr>
<td>Repsol</td>
<td></td>
</tr>
<tr>
<td>Gazprom</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Sinopec</td>
<td></td>
</tr>
<tr>
<td>Rosneft</td>
<td></td>
</tr>
<tr>
<td>Shell</td>
<td></td>
</tr>
<tr>
<td>Equinor</td>
<td></td>
</tr>
</tbody>
</table>

Source: Bloomberg Terminal
Section 4. Gender and innovation

Firms with gender diverse boards produce more patents and better patents with more citations, with greater efficiency, than their competitors according to academic studies. CEOs of such firms offer sufficient latitude for failure, on the back of long-term compensation structures. More importantly, gender diverse boards nurture an innovative corporate culture, conducive to helping a more diverse set of innovators collaborate and thrive. As with the case of improving climate performance and disclosure, promoting innovation also requires that gender diversity goes beyond tokenism and moves towards critical mass. This section examines the relationship between gender and innovation at corporations.

4.1. Gender and innovation

Our research findings show that companies with a higher gender diversity – or than 30% female on their board – have larger intangible assets and R&D expenses than companies with fewer female members on the board (Figure 25, Figure 26). We considered intangible assets as one innovation criteria as it includes patents, copyrights, trademarks and capitalized development cost.

R&D expenditure, which is also a key indicator for innovation, is strongly correlated with market value (market cap) (Figure 27). Companies that have invested in technological innovation have high market value because it is considered a seed for long-term business growth. It creates a positive cycle between capital and innovation as long as innovation drives business growth.

In terms of sectors, auto manufacturers spend by far the most on R&D on average, among the 72 sectors in our research coverage, followed by internet and semiconductor sectors (Figure 28). Those auto manufacturers with the highest R&D expenses also showed a positive correlation with gender diversity at the board level (Figure 29), but not necessarily in other sectors such as the internet, which ranked second highest in R&D spending (Figure 30). The category with 0-10% women on board for internet sector consists of only four companies – three in Asia and one in the U.S. This suggests that it is important to acknowledge the role of gender diversity in positively influencing innovation, but the impact differs by sector. Gender diversity is not the sole
Gender diversity and climate innovation

Determining factor for innovation. A later section of the report discusses this topic with more focus on climate innovation in case studies.

4.2. Oil and gas sector

Gender diversity in the workplace brings more innovative ideas for research and development in the oil and gas sector. Gender-diverse companies with a high ratio of female employees have higher research and development expenses than those with lower female representation in workforce (Figure 31).

The relationship between a gender diverse board and innovation is, however, less clear. Board gender performance is heavily influenced by policy and regulation as discussed in the previous section. Europe is most advanced in terms gender diversity policies and Asia lags behind (Figure...
10). Companies based in Asia have low female participation on the corporate board despite the high rate of R&D spending to net sales (Figure 32), probably due to gender policy. Also, general state of gender norms such as lower female employee and manager ratio in Asia plays a big role.

**Figure 31: % women in workforce and R&D expense to net sales for oil and gas companies**

**Figure 32: % women on board and R&D expense to net sales for oil and gas companies**

Source: Bloomberg Terminal. Note: gender and innovation data was available for 36 companies only due to limited disclosure. Red represents company’s HQ in APAC, green for Europe and blue for Americas. Bubble size is market cap.

**Digitalization in the oil and gas sector**

Oil and gas majors are pursuing digital technologies in earnest to increase the efficiency of their core businesses. Their key objectives, upstream and downstream, are to reduce the downtime of critical equipment, improve oil recovery rates of wells, increase energy efficiency and respond flexibly to market signals. Digitalization activities by oil and gas companies have been increasing since 2017 (Figure 33), with just over one third of activities based in North America (Figure 34). Analytics software thus far accounted for the largest proportion of activity, including artificial intelligence, digital twins and predictive maintenance. This investment enabled oil and gas companies to operate their assets remotely during the pandemic in 2020.

Integrated oil and gas companies have deployed digital technology pilots across their businesses and are leading in terms of adoption and investment. They were able to hire experienced data scientists and software developers to help digitally innovate. Oil companies also host incubators and accelerators for start-ups, or invest in them directly through venture capital arms. Despite the current downturn in oil prices and the pandemic, digitalization seems even more important as adopting it helps reduce costs and aids remote operations.
European integrated oil companies like Shell, BP and Equinor have succeeded in making digitalization a company priority and are implementing their strategy through many public digitalization partnerships and investments (Figure 35). Oil firms in the Middle East are catching up, with some recent digital announcements, while U.S. oil companies are lagging. Many Asian oil firms are quite digitally active, particularly in China, but they tend to make fewer announcements publicy and choose only one major partner (such as the Sinopec and Huawei relationship). This is in contrast to European majors who partner with varied small to large technology firms (particularly startups), in addition to forming partnerships with each other. An example is the March 2020 Shell and Equinor collaboration on digital technology, with the goal to reduce carbon emissions. Both companies have significant numbers of women in their digital leadership teams.
Of the leading digital oil firms, four had more than eight digitalization activities and high gender diversity at board level with more than 30% females on board. These are Shell, Repsol and BP (integrated oil companies) and Halliburton (oil and gas service company) (Figure 36). The gender diversity performance of Shell in particular is better than its peers. Shell has more female leaders as board members and has set gender diversity hiring targets, increasing gender diversity in the workforce (Figure 37).

**Figure 36: Digitalization activities and diversity at board level**

![Graph showing digitalization activities and diversity at board level]

**Figure 37: Shell’s gender diversity at board, management and workforce vs integrated oil sector average**

![Graph showing gender diversity at board, management, and workforce]

Source: BloombergNEF, Bloomberg Terminal

Source: Bloomberg Terminal. Note: 35 companies are categorized as integrated oil and gas sector.
Section 5. Gender and climate innovation case studies

Gender diversity policies can positively contribute to corporate climate innovation efforts. A diverse workplace encourages new ideas from different perspectives, healthy competition and an appetite for new challenges. Building a gender diverse workplace, for most companies, means hiring more women. This report showcases four companies that have placed women in positions of power to help strengthen corporate sustainability innovation.

- **Technology innovation**: Gender diversity appears to contribute to technology innovation and new business development. The product innovation units in Shell and Alibaba have female leaders, and they have encouraged other women innovators to excel in their work. Women innovators also have a good understanding of customer needs and contribute to create product features that attend to a more diverse customer base, as mentioned by Alibaba’s founder.

- **Corporate culture**: Gender diversity can catalyze innovative corporate cultures. In the case of Lendlease, women help to shape a supportive innovation culture, encouraging everyone to contribute their ideas. Diversity policies of a company can lead to gender diversity and innovation at the same time, as seen in Sony.

- **Sustainability**: Companies with gender diversity goals also tend to incorporate sustainability into their innovation efforts. Women employees lead on climate in Shell’s venture investment team, Alibaba’s philanthropy unit and Sony’s R&D units. Lendlease also transferred women employees from the sustainability team to the digital unit to bring in new perspectives.

- **How to improve gender diversity**: To achieve gender diversity, companies can set targets and develop actionable programs such as women’s networks and technology training. China’s Alibaba and Sony’s Japan unit set specific targets for female employment share, including at the management level. Shell has multiple programs internally to support women in leadership roles and Lendlease set up programs to train more women in the engineering field.
Diverse ideas are important for making venture investments, product innovation choices and successful technology in research and development. To make suitable products for its clients, a company’s diversity should reflect the make-up of the markets in which it is active. Gender diversity means the team benefits from differing opinions and strengths. As a result, we see units related to climate innovation often have a higher percentage of women employees or leaders.

### Table 2: Case study summary on gender diversity driving climate innovation

<table>
<thead>
<tr>
<th>Company (HQ location)</th>
<th>Shell (Europe)</th>
<th>Alibaba (China)</th>
<th>Lendlease (Australia)</th>
<th>Sony (Japan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender diversity</td>
<td>38% of the venture unit is female. There is a female chief digital officer for the downstream oil business</td>
<td>50% of the product innovation team is female. 42% of executives are women, of which some lead new business</td>
<td>27% of the digital team leadership is made up of women, with a woman head of innovative culture</td>
<td>The number of women managers doubled since 2015. Many are in the sustainability team</td>
</tr>
<tr>
<td>Climate innovation</td>
<td>Investing in clean technologies, developing digital tools to reduce scope 3 emissions</td>
<td>Developing new software products with sustainable features, reducing emissions from operations</td>
<td>Developing digital tools to reduce emissions from operations</td>
<td>Building a technology-driven sustainability roadmap</td>
</tr>
<tr>
<td>Gender’s role for climate innovation</td>
<td>Gender diversity drives clean technology venture business</td>
<td>Gender diversity contributes to developing sustainable product features</td>
<td>Gender diversity shapes a dynamic and inclusive innovation culture</td>
<td>Diversity policy encourages female leadership and innovation</td>
</tr>
</tbody>
</table>

*Source: BloombergNEF.*
5.1. Shell: gender diversity drives new businesses

Royal Dutch Shell is a multinational oil and gas company with operations spanning upstream oil exploration, refinery and downstream retail. Shell stands out in the oil and gas sector in terms of its commitment to renewable energy and new technologies, as well as the role of women in driving these new businesses. 25-30% of Shell’s managers are female, compared to a global average of 10.8% for the oil and gas sector. These female employees have contributed significantly to building Shell Ventures, the first corporate venture capital arm of an oil and gas company, and in developing Shell’s downstream technology innovation.

Table 3: Shell’s performance in gender diversity and climate innovation

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Current progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender diversity</td>
<td>- 50% of board members are women</td>
</tr>
<tr>
<td></td>
<td>- 25-30% management roles are held by women, with a female CFO</td>
</tr>
<tr>
<td></td>
<td>- 48% graduate new hires are women</td>
</tr>
<tr>
<td></td>
<td>- Shell Ventures has 38% female employees; Shell GameChanger has 50% female employees</td>
</tr>
<tr>
<td></td>
<td>- Shell’s chief digital officer for downstream products is a woman</td>
</tr>
<tr>
<td>Climate innovation</td>
<td>- 65% emissions reduction target by 2050</td>
</tr>
<tr>
<td></td>
<td>- Shell Ventures has made 81 investments</td>
</tr>
<tr>
<td></td>
<td>- Shell’s accelerator incubated 150 ideas</td>
</tr>
<tr>
<td></td>
<td>- 0.3% revenue for R&amp;D budget, 223 R&amp;D projects in 2019</td>
</tr>
<tr>
<td></td>
<td>- Shell believes digital technologies can help reduce its scope 3 emissions by 20%</td>
</tr>
<tr>
<td></td>
<td>- Digital training course for all employees</td>
</tr>
</tbody>
</table>

Source: BloombergNEF.

Shell has been working towards greater gender diversity since 1997, as part of its larger diversity and inclusion plan. Shell’s Chief Executive Officer Ben van Beurden is a member of the Catalyst CEO ‘champions for change’, a group of more than 50 CEOs who have pledged to support women’s advancement at all levels of leadership. The results of this transformation have been significant. Shell is the only oil and gas company to be listed in The Times’s 2016 Top 50 employers for women list (since 2014). Half of Shell’s board members (6 out of 12) are women – one of the highest shares in the integrated oil and gas sector companies globally. The percentage of women in Shell’s senior leadership, middle management and supervisory level has also grown significantly over the last decade (see Table 3). Shell does a good job of maintaining gender diversity among entry-level employees too – 48% of the graduate new hires, and 51% of the business operation center employees were women in 2019.

Shell has implemented some programs internally to facilitate this change: the ‘senior women connect program’ (SWC) helps women make professional connections within and beyond the company; and the women’s career development program (WCDP) has supported 3,500 women in developing effective strategies to balance their career and personal success. Shell has also been promoting the global STEM program and the Royal Academy of Engineering campaign to attract more women in tech and engineering. There are also specific initiatives, such as maternity leave, flexible working hours, and training program for new mothers, which aim at supporting women during various life events.
Gender diversity has a great impact on Shell's venture capital and accelerator business. Shell established Shell Ventures in 1996, the first oil and gas company to launch a venture capital fund to invest in new technologies. Since then, venture capital has become an important pillar of support for Shell's diversification into renewable and new businesses, with 81 investments made so far (see Table 4 for portfolio companies). Shell GameChanger is the accelerator unit Shell launched to incubate early stage technologies, which has turned more than 150 ideas into reality so far.

Both venture units of Shell have a high proportion of women, rare in the venture capital industry. 38%, or 15 out of the 44 employees in Shell Ventures are women, compared to an industry average of 30% in the venture capital sector (U.K. samples). 40%, or two out of the five, investment principals in Shell Ventures U.S. are women, much higher than the venture capital industry average of 13% in 2020. Similarly, the Shell GameChanger accelerator is led by a female managing director, with women accounting for 50% of the team.

Women employees in Shell’s VC and incubator units have made an impact on Shell’s investment focus on renewable energy, new fuels, e-mobility and sustainability. For example, Shell Ventures U.S.’s only investment principal that focuses on sustainability is a woman. Shell GameChanger’s women members have been the champion incubators of companies tackling energy transition and alternative fuels. The managing partner of Shell Ventures had called out for more women to join the company in 2019. The regional branches established more recently, such as Poland and China, have much higher women representation. Shell Ventures Poland’s three team members are all women that focus on e-mobility and digital business. 50% of Shell Ventures China employees that invest in clean energy and mobility are women.

Table 4: Shell Ventures clean tech investments (select)

<table>
<thead>
<tr>
<th>Company</th>
<th>Tech</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense Labs, Palmetto</td>
<td>Energy efficiency</td>
</tr>
<tr>
<td>AutoGrid, Innoweratts</td>
<td>Decentralized energy</td>
</tr>
<tr>
<td>Brill Power, Geli</td>
<td>Battery storage</td>
</tr>
<tr>
<td>Forge Hydrocarbons</td>
<td>New fuels</td>
</tr>
<tr>
<td>Via Carpooling</td>
<td></td>
</tr>
</tbody>
</table>

Source: Pitchbook

Figure 39: Change in the percentage of women in Shell’s management level

<table>
<thead>
<tr>
<th>Year</th>
<th>Supervisory level</th>
<th>Management position</th>
<th>Senior leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>7%</td>
<td>14%</td>
<td>21%</td>
</tr>
<tr>
<td>2013</td>
<td>14%</td>
<td>28%</td>
<td>35%</td>
</tr>
<tr>
<td>2015</td>
<td>21%</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>2017</td>
<td>28%</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>2019</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Source: BloombergNEF, Shell
Downstream digitalization driven by women innovators

Women are leading Shell’s innovation in its downstream business. In addition to investing in clean technologies, Shell is also working to reduce emissions from its existing petroleum-based products, such as lubricants. The downstream digital unit is tasked with developing new digital technologies to optimize the use of its products for the customers (Table 5). Shell believes these innovations can potentially reduce its scope 3 emissions by around 20%.

Shell has a female chief digital officer (CDO) leading the development of new digital tools and services for downstream customers. Her team has a very high female representation, with the country innovation leads in the U.S. and Asia-Pacific also women. This is rare among oil and gas companies – for example, the chief digital officers at BP, Total and Equinor are all men.

Gender diversity has brought a new approach and perspective to innovation in the team. Instead of starting from the technology perspective, the team began with customer interviews and pilot projects. Women innovators tend to think from the customer’s perspectives and understand their pain points and problems, which could then provide inspiration for the innovations. This process also involves a lot of trial and error, requiring significant patience to go through, which a diversified team tends to do well. For example, the team realized the mining sector has similarities to the oil and gas sector, but is much less energy efficient and digitalized. Starting from 2019, it has launched multiple software packages to test the market in the mining sector.

The digital team has a very flat structure and gives significant opportunities to young female innovators to take initiative. For example, the innovator of the Tulli wind software and Shell Remote Sense lubricant software is a junior female employee.

5.2. Alibaba: gender diversity at the core of the business

Alibaba is a Chinese technology company specializing in e-commerce, logistics, cloud services and data analytics. We think Alibaba is a particularly good example of how gender diversity drives innovation, because the company was born in the context of women empowerment in China and the founders made gender diversity one of the core company policies. Female ratio of executives is 42%, much higher than the global average of 13.4% for the technology sector. Alibaba is also the only Chinese company that has committed a fixed percentage of its revenue (0.3%) to fund climate actions every year.

<table>
<thead>
<tr>
<th>Product</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuport &amp; Remote Sense</td>
<td>Software to optimize lubricant use</td>
</tr>
<tr>
<td>Machine Max</td>
<td>Software to optimize fleet utilization</td>
</tr>
<tr>
<td>FitCar</td>
<td>Software to monitor car fuel use and maintenance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Current progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender diversity</td>
<td>42% of executives are women</td>
</tr>
<tr>
<td></td>
<td>33% of Alibaba partnership leaders are women</td>
</tr>
<tr>
<td></td>
<td>47% of total employees are women</td>
</tr>
<tr>
<td></td>
<td>Half of the product designers and testers are women</td>
</tr>
<tr>
<td></td>
<td>Alibaba has a woman chief people officer</td>
</tr>
<tr>
<td></td>
<td>Alibaba has women leaders in new business groups</td>
</tr>
<tr>
<td>Climate innovation</td>
<td>0.3% of revenues go to Alibaba Foundation for environmental actions</td>
</tr>
<tr>
<td></td>
<td>The second-hand item trading platform is estimated to have reduced emission by 5,848 metric tons</td>
</tr>
<tr>
<td></td>
<td>AI reduces logistics material use by 15%</td>
</tr>
<tr>
<td></td>
<td>55 million trees planned on behalf of the users taking green actions in life</td>
</tr>
</tbody>
</table>

Source: BloombergNEF.
Alibaba is known to have gender diversity as part of its founding values. Women contribute to over 65% of Alibaba’s e-commerce sales and most of the retailers selling on Alibaba’s platform are women, making 30% more sales on average than male retailers. It is fair to say Alibaba’s success came hand in hand with women empowerment in China – the new generation of women born in the 90s have been driving China’s $670 billion ‘sheconomy’ for the past decade.

Aware of women’s role in its business, Alibaba’s founder Jack Ma is a supporter of gender diversity. Ma said the ‘secret’ recipe of Alibaba’s success is the women in the company, and thinks the proportion of women employees is positively correlated with the long-term growth of a company. He set a requirement for women to make up at least 33% of employees and made it part of the management’s performance indicators. Ma also founded the ‘global conference on women and entrepreneurship’ in 2016, and has since partnered with UN Women, Melinda Gates and other popular women entrepreneurs to promote women innovation.

The representation of women in Alibaba is significant on different levels. 42%, or 6 out of 14, management executives are women. 33%, or 12 out of the 36 partners within Alibaba who take on senior management positions, are women. So far, women account for 47% of Alibaba’s total employees, much higher than the 33% minimum requirement Ma set.

Product innovation benefits from gender diversity

Gender diversity plays a critical role in Alibaba’s product innovation. In the product R&D department, although men account for 87% of the workforce, Alibaba wants to make sure half of the product designers and testers are women. Alibaba’s founder, Jack Ma, highlighted the role of women in understanding customers and improving product design. He said that gender diversity helps to make sure a diversified perspective is incorporated in the product design, taking into account the user experiences of people from all backgrounds. He also emphasized that women’s unique strengths in being adaptive to changes and attentive to human feelings, are crucial for Alibaba’s product innovation.

There are a couple of consumer products with innovative sustainability features. They might not have happened without a diversified product design team that thinks beyond technical excellence to attend to what the users want and need. For example:

- Alibaba developed a second-hand item trading software called Xianyu in 2014. Through enabling the use of second-hand items such as clothes, books and electronics, Alibaba estimates it’s saved 5,846 metric tons of CO2.
- Alibaba’s logistics unit Cainiao Network is developing an optimization algorithm that matches packaging needs based on a parcel’s mass and volume. This reduces the use of packaging materials by approximately 15%.
- Amap, a map service provider acquired by Alibaba in 2014, launched an environmental mapping service in 2018. The map presents data on air pollution and water pollution across different cities in China, aiming to push relevant entities to disclose emissions data and address environmental issues.
- The Alipay mobile payment app designed a unique feature to engage the public for environmentally friendly actions. Users of the app can collect ‘green points’ through low-carbon options in their daily lives such as using e-payments and choosing public transportation, and Alibaba would plant trees on behalf of the users in return. As of May 2018, 55 million trees had been planted on behalf of 350 million program participants.
Diversified management fosters diversified entrepreneurs

Women not only contributed to the development of these new products, but also led some of the new business teams.

- Lucy Peng, one of the founder members of Alibaba alongside Jack Ma, has been heading Ant Financial since 2018, the $150 billion unicorn born out of Alibaba that manages Alipay and the tree planting initiative.
- Judy Tong, the chief people officer of Alibaba, was appointed in 2019 to head the Cainiao Network – the logistics unit of Alibaba that launched the green supply-chain initiative.
- Ruihe Wang, the secretary of Alibaba Foundation, is the key driver of the Xianyu software, and the founder of the ‘internet plus circular economy committee’ in the China Association of Circular Economy.

The women leaders in Alibaba are dedicated to empowering more women entrepreneurs. The 12 female partners of Alibaba launched a program called ‘model mom entrepreneurship competition’, to highlight female entrepreneurs from disadvantaged backgrounds with the purpose of inspiring other women to start entrepreneurial ventures. The selected winners of the competition are each awarded interest-free loans and free training at Peking University’s entrepreneurship course. So far, 5,100 entrepreneurial moms have received opportunities there.

5.3. Lendlease: gender diversity shaping corporate culture

Lendlease is an Australian property company specializing in construction, project management and real-estate development. The company stands out because of the important role gender diversity plays in shaping its unique innovative culture. Lendlease has one of the most ambitious sustainability and innovation targets in the construction sector, with a carbon neutral goal set in 2019, and ambition to build a digital team from scratch. There is a healthy and dynamic culture within the company, where gender diversity has made a big impact.

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Current progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender diversity</td>
<td>• 40% of board members are women</td>
</tr>
<tr>
<td></td>
<td>• 27% of executives are women</td>
</tr>
<tr>
<td></td>
<td>• 32% of total employees are women</td>
</tr>
<tr>
<td></td>
<td>• Programs to address gender gaps in salary and job functions</td>
</tr>
<tr>
<td></td>
<td>• Lendlease has a female head of innovative culture</td>
</tr>
<tr>
<td></td>
<td>• Lendlease has significant gender diversity in the sustainability team</td>
</tr>
<tr>
<td>Climate innovation</td>
<td>• 20% emission reduction by 2020; carbon neutral goal set in 2019</td>
</tr>
<tr>
<td></td>
<td>• Hired a chief digital officer from GE and founded a digital team</td>
</tr>
<tr>
<td></td>
<td>• Digital software and research lab to reduce construction emissions by 50%</td>
</tr>
<tr>
<td></td>
<td>• Smart building pilot to reach carbon neutrality</td>
</tr>
</tbody>
</table>

Source: BloombergNEF.

The company is trying to address the occupational segregation in the real-estate industry – only 21% of the construction workforce is female, while the female proportion in other functions is
much higher. To achieve better gender diversity for the engineering and technology roles, Lendlease is making sure there is a similar participation of both men and women students in its graduate program, despite the majority of the universities it recruits from being male dominated. It is also engaging with high schools in Australia to encourage more women to take on STEM subjects and career paths in construction. Currently, women account for 32% of total employees and 27% of the executives at Lendlease. The company set a goal to have 30% women in senior management roles, and has been working towards it by increasing the share of women by 2% every year.

Another two pillars Lendlease identified to ensure gender diversity are addressing gender pay gaps and increasing flexibility. The company’s CEO Steve McCann is a champion of gender equality and has been monitoring and addressing pay gaps between women and men. The chief people officer of the company highlighted the company’s focus on ensuring flexibility at work – a lot of working parents in the construction sector struggle as most construction projects have firm delivery deadlines and allow little flexibility. These two programs can incentivize more women or working mothers to stay in the company and work their way to the leadership roles.

A dynamic and inclusive culture catalyzed by gender diversity

Women have brought their unique views to shape the innovation culture of Lendlease. Jasna Sims was appointed the head of innovation culture to accelerate the company’s pace of innovation in 2017, working with the leadership to create a supportive environment for innovation. A lot of her team members are women as well. Building an innovative culture is not an easy task, especially in the construction industry, which traditionally competes on cost and speed. It requires challenging the hierarchical organizational structure, and enabling everyone to contribute their ideas and talents.

Lendlease launched an innovation lab to encourage employees with their innovation efforts. The head of innovation culture mentioned that construction projects have a long timeframe, so innovation will have to be forward looking – addressing challenges and customer needs 30 years from now. Jasna’s deep understanding of people and organization has contributed to a strong innovation culture within Lendlease:

- **Turning ideas and knowledge into execution**: Rather than simply running training sessions for employees, Jasna thinks learning by doing is a better approach. Through handing out innovation assignments to the employees and coaching them to execute these ideas, they can understand how lean and fast experiments look like in practice.

- **Creating a safe space for trial and errors**: Jasna thinks creating sandboxes for people to experiment, to fail and to try new things is important. She also suggested lifting of the standard key performance indicators and rigorous five-year business planning for the innovation team, as they will never be able to successfully innovate if they are not allowed to fail.

This is the culture that gave rise to Lendlease’s digital team – established in 2019 to develop proprietary software for the progress of the construction sector. About 23.5%, or 4 out of the 17 people in the leadership team of Lendlease digital, are women. They play important roles in product, HR and finance. While other construction giants such as Balfour Beatty and Bechtel are still exploring their digital transformation, Lendlease has already hired a chief digital officer from GE and built the industry’s first digital twin software. Called Podium, it can simulate and optimize the design and schedule of construction projects, speeding up construction by 20% and thus reducing the use of material and energy. In 2018, Lendlease won a $28 million grant from the
Australian government with its smart building research center, which aims to achieve 80% reduction in construction waste and 50% reduction in CO2 emission with digital technologies.

**Sustainability going hand in hand with gender diversity**

Lendlease has achieved good gender diversity in the sustainability team. The sustainability board is headed by a woman, who has been driving the sustainability goals of Lendlease since 2013. Half the sustainability heads within the company are women and they have helped incorporate the sustainability agenda within the innovation practice of the company. Some female leaders were transferred from the sustainability team to the digital team to drive strategy planning.

Gender diversity has gone hand-in-hand with the sustainability performance of Lendlease. Women in the team had a significant role in putting sustainability on top of the agenda of Lendlease. The company is a supporter of the ‘Task Force on Climate-related Financial Disclosures’ (TCFD) framework, and the international leader of the global real estate sustainability benchmark’ (GRESB), with five funds ranking it number one among the hundreds of participants globally. In 2015, Lendlease set a target to reduce energy use, emissions and water use by 20% by 2020, and has been progressing towards this goal. It also committed to tackle scope 3 emissions in 2019, working with its supply chain to advance low carbon materials and purchasing certified carbon offsets to reach carbon neutrality. Lendlease also developed Australia’s first carbon neutral community – Barangaroo South, where it uses the viiva software to integrate building and process information.

### 5.4. Sony: diversity policy bringing out the best in people

Sony is a Japan-based conglomerate specializing in electronics, gaming, music and movie entertainment. Sony stood out among Japanese companies due to its high gender diversity and clear sustainability targets. One-third of board members are female, compared to a global average of 20% for mobile electronics manufacturers. Sony has a particularly good gender diversity in its sustainability-related teams, spanning R&D, corporate sustainability practices and external communications.

| Table 8: Sony performance in gender diversity and climate innovation |
|-------------------------|-----------------------------|
| **Metrics**              | **Current progress**         |
| Gender diversity         | 33% of board members are women |
|                         | 28% of managers are women    |
|                         | 10% target for women managers in Japan by 2020 |
|                         | Sony has great gender diversity in the sustainability leadership roles |
|                         | Sony has female scientists in the R&D department |
| Climate innovation       | Net-zero emissions target by 2050 |
|                         | Emissions from its products reduced by 52% by 2019 |
|                         | Sony computer science lab researches sustainable agriculture and nature conservation |
|                         | Sony startup accelerator partnered with UNOPS on a global innovation challenge for startups using AI to mitigate climate changes |
|                         | RE100 member |

*Source: BloombergNEF. UNOPS is United Nations Office for Project Services. RE100 members are companies who are committed to be 100% powered by renewables.*
Sony believes gender diversity is not just a corporate responsibility initiative, but it can bring competitiveness and economic return to companies. Sony Group launched a ‘diversity statement’ in 2013 to recognize diversity as a key management strategy of the company, one of the first Japanese companies to make a commitment in this area. In the statement, Sony recognized the importance of diversity in fostering an inclusive workplace and supporting all employees to make the most of their individual strengths and skills.

Since the launch of the diversity statement, Sony has been setting targets and increasing female representation within the company. The percentage of women on the board and in management roles has increased significantly (Figure 40). Although the percentage of women at the headquarters in Japan is lower than its global average, the number has doubled in the last five years. To fill the gap in Japan, Sony has set a target for women to hold 15% of management positions at Sony Corporation (the parent company), and 10% of management positions in the Sony Group (which includes the Sony Corporation and its affiliates) by end of fiscal 2020 (in March 2021). As an international company with overseas business accounting for 70% of its revenue, Sony could benefit more from promoting gender diversity than companies focusing only on Japan’s domestic market, for both branding and business purposes.

![Figure 40: Change of women employee in Sony, Sony Group (global) and the Japan unit](image)

Source: BloombergNEF, Sony

**Women rising up to lead sustainability practices**

Sony is very committed to fostering women leadership in the company. It joined the United Nations Global Compact with an NGO Athena to promote gender equality, putting some of its female employees on Athena’s women leadership training programs. Sony also has two internal programs designed specifically to support women to progress in their career. The women of action, vision and empowerment (WAVE) program offers mentoring and networking training for women employees so that they are better equipped with leadership skills. The Sony team of enterprising parents (STEP) supports the needs of working parents so that women do not have to sacrifice career progression for families.

While Sony has been working to improve gender diversity in Japan, it has already achieved a significant female representation in the sustainability-related management roles. Sony’s policy to
support women leadership has empowered women employees to rise up to management roles while pursuing their passion for sustainability and leveraging their strengths in communications and project management. Some examples include:

- **Sustainability department**: Mitsu Shippee is the head of corporate social responsibility (CSR), working with stakeholders on supply chain sustainability and other CSR issues. Keiko Shiga is the head of the environment section, managing Sony’s plans in achieving environmental and climate targets. Mami Imada is the senior general manager of the whole sustainability department.

- **Public relation and investor relations departments**: Naomi Matsuoka is the senior vice president managing investor relations for Sony on ESG issues. Yurika Kamitani is the senior general manager leading the public relations and government communication on ESG issues. Ms Kamitani mentioned that the support from colleagues has been crucial for her to keep taking on challenges and rising up to promotion opportunities.

These female leaders have contributed significant work to build Sony’s climate and sustainability roadmap. The efforts to bring the best potential out of employees led to a diverse workplace, as well as good company performance. Sony has been a pioneer of climate actions since 2006, when it committed to reduce carbon emissions by 7% by 2010. More recently, Sony set a target to achieve a ‘zero environment footprint’ by 2050 (in 2011) and has been working towards this goal on a five-yearly basis – it met the goal of reducing 30% carbon emissions by 2015. Sony’s sustainability roadmap is very specific and comprehensive, making it stand out from its peers. The plan takes into account all the stages of its product lifecycle, and tackles all the aspects from emissions, material use, chemical use and biodiversity (See Table 9).

### Table 9: Sony’s action plan in different areas related to its environmental goals

<table>
<thead>
<tr>
<th>Area</th>
<th>Target by 2020</th>
<th>Current progress</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy use</td>
<td>Reduce electronic product’s energy use by 30% (from 2013); reduce mobile product’s power use in idle mode to under 0.03W</td>
<td>Sony has reduced energy consumption per product by 52% by 2019</td>
<td>Energy efficiency technologies for electronics</td>
</tr>
<tr>
<td>Material use</td>
<td>Reduce the amount of oil-based plastic per product unit by 10% (from 2013)</td>
<td>The amount of oil-based plastics per product unit increased 10% by 2019, due to stricter regulation on recycled plastic imports and the expansion of the average TV screen size</td>
<td>Digitalizing product manuals; developing new recycled plastic material</td>
</tr>
<tr>
<td>Chemical use</td>
<td>Eliminate substances of high concern such as polyvinyl and chloride</td>
<td>N/A</td>
<td>Using measurement devices to detect chemicals; new hardware that uses alternative substances</td>
</tr>
</tbody>
</table>

*Source: BloombergNEF, Sony. Note: Green means Sony achieved the target while red means otherwise.*

**Women achieving their potential in tech R&D**

Sony believes inclusion and diversity are linked to innovation, according to Cheryl K. Goodman, head of corporate communication at Sony Electronics. She joined Sony three years ago and has been driving Sony’s commitment to women leadership in technology. Sony has been quoted
saying that a diverse team is more likely to remain objective, identify potential errors and be less timid about scrutinizing other’s points of view.

The diversity policy of Sony has encouraged more women to join and contribute to technology R&D, which is fundamental in developing low emission products and nature conservation technologies in general. Sony Computer Science Laboratories (CSL) is a research lab with around 30 scientists that look into frontier technologies with high social impacts. One of the main focus there is climate innovation, where scientists explore environmentally-friendly agriculture and distributed-energy systems enabled by digital technologies. The lab has some female scientists – Kaoru Yoshida is one of them and leads the research into the global circulation system and environmental disruption. Sony also has a R&D center working on new technologies to support the company’s various businesses in electronics and entertainment. Sony profiled the journey of a female AI researcher Hiromi Wakaki in the R&D department. She mentioned “Kando” (to move people emotionally), and a supportive environment, distinguished Sony from her previous company. After she took on a management role, she has been trying to apply the same values in managing her team, encouraging every team member to voice their opinions and ideas. She said that her parenting experience has enabled her to be more empathetic with what other people are going through or feeling.
Section 6. Recommendations

1. **Public corporate commitments** to shared gender diversity benchmarks will prove valuable, by allowing companies to benchmark to global peers.

2. **Disclosure**: Increased and standardized disclosure of gender diversity will be essential, and will ultimately enable companies and financial markets to better assess the linkages between diversity and business performance. Data and benchmarks will allow markets to back-test the relationships between gender diversity and performance.
   a. Disclosure is still a big issue in both gender diversity and climate performance. With the exception of board diversity, the level of disclosure on other diversity metrics such as women in management and women in workforce vary widely by company. To date, only 13% of companies in our data coverage (more than 11,700 companies) had disclosed the data on women in management roles, while 33% had done for female share in employees.
   b. Definition of gender diversity metrics should be standardized. Female employees in management position is defined differently by market and by company.
   c. Lack of disclosure would dis-incentivised financial markets to look for investment opportunities in companies with good gender diversity and climate.
   d. Global initiatives that set gender disclosure guideline and standardization would be needed at the same level as Greenhouse gas protocol for climate change. This could also play a role in promoting gender diversity along with initiatives like the 30% Club, mentioned in section 3.

3. **Diversity goals**: Companies should consider setting longer-term diversity goals in the same fashion that they set goals for financial performance, climate governance and performance just like global climate initiatives including RE100. Our analysis has shown 30% share of women on the board constitutes a tipping point beyond which climate and innovation performance improves. Companies should consider this threshold in setting their diversity goals. Also, companies can do more than target long-term diversity; they can commit to it. Financial markets can then evaluate the commitments.
   a. Longer-term commitments on diversity and climate innovation would be increasingly important for companies as they give a clear signal on direction of their businesses to stakeholders and financial markets.
   b. Back-testing gender, climate and business performance has been done to look for correlation metrics, but that is limited to analysis of past performance.
   c. Forward-looking analysis on gender and climate could increasingly play a crucial role in company valuation and cash flow analysis. Climate-related opportunities including climate innovation and risks would influence business performance at greater scale than before. Gender should also be treated as an additional metric that impacts climate governance, as this research results show.
   d. Financial markets should respond to integrate forward-looking analysis on gender and climate into not only valuation analysis but also engagement with companies.
Appendices

Appendix A. Data coverage, definition, gender data

A.1. Data coverage:
More than 11,700 companies with ESG data available on Bloomberg Terminal, from 102 countries and longer than 10 year history, providing transparency data since 2006. Higher than 84% of global market cap.

A.2. Definition

Bloomberg’s environmental disclosure score:
Proprietary Bloomberg score based on the extent of a company’s environmental disclosure as part of Environmental, Social and Governance (ESG) data. Companies that are not covered by ESG group will have no score and will show N/A. Companies that do not disclose anything will also show N/A. The score ranges from 0.1 for companies that disclose a minimum amount of ESG data to 100 for those that disclose every data point collected by Bloomberg. Each data point is weighted in terms of importance, with data such as Greenhouse Gas Emissions carrying greater weight than other disclosures. This score measures the amount of environmental data a company reports publicly, and does not measure the company’s performance on any data point.

Emission data:
Scope 1 + Scope 2 emissions used for all the companies in this research.

A.3. Top companies

<table>
<thead>
<tr>
<th>Rank</th>
<th>Name</th>
<th>Country</th>
<th>Sector</th>
<th>% women on board</th>
<th>Market cap ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bespoke Extracts</td>
<td>U.S.</td>
<td>Pharmaceuticals</td>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Destination Maternity Corp</td>
<td>U.S.</td>
<td>Retail</td>
<td>80</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Travelzoo</td>
<td>U.S.</td>
<td>Internet</td>
<td>80</td>
<td>104</td>
</tr>
<tr>
<td>4</td>
<td>Tootsie Roll</td>
<td>U.S.</td>
<td>Food</td>
<td>75</td>
<td>2,107</td>
</tr>
<tr>
<td>5</td>
<td>Wallenstam</td>
<td>Sweden</td>
<td>Real Estate</td>
<td>75</td>
<td>4,993</td>
</tr>
<tr>
<td>6</td>
<td>Empresa de Telecom de Bogota</td>
<td>Colombia</td>
<td>Telecom</td>
<td>71</td>
<td>199</td>
</tr>
</tbody>
</table>

Source: Bloomberg Terminal.
A.4. Gender data

Figure 41: Gender diversity global average

Source: Bloomberg Terminal

Figure 42: Gender diversity in electric utility sector

Source: Bloomberg Terminal

Figure 43: Gender diversity in oil and gas sector

Source: Bloomberg Terminal

Figure 44: Gender diversity in mining sector

Source: Bloomberg Terminal

A.5. Related BNEF research reports

- Is Big Oil Serious About Going Low Carbon? (web | terminal)
- How Oil and Gas Companies Are Addressing Climate Risk (web | terminal)
- 1H 2020 Digital Trends in Power, Oil and Gas (web | terminal)
- Sizing the Market Opportunities for Oil and Gas Software (web | terminal)
- Digitalization Strategies of Oil Majors: Company Profiles (web | terminal)
- Task Force on Climate-related Financial Disclosures Primer (web | terminal)
A.6. Related research reports by the Sasakawa Peace Foundation

- *Gender Equality in Japan, Hong Kong & Singapore*
- *Gender Lens Investing Landscape East & Southeast Asia*
- *Sustainable Investing in Japan: An Agenda for Action*
- *The Role of Entrepreneurship in Closing Gender Gaps in Myanmar*
- *The Emergence of Angel Investment Networks in Southeast Asia Report I - III*
Gender Diversity and Climate Innovation
December 1, 2020

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