

## **Background of Boeing**

Roan Ryan

The Boeing Company, founded by William E. Boeing, and originally titled “The Pacific Aero Products Company,” has played a pivotal role in shaping the aviation industry, and has become, among other things, a symbol of innovation, ambition, resilience, and technological capability. Boeing's history now spans over a century, where they have transitioned from a small airplane manufacturing company, to a military aircraft supplier, to the global aerospace and defense giant they are today. Boeing's business units revolve around three categories of products and services: Commercial Airplanes, Military Aircraft and Missiles, and Space and Communications. These three broad subjects have required Boeing to accrue a myriad of facilities, staff, and bright minds to continue to innovate and manufacture their aircrafts. (Amir, Weiss, 2024)

Originally, Boeing wanted to focus on Seaplanes, and their first aircraft, the B&W Seaplane, debuted in 1916 in Seattle, Washington. Shortly after, Boeing was rebranded to the name we know today. After the rebranding, Boeing solidified its place in the aviation industry with its production of military aircraft. Particularly, the Model C and Model 95 Seaplanes, which the Navy commissioned repeatedly. The first world war created a demand for military aircraft, one that Boeing seized entirely, marking the beginning of their significance in the decades to come. (Crowley, 2003) Some more notable aircrafts manufactured by Boeing used in the US military are the F-15 Eagle, F/A-18 Hornet and Super Hornet, the C-17 Globemaster, the Apache series, and the CH-47 Chinook. The V-22 Osprey is also a recognized aircraft. (Crowley, 2003)

During the war, Boeing's commercial aircraft market faltered behind their competitors, and in order to compete, they developed an airliner powered with turbojets, with more range than

any aviation company had seen before. While it was initially met with speculation due to its expensiveness, it quickly won over passengers and crew due to its short flight times, and the 707 went into commercial service successfully. By the end of the 20th century, the Boeing 737 had become the world's best selling commercial aircraft. The Boeing 747, their "Jumbo Jet," the world's first wide-body jetliner, almost set them into bankruptcy. The gamble paid off however, when the 400-seater went into service in 1970, allowing airlines to offer affordable, high capacity, long-range air travel. This success propelled Boeing into a monopoly position in the aviation market. In 1960, Boeing acquired the Vertol Corporation, which was the world's largest helicopter manufacturing company, adding helicopters to their mix of aircrafts. They also started work on missiles in 1945, resulting in successful, intercontinental ballistic missiles and air-launched cruise missiles into their arsenal. (Amir, Weiss, 2024)

Concerning space technology, Boeing produces Delta launch vehicles, including solid-rocket boosters and rocket engines for space shuttles. They work with the United Space Alliance to complete these projects, as well as NASA. Boeing worked on the International Space Station, and in the 1960-70s, Boeing built the first spacecraft to orbit the moon, the "Lunar Orbiters," and the Mariner 10 space probe, which took the very first close up pictures of the surface of Mercury. Boeing influence in the space industry is often unnoticed in comparison to their commercial airplanes, but their influence is strong and long lasting. In 1993, NASA chose Boeing as the prime contractor for the ISS, and intermittently increased their responsibilities around the station over the next two years. In 200, Boeing acquired the satellite company of Hughes Electronics.

Boeing military's influence did not end after the World Wars, and in fact, the US Air Force worked with Boeing, General Dynamics, and Lockheed Martin, on the F-22 Raptor, a tactical fighter plane with stealth features. After World War II, Boeing also helped develop the

F-18 Sabre, and the F-100 Super Sabre, which was the very first American fighter to fly at supersonic speeds.

The beginning of manufacturing failure for Boeing took place around 2003, when the new model of the 787 began to encounter problems, including fuselage failure in stress tests. The 787 was one of the first lighter planes to be created, and Boeing found themselves in new territory with high demand, an environment of pressure. In January of 2013, all 787s were temporarily grounded until a possible battery-fire threat was fixed. (Amir, Weiss, 2024)

The next large-scale operational failure that took place was in 2018. The first of two major crashes, the Lion Air Flight 610, a Boeing 737 Max, was a scheduled flight from Tangerang to Indonesia that crashed into the Java Sea 13 minutes after takeoff. All 189 people on board passed away. This was not only the 737's major accident, but also their highest death toll, surpassing an accident in 2010 on the Air India Express Flight 812. It was also the deadliest aircraft incident that has ever taken place in the Java Sea. An investigation revealed flight control problems that Boeing had already been aware of due to a previous passenger-traumatizing flight. There was also a serious issue with the AoA sensor (angle of attack) and many other flight instruments. The United States Federal Aviation Administration issued warnings and training advisories to Boeing, which were not fully implemented, playing a role in the next major 737 crash, which took place in 2019. (Ember, Nerkar, 2024)

The second fatal crash was the Ethiopian Airlines Flight 302, a scheduled passenger flight from Ethiopia to Kenya. The 737 Max crashed 6 minutes after takeoff, near the town of Bishoftu. All 157 people aboard passed away. This was Ethiopia Airlines deadliest incident of record, and the deadliest aircraft incident in Ethiopia. The crash took place five months after the Lion Air crash. The crash was caused by the previously mentioned elements as well as the

plane's MCAS system activating, causing the plane to nose dive towards the ground. Again, the FAA ordered Boeing to implement design alterations, particularly in the MCAS system. In the following two weeks, Boeing lost \$40 million dollars in market value.

There was a third fatal crash with China Eastern Airlines, in which the 737 again nosedived into the ground. This crash took place in March of 2022, and all 132 passengers died. Investigation is still ongoing, but many reports say that the aircraft was deliberately crashed, so for the moment, this crash does not fall under the same umbrella of operational failure. This crash was the deadliest of 2022. (Johnson, 2024)

The most recent Boeing headline surrounds the door plug that fell off the 737 Alaska Airlines flight in midair, causing an emergency landing. This incident happened last month, and is just in its beginning stages of investigation and legal consequences. So far, investigation has revealed faulty bolts, and widespread quality failures. The lawsuit claimed that Boeing prioritized short term success over the quality of their aircrafts and the safety of their passengers and crew. "This incident should have never happened, and it cannot happen again," said the FAA, exasperated with the multitude of problems Boeing has been involved with in the past few decades. (Burke, Blackman, 2024)

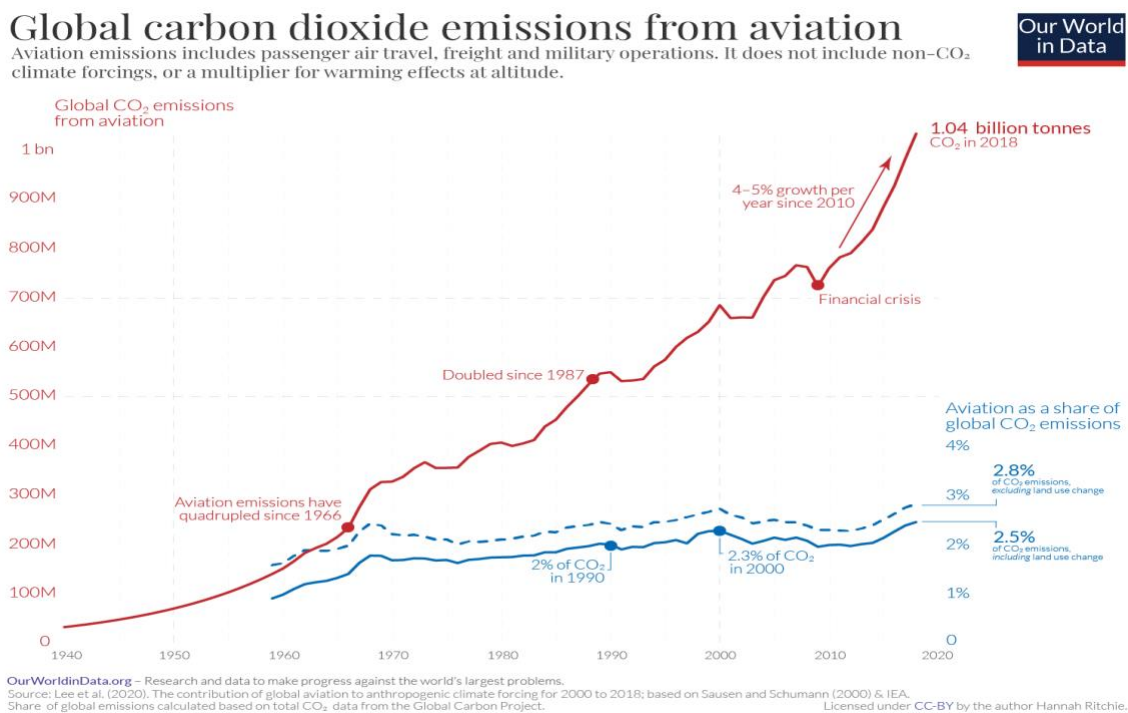
PESTEL Analysis:

**Political:**

There are various political and market-based effects on the aviation industry. The International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO) have implemented strategies and suggestions for aircraft manufacturers as well as airlines within the past few years. The methods implemented encompass technological, operational, and infrastructural approaches, all that have to do with the political climate of the

nation or market-based regulations. Flight taxes and airline compensation are two large political objects of discourse in the aerospace industry. Boeing has had an undeniably rocky few years, and airline compensation is of great relevance to them due to multiple hazards passengers have been subjected to, and the few fatal occurrences that have occurred due to manufacturing errors as well. When considering how Boeing should move forward, it is important to keep these regulations and political influences at the forefront of their strategies, as to correct mistakes and encourage passengers and government institutions to regain trust and admiration for the company. (Wild, 2021)

In a study of Swiss Aerospace, it was found that both the IATA and the ICAO have been putting pressure on issues of CO2 emissions, flight taxing in regards to emission reduction, sustainability and price fluctuations, and how the COVID-19 pandemic has left long-term effects on the aerospace industry. 2.8% of all CO2 emissions from fossil fuel combustion come from the aviation industry, as the figure below shows.



(Ritchie, 2020) *For the above figure*

The main goal of political action involving aerospace in Switzerland is to create a more sustainable environment, globally and nationally. Public feedback has been in large support of this, and they have shown to highly favor voluntary compensation. These taxes are also predicted to generate more airport traffic. While Boeing is not an airline, they are directly correlated with the success of airlines and airports, and will be affected thusly. In order to capitalize off of impending changes in the industry, Boeing needs to ensure they are ready and able to accommodate these incoming adjustments. (Boeing, 2023)

When considering political elements of a company's PESTEL analysis, it's also important to consider current global conflicts, and how they affect the success and reputation of businesses. One of the most prominent global conflicts today is the Israel-Palestine conflict, in which many companies have shared their opinion due to public pressure. A company's issued stance on current political issues can significantly impact their success. Controversial opinions, which any opinion on the Israel-Palestine conflict could be considered, can risk alienating customers and sparking boycotts and social backlash. A supportive stance (one aligned with

common social values) can help build customer loyalty, include employee morale, and erode general trust in the company. For example, McDonalds recently announced their offer of free meals for members of the Israeli military. Since McDonalds is an Israel based company, this stance doesn't come to a surprise to the higher staff, but most customers were unaware of this fact until recently. As a result, many people have been calling for a Boycott of McDonalds.

Boeing has chosen a fairly neutral stance on the conflict, committing two millions dollars to humanitarian efforts in the conflict, without specifying Palestinian or Israeli. They're supporting humanitarian efforts to organizations in the afflicted area that provide food, water, medical care, and other resources to civilians. This would be considered a smart stance by most, possibly a spineless stance by a few passionate commentators who would prefer a solid stance, but in general this approach supports humanitarian efforts all around and would be considered thoughtful and appropriate. (Zahn, 2023)

### **Economic:**

Boeing's employment rate decreased by 12.48%, after two crashes of the Boeing 737 MAX occurred in 2018 and 2019, killing 346 people. Since then, their employment rate has steadily begun to increase again. In 2021, it increased by 0.71%, a sign of the slow start of recovery for the business. In 2022, employment increased by 9.86%, and then another 9.26% in 2023. While we are in the beginning of 2024, growth rate has begun to show a slight dip at a .24% decrease, possibly in light of new, recent issues with the Boeing 737 MAX, where a fuselage panel came flying off mid flight, which the company explained was due to faulty bolts used in manufacturing. Employee retention has shown to be an issue for Boeing, due to their reputation as well as their financial status. In the past year, Boeing has cut their strategy teams

resources in divisions by 50%, however, they decline to comment on the number of jobs affected, which has further spread scrutiny and speculation around the company. (MacroTrends, 2023)

On December 11th of 2023, Boeing introduced a new Chief Operating Officer (COO), Stephanie Pope, in order to display new and changing priorities within business operations. This also places Pope in the position to succeed Boeing's CEO, Dave Caloun, when the time presents itself. Boeing subsequently saw a 1.4% increase in shares on that same Monday. Marc Allen, a previously predicted future CEO of Boeing has been announced to step down from his position of Chief Strategy Officer, (CSO). Last week, Boeing let the head of their 737 program go. Ed Clark, who was a main player in ramping up 737 production after the COVID-19 crisis, is stepping down immediately after 18 years at the company, following the mid-air door blowout that occurred just months ago. Katie Ringgold is replacing him as Vice President and general manager of the 737 program, and the Boeing factory in Renton, Washington. (Isinna & Hephher, 2023)

These major changes in employment are meant to alter public perception of the company and allow for growth from employees with fresh eyes and a keen awareness of the dire situation Boeing finds itself in. Aside from the 50% cuts in strategy teams, some strategists are being told that when the 60 day notices hit, to not return to work at all, and instead accept job search “advice” from company higher-ups. Keeping and maintaining talent has remained a prevalent issue within Boeing, but they are making tangible steps to combat this within the past few months especially, with major cuts and shifting employment standards.

Aside from employee retention, Boeing has had major debt issues that continue to persist with each new revelation of manufacturing and operational errors. Since the COVID-19 crisis,



Boeing has been contending with supply disruption and has become encumbered with almost 40 billion dollars in debt, resulting from the COVID-19 travel slump and the prior 737 safety crises. At the tail end of September 2019, Boeing had accrued about 12 billion in debt, which skyrocketed to 63 billion in December of 2020, and begun to decline again in September of 2023, plateauing at about 53 billion dollars according to Boeing's most recent reported data. 2020 proved to be their worst debt-accruing year in the past two decades, as they were reeling from major fatal crashes and the COVID-19 crisis. Most of their major competitors, including Airbus, have debt that is currently around  $\frac{1}{5}$  to  $\frac{1}{6}$  of Boeing's current debt. (MarketCap, 2024)

Boeing has also attributed a fair amount of their debt to inflation, while this is indeed speculation, there is no doubt that inflation has played a role. Inflation has become a significant and pervasive issue in the aircraft industry. Base prices of parts and materials for aircrafts have skyrocketed within the past decade, as well as labor and financing costs. Higher interest rates have led to higher borrowing costs, which in turn affects operational abilities and expenses. Demand for air travel has also had a huge influence on inflation and general costs. Both periods of high and low demand for air travel have their disadvantages. During periods of high demand, higher prices appear for goods and services. During periods of low demand, airlines face challenges with passing on increased costs to customers through their higher ticket prices. (Yu, 2022)

Boeing has also encountered difficulties in the stock market, in combination with and due to the prior discussed economic difficulties they've faced. Due to the fatal accidents in 2018 and 2019, in addition to the COVID-19 pandemic and its subsequent financial ramifications, Boeing stock dropped 75%, completely wiping out over 200 billion dollars in market value, a devastating loss to the company. This loss stung in particular due to the prediction that things

were finally beginning to turn around for Boeing, as demand for commercial airlines had skyrocketed. Over 3,800 aircrafts had been ordered from Boeing and Airbus in 2023, more than had been ordered in the past decade for either company. That was until the first of many 737 MAX's groundings, following the initial grounding due to the door plug blowing out on the Alaskan Airlines flight. (Root, 2024)

Boeing competitors have faced similar challenges, but with better financial resources and a considerable lack of reputation ruining operational failures. Lockheed Martin's total debt lands at 17.5 billion, while General Dynamics sits at a low 9.3 billion. Airbus, one of their largest competitors, has 11.29 billion dollars in debt. All of these figures are alarmingly low compared to Boeing's 63 billion dollars of current debt. (MarketCap, 2024)

The intertwining relationship between inflation and the economy proves to have created a myriad of challenges for the aerospace industry, Boeing especially, due to its tumultuous past and present. Escalating aircraft prices, increased debt and operational expenses necessitates strategic foresight and proactive risk management for Boeing.

### **Social:**

Issues of social and public perception are almost more important than every internal and operational failure that Boeing has faced recently. Public perception controls the popularity, and thus, the success of the company. Boeing's public perception has varied within the past six years. Many factors have influenced this, including the 737 MAX crises, the COVID-19 pandemic, labor issues, and on a positive note, their innovation and technological advancements. There is no denying Boeing's history of prowess and leadership in the Aerospace industry, something that carries weight regardless of current or future circumstances. Boeing is a recognized name,

possibly one of the most prominent names in the industry. It's also important to note that public perception is dynamic and can change at a moment's notice. It is very important to stay up to date on current news to get a full and accurate depiction of their stance in the media and public eye.

In 2019, a public research study found that 40% of travelers did not want to fly on the 737 MAX. While there hasn't been an official study since, it's easy to imagine the number has risen. All of Boeing's planes are issued with a statement from them, the FAA, and global regulators, saying that the airplanes are safe. However, it's also interesting to note that the notion of safety isn't set in one particular spot. This statement proving to be false, however, has caused travelers to seriously doubt the honesty and reliability of Boeing. They wonder if it was known if the planes were unsafe, would Boeing genuinely make an effort to recall them or provide better safety measures for passengers. Boeing's future in public opinion has been described as an uphill battle. (Ronco, 2020)

There have also been allegations of mistreatment of Employees within Boeing's work workforce. In October of 2020, a Boeing employee claimed racial and religious discrimination in the workplace, stating that she had been passed up for multiple promotions due to her being black and a Muslim. She also filed a suit in the Eastern District of Pennsylvania, which we will delve more into in the legal portion of Boeing's PESTEL analysis.

Another social aspect of Boeing is supply chain relations. Boeing's supply chain is notably intricate, with extensive reach and connections. About 80% of Boeing supply expenses remain within a concentrated group of about 10 major suppliers, and the remaining 20% are distributed across 11,000 small but significant, underlining the breadth of Boeing's supplier basis. Something Boeing has historically done and continues to do is collaborate with small and

minority owned enterprises, contributing to the large and diverse network of supplier relationships they have. (Noor, 2021)

In the thread of diversity, within the past year, 92% of interviews conducted by Boeing were classified as diverse in terms of demographics, and 42% of hires were also classified as diverse. Elon Musk, a prominent businessman and public figure, has publicly denounced Boeing various times in the past. His most recent remark has to do with diversity hiring, a slightly polarizing topic, especially when a “celebrity” figure speaks on it. He believes that DEI (Diversity, Equity and Inclusion) efforts will genuinely result in more deaths, as he states that Boeing cares about everything except general safety. Regardless of the truth of this matter, his opinions may shift public perception negatively, serving to spread further fear around the competency of Boeing and its staff. (NYPost, 2024)

### **Technological:**

While Boeing has experienced its fair share of blunders and operational failures, they have consistently been one of the first aircraft companies to harness and explore new technologies in aerospace. Since Boeing's foundation in 1916, they have been revolutionizing military aircraft, with the B-17, PW-9, and with commercial aircraft as well, including the 747 Jumbo Jet. They have consistently been the first to implement big changes in their aircrafts. Treating such an intensive manufacturing process as a race can do wonderful things for a company's reputation, that is, if no corners are cut, and no manufacturing errors occur. Clearly, this method worked wonders for Boeing in the past, and has allowed room for major errors in the present. (OrbitHub, 2024)

In October of 2022, Boeing and Aurora Flight Sciences, their subsidiary, implemented the Boeing Aerospace & Autonomy Center (BAAC), at the Massachusetts Institute of Technology (MIT). This center will assist Boeing in developing software that will enable airplanes to make intricate decisions in order to avoid crashes. This is just the beginning of changes in Boeing's technological ambitions.

There are a few areas of main focus, including composite materials. The composite materials Boeing has been developing are stronger and lighter than ever before. They also have significantly enhanced fuel efficiency and general performance by including carbon-fiber reinforced polymers into their aircrafts. Boeing has also placed emphasis on prevention of noise pollution recently, a prevalent issue in the aircraft industry. Boeing has been able to combat this issue through the use of chevron-shaped engine nozzles and better insulation materials. This also includes passenger experiences, in the plane and in a general airport setting.

Boeing has made countless recent innovations to their aircrafts, even if the manufacturing itself has shown to be problematic within the past few years. Aside from reduction of noise pollution, autonomy technology, fuel efficiency, and composite materials, Boeing has made other recent advancements. They've begun to invest in electric propulsion, for one, a technology that will help to develop cleaner and more sustainable aircrafts. Electric propulsion has been shown to significantly reduce noise pollution and carbon emissions. Along with composite materials, Boeing has begun to implement 3D-printed materials and lightweight alloys as well, allowing for more flexibility and durability in their aircraft, which in turn allows for more efficiency and environmentally safe methods of manufacturing. (OrbitHub, 2024)

Boeing has also begun to focus on Urban Air Mobility, which is a concept of vertical takeoff and landing, which could create massive shifts in airports and aircraft companies. This is

an exciting concept for airports especially, as it will decrease congestion and enhance accessibility for passengers. The final technological aspect of Boeing that will be discussed here is space travel. Boeing plays an integral role in space exploration, and have developed critical materials and components for NASA's space shuttles and the International Space Station.

### **Legal:**

Boeing's rocky history of serious incidents and crashes has opened the door to a plethora of legal trouble. The largest lawsuit in Boeing's recent history is the US. Vs. Boeing Company case, where Boeing was accused of conspiracy to defraud the Federal Aviation Administration's Aircraft Evaluation Group (FAA AEG). In January 2021, Boeing reached an agreement with U.S. authorities due to the criminal charge in regards to its 737 MAX airplane. Boeing admitted to deceiving aviation regulators during evaluations. As part of the deal, Boeing agreed to pay over \$2.5 billion, including a penalty and compensation for airline customers and crash victims' families. The agreement lasts three years, during which Boeing cannot dispute its responsibility publicly, or make any sort of public statement about the charges. If Boeing violates the terms, the U.S. Justice Department can prosecute. (U.S. Department of Justice, 2024) The total payment was separated into 3 categories. Boeing customers got 1.77 billion, a criminal monetary fee of 243.6 million was paid out, and 500 million was paid to families and legal beneficiaries of those who died in either of the 737 MAX crashes. (U.S Department of Justice, 2023)

There is also a current lawsuit surrounding the blown out door plug on an Alaskan Airlines 737 flight earlier in January of this year. Passengers have filed a lawsuit due to the fear and trauma they experienced from the frightening experience, which easily could have turned seriously dangerous. Luckily, no one was seriously injured, and all got back to the ground safely.

The suit is seeking unspecified damages and alleges product liability against Boeing under the Washington Product Liability Act. (McMichael, 2024)

Aside from those lawsuits, there have also been legal issues surrounding treatment and discrimination of employees. Various suits have been placed over the years. In 2018, Roderick Marshall was awarded 350,000 dollars after he endured a hostile work environment and racism from his coworkers, and the negligent response from superiors. Marshall claimed that a coworker tied a rope into a small noose and threw it at him, causing Marshall to fear for his life. (Haire, 2018) Boeing is unhappy with the verdict, claiming all superiors acted appropriately. There is one instance of a discrimination lawsuit that was dismissed, but most have resulted in small payouts to those afflicted. Boeing has also fired 65 employees for racial discrimination over the year of 2021, as a part of a “zero tolerance” approach Boeing implemented. (Heeb, 2021)

In the upcoming years, Boeing needs to stay sharp and vigilant surrounding any possible legal conundrums that could arise. Compliance with the FAA, who Boeing has had a close and not necessarily positive relationship with, is of utmost importance, as well as compliance with the EASA (European Aviation Safety Agency). Their compliance is also necessary in terms of export controls and trade regulations, contractual and commercial laws, intellectual property laws, employment and labor laws, and environmental regulations, in order to keep their heads above water during their newest crisis surrounding the door plug popping off of a flight in January.

Environmental:

A large part of Boeing's recent technological advancements have surrounded sustainability and environmental awareness. This includes new alloys, reduction of noise pollution and carbon emissions, and other sustainable fuels and materials. Since Boeing is a global aerospace giant, it operates in an intricate environmental landscape that significantly influences its strategic decisions and operational practices. In the realm of environmental considerations, Boeing navigates a dynamic set of factors that shape its commitment to sustainability and environmental responsibility. Adherence to emissions regulations stands out as an integral concern for Boeing. The aviation industry faces increasing pressure to align with global and regional emissions standards. Stricter regulations have the potential to impact aircraft design, manufacturing processes, and operational efficiency, necessitating continuous innovation to minimize environmental impact. Boeing must remain agile in adapting its practices to meet evolving emission standards and contribute to the industry's broader sustainability goals.

The carbon footprint of aviation is a critical focus area for Boeing. As environmental consciousness rises globally, the company is challenged to innovate and invest in technologies that enhance fuel efficiency, reduce greenhouse gas emissions, and foster overall sustainability. The development of eco-friendly aircraft and propulsion systems becomes imperative in this context, requiring ongoing research and development efforts, as we've discussed in the technological section of this analysis.

Renewable energy adoption represents another significant environmental factor for Boeing. Transitioning towards renewable energy sources for manufacturing facilities and operational activities is crucial to reducing reliance on non-renewable resources. By embracing sustainable energy solutions, Boeing not only mitigates its environmental impact but also contributes to the broader global effort towards a greener future.



In the scope of Boeing's environmental responsibilities, attention extends beyond its direct operations to the sustainability of the supply chain. Encouraging and enforcing eco-friendly practices among suppliers is essential towards fostering a more sustainable aerospace industry. Boeing's influence over its extensive network of suppliers enables it to drive positive environmental practices throughout the production and distribution chain. Effective waste management is another key consideration for Boeing's environmental strategy. Minimizing waste generation and implementing efficient waste management practices are imperative. Boeing should focus on recycling, reusing materials, and reducing overall waste in its manufacturing processes to align with global efforts to combat environmental degradation.

Biodiversity considerations are also essential in Boeing's environmental responsibilities. The company must be mindful of the impact its operations have on local ecosystems and biodiversity. Evaluating the environmental consequences of manufacturing or testing facilities helps prevent adverse effects on natural habitats and contributes to broader conservation efforts. Transparent reporting on environmental initiatives and performance is a crucial aspect of this environmental strategy. By openly communicating environmental goals, achievements, and challenges, Boeing demonstrates accountability and responsible corporate citizenship. This transparency builds trust with stakeholders and reinforces Boeing's commitment to environmental sustainability.

Davoudi, S., & Sadeghi, R. (2021). The impact of technology adoption on green logistics performance: The case of Iranian SMEs. *Case Studies in Transport Policy*, 9(2), 819-825. <https://www.sciencedirect.com/science/article/pii/S2590198221001123>

The Boeing Company. (2024, February 22). Boeing Statement on Ukraine International Airlines Flight PS752 Settlement. *Boeing Newsroom*. <https://boeing.mediaroom.com/news-releases-statements?item=131343>

ABC News. (Year, Month Day). Companies like Starbucks and McDonald's face controversy amid Israel-Hamas conflict. *ABC News*. <https://abcnews.go.com/Business/companies-starbucks-mcdonalds-face-controversy-amid-israel-hamas/story?id=104219615>

MacroTrends. (n.d.). Boeing total number of employees. *MacroTrends*. <https://www.macrotrends.net/stocks/charts/BA/boeing/number-of-employees#:~:text=Boeing%20total%20number%20of%20employees,a%200.71%25%20increase%20from%202020>.

Reuters. (2023, December 12). Boeing deepens strategy cuts, operations take center stage - sources. *Reuters*. <https://www.reuters.com/business/aerospace-defense/boeing-deepens-strategy-cuts-operations-take-center-stage-sources-2023-12-12/>

CompaniesMarketCap. (n.d.). Boeing total debt. *CompaniesMarketCap*. <https://companiesmarketcap.com/boeing/total-debt/#:~:text=Total%20debt%20on%20the%20balance,current%20and%20non%2Dcurrent%20debts>.

Yu, D. (2022, April 26). Inflation hits new aircraft deliveries: escalating the problem or inflating a solution? *Forbes*. <https://www.forbes.com/sites/davidyu/2022/04/26/inflation-hits-new-aircraft-deliveries-escalating-the-problem-or-inflating-a-solution/?sh=59d34d1f3114>

Root, Al. (2024, February 4). Boeing Stock Is a Buy, Sell, or Hold Right Now? *Barron's*. <https://www.barrons.com/articles/boeing-stock-buy-sell-28e1f541>

Osteower, Jon. (2024, January 1). Measuring Public Sentiment Toward Boeing's 737 Max. *The Air Current*. <https://theaircurrent.com/feed/dispatches/measuring-public-sentiment-toward-boeings-737-max/>

Ronco, Ed. (2020, November 20). Analysis: Uphill Battle for Boeing to Regain Public Trust in 737 Max. *KNKX*. <https://www.knkx.org/business/2020-11-20/analysis-uphill-battle-for-boeing-to-regain-public-trust-in-737-max>

Hayes, Peter. (2020, Oct. 30) Boeing. *Bloomberg Law*. <https://news.bloomberglaw.com/daily-labor-report/boeing-3>

Buchholz, Lucy. (2023). Boeing sets decarbonisation goals in its sustainability report. *Sustainability Magazine*. <https://sustainabilitymag.com/articles/boeing-sets-decarbonisation-goals-in-sustainability-report>

NYPost. (2024, January 12). Alaska Airlines shows Elon Musk is right: Boeing DEI could kill people. *New York Post*. <https://nypost.com/2024/01/12/opinion/alaska-airlines-shows-elon-musk-is-right-boeing-dei-could-kill-people/>

Noor, Maryam. (2021, April). Let's Talk Boeing Supply Chain Relationships. *Foster School Blog*. <https://blog.foster.uw.edu/lets-talk-boeing-supply-chain-relationships/>

OrbitsHub. (2024). Advancements in Boeing Aircraft and Aerospace Technology. *Orbits Hub*. <https://orbitshub.com/advancements-in-boeing-aircraft-and-aerospace-technology/>

Ritche, Hannah. (2020, October). CO2 emissions from aviation. *Our World in Data*. <https://ourworldindata.org/co2-emissions-from-aviation>  
(CO2 image)

Crowley, Walt. (2003, March). Boeing Company (Seattle). *HistoryLink.org*. <https://www.historylink.org/file/5369>

Amir, Weiss, (2024, Feb 21). Boeing Company. *Encyclopedia Britannica*.  
<https://www.britannica.com/topic/Boeing-Company>

Nerkar, Ember. (2024, February 5). Boeing 737 Max Faces New Uncertainty. *The New York Times*. <https://www.nytimes.com/2024/02/05/business/boeing-737-max-uncertainty.html>

Johnson, Gene. (2024). Boeing says Alaska Airlines emergency door plug is not a problem. *AP News*. <https://apnews.com/article/boeing-alaska-airlines-emergency-door-plug-1ef6d34c42fb22935c03a9cea46dd814>

Delisio, Meredith. (2024, January) Boeing and Alaska Airlines sued over emergency door plug. *ABC News*. <https://abcnews.go.com/US/boeing-alaska-airlines-door-plug-lawsuit/story?id=106417379>

Haire, Chris (2018, July 15). Boeing employee wins racial harassment discrimination lawsuit against the aerospace giant, which has five other lawsuits on the way. *Press-Telegram*.  
<https://www.presstelegram.com/2018/07/15/boeing-employee-wins-racial-harassment-discrimination-lawsuit-against-the-aerospace-giant-which-has-five-other-lawsuits-on-the-way/>

Heeb, Gina. (2021, April 30). Boeing fired 65 employees for racist or hateful conduct over past year. *Forbes*. <https://www.forbes.com/sites/ginaheeb/2021/04/30/boeing-fired-65-employees-for-racist-or-hateful-conduct-over-past-year/?sh=1092f825303e>