AIRLINES
Research Brief

SASB’s Industry Brief provides evidence for the material sustainability issues in the Road Transportation Industry. The brief opens with a summary of the industry, including relevant legislative and regulatory trends and sustainability risks and opportunities. Following this, evidence for each material sustainability issue (in the categories of Environment, Social Capital, Human Capital, Business Model and Innovation, and Leadership and Governance) is presented. SASB’s Industry Brief can be used to understand the data underlying SASB Sustainability Accounting Standards. For accounting metrics and disclosure guidance, please see SASB’s Sustainability Accounting Standards. For information about the legal basis for SASB and SASB’s standards development process, please see the Conceptual Framework.

SASB identifies the minimum set of sustainability issues likely to be material for companies within a given industry. However, the final determination of materiality is the onus of the company.

Related Documents

- Airlines Sustainability Accounting Standards
- Industry Working Group Participants
- SASB Conceptual Framework

INDUSTRY LEAD

Nashat Moin

CONTRIBUTORS

Andrew Collins
Henrik Cotran
Anton Gorodniuk
Jerome Lavigne-Delville
Himani Phadke
Arturo Rodriguez
Jean Rogers
Gabriella Vozza

SASB, Sustainability Accounting Standards Board, the SASB logo, SICS, Sustainable Industry Classification System, Accounting for a Sustainable Future, and Materiality Map are trademarks and service marks of the Sustainability Accounting Standards Board
INTRODUCTION

Once a symbol of high social and economic status, air travel has become a basic transportation service in developed economies and is increasingly common in many emerging economies. With this exponential growth of air travel worldwide, greenhouse gas (GHG) and other air emissions of airlines at high altitude have become an acute environmental externality in the focus of global and local mitigation efforts to combat climate change. And with intensifying air traffic, the industry must address increasingly stringent safety standards to maintain its image of the safest means of transportation. Moreover, despite a trend towards privatization, airlines are still directly or indirectly run by governments in many parts of the world. Fully privatized airlines struggle to stay profitable with a highly-unionized workforce, high capital requirements, and competition from government-sponsored carriers, and often seek court protection from creditors through bankruptcy and restructuring. To find economies of scale, Airlines are in a constant state of consolidation and increasingly cooperate through alliances, which limits competition.

Investors would obtain a more holistic and comparable view of performance with airlines companies reporting metrics on the material sustainability risks and opportunities that could affect value in the near- and long-term in their regulatory filings. This would include both positive and negative externalities, and the non-financial forms of capital that the industry relies on for value creation.

Specifically, performance on the following sustainability issues will drive competitiveness within the Airlines industry:

- Improving fuel efficiency of aircraft and reducing direct greenhouse gas (GHG) emissions and harmful air pollutants;
- Managing labor relations and ensuring fair employee treatment;
- Ensuring fair competition practices; and
- Ensuring the highest standards of passenger and cargo safety by managing the key risk factors: pilot error and mechanical failure.

In the context of global climate change and rising economic development in many parts of the world, regulatory pressure and public expectations will continue to drive environmental performance, passenger safety and competitive behavior. Therefore, management (or mismanagement) of these sustainability issues has the potential to affect company valuation through impacts on profits, assets, liabilities, and cost of capital.

INDUSTRY SUMMARY

The Airlines industry comprises companies that provide air transportation to passengers for both leisure and business purposes. This includes commercial full-service, low-cost, and regional airlines that operate in the U.S. and internationally. Most airline companies also have a cargo segment in their operations from which they generate two to three percent of revenues for the U.S.-domiciled airlines. For European, Asian, and Latin American airlines, nine to 12 percent of revenue is generated from a cargo segment. Current

---

1 Industry composition is based on the mapping of the Sustainable Industry Classification System (SICSTM) to the Bloomberg Industry Classification System (BICS). A list of representative companies appears in Appendix I.
Industry trends indicate that airlines are reducing their fleet of freighter planes and instead utilizing their passenger aircraft for cargo transportation. For example, Air France-KLM transports 72 percent of freight by passenger planes, which is up from 54 percent in 2007.¹

Airline routes and networks are key drivers of profitability for the industry. Full-service carriers typically use a hub and spoke model to design their routes within the U.S. and internationally. Low-cost carriers usually offer a smaller number of routes as well as no-frills service to their customers.² Regional carriers typically operate under contract to full-service carriers, expanding the network of the larger carriers.³ Another tactic used to increase an airline’s network is the use of alliances. There are three leading alliances: Star Alliance, Oneworld, and SkyTeam, each with 27, 15, and 20 worldwide members, respectively. Operating as an alliance allows customers access to international or otherwise unserved itineraries on multiple airlines, under one ticket. At the same time, airlines share some overhead costs and increase their competitive position in the international market without having to establish foreign operations.⁴

The global airlines market is valued at around $615 billion in revenues, with full-service airlines representing over 80 percent of the revenue. Airline cargo is the smallest segment with just under $20 billion of global revenue.⁶ Airline companies listed on the U.S. exchanges generate over $190 billion in revenue from the passenger transportation segment. In 2013, the median operating profit margin for U.S.-listed companies and those primarily traded over-the-counter (OTC) was 5.2 percent, while the median net income margin was 2.4 percent. Full-service airlines tend to have lower margins than their low-cost peers. Median operating margins of the largest full service airlines were 2.6 percent and the median net income margins were 1.3 percent in 2013. In comparison, in the same year, low-cost carriers were more profitable, with median margins of 9.8 and 3.7 percent of operating and net profit margins respectively.⁷

The industry is mature and concentrated, with the top four U.S.-domiciled, publicly traded, full-service airlines (United Continental Holdings, Delta Air Lines, American Airlines, and Southwest Airlines) holding more than 75 percent market share in North America in 2013, up from just under 70 percent in 2012.⁸ Industry consolidation was one of the main drivers of the rise in concentration.⁹ Over the last 12 years six mergers reduced the number of major carriers from 10 to four to dominate the market. The most recent mergers and acquisitions include: American Airlines merging with US Airways in 2013, Southwest acquiring AirTran Airways in 2011, United merging with Continental Airlines in 2010, and Delta Air Lines merging with Northwest Airlines in late 2009. Most of the companies were overcoming periods of bankruptcies prior to their mergers.¹⁰

The international airlines industry is characterized by high barriers to entry. This is mostly attributed to strict government regulations, high capital requirements, as well as licensing and reporting requirements. There can be only a limited number of aircraft designated to operate on each route, determined by airline agreements involving landing rights. Moreover, volume

¹ Using routes from a hub airport to other airports as spokes to connect them via the hub.
Quotas on international airline services are imposed on a country-by-country basis, which may give a competitive advantage to nationalized airlines.\textsuperscript{11}

Competition in the airline industry is dampened in some regions through limited airport infrastructure and airport slots, which can act as a cap on supply and make it very difficult for emerging companies to gain new slots. An airport slot is critical to an airline’s operations and gives the slot owner permission to use the airport infrastructure necessary to arrive or depart. The International Air Transportation Association (IATA) provides a global standard for slot management, but there are variations throughout the world in how and to what extent they are applied. The IATA categorizes airports as Level 1, Level 2, or Level 3 based on the level of congestion. Level 3 airports are the most congested and are defined as “airports where the capacity providers have not developed sufficient infrastructure or where governments have imposed conditions that make it impossible to meet demand.”\textsuperscript{12}

At Level 3 airports, slots are allocated to airlines using several principles, including historical precedents, whereby airlines that had a slot in the previous year and utilized it 80 percent of the time can retain that slot.\textsuperscript{13} Airlines are able to acquire, retain, and exchange take-off and landing slots. Due to limited availability, airport slots are very valuable to airlines. Therefore, U.K. airlines started recognizing their slots as assets on balance sheets. For example, BMI British Midland valued its Heathrow airport slots at £770m.\textsuperscript{14}

The price of fuel is a key driver in the profitability of the industry. Cost of fuel represented about a third of total operating expenses in recent years, followed by wages, with 16 to 19 percent.\textsuperscript{15} Increasing fuel prices mean higher costs for airlines, and typically, airlines are not able to pass the full cost increase onto their passengers. Therefore, increasing oil prices eat directly into airline profits. Even with oil prices decreasing in 2013, their volatility in the future will play a critical role in the stability of the airlines industry.\textsuperscript{16} Major airlines employ fuel hedging strategies in order to limit their exposure to such volatility, and nine out of the top 10 U.S.-based, publicly listed airlines use various financial instruments to hedge the cost of fuel, including swap contracts, call options, collars, futures contracts, and forwards contracts.\textsuperscript{17} Some companies, but not all, choose to designate this as hedging activity for accounting purposes.

In 2007 and 2008, fuel prices soared, while the economy experienced a downturn. The slowing economy hit both consumer discretionary spending and corporate profits, leaving airlines with falling demand and overcapacity. Coupled with the fluctuating and mostly increasing fuel costs, this shift in demand created industry losses. Low-cost airlines fared better through the downturn and in 2010, the industry stabilized as a result of cost-cutting measures. Recent trends show low-cost airlines are slowly eating into the full-service market share. The market is also characterized by structural changes in the form of mergers and acquisitions and bankruptcies.\textsuperscript{18}

Passenger safety is another important factor that drives performance of airlines. As recent tragedies showed, some risks may go beyond the airline’s control. Accidents that led to a loss of many lives made the industry increase its focus on the safety issue.

**LEGISLATIVE AND REGULATORY TRENDS IN THE AIRLINES INDUSTRY**

Regulation plays a prominent role in the Airlines industry. Increasing awareness around climate change shapes regulations for airlines, due to environmental externalities related to the nature of their business. Moreover, continuous evolution towards higher safety standards puts public and regulatory pressure on the industry. The following section provides a brief summary of key regulations and legislative efforts related to this industry that drive material sustainability issues.\textsuperscript{\textdagger}

\textsuperscript{\textdagger} This section does not purport to contain a comprehensive review of all regulations related to this industry, but is intended

---

\textsuperscript{11} Measured in number of seats.
The Federal Aviation Administration (FAA) has authority to regulate and oversee all aspects of American civil aviation. The agency is broken into four lines of business: (1) Airports, (2) Air Traffic Control, (3) Aviation Safety, and (4) Commercial Space Transportation. FAA requirements cover, among other things: retirement of older aircraft, security measures, collision avoidance systems, airborne wind shear avoidance systems, noise abatement and other environmental concerns, aircraft operation and safety, and increased inspections and maintenance procedures to be conducted on older aircraft. The FAA also regulates the health and wellbeing of pilots and crew members as they relate to passenger safety. For example, the agency has introduced requirements on the frequency and duration of rest periods compared to flight time for pilots. In December 2011, new pilot fatigue requirements were introduced to significantly reduce the number of hours on duty. The FAA routinely issues fines or revocations for infractions and can enact new regulations with positive or negative cost implications for airlines.

Another organization whose standards can influence airline profitability is the United Nations’ International Civil Aviation Organization (ICAO). The ICAO is represented by 191 members and develops international Standards and Recommended Practices (SARPs) that are further used by member countries to develop national civil aviation regulations. The ICAO’s Annex 18 sets standards for “Safe Transport of Dangerous Goods by Air.” Air carriers are required to have inspection and enforcement procedures to ensure compliance with the Annex 18. In addition, in April 2014, the ICAO Dangerous Goods Panel (DGP) proposed to restrict transportation of lithium metal batteries to cargo aircraft only. If the proposal is approved by the ICAO Council, the changes will become effective starting January 2015.

The U.S. Department of Transportation (DOT) also plays an important role in regulating the airline industry. The DOT is responsible for executing and enforcing airline consumer rights laws established by the U.S. Congress. It may also develop regulations based on more general statutory authority, giving it broad powers to prescribe regulations, standards, and procedures related to air travel. The DOT is responsible for the recently enacted Passenger Protection Rules, which address matters such as tarmac delays, chronically delayed flights, fee transparency, and fair treatment of passengers.

Despite efficiency improvements, increasing levels of GHG emissions due to the growing demand for air travel have led to a number of environmental regulations addressing the airline industry’s emissions, both in the U.S. and internationally.

In the U.S., the Environmental Protection Agency (EPA) has oversight of the Airlines industry’s environmental impacts under both the Clean Air Act and the Clean Water Act. The Clean Air Act gives the EPA the authority to determine whether carbon emissions from aircraft operations endanger society. It also gives the EPA authority to introduce regulations to address the issue.

In 2012, the European Union (E.U.) moved to include aviation in its emissions trading system (ETS) by establishing limits on carbon emissions and introducing allowances and fees on flights to, from, and within the European Economic Area (EEA). However, resistance from several countries, including the U.S., caused the E.U. to postpone the enforcement on international flights until November 2013 in hopes of creating a global, market-based solution through the UN’s ICAO. The legislation has since been amended for the period from 2013 to 2016, and only emissions from flights within the EEA currently fall under the E.U.’s ETS. The decision was driven by the ICAO Assembly agreement in October 2013 to “develop a global market-based mechanism addressing international aviation emissions by 2016 and apply it by 2020.”
SUSTAINABILITY-RELATED RISKS AND OPPORTUNITIES

Industry drivers and recent regulations suggest that traditional value drivers will continue to impact financial performance. However, intangible assets such as social, human, and environmental capitals, company leadership and governance, and the company’s ability to innovate to address these issues are likely to increasingly contribute to financial and business value.

Broad industry trends and characteristics are driving the importance of sustainability performance in the Airlines industry:

- **Energy inputs and externalities** from fuel-intensity of operations: As a fuel-intensive industry with large direct emissions contributing to climate change, the Airlines industry is attracting growing attention from U.S. and international regulators. At the same time, increasing energy costs are providing incentives for efficient fuel management.

- **High safety standards**: Passengers entrust their lives to airlines; companies must continue to maintain high safety standards to retain their license to operate.

- **Dependence on public infrastructure**: The industry’s use of common capitals and public goods, including airports and airspace, drives both its sustainability impacts and consequently, impacts on its value through regulations or public reaction.

- **Industry concentration creates competition concerns**: The Airlines industry experiences frequent merger and acquisition activity, leading to consolidation and concerns about competitive behavior. As described above, the regulatory and legislative environment surrounding the Airlines industry emphasizes the importance of sustainability management and performance. Specifically, recent trends suggest a regulatory emphasis on reduction of environmental impacts and high safety standards, which will serve to align the interests of society with those of investors.

The following section provides a brief description of each sustainability issue that is likely to have material implications for companies in the Airlines industry. This includes an explanation of how the issue could impact valuation and evidence of actual financial impact. Further information on the nature of the value impact, based on SASB’s research and analysis, is provided in Appendix IIA and IIB. Appendix IIA also provides a summary of the evidence of investor interest in the issues. This is based on a systematic analysis of companies’ 10-K and 20-F filings, shareholder resolutions, and other public documents. It also based on the results of consultation with experts participating in an industry-working group convened by SASB.

A summary of the recommended disclosure framework and accounting metrics appears in Appendix III. The complete SASB standards for the industry, including technical protocols, can be downloaded from www.sasb.org. Finally, Appendix IV provides an analysis of the quality of current disclosure on these issues in SEC filings by the leading companies in the industry.

ENVIRONMENT

The environmental dimension of sustainability includes corporate impacts on the environment. This could be through the use of natural resources as inputs to the factors of production (e.g., water, minerals, ecosystems, and biodiversity) or environmental externalities and harmful releases in the environment, such as air and water pollution, waste disposal, and GHG emissions.

The Airlines industry faces risks and opportunities related to environmental factors, particularly increasing climate regulations. Regulatory costs associated with
GHG emissions are threatening the Airlines industry’s already thin profit margins. However, optimizing fuel management through technology innovation offers an opportunity to control costs.

Environmental Footprint of Fuel Use

As a result of heavy reliance on oil, the Airlines industry generates a significant amount of direct GHG emissions and is subject to potential compliance costs and risks associated with climate change mitigation policies. The main sources of GHG emissions for airlines companies are aircraft fuel use and emissions, ground equipment, and facility electricity. Aircraft emissions are the largest contributor to total emissions from the industry, and fuel management is a critical part of reducing emissions.

Fuel management addresses both fuel efficiency and the use of alternative fuels. It offers an effective way for airlines to increase profits through reduced fuel costs, while also limiting exposure to volatile fuel pricing, future regulatory costs, and other consequences of GHG emissions. Under the Clean Air Act, the EPA is currently evaluating whether aircraft emissions endanger society, the results of which could lead to regulatory measures. In September 2014, the EPA further began determining whether it will regulate GHG emissions from airlines. The regulations would lead to increased air travel costs. There is no timeline set by the agency on when the rules are to be released.

Companies can adopt various strategies to reduce the environmental footprint of their fuel use. The fuel efficiency of an airline has several drivers, including aircraft design, route selection, and load factor. Newer aircrafts are more fuel-efficient, and one report estimates that every 10 years, the aircrafts being built are 10 to 15 percent more efficient. However, existing planes can be retrofitted for efficiency. For example, adding winglets can increase fuel efficiency by 1.8 percent, and replacing an engine on an existing aircraft can improve efficiency by 15 percent. The dynamic of new technology versus retrofits is important, given that over a third of the world’s airline fleet is rented. It is not entirely clear that either leasing or owning is better from a fuel efficiency perspective, but it is important to acknowledge that having access to the latest technology does have a beneficial impact on fleet fuel efficiency.

As one of the strategies to minimize GHG emissions, airlines can seek alternative fuel options. With looming climate regulations and volatile fuel prices, the Airline industry began using biofuels on commercial flights in 2011. While biofuel flights do emit carbon dioxide—unlike fossil fuel—biofuel absorbs carbon dioxide during the growth of the crop, greatly reducing the lifecycle carbon dioxide emissions. Given the emissions captured during the production of biofuels, the overall reduction in emissions is estimated to be 80 percent when compared to fossil fuels.

There are various industry initiatives aimed at reducing environmental externalities created by airlines’ operations. In 2009, the IATA began taking commitments from airlines to be carbon neutral in all growth after 2020 and reduce absolute carbon emissions by 50 percent by 2050. In October 2010, the International Civil Aviation Organization (ICAO) established an action plan to identify the most appropriate measures to reduce CO2 emissions from international civil aviation. The resolution focuses on technology, operations, and infrastructure measures as the primary means for addressing emissions.

Company performance in this area can therefore be analyzed in a cost-beneficial way, internally and externally, through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Gross global Scope 1 emissions;
- Long- and short-term strategy to manage Scope 1 emissions;
- Total fuel consumed, percentage from
renewables; and
- Notional amount of fuel hedged, by maturity date.

Evidence
The Airlines industry is a significant contributor to global GHG emissions, creating regulatory risks for companies. According to the Carbon Disclosure Project Transportation Report, the Transportation sector accounts for 13 percent of global emissions, 13 percent of which come from air transportation. Statistics from the Center for Climate and Energy Solutions (C2ES) indicate similar contribution, with around 1.5 percent of global GHG coming from aviation, which includes both passenger airlines and air freight. U.S. aviation activities account for approximately 40 percent of these emissions. In absolute values, the Aviation industry in the U.S. accounted for around 145 Teragrams CO₂ equivalent (Tg CO₂e) emissions in 2012, with 114.4 Tg CO₂e coming from commercial aircrafts. Over 99 percent of these emissions are in the form of carbon dioxide.

Climate change regulations steadily make it more costly for airline companies to operate. Even without U.S. federal regulations or a global treaty on addressing climate change, there are regulations specific to certain geographic areas that can impact the industry, as airlines operate across different regions globally. In Europe, the Emissions Trading System (ETS) was launched in 2005 to mitigate climate change. The ETS covers factories, power stations, industrial plants, and all flights within the EEA. The E.U. came close to including non-European airlines that serve Europe in the ETS in November 2012—a move that would reportedly have cost U.S. airlines $3.1 billion between now and 2020. The move was postponed in the hope that a more agreeable global market-based solution would come out of the UN ICAO (see Legislative and Regulatory Trends section). In response, the ICAO agreed to build a global market-based mechanism to monitor, report, and verify aircraft emissions by 2016. However, given that the UN’s deadline to implement the system is 2020, the E.U. may not be satisfied and could still require non-E.U. airlines to comply with their ETS requirements.

Meanwhile, the IATA, which represents 85 percent of the world’s airline traffic, is calling for airlines to offset increased emissions after 2020 by purchasing carbon credits. In this scenario, it is estimated that the cost to the industry could be up to 0.5 percent of total international airline revenue, assuming the cost of credits to be $4 to $6 per metric ton in 2015.

In April 2014, Germany fined 61 airlines from several countries including the U.S. for breaching E.U. ETS rules and for failing to submit emissions permits to cover GHG discharges from the flights within the EEA. The amount of total penalties is close to $3.7 million, and the fine is the first since aviation was included in the E.U. carbon market. Under the E.U. law, aircraft operators failing to surrender the required number of permits can be fined EUR100 per metric ton of CO₂.

If the E.U. ETS rules extend to flights to and from the EEA, the financial impact of non-compliance is likely to increase in the future.

Furthermore, cost of jet fuel is a significant operating expense for aircraft operators and can put the business at risk during times of rising or volatile fuel prices. In 2012, the global airline industry spent $207.6 billion on fuel, which was 31 percent of its operating costs. Airlines for America, the largest U.S. airline trade association, estimates that for every dollar that the price of jet fuel increases, the U.S. airlines industry pays an additional $445 million for fuel per year.

Along with other factors, increasing oil prices led more than 50 passenger and cargo airlines in the U.S. to file for bankruptcy between 2000 and 2012. To limit their exposure to volatile oil prices, some companies in the industry use fuel hedging strategies or even operate their own refineries. All of the top ten U.S.-domiciled companies by revenue acknowledge in their 2012 annual filings with the SEC that they are materially impacted by changes in aircraft fuel prices.
Nine of these 10 companies are using financial instruments to hedge fuel prices, and they disclose metrics on the percentage of their fuel use that is hedged in their filings.

In their fiscal year (FY) 2012 Form 10-K, Republic Airways describes the extent to which fuel price volatility impacts their cash flow, stating that “a one dollar change in price per barrel of crude oil will increase or decrease our fuel expense by $3.8 million.” In 2012, $3.8 million represented 0.5 percent of Republic Airways’ aircraft fuel costs for the year and a meaningful 7.4 percent of profits. For Alaska Airlines “a $1 per barrel increase in the price of oil equates to approximately $11 million of additional fuel cost annually.” For United Continental, the increase would be $94 million annually.

Fuel management in the form of efficiency improvements or hedging strategies is therefore critical for the profitability of companies, like Republic Airways and others in the Airlines industry. It also enables companies to lower their GHG emissions, and therefore, regulatory risks discussed earlier.

Another way for the industry to mitigate GHG emissions is through the use of biofuels. The largest hurdle in switching to biofuels is cost, not technology. Airlines already spend 25 to 35 percent of their operating costs on jet fuel annually, and that number would rise substantially by switching to biofuels at current prices. When Alaska Airlines launched its first commercial biofuel-powered flight in 2011, it paid six times the cost of traditional jet fuel. Alaska Airlines used a 20 percent biofuels blend, made from used cooking oil, which it estimates reduces GHG emissions by 10 percent.

Although the use of biofuel blends can be beneficial, biofuels themselves can generate negative externalities. Irrigation for corn production means that currently, biofuels are actually the most water-intensive fuel source in the U.S. Water consumption for biofuels is orders of magnitude greater than for refining crude oil. Crop production for biofuels also has the potential to distort other markets, such as the food industry.

Advanced biofuels could reduce water consumption significantly, but these technologies are yet to be proven on a commercial scale. Short-term costs to find commercially viable technologies can be significant, and these are lowering investments in advanced biofuels. However, investments in R&D for such technologies could serve to advance airline companies’ long-term profitability.

Despite the high costs of biofuels compared to traditional jet fuel, airlines are acting to make aviation biofuels more commercially viable, due to the importance of reducing GHG emissions for the industry. In its 10-K Form for FY2012 United Continental Holdings, Inc. states that “(t)he Company is taking various actions to reduce its carbon emissions through fleet renewal, aircraft retrofits, and actions that are establishing the foundation for the commercialization of aviation biofuels.” As one of the actions for the commercialization of aviation advanced biofuels, United Airlines signed a purchase agreement with AltAir Fuels to buy 15 million gallons of lower-carbon, renewable jet fuel over a three-year period. AltAir Fuels will retrofit part of an existing petroleum refinery to become a 30 million gallon, advanced biofuel refinery near Los Angeles. The fuel is expected to help the company achieve a 50 percent reduction in GHG emissions on a lifecycle basis.

The importance of managing the environmental footprint of Airlines fuel use is reflected in current SEC filings of the top companies in the industry. Companies such as United Continental, Delta, Southwest, and American Airlines, to name a few, have started reporting on their fuel management programs and initiatives, examples of which include fleet renewal plans, aircraft retrofits, use of aviation biofuels, programs to reduce fuel usage by ground support operations, use of technology to modernize air traffic control systems, and reductions in engine idle
times, among others.

**Value Impact**

GHG-intensive operations expose airlines to increasing risk of chronic regulatory compliance costs, with direct costs already occurring in some markets. In addition, management of energy efficiency and energy mix (including renewables) is key to the profitability and risk profile of airlines. Compliance—expected or actual—also leads to additional capital expenditures (CapEx) to renew or retrofit fleets for energy efficiency, with a potentially significant impact on profitability and cash flow. At the same time, investments in fuel-efficient and alternative fuel engines will result in lower ongoing fuel expenses in the medium term, improving profitability. As international and national efforts continue to advance regulation to reduce total GHG emissions, including in the Airlines industry, the probability and magnitude of these impacts are likely to increase in the near to medium term. The magnitude of these impacts can be estimated using companies’ Global Scope 1 emissions, in absolute terms and relative to their peers, factoring in regions of operations and mitigation efforts reflected in concrete emissions-reduction targets.

In addition, while the cost of energy consumption is already captured in financial results, overall energy consumption indicates airlines’ exposure to possible future increases in energy prices, resulting from internalizing the growing environmental and social impact of energy consumption. Reliance on specific types of energy also creates operational risks, which impact long-term profitability and ultimately the risk profile of the company and its cost of capital. Lastly, use of renewable energy indicates airlines’ ability to mitigate their environmental footprint and exposure to increases in energy costs driven by sustainability impacts.

**HUMAN CAPITAL**

Human capital addresses the management of a company’s human resources (employees and individual contractors), as a key asset to delivering long-term value. It includes factors that affect the productivity of employees, such as employee engagement, diversity, and incentives and compensation, as well as the attraction and retention of employees in highly competitive or constrained markets for specific talent, skills, or education. It also addresses the management of labor relations in industries that rely on economies of scale and compete on the price of products and services or in industries with legacy pension liabilities associated with vast workforces. Lastly, it includes the management of the health and safety of employees and the ability to create a safety culture for companies that operate in dangerous working environments.

In the Airlines industry, human capital issues revolve around the dependence on a large number of workers who are covered under collective bargaining agreements. Even though unionization rates have generally decreased, union participation in the Airlines industry remains strong. Therefore, management of, and communication around, issues such as worker pay and working conditions is critical to prevent costly worker strikes. Proper personnel training and ensuring the health and well-being of crew members is critical to ensuring safety. The issue is covered in the “Accidents & Safety Management” section of the brief.

**Labor Relations**

The Airlines industry employs several types of skilled workers, including pilots, flight attendants, baggage handlers, maintenance workers, and ticket agents. Wages were the largest cost component for airlines until recent increases in fuel prices replaced labor costs with fuel costs as the largest cost item. Organized labor plays an important role in the industry as there are high levels of unionization—some U.S.-listed airlines have as much as 97 percent union participation. There are several major airline unions that govern negotiations, including the U.S. Airline Pilots Association, Air Line Pilots Association, Association of Flight Attendants, and the Transport
Workers Union. Unions can protect worker rights and negotiate wages due to their bargaining power. In countries with strong labor laws or in industries with union representation, wages tend to be higher than in the absence of strong worker laws and enforcement, representing to an extent better protection of worker rights. Unionization of key personnel leaves airlines vulnerable to service shutdowns resulting from strikes if management is unable to address worker demands, which reduces industry revenue and disrupts economic activity. Additionally, collective bargaining may result in higher labor costs via wage or benefits increases. Some older U.S. airlines also face larger burdens from legacy pensions compared with their younger counterparts, and bankruptcies are a means to reduce these liabilities. This creates a risk for labor rights if worker pay or benefits are significantly reduced as a result. Proper management of, and communication around, issues such as worker pay and working conditions can prevent conflicts with workers that could lead to strikes that can severely impact revenue and create reputational risk.

Airlines with newer operations in the U.S. have lower unionization rates or pension liabilities. For companies with low unionization rates in an industry characterized by otherwise high union participation, a short-term view on worker compensation, contract terms, and working conditions could create a potential for disruption as workers begin to demand better standards through increasing unionization or other actions. Proper management of, and communication around, issues such as worker pay and working conditions can prevent conflicts with workers that could lead to extended periods of strikes, which can slow or shut down operations and create reputational risk. Airlines need a long term perspective on managing workers, including their pay and benefits, in a way that protects worker rights and enhances their productivity while ensuring the financial sustainability of a company’s operations.

Company performance in this area can therefore be analyzed, internally and externally, through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Percentage of workers covered by collective-bargaining agreements; and
- Number and duration of strikes and lockouts.

Evidence

Labor unions play a critical role in the global Airlines industry. Over one-third of all workers in the U.S. air transportation industry are unionized: in 2013, 37.1 percent of workers were union members and 38.6 percent were covered by collective bargaining agreements. Some airlines, such as China Eastern, LATAM, Alaska, and Southwest Airlines, report higher rates of unionization, with rates of between 31 and 97 percent. Most major carriers are highly unionized, while national and regional carriers include a mix of union and nonunion workplaces. In contrast, only 7.5 percent of all U.S. private sector workers were covered by unions in 2013. In durable goods manufacturing, a traditional union stronghold, union density fell from 32.1 in 1983 to 10.9 percent in 2013.

Wages at U.S.-domiciled international and domestic airlines are estimated to represent 22.1 and 10 percent of revenue for 2013, respectively. Costs are also high for non-U.S. international airlines. For example, Latin American airline LATAM reported labor costs as 20 percent of total operating expenses in its FY2013 20-F filing. It is estimated that airline workers covered by collective bargaining agreements enjoy a wage premium. Across all airline workers, between 1995 and 2000, union members had a wage premium of about 15 to 25 percent, which may account for the significance of labor costs.

Heavy union participation in the Airlines industry presents considerable operating risk, if relations between labor and management are strained. Many of LATAM’s pilots, flight attendants, mechanics, and airport personnel are unionized. The company
recognizes the risks associated with poor labor relations in its FY2013 20-F form by disclosing that strikes, walk-outs, or stoppages by these groups could “severely disrupt our operations and negatively impact our operating and financial performance, as well as how our customers perceive us.”

Airlines have tried to reduce their labor costs through bankruptcies and mergers. Without early engagement, unions may limit the ability of companies to quickly adjust labor expenses and the size of their workforce in response to competitive pressures or adverse economic conditions. After the crisis in early 2000s, several major U.S. carriers entered bankruptcy. Among the factors responsible were high labor costs, rising fuel prices, competition from low cost carriers, and low demand. U.S. Airways entered bankruptcy in 2002 and 2004, United in 2002, Delta and Northwest in 2005. In 2003, American Airlines was able to avoid bankruptcy after negotiating concessions with unions.

In 2012, American Airlines was forced to cancel hundreds of flights when a large number of pilots called in sick to protest a contract that would reduce their pay and benefits at the then-bankrupt carrier. The possibility of reductions in pay and benefits can also lead to worker actions that pose difficulties during merger proceedings. Recently, the likelihood of a flight attendants’ strike at Piedmont Airlines threatened the pending merger of its parent company, U.S. Airways, with American Airlines. Piedmont flight attendants formed picket lines in June 2013, looking to share in the success of U.S. Airways. This came in the midst of U.S. Airways’ bid for approval from federal regulators for its proposed merger with American Airlines. At the same time, unions can play an important role in working with management to resolve difficulties in operations. As part of the same proposed U.S. Airways-American Airlines merger, U.S. Airways’ union leaders met with leaders at the Department of Justice to register their support for the merger as a means to preserve jobs. This case highlights both the positive and negative impacts of worker actions related to wages and working conditions for airlines in their merger activities and operations generally.

Several examples of strikes and near-strikes highlight the potential material impacts on airlines of poor labor relations. On June 12, 2010 Spirit Airlines pilots went on strike for better wages, grounding flights for thousands of passengers. The pilots claimed that they had been “working at below market rates and work rules for years.” The airline refunded passengers’ tickets and gave them $100 toward future flights. The strike was resolved and pilots went back to work on June 18, 2010. The resolution included better pay, retirement benefits, and performance reviews to acknowledge leadership initiative. The strike is reported to have cost Spirit Airlines $19 million; however, the company reported a loss of $2.8 million in the first six months of 2010. The event highlights the challenges that can result from employee strikes related to wages and working conditions, and emphasizes the importance of management recognizing and addressing worker concerns in a timely manner, and maintaining good communication between management and employees. Likewise, pilot strikes resulted in 160 canceled Avianca flights in 2013. Pilots of the U.S.-listed Colombian airline claimed that in 2003 they agreed to increase working hours from 75 to 90 hours a month under the promise of benefits that did not materialize.

**Value Impact**

Labor-intensive industries with well-defined occupations are prone to high rates of unionization, as employees with similar skills and compensation have an incentive to resort to collective bargaining in their negotiations with management. The bargaining power that comes with unionization leads to higher wages and other compensation costs, as well as pension liabilities. This is likely to be particularly material in the Airlines industry, where median net income margins are already at 2.4 percent. Unionization can also lead to labor disputes and service disruptions with short-term impact on revenue and longer-term impact on reputation and brand value, and ultimately market share.
New entrants or disruptors in highly unionized industries often have a short-term competitive advantage from low unionization rates and lack of pension liabilities. However, these companies incur the risk of a medium-term shift in cost structure as growth tapers and cost-cutting initiatives drive employees to collective bargaining. The number of work stoppages provides a measure of past performance on labor practices, while the percentage of employees unionized provides an indication of companies’ exposure to wage cost increases and possible future labor disputes.

**BUSINESS MODEL AND INNOVATION**

This dimension of sustainability is concerned with the impact of environmental and social factors on innovation and business models. It addresses the integration of environmental and social factors in the value creation process of companies, including resource efficiency and other innovation in the production process. It also addresses product innovation and looking at efficiency and responsibility in the design, use-phase, and disposal of products. It includes management of environmental and social impacts on tangible and financial assets—either a company’s own or those it manages as the fiduciary for others.

Airline companies rely on innovation to maintain value. Innovation that contributes to sustainability outcomes in this industry centers around fuel management and alternative fuels, which have been addressed in the disclosure topic “Environmental Footprint of Fuel Use.”

**LEADERSHIP AND GOVERNANCE**

As applied to sustainability, governance involves the management of issues that are inherent to the business model. It also involves issues that are common practice in the industry, and that are also in potential conflict with the interest of broader stakeholder groups (government, community, customers, and employees) Therefore, these issues create a potential liability, or worse, a limitation or removal of license to operate. This includes regulatory compliance, lobbying, and political contributions. In addition: risk management, safety management, supply chain and resource management, conflict of interest, anticompetitive behavior, and corruption and bribery. It also includes risk of business complicity with human rights violations.

For the Airlines industry, leadership and governance issues arise from the need to manage the safety of highly complex, sensitive, and global operations, including accident prevention. Accidents and other safety incidents affect customers and employees, and can also lead to significant economic losses in the case of the cargo segment. The safety of passengers and cargo is a priority for companies in the industry, and mismanagement of the issue can have a significant negative impact on company value.

**Competitive Behavior**

As described in the industry summary, the Airlines industry is characterized by low profitability due to high fixed capital and labor costs, as well as competition with subsidized national carriers in foreign markets. This pushes airlines to find economies of scale through alliances or consolidation, which results in a highly concentrated market with four players capturing 75 percent of the U.S. markets. The industry is also characterized by high barriers to entry through limited landing rights and increasing airport congestions. Together, these factors can result in anticompetitive practices that result in higher prices for consumers.

As a result, certain airline industry practices have been scrutinized by antitrust authorities. These practices include market concentration, airport slot management, predatory pricing, and the anticompetitive effects resulting from airline alliances.
and mergers. Any time a business action is held up in legal limbo, there is a material risk to investors stemming from legal fees, reputational risk, costs associated with a delayed transaction, and limit to growth by acquisition. Moreover, denied mergers may press companies to declare bankruptcy.

The oldest and largest airline alliance is the Star Alliance, originally formed between United and Lufthansa, which has since been expanded to include 27 airlines worldwide. The other major alliances are Sky Team and Oneworld, with 20 and 15 member airlines respectively. Alliances can be controversial and may have both positive and negative effects on competitiveness and consumer pricing, and are therefore heavily scrutinized. University of Illinois economists found mixed effects on consumer pricing as a result of alliances, claiming that prices to smaller regional airports decrease due to alliances, while fares to large gateway airports increase.

Another industry dynamic that affects competition is the availability of airport slots. Limited slots at some airports effectively cap the supply to that region and create a barrier to entry for new players. Incumbent airlines have a dominant position because they are allowed to maintain any slots they use regularly, leaving little room for new players. The percentage of slots held by companies is often considered in high-profile mergers when evaluating anticompetitive practices.

Finally, the issue of competitive behavior revolves around price-fixing practices within the cargo segment of the industry. High industry consolidation makes it easy for airlines to collude. There have been several high-profile cases of price-fixing involving the cargo segment of airlines. Major airlines were found to have colluded on fuel surcharges.

Company performance in this area can be analyzed in a cost-beneficial way internally and externally through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Amount of legal and regulatory fines and settlements associated with anticompetitive practices.

Evidence

Continuous consolidation of the industry drove the number of major airlines from eight to four in the last five years. Several studies show that mergers of airlines eventually result in higher ticket prices for consumers. According to The Wall Street Journal dissected data, flight prices between some big cities increased by 40 to 50 percent after mergers. Particularly, by the third quarter of 2012, fares between Chicago and Houston (hubs of United Airlines and Continental Airlines prior to the merger) increased by 57 over three years. The average fares of United Airlines increased by only 16 percent over the same period.

Ancillary fees (baggage fees and on-board food and services) are a significant portion of revenue for airlines. In 2013, United Airlines earned $5.7 billion in ancillary revenue, the most of any airline globally. In the same year, the total industry ancillary revenue was $31.5 billion. With current consolidation trends and the increasing share of the ancillary revenue, airlines will likely increase fees as competition weakens. Moreover, in the long term, airlines may reduce benefits of their loyalty programs. Passengers flying from non-major cities will be left with no choice of a carrier, therefore, ‘loyalty’ will not be a decisive factor.

As mentioned above, merger and acquisition (M&A) activity in the industry resulted in high market consolidation. Even though the recent mergers were approved, the cases had to go through lengthy reviews and investigation. In 2013, a civil antitrust lawsuit was filed by the Department of Justice (DOJ) to challenge the proposed merger between US Airways and American Airlines. The DOJ was seeking to permanently block the $11 billion merger. Federal courts were examining whether the merger would lead to less competition in the industry and higher prices for consumers. Prior to the merger, U.S. Airways held
55 percent of the slots at Reagan National Airport; post-merger, that would increase to 69 percent. However, US Airways and American Airlines’ parent company, AMR Corporation, argues that there are two other major airports serving the Washington metropolitan area, and post-merger, they would only control 25 percent of aircraft seats in the market. The news of the government’s antitrust suit caused US Airways’ stock to fall 13 percent, and bonds of AMR Corporation also dropped. AMR, which filed for bankruptcy in November 2011, was using the merger as a means to complete a reorganization and exit court protection. If the merger was not approved, it could result in American Airlines declaring bankruptcy.

For the merger to be approved, American Airlines had to give up 52 round-trip slots at Washington Reagan Airport and 17 round-trip slots at New York LaGuardia Airport. Subsequently, Southwest Airlines and JetBlue Airways won most of the slots that became available.

The investigation of competitive behavior is also affecting other companies in the industry. In 2011, a $1.4 billion acquisition of AirTran by Southwest was under the antitrust investigation. In its 10-K filing for 2012, Southwest Airlines stated: “AirTran is currently subject to pending antitrust litigation, and if judgment were to be rendered against AirTran in the litigation, such judgment would adversely affect the Company’s operating results.” The litigation is a 2009 class action suit that accused AirTran of colluding with Delta airlines in 2008 to fix baggage fees. The Southwest-AirTran case was dismissed by a federal judge.

Regulatory scrutiny of anticompetitive practices extends beyond the U.S. and affects airlines’ global operations. A federal court in Australia fined Emirates, the UAE based airline, $10.2 million in 2012 for price-fixing. The court found that the airline had engaged in cartel conduct with other carriers by fixing prices associated with fuel and other surcharges in its routes to Australia. This example exposes that U.S.-listed airlines are engaged in a global business and can be held accountable for their actions in any country in which they operate. The penalty comes from the Australian Competition & Consumer Commission (ACCC), which imposed a total of $68 million in fines to Emirates and the other airlines involved in the cartel.

In 2010, the European Commission fined 11 air cargo carriers, including Air France-KLM and British Airways, a total of almost €800 million for anticompetitive practices. The Commission alleged the companies of forming a cartel and rigging surcharges for fuel and security between May 2004 and February 2006. Air France-KLM was hit with the largest fine: almost 43 percent of the total amount, €339.6 million, which represented €0.91 per fully diluted share. It also represented 7.3 percent of gross cash reserves on June 30, 2010.

**Value Impact**

Perceived and actual anticompetitive practices can lead to regulatory fines and penalties that increase extraordinary expenses and contingent liabilities and negatively affect a company’s bottom line. Denial by federal antitrust authorities to proceed with merger plans limits the ability of companies to grow by acquisitions, something of particular importance for airlines given the maturity of the industry and the difficulty of growing organically in markets with incumbents’ landing rights. Market concentration can lead to increased scrutiny from antitrust authorities and can impact airlines’ ability to raise prices, with subsequent impact on revenue. Increased antitrust oversight can also raise the risk profile of airlines, raising their cost of capital. Beyond high-publicity antitrust actions during mergers or otherwise, ongoing legal and regulatory fines associated with anticompetitive practices indicate airlines’ ability to maximize profit while managing a sensitive competitive environment.

**Accidents & Safety Management**

Passenger safety is a paramount issue in the Airline industry, given the nature of air travel and extreme
situations in which incidents can occur. Although air travel is one of the safest modes of transport, airlines are held to very high safety standards, with consumers expecting completely safe and accident-free operations. Furthermore, as products transported by air tend to be high value or perishable goods, delivering them from point A to point B safely and in a timely manner is a priority for any carrier. Moreover, airline accidents may result in significant environmental and social externalities and require companies to pay for remediation and compensation of victims.

Safety incidents or violations of safety regulations can lead to a chronic impact on reputation. They can also lead to lower demand from passengers, as well as cargo shippers. Larger accidents, even if they happen rarely, can lead to significant and long-term impacts on reputation and revenue growth.

Proper personnel training, and ensuring the health and well-being of crew members, is critical to ensuring safety. Equally, timely and adequate maintenance of aircrafts can help operators minimize chances of technical failure and avoid severe regulatory penalties for non-compliance. The FAA standards for both aircraft maintenance and pilot scheduling and training are quite stringent; however, this is a global industry and airlines that maintain the highest safety standards throughout their international operations are likely to experience fewer safety incidents.

The FAA maintains rules regarding pilot scheduling to ensure pilots have adequate rest when they enter the cockpit for the duration of their work. The rules cover the flight duty period, flight time limits, rest period minimums, and cumulative fatigue. These rules provide a minimum set of standards, but as the evidence below suggests, pilot fatigue is a challenging issue for the industry, with devastating consequences and requiring careful oversight.

Evidence
Cultivating the image of a relatively safe means of transportation, the aviation industry must constantly strive to maintain the highest standards to ensure safety of passengers and cargo. In general, accidents in the industry are rare. But when they occur, they may have significant social externalities as well as acute financial impacts on companies. According to IATA, there were 36.4 million flights in 2013, with 16 fatal accidents and 210 fatalities globally—a rate of 0.44 fatal accidents per million flights. There are several factors that contribute to accidents in the industry. The majority of fatal airline accidents are due to pilot error, accounting for 51 percent of incidents. The next highest contributor, mechanical failure, accounts for 20 percent of fatal accidents. This highlights the importance of rigorous employee training, fleet maintenance, operational measures, and ensuring that the pilot and crew are well rested and alert.

Safety incidents and accidents can create burdensome costs and liabilities for airlines by requiring further accident prevention measures, remediating actions, and compensation of victims. The recent crash of an Asiana Airlines flight while landing at San Francisco International Airport took three lives and called into question pilot flying skills and cockpit teamwork. While investigations are still pending, Asiana has committed to increasing crew training, and has brought in third-party consultants to evaluate their program’s effectiveness. Survivors of the crash are suing both Asiana and Boeing for poor pilot training and aircraft design. Even in the absence of incidents or accidents,
evidence suggests that violations of safety regulations can have acute impacts on value through regulatory penalties. On July 28, 2014, the FAA imposed a $12 million fine against Southwest Airlines for non-compliance with safety regulations during their aircraft repairs. In 2009, the company was already fined $7.5 million by the FAA for flying planes without critical safety checks. In 2013, American Airlines and three of its subsidiaries paid $24.9 million to settle FAA claims of alleged safety violations between 2007 and 2011.

Among other things, the new FAA rules, which go into effect in 2014, require a 10-hour minimum rest period prior to a pilot’s flight duty period, a two-hour increase over the old rules. The rules also mandate that a pilot must have an opportunity for eight hours of uninterrupted sleep within the 10-hour rest period, and that pilots will be limited to no more than nine hours of flight time. Pilots will also be limited to 28 working days in a month and will be required to be given at least 30 consecutive hours free from duty on a weekly basis, a 25 percent increase over the old rules.

As pilot error is the main contributing factor to fatal airline accidents, ensuring health and well-being of pilots is crucial for safety management. In May 2009, Continental Airlines’ regional carrier Gulfstream received a $1.3 million civil penalty from the FAA for overworking pilots and breaking aircraft maintenance rules. In the week following the announcement, Gulfstream’s stock fell 21 percent and eventually plummeted 51 percent by the end of the year. The FAA investigation began with a complaint filed by a Gulfstream pilot and was eventually settled in 2010, with Gulfstream agreeing to pay $550,000.

The fine for Gulfstream came just after the crash of Continental Flight 3407, which took place in Buffalo, NY, when the flight experienced an aerodynamic stall and crashed into a house. All 49 on board the flight were killed, as well as one person on the ground. The National Transportation Safety Board (NTSB) released documents during the hearing that indicated the pilots made a series of errors leading up to the crash. Additional testimony at the hearing suggests that the pilots may have suffered from fatigue (from commuting from their homes in Florida and Seattle) to work out of Newark Liberty International Airport. Financial impact from fatal accidents goes beyond substantial regulatory penalties. Following the two crashes of Malaysian Airlines, the company experienced “a sharp decline” in weekly bookings. Damaged reputation and low demand for services resulted in net loss $97.4 million in the second quarter of 2014. The company is likely to experience difficulties in the long-term to gain market confidence back and increase sales.

Usually, the most valuable products are transported by air, when time and safety matter the most. Even though goods transported by air account for only 0.5 percent of global trade, they represent over 35 percent by value, which equals approximately $6.8 trillion annually. The loss of valuable cargo as a result of accidents can therefore have a significant economic impact.

Cargo may contain hazardous materials, which substantially increases the risk of transport. Companies that fail to comply with safety requirements in transporting hazardous products may be prone to incidents that could not only result in a loss of cargo, but in hull losses in extreme cases. There were 144 air incidents recorded by the FAA from March 20, 1991 to May 19, 2014 that involved batteries carried as cargo or baggage. In September 2011, an Asiana Airlines cargo plane crashed into the East China Sea after a fire on board. The jet was carrying lithium batteries. Moreover, on September 3, 2010, a UPS plane carrying more than 81,000 lithium batteries caught on fire and crashed at a military base shortly after taking off, killing both pilots.

Lastly, airlines with a poor safety record are likely to experience a long-term negative value impact from increased insurance premiums. For example, following
the twin tragedy of Malaysian Airlines flights in 2014, the insurance industry is likely to lose $2 billion. The prices for all-risk policies that cover liability claims, compensation payments to passengers, legal fees, and physical damage to aircraft (not caused by hostile acts) are expected to rise, according to a Financial Times report.  

In their SEC filings, airlines recognize the extent of various material impacts that may follow accidents. For example, in its Form 10-K, Alaska Air Group states: “[the company] could experience significant claims from injured passengers, by-standers and surviving relatives, as well as costs for the repair or replacement of a damaged aircraft and its consequential temporary or permanent loss from service. We maintain liability insurance in amounts and of the type generally consistent with industry practice, as do our codeshare partners and CPA carriers. However, the amount of such coverage may not be adequate to fully cover all claims and we may be forced to bear substantial economic losses from an accident. Substantial claims resulting from an accident in excess of our related insurance coverage would harm our business and financial results.”  

**Value Impact**

Major airline accidents in which passengers are injured are global news events. Whether incidents occur due to mechanical failure, human error, or unpredictable circumstances, they can negatively affect the reputation of a carrier, with acute and long-term impacts on revenue and market share. Accidents also lead to extraordinary expenditures and contingent liabilities related to compensation of victims and regulatory sanctions, which have an acute impact on value. Failure to comply with safety standards can result in chronic impacts on value through fines and additional capital requirements to remain in compliance. Poor safety records can also increase the risk profile of airlines, resulting in higher insurance premiums and cost of capital. The number of accidents—defined broadly to include passenger safety and mechanical failures—indicate trends in safety records beyond high-publicity events. Safety Management Systems (SMS), together with government regulatory actions, provide a sense of how companies are proactively managing safety above and beyond regulatory requirements. Increasing oversight and enforcement of safety standards around pilot fatigue is likely to increase the magnitude of these impacts in the near to medium term.

---

**SASB INDUSTRY WATCH LIST**

The following section provides a brief description of sustainability issues that did not meet SASB’s materiality threshold at present, but could present a material issue in the future.

**Noise & Light Pollution:** The human and environmental impacts of noise and light from aircrafts, particularly near airports, continues to be a topic of concern for communities living near airports. A recent study by researchers at Harvard School of Public Health and Boston University School of Public Health have linked exposure to aircraft noise with higher hospitalizations for cardiovascular disease. This is likely due to exposure to noise being related to stress reactions and increased blood pressure, both of which are risk factors for cardiovascular disease. Public health concerns for local residents have played a role in limiting airport expansions. A German court banned flights landing at Frankfurt between 11 p.m. and 5 a.m. as a result of residents protesting excessive noise. Such restrictions are of material concern to airlines whose landing slots were scheduled during those hours. In Frankfurt, the ban was estimated to cost the cargo arm of Lufthansa €40 million. While plane engines are getting less noisy, the increase in flight traffic may still lead to exposure to increased noise levels. This has led to many airports restricting maximum decibel levels for individual flight landings and in aggregate. A lesser understood impact of increased flight traffic is light pollution. While light pollution from urban centers is brighter but localized, light from flights can span larger distances. Artificial
light has an effect on the ecosystem and migratory animals that use light sources to direct them. Public concern regarding noise and light pollution from aviation may lead to regulations that could have a material impact on airlines in the future.

Pilot Recruitment & Inclusion: Airlines are facing three important trends that contribute to talent shortage: (1) increasing federal requirements for minimum pilot training, (2) reductions in working hours to diminish fatigue, and (3) higher-than-normal retirement rates, driven by an aging population of pilots. These two issues have a compounding effect on access to talent for companies in this industry. The Airlines industry is characterized by significant gender and racial gaps in workforce representation. According to the U.S. Bureau of Labor Statistics, in 2012, only four percent of the 129,000 aircraft pilots and flight engineers in the U.S. were women. This trend has been stagnant for over a decade. The gender gap can be partially explained by a larger pool of men with backgrounds in the military, where they receive training. The racial bias in the industry is also significant. According to the 2012 annual average data from the U.S. Bureau of Labor Statistics, 93 percent of the 129,000 aircraft pilots and flight engineers were white. Meanwhile, only 2.7 percent were black or African-American, 2.5 percent Asian, and 5 percent of Hispanic or Latino ethnicity. Women have only been allowed to become fighter pilots since 1993, and are able to retire after 20 years with the Air Force. As a result, the industry may soon benefit from a greater pool of military-trained female pilots. Companies that are among the first to seize this opportunity may be better positioned in protecting their pilot pipeline, avoiding talent shortages, and improving their reputation.
APPENDIX I
FIVE REPRESENTATIVE AIRLINES COMPANIES\textsuperscript{vii}

<table>
<thead>
<tr>
<th>COMPANY NAME (TICKER SYMBOL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Continental (UAL)</td>
</tr>
<tr>
<td>Delta Airlines (DAL)</td>
</tr>
<tr>
<td>American Airlines Group (AAL)</td>
</tr>
<tr>
<td>Southwest Airlines (LUV)</td>
</tr>
<tr>
<td>China Southern Airlines - ADR (ZNH)</td>
</tr>
</tbody>
</table>

\textsuperscript{vii} This list includes five companies representative of the Airlines industry and its activities. This includes only companies for which the Airlines industry is the primary industry, companies that are U.S.-listed but are not primarily traded Over-the-Counter, and for which at least 20 percent of revenue is generated by activities in this industry, according to the latest information available on Bloomberg Professional Services. Retrieved on July 10, 2014.
## APPENDIX IIA
### EVIDENCE FOR SUSTAINABILITY DISCLOSURE TOPICS

<table>
<thead>
<tr>
<th>Sustainability Disclosure Topics</th>
<th>Evidence of Interest</th>
<th>Evidence of Financial Impact</th>
<th>Forward-Looking Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HM (1-100)</td>
<td>IWGs</td>
<td>%</td>
</tr>
<tr>
<td>Environmental Footprint of Fuel Use</td>
<td>97*</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>Labor Relations</td>
<td>60*</td>
<td>86</td>
<td>3</td>
</tr>
<tr>
<td>Competitive Behavior</td>
<td>80*</td>
<td>91</td>
<td>4</td>
</tr>
<tr>
<td>Accidents &amp; Safety Management</td>
<td>50</td>
<td>73</td>
<td>2</td>
</tr>
</tbody>
</table>

**HM:** Heat Map, a score out of 100 indicating the relative importance of the topic among SASB’s initial list of 43 generic sustainability issues; asterisks indicate “top issues.” The score is based on the frequency of relevant keywords in documents (i.e., 10-Ks, shareholder resolutions, legal news, news articles, and corporate sustainability reports) that are available on the Bloomberg terminal for the industry’s publicly-listed companies; issues for which keyword frequency is in the top quartile are “top issues.”

**IWGs:** SASB Industry Working Groups

**%:** The percentage of IWG participants that found the disclosure topic to likely constitute material information for companies in the industry; (-) denotes that the issue was added after the IWG was convened.

**Priority:** Average ranking of the issue in terms of importance. One denotes the most important issue. (-) denotes that the issue was added after the IWG was convened.

**EI:** Evidence of Interest, a subjective assessment based on quantitative and qualitative findings.

**EFI:** Evidence of Financial Impact, a subjective assessment based on quantitative and qualitative findings.

**FLI:** Forward Looking Impact, a subjective assessment on the presence of a material forward-looking impact.
## APPENDIX IIB

### EVIDENCE OF FINANCIAL IMPACT FOR SUSTAINABILITY DISCLOSURE TOPICS

<table>
<thead>
<tr>
<th>Evidence of Financial Impact</th>
<th>Revenue</th>
<th>Operating Expenses</th>
<th>Non-operating Expenses</th>
<th>Assets</th>
<th>Liabilities</th>
<th>Cost of Capital</th>
<th>Industry Divestment Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Footprint of Fuel Use</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor Relations</td>
<td>•</td>
<td>•</td>
<td></td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitive Behavior</td>
<td>•</td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accidents &amp; Safety Management</td>
<td>•</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- **MEDIUM IMPACT**
- **HIGH IMPACT**

*Note: The table illustrates the impact of sustainability disclosure topics on financial metrics and risk factors.*
## APPENDIX III
### SUSTAINABILITY ACCOUNTING METRICS – AIRLINES

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>ACCOUNTING METRIC</th>
<th>CATEGORY</th>
<th>UNIT OF MEASURE</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Footprint of Fuel Use</td>
<td>Gross global Scope 1 emissions</td>
<td>Quantitative</td>
<td>Metric tons CO₂-e</td>
<td>TR0201-01</td>
</tr>
<tr>
<td></td>
<td>Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>TR0201-02</td>
</tr>
<tr>
<td></td>
<td>Total fuel consumed, percentage renewable</td>
<td>Quantitative</td>
<td>Gigajoules, Percentage (%)</td>
<td>TR0201-03</td>
</tr>
<tr>
<td></td>
<td>Notional amount of fuel hedged, by maturity date</td>
<td>Quantitative</td>
<td>Millions of gallons, Year</td>
<td>TR0201-04</td>
</tr>
<tr>
<td>Labor Relations</td>
<td>Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees</td>
<td>Quantitative</td>
<td>Percentage (%)</td>
<td>TR0201-05</td>
</tr>
<tr>
<td></td>
<td>Number and duration of strikes and lockouts**ix</td>
<td>Quantitative</td>
<td>Number, Days</td>
<td>TR0201-06</td>
</tr>
<tr>
<td>Competitive Behavior</td>
<td>Amount of legal and regulatory fines and settlements associated with anti-competitive practices**viii</td>
<td>Quantitative</td>
<td>U.S. Dollars ($)</td>
<td>TR0201-07</td>
</tr>
<tr>
<td>Accidents &amp; Safety Management</td>
<td>Description of implementation and outcomes of Safety Management System</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>TR0201-08</td>
</tr>
<tr>
<td></td>
<td>Number of accidents</td>
<td>Quantitative</td>
<td>Number</td>
<td>TR0201-09</td>
</tr>
<tr>
<td></td>
<td>Number of governmental enforcement actions of aviation safety regulations</td>
<td>Quantitative</td>
<td>Number</td>
<td>TR0201-10</td>
</tr>
</tbody>
</table>

**viii Note to TR0201-06 - Disclosure shall include a description of the root cause of the stoppage, impact on operations, and corrective actions taken.

**ix Note to TR0201-04 - Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.
APPENDIX IV: Analysis of SEC Disclosures

Airlines

The following graph demonstrates an aggregate assessment of how the top ten U.S.-listed Airline companies by revenue are currently reporting on sustainability topics in the SEC Disclosures.

<table>
<thead>
<tr>
<th>TYPE OF DISCLOSURE ON MATERIAL SUSTAINABILITY TOPICS</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Footprint of Fuel Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Labor Relations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>86%</td>
</tr>
<tr>
<td>Competitive Behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>91%</td>
</tr>
<tr>
<td>Accidents &amp; Safety Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>73%</td>
</tr>
</tbody>
</table>

*NO DISCLOSURE, BOILERPLATE, INDUSTRY-SPECIFIC, METRICS

*Percentage of IWG participants that agreed topic was likely to constitute material information for companies in the industry.


52 Data on percent of employees unionized is from Bloomberg Professional service, accessed August 11, 2014 using EQS screen for U.S.-listed companies (including those traded primarily OTC) and generating at least 20 percent of revenue from the Airlines segment.


70 Ibid.


The information, text, and graphics in this publication (the “Content”) is owned by Sustainability Accounting Standards Board. All rights reserved. You may use the Content only for non-commercial and scholarly use, provided that you keep intact all copyright and other proprietary notices related to the Content, and that you make no modifications to the Content. The Content may not be otherwise disseminated, distributed, republished, reproduced, or modified without the prior written permission of Sustainability Accounting Standards Board. To request permission, please contact us at info@sasb.org.