



This Eurosif sector report has been compiled using research by Sustainalytics. It describes the major environmental, social and governance (ESG) challenges facing the Aerospace & Defence industry and the associated risks and opportunities these pose for long-term returns.



Aerospace & Defence Overview

The Aerospace & Defence (A&D) sector consists of a diverse set of companies. While there are large conglomerates that develop and manufacture a wide range of aerospace and defence products, there are also niche players that supply specific technologies or products. The barriers to entry in this sector are high. Limited access to specific technologies, high development costs and government support make it difficult for new companies to break into the market.

The commercial aerospace market is comprised of a few prime contractors producing aircrafts and engines, and numerous companies supplying sub-components. In contrast, the defence market has a much more diverse character, ranging from conglomerates to small niche players, and from companies developing complex software to those simply producing metal ammunition cases. Commercial aircraft manufacturers depend on demand from the highly cyclical airlines industry, while defence companies are heavily reliant on government military spending.

The main environmental challenges facing this sector relate to the consumption of large amounts of fossil fuels and relatively high emissions of greenhouse gasses per aircraft. In regards to social issues, there is a strong trend to outsource production, which creates tensions with the well organized workforces. Governance concerns are primarily in connection with managing and preventing bribery and corruption.

Aerospace & Defence Trends

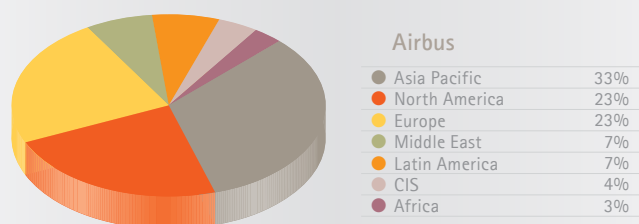
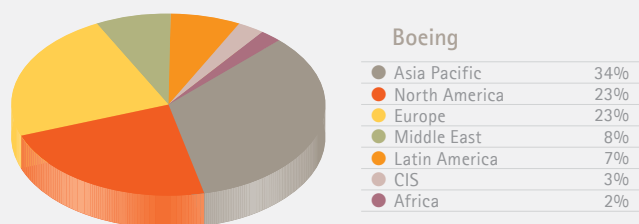
Globalizing production and supply chains: Historically, the Aerospace & Defence sector has had a strong relationship with the communities in which their manufacturing plants are situated. However, due to cost pressures, there is a growing trend to move operations abroad, particularly to emerging market countries with lower labour costs. This is generally accomplished by buying into another company or establishing a joint-venture.

Strongest growth is expected in Asia: Both Airbus and Boeing forecast that the Asia-Pacific region will dominate air traffic in 2029 and will make up one third of world demand for new aircrafts (see Graph 1). Furthermore, the region's strong growth in defence expenditure acts as additional stimulator. In recent years, India, China, South Korea and Pakistan have become the largest weapon importers (see Graph 2).

Pressure on defence spending: According to the Stockholm International Peace Research Institute (Sipri), worldwide military expenditure reached \$1.5 trillion (€1.05 trillion) in 2010. The United States remains the largest market by far, spending \$698 billion (€489 billion), or 43% of worldwide expenditure, in 2010. Despite various financial crises and major natural disasters, military spending increased by more than 50% during the last 10 years, including for big spenders like the U.S., China, India, Russia and Saudi Arabia.¹ However, recent research shows a flattening of the growth pattern. Although defence spending is still relatively high, the recent economic slowdown has spurred governments to make cuts in their budgets.

Climate change: With jet kerosene accounting for about 25% of total airline costs and oil prices still surging, aircraft and engine manufacturers put significant effort into technologies that reduce fuel consumption.² The arrival of new legislation, such as the EU Emission Trading Scheme that will cover the airline industry starting in 2012, will put a price on carbon and drive demand for aircrafts with lower emission rates.

GRAPH 1
Expected New Aircraft Deliveries in 2029 per Region



Sources: Boeing, "Current Market Outlook 2010-2029", 2011 and Airbus, "Global Market Forecast 2010-2029", 2011.

GRAPH 2
Top 10 Suppliers & Buyers of Major Conventional Weapons, 2006-2010

	Suppliers	Buyers
1	United States	India
2	Russia	China
3	Germany	South Korea
4	France	Pakistan
5	United Kingdom	Greece
6	Netherlands	United Arab Emirates
7	China	Singapore
8	Spain	Algeria
9	Italy	Australia
10	Sweden	United States

Source: Sipri Fact Sheet, March 2011.

¹ Sipri Military Expenditure Database, April 2011.

² International Air Transport Association (IATA), Financial Forecast, March 2011.

Key Challenges

Bribery, Corruption and Transparency

The Aerospace & Defence sector is often seen as prone to bribery and corruption. This largely relates to the intense competition, high financial stakes and secrecy surrounding military procurement. Defence companies depend on governments in two ways: through procurement and export licenses. As a result, intensive lobbying is an almost integral feature of procurement in this industry.

Transparency International (TI) describes the defence sector as one of the most secretive, and one in which it is difficult to openly discuss corruption issues.³

An initiative to combat bribery and corruption comes from two main industry bodies. The Aerospace Industries Association of America (AIA) and Aerospace and Defence Industries Association of Europe (ASD) have jointly developed the Global Principles of Business Ethics for the Aerospace and Defense Industry. These principles provide guidance to the sector on issues that may impact ethical business conduct.

Supply Chain Management

Companies in this sector are increasingly moving part of their production or sourcing to foreign markets. A&D companies may face challenges in their supply chain management since traditionally they have had limited experience in this area.

The manufacturing of aircraft is complex and involves production of various parts requiring different technical competencies. This creates an extra challenge for the A&D companies that operate in a highly competitive environment.

Climate Change

Jet kerosene prices have doubled since their low point in early 2009. With a share of 25% of total airline costs, the impact on airlines' profits is substantial.⁴

Beginning January 1, 2012, all flights arriving or departing from EU airports, regardless of nationality or operator, will fall under the EU Emission Trading Scheme (ETS). As a result, airlines will have to pay for their CO₂ emissions. The use of aircraft with lower emissions will be advantageous for airlines aiming to save costs.

One of the key goals of the EU's recently published White Paper on Transport, "Transport 2050", is to use 40% of sustainable low-carbon fuels in aviation by 2050.

A report from the Aerospace Industries Association supports the assertion that biofuels may reduce the industry's exposure to oil price fluctuations and create environmental benefits.⁵

Three US Air Force fighter jets have made flights using a blend of biofuel and traditional jet fuel. In fact, the US Air Force is aiming to obtain half of its domestic jet fuel from alternative sources by 2016.⁶

Controversial Weapons and Trade

The A&D sector is the only industry that falls under the scope of international conventions prohibiting the development, production and trade of certain products, for example cluster munitions.

Sustainability research indicates that approximately 60 listed companies are involved in so-called controversial weapons.⁷ Based on international conventions and ethical norms, the following weapons tend to be considered controversial: anti-personnel landmines, biological and chemical weapons, cluster weapons, depleted uranium, nuclear weapons and white phosphorus.

In addition to the controversial weapons conventions already in place, governments are currently negotiating an additional Arms Trade Treaty expected to take effect in 2012. This treaty will cover the trade of conventional arms with controversial end-users.

Product Quality and Safety

Ensuring the safety and reliability of aircraft is of great importance to the airline industry. Human tragedies, huge financial claims and loss of reputation and business are all at stake. In light of these consequences, the industry takes product quality management extremely seriously.

Through outsourcing manufacturers try to share the costs and the burden of product related risks. However, outsourcing creates extra risks in managing the production process and maintaining quality standards.

Labour Relations

Aircraft manufacturers deal with strong unions that are large and well organized. Manufacturers face an increased risk of strikes due to planned relocation of operations. This causes unrest, which can result in new bargaining agreements and therefore higher labour costs for the companies involved.

Historically, this sector has one of the least globalized workforces. This is changing as companies enter into joint-ventures in emerging markets or build manufacturing plants overseas. It is important that manufacturers apply the same labour standards throughout their facilities and implement monitoring systems.

³ Transparency International, "Building Integrity and Countering Corruption in Defence & Security", March 2011.

⁴ IATA Financial Forecast, March 2011.



Business Risks & Opportunities

Although bribes are initially intended to generate business, the potential downsides for companies involved are substantial. Since governments are significant A&D customers and are often sensitive to maintaining appropriate business relationships, companies must be vigilant to counter bribery exposure in order to maintain their ability to win government contracts.

Corporate culture and reputation can be severely damaged as a result of bribery or corruption cases. The more material downsides relate to fines, legal costs and loss of licenses to operate or tender for new business.

A number of major new aircraft launches have been subject to severe production delays due to supply chain issues. Expanding the industry's supply chain is becoming an essential strategy to decrease overall production costs and gain access to markets to sell its products.

Several A&D companies have started manufacturing activities in emerging markets. As in other sectors, A&D companies need to develop strong supply chain standards, monitoring systems and audit procedures to better manage the potential risks involved. For example, BAE Systems, Boeing, EADS, Raytheon and Saab all have started joint ventures with Indian companies. Examples of companies that have facilities located in China are Boeing, Bombardier, EADS, Embraer and Textron (see Case Study 1).

Manufacturers that develop aircraft or engines that have lower fuel consumption and emissions will benefit in the long-term as demand from the airline industry grows.

Aircraft manufacturers also achieve lower fuel consumption by reducing the weight of aircraft, for example by using composites such as fibre glass and carbon fibres.

Although still in its infancy, demand for alternative fuels is expected to grow in the coming years. Several manufacturers and airlines are already involved in programmes to develop and test alternative fuels. (Please refer to Case Study 2 for an overview of different company programs related to biofuels).

The increase of alternative fuel consumption by the military would be a strategic move as it decreases the dependency on foreign oil supplies.

As a result of these conventions and societal norms, a growing number of financial institutions are avoiding financial relationships with companies involved with these types of products.

In run up to the Arms Trade Treaty, defence companies will increasingly be required to have proper policies and transparent reporting on their arms sales.

In order to spread the risk burden of product quality-related claims, manufacturers increasingly transfer product quality risks to their suppliers. All major aircraft and engine manufacturers have faced severe product quality issues. These issues relate to insufficient safety management, supply chain management and challenges with new technologies.

Traditionally, aircraft manufacturers have had large labour forces with high wages and strong unions. However, intense competition is forcing many companies to cut costs and eventually relocate operations. These developments pose an increased risk for strikes against A&D companies.

Due to the technologically sensitive nature of aerospace manufacturing, labour is generally shifted within the manufacturers' country. However, some companies have begun transferring labour to emerging markets. This change also stems from the fact that the largest growth in the A&D industry is occurring in regions like China, India and the Middle East that will, in turn, try to transfer jobs and technology to their own economies.

⁵ AIA, "Civil Aviation Growth in the 21st Century", September 2010.

⁶ Air Transport World, "Obama pushes for development of biofuel to power military, commercial aircraft", 31 March 2011.

⁷ Sustainalytics Controversial Weapons Radar, Q2 2011.

Case Studies



Case Study 1: Best Practice in Supply Chain Management

Thales

While Aerospace & Defence companies deal with a complex globalizing supply chain, only a few companies explicitly address ESG issues in their supply chain. One of these companies is Thales, which began building responsible supplier relationships in 2008. As part of this effort, the company implemented a Purchasing and Corporate Responsibility Charter, asking suppliers to adhere to the company's Code of Ethics and the UN Global Compact principles. Thales requires its suppliers to follow principles of corporate citizenship in the areas of human rights, labour standards, the environment and business ethics.

With regard to human rights, the company encourages its suppliers to uphold the principles of the United Nation's Universal Declaration of Human Rights. The labour standards principles are based on the International Labour Organisation Conventions, which prohibit both forced and child labour. Other issues covered by the Charter are environment, corporate governance and prevention of corruption. Furthermore, Thales suppliers are not allowed to offer any undue payment to obtain or retain contracts or other benefits.

The company's policy is implemented across all of its business units, and is applicable to all Thales suppliers and throughout their own supply chain. Since 2009, all of Thales' major and new suppliers are required to sign the company's Purchasing and Corporate Responsibility Charter. Thales' purchasing department is responsible for monitoring suppliers and help to evaluate their performance as part of the supplier approval process. In case of suspected misconduct, the company has the right to audit suppliers on each of the principles addressed in the company's Charter.

To raise awareness on the issue of responsible supply management, meetings are organized for decision-makers and purchasers within the company. Training is provided by the Thales University and quarterly meetings take place to evaluate purchasing practices with regard to sustainable development.

Case Study 2: Biofuels

There is growing interest among aircraft manufacturers for initiatives to replace traditional fossil fuels, at least in part, with biofuels. Biofuel is a synthetic fuel, made from biomass. The industry acknowledges the controversy around biofuels and is focussed on developing biofuels that do not compete with food production, require excessive farming techniques or threaten biodiversity. After several years of laboratory research and engine tests, the first flights partly powered by biofuels have taken place. A study indicated that airlines would only need to transition 1 to 1.5 % of their total fuel consumption to biofuels to make biofuels commercially viable.⁸ In contrast to road transport, air transport infrastructure is favourably structured to build a distribution system for biofuels. With 50 airports accounting for almost one third of all worldwide aircraft movements, a relatively limited investment in biofuels infrastructure is required. Some initiatives undertaken by Aerospace & Defence companies include:

The Boeing Company

In recent years, Boeing tested biofuels as a commercial jet fuel to reduce greenhouse gas (GHG) emissions from fuel use. These tests proved that biofuels performed equal to or better than typical petroleum-based jet fuel. The company notes that biofuels do not come at the expense of food crops, but require minimal land, water and energy inputs, and support communities where they are grown.

Bombardier, Inc.

Bombardier is currently conducting its own biofuel research to ensure that its aircraft are ready to use these new fuels. The company is also carrying out an in-depth study in alternative fuels. It is reported that when burned, biofuels emit only the amount of CO₂ that they had absorbed during growth.

European Aeronautic Defence and Space Company N.V. (EADS)

Research done by EADS' Innovation Works initiatives show that all necessary technologies exist for the production of biofuel from algae. However, further research and development is required to achieve economies of scale at the industrial production level. Together with partners, the company is developing the industrial infrastructure needed for the production of biofuel on a larger scale.

Rolls-Royce plc

Rolls-Royce plays an active role in demonstrating and developing scientific testing and evaluation of biofuel. Consequentially, the company actively contributes to the scientific data in this field. One of the top priorities for Rolls-Royce is to make sure that biofuel achieves at least the same commercial and technical standards as traditional fuels. The company also wants to ensure that the production of biofuel is sustainable without harming biodiversity, water resources or ecosystems.

⁸ Air Transport Action Group (ATAG), "Beginner's Guide to Aviation Biofuels", May 2009.

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