

b. Environment

I. Introduction

"At Airbus we believe that by demanding more of ourselves, we can demand less of our planet. We are challenging ourselves to go further when it comes to taking responsibility for the environmental impact of our product throughout its lifecycle, and are investing major efforts into examining and reducing the impact of our products in operation together with all actors within the aviation sector. We not only rigorously track and measure our own impact, in our sites, products and services, but we also collaborate with our worldwide supply chain to drive more effective environmental management and decarbonise our industry. And we place innovation at the core of this effort by investing in research, new technologies, and sustainable solutions to help us reach our vision."

Guillaume Faury, Airbus CEO

II. Governance

New Policy

"Go further" for Airbus means developing products and services taking into consideration current and foreseeable future environmental challenges for future generations and with long-term value creation in mind. This is driven through the Company's environmental policy, with a strong support from the CEO and Executive Committee.

The policy focuses on three main directions:

- continually improving our manufacturing and site operations by achieving net zero GHG emissions, zero water and air pollution, sustainable energy sources and zero waste to landfill before 2050;
- driving development of eco-efficient products and services, taking into account environmental challenges; and
- working in cooperation with the aerospace sector to develop sustainable operations of air transportation.

The industry faces a variety of environmental challenges, including climate change, and the Company invests and cooperates with stakeholders across the value-chain in researching and implementing innovative ways to meet them.

As aviation represents around 2.5% of global man-made CO₂ emissions, the Company recognises its role in reducing the global environmental footprint of the sector and the importance of respecting the commitments of the Paris agreements. Climate change may also affect the environmental conditions in which the Company's manufacturing activities and products are operated. Another area of attention is the elimination of substances posing a risk to human health or the environment. The Company is continually seeking technically-feasible sustainable solutions to reduce the environmental impacts of its products and operations, in cooperation with its suppliers and industrial stakeholders.

Organisation around Environmental Affairs Topics

Since September 2019, an Environment Executive Steering Committee has been established. This committee gathers members of the Executive Committee and managers in charge of environmental topics. It meets regularly to review progress and take decisions on all matters related to the environmental strategy of the Company.

An Environmental Coordination Committee on a cross-Divisional level ensures consistency in the operational management of environment throughout the Company and aligns on reduction objectives. The Coordination Committee meets four times a year and is composed of the heads of Environment for Helicopters, Defence and Space and the commercial aircraft activities of the Company.

The role of the Airbus Environmental Affairs organisation is to guide the business in environmental matters, to set the policy and deploy, drive and improve the Environmental Management System (EMS) throughout the Company to achieve the Company's environmental objectives. The Airbus EMS is based on ISO 14001:2015. Airbus was the first aircraft manufacturer to be ISO 14001 certified, and continues to show its commitment by having been recertified to ISO 14001: 2015 in November 2019.

Airbus also monitors environmental regulatory developments to understand, evaluate and prepare for legal and regulatory evolutions applicable to its activities and products.

On an annual basis, the Company undertakes an extensive exercise to collect, consolidate and report its environmental data. This enables Airbus to measure the environmental impact of its site operations, track its performance and communicate information on environmental matters to internal and external stakeholders. As part of its transparency policy, the Company discloses its GHG emissions to the CDP, providing its investors and other interested parties with the insight they need. Once evaluated by CDP, Airbus' entries to the climate change questionnaire are made available publicly on the CDP website.

Working in Cooperation

Airbus understands the importance of working together with other stakeholders to find solutions.

For instance, Airbus is a Founding Member of the International Aerospace Environmental Group (IAEG) and is actively engaged in all areas of work, such as greenhouse gas emissions, substances management, substitution technologies and supply chain to share practices and promote the development of global standards.

Airbus is also an active board member of the ATAG which sets industry goals including CO₂ emission reduction goals, and mobilises action on strategic aviation issues.

Aviation is a global industry and requires global solutions. ICAO, a specialised agency of the UN, has a proven track record of delivering robust aviation environmental standards and guidance (i.e. air quality, noise, CO₂).

Airbus supported the ICAO agreement in 2016 on the CO₂ standard and also the adoption of the new Carbon Offsetting & Reduction Scheme for International Aviation (CORSIA) in 2017. Within the framework of this sectoral offsetting scheme, airlines were scheduled to start the monitoring and reporting process of CO₂ emissions as of 1 January 2019. CORSIA is the first global sectoral offsetting scheme.

On space activities, Airbus has worked with the ESA in Earth observation for over 25 years. EarthCARE (Earth clouds, aerosols and radiation explorer) and Copernicus, the most ambitious Earth observation programme to date, are two examples.

Recyclability is another important topic that the Company is tackling in cooperation with other entities through TARMAC Aerosave, a joint venture between Airbus SAS, Safran Aircraft Engines and Suez, providing state of the art services for the management of an aircraft's end of life.

III. Risk Management

Environmental risk and opportunities are managed following the Company's ERM system and requirements defined within the ISO 14001:2015 certified EMS. Identification of specific environmental risks and opportunities is defined by internal guidance and it notably highlights the Life Cycle Perspective approach to be adopted and the inputs to be considered: environmental aspects and impacts, compliance obligations and other issues and requirements including stakeholders' expectations.

Risks and opportunities are reported quarterly to the Executive Committee of each Division and top risks are consolidated at Company level to be brought to the attention of top management.

1. Climate Change Risk on Aircraft and Industrial Operations

The air transport market and Airbus business and operations may be disrupted by climate change, air emissions related impacts and stakeholders expectations including those of society, regulators and customers.

Climate Change Mitigation

Developing lower emission products and services to satisfy those expectations will require breakthrough advances in technology research (e.g. development of energy storage for electric aircraft, electrical distribution in the aircraft, power to weight ratio of electrical machines, etc.).

Airbus pursues incremental improvement of its programmes and has developed a dedicated organisation aimed at developing the future technologies that will be required. However, these technologies may not be available on time or may not deliver the required improvements to meet the climate objectives.

The Company's reputation may be affected if its or the sector's expected contributions on GHG emission reduction are not delivered as defined by ATAG to support the Paris agreements. Society's sensitivity to climate change leading to a change in passengers' behaviour including preference for alternative means of transport may change the market and demand for air travel. The Company may face reduced demand for its products and may need to adapt its business model in consequence.

Climate Change Adaptation

The foreseen consequences of climate change include harsher average weather conditions and more frequent extreme weather events, such as hurricanes, hail storms, heat waves or extreme cold spells. To cope with degraded operational conditions, more frequent redesigns may be required to meet more stringent regulation and certification criteria or standards.

Industrial operations and supply chain may also be affected by the consequences of climate change and require specific adaptation measures to remain operational.

2. Chemicals of Concern

Evolution of the hazardous chemicals' regulatory framework may lead to short- and long-term potential bans and result in business disruption across the Company's value chain.

With the aim of protecting human health and the environment, regulators at national and international level have developed a stringent set of legal requirements that are continuously evolving to ensure that hazards related to substances are under control or eliminated.

In order to mitigate the risk of disruption in its operations and supply chain, the Company's policy is to develop safe alternatives to the targeted substances and substitute these as soon as those alternatives have proven reliable enough to meet the stringent airworthiness criteria.

IV. Initiatives

Industrial Operations

The Company is engaged in an industrial transformation to anticipate mid-term evolutions of its industrial systems as well as looking for longer term solutions to build its "factories of the future". This company-wide initiative will support the reduction of Airbus' environmental footprint on air, soil and water quality, climate change, biodiversity and resource availability. An evaluation of hotspots based on life cycle assessment studies of some Airbus products is also ongoing to help focus on appropriate topics.

In 2019, Airbus has rolled out High5+, a 2030 plan to reduce the footprint of all Airbus activities globally and reach out to the supply chain. High5+ engages all sites and functions, making sure that each area plays its part in delivering the global 2030 objectives. These objectives have been set in absolute value compared to 2015 levels to reduce energy consumption, CO₂ emissions, water consumption, VOC emissions and waste production as follows:

- energy and CO₂: Following "Science Based Targets" methodology, reduce energy consumption by 20% and reduce direct (scope 1), indirect (scope 2) and oversize transportation (scope 3) GHG emissions by 40%. Reduction of oversize transportation impact will involve use of carbon offsetting to achieve overall ambition;
- waste and raw materials: divert 100% of the waste from landfilling and incineration without energy recovery, and reducing the amount of waste produced by 20%;
- air emissions: comply with air emissions regulations with 0% increase of air emission by 2030;
- water: develop strong maintenance and rehabilitation programs to improve reliability and lower costs in order to reduce water purchase by 50%, with no increase in water consumption; and
- deploy environmental requirements and risk evaluation across a targeted scope of the supply chain. Enhance the use of environmental risk evaluation for consideration as a quantitative input during selection, contracting and supply chain control phases.

In order to better embed this ambition into the Company's performance management, the Executive Committee agreed in 2019 to include a CO₂ reduction target for 2020 of 2.7% on the same perimeter as part of the Company's top objectives. As such it will form part of the CEO's and other Executive Committee Members' remuneration in 2020.

	2030 Target	2015	2019	2019 v. 2015
Energy (MWh)	-20%	2 323 287	2 408 751	3,7%
CO ₂ e (tonnes)	-40%	934 788	981 985	5,0%
Waste :				
Landfilled and incineration without energy recovery	0%	18%	26%	
Waste produced	-20%	67 115	68 997	2,8%
Air emissions				
VOC (tonnes)	0% increase	1 156	1 208	4,5%
NOX (tonnes)	0% increase	203	237	16,9%
SOX (tonnes)	0% increase	11,6	11,8	1,5%
Water				
Water purchase (m ³)	-50%	2 606 859	3 006 246	15,3%
Water consumption (m ³)	0% increase	2 944 677	3 454 085	17,3%

Perimeter : Airbus sites w/o subsidiaries. Airbus FAL in Mobile (US) & in Mirabel (Canada) were not operated in 2015 and therefore do not contribute to the baseline. 2017 data used as baseline for Airbus Tianjin & Oversize Transportation

The 2019 status shows a moderate increase compared to the 2015 baseline. This is expected and can be explained by the Company's significant industrial ramp-up over the same period combined with the introduction of the A220 FAL in Mirabel (Canada) in 2019. Compared to previous objectives that were calculated relative to revenue, the High5+ plan targets specific initiatives to achieve the absolute value reduction targets by 2030.

VOC emissions have been reduced by over 15 tonnes annually in Nantes by switching from liquid cleaning solutions to sprays and wipes.

The Company is also engaged on circular economy. Beyond waste reduction, the Company has been proactive in seeking ways to reuse and recycle materials beyond their initial life. Not only does the Company send nearly 60% of its waste to be recycled, but today, through the TARMAC Aerosave joint venture, more than 90% of an aircraft weight is recycled or reused through a selective dismantling (reverse manufacturing) process. As airplanes manufactured with large volumes of composites start retiring in the next few decades, Airbus is working in cooperation with several specialist companies involved in carbon fibre recycling, as part of an industry goal to determine the best processes and uses for recycled and reused carbon fibre materials.

Wherever its industrial activities have an impact on biodiversity, the Company is engaged with local partners on conservation and remediation projects to preserve the affected flora and fauna and ensure they are not adversely affected by the Company's activities.

In order to promote biodiversity and educate employees on environmental protection, a beehive has been installed on Airbus Helicopters' Marignane site with approximately 15,000 bees and a seedling nursery has produced 300 seedlings of gardening, fruits and native plants on the Itajuba site.

Noise around Airbus sites can also be an important topic for neighbouring communities. The Company is actively engaged with local authorities and the affected population to minimise its impact, by adapting operating times and actively seeking to reduce the noise at the source. In Toulouse, Airbus has launched the Median initiative regrouping actors in charge of flight activities around the airport to find the most effective solution to reduce noise levels.

Light pollution caused by Airbus activities has been deemed to be non-material to the Company's value chain.

The Company monitors and makes available data verified by external auditors, and publishes transparently its industrial performance. Environmental data has been externally audited since 2010. Below is a selection of externally reviewed environmental indicators.

ANNUAL REPORTING OF PERFORMANCE INDICATORS TABLE

Environmental performance	GRI	KPI	Unit	2019	2018
Energy	302-1	Total energy consumption (excluded electricity generated by CHP on site for own use) ✓	MWh	4,054,849	4,006,108
		Energy consumption from stationary sources ✓	MWh	1,359,018	1,304,338
		Energy consumption from mobile sources ✓	MWh	1,112,573	1,094,851
		Total electricity consumption, heat & steam consumption excluding CHP for own use ✓	MWh	1,583,258	1,606,919
		Of which purchased electricity from renewable sources (REC)	MWh	101,612	
		Generated electricity from CHP on-site for own use ✓	MWh	187,846	190,287
Air emissions	305-1	Total Scope 1 + Scope 2 CO ₂ emissions ✓	tonnes CO ₂	927,529	959,825
		Total direct CO ₂ emissions (Scope 1) ✓	tonnes CO ₂	569,838	553,887
		Total indirect CO ₂ emissions (Scope 2) ✓	tonnes CO ₂	357,691	405,938
		Indirect CO ₂ emissions Business Travel (Scope 3) ✓	tonnes CO ₂	109,403	111,666
	305-3	Indirect CO ₂ emissions Oversize Transportation ⁽¹⁾ (Scope 3)	tonnes CO ₂	198,526	185,500
		Total VOC emissions ⁽²⁾ ✓	tonnes	1,535	1,553
		305-7	Total SOx emissions	tonnes	15
Total NOx emissions	tonnes		280	323	
Water	303-5	Total water consumption ✓	m ³	3,987,289	3,647,950
	303-4	Total water discharge	m ³	3,740,566	3,338,712
Waste	306-2	Total waste production, excluding exceptional waste ✓	tonnes	99,280	98,631
		Material recovery rate ✓	%	54.0	57.8
		Energy recovery rate	%	21.2	20.7
EMS certification		Number of sites with ISO 14001 /EMAS certification ⁽³⁾ vs total number of covered by environmental reporting	Unit	62 / 80	60 / 71
		Workforce effectively covered by reporting over workforce subject to reporting according to the environmental guidelines ⁽⁴⁾	%	94	89

2018 baseline has been recalculated to integrate changes in accounting methodology (emission factors & exclusion of close loop water consumption in Donauworth). Electricity Emission factors updated according to IEA 2018 v1.01 for 2019 data and IEA 2017 v1.03 for 2018 data.

Sites A220 FAL in Mirabel, Canada, Satair Copenhagen, Ashburn & Miami, AH Oxford, ATR Francal, are included in 2019 according to reporting rules.

✓ 2019 data audited by Ernst & Young et Associés. 2019 data covers 92% of total group employees.

(1) Oversize emissions cover transport of large and non standards shipments. Values cover aircraft commercial activities and are estimated.

(2) 2019 VOC emissions data is estimated and 2018 data actualised. The accurate 2019 data will be consolidated and available during March 2019

(3) Number of sites covered by the environmental reporting which are certified ISO 14001.

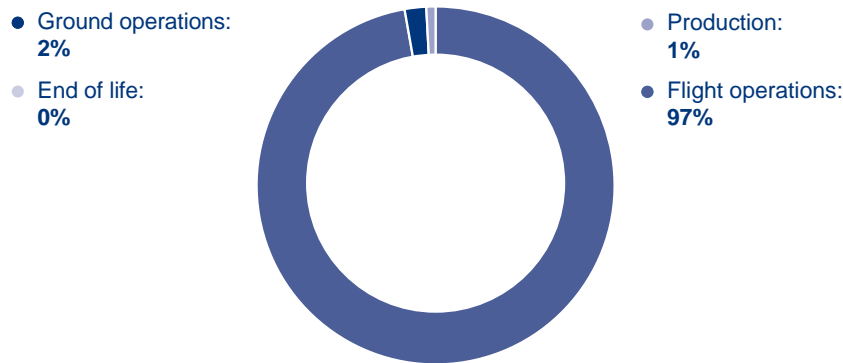
(4) Airbus environmental reporting guidelines include sites worldwide with a workforce on-site higher or equal to 50 employees. Note that only 100% consolidated entities are taken into account to calculate this 50 employee threshold. Coverage varies from 92% to 93% for waste, water, heat & refrigerants indicators.

As part of its plan to tackle scope 3 emissions, the Company has decided to offset all emissions linked to air business travel. In 2019, the Company has also started compensating emissions of activities for which reduction and use of renewable energy are not sufficient to meet the targets, such as air and sea logistics means.

In 2019, Airbus undertook an initial assessment of its scope 3 “Purchased Goods and Services” impact using a methodology developed by IAEG. The results of this assessment will be used to understand where the main impacts are in the Airbus supply chain in terms of GHG emissions and engage with suppliers on targeted projects to address them in the most effective way.

As can be expected, GHG emissions linked to the operation of Airbus’ products are among the areas of particular focus as they represent the main part of the value chain’s emissions. Recent internal studies, aiming at understanding the spread of GHG emissions of a commercial aircraft product over its current complete lifecycle, have concluded that over 97% of GHG emissions occur during the flight operations phase. As this phase is influenced by several factors beyond Airbus’ direct control and needs to be calculated as a projection of an aircraft’s operation over its entire service life, Airbus calls for a sectoral alignment on a methodology providing consistency to the way such impacts are calculated and communicated throughout the air transport sector.

Illustration of a Typical Commercial Aircraft Lifecycle GHG Distribution*



* Initial assessment for illustrative purposes only.

Products in Operation

In the last 60 years, the aviation industry has cut fuel consumption and CO₂ emissions per seat / kilometre by more than 80%, NO_x emissions by 90% and noise by 75% of aircraft in operation.

Whilst this performance is impressive, Airbus and the aviation industry recognise the importance to continue improving the sector's environmental performance in all areas – from noise to air quality and GHG emissions, notably CO₂. Due to the industry's short- and mid-term reliance on hydrocarbon fuels as well as potential additional impacts from non-CO₂ factors, the reduction of aviation's impact on climate change remains an environmental challenge.

Airbus, along with airlines, airports, air traffic management and other manufacturers, committed in 2008 to sectoral CO₂ emission goals (ATAG):

- improve fleet fuel efficiency by an average of 1.5% per annum between 2009 and 2020;
- stabilise: from 2020, net carbon emissions from aviation will be capped through carbon neutral growth (CNG); and
- by 2050, net aviation carbon emissions will be half of what they were in 2005.

The Company is actively working on a greater decarbonisation potential through new fuels and energies, technology and innovations (aiming at zero emissions flights) and carbon offsetting. Meeting these challenging goals will require a truly collaborative approach across the industry, investors and financial institutions, governments and civil society, focused on a combination of improvement measures encompassing technology (including sustainable fuels), operational improvements, infrastructure (including air traffic management) and market based measures.

Sustainable aviation fuels (“SAF”) are vitally important to the decarbonisation potential of our sector. These are not just “a nice to have” and as such the Company is fully engaged with other industry partners to drive the development of the industry. Airbus is the first manufacturer to offer delivery flights on sustainable fuels and intends to use SAF for test flights and Beluga flights as well as increasing the opportunity for more delivery flights. The first Beluga flight with SAF is an important milestone towards Airbus' decarbonisation strategy. Airbus plans to progressively use SAF in its new fleet of Beluga XLs and plans to deploy this to other operational bases in Europe.

Beyond climate change, the Company also focuses on reducing the other aspects of the environmental impacts of aircraft in operations. For instance, the Airbus Noise Technology Centre

based at the University of Southampton is continually modelling and testing to better understand noise, its sources and solutions to be embedded into current and future products.

Substances Roadmap

Many substances used in the global aerospace industry to achieve high levels of product quality, safety and reliability are subject to strict regulatory requirements.

In the aerospace industry, regulations on substances impact key processes and products, such as surface treatments, paints and fire protection. The Company remains committed to move towards replacement of such substances in products and processes. To help achieve this, the Company has put in place a portfolio of activities and projects, working with suppliers to identify, develop, qualify and deploy new technologies and solutions that avoid the use of substances classified as posing a risk to human health or the environment, whilst satisfying airworthiness, certification and performance requirements. The Company also engages with suppliers to promote the adoption of a similar approach through regular communication and, more widely, by working together with the aerospace industry to promote worldwide harmonisation of regulations and ways of working, taking into account the sector's safety and lifecycle specificities.

Using information obtained from its suppliers, the Company tracks, registers, assesses and declares regulated substances. Since 2011, the Company has analysed the impact of over 1,100 substances and qualified and deployed substitutes for over 100 substances in 300 products. Currently, the Company is actively working to substitute 65 substances in its own design, and an additional 45 in its supply chain, over the next 5 years.

Airbus invests substantial time and resources in research and development for technologies that use alternatives to regulated substances. When it can be demonstrated that these technologies meet the strict safety and reliability criteria required for aviation, Airbus seeks to implement them in its aircraft design and manufacturing.

For example, in 2006, the Airbus Chromate-Free project was launched with the aim of developing, qualifying and deploying chromate-free alternatives to materials containing and processes using chromates in aircraft production and maintenance. Chromate-free external paint systems developed initially for the A380 programme are now used in all Airbus commercial aircraft manufacturing programmes and across the aerospace industry.

Another example is the Airbus Basic Primer project that researches potential alternatives with the aim of phasing out the green chromated primer coat.

Cultural Change

Corporations across industries are increasingly realising how essential their employees are as stakeholders in the conversations driving their business. At Airbus, this is no exception. The people who work here see sustainability in the aerospace industry not as an add-on to the business priorities but as an important part of their personal motivation in everything they do.

According to a 2018 survey, 11% of the Airbus Toulouse-based employees cycle to work. An annual event is organised by the Company to spread the initiative.

As part of its roll out plan, high5 + initiated a group-wide communication campaign to engage employees on day-to-day actions in order to reduce their environmental impact.

V. Future Outlook

"By 2050, we have made the commitment to bring CO₂ emissions to half of 2005 levels. A new generation of technology, research and development, and our total respect for the planet lay the foundation for a more sustainable aviation industry. By demanding more of ourselves in the areas of research, supply, production and operations, we can demand less of our planet. This clears the path toward a future in which we can connect more people than ever before, in the most sustainable way possible."

Guillaume Faury - Airbus CEO

New Technologies

When it comes to research and technology portfolio, the Company's first priorities are set on designing and maturing the technologies, which will then enable us to come to the market with an emission free aircraft.

The E-Fan projects are contributing to illustrate and disseminate the idea that electrically-based propulsion will probably be the next major breakthrough in our industry. So far, the E-Fan programmes have delivered assets and knowledge, but also aim to provide momentum for electrification with the Company taking a lead in the vision and its drive. E-Fan X is the next step of our electrification journey.

In order to advance aerodynamics research, the Company has developed a scale demonstrator aircraft with the first inflight, freely flapping wing tips that could revolutionise aircraft wing design through a biomimetic approach. Known as AlbatrossONE, this remote controlled aircraft has already taken its first flights to prove the concept.

The Company's fello'fly project aims to demonstrate the technical, operational and commercial viability of two aircraft flying together for long-haul flights. Through fello'fly, a follower aircraft will retrieve the energy lost by the wake of a leader aircraft, by flying in the smooth updraft of air it creates. This provides lift to the follower aircraft allowing it to decrease engine thrust and, therefore, reduce fuel consumption in the range of 5-10% per trip.

c. Responsible Defence and Space Products

I. Governance

The Company delivers defence and space products and solutions that enable governments and organisations to protect people and resources, and it aims to do so in a sustainable, respectful and fair manner.

This commitment is defined in terms of two thematic areas:

- A more secure world: Contributing to protecting citizens and nations' sovereignties, values, and infrastructure in a world of evolving threats; and
- A healthier environment: Designing products with a smaller eco-footprint and developing solutions to better monitor and manage natural resources.

In 2019, Airbus Defence and Space's R&S Governance Committee set a long-term objective to expand the number of products and services that contribute to its sustainability goals and the eight aforementioned UN SDGs. While inventive solutions are in the pipeline, this section describes solutions that currently contribute to a more secure world and a healthier environment.

II. Initiatives

a) Products for a More Secure World

As long-standing threats to public safety and infrastructure are compounded by emerging risks that take on new forms in our cyber age, the Company aims to increase the safety of communities and protect human lives through its defence solutions, space-based intelligence and communication, and cyber security solutions. Representative contributions include:

Maritime

The Company makes locating, tracking and communicating with seafaring vessels across the globe's vast and remote oceans possible through its optical and SAR satellite imagery. Its Ocean Finder solution allows customers to monitor ships and activity at sea, which may be at risk due to illegal activities, hijacking or hostile waters and can assist with search and rescue efforts.

On the dock, ports need software to enable the secure and efficient movement of levied goods, and in the water they need to monitor incoming sea vessels to ensure safe movement among cruise ships, freight liners, private vessels and tankers. The Company provides real-time maritime information to help organise port traffic, provide navigation assistance to vessels and ensure smooth goods operations on land. Australia, with one of the largest harbours in the world with 1.6 million passengers passing through its Port Authority, depends on Airbus' STYRIS® system to manage Sydney Harbor and Port Botany.

Public Safety

The Company helps to protect societies and cities by providing communication and collaboration solutions to government authorities, law enforcement agencies, emergency services, healthcare providers and other public safety organisations. Their solutions enable authorities to respond to, and collaborate on, multiple simultaneous missions, often in emergency or high-security scenarios, through the sharing of high-value information (voice and data). The Company has equipped 19