

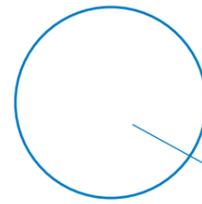


arianeGROUP

CORPORATE SOCIAL RESPONSIBILITY REPORT 2020

#spaceenablers





INTRODUCTION

Foreword by the CEO	4
Our purpose and activities	6
Our governance	10
Our materiality analysis	12
Our Corporate Social Responsibility strategy	14



PEOPLE

16

1.1 · Embody and develop European collaboration	18
1.2 · Ensure a socially responsible digital transformation	21
1.3 · Ensure employees' health and safety at work	24
1.4 · Encourage work-life balance	27
1.5 · Promote a culture of integrity and fight corruption	28



ENVIRONMENT

30

2.1 · Mitigate climate change	32
2.2 · Integrate eco-design as part of product strategy	36
2.3 · Eliminate and monitor space debris	40
2.4 · Manage harmful products responsibly and protect the environment	41



PROGRESS

44

3.1 · Encourage sustainable innovation	46
3.2 · Enable scientific and space knowledge and inspire people	50
3.3 · Promote diversity and equal opportunities	52
3.4 · Deliver local impact and be involved in local socio-economic development	54
3.5 · Ensure sustainable procurement and outsourcing	56

OUR COMMITMENT TO SUSTAINABILITY

Pioneer in access to space, ArianeGroup was created in 2016 by Airbus and Safran to take up an economic and industrial challenge: meeting the new needs of the space market, while drawing on experience gained over more than 50 years. Today, ArianeGroup ensures France's and Europe's strategic autonomy in access to space with the Ariane launchers and makes a major contribution to the French oceanic deterrent force.

But our ambition goes far beyond this. People have always looked to the sky, and what once seemed unreachable has become accessible thanks to space exploration: we aim to ensure that space is beneficial to everybody, and contributes to making progress towards a more sustainable world. Innovations in the field of space are thus deployed for the benefit of everyone and the preservation of our environment – as described in our purpose: “Pioneering the European way to space, for the well-being of all citizens in a safe world”.

With the development of high-speed Internet for all and the massive use of satellite data,

space provides many services that are necessary to the functioning of our society: the use of communication networks, weather forecasts, navigation, geolocation, environmental measurements, natural resource management, sustainable agriculture techniques, etc. Thanks to the Ariane launchers, ArianeGroup guarantees Europe's capacity to build and maintain space infrastructures, and thus to provide European citizens' access to these services.



As a contributor to France's deterrence and defense and security strategy, ArianeGroup helps to preserve peace for France and Europe. Our ambition is to remain a responsible player in the defense sector, working on reducing the environmental impact of our defense launchers (for instance thanks to the end-of-life biological treatment of propellants), paying particular attention to the regulations to which we are subject and working in synergy with our industrial ecosystem.

The satisfaction of our customers, whose needs are evolving more and more rapidly, as well as the quality and safety of our products are our priorities. Our activities

cover the entire life cycle of civil and defense launchers, and we are already working on the future of Europe's next generation of space launchers, which will be reusable and have a reduced environmental impact. From the production chain to the launchers' missions, ArianeGroup makes every effort not just to respect but to anticipate standards, reinforce the eco-design of its products and preserve the environment.

Our ambition nowadays is to go beyond performance to create value for everyone in the long term. To this end, we started by carrying out a materiality analysis in order to consult our stakeholders on their expectations in terms of sustainable development, and to strengthen the dialogue. This approach, carried out in 2018, helped structure our Corporate

Social Responsibility (CSR) strategy around three pillars – Space for People, Space for the Environment and Space for Progress – and six axes linked to the United Nations Sustainable Development Goals (SDGs): Driving digitalization for the benefit of people everywhere, Developing European collaboration, Combating climate change, Preserving Space as a global commons, Encouraging sustainable innovation, and Contributing to local socio-economic development.

Today, our Group is in the midst of a transition towards sustainability: we are currently working to structure our governance around CSR issues and defining objectives,

indicators, and action plans in order to meet the environmental and societal challenges of tomorrow. We believe this transformation is vital to continue to ensure France's long-term credibility in the defense sector and building even safer space for tomorrow.

We are very much aware of how much we still have to do, but we wanted to make this first report for our internal and external stakeholders public in order to present an overview of our CSR challenges. The first actions implemented to respond to them focus for example on health and safety and the development of our employees, assisting the development of greener future mobility thanks to our hydrogen know-how, and our local territorial actions, for example with the creation of a training course in French Guiana. I would like to take this opportunity to thank our employees who work hard every day to help us make progress on these issues and make European space industry the most responsible in the world.



Pioneering the European way to space, for the well-being of all citizens in a safe world”

André-Hubert ROUSSEL
CEO

OUR PURPOSE AND ACTIVITIES

As the lead contractor for Europe's Ariane launchers, as well as for the French oceanic deterrent force missiles, **we exist to pioneer the European way to space, for the well-being of all citizens in a safe world.**

Equally owned by the Airbus and Safran groups in a 50/50 joint venture, ArianeGroup houses the entire scope of their space and defense launcher activities and expertise in a single, coherent company.

ArianeGroup also manages a portfolio of critical equipment activities for space and defense, in-house or via subsidiaries. The ArianeGroup network includes 11 subsidiaries and affiliates in which ArianeGroup has a significant shareholding. The Group (ArianeGroup and subsidiaries) employs around 8,800 highly skilled people, mainly in France and Germany. Consolidated in 2016, ArianeGroup's roots reach back more than 70 years into the history of space activity in Europe.

SPACE BENEFITS FOR EARTH

The satellites we launch are technological infrastructures installed in space. They enable the development and delivery of many activities of high societal value, notably in:



The telecommunications sector, by providing access to telephone, radio, and television services, and to the internet, hence helping to close the digital gap and providing access to new digitalized services (homeworking, telemedicine, remote training, etc.)



Earth observation, for environmental monitoring including climate change¹, weather forecast, etc.

Navigation services, namely through the European Global Navigation Satellite System Galileo, for optimization of all types of transportation (road, maritime, air) and precision farming



Research, with satellites collecting a wealth of data to push science ever forward



Defense and security, through military satellites

In all of these ways, they contribute to people's quality of life and are critical for Europe's transition towards sustainability. As for other similarly significant infrastructures, Europe should maintain its independence in building them; and this includes its independent access to space using its own European launchers, such as Ariane.

ACTIVITIES IN THREE MAIN AREAS



Our activities cover the entire life cycle of a space launcher, from design to development, production, and launch services operations, marketing and sales, the latter through our subsidiary Arianespace. We produce and operate the Ariane 5 launcher and are developing the future Ariane 6 launcher for the European Space Agency (ESA). As lead contractor and design authority, we coordinate an industrial network of more than 600 companies in 13 European countries involved in the Ariane 6 program. We design innovative and competitive solutions for space launch systems and applications for institutional, commercial and industrial customers. The Group is thus expert in the most cutting-edge technologies, from complete propulsion systems of any major technologies (cryogenic, storable or solid) to equipment and materials.



The other main part of our activity is concerned with the M51 strategic missile, a key component of the French deterrent force. The M51 is a three-stage submarine-launched ballistic missile (SLBM) designed to be launched from the French Navy's Strategic Oceanic Force (FOST) submarines. We are the prime contractor for this program on behalf of the French Defense Procurement Agency (DGA) for the French Navy. ArianeGroup brings together the expertise of more than 900 French industrial companies and SMEs with a twofold objective: the constant quest for the highest level of performance, and national independence. Our responsibility covers upstream research, design, development and production of the missiles, the land-based operating infrastructures and the command and control system on-board the submarines. ArianeGroup is also responsible for the system's in-service support (MRO) as well as end-of-life dismantling of missiles.



ArianeGroup has in-depth, long-term expertise in propulsion systems and equipment for "to, in, and from space" applications, from development to manufacturing: launchers, satellites, space vehicles, landers. Orbital propulsion experts, we deliver complete propulsion systems and subsystems for satellites to all European primes and many international customers. Our specificity is the mastery of all key propulsion technologies used for launch systems – cryogenic, storable or solid –

and for in-space applications – chemical mono or bi-propellant and electric (radio-frequency ion thrusters). Drawing on its experience as prime contractor for large and complex programs, ArianeGroup also offers studies and turnkey solutions for complex infrastructures for space, defense and security: ground segment infrastructures, operation and control centers, space traffic management and space situational awareness systems, energy generation facilities, and end-of-life dismantling. Our subsidiaries have extensive expertise in specific subsystems and equipment for space, defense, and industry applications, notably pyrotechnical and mechanical equipment, or optical, optronic, neutron, and laser systems.

¹ The Global Climate Observing System (GCOS) currently specifies 54 Essential Climate Variable (ECVs), of which about 60 per cent can be addressed by satellite data ([source here](#))

GROUP STRUCTURE AND ACTIVITIES



SUBSIDIARIES (>50%)

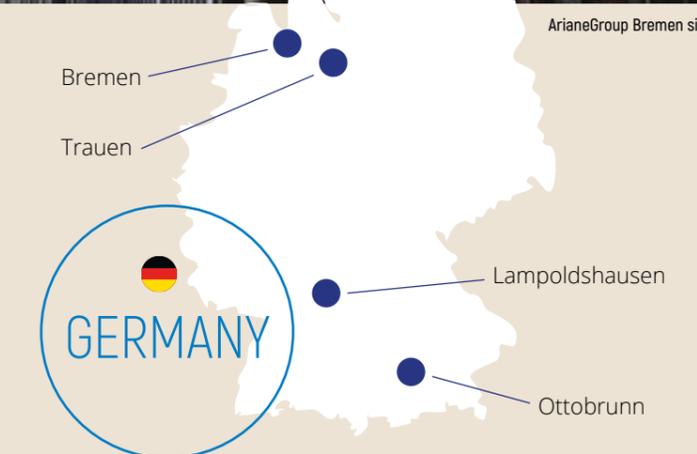
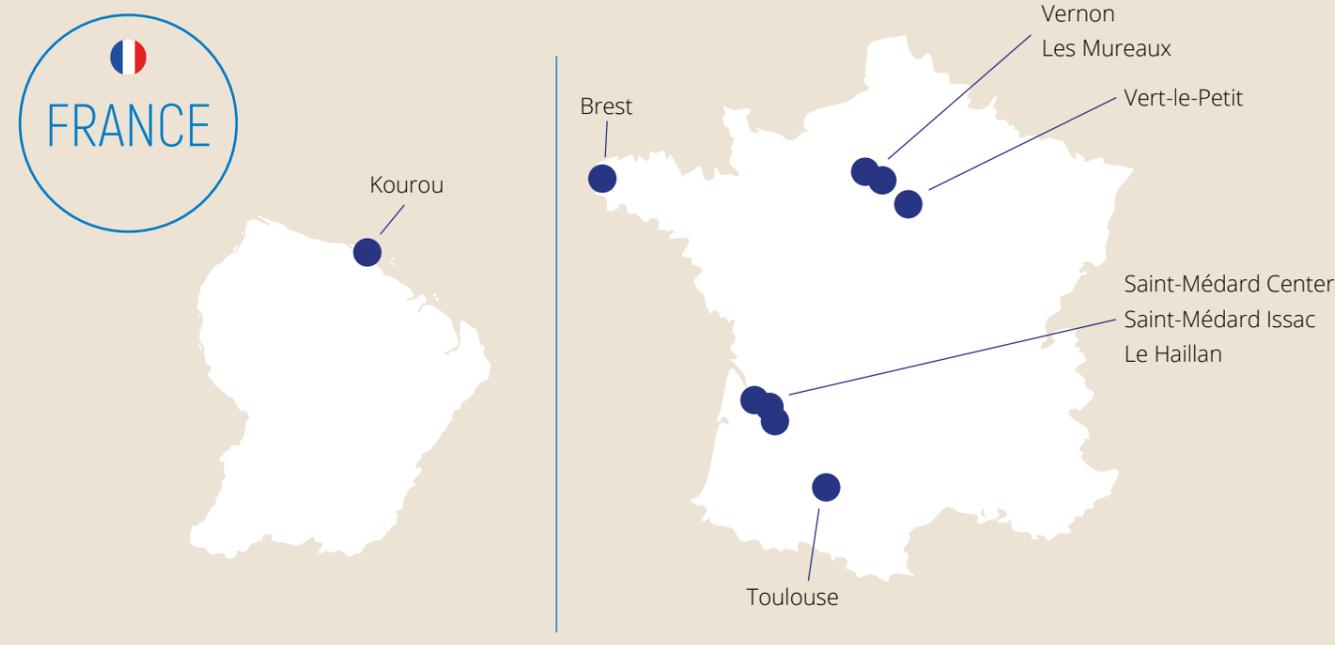
APP BEHER Gas igniters and generators for space and industry 100%	NUCLÉTUDES* Protection of space and strategic systems 98.9%
PYROALLIANCE* High reliability pyrotechnic and mechanical equipment 90%	SODERN* Optical, optronic and neutron systems and equipment 90%
SME-CQ Gas generation tablets for automotive safety (Airbags) 75.5%	ARIANESPACE* Including two representative subsidiaries: • Arianespace Inc. (United States) • Arianespace Singapore Pte Ltd (Singapore) Space launch services and solutions for all types of satellites to all orbits (Ariane, Vega, Soyuz) 73.6%
CILAS* Optronic systems and civilian and military lasers, precision spatial optics 63%	EUROCKOT Launch Services Launches of satellites into low-Earth orbits (Rockot) 51%

SHAREHOLDINGS (≤50%)

EUROPROPULSION* Design, development and production of solid rocket motors for Ariane 5, Ariane 6 and Vega 50%
EURO CRYOSPACE (GIE) Design, Development and production of Ariane 5 cryogenic tanks and associated equipment 45%
REGULUS* Solid rocket propellant casting for Ariane 5, Ariane 6 and Vega 40%
STARSEM Soyuz launch services from Baikonur 35%

² AGH is held 50/50 by Airbus and Safran
³ AGS is held 100% by AGH except one preference share (French State)
 * Strategic Subsidiaries/Shareholdings governed by National Interests Protection agreements

OUR SITES



SUBSIDIARIES

- APP** Klundert (Netherlands)
- ARIANESPACE** Kourou (France) / Evry (France) / Washington DC (United States) / Singapore / Tokyo (Japan)
- CILAS** Orléans, Mont Audouze, Le Barp, Aubagne (France)
- EUROCKOT** Bremen (Germany)
- NUCLÉTUDES** Les Ulis (France)
- PYROALLIANCE** Les Mureaux, Toulon (France)
- SODERN** Limeil-Brévannes (France)

SHAREHOLDINGS

- EUROPROPULSION** Suresnes, Kourou (France)
- EURO CRYOSPACE** Les Mureaux (France)
- REGULUS** Kourou (France)
- STARSEM** Evry (France)

OUR GOVERNANCE

ARIANEGROUP IS COMPOSED OF THE FOLLOWING COMPANIES AND THEIR AFFILIATES:

ARIANEGROUP HOLDING SAS

The head entity of the Group, centralizing the Group management and administrative functions, aiming at steering, providing governance for and supporting its subsidiaries and, as the case may be, its shareholdings by supplying associated services

ARIANEGROUP SAS AND ARIANEGROUP GMBH

The two operational first-level entities, conducting the Group's business activities in France and Germany respectively except for the business conducted by Arianespace

ARIANESPACE

Conducting the Group's business relating to the marketing, sales, and operation of launch services

ArianeGroup is headed by a Chief Executive Officer, under the supervision of a Board of Directors and assisted by an Executive Committee.

The Board approves the strategy for the Group, supervises the management of the Group implemented by the CEO, and is composed of up to six members with voting rights (three are proposed by Airbus and three by Safran) appointed for a renewable three-year term, one state representative and a "Commissaire du Gouvernement", both appointed by the French State and attending the Board meetings in an advisory capacity.

In carrying out its duties, the Board is supported and advised by three committees:

- the Audit, Risks, Finance and Compliance Committee;
- the Nomination and Remuneration Committee;
- the Spécial France Committee.

The CEO has responsibility for the organization of management of the Group and direction of the Group's strategy under the supervision of the Board. The CEO represents ArianeGroup vis-à-vis third parties and is the voice of ArianeGroup both internally and externally. He decides upon the allocation of duties and responsibilities within the organization. The CEO also chairs the Executive Committee and is responsible, together with the Executive Committee members for the overall running of the business of ArianeGroup, its performance and overall coherence.

The Executive Committee is the integrated top executive body of ArianeGroup in charge of the entire management structure, working as a team to meet the Group's ambition and targets.

ARIANEGROUP'S EXECUTIVE COMMITTEE AS OF 01/07/2021



ANDRÉ-HUBERT ROUSSEL
CHIEF EXECUTIVE OFFICER



FRANCK HUIBAN
HEAD OF CIVIL PROGRAMMES



PHILIPPE CLAR
HEAD OF DEFENSE PROGRAMS



STÉPHANE ISRAËL
CEO, ARIANESPACE



HERVÉ GILBERT
CHIEF TECHNICAL OFFICER



KARL-HEINZ SERVOS
HEAD OF INDUSTRIAL DIRECTORATE



PHILIPPE GIRARD
HEAD OF QUALITY



GILLES FONBLANC
GENERAL SECRETARY



STÉPHANE NOGATCHEWSKY
HEAD OF PROCUREMENT



AKILLES LOUDIÈRE
HEAD OF DIGITAL & TRANSFORMATION



PIERRE GODART
CHIEF FINANCIAL OFFICER



FLORENCE GALLOIS-POOLE
CHIEF HUMAN RESOURCES OFFICER



OLIVIER LAPY
CHIEF COMMUNICATION OFFICER

CORPORATE SOCIAL RESPONSIBILITY (CSR) GOVERNANCE

CSR is under the responsibility of the General Secretary. The CSR Manager is in charge of defining and deploying the sustainability strategy, with the help of a CSR network. The CSR network is composed of all functions involved in CSR. One of the 2021 objectives is to structure this network as well as CSR governance in general so as to make sure our Sustainability Commitments are embedded in our day-to-day actions and lead to concrete results.



By setting up robust CSR governance and embedding it into each of our jobs and activities, we are building the future of our company. Sustainability will be at the heart of tomorrow's business."

Violette Edwards,
Corporate Social Responsibility Manager

OUR MATERIALITY ANALYSIS

In 2018, in order to structure our CSR strategy and monitor our stakeholders' expectations, we conducted our first materiality analysis.

1

WE STARTED BY establishing a list of CSR issues from international standards (UN Sustainable Development Goals, Global Reporting Initiative, ISO 26000, etc.) and mapped our main external stakeholders.



2

WE THEN INTERVIEWED internal stakeholders (Executive Committee, two groups of Talents, and the CSR project team), and external ones (shareholders, space agencies, customers, suppliers, communities, scientific and space experts, forecaster, expert in environmental impact, expert in extra-financial rating).

3

WE ASKED each of these groups to assess the importance of the various CSR issues for ArianeGroup and consolidated the results into a matrix weighing the importance of the topics (internal importance vs external importance).

Beyond reinforcing our dialogue with external stakeholders, this materiality analysis helped build our CSR Strategy and commitment focuses presented below.

This CSR report provides information on the most material issues. We have also included an area that had not been identified as a priority in our 2018 exercise, but on which we are working to improve our impact: "Protect biodiversity", which we merged with the issue "Manage harmful substances responsibly and protect the environment".



OUR MATERIALITY MATRIX

For the sake of transparency, we have cross-referenced in color the chapters dealing with our most material CSR issues.

EXTERNAL IMPORTANCE

<ul style="list-style-type: none"> • Ensure sound risk and crisis management • Deliver positive business • Ensure recycling, waste management and reduction • Protect health and safety of communities • Monitor social acceptance of space exploitation 	<ul style="list-style-type: none"> • Ensure efficient communication to promote brand image • Protect biodiversity >2.4 	<ul style="list-style-type: none"> • Maintain strong relationships with stakeholders > FOREWORD BY THE CEO • Promote a culture of integrity and fight corruption >1.5 • Ensure sustainable procurement and outsourcing >3.5 • Ensure long-term value creation > FOREWORD BY THE CEO • Deliver local impact and be involved in local socio economic development >3.4 • Ensure product safety and quality > FOREWORD BY THE CEO • Ensure client satisfaction > FOREWORD BY THE CEO • Integrate eco-design as part of product strategy >2.2 • Encourage positive sustainable innovation >3.1 • Mitigate company's impact on climate change >2.1 • Eliminate and monitor space debris >2.3 • Manage harmful substances responsibly and protect the environment >2.4 • Ensure a socially responsible digital transformation >1.2 • Ensure employees' health and safety at work >1.3 • Promote diversity and equal opportunities >3.3 • Encourage work-life balance >1.4 • Attract and retain talents >1.2 / >1.3 / >1.4 • Enable, share and promote scientific and space knowledge and extend human technology >3.2 • Inspire people >3.2 • Embody and develop European collaboration and ensure independent access to space >1.1 • Ensure peace and be a responsible actor of the defense industry > FOREWORD BY THE CEO / >1.5 / >2.2
<ul style="list-style-type: none"> • Promote the respect of Human Rights 	<ul style="list-style-type: none"> • Deal with governance interdependency and exert responsible lobbying • Inform clients properly and transparently • Promote a user-friendly work environment 	<ul style="list-style-type: none"> • Take into account general interest and sustainability in the corporate mission • Support employee development • Encourage innovative, agile and responsible management practices
		<ul style="list-style-type: none"> • Ensure a strong and responsible governance • Optimize transports • Optimize travels • Promote a corporate vision and culture

INTERNAL IMPORTANCE

OUR CORPORATE SOCIAL RESPONSIBILITY STRATEGY

At the heart of ArianeGroup's concerns is being a responsible corporate citizen and ensuring that access to space remains a strong and sovereign means for a sustainable Earth in the long term. This is set out in our company purpose statement, "Pioneering the European way to space, for the well-being of all citizens in a safe world": we want to make sure space is a sustainable resource to improve life on our planet for its inhabitants.

The act of formalizing our Sustainability Commitments lays the groundwork for channeling our purpose and making sure our day-to-day activities are in line with it. We strictly comply with laws and regulations and have already put in place many actions and projects

to support these commitments, but their ultimate purpose is to push us further and ensure that we are constantly improving for a better tomorrow, notably by contributing to the United Nations Sustainable Development Goals (SDGs) and the European Green Deal.

We are fully aware that the challenges facing the world today will not be solved single-handedly. More than ever, teamwork and cross-fertilization of ideas are critical: we know that collaborating with all our stakeholders, especially our industrial partners and suppliers, is essential to maximize our positive impact, and we will continue to move in this direction.

Artist's impression of the Ariane 6 launcher



SPACE FOR PEOPLE



3 GOOD HEALTH AND WELL-BEING
DRIVING DIGITALIZATION FOR THE BENEFIT OF PEOPLE EVERYWHERE

17 PARTNERSHIPS FOR THE GOALS
DEVELOPING EUROPEAN COLLABORATION

SPACE FOR ENVIRONMENT



13 CLIMATE ACTION
COMBATING CLIMATE CHANGE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
PRESERVING SPACE AS A GLOBAL COMMONS

SPACE FOR PROGRESS



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
ENCOURAGING SUSTAINABLE INNOVATION

8 DECENT WORK AND ECONOMIC GROWTH
CONTRIBUTING TO LOCAL SOCIO-ECONOMIC DEVELOPMENT



PEOPLE

1

We exist to provide European access to space for the benefit of all citizens. Thus, we foster development of European collaboration through the very core of our activity. Externally as well as internally, we strive to promote responsible digitalization. Regarding ArianeGroup's people, while our priority is to ensure their health and safety, we also seek to cultivate their well-being by ensuring a good balance between their professional and personal lives in order to attract and retain talents. We mobilize everyone to ensure the principles of integrity at all times.

EMBODY AND DEVELOP EUROPEAN COLLABORATION

CONTEXT

ArianeGroup was born of Europe and is proud to play a role in pursuing European ambitions for the benefit of all citizens. Access to space has been a European project synonymous with peace and collaboration for over 50 years. The first European launcher project, Europa, was launched by ESA's⁴ forerunner in the 1960s. ESA created the Ariane program with the objective of enabling Europe to launch its satellites without depending on any other space powers. The first Ariane flight took place in 1979. Since then, Airbus and Safran and later ArianeGroup were commissioned to develop and build the Ariane launchers. Collaboration is also a key enabler in company performance improvement and therefore the main pillar of the cultural transformation endeavor in which we have been engaged since the establishment of ArianeGroup in 2016.



Ariane 6 upper stage production (Bremen)



Real collaboration is more than just cooperating. It involves a shared vision, mutual respect, an understanding of each other's roles, the capability to share ideas and learn from each other. I am convinced that with a more coordinated and integrated European approach we can leverage the efficiencies needed to succeed in our highly competitive market. To do so, we will need to collaborate more closely with our partners and suppliers, actively seeking synergies and integration, but also with each other internally. It is the way to become a truly European company."

Pierre Godart, Chief Financial Officer



ESA member states and cooperating states⁵ (source: ESA)

8,800 PEOPLE WORK FOR ARIANEGROUP AND ITS SUBSIDIARIES⁶

7,500 PEOPLE IN ARIANEGROUP

6,400 EMPLOYEES IN FRANCE

1,100 EMPLOYEES IN GERMANY

ACTIONS AND PROGRESS

FOSTERING EUROPEAN COLLABORATION

We embody and foster European collaboration in our sector, both internally within our multinational teams and externally, working with institutional and industrial partners.

While 600 European companies contribute to Ariane 5, more than 10 major industrial players are working hand in hand with our teams across 13 countries to build the ambitious Ariane 6 project. In addition to our own solutions, we are also enabling the deployment of other European projects such as Galileo (global navigation satellite system) and Copernicus (Earth observation and monitoring). We are also contributing to collaborative projects financed by the EU: Horizon Europe, the European Defense Fund, and Digital Europe.

Beyond these projects and the number of jobs created, our main lever for contributing to European collaboration is our active commitment to ensuring independent European access to space, as we are convinced that it is an essential pillar of Europe's sovereignty.

THE "GEO-RETURN" PRINCIPLE

The ESA applies a principle of fair return towards its 22 member states: a member state's financial contribution to a project should flow back to the country's national industry in the form of contracts. This encourages cross-European industrial collaboration.

⁴ https://www.esa.int/ESA_Multimedia/Videos/2019/11/This_is_ESA
⁵ **Marked in dark beige:** The national bodies responsible for space in these countries sit on ESA's governing Council: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, The Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland and the United Kingdom.
Marked in light beige: Canada also sits on the Council and takes part in some projects under a Cooperation Agreement. Slovenia and Latvia are Associate Members. Six other EU states have Cooperation Agreements with ESA: Bulgaria, Croatia, Cyprus, Lithuania, Malta and Slovakia.
⁶ Rounded active workforce on December 31, 2020

This integrated vision is reflected in our contributions to the socio-economic development of European territories. Since 1998, the Community of Ariane Cities association has brought together Ariane Cities and the industrial partners involved in the Ariane launcher program. This Community of Ariane Cities association has five key objectives:

- Raise public awareness on issues related to space transport, space and science;
- Develop and share space-related scientific knowledge as well as scientific, technical and industrial culture;
- Promote economic and professional opportunities;
- Develop and maintain close ties between the Ariane cities and the space ecosystem stakeholders;
- Increase the influence and development of the European space industry.

ENCOURAGING INTERNAL COLLABORATION

In order to develop all our projects, our first responsibility is to promote and foster collaboration within our multinational teams.

To this end, in 2018 we launched the Cultural Transformation Project, which mobilized over 600 leaders within the company until December 2020. Amongst other things, the action plan included promoting English as a shared working language and offering language courses to employees, creating tools to facilitate collaborative work between departments, and implementing collective objectives for managers. The project has reached its closure but ArianeGroup's cultural journey will continue, maintaining the focus on better collaboration, feedback culture, and customer orientation.

In addition to the Cultural Transformation project, we also have a long-standing social dialogue culture: for instance, in 2020 10 agreements were signed in France at corporate level and 18 in Germany.



European Spaceport (French Guiana)



A GEOTracker telescope

COLLABORATION IN DEFENSE

Operating a launch system (launchers and launch base) is not sufficient to ensure Europe's freedom of action in space: space surveillance assets are key to manage military and environmental risks such as collision and thus to ensure a sustainable use of space and to protect the EU's strategic capabilities. This is why we are developing our activities in the field of space situational awareness (SSA) and space traffic management (STM). As an example, we have developed a network of GEOTracker telescopes dedicated to monitoring satellite traffic in the geostationary arc. This system is fully automated and controlled from Les Mureaux."

Philippe Clar, Head of Defense Programs

The GEOTracker network continues to expand around the world with a 7th and 8th observatories installed in 2020 on ArianeGroup's Ottobrunn site in Germany and in central Australia, and more stations to come around the globe in order to provide high availability.

1.2

ENSURE A SOCIALLY RESPONSIBLE DIGITAL TRANSFORMATION

CONTEXT

In our ever-faster-paced world, we believe that digital evolution is a very powerful tool to keep on improving the quality of life and work on Earth – but only if it is ethically guided and applied for the benefit of people.

ACTIONS AND PROGRESS

WHAT WE ENABLE THROUGH LAUNCHES

We believe that our core mission, providing access to space and thus to all the benefits of space technologies, is essential to support an independent, secured and ethically-driven connectivity and digitalization for European society.

Indeed, the satellites that our solutions have put into orbit have enabled major advances, such as:

- The Galileo⁷ project, for which 26 satellites have already been launched (12 of which by Ariane 5), will enable European society to benefit from the most precise positioning system in the world (down to the 1 meter range);
- The Copernicus Sentinel⁸ satellites offer free continuous access to the most precise climate and environmental data in the world. Four out of the eight Sentinel satellites were launched on Ariane 5. The Copernicus system helps for instance to monitor the implementation of the Paris Agreement on climate change, and the UN Sustainable Development Goals;
- The deployment of telecommunications networks allows us to increase communication flow around the globe and close digital gaps in certain remote areas.

Through projects like these, we are particularly proud to contribute to Europe's digital autonomy. Ariane 6 will secure this sovereign access to space for Europe.

⁷ http://www.esa.int/Applications/Navigation/Galileo/What_is_Galileo
⁸ https://www.esa.int/Applications/Observing_the_Earth/Copernicus



Through the satellites we launch and the internal transformation we lead, we aim to be at the forefront of a smart and sustainable digitalization. We want our employees to be able to work efficiently and smoothly in a cutting-edge workplace environment, and to interact more efficiently with our customers, industrial partners and suppliers."

Akilles Loudière, Head of Digital and Transformation

DIGITALIZING OUR ACTIVITIES

Regarding our company working practices, we are committed to implementing a socially responsible and inclusive digital transformation process, providing our employees with the appropriate tools and applications to facilitate their work, improve safety and performance, and ensuring that no one is left behind.

Digit'all, our digital transformation project

Digital transformation aims at improving or developing new services with the support of technologies, and has to be managed with a human aspect. We are thus introducing a strong change management aspect to the Digit'all project, including classic training but also a deep human impact analysis. Digitalization is made to help people work together in a lean and agile way, relying on transparency and trust, in line with our Leadership Model.

As an illustration, we are working towards the implementation of a state-of-the-art, integrated digital workplace, which will be gradually deployed from the first half of 2022. It will be a single entry point for information, daily processes, and applications, in order to simplify usage, information and data access, providing our employees a satisfying user experience. It will also help to minimize meetings and the use of email, thanks to collaborative and social functionalities.

Leadership Model and training

Human Resources policies are a strong lever for making sure digitalization leaves no one behind. Following the creation of ArianeGroup, we strengthened our corporate culture and values through the definition of our Leadership Model. This project aimed at defining our ways of working in order to become more collaborative and agile. In 2017 and 2018, 1,000 people representing 84% of our managers were trained in these new practices and behaviors through 45 sessions of "BeALeader@AG". This training was then digitalized in 2019 to be accessible to all newcomers.

In 2020, we devoted 2.9% of gross wages to training and delivered 97,000 hours of training, of which 74% was dedicated to supporting people development, including digital transformation in both France and Germany. The remaining 26% was devoted to mandatory HSE trainings, which also support the employability and skill maintenance of our employees, on top of making sure people are able to guarantee their own safety as well as the safety of their colleagues.

This generalized training effort is motivated by the desire to develop employees' skills in disciplines that really matter to our customers and which contribute to ArianeGroup's cultural transformation. Additionally, in 2020 we pursued the digitalization of our learning offer by creating 80 e-learning modules in order to enable continuous learning while teleworking.

We also believe in accompanying our employees in their career development and have thus created various tools toward this goal. Me@AG is a digital and interactive program aiming at building a common company knowledge-base, rooted in the belief that understanding our company history and its future stakes is a key lever for successful career development. Move@AG is a digital platform dedicated to skills and career development which helps employees think about their career aspirations and plan their career moves within our company.

We are also working on the ArianeGroup Launchers Academy, a common forum for learning, developing, and capitalizing on our knowledge, but also for leveraging synergies in our development actions and aiming for a learning company dynamic.

2.9% OF GROSS WAGES DEDICATED TO TRAINING (97,000 HOURS OF TRAINING)
INCL.
74% TO SUPPORT PEOPLE DEVELOPMENT



THE ARIANEGROUP LEADERSHIP MODEL



Surface preparation - Laser tracking technology for P120 nozzle (Le Haillan)

Protecting personal and company data

The protection of our employees' personal data and of the personal data that is entrusted to us is of utmost importance. Our Governance defines roles and responsibilities for data use and brings efficiency by helping employees share information in a way that is compliant with applicable data protection regulations. An e-learning scheme, the Data Academy, raises awareness about data sharing and governance. Two Data Protection Officers ensure our compliance to the GDPR⁹. Together with an internal data protection network, their role is to detect and prevent any situation likely to present a risk to the security and confidentiality of personal data processed by ArianeGroup, or on its behalf by its subcontractors. A dedicated organization, adapted processes, and regular training programs are in place to comply with all regulations concerning data privacy.

We also rely on our Cybersecurity and Security organizations to efficiently protect our company information, as well as third-party proprietary information, in line with all applicable laws and regulations.

In addition, we have launched various actions in the framework of our Digit'All project in order to improve the way we manage data. Data governance helps people master and retrieve information in an efficient and secured way. The associated architecture is being put in place to simplify the application portfolio and make sure the right tools are used. The end objective is to maximize the time dedicated to added-value tasks by increasing data quality and avoiding having to recopy the same information in various places.



Industrial process pre-testing using virtual reality (Saint-Médard Issac)

FACTORY 4.0

The digitalization of our production processes in the frame of the Factory 4.0 project is a huge part of what we do to meet best-in-class production standards and enable the improvement of working conditions. For example, remote assistance, implemented thanks to augmented reality and the Remote Launch Center located in Les Mureaux, enhances reactivity and collaboration while reducing fatigue for employees who previously had to travel to Guiana to conduct these operations. Another example among many is the use of collaborative robots ("cobots") like the one installed on the Ariane 6 ground/board cryogenic Interfaces line in Vernon, which helps operators transfer objects between the different work stations. Digital transformation also makes it possible to eliminate non-added value tasks and allows operators to focus on added-value ones. For example, the smart tools used for tightening operations enable a better accuracy, repeatability, and traceability, hence limiting the tasks of verification and manual reporting.

⁹ EU General Data Protection Regulation 2016/679

ENSURE EMPLOYEES' HEALTH AND SAFETY AT WORK

CONTEXT

The health – both physical and mental – and safety of our employees and the people who contribute to our value chain are a constant concern and one of our primary responsibilities. We are strongly committed to providing safe working environments and ensuring their health and well-being.

ACTIONS AND PROGRESS

ENSURE SAFETY IN OUR VALUE CHAIN

ArianeGroup has developed its own Health, Safety and Environment (HSE) Performance system in order to adapt its actions to the specific risks of its sites. This performance system is regularly audited by external bodies to ensure it is equivalent to best-in-class management standards.

The HSE Policy¹⁰ formalizes ArianeGroup's commitment to comply with laws and regulations, protect human life, respect the environment, prevent pollution and safeguard property. Its objectives are to:

ACCIDENT FREQUENCY RATE **3.02**

On December 31st, 2020

1

Develop a policy based on anticipation and prevention to control HSE-related risks for the benefit of ArianeGroup personnel and interested parties involved in its activities

2

Guarantee the continuity of company activities by maintaining rigorous requirements in terms of the safety of installations and by controlling environmental impacts

3

Design, build, test, and deliver products and services that meet the HSE requirements throughout their life cycle



Pressure tests for Ariane 5 sensors (Le Haillan)



Ariane 5 VA250 launch campaign (Kourou)



Ariane 6 upper stage assembly operations (Bremen)

To implement this policy, training programs and audits are conducted. In 2020, we managed to perform 64% of our training plan despite national lockdowns and the closing of training centers – priority was given to ensuring mandatory regulatory training. 24,698 hours of HSE training were provided and 2,742 people trained in France, representing about 50% of employees. In Germany, all employees are trained on HSE aspects on an annual basis. All German managers also received training on various HSE matters in 2020.

HSE performance audits were conducted in 2019 on all ArianeGroup sites in France and Germany. The next ones are scheduled for 2021 on all sites except Kourou.

The implementation of the HSE performance system allowed us to reduce the accident frequency rate¹¹ to 3.4 in 2019, ranking ArianeGroup amongst the best-performing companies of the French aeronautics and space sector (for which the accident frequency rate averaged 6.6 in 2019¹²). The subnormal level of activity resulting from Covid-19 reduced this number further, to 3.02 in 2020. In order to maintain these good results, in 2021 10% of the individual objectives of all employees will be dedicated to Health, Safety and Environment.

In 2020 a new common tool "@LL HSE" was launched and rolled out to help HSE managers assess risks, keep up to date with regulations, monitor compliance, and define relevant action plans.

“At ArianeGroup, we have at heart to make sure that our employees work in a safe environment. Our in-house Health, Safety and Environment performance system, as well as our results in terms of low accident frequency rate, are proof that we walk the talk in the matter.”

Gilles Fonblanc, General Secretary

¹⁰ <https://www.ariane.group/wp-content/uploads/2019/07/D-0003-E-1.pdf>
¹¹ Accidents with lost days per million working hours
¹² Source: Direction des Risques professionnels de l'Assurance Maladie (https://www.risquesprofessionnels.ameli.fr/fileadmin/user_upload/document_PDF_a_telecharger/etudes_statistiques/AT_2019/2019_at-indicateurs-selon-ctn-et-code-naf.pdf)

PREVENTING PSYCHO-SOCIAL RISKS

We consider health as a holistic issue which includes individuals' mental health and well-being. We therefore have specific programs in place both in France and Germany.

IN FRANCE, OUR HARMONIZED AND COMPREHENSIVE APPROACH TO PREVENT WORK-RELATED STRESS INCLUDES:

- 1 Information available to all employees on a dedicated Intranet page and a dedicated e-learning scheme
- 2 A training cycle of three workshops for managers and HR Business Partners (HRPBs)
- 3 An annual collective assessment of stress in the workplace at site level and corresponding action plans drafted by managers within the business units
- 4 Psychological support in particular through the setting up of a telephone counselling service

In 2021 a stress at work survey will be carried out for all French employees. Additionally, an approach to prevent situations of harassment, gender-based acts and workplace violence has been defined and two "sexual and moral harassment, sexist acts and workplace violence"¹³ officers have been appointed on each site.



26

IN GERMANY, THE APPROACH TO PREVENTING PSYCHO-SOCIAL RISKS INCLUDES:

- 1 Social counselling through monthly reports addressing various social issues
- 2 Individual coaching in case of social crisis
- 3 Annual psycho-social risk assessments at department, site, and company level (including intervention and action plans)
- 4 Family care support and support upon retirement
- 5 Awareness-raising campaigns on drug and alcohol abuse

SPECIAL ATTENTION TO OUR EMPLOYEES' SAFETY

In 2020, in the Covid-19 context, our priority was more than ever the health of our employees. We secured work stations, deployed strict sanitary protocols, conducted awareness campaigns, and implemented home-based work for all employees for whom this is possible. We offered dedicated online training to employees working remotely. Thanks to these measures, no Covid-19 cluster broke out on any of our sites.

In Germany, a special health management program was implemented in collaboration with a public health insurance body (Techniker Krankenkasse), offering for instance tips for exercise breaks to be taken at home. Workshops on ergonomics and individual online coaching sessions in the areas of fitness, nutrition, stress management, and stopping smoking also took place.

27

1.4

ENCOURAGE WORK-LIFE BALANCE

CONTEXT

We are convinced that people are more fulfilled in their work and therefore more effective when they are able to achieve the right balance between their personal and professional lives. In view of the sanitary situation and lockdown, we have paid particular attention to this issue in 2020. We encourage social dialogue in both of our countries of operations to be responsive to our employees' needs.

ACTIONS AND PROGRESS

To support the generalization of home-based work and remote management, managers were encouraged to attend specific conferences in a crisis context. Guidelines and e-learnings about home-based work were also made available to them. At the end of the first lockdown, we organized a feedback session in order to capitalize on the transformation opportunities which emerged during this one-of-a-kind period. It focused on the way it was perceived by employees, the post-lockdown outlook, and the structural changes over time. Simultaneously, we launched a hackathon dedicated to positive innovations regarding home-based work. Additionally, 20 short videos related to teleworking topics were made available to all employees via our Intranet, as well as a "best practices for teleworking" digital booklet.

Social agreements to better regulate home working were signed in France in 2017 and 2020 ("Quality of life at work and Psycho-Social Risks (PSR) prevention" agreement¹⁴).

In Germany also, a work council agreement has been signed regarding teleworking conditions. The ArianeGroup German entity was audited and certified "Beruf und Familie", a strategic management tool to assess the alignment of the companies' HR policies with family and life-conscious awareness.

The right to disconnect is formally enforced so that the use of digital tools does not conflict with our employees' work-life balance. In France, it is part of the "Quality of life at work and PSR prevention" agreement. We also conduct awareness-raising actions for employees through a dedicated charter and guide. In Germany, the right to disconnect was formalized through the "Mobile working place" agreement, signed in December 2020.



“ArianeGroup promotes balance between professional and personal life. We are convinced that this balance is a part of quality of life at work and improves the performance of the company. A company agreement has been signed on quality of life at work and psycho-social risks prevention in France, and we intend to achieve a global approach in the near future.”

Florence Gallois,
Chief Human Resources Officer

¹³ Référents en matière de lutte contre le harcèlement, agissements sexistes et violence au travail

¹⁴ Accord Qualité de Vie au Travail et prévention des Risques Psycho-Sociaux (RPS)

PROMOTE A CULTURE OF INTEGRITY AND FIGHT CORRUPTION

CONTEXT

Integrity and compliance with the law and regulations is part of ArianeGroup's culture. It is rooted in our working methods. In an industry such as ours, linked to space and defense, compliance and ethics are the subject of great vigilance, especially as our customers', shareholders', employees' and other stakeholders' expectations are constantly rising. It is a cornerstone of our Leadership Model and we are committed to the highest standards of integrity and professionalism.



Embracing our values, upholding our integrity and rejecting corruption – this is the only way we want to conduct our business. We owe it to ourselves and to those who honor us with their trust."

Gilles Fonblanc, General Secretary

ACTIONS AND PROGRESS

ORGANIZATION

Our Ethics and Compliance department is responsible for preventing risks, securing business operations and promoting an ethical culture. The team also assists managers and employees in carrying out their responsibilities with integrity. They design and implement the appropriate system to prevent corruption and influence peddling in accordance with regulatory requirements and lead a network of compliance officers in each of the Group's entities.

ETHICS CHARTER

The Ethics Charter is a reference document that formalizes the commitment of ArianeGroup to comply with the law and regulations as well as with ethical standards and internationally recognized agreements. It describes employees' rights and duties and provides guidance in key areas in order to help us always operate in accordance with our company values. It applies to all ArianeGroup directors, managers and employees including those employed by subsidiaries. An e-learning dedicated to the Ethics Charter will be available in 2021 and will be integrated into the newcomers' training path.

PREVENTING CORRUPTION

Policy and Code of Conduct

The detection and prevention of corruption risks have been a priority for the company since its early days, and significant efforts have been made to improve the company processes. Our program is based on a zero tolerance policy toward all forms of corruption. The Code of Conduct¹⁵ includes examples of prohibited behaviors, including the risks of influence peddling and favoritism, and provides practical guidelines for identifying risky situations and adopting the appropriate attitude. Our procedure for the prevention of corruption formalizes specific processes and validation steps regarding, among other things, conflicts of interest, gifts and hospitalities, selection and monitoring of business partners, sponsorship, and donations.

Continuously training our exposed employees

The criminal liability of companies and individuals can be incurred even in circumstances where no employee was actually aware of the events, so due diligence and vigilance are extremely valuable. Additionally, we are training our employees who have been identified as exposed to such risks. Online learning on corruption prevention is available to all employees since 2020. Mandatory live digital training will be deployed in 2021 for functions with a higher exposure to the risk of corruption.

¹⁵ <https://www.ariane.group/wp-content/uploads/2018/07/Supplier-Code-of-Conduct-EN.pdf>

¹⁶ See section 3.5 for more information

THIRD PARTY DUE DILIGENCE

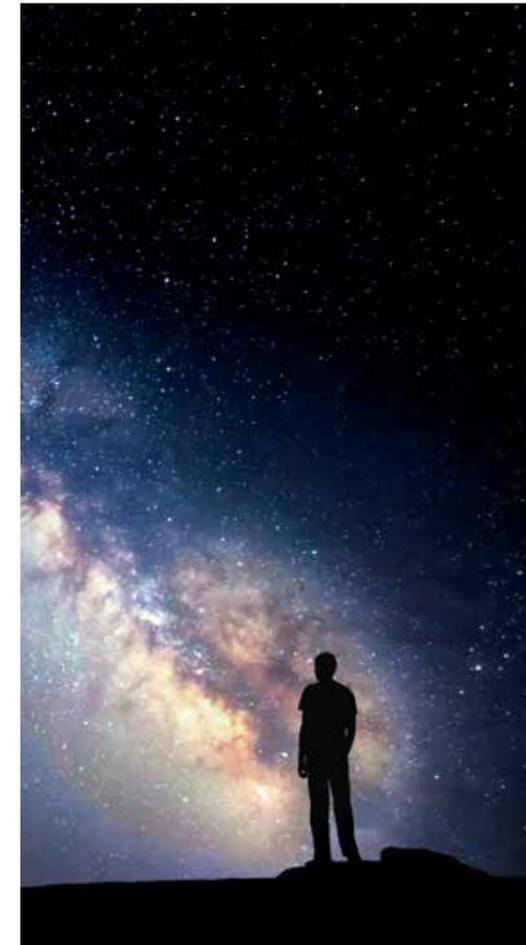
As part of the efforts we employ to prevent corruption and ensure our duty of vigilance, we are implementing due diligence procedures to make sure that our third parties are reputable and share our integrity standards. Third parties associated with a higher risk of corruption, such as business partners, are subject to a particular scrutiny with stricter due diligence and validation processes. In 2020, we introduced a tool to improve corruption risk mapping and automatization of due diligence processes, with an initial focus on suppliers¹⁶. It addresses corruption, human rights, and HSE risks.

WHISTLEBLOWER POLICY AND ALERT MECHANISM

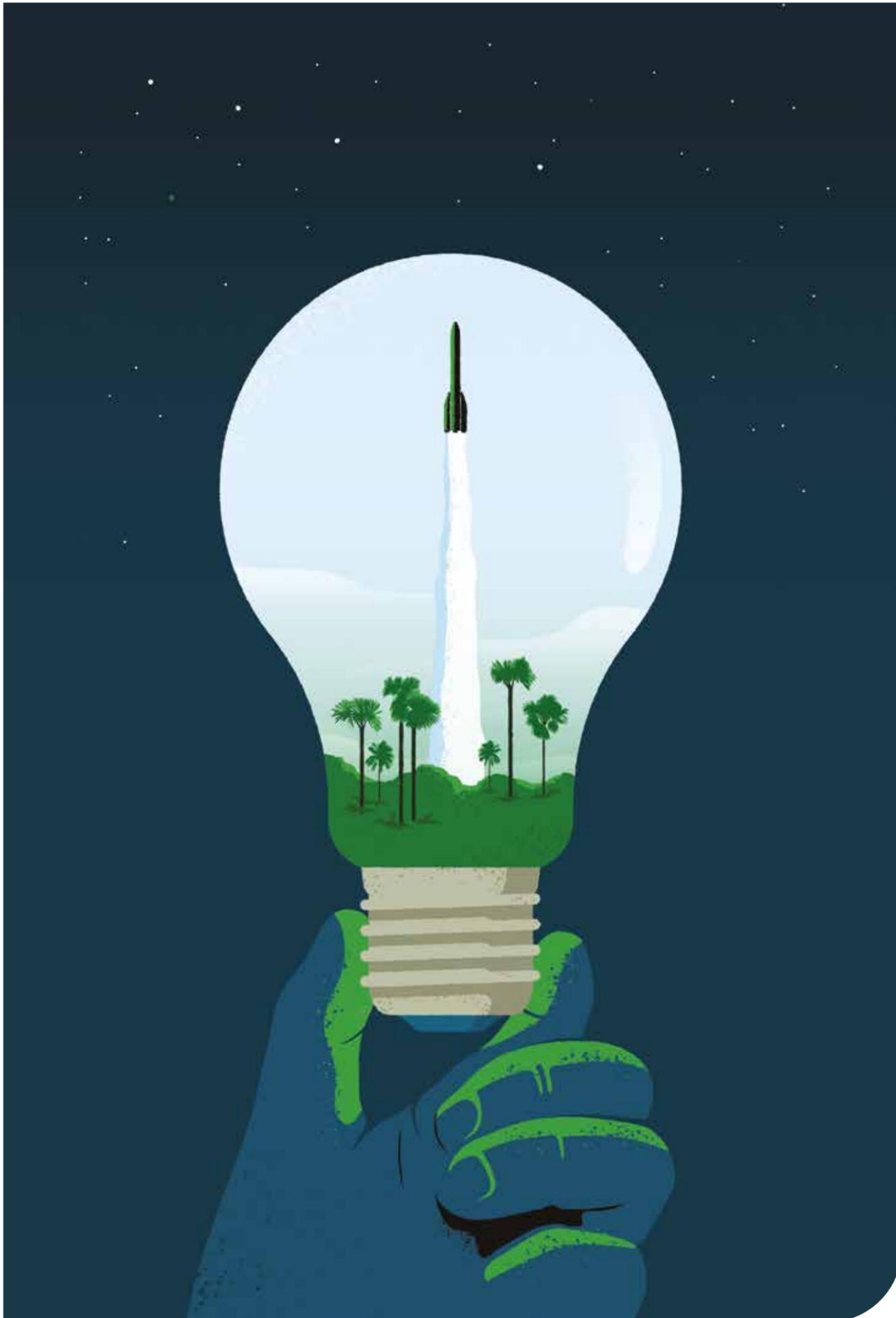
In 2020, ArianeGroup strengthened its procedure for collecting and processing alerts, ensuring the protection of whistleblowers against any form of retaliation for anyone who speaks up selflessly and in good faith. Employees and external contributors are able to safely report concerns in a confidential way, using a web-based platform. Topics include corruption as well as serious violation of human rights and HSE issues.

EXPORT CONTROL

ArianeGroup buys and sells goods and services around the world. As some of them are military or dual technologies, a dedicated organization, adapted processes, and regular training are in place to comply with all regulations concerning export and import. Around 400 employees are trained every year in relation to these issues.



Ariane 5 upper stage integration (Bremen)



2

ENVIRONMENT

Although we work in space, our primary concern is our planet Earth. Highly aware of the climate emergency, we strive to fight for sustainability by reducing our own footprint but also through our products and services. We integrate the principles of eco-design into our product development strategies. To protect space, we innovate to address the issue of space debris. To protect the Earth, we manage our chemicals responsibly and protect the environment on our sites.

MITIGATE CLIMATE CHANGE

CONTEXT

Climate change is the most pressing issue humanity has to address. We are taking part in the international endeavor to mitigate climate change and ultimately reach carbon neutrality, in line with the European Green Deal. Our strategy to reduce greenhouse gas (GHG) emissions covers many aspects, including reducing our energy consumption, optimizing our IT infrastructures and our supply chain, and investing in the life cycle performance of our products.



Some of the satellites that we are launching bring benefits in the fight against climate change. They monitor climate through the analysis of the weather, of deforestation, and of the rise in sea levels. Some of them also enable the reduction of CO₂ emissions, by optimizing navigation and increasing connectivity, for example."

Stéphane Israël, CEO, Arianespace

ACTIONS AND PROGRESS

UNDERSTANDING AND REDUCING OUR CARBON FOOTPRINT

In 2020, we decided to undertake our first company carbon footprint assessment. The objective was to understand and rank our impacts, in order to identify the levers that will allow us to cut down our own GHG emissions and help to reduce those in our value chain (see infographic opposite with upstream and downstream activities).

2019 CARBON FOOTPRINT

433,407 TONS OF CO₂ EQUIVALENT (TCO₂ EQ.)

-10.4% OF ENERGY CONSUMPTION AND **-9.5%** OF CO₂ EMISSIONS THANKS TO OUR ENERGY POLICY BETWEEN 2017 AND 2020



+ 2% OF RENEWABLE ENERGY IN OUR TOTAL ENERGY CONSUMPTION¹⁷

¹⁷From 2017 to 2020 and on a comparable basis

We performed the carbon footprint for year 2019, encompassing French and German perimeters and taking into consideration the following items:

SCOPE 1 Our direct emissions: combustion of gas, biomass, fuel oil, non-road gas oil, as well as the combustion of fuels related to the transport of our vehicles.

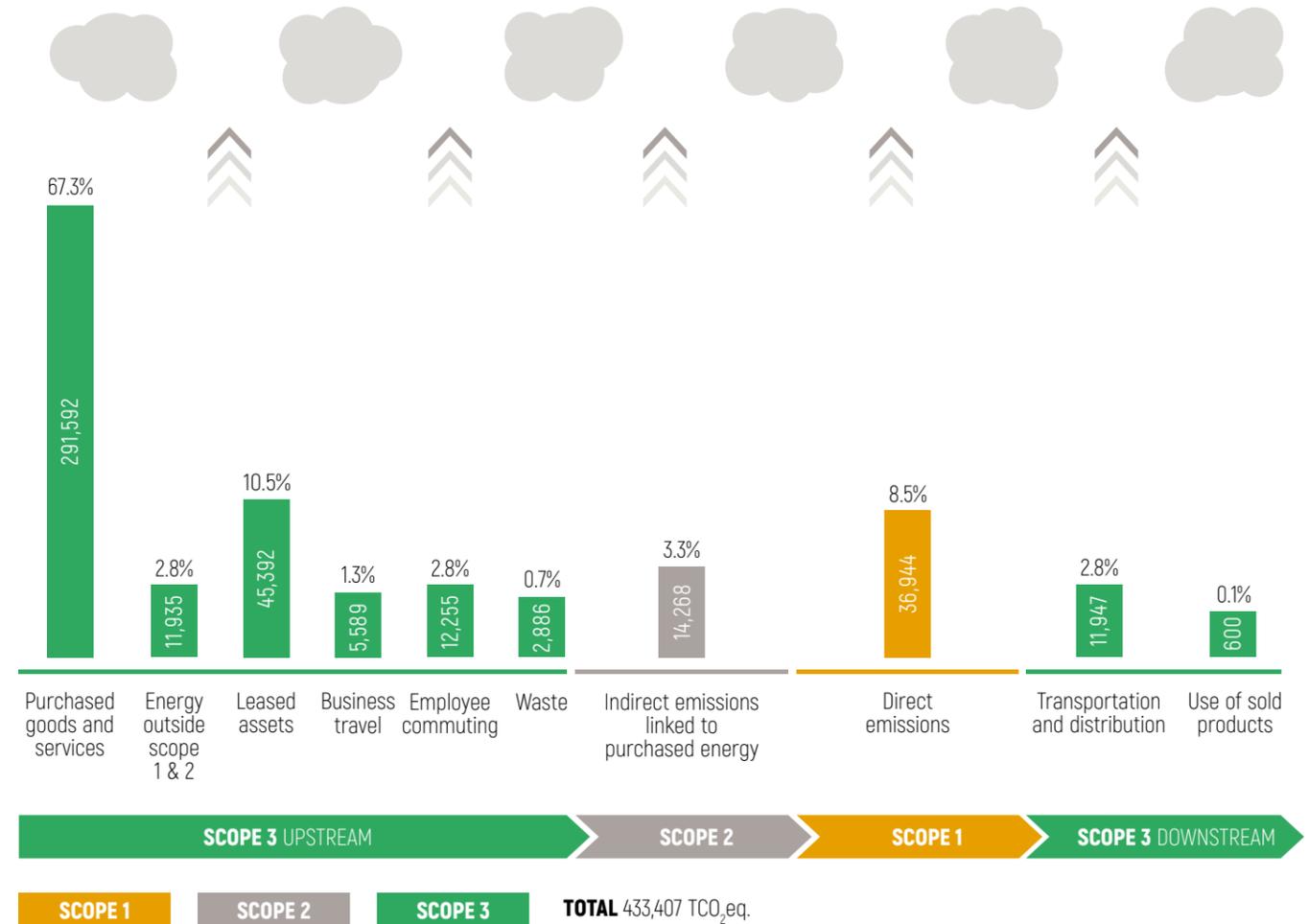
SCOPE 2 Our indirect emissions linked to energy consumption.

SCOPE 3 Indirect emissions that occur in our value chain. This includes emissions resulting from the sources indicated in the following infographic.

We tried to make our Scope 3 footprint analysis as comprehensive as possible by deepening our understanding of upstream and downstream activities impacts as well as by strengthening our data collection processes. At present, we do not provide information on the upstream transportation and end-of-life treatments of sold products.

We then collaborated with a sustainability agency in order to validate the robustness of our methodology and the alignment with the GHG Protocol Standards. We also identified areas for possible improvement, particularly regarding the carbon footprint coverage and the granularity of upstream impact information, more specifically purchasing and transportation. Indeed, as emissions resulting from the purchasing of goods and services represent over 67% of total emissions (291,592 tCO₂eq.), a more precise understanding of the associated impact will allow us to identify leverages to reduce upstream emissions. Additionally, starting in 2021 we will reinforce the data collection process concerning transportation to be able to include it in our next carbon footprint, as it represents an opportunity to identify other reduction levers.

Based on this first step, we will be working in 2021 on a strategic roadmap to reduce our carbon footprint. Our reduction objectives will be published in our next CSR report.



CARBON FOOTPRINT OF THE LAUNCHERS

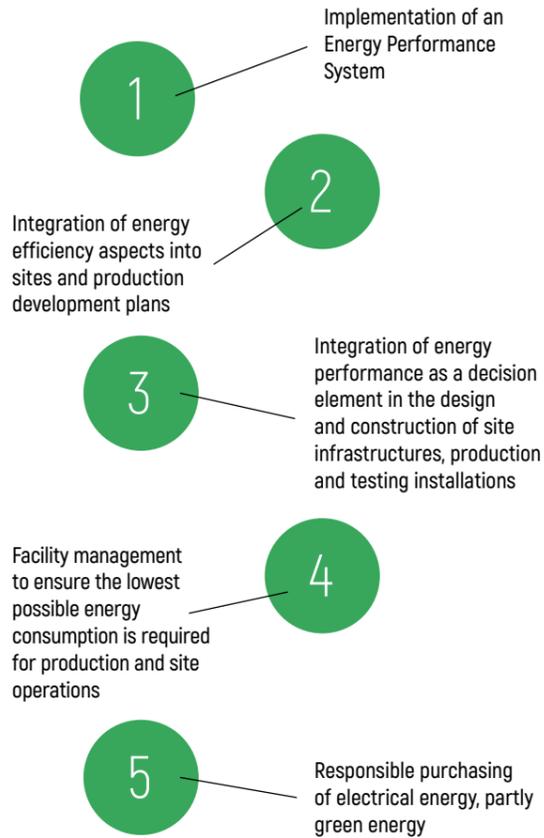
There is a lot of debate around reusability of launchers. We are engaging studies with CNES and ArianeWorks¹⁸ in order to assess its potential environmental performance and define the parameters we should look at to achieve environmental mitigation, particularly in terms of carbon footprint. The existing literature on this matter is too incomplete as of today to confirm that reusing launchers definitely brings about a global environmental benefit. Indeed, reusable launchers involve new life cycle steps that have their own specific impacts, which have to be reduced as well: recovery, transportation at different phases, reconditioning, requalification, testing, construction of new adapted buildings, etc.

In the meantime, we are developing all the necessary technological bricks that will allow Europe to develop, in the future, fully or partially reusable launchers. The goal is to be ready to develop them, as soon as the launch rate in Europe will make reusability economically viable and when the environmental benefit will be proven. Technological demonstration programs at European level, such as Prometheus¹⁹ and Themis²⁰, are critical to develop those technologies. Prometheus is an ultra-low cost reusable engine using liquid oxygen-methane propellants and Themis is a demonstrator for a low-cost reusable launcher stage using Prometheus. Both are ESA programs and are developed by ArianeGroup as lead contractor.

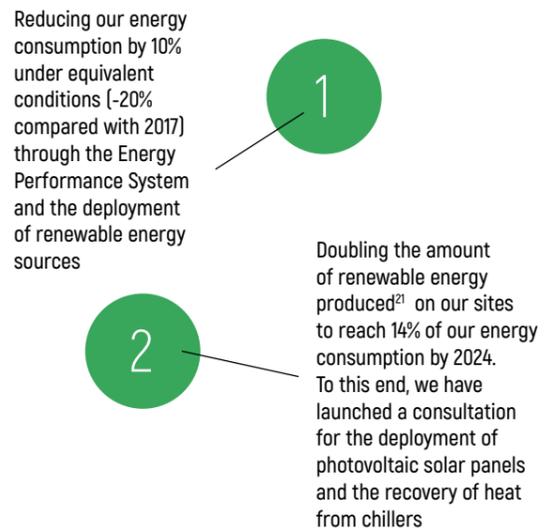
In order to limit the impact of launching payloads into space, we are developing innovative rideshare and kick stage technologies to ensure that the fill rate (use of capacity) of each launch is maximized, by including multiple payloads with multiple end-destinations. The Astris Kick Stage is a small additional upper stage that will allow Ariane 6 to launch various payloads on different orbits or to propel satellites directly to their targeted orbit, thus allowing faster access to their geostationary orbit, energy savings and consequently extending their operational lifespan by two years for electrical satellites. Its first launch is planned for 2024. It will be propelled by the BERTA engine which is currently being developed.

MEASURING AND REDUCING OUR ENERGY CONSUMPTION

Our latest energy reduction plan allowed us to reduce our energy consumption by 10.4% (vs goal of 10%) and our GHG emissions by 9.5% between 2017 and 2020 through a five-fold action plan:



We are stepping up our efforts with our new 2021-2024 energy policy which aims at:



¹⁸ See section 3.1

¹⁹ <https://www.ariane.group/fr/photo-video/prometheus/>

²⁰ <https://www.ariane.group/en/news/themis-reaches-for-the-sky/>

²¹ Reference year 2019 and under comparable meteorological conditions and production levels



Ariane 5 launch vehicle lift-off



Vulcain 2.1 engine FMI test (Vernon)

GREEN HYDROGEN

We observe a growing interest in hydrogen as it is expected to play an essential role in the energy transition to a less carbon-intensive world. ArianeGroup has been working on this complex technology for 40 years and now intends to contribute its competencies and know-how to the transition towards a decarbonized technology.

At our Vernon site, large quantities of liquid hydrogen are used for testing rocket engines. Today, it is produced by our suppliers using a process based on the cracking of hydrocarbons. We have two projects underway to decarbonize hydrogen:

- the first targets the recovery of fatal hydrogen;
- the second aims at producing green liquid hydrogen on site, from an electrolysis process using renewable or at least low-carbon electricity.

We are also aware that liquid hydrogen, which can generate most power, is critical in order to decarbonize heavy mobility means (ships, trains, planes, trucks). This is why we signed a cooperation agreement with Engie in 2020 in order to develop our activities, namely developing an improved hydrogen liquefaction technology.

Finally, we are contributing to the Hyperion project co-funded by the French Directorate General of Civil Aviation (DGAC), working with Airbus and Safran to support them in developing these technologies, testing and studying to prepare for future aircrafts that would use liquid hydrogen.

These projects and developments are in line with the energy transition and territorial development plan policies and in this way supported by *France Relance* and identified in a convention signed with the region of Normandy.



Thanks to its know-how in the field of liquid propulsion systems – the most powerful hydrogen existing systems – ArianeGroup benefits from proven expertise in liquid hydrogen systems design and production. Furthermore, ArianeGroup successfully operates a unique hydrogen testing area with proven efficient risk management. ArianeGroup is now making its facilities and skills available to contribute to hydrogen deployment in Europe and is already part of hydrogen aircraft initiatives with Airbus and Safran. Our goal is to contribute to making hydrogen accessible to all.”

Philippe Girard, Head of Quality

INTEGRATE ECO-DESIGN AS PART OF PRODUCT STRATEGY

CONTEXT

Our ambition is to develop tools and methods that take the environmental impacts of all stages of the product life cycle into account from the design definition phase. Following an eco-design approach for a product can bring environmental gains in terms of preserving resources and biodiversity, preventing pollution and nuisances, climate balance, land use, etc.



Just as our sites follow an environmental policy, our products must follow this path and be sustainable. This will be achieved by taking into account the reduction of the environmental footprint as a key performance criterion and by deploying our eco-design process."

Hervé Gilibert, Chief Technical Officer

5%

OF SELF-FUNDED CAPITAL EXPENDITURE DEDICATED TO IMPROVING OUR ENVIRONMENTAL IMPACT

Ariane 5 at the European Spaceport (French Guiana)



ACTIONS AND PROGRESS

LIFE CYCLE THINKING

Our Environmental Sustainability team has been raising awareness and building our environmental knowledge of products. It uses the Life Cycle Analysis (LCA) methodology to achieve the most possible comprehensive view and understanding of the environmental impact of our products in order to develop mitigation actions through eco-design principles.

The Environmental Sustainability team works hand in hand with its peers, to co-construct the best common guidelines, tools and databases, both for civil and defense programs. For example, we collaborate in the ESA Clean Space initiative, we are part of the GIFAS (Group of French Aeronautics and Space Industries) eco-design working groups, and the CNES (French National Center for Space Studies) and DGA (French Defense Procurement Agency) eco-design networks. The DGA is setting up evaluation grids on eco-design topics; the first one was carried out in 2020.

An internal eco-design process to be used by ArianeGroup project managers will be released in 2021. The objective is to offer guidance to the teams by defining specific rules and roles to be applied within the framework of a project.

THE LIFE CYCLE ASSESSMENT OF ARIANE 6

Ariane 6's Statement of Work includes the requirement to perform an Environmental Life Cycle Assessment (LCA) of the exploitation phase of the full launcher system, and to compare it to Ariane 5. The LCA of the future Ariane 6 launcher was carried out within ArianeGroup from 2018 to 2020. It is a pioneering study at the industrial level that has led to a better understanding of the environmental impacts of our systems, and will serve as a reference to identify and study significant trade-offs for the reduction of environmental impact of future launchers.

PRELIMINARY RESULTS OF THE ARIANE 6 LIFE CYCLE ASSESSMENT (LCA)



LCA WAS APPLIED TO ARIANE 64 VERSION (4 BOOSTERS). PRELIMINARY RESULTS SHOW THAT THE ENVIRONMENTAL PROFILE OF ARIANE 64 IS DRIVEN BY PRODUCTION & ASSEMBLY PHASE AND PROPELLANT MANUFACTURING & LOADING/FUELING.

IMPACT ON OZONE DEPLETION IS DRIVEN BY THE FLIGHT EVENT (EMISSIONS DUE TO BURNING OF PROPELLANT).

1 PRODUCTION & ASSEMBLY PHASE OF UPPER STAGE (UPPER LIQUID PROPULSION MODULE) AND CORE STAGE (LOWER LIQUID PROPULSION MODULE) ARE DRIVEN BY ENGINES TESTING (LIQUID HYDROGEN CONSUMPTION) AND MANUFACTURING OF BARE TANKS (RAW MATERIAL AND ENERGY CONSUMPTION).

2 BOOSTERS (EQUIPPED SOLID ROCKETS) PRODUCTION (STRUCTURE MANUFACTURING + SOLID PROPELLANT PRODUCTION & LOADING) IS ACCOUNTABLE FOR AN AVERAGE CONTRIBUTION OF ALMOST 50% OF ALL ENVIRONMENTAL IMPACTS FOR ARIANE 64.

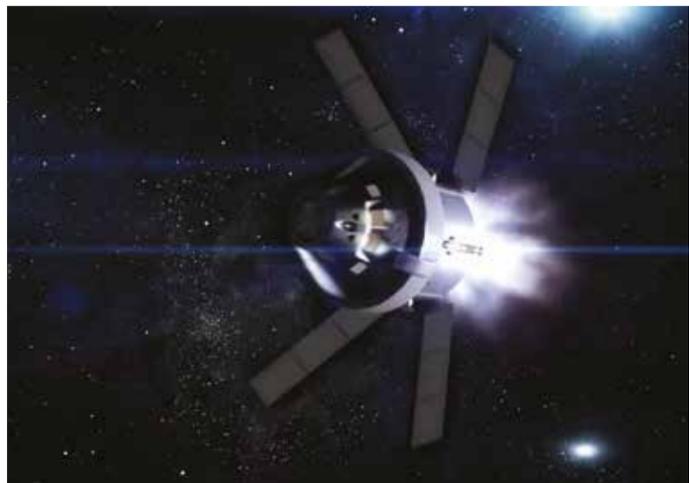
GREENER PROPULSION

We are also working toward greener propulsion of our launchers, for example by introducing the Liquid Oxygen (LOX)-Methane propulsion technology that will be used by our low-cost and potentially reusable Prometheus European engine. LOX-Methane could at least partly replace solid propulsion, which greatly impacts the environmental footprint of Ariane 6. Preliminary results on future launchers scenarios using LOX-Methane propulsion show potential environmental benefits compared to current launcher propulsion. CNES and ArianeGroup are working together to refine the environmental data and knowledge associated with this new propulsion technology.

ArianeGroup also offers solutions for the propulsion of satellites and space vehicles. Historically, hydrazine and its derivatives have played a major role in orbital propulsion and thus in all major scientific, commercial and human space missions. In 2011, hydrazine was identified as a Substance of Very High Concern (SVHC) by the European REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) regulation due to its toxic, carcinogenic and mutagenic properties. We are therefore actively involved in the research for “greener propellants” and greener propulsion technologies, which will eliminate or at least drastically reduce the use of hydrazine, hence increasing safety of our employees and value chain and which can offer additional advantages in terms of performance and cost. We are exploring various greener technologies, among them hydrogen peroxide as monopropellant, new hypergolic green bipropellants, ammonium dinitramide-based monopropellants and water propulsion.

We are also developing electric propulsion for orbital applications that use greener propellants and need less than 10 times the fuel mass as compared with chemical systems. Electrical thrusters are critical to space exploration as they can be used for very long distances. For instance, in 2020, we signed an initial agreement with Airbus DS to work on the ESA/NASA Mars Sample-Return Mission. However, electric propulsion cannot answer every need: the thrust power achieved is not sufficient to carry out lander missions, for example.

Cooperation is also a big lever in our activities. We participate in national (DLR – German Aerospace Center), ESA (General Support Technology Program (GSTP) and Basic Technology Research Program (TRP)) and EU (H2020) programs, and are members of international working groups on greener propellants. We continuously finance Master and PhD thesis on the topic. We are also part of several projects with key industry players, to develop highly competitive and innovative plug-and-play electric propulsion solutions for satellites.



Artist's impression of an orbital propulsion system

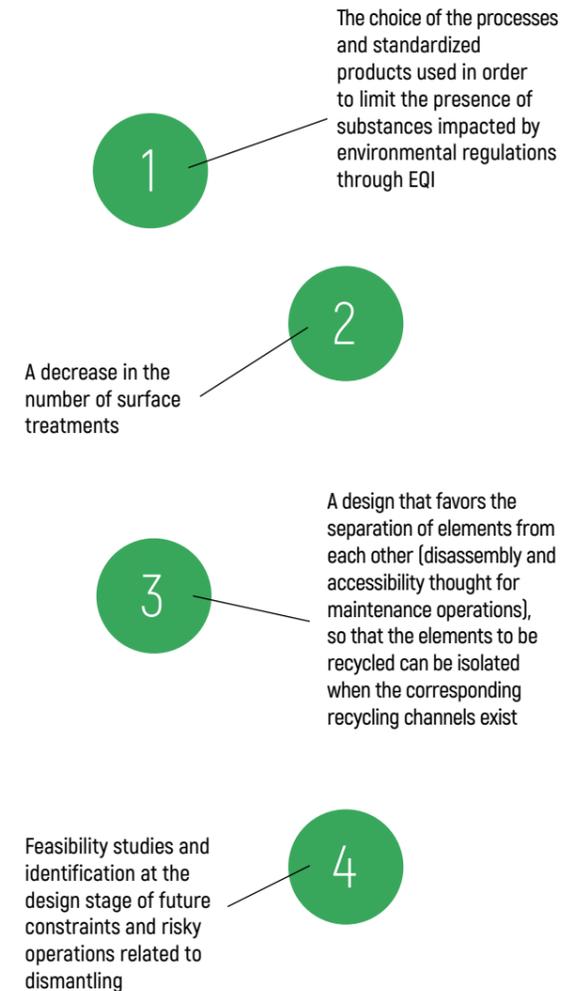
ENVIRONMENTAL QUALITY INDEX

In 2010, we deployed a tool called the Environmental Quality Index (EQI) in order to assess the toxicity of standardized parts. Fully integrated in the Product Lifecycle Management (PLM) tool used during design phase, EQI allows us to take into account the regulatory environmental stakes linked to substances present in the standardized products that we integrate into the finished products we design, produce, and assemble. EQI also helps prevent the obsolescence linked to environmental regulations. Our goal is to deploy EQI at all program levels in line with ArianeGroup's PLM tool development.

BEING A RESPONSIBLE PLAYER OF THE DEFENSE INDUSTRY

Life cycle thinking

Beyond regulatory compliance, ArianeGroup's designers are aware of their role in mitigating environmental impacts. For example, on military programs, environmental impacts are taken into account and minimized through:



Life cycle thinking is meant to gain momentum in the context of the next incremental evolutions of ballistic missiles. Indeed, in order to introduce environmental criteria into the design choices according to a grid defined by DGA, a product eco-design evaluation is currently carried out.



M51 test flight

Dismantling

For years, the first generations of missiles were eliminated by bench firings, with an unsatisfactory environmental record as the open burning of pyrotechnic waste was a source of pollution. After several years of research, a more environmentally friendly alternative was developed and patented by ArianeGroup: the Licorne™ biological treatment plant. Operational since 2014, the Licorne™ station makes it possible to eliminate the propellant and its main component, ammonium perchlorate, thanks to an innovative biological treatment process. Today, the plant, located in Saint-Médard-en-Jalles, is capable of treating 300 tons of ammonium perchlorate and 500 tons of propellant per year.

Already managing the end of life of the M45 solid rocket motors, we are now preparing to adapt to the latest generations of missiles using new propellants. The Elixir™ solution to this issue: according to the same incremental logic developed for the M51 missiles, the Elixir™ process for treating waste by supercritical aqueous oxidation could be integrated with those implemented by the Licorne™ biological station to increase its compatibility with future generations of missiles.

ELIMINATE AND MONITOR SPACE DEBRIS

CONTEXT

Over 500,000 pieces of debris, or “space junk”, are tracked in orbit around the Earth. They travel at speeds up to 28,000 km/h, fast enough for relatively small pieces of orbital debris to damage a satellite or a spacecraft. Their collision causes even more debris. It is therefore our duty to preserve space as a global commons by eco-designing our products and working collectively to safeguard this precious shared resource.

ACTIONS AND PROGRESS

INNOVATING TO TRACK DEBRIS AND LIMIT THE GENERATION OF NEW DEBRIS

The GEOTracker telescopes we developed enable the monitoring and modeling of debris trajectory to ensure a sustainable access to space, namely by avoiding collision between satellites and debris (and thus also preventing the generation of new debris). We also developed specific laser sensors for high accuracy orbit determination. Additionally, we are contributing to research and development to protect the space environment as part of the European Union's Space Surveillance Tracking program.

Investing in multiple launches technologies is also a way to limit the generation of potential new debris linked to single launches. On Ariane 5, this is enabled by our Syllda technology. In addition to de-orbiting its upper stage, Ariane 6 will also be capable of multiple launches, thanks to its Dual Launch Structure (DLS). The DLS itself will re-enter the atmosphere within 25 years, as stipulated by the French Space Operation Act (FSOA).

For Ariane Next, the generation of rockets that will replace Ariane 6, we are studying the opportunity to have a reusable first stage with the Themis demonstrator (see illustration in section 3.1). We are also working on Prometheus, a low-cost and potentially reusable European LOX-Methane engine.

We have also developed an innovative “orbital resource scarcity” indicator that could be used in Life Cycle Analysis studies to assess the potential impacts of space missions on the orbital environment.



Astris Kick Stage

REMOVING DEBRIS

Removal of existing debris is one of the big challenges the space sector is faced with. We are currently conducting a study for ESA's Future Launchers Preparatory Program (FLPP) on how we can use Ariane 6 access capacity (which is not fully exploited on every launch) to launch service vehicles that would eliminate multiple debris and thus support Europe in its effort to reverse its contribution to space debris.

EUROPE AT THE FOREFRONT

In 2009, France published the French Space Operation Act (FSOA), a law imposing, among other things, the de-orbiting of the upper stage in the development of launchers, which is fully applicable since the end of 2020. France is to date the only country to enforce this. Ariane 6 will therefore be the first launcher to have this deorbiting constraint and for which a life-cycle analysis will have been done during the design phase. The FSOA also :

- imposes that the level of risk to persons associated with the possible fallout of fragments is reduced to a minimum (1 out of 10,000 launches),
- limits to two the number of pieces of debris that can be left in space in case of shared launches,
- and ensures that debris are not a threat to space operations and that their re-entry happens within a maximum of 25 years.

These constraints are the strictest in the world, and we believe that they should be made a global standard. Space is a place of common scientific and economic research that we must protect together.

MANAGE HARMFUL PRODUCTS RESPONSIBLY AND PROTECT THE ENVIRONMENT

CONTEXT

The space and defense industry uses a range of substances and materials that are under regulatory control with regard to their potential risk to public health and the environment, and the majority of our sites are registered as representing a major accident environmental risk (13 Seveso and 14 Pyrotechnic sites). We thus pay a very specific attention to the protection of the environment, taking into account our long-standing industrial history: our Saint-Médard-en-Jalles site, for instance, is over 350 years old. We have maintained our industrial activity throughout all these years, in compliance with all environmental regulations.

ACTIONS AND PROGRESS

Our HSE Performance System (see section 1.3) has been certified with ISO14001 equivalency and helps us focus our efforts where it matters, and we have robust processes in place to guarantee the anticipation and management of our risks, including our impact on the environment.

CHEMICAL RISK MANAGEMENT

Chemical risk management is included in ArianeGroup's HSE performance system and we have implemented a Chemical Use and Approval policy as well as an internal tool, the FIT List. This list, integrated into our processes, defines the Forbidden, Inappropriate and Threatened substances that may not be used or should be avoided in ArianeGroup's operations, based on the various EU regulatory frameworks for chemicals we are complying with: REACH (Registration, Evaluation, Authorization and Restriction of Chemicals), Ozone-Depleting Substances (ODS), RoHS (Restriction Of Hazardous Substances in Electrical and Electronic Equipment), Fluorinated gases (F-Gas), Persistent Organic Pollutants (POPs), etc.

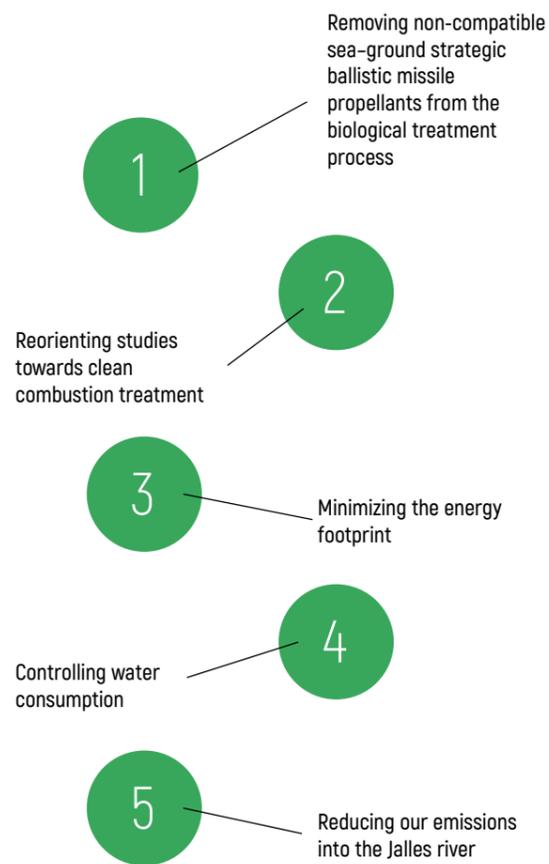


To further improve our processes, in 2020 we launched an IT software tool called e-Athena, which helps us to ensure optimized management of chemicals and integrates the FIT List.

To ensure the implementation of our policy, we are also improving internal awareness regarding harmful chemical substances. At the end of 2020, we launched a training module on hazardous chemical risk management and toxicology and enlarged our e-learning offer with new chemical risk awareness modules.

DEPOLLUTING PROGRAMS

Alongside the Licorne™ and Elixir™ programs, we are currently preparing an offer for the DGA which aims at taking these installations further by:



We have a specific program for our Saint-Médard site so as to preserve the Jalles River and the quality of the groundwater. Since 2015, two groundwater treatment facilities have been pumping and treating the water to reduce the perchlorate level below the 4mg/L threshold. This threshold ensures that the groundwater, which is used for human consumption, is drinkable without any danger. We will be finished treating perchlorate in these waters by the end of 2021.



Our industrial footprint is one of our main concerns. For Ariane 6 and the future generation of launchers, we propose innovative solutions in terms of ergonomics, digitalization, energy efficiency and environmental impact in order to anchor our industrial processes in our environment in a sustainable way."

Karl-Heinz Servos, Head of Industrial Directorate

The Licorne™ plant will allow us to treat all perchlorate solutions created by our activities, within the limit of an authorized 200g of perchlorate released in the Jalles river per day.

After 2021, we will also continue to treat the environmental liabilities linked to the presence of chlorinated solvents on several sites (Les Mureaux, Le Haillan, Saint-Médard). Treatment operations have been underway since 2008 to pump out the water and extract the chlorinated solvents using activated carbons and in situ biological treatment.

Additionally, we are working on the SECOIA program, a plant for the destruction of World War I chemical weapons, which are regularly found during agricultural, fishing or public works activities for instance. Until the operational launch of the plant in the French Aube department in 2016, this toxic waste was dumped at sea. As industrial prime contractor for DGA, ArianeGroup is responsible for dismantling the chemical weapons, exploiting our know-how beyond the scope of our direct activities.



Ariane 5 VA250 launch campaign

PROTECTING BIODIVERSITY

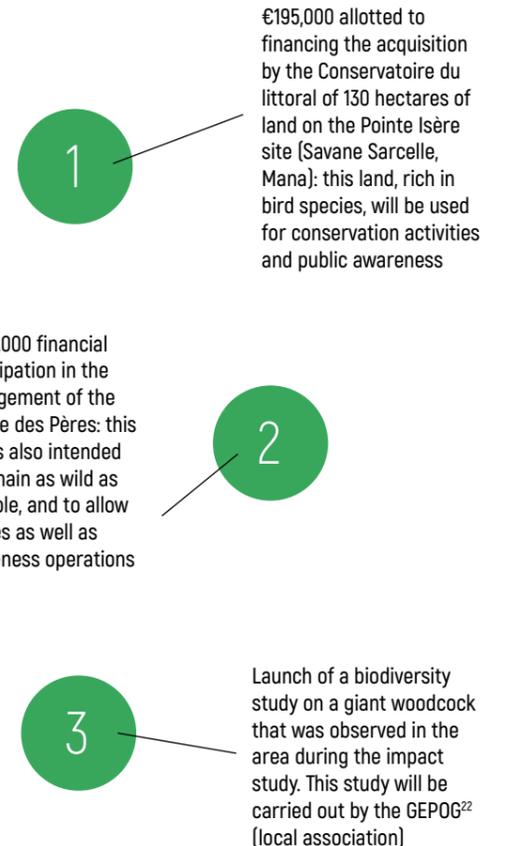
Our Vernon site and our Saint-Médard site, traversed by the Jalles River, are fully integrated in a Natura 2000 environment. Our bigger sites, covering hundreds of hectares, are home to a vast natural diversity of fauna and flora that we are trying to preserve through actions such as the replacement of roads by green areas (for example at Les Mureaux).

ArianeGroup works closely with the French Water Agency (Agence de l'Eau) to ensure that our activities do not have an impact on groundwater and rivers. In addition to the major decontamination campaigns of our historical pollution that we carried out, namely on our Saint-Médard-en-Jalles and Toulouse sites (see previous paragraph), we are also conducting a study to preserve ecological continuum in the Jalles to protect fish migration.

GUIANA SPACE CENTER

Created in 1964 by ministerial order, the Guiana Space Center is owned by the CNES, and hosts the European Spaceport and related industrial activities. In 2020, Ariane 5, Soyuz and Vega rockets are launched from there at a rate of about 10 per year. CNES has a mission to protect people, property and the environment. The spaceport domain is a regulated area, with a surface of 0.8% of the total surface of French Guiana. This area is necessary to protect the population during launches. The surveillance of the area, the ban on carrying weapons, the limitation of urban and agricultural projects throughout the area, and the numerous inventories carried out over time, allow the study and conservation of a natural environment of exceptional biological value.

In 2020, ArianeGroup continued the construction of the EFF (ESR Finishing Facilities) and BSB (Booster Storage Building) buildings at the Guiana Space Center, which will be used for the future Ariane 6 launcher. These operations are subject to an environmental authorization file, which has led to the following compensatory measures aiming at increasing knowledge of the natural environment:



²² Groupe d'Etude et de Protection des Oiseaux en Guyane



3

PROGRESS

For more than 50 years, we have been proud to create products with very high added value thanks to our best-in-class know-how and technologies. In addition to the benefits brought about by our products, we aim to promote sustainable innovation and push society forward thanks to this knowledge, but also by promoting diversity and inclusion, making a local socio-economic contribution, and building a responsible supply chain.



Sustainable innovation is not only about technology and products, it influences the growth and the attractiveness of our company globally. Sustainable development and economic opportunities come together. We are working on it."

Morena Bernardini, Head of Strategy



ARIANE 6

Designed to be compliant with the French Space Operation Act (FSOA) and the UN COPUOS²³ standards, sustainable innovation is at the heart of its development.

BRICKS FOR FUTURE LAUNCHERS

The Lightweight Upper Stage innovation will allow a weight reduction that gives a gain in performance by increasing the available mass for payloads for the same amount of energy delivered by the propulsion systems. We will also achieve a safety gain linked to its composite structure since no debris should be produced at re-entry. The Prometheus and Themis projects are also great illustrations of the effort we are making jointly with our partners to enable reusability.

²³ <https://www.unoosa.org/oosa/en/ourwork/copuos/index.html>

3.1

ENCOURAGE SUSTAINABLE INNOVATION

CONTEXT

In the context of ever-increasing competition with many emerging players, innovation is a necessary condition for the survival of our Group. However, this innovation must take environmental constraints and societal needs into account if it is to be compatible with a sustainable society and economy. We therefore have a responsibility to encourage sustainable innovation and the creation of sustainable business models in our company, with our stakeholders and anywhere we can have an impact.

EXAMPLES OF INNOVATIVE PROJECTS

Here are some examples of positive innovations that we are proud of:



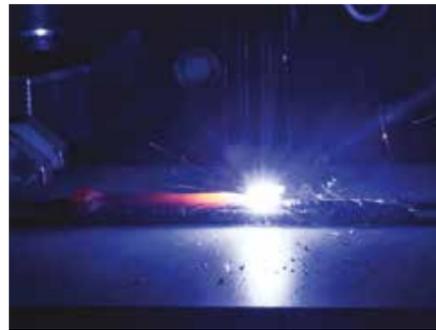
Artist's impression of a lunar lander

SPACE LOGISTICS

An ongoing project with ESA on end-to-end space transport solutions to the Moon, efficient multi-orbit rideshare strategies, and in-orbit servicing will help extend our portfolio to include "in-space" and "from-space" service solutions. This project has contributed to a shift in the space transportation vision in Europe, lowering entry barriers for new applications.

AIRCRAFT ENGINE EXTINGUISHERS

We are working on replacing halon gas extinguishing equipment with Typhoon pyrotechnical extinguisher technology, which can eliminate the halon gas that has a negative impact on the ozone layer (project currently in the demonstration phase).



Additive Layer Manufacturing production

ADDITIVE LAYER MANUFACTURING (ALM)

ALM is now used for manufacturing the most complex metallic parts of our launchers, especially on the cryogenic engines, where this allows drastic reduction of raw material consumption (sometimes up to 90%, for instance for the Ariane 5 and Ariane 6 tank panels) and of energy (regularly more than 50%).

METALLIC TECHNOLOGIES

We have developed specific solutions to replace polluting surface treatments. These include the use of laser-based techniques for preparing Ariane 6 tanks for thermal protection bonding.

GREENER PROPULSION

Greener propulsion for orbital orbital spacecraft is also our focus, for example with the development of a water-based propulsion system for satellites (see section 2.2).



Carbon fiber composite manufacture

COMPOSITE MATERIALS

In the field of composite materials, we are actively working with SMEs in the French Nouvelle-Aquitaine region to develop bio-sourced resins and fibers that will replace carbon-fiber reinforced polymers in the future.

GREEN HYDROGEN

We are spinning off space hydrogen technologies to offer products, equipment and services in new sectors such as transportation (see section 2.1). This is part of our key strategic initiatives for the future of ArianeGroup.



SECOIA facility

SECOIA

We are helping the DGA destruct WWI chemical weapons through the complete treatment of all solid and gaseous residues in a factory that is unique in Europe (see section 2.4).

An enabling factor in these successes is the deployment of our Agile Policy, which is restructuring our innovation processes and development teams to make them more efficient. Enablers and tools were implemented to support these teams, such as Innovation Hangars on sites, Fab Labs and Rapid MAIT for fast prototyping and accelerating cycles. We are also advocates of cross-fertilization and as such are part of the French "Agile @Industry" Community along with other actors of the aerospace and automotive industry.

In order to give an additional boost to these topics, our yearly R&T Days event, initially planned in November 2020 and now postponed to November 2021, will focus on Clean Space and Green Energy.

ARIANWORKS, AN ACCELERATION PLATFORM FOR SPACE LAUNCHER TECHNOLOGIES

CNES and ArianeGroup created the ArianeWorks acceleration platform in order to boost the preparation of future European launchers. This new kind of partnership, where teams work together in a highly flexible environment, is open to new players and international, with the key goal of accelerating the roadmap for the future generation of Ariane launchers, and in particular its first phase, the Themis reusable first stage demonstrator. It has been a success, since Themis has obtained ESA approval in the form of a contract signed in December 2020 with ArianeGroup, as prime contractor, for the initial development phase.



Themis demonstrator (Vernon)

FOSTERING OPEN INNOVATION

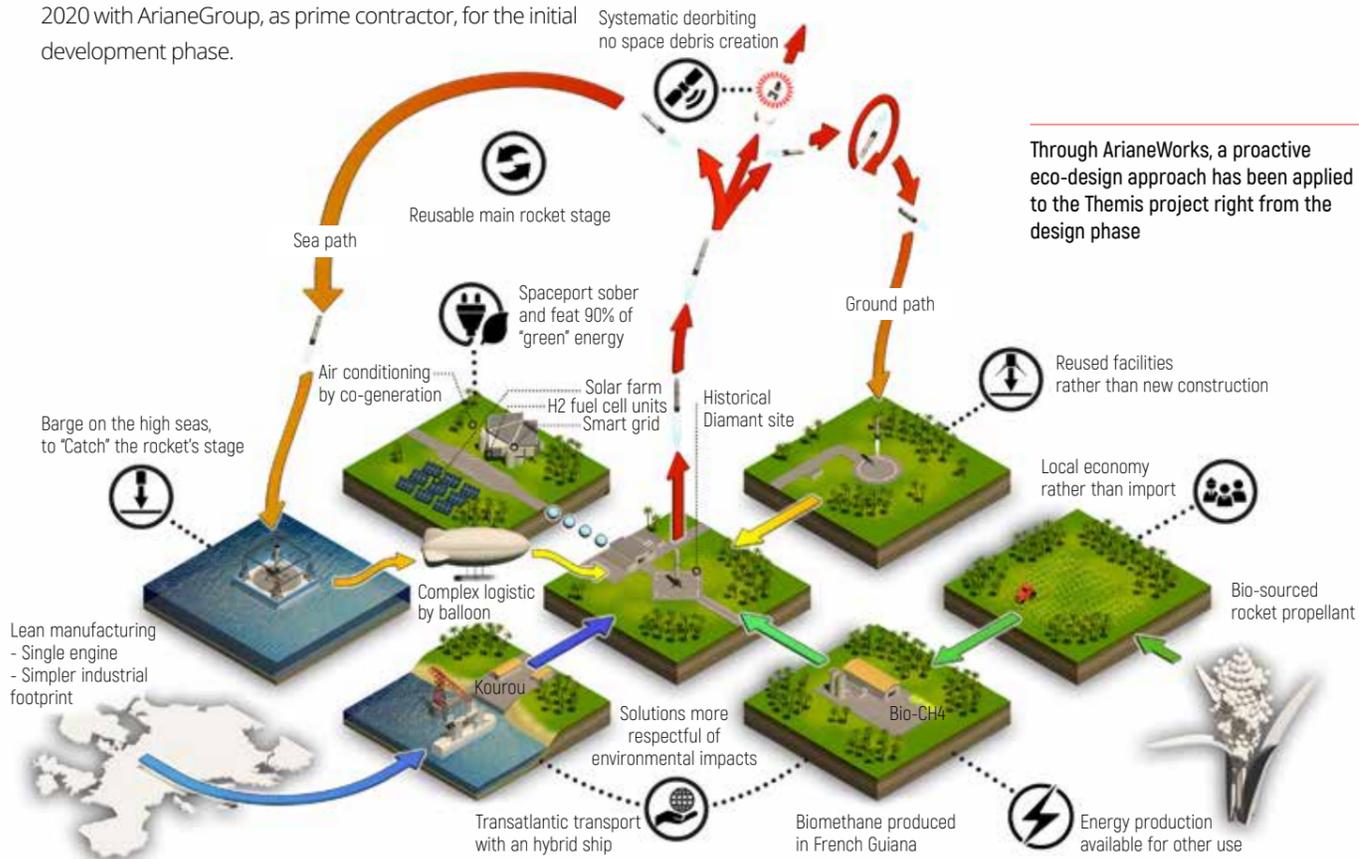
On some topics, we are opening up our innovation processes by fostering communication channels with institutions, academia, deep tech and industry. For ArianeGroup, the objectives are to:

- integrate external solutions to improve our competitiveness;
- use our technologies to benefit other application areas;
- encourage agile and creative thinking internally.

For our partners, and particularly start-ups, it represents an opportunity to be backed up by a large group with its research resources and capital, and to anchor their initial growth with a contract of several months or years (ArianeGroup's product cycles are several years long). We are focusing on the Deep-Tech ecosystem, in a concerted approach together with

Airbus, Safran, MBDA, and the DGA. In this context, partnerships are regularly set up to source deep tech start-ups; in 2020, we collaborated notably with Prime and Hello Tomorrow on the subject.

Opening up to this new ecosystem of non-space tech players is now key to differentiate ourselves and feed our innovation platforms, and thus face competition from new space players.



Through ArianeWorks, a proactive eco-design approach has been applied to the Themis project right from the design phase

THE CANOPÉE SAILING CARGO SHIP: WHEN LAUNCHERS BOOST INNOVATION IN MARITIME TRANSPORT



Artist's impression of the Alizés Canopée vessel

Ariane 6 parts will be shipped to French Guiana from four European harbors. ArianeGroup has thus selected an innovating shipping solution: the French company Alizés is developing specifically for our needs and will operate the first sailing cargo vessel, called "Canopée", over a 15 year service contract starting in 2022. Canopée is a new-generation vessel combining hybrid propulsion and four sails that will comply with new 2020 environmental regulations implemented by the International Maritime Office (IMO) to reduce sulphur emissions by over 80% as well as CO₂ emissions.

ENABLE SCIENTIFIC AND SPACE KNOWLEDGE AND INSPIRE PEOPLE

CONTEXT

Our sense of community combined with our position as a technology pioneer leads us to strive to push forward the frontiers of science and education wherever we can, for the common good. Space technologies are expert subjects and can get very technical, but it is also the stuff of dreams. This makes it all the more critical for the space industry to communicate to the general public to explain the benefits of space and share its knowledge – within the limits imposed by confidentiality –, and ultimately to keep inspiring people.

OVER
100 R&D PROJECTS
IN COOPERATION
WITH VARIOUS
STAKEHOLDERS

80 SCIENTIFIC
DOCTORAL THESES

ACTIONS AND PROGRESS

ARIANEGROUP AND THE ACADEMIC AND SCIENTIFIC WORLD

In order to foster education and research around space, ArianeGroup has been developing many bridges with schools, universities and research centers.

We are constantly conducting around 100 Research & Development (R&D) projects in cooperation with universities, their spin-offs, academic laboratories and major European research centers (ONERA, CNRS, INRIA, DLR institutes, etc.), technical centers (e.g. CETIM), and the SME network present in the various regions where ArianeGroup has its activities. About 80 scientific doctoral theses are permanently being carried out within ArianeGroup teams.

We are one of the few companies who have a full-time educational institutions liaison officer posted with the rectorate in the south-west region of France. This liaison officer intervenes in schools, events and manages projects to promote engineering careers for the younger generations.

We are also developing partnership policies with over a dozen European educational establishments and working closely with around 20 of them (in France: Polytechnique Engineering School, ISAE, SUPAERO, ESTACA, etc.; in Germany: universities of Bremen, Giessen, Stuttgart, etc.). We have co-created a chair for Space Economy with ESA, the ESA-Lab@HEC, and a Defense & Aerospace chair with Sciences Po Bordeaux.

Our commitment to share knowledge and strengthen education is also reflected in our support of young people through internships and apprenticeships. In 2020, despite an extremely difficult context, we received over 750 students²⁴ from more than 100 schools, colleges, and universities at our sites in France and Germany. We will maintain this high level of internship and apprenticeships in 2021.

750 STUDENTS WITH
AN INTERNSHIP OR
APPRENTICESHIP
CONTRACT

²⁴ Presence with apprenticeship or internship contract during year 2020



Mankind has always looked to space and been fascinated by it. Today, space is accessible to humans and new exploration brings us exciting new knowledge about the universe and our own planet. Space technologies play an increasingly important part in our daily life, even if we are not always conscious of it. As European leader in space transportation, ArianeGroup has the duty to promote space activities among European citizens. Conveying aspirational messages and images in order to inspire people and to recruit new ambassadors for space is an essential 'raison d'être' for our communication channels, and especially on social media. The response is great and we have fantastic interactions with our fast-growing community on Facebook, Twitter, LinkedIn and Instagram."

Oliver Lapy, Chief Communication Officer

SPACE EXPLORATION

ESA currently manages four exploration program lines: Low Earth Orbit (LEO) activities, activities beyond LEO, lunar robotic exploration and Mars robotic exploration. ArianeGroup is contributing to all of these, for instance through:

- assembling the European Service Module propulsion subsystem via Airbus Defence & Space;
- engineering and equipment for the International Habitat and ESPRIT lunar station modules;
- propulsion system maturity investigations including ArianeGroup's innovative RIT 2X electrical propulsion thrusters onboard the Mars Sample Return mission's "Earth Return Orbiter spacecraft".



Ariane 5 upper stage integration (Bremen)

INSPIRING PEOPLE

We consider that we have a fundamental responsibility to inspire people, both children and adults, about space and the Ariane project. To this end, we launched a "Space Inspiration" section on our website, as well as an "ArianeGroup Kids" section targeting children of 7+ years old. We are also very active on social media, organizing online competitions and events for example.

In 2020, we participated in the (online) Pint of Science festival, during which researchers and scientists address the general public, by holding two conferences around the theme "Boosting the Future".

The World Space Week takes place all over the world in October to celebrate the contribution of space science and technology to the betterment of the human condition. For the 2020 edition our employees were encouraged to go to their children's or grandchildren's schools to share their passion for space.

ArianeGroup is also the official sponsor of Planète Sciences, which organizes holiday camps for young people in France and the Rocketry Challenge, a micro-rocket challenge for young people. We also have partnerships with the Cité de l'Espace in Toulouse and the Cité des Sciences in Paris.

Ariane 6 Vulcain 2.1 engine test preparation (Vernon)



PROMOTE DIVERSITY AND EQUAL OPPORTUNITIES

CONTEXT

Plurality of points of view and experiences leads to an increase in creativity and innovation: it enables a team to multiply the ways of solving a problem, through a wider set of skills. We are implementing various actions regarding diversity and inclusion because we are convinced that it is a real asset for an organization and for society more generally.

GENDER BALANCE OBJECTIVES:



WOMEN TO REPRESENT 30% OF ANNUAL NEWCOMERS WITH A PERMANENT FRENCH CONTRACT BETWEEN 2021 AND 2024

30%



WOMEN TO REPRESENT 10% OF FIRST LINE OF GERMAN MANAGEMENT BY END OF 2022, AND 19% FOR THE SECOND LINE OF MANAGEMENT

10%

ACTIONS AND PROGRESS

We are striving to develop a culture of inclusion, rethink our processes to better integrate diversity and respect a principle of equal opportunities by fighting discrimination of all kinds (gender, age, disability, social origins, ethnicity, etc.).

GENDER

Gender balance is a major issue in the aerospace industry. Although this number has since increased, in 2017 women represented only around 25% of the GIFAS²⁵ (Grouping of French Aeronautics and Space Industries) workforce, compared to 18% in 2007. For ArianeGroup in 2020²⁶, women represented 21.7% of the workforce in France and 17.7% in Germany.

With the driving objective of 30% of annual newcomers with a permanent contract over the 2021–2024 period to be women, we signed an agreement in France in 2017, renewed in 2020, to take actions in seven areas: recruitment, compensation, training, promotion, work–life balance, health and working conditions, communication. This agreement also stipulates that we will sign the French Diversity Charter for the 2021–2024 period. Additionally, we have set up a partnership with the “Elles bougent” association, whose mission is to reinforce gender balance in the industry and technology sectors. In 2020, before the beginning of the Covid-19 crisis, we took part in a forum organized by the association.

In Germany, gender balance objectives include having 10% of women in the first line of management by the end of 2022, and 19% for the second line of management. As part of our effort to boost diversity and inclusion, we sit on the advisory board of BeyondGenderAgenda²⁷, a think tank which aims to secure and expand the international competitiveness of the German economy in the long term by anchoring diversity, equity and inclusion in the DNA of listed and medium-sized companies.

We have implemented tools to measure our progress: an annual report about gender equality, including KPIs, and the French Professional Gender Equality Index for which we obtained a score of 90/100 in 2020.

²⁵ <http://www.ellesbougent.com/ressources/enquetes/les-femmes-et-aeronautique-2130/>

²⁶ Percentage of women in registered workforce as of 31/12/2020

²⁷ <https://beyondgenderagenda.com/en/>



We want to attract women with mechanical and aeronautical engineering skills. ArianeGroup wants to be proactive in this field; we need to work together with other stakeholders to have a real impact."

Florence Gallois, Chief Human Resources Officer

Ariane 6 Vulcain 2.1 engine FM1 test (Vernon)



DISABILITY

We are also working on the inclusion of disabled people in our workforce. In France, we signed an agreement with the Agefiph²⁸ in 2019, which ran until the end of 2020 and will be renewed. This framework plans out concrete actions on five topics:

- communication, information, and training our workforce – we hold a disability week annually on all sites;
- integration and retention of disabled people in employment;
- support for professional careers;
- nomination of “disability points of contact” on each site;
- supplier contractualization with disability-majority companies, mainly in the areas of document services, site facility management, HR support services, but also manufacture of technical products used on our launchers.

Since 2019, we have had a partnership with the HANVOL association and Handisup Haute Normandie, which was renewed in 2020. The objective is to offer training in our industry's jobs to people with disabilities.

Our contribution to the inclusion of disabled people is also reflected through our Fabrikarium flagship event²⁹: in the framework of a partnership signed in 2019 with the non-profit organization My Human Kit, we organize an annual collaborative workshop to imagine, design and prototype innovative, concrete aids for making the daily life of people with disabilities easier. Two such events have already taken place: one in 2019 and the other in 2020, and a third will take place in 2021.

AGE

In order to encourage youth and senior employment, ArianeGroup has implemented various actions in France:

- additional support to apprentices by providing them with additional paid leave for school exams and financial support in case of dual residency;
- specific measures for 50+ year old employees: ergonomic study, medical check-up, etc.;
- financial help to buy back pension quarters and gain additional retirement rights.

In Germany, ArianeGroup has reaffirmed its commitment to continuing professional education and the recruitment of apprentices even in difficult economic times.

²⁸ AGEFIPH is the Association for the Management of the Fund for the Professional Integration of Disabled People. It promotes access to and retention in employment of disabled people.

²⁹ <https://www.ariane.group/en/news/fabrikarium-interview-with-nicolas-huchet-founder-of-my-human-kit/>

3.4

DELIVER LOCAL IMPACT AND BE INVOLVED IN LOCAL SOCIO-ECONOMIC DEVELOPMENT

CONTEXT

We operate in space but we are firmly grounded in our local environments. It is very important to us to contribute to local socio-economic development, through the involvement and integration of our sites in their localities and communities.

ACTIONS AND PROGRESS

LOCALIZING JOBS

Our medium- to long-term objective is to localize jobs in the localities we are established. We are undertaking several actions to achieve this goal, for instance:



Ariane 5 VA250 launch

CREATING LOCAL ECONOMIC VALUE

Due to our product security applications (civil and defense), the main part of our procurement requirements is sourced in Europe, with 76.8% in France, and 85.6% including Germany. 600 European companies contribute to Ariane 5 and 900 companies to the M51, including 300 SMEs.

76.8%
OF OUR SOURCING
IS DONE IN FRANCE
AND
85.6%
IN FRANCE
AND GERMANY
COMBINED

We are part of the French Pacte PME association, which promotes and facilitates interaction between SMEs and large companies.

We are also involved in regional competitiveness clusters with Aerospace Valley (south-west France), ASTech (Paris) and Normandie AeroEspace (north-west France) to build up relationships with SMEs.



Ariane 6 liquid oxygen tank for combined tests (Les Mureaux)

1

In the Bordeaux area:

We are involved in the Bordeaux Aquitaine Aéronautique & Spatial (BAAS) association and network which bring together the leaders of the Nouvelle-Aquitaine large civil and military sites and institutional representative bodies of the aeronautics, space and defense industries, in order to promote and develop the sector at the regional level. Gilles Fonblanc, President of ArianeGroup SAS, is the chairman of this association.



Transferring an Ariane 5 solid booster (Kourou)

2

In French Guiana:

- We are creating a professional baccalaureate specializing in aeronautics and systems which will be launched in September 2021;
- We are also working with different public communities and universities on a "Campus of excellence for jobs and qualifications" with a focus on aerospace: a letter of intent was signed in 2020;
- Additionally, we are hosting a start-up campus, the "Kourou Industry Territory", on our site. We launched this initiative together with the local government. The objective is to allow start-ups to create new innovative economic activities generating local jobs, with local recruitment at the end of the university course. We were also in charge of sourcing the projects in 2019, and are now helping them to secure funding.



"In Guiana, our medium- to long-term objective is to localize jobs. We develop training schemes locally. As a whole, the space sector has increased its local workforce from 5% to 60% in the recent years. We must join in a collective effort with our local partners."

Franck Huiban, Head of Civil Programs



Signature of the Ariane 6 production contract between ArianeGroup and MT Aerospace (Germany)

3.5

ENSURE SUSTAINABLE PROCUREMENT AND OUTSOURCING

CONTEXT

We are acutely aware that the challenges facing the world today will not be solved single-handedly. More than ever, teamwork and cross-fertilization of ideas are critical: we know that collaborating with all our stakeholders, especially our industrial partners and suppliers, is key to maximizing our positive impact, and we will continue to move in this direction.

ACTIONS AND PROGRESS

SUSTAINABLE PROCUREMENT STRATEGY

To ensure that we maintain responsible relations within our value chain, we formalized a strategy and processes for sustainable procurement. A dedicated action plan with four key action streams has been defined and approved by the Procurement steering committee, aiming in particular at promoting and enforcing good practices relating to human rights, ethics, health, safety, and the environment.

SUPPLIER ETHICS CHARTER

This Charter is an integral part of ArianeGroup's sustainable procurement action plan. By accepting our Supplier Ethics Charter³⁰, which is referenced in the General Purchasing Conditions and in the contracts or purchase orders placed by ArianeGroup, our suppliers and subcontractors commit to respect the same level of ethics and integrity standards as we do and to apply them in their own supply chain.

³⁰ <https://www.ariane.group/wp-content/uploads/2020/03/Supplier-Ethics-Charter-2020-EN-v03.pdf>



Ariane 5 upper stage on test bench (Lampoldshausen)

DUTY OF VIGILANCE AND SUPPLIER RISK MAPPING

To comply with our CSR commitments and applicable laws regarding duty of vigilance and prevention of corruption, we performed the risk mapping of our supply base regarding the topics of human rights/safety, health/environment, and corruption, money laundering and fraud. Risk levels and detailed scores are made available on a secured web-based platform. In 2021, further screening reviews will be launched, risk mitigation actions implemented, and the use of this platform will be made available to the main users. The risks analysis results are consolidated with other risk data into the Enterprise Risks Management process.

TRAINING OUR BUYERS

We are continuously training our buyers on CSR-related issues (sustainable procurement, personal data protection, anti-corruption, HSE, etc.). CSR is part of the annual training plan for procurement and is included in the newcomers' training program. Updates are made by the Sustainable Procurement Manager during annual procurement roadshows.



“We are determined to work with suppliers and subcontractors who share our ethical values and our ways of working. We consider our value chain as our wider responsibility. Therefore, it is our duty to be vigilant regarding the social and environmental impacts of our purchased products and services.”

Stéphane Nogatchewsky, Head of Procurement

FOR FURTHER INFORMATION, PLEASE REFER TO:

- **THE ARIANEGROUP WEBSITE**

<https://www.ariane.group/>

- **OUR COMMITMENTS WEBPAGE**

<https://www.ariane.group/en/about-us/our-commitments/>

- **OUR DUTY OF VIGILANCE REPORT**

<https://www.ariane.group/en/about-us/our-commitments/>

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www.ariane.group



ArianeGroup Holding

Headquarters:

51-61 Route de Verneuil
78130 Les Mureaux, France