



Innovative glass  
for a better world



2022 Sustainable Development Report

# Dear partners



2022 has been declared "International Year of Glass" by the United Nations, reminding us that glass is a unique, healthy, recyclable material that has great innovation potential in many fields (scientific, economic, artistic, cultural, etc.). It is essential for the transition to a better, more environmentally friendly world. Arc has played a leading role in this regard and launched various initiatives and partnerships to raise the profile of the glass industry worldwide. These initiatives can be found throughout this report.

The conflict between Ukraine and Russia and the soaring energy costs that ensued also had a major impact in 2022. These geo-political tensions and their ramifications have weakened industry and particularly the glass sector.

Some had no choice but to temporarily stop producing. At Arc, although our energy bill rose by €100 million in France alone, we decided to significantly cut back our operations while continuing to provide the best possible service to our customers. Many teams have been and are still being affected by partial layoffs, which is why I would like to underline the spirit of solidarity and resilience that distinguishes us and helps us to move forward, to question ourselves and to overcome difficulties each day. This crisis has shown us the extent to which the effective control and agility of our teams with respect to energy supply and the way we operate our facilities must remain a priority for our Group, as must the ongoing quest for processes that are more environmentally friendly.

In this context, Arc is now more than ever making its environmental ambitions a central part of its strategy. Our vision, "Innovative glass for a better world", reflects our Group's ambition to work towards more responsible production and consumption, offering new solutions to our customers for new consumer habits. In particular, we aim to reduce our CO<sub>2</sub> emissions at the Arc France site by over a third, our fossil fuel consumption by almost 40% and our water consumption by 80% by 2030.

The Arc Group also has over 7,000 talented employees worldwide. Their health, safety and development are our daily priorities.

We each have a role to play in making the world a better place: in these pages you will discover the progress we have already made and the direction we are taking in the coming years with practical actions to achieve this.

I hope you enjoy reading it.  
Yours faithfully,

**Nicholas Hodler**  
CEO



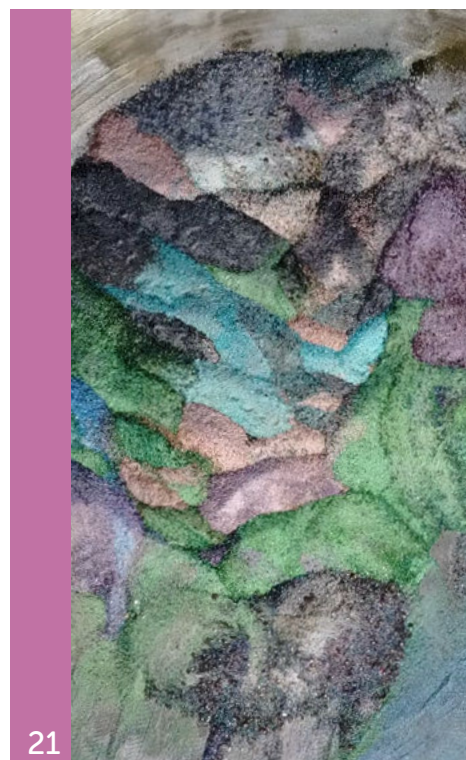


Group

Strategy

Circular  
Economy

Teams



# Group Company context

## HISTORY

As the world leader in tableware, the Arc Group designs innovative and sustainable glass solutions for everyday use, dedicated to the pleasure of drinking, eating and decorating our homes.

The company was founded in 1825 in the North of France, in Arques, where the Group still has its headquarters and its Research and Development division. The Arques site is the largest glass production site in the world and the eighth largest industrial site in France.

With production units in France (Arc France - AF), the United States (Arc North America - ANA), China (Arc Glass China - AGC) and the United Arab Emirates (Arc Middle East - AME), the Group manufactures over 4 million items every day. Arc employs **7,000 permanent staff worldwide, including 4,800 in France**, and generated sales of €900 million in 2022. With brands Luminarc®, Arcoroc®, Cristal d'Arques® Paris and Chef & Sommelier®, Arc caters to both private and professional clients.

The Group operates in many markets, including supermarkets, hotels, restaurants, bars and cafés, wine merchants and local authorities (schools, hospitals, retirement homes and company canteens). It also offers customised solutions for industry such as candle jars and promotional products.



## 3 DISTRIBUTION CHANNELS

to cover all sectors

Design, production and distribution of tableware and professional glass products.

### Consumer Goods - 41% of total sales

Tableware for the general public.

Main brands: Luminarc®, Cristal d'Arques® Paris, private label.

### Food Service - 24% of total sales

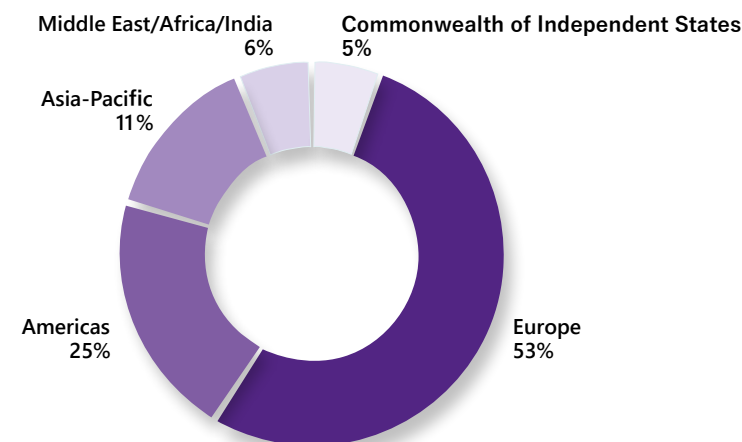
Tableware for the hotel, catering and community sectors.

Main brands: Arcoroc®, Chef&Sommelier®.

### Arc Customised Glass - 35 % of total sales

Customised solutions for professionals: industry, advertising, premium and customer retention.

## SALES BY REGION





## KEY FIGURES



## Values and strategic direction

In 2021, we presented the Group's new vision for the future: **"Innovative glass for a better world"**. This signature, which now accompanies our official logo, gives meaning to the daily efforts of Arc's 7,000 staff whatever their role and position in the company. We also share values: Excellence, Innovation, Respect for people and the environment, Team spirit and Responsibility. Values that unite and guide each of us in our work with a shared mindset.





With the economy weakened by the years of health crisis and then the energy crisis in Europe, and facing stiff competition, we have drawn up an ambitious investment plan to guarantee Arc's growth and thereby ensure the Group's long-term future.

This plan is based on 4 strategic priorities shared at Group level. These 4 priorities are the basis for our day-to-day work. They guide us and give meaning to our everyday tasks. In this way, everyone contributes to the company's success. Sustainability is increasingly becoming a guiding principle for our customers and partners.

As a global industrial group, we strongly believe that Arc's business must be managed with the right balance between social, environmental and profitability considerations. This combination is now core to our strategic objectives.

We are also developing solutions that actively contribute to the transition to a new circular economy model. Our innovative and sustainable glass containers, which are an excellent alternative to single use, demonstrate our commitment to helping build a more sustainable world.

**Be safe**



**Develop operational performance and profit**

**Empower our people**



**Innovate sustainably**





The vision, the mission, the values and strategic priorities form the governance of our arcWAY management system. This system was built with the staff who contributed to the recent changes in our values and management model by taking part in working groups.



ArcWAY defines and applies shared practices and standards across the Group to improve our overall performance while satisfying our employees, customers and partners.

It is a management system based on guidelines established at Group level covering every key process; each line may be completed by standards or practices that meet local requirements or specific features.

These include our policies and standards in the areas of safety, quality, environment and corporate social responsibility.

The management of our operations, procedures and other standards associated with the business are based on ISO standards or globally recognized benchmarks and take into account the needs and expectations of our stakeholders.

For example, at present, 3 out of 4 of Arc Group's manufacturing

entities have obtained ISO 9001 certification and 2 out of 4 have obtained ISO 50001 certification.

We also want to maintain and develop the involvement of all staff, by creating a genuine culture of continuous improvement in our business and encouraging the transfer of knowledge between employees.

ArcWAY is also applied through Group programmes such as safety training and awareness building for managers, the Responsible Sustainability programme, the development of our management model and various initiatives that we detail later in this report.



## ETHICS

Integrity, reliability and responsibility are core to our efforts and embody the values of the Arc Group.

This commitment is reflected in a growing culture of ethics, compliance, responsible purchasing and related initiatives.

As part of our management system, we regularly review our policies to adapt them to regulatory and/or social developments and to continue promoting an ethical culture within the Arc Group.

The Code of Ethics is key to managing Arc's business, both internally and in commercial relationships, both upstream and downstream of the Arc value chain.

It is the centerpiece of our compliance and ethics policy framework and a key component of the arcWAY Management System. The Code of Ethics applies to all Group subsidiaries worldwide. It describes how all Arc staff should behave in-house and externally to our stakeholders, to comply with legal obligations and to prevent any non-compliant practices that could negatively impact Arc's business, results or reputation.

The Code of Ethics covers the following areas:



Respect for people:  
in terms of health, safety at work,  
preventing harassment



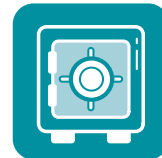
Equal opportunities  
in employment and  
non-discrimination



Respect  
for the law



Respecting  
the environment



Protecting  
our company  
and our assets



Respect for confidentiality  
of information and  
intellectual property



Anti corruption  
and respect for  
anti-trust laws












Updated, published and easily accessible procedures elaborate on the Code of Ethics. The ethics whistleblowing procedure specifies, for example, how it is dealt with, from examining its relevance to the investigation leading to corrective action or potential disciplinary sanctions.

A specific e-mail address has been set up to report breaches of the Code of Ethics ([ethics@arc-intl.com](mailto:ethics@arc-intl.com)). Both the identity of the whistleblower and the identity of those involved are kept strictly confidential.

Communication campaigns are regularly conducted to publicize the Code of Ethics and related procedures. A Code of Ethics training program has been in place since 2018 for all Group employees with access to the internal digital training platform, Arc University.

All new staff joining the company are informed of the Code and sign a document stating that they have read it. The Code is available on the Group's intranet at all times.

	Arc France	Arc Middle East	Arc Glass China	Arc North America
	○	○	○	○
	●	●	●	
	●		●	
			●	
			●	
	Silver 56/100			
	●	●	●	●
	●			
	●			

● Certified ○ Participant



## Global Compact

The Global Compact was launched in July 2000 and is the starting point for all organisations to help achieve the 17 United Nations Sustainable Development Goals.

Arc has been a signatory since 2003, thereby providing a universally recognized framework for its efforts to promote sustainable development. We are particularly involved in the French Global Compact, giving us the opportunity to interact with our peers in the region.



## SMETA-4P

The SEDEX network to which Arc belongs is recognized worldwide. It hosts the world's largest collaborative platform to promote and strengthen responsible supply chains. It is used by more than 74,000 members in over 170 countries to manage their performance on labor rights, health & safety, environmental protection and business ethics.

Every two years, Arc Group subsidiaries carry out a SMETA-4P (Sedex Members Ethical Trade Audit) on social, safety, ethical and environmental criteria. These audits inform our thinking and action plans to improve on the various criteria that are consistent with Arc's values.

## Ecovadis 2022 award

Ecovadis is a collaborative platform that has developed a world-class CSR certification used in 160 countries by 100,000 companies. This certification is central to Arc France's CSR commitment.

After being awarded the silver medal in June 2021, Arc France again won the Ecovadis silver medal in May 2022 for its Corporate Social Responsibility (CSR) actions in the following areas: Environment, Human Resources, Ethics and Sustainable Sourcing.





## Message from the head of CSR



After the pandemic years of 2020 and 2021, there was another difficult year in 2022, with the crisis in Ukraine and the subsequent energy shock. Moreover, the effects of global heating were also felt in 2022, directly affecting our production capacities. Heat waves and droughts in France and China, as well as huge forest fires and floods in several parts of the world forced us to adapt. The year reinforced our

sense of responsibility and our efforts to sustainably transform the Arc Group.

As part of the International Year of Glass declared by the UN, we have taken part in initiatives aimed at raising awareness of this durable, multi-purpose material, which is used in all aspects of our daily lives. We have also strengthened our support for glass recycling and reuse initiatives with all industry stakeholders.

We also worked to extend our sustainable development initiatives to the entire Arc Group by structuring our internal network, by continuing to consolidate and coordinate each entity's roadmap, and by developing specific training modules for employees. We have also strengthened our links with peers in the regions where we operate.

In Europe, and especially in France, the political drive to halve greenhouse gas emissions in industry has further spurred us to accelerate our decarbonisation roadmap. The R&D teams have made every effort to develop low-carbon fusion technologies.

In this report, we give you an overview of our sustainability journey, including where we have been, where we are now and where we are heading. The road is still long and hard. We shall transform ourselves together with our partners, employees, customers, suppliers and peers, and together we shall lay the foundations for a sustainable model to which we are modestly contributing.

We hope you find this report informative and inspiring.

Yours faithfully,

**François MERRIAUX**

Head of CSR



# Strategy Sustainable Development.

At Arc, we are committed to sustainable business transformation on a daily basis. Our sustainability strategy is built around four pillars, which are embedded in the Group's arcWAY management system and are based on compliance with applicable regulations, with integrity and responsibility in all our activities.

At Arc, we believe that involving our stakeholders in our sustainability roadmap is key to our success. There are many challenges, and prioritizing and talking about them is essential.

To do this, we will carry out a materiality analysis with each subsidiary, taking a pragmatic and structured approach that will enable us to better understand the sustainable development expectations of all our stakeholders. An extended materiality matrix for the whole Arc Group will be released in the future. All the subsidiaries are aligned in a shared vision.

This vision is part of a system with tools for continuous improvement. Led by the Group's Executive Committee, it will be introduced in each entity, according to its specific features, and will be supported by all the Group's teams, who will improve it.

There was significant progress in 2021 and 2022 in the realization of this vision through:

- The roll-out of a training programme on sustainable development via our Arc University platform to raise awareness among Arc Group employees.
- The drafting of a decarbonisation roadmap within Arc France.
- An assessment and adjustment of the Arc France strategy with the help of our stakeholders, by completing, a materiality matrix allowing us to determine the challenges of the future.
- Regular presentations of our practical sustainable development actions to the public and the training of "Responsible" Ambassadors to avoid any publication that could be considered as greenwashing.

[Our regular reports](#)





[Our CSR commitments](#)

### **Start a circular economy model by promoting reuse and recycling throughout the company's value chain.**

Producing the Arc collections as close as possible to our markets means we can minimize logistical movements, particularly by sea. This is what we do with our 4 production sites around the world.

Thanks to its natural benefits, glass is a perfect alternative to plastic when it comes to environmental issues. We support and assist projects that encourage reuse. We are also committed to working with local political, economic and academic players to invent sustainable responses to societal and environmental challenges.

We help set up collection circuits for glassware and tableware from the tableware industry and are industrializing the use of recovered glass in our French plant's production.



### **Reduce our environmental footprint by focusing on our energy and water consumption and by decarbonizing our production processes.**

Each day, our Research and Development division focuses on developing new technologies to preserve water and air and reduce our direct impact on climate change. Several million euros were invested in 2022 to install closed and controlled water networks, to modernize heat exchange installations with better energy performance and to treat the emissions from the facilities. The company also invested € 5 million in R&D to develop new fusion technologies.

By 2030, we will reduce our CO<sub>2</sub> emissions at the Arc France site by over a third, our fossil fuel consumption by almost 40% and our water consumption by 80%. In an effort to continuously improve and maintain our practices, Arc France earned ISO 50001 certification in 2022, thereby certifying its energy management system.



## Building a safe and inclusive work environment on every level

As an industrial group, the health and safety of our employees are priorities for us. Multi-year plans are being implemented in each subsidiary to make work and facilities safer and to develop a safety culture consistent with our ambitions. These plans are based on risk prevention and teamwork by encouraging everyone to take responsibility for their own safety and that of their colleagues.

We believe that diversity is a source of value for all, and we encourage all employees to participate and contribute, knowing that they will be respected, heard and acknowledged.

Drawing on the talent of its teams, the Arc Group invests in training its employees throughout their careers while passing on its know-how through work-study programs.



## Helping ecosystems to develop

The company's history of almost 200 years reflects its strong regional roots. Thanks to our significant role as an employer and the extent of our facilities, we contribute to the vitality of the areas in which we operate.

We are committed to working with local subcontractors to preserve the regional economic fabric and to promote local purchasing.

We invest in local communities by developing partnerships wherever we operate and developing a constructive dialogue with our local stakeholders.







	2019 figures	2022 figures
Percentage of women working for Arc	17.38%	19.82%
Change in proportion of women in the group 2019 - 2022	+ 2.4 points	

**3**

**CSR training modules for staff**

**+15**

**Re-use experiments in Europe**

**100%**

**of our production sites SMETA 4P audited**

**50%**

**of our production sites certified ISO 50001**

**75%**

**of our production sites certified ISO 9001**

**Ecovadis silver medal 56/100**

**arc France**

	2019 figures	2030 targets	2022 figures
<b>CO<sub>2</sub> emissions / tonne of premium glass</b>	0.93tCO <sub>2</sub> /t	0.73tCO <sub>2</sub> /t	0.97tCO <sub>2</sub> /t
<b>Water consumption (m<sup>3</sup>) / tonne of premium glass</b>	5.92m <sup>3</sup> /t	2.56m <sup>3</sup> /t	6.23m <sup>3</sup> /t
<b>Fossil fuel consumption / tonne of premium glass</b>	4.12MWh / t	3.32MWh / t	4.25MWh / t

**75%**

**of the volume of commodities transported by waterways**

**+94%**

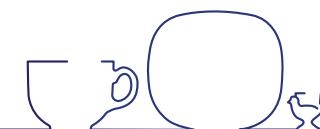
**water in closed circuit**

**90%**

**of internal glass waste recycled in our furnaces**

**57%**

**recycled waste (excluding internal glass waste)**



## Our contribution to SDGs

The 17 Sustainable Development Goals (SDGs or Agenda 2030) adopted in September 2015 by 193 countries at the United Nations, following the Millennium Development Goals (MDGs), represent an action plan for peace, humanity, the planet and prosperity, requiring multi-stakeholder partnerships to be forged.

In an uncertain global context, and with only seven years left to achieve the SDGs, we need to clarify our impacts and ambitions to return to secure our involvement in the sustainability journey, while stepping up and intensifying progress towards global goals.



## Sustainable Development Goals Cross Reference Table

	We improve the efficiency of resource use in terms of consumption and production.	21-28, 30
	We are modernizing our infrastructure and adapting our industry to make it sustainable.	27-28, 30
	We are improving our energy efficiency.	26, 29-30
	We are striving to introduce sustainable management of our consumption and production, focusing on how our supply chain works, involving our suppliers, customers and employees.	23-34
	We are careful to preserve water resources, minimize the use of chemicals, invest in the recovery, treatment and reuse of wastewater.	23, 28
	We train our employees and pass on our know-how.	26, 35-39
	We promote partnerships.	33-34, 40-42



As part of its CSR strategy, Arc has in the past produced internal materiality matrices for its entities Arc France and Arc North America. This year, Arc France has updated its 2020 materiality matrix by involving its stakeholders to make it more "robust". This process enabled our entity to assess the priority level of CSR and sustainable development issues by consulting its stakeholders (Y axis) and internal experts (X axis).

The update enabled Arc France to check how well its CSR strategy, with current and future projects, is aligned with the challenges considered as important by its stakeholders and internal experts. Arc France accounts for more than 50% of the production sold in the Group. This means that its materiality matrix is very important from a strategic point of view for the Arc Group, but it cannot be extrapolated to other entities because of their different situations.

Click [here](#) to learn more about the Arc France materiality matrix.

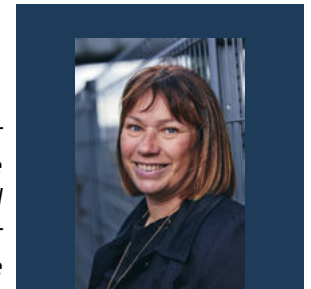


**Marc OURDOUILLIE**  
(Head of Sales)

*"We discuss sustainable development, Arc's impact on the environment and people, CO<sub>2</sub> emissions, the use of recycled materials, etc. on a daily basis with our clients. These issues are increasingly prioritized by our clients and we need to be able to align what is important to Arc with what is important to them.*

*This is made possible by working on the materiality matrix. We need to be sure that our sustainable development priorities are shared by our customers, and that our targets are clearly identified with action plans to achieve them."*

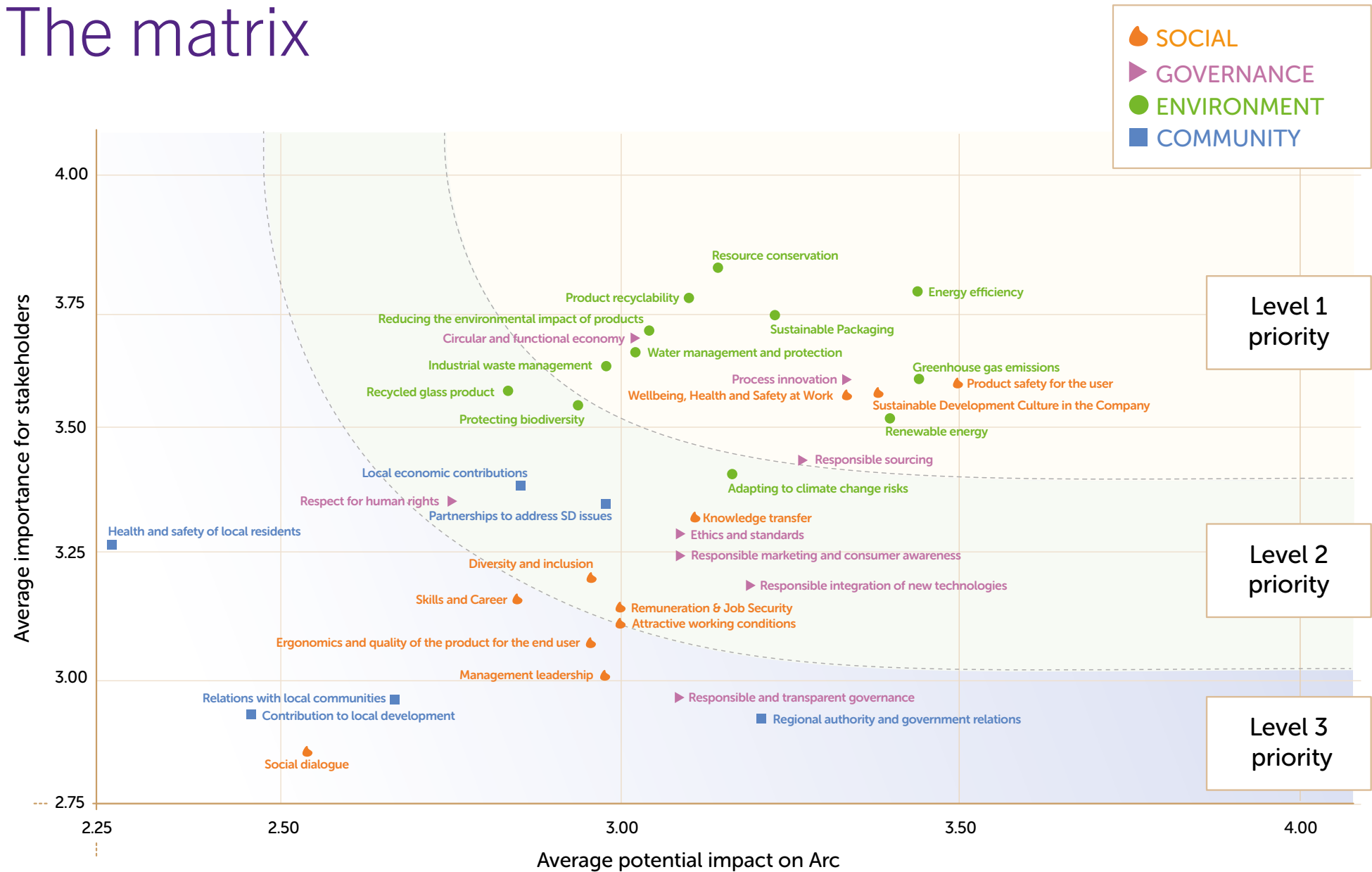
**Sandrine LELEU**  
(CSR Project Manager Arc France)



*"The CSR strategy is also discussed with our stakeholders. To create the materiality matrix, we were able to achieve a result based on a much broader and fairer CSR vision. This tool helps us to check that our projects and our CSR strategy meet the sustainable development expectations of our stakeholders. The interviews with our staff were very interesting. Many of them consider sustainability issues to be important and they are conscious of them both at work and in their personal lives. Prioritising issues allows us to step up our efforts on subjects that are less well addressed."*



# The matrix





# Circular economy

## Our roadmap



[More responsible  
manufacturing](#)



Two aspects of the Arc Group's CSR strategy require the application of a circular economy model and the reduction of our impact on the environment. As such, a 360° approach to direct and indirect activities has been drawn up: our climate and circular economy roadmap (Responsible programme). Each entity is encouraged to adopt it so as to implement the most relevant projects.

This programme supports the Group's transition by incorporating environmental aspects at each stage (product design, raw material supply, manufacturing, logistics, use and end of life) as well as by innovating to come up with solutions for the future.

Arc France has taken this approach since 2020 and has brought together experts from all phases of the product's life, from design to end of life, to develop the Responsible programme.

Having started with this cross-disciplinary approach, the programme now includes around 30 active projects. Each aims to minimize negative impacts on the planet and its limited resources, and maximize the positive impacts of our products and services.

Each project is led by a designated team with assigned targets and resources. The overall programme is reviewed periodically by the Arc France Management Committee.

In our previous report we mentioned that we wanted to build on the French experience to extend the Responsible programme to our other entities: Arc North America, Arc Middle East and Arc Glass China.

In 2022, Arc North America therefore consolidated its own Responsible programme by identifying suitable projects in each of the seven areas of the initiative and by deploying further staff to step up its CSR efforts.

**Dean KIMBER**  
(General Manager ANA)



*"CSR is one of Arc North America's top strategic priorities. We've even written it on the wall of our senior management offices! Many of our partners, vendors and teammates share this strategic priority. With this in mind, in 2022 we undertook several key CSR initiatives, such as updating our CSR roadmap and carrying out R&D to reduce CO<sub>2</sub> emissions. I'm proud to say that we have completed some major projects such as the full conversion of the warehouse and factory to LED lighting. We are continually working on new and innovative ways to propel us on our path to sustainability."*

Meanwhile, Arc Middle East initially focused on the Production workstream by introducing a continuous improvement roadmap to reduce its GHG emissions by 6.4% by 2026.

Finally Arc Glass China is setting up several projects, such as installing solar panels on its roofs, and will develop its climate and circular economy roadmap in 2023.

respnsible



Injunctions requiring companies to reduce their fossil energy consumption and more broadly their environmental impact are increasingly urgent. The glass industry is energy intensive and has a significant environmental footprint. For this reason, Arc has included this major challenge in its CSR strategy, and in 2019 drew up an environmental and energy policy that it made available to all staff. We have also started to significantly reduce our environmental footprint by accurately measuring our impacts and with targeted actions, because we can only act effectively on what we fully understand.

Depending on its priorities, each subsidiary sets up measurement and metering tools to inform the continuous improvement systems. We measure energy and water consumption, waste and air emissions.

All our production sites have been equipped with continuous measurements for this purpose since 2022.

To fully understand the impacts of a product, we initiated life cycle assessments (LCA) in 2020. A critical review of our first comparative LCAs lent weight to this approach, and ensured that it was built according to ISO 14044 rules. We now analyze our glass in-house.

The Arc France site, which is covered by the European Carbon

Trading Scheme, has its Scope 1 carbon emissions checked by an independent third party.

Measurements are communicated at regular intervals, allowing us to identify any deviations and make improvements within our integrated management system.



[Comparative LCA](#)



## Making eco-design our development norm

After transportation and housing, the consumption of private goods and services contributes about 19.4% of the average French person's carbon footprint (source: Carbone 4 - 2019). Every product has an impact. Over 80% of a product's environmental impacts are determined during the design phase. Eco-design is a preventive approach that seeks to integrate environmental concerns into the design and development of products (goods and services). This approach is structured by standards. Eco-design takes into account the entire value chain involved, the life cycle of the products and all the components required for the product.

There are two factors which enable products to qualify as eco-designed: reduce environmental impacts for equivalent functions and increase services rendered for the same environmental impact.

In 2021, we launched a pilot project to foster a culture of eco-design and design thinking in all new developments. This project, which is ongoing, has involved the design, marketing, sales, industrial operations and CSR teams.

Using SimaPro life cycle analysis software, we have identified the most impactful phases in our glass manufacturing process for each type of glass we make.

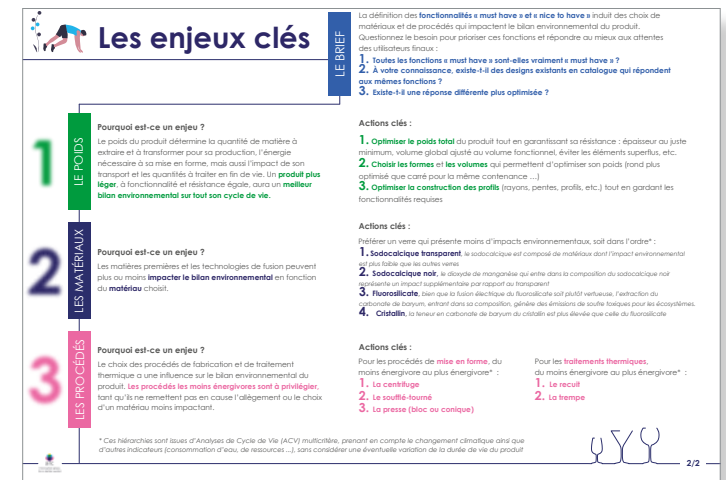
From this point, together with Coopérative MU, we have developed an eco-design approach.

This is embodied in an eco-design charter for our design and product development teams and our Arc France sales teams to raise awareness and help them find the right solution.

This eco-design charter also helps us to discuss needs with our customers and to jointly develop appropriate specifications in line with the eco-design principles that Arc aims to apply.

New products developed for the Group's brands will follow the eco-design principles derived from this first project from 2025.

Eco-design charter





## Reducing the environmental impact of our value chain

Sourcing the raw materials and accessories needed to manufacture our products, as well as the logistical flows generated by our activity, have an environmental impact, not only on the climate, but also on biodiversity and resource extraction. Our commitment to reducing these risks is illustrated by a supplier risk map that is currently being finalized, a responsible purchasing policy, and a supplier code of conduct. All our suppliers have signed this code of conduct which sets out environmental, ethical and social commitments. Our main suppliers are assessed each year.

Favoring "sustainable" sources, alternative modes of transport such as rail or waterways instead of road, and reducing the distances that materials travel are key to reducing the negative impacts of our value chain.

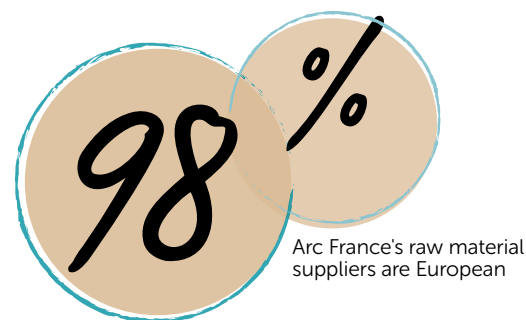
For example, in France, 98% of our raw material suppliers are European and more than 70% travel less than 500 kilometers to deliver to us. Our decision to prioritize local sourcing is shown by the Origine France Garantie certification of the Group's brands for products manufactured in France. This certification assures consumers of a product's provenance by providing a clear and objective indication of origin. To be certified, at least half of the value of the product must come from work performed in France (design, source of raw materials and production).



The process is transparent and assessed by a certification organisation. As well as this local approach, we favor non-road means of transport. For instance, more than 75% of raw material volumes are transported by waterway in France.

In France, most of the carbon impact of our logistics relates to shipping to our customers, mostly by road. For many years, the transport teams have been using rail transport solutions on existing lines.

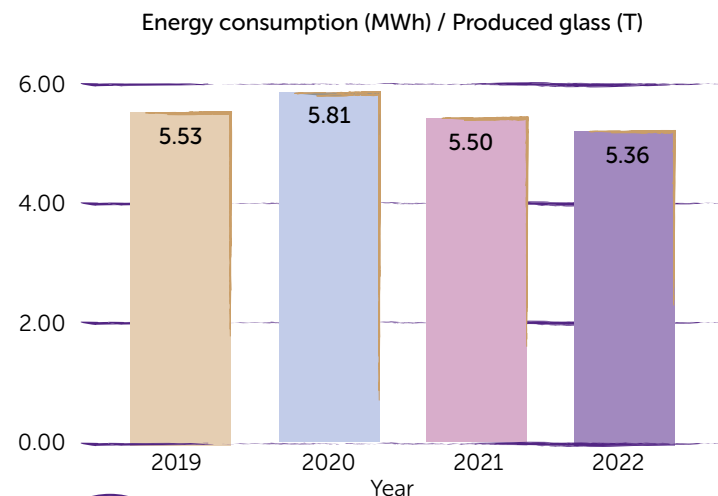
Similarly, more than 85% of the raw materials used in our US facility are transported by rail. This modal shift significantly reduces greenhouse gas emissions related to material transport.



## Improving our energy consumption

Improving our energy performance is a major economic and ecological challenge for Arc, as 80% of the energy used is from a fossil fuel: gas. The energy crisis in 2022 due to the war in Ukraine has pushed us even further in this direction in Europe. Despite operational difficulties related to furnace shutdowns or reduced capacity, improving our energy management systems has enabled us to maintain consumption per ton produced at almost the same level as in 2019, when all our facilities were producing at full capacity.

In the spirit of continuously improving our business and our performance, Arc France has obtained ISO 50001 certification, thereby guaranteeing to our stakeholders the robustness of our energy management system.



**David DESRAT**  
(Integrated Management System Manager)

*“Setting up this energy management system has been very rewarding for our company. It involved major changes in our processes and working habits, resulting in a difficult period of adaptation in a very restrictive internal and external context.*

*The process managers, ISO officers and all staff were key to this success. They were involved at each stage of the project, helping to collect data, set up new procedures, manage the project and raise staff awareness.*

*There have been many benefits of better management of our energy consumption, including reduced operating costs, lower prices and improved brand image. This certification gives us and our stakeholders real satisfaction. This is a first step and setting up performance indicators to monitor our energy consumption, targets, an action plan as well as auditing and awareness programmes are key to achieving our long-term goal of continuously improving energy performance.”*

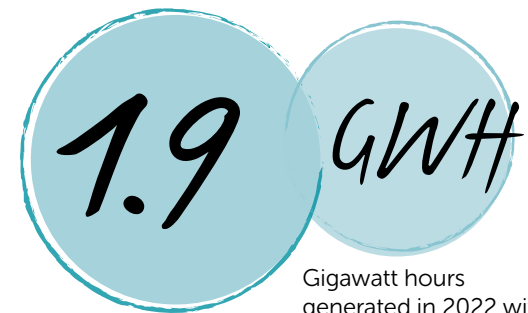


So far, AGC and AF are the two Arc Group entities to have obtained ISO 50001 certification.

AME plans to reduce its energy consumption with its energy roadmap and aims to achieve ISO 50001 certification in 2023 / 2024. In July 2021, solar panels were installed on the roofs of two of the warehouses at Arc China's production site in Nanjing. With 2 megawatts of power, these panels are intended to provide the site with electricity for its own consumption.

1,900 Megawatt hours were generated in 2022, avoiding the equivalent of over 1,000 tons of CO<sub>2</sub>.

Arc China is studying the second phase of the project for 2023 with the installation of new panels on the ground or on the roofs of other buildings on site, for a further 2 Megawatts of power.



Gigawatt hours  
generated in 2022 with  
solar panels

**Bharat BHUSHAN**  
(General Manager of AGC)



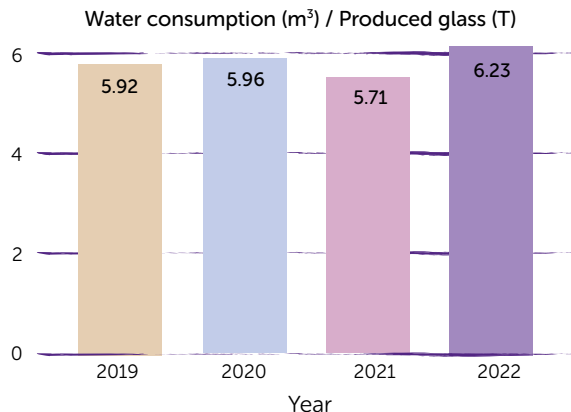
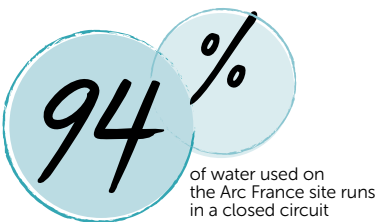
*"True to Arc's vision of creating sustainable glass, AGC is ceaselessly looking for ways to reduce its carbon footprint. We invested in solar power generation by using the roofs of our warehouses and other available space to generate electricity. This reduces our consumption of carbon-intensive grid electricity, as we consume what we generate on site. This is a small part of our consumption, which will increase in a second phase that will double our generation."*



## Improving our water consumption

In France, 2022 was also affected by severe heat waves that put the spotlight on water, its use and reuse. Water is essential to our processes, as well as to other local users in the regions where we operate. Glass manufacturing processes involve melting raw materials at temperatures of over 1,000°C. Water is essential for cooling. We take a site-specific approach to water resource management, depending on the local environment.

For many years, the Group has been using closed-circuit water networks to ensure that no water is taken from nature. Water intake at the Arc France site was reduced by 15% in 2022 compared to 2019. These gains were achieved via various fundamental measures and are being continued in line with the action plan that is being followed at the site. Across the group as a whole, scaling back the business over 2022 resulted in a 12% reduction in our intake, with a worse performance compared to a period of full utilization of our facilities. We are always striving to reduce our water consumption. To do so, we need to increase the share of water in closed or semi-closed circuits and also reduce our water consumption in non-closed circuit areas.



On the Arc France site, for example, our water management system runs on meters allowing us to continuously monitor our water consumption. Dedicated staff have been appointed at the production site to carry out checks in case anomalies are detected by these metering systems. This encourages employees to view water as an important resource and encourages them to be more careful about water use and to report irregularities more swiftly.

Furthermore, this year AF is replacing cooling towers (which consume less water) to improve the efficiency of the glass droplet's path to the basement, thereby reducing the water used by 5.3% per ton of glass melted. At present, 94% of the water circulates in a closed circuit and equipment on the production sites (decanters, physico-chemical station, evaporator) ensures that the quality of water discharges complies with local regulations.

Our UAE production site is a benchmark site in terms of water management. It has two water treatment plants, so it does not discharge any wastewater.

The first is a reprocessing plant for the site's domestic water, which ensures the quality of the irrigation water. The second is an industrial wastewater treatment plant. These two facilities recover, treat and reuse wastewater in various ways, from manufacturing processes to watering the vegetables in the site's garden!

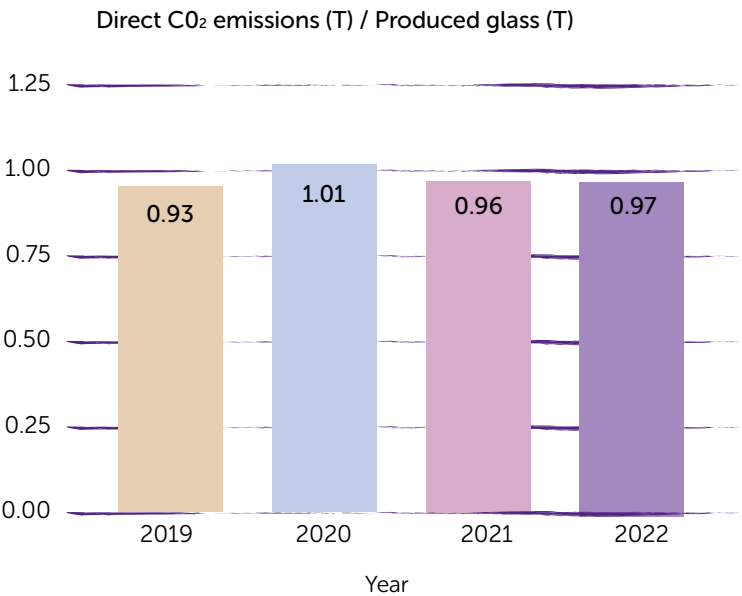


# Decarbonizing our production processes

Glass production is an energy-intensive industry. Greenhouse gas emissions stem mainly from the high demand for heat generated by burning natural gas in the smelting furnaces, but also from the release of gas from certain raw materials during the smelting process.

In 2022 we emitted nearly 55,000 tons of CO<sub>2</sub> less than in 2019, mainly due to reduced operations.

Producing one ton of glass entailed directly emitting 0.97 tons of CO<sub>2</sub>, an increase of 4.6% compared to 2019. This was mainly due to the fact that several furnaces at each of our sites were shut down or operating at reduced capacity.

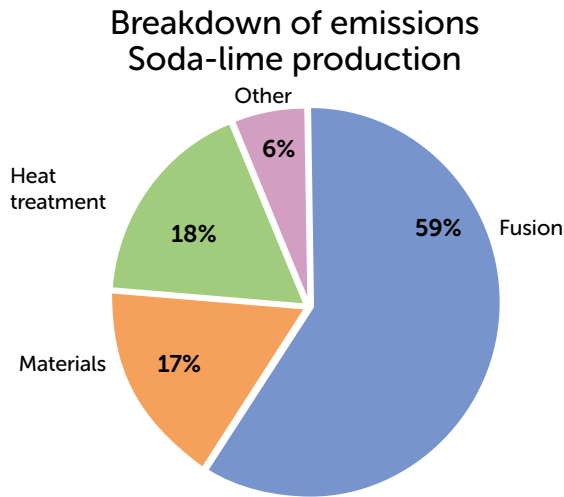


Improving the company's energy efficiency has always been an improvement driver for Arc as we have seen. This lever has the dual advantage of limiting the impact on the climate but also improving profitability, as energy represents around 30% of the product price. Although this is an essential component, it is not enough to achieve our target of a 20% reduction in greenhouse gas emissions by 2030.

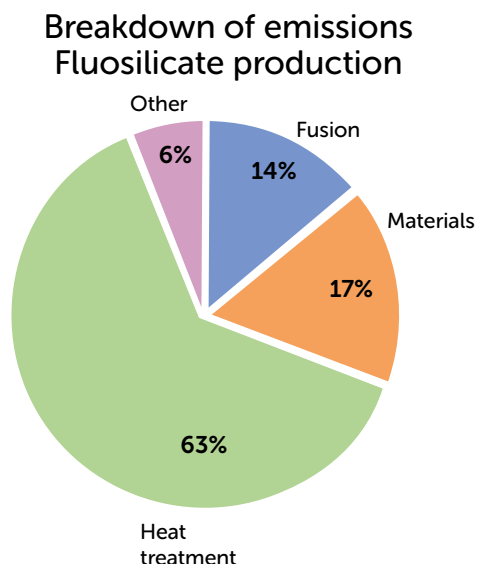
To target and prioritize our efforts, we analyzed our emissions (Scope 1) by type of glass produced, taking into account the specific features of each type. Soda-lime glass requires conventional gas furnaces, which emit more greenhouse gases than fluosilicate glass, which is fused electrically.

Consequently, the challenges for each type of glass are different.

For soda-lime glass, the challenges relate to the melting of the glass, which accounts for more than 75% of CO<sub>2</sub> emissions. These emissions are divided into those related to fuel in the furnace or feeders, and those related to the decarbonation of the materials.



Fluosilicate glass shows a different emission distribution than soda-lime glass. Indeed, electric fusion can completely eliminate the CO<sub>2</sub> emissions linked to the furnace fuel and improves the energy performance of the furnace. The main issue for fluosilicate glass is the impact of heat treatment and the decarbonation of raw materials.

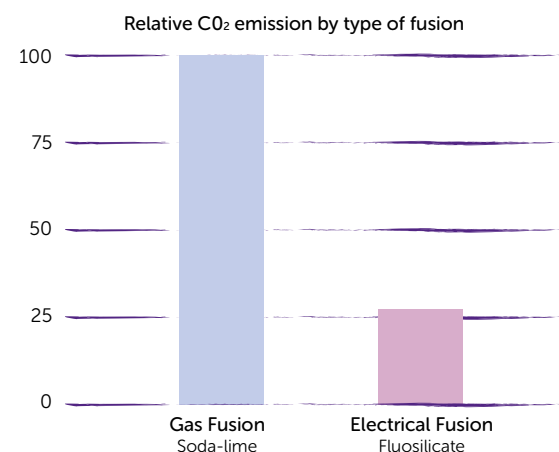


As mentioned earlier, nearly 60% of the greenhouse gas emissions from soda-lime glass production are related to the fusion and delivery of the glass to the machine, due to the use of gas.

Arc has nearly 60 years of experience with power supplies for its fluosilicate furnaces. We are also working on converting large capacity soda-lime furnaces from gas fusion to electric fusion. Tests carried out in recent years have prepared us to consider electrification of the soda-lime furnaces at the Arc France site. The French site is the best place to experiment with all decarbonation technologies, especially electric fusion.

Transforming the French site to a low-carbon model will then be replicated wholly or partially, depending on opportunities and possibilities.

We are also studying the electrification of our heat treatments and other equipment preheating needs at other Group sites.



Just over 15% of direct CO<sub>2</sub> emissions from glass production come from the decarbonation of raw materials used in our composition. The gradual substitution of carbonate materials led to a 14% reduction in process emissions in 2020 and 2021 compared to the average for the years 2014 to 2018. This initiative will be continued in the coming years.



Promote the recycling of materials throughout the company's value chain.

Glass is one of the only materials that can be recycled almost without loss. Consequently, it can be remelted many times without altering its qualities. Tableware glass is not currently included in existing selective glass collections, especially in Europe. Together with trade organizations, customers and partners, in 2022 we worked to ensure that our soda-lime glass products can be collected for recycling. This work will continue in 2023.

Glass waste recycling is a key concern for our manufacturing units and reusing our glass internally is already a well-established practice.

Today, almost 90% of the cullet produced in-house is remelted in the company's furnaces, which means that each item manufactured contains around 30% recycled glass. Reusing cullet also cuts CO<sub>2</sub> emissions by reducing energy consumption.

Over 30 years ago, the excess cullet from our operations was landfilled. Now, the internal cullet unfit for the production of clear glass is reused in a special type of glass, namely black glass. Produced only in France, it contains up to 75% of internally recycled cullet, 25% of which comes from the manufacture of black glass and 75% of colored or decorated cullet from other production.

We are also considering the possibility of using by-products to replace our raw materials to reduce the amount taken from the environment.



**Philippe BOULAINGHIER**  
(Raw materials and energy buyer)



*"Rather than having our "traditional" supplier extract minerals from the ground, with a few transformations, we are going to make use of a waste product that has had little or no value until now.*

*We need to fill in the missing bricks between the by-product as found on the market and our ability to use it (granulometry, moisture content, storage means). It is a long process and not necessarily economic."*



## Using more responsible packaging

At our Arques site, we manufacture glassware but also much of the packaging used to pack our glass and tableware products.

Most of this packaging is produced from corrugated cardboard, a material that can be recycled up to seven times, to produce new paper, packaging or even insulation products for buildings. In this way, carbon emission cycles as well as water, energy and raw material consumption can be avoided.

All Arc France's packaging production is FSC certified®. This environmental label certifies that the raw material for our packaging comes from responsibly and sustainably managed forests. Moreover, we work exclusively with packaging suppliers who also have the FSC® label. This guarantees our customers sustainable, responsible and ethical packaging production.

In terms of printing on our packaging, we prioritize technologies that use fewer resources (inks, paper).

Besides cardboard, less than 5% of consumer packaging contains plastic. This is mainly polyethylene, an industrially recyclable and reusable plastic. The pallets are protected by a plastic film which is also made of polyethylene.

Working with one of its customers, AGC is improving its packaging by replacing the use of corrugated cardboard and paper trays with cane pulp trays that can be directly disassembled and inserted into the sales box, and used as part of its interior lining.



This packaging not only protects the products, but also reduces packaging waste and allows more products to be stacked per pallet, thereby reducing transportation costs for the customer.

The AME site works with its suppliers to produce packaging as close as possible to the market. This is not always possible, so excess packaging is adapted and reused for subsequent production.





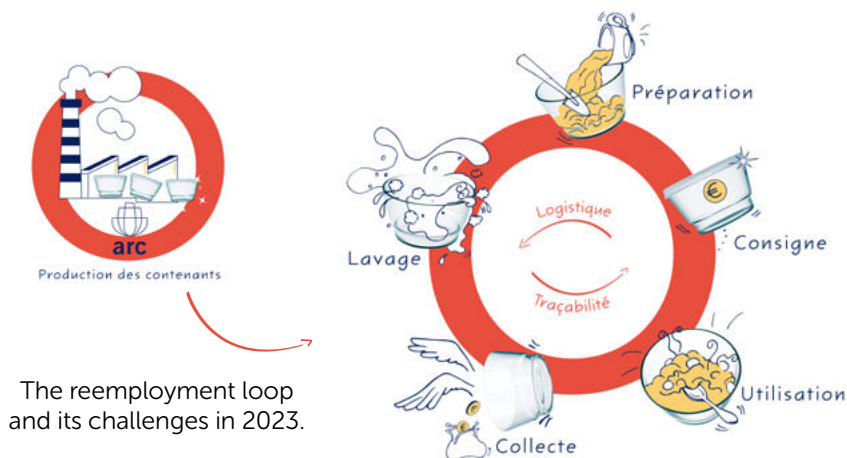
## Promoting reuse

According to the French environmental code, reuse refers to "any operation by which substances, materials or products that are not waste are used again for the same purpose for which they were designed".

As part of the vital need to reduce waste, particularly that related to single-use containers, reuse is a virtuous solution that is gaining traction.

The take-out market, which operates in tandem with home delivery, is growing rapidly. Changing lifestyles, particularly with the rise of telecommuting, are driving this increase. Given that there are three to four disposable packages for each meal delivered, the waste generated is significant.

The French law of February 10, 2020, to combat waste and promote a circular economy (AGEC law) sets a target for reducing this waste in France. Since 2019, European law, with the "Single Use Plastic" (SUP) directive, has encouraged a circular approach and is eliminating many single-use plastic objects from our daily lives.



The reemployment loop and its challenges in 2023.

Promoting reuse is therefore an important part of our Responsible program. It is in keeping with the Arc Group's commitments to the UN 2030 Agenda.

Glass containers, a historical packaging material, provide a sustainable and well-known solution that we have promoted with many players such as the returnable network or events such as the Agores forum (forum for public sector catering in France).

A list of reuse partners, recommendations for use ([see here](#)) and brochures ([see here](#)) specific to reuse have been created to support our offering adapted to these needs.



[Glass as an alternative](#)





These mechanisms are still at the experimental stage and we at Arc believe that encouraging stakeholders who seek to embrace reuse is key to successfully developing this virtuous practice.

We have therefore conducted a campaign to promote them. The number of retailers and their appetite for these new models is clear and on the rise. Over 15 partnership projects have been developed to equip commercial catering services, large food stores, canteens and home delivery services.



[Guide to Reuse](#)



Reuse partnerships

Based on our experiments, we have identified four key success factors for the widespread expansion of reuse in restaurants:

- There are currently a variety of local players, and we have listed many of them in our reuse guide. The steps required for reuse in catering are also diverse, and each player has expertise in one or more of them. **Coordinating** these different steps is essential to ensure that the project can be scaled up.
- **Standardization** will simplify each of these steps as well as the user experience (a limited number of containers used everywhere, left anywhere, reused by all).
- **Simplifying** each of the reuse steps in the restaurant industry as much as possible will help build a sustainable model and user acceptance.
- Reuse is developing, thanks to the impetus given and the **communication** made on the implementation of the loop, whether it is by public actors, cities or territories (Paris - Munster - Monaco - Quebec - etc.) or private actors.

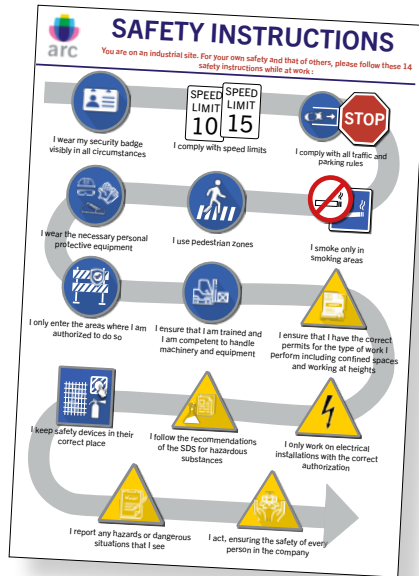


[Interviews with reuse professionals](#)



# Teams

## Develop a safety culture



Our industry creates risks that we must control. We aim to guarantee the health and safety of all employees, visitors, and on-site workers in accordance with regulations. To do this, we are setting up an organization and procedures with financial, human and technical resources based on continuous improvement principles. We want to involve all of our employees, corporate partners, and service providers in this prevention approach. We work to ensure that everyone takes safety into full

consideration when making decisions and adopts exemplary, responsible behavior on a daily basis.

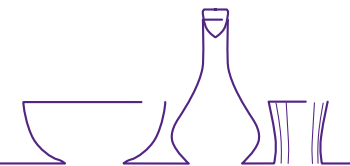
To embed this safety culture, all of the Group's managers have been trained in safety awareness and responsibility. In-house support has been introduced, based on core safety concepts. This is how the Golden Rules were established. They

set out the basic rules that each employee must know and apply, and aim to improve prevention by encouraging everyone to take action as soon as any deviation is noticed and to stop work if the risk is not under control. They stem from situations we have encountered in our units.

These Golden Rules have two aspects: they are binding for everyone in the company, for service providers and outside companies, but they can also be invoked to justify refusing to operate in a dangerous situation.

Lastly, these rules are explicitly stated in the company's internal documents. They are intended to be included in the training processes of all those involved, including employees of external companies.

We aim to develop a shared perception of risk and thereby contribute to developing individual and collective responsibility. Employee commitment is essential, which is why our awareness-raising and training programs take into account various behavioral, managerial and technical aspects.



General safety training, available in French, English and Chinese, is provided to all new Arc employees. This enables them to understand the safety culture and requirements. All employees also have access to more comprehensive local training.

Our commitment to safety is accompanied by routines at all managerial levels. These make it possible to strengthen manager and team commitment, identify risks, and apply a progressive approach as well as maintaining constant communication on safety issues. A "safety briefing" at the beginning of each meeting has been introduced at Arc France, as well as "safety talks" at other Group sites, with the operational teams.

All managers in the Group's Operations and Engineering departments are also invited to take part in specific safety "Gemba Walks" on a regular basis. The "Gemba Walk" is an approach based on going to workshops to identify good practices and safety risks, talking with operators to find the root causes of malfunctions and proposing appropriate solutions.

Moreover, our entity in charge of Research & Development, AEG R&D, has obtained ISO 45001 certification, thereby joining the AGC site.



## Training and support

With nearly 200 years of experience behind them, Arc's employees have valuable know-how that it is essential to maintain and develop.

This is why training our employees throughout their careers and passing on knowledge through apprenticeships has always been part of Arc's DNA.

This year, this could take place in many ways with:

- 112,821 hours of training completed despite the poor economic climate.
- A wide-ranging work-study scheme so that apprenticeship supervisors can pass on their knowledge and passion for glass to their students and enable them to better grasp the specific characteristics of the glass material.



**Daniel VASSEUR**

(Training, recruitment and apprenticeship manager)

*"There are many retirements. In the 1980s, we were recruiting almost one person a day, so now almost one person a day is retiring. Knowledge needs to be passed on because in the glass industry, experience is acquired over time and it takes a while to become efficient and autonomous when operating our industrial tools. And when hiring, we rely on degrees from the world of education and academia, but often we will add a 'glass tint' so that they learn and master this material and how it evolves during the production process."*



[Interview - Glass activities \(video in French\)](#)





The extreme weather events that occurred around the globe in 2022 and the publication of the 6th IPCC<sup>1</sup> assessment report remind us how important it is for an industrial company to make its staff aware of the impacts of climate change and how to mitigate it and adapt.

Arc has taken numerous actions at Group level and in each of its entities, such as:

- Raising awareness within Arc France, among the sales and design teams and among work/study apprentices during their time on site, on the importance of taking a "life cycle" approach.
- Between 2022 and 2023, no less than 7 digital training modules have been or will be devised internally to instill a sustainable development culture within Arc.
- Setting up commitment initiatives for employees to encourage them to reduce their own impacts. Arc France has encouraged its employees to carpool. Arc North America is developing cleaning initiatives and AGC has installed electric charging stations to allow employees to recharge their electric bikes.

**Ariane COLOMAR**  
(Continuous Improvement Project Manager)

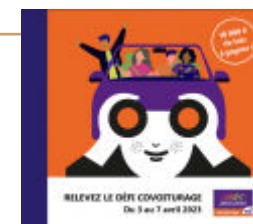


*"Although many employees were already car-sharing, the Pass Pass application makes it easier to do so and I personally find that it meets all my travel needs while giving me a chance to meet other staff. It saves me about € 100 a week in fuel, which I can spend on activities and outings with my kids at weekends. I really enjoy travelling with my colleagues. It's a great way to chat informally between different departments, learn from their experiences and find new solutions. Personally, I am pleased to be reducing my ecological footprint by carpooling. I am delighted that this has been set up!"*

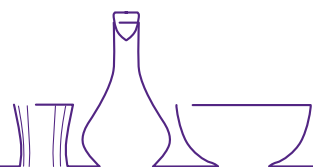
**+550**  
employees  
trained in CSR  
in three modules

**7**

Scheduled CSR training  
modules



<sup>1</sup> IPCC = Intergovernmental Panel on Climate Change





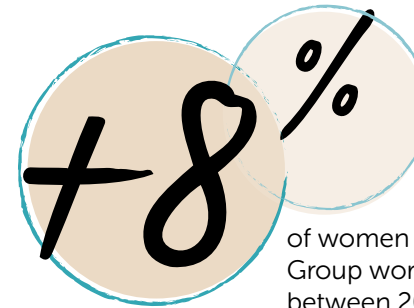
## Promoting diversity

Increasing the number of women in our industrial trades, which have historically been very male-dominated, is a challenge within the Group.

The share of women in the workforce increased by around 8% and even by over 12.5% in the production workforce between 2019 and 2022. This change is particularly noticeable at Arc France. Over 900 women have chosen to work in the industry. Although there are more women in technical and managerial positions, they are also actively involved in production, maintenance, logistics and R&D.

The promotion of diversity and equality in the workplace at the French site is especially supported by a volunteer group created in 2017: the Verr'Elles network.

This association leads initiatives on diversity and gender equality in the company and promotes the value of industrial jobs to young women, particularly in the region's high schools and colleges. They forge links with other networks in the region to discuss the issues encountered within their companies and to share best practices. They are committed to supporting young women as part of the Capital Filles program (which pairs female mentors from the professional world with female students in their final year of high school to help them make career choices). Through work-study programs or internal promotions, women



are now becoming industrial line operators or maintenance technicians, for example.



of women in the  
Group workforce  
between 2019  
and 2022

**Lindsey DECUPPER**  
(Industrial Equipment Operator)

*"When I heard that Arc was hiring, I applied and was taken on as a temp in packaging. I then took the glassmaking machine operator qualification, which enabled me to be hired on a fixed-term contract as an industrial equipment operator, and then on a permanent contract."*



## Contributing to the vitality of our hinterlands

Since its inception, the Group has always sought to invest in the regions in which it operates. 2022 was no exception, as the company engaged in a number of partnerships selected by each of the entities.

As such, Arc Glass China has decided to support the Red Cross by donating the equivalent of €15,000 worth of plates to retirement homes.

Arc North America offered more than 40 students from Cumberland County Tec's engineering program a tour of the plant and a presentation of the trades thanks to the sharing of experiences by several employees.

### Student feedback

*"I found the way in which people of all backgrounds work together to create a product particularly interesting."*

*"Visiting a place like this has been the most remarkable experience of my engineering career so far."*

ANA is also involved with the local YMCA, which seeks to strengthen the community by empowering youth, improving the health and well-being of people of all ages, and inspiring action within and across communities.

This helped 73 families in need during the holiday season by collecting donations of food, clothing, household items, etc. from staff members.

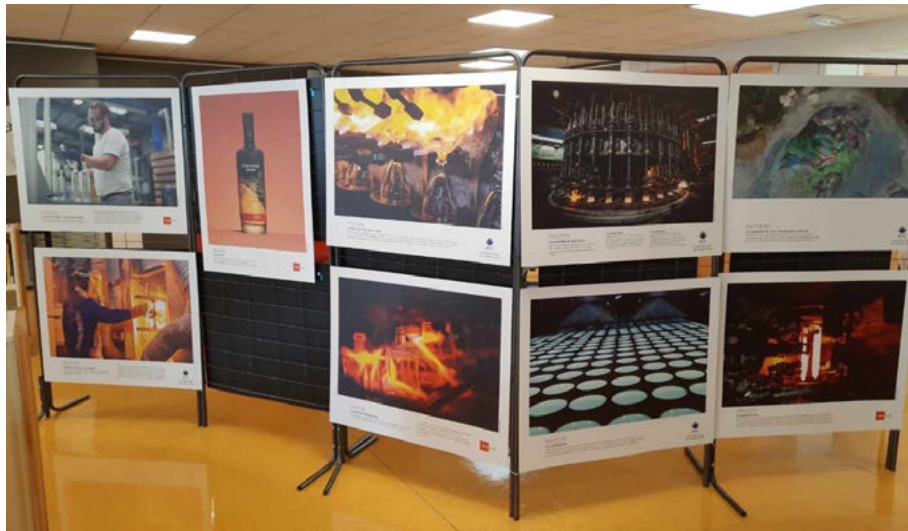
Arc France also sought to partner with events promoting culture, social ties and ecology in the region.

This took the form of partnerships supporting the Canoe Polo World Championships that took place in Saint-Omer, the showcasing of Audo Tri, the promotion of a local outreach grocery store, and the construction of a "mattauphone" instrument by a high school through glass donations.



2022 was declared the International Year of Glass by the UN, and Arc, like other glassmakers, joined the Glass Federation to promote the material.

As part of this event, the region where Arc France is located, the Communauté d'Agglomération du Pays de Saint-Omer, organized a photo exhibition on the themes of industry, materials and glass trades in connection with Arc France and Saverglass.



**Christophe BENON**  
(Head of R&D)

*"As part of the International Year of Glass (IYOG2022), I was given the opportunity to take part in the "Parlons Verre" documentary series. A working group made up of glass industry representatives was set up by the Fédération des Industries du Verre and the Fédération du Cristal et du Verre. Over the year we produced several short videos aimed at the widest possible*

*audience. This gave us the opportunity to talk about our trades, our techniques, the many uses of this beautiful material, the passion that drives the men and women who make it, as well as our challenges and our aspirations.*

*One of the main ambitions, shared by all glassmakers, is to reduce our environmental impact. Although glass is a recyclable material, and the glass items we make at Arc are by their very nature designed for re-use, and although glass has advantages in replacing less virtuous materials, the industry is a major consumer of virgin resources and energy.*

*We still have a long way to go in reducing our footprint, and I hope this series has helped to convince people of the effort we are putting into it and the sincerity of our commitment."*



[The miracle of glass \(video in French\)](#)







Arc France once again joined the Terre de Verre association's "Operation Christmas Balls" project.

It was once again a success thanks to the passionate involvement of the company's and the association's glassblowers.

The local cardboard factory Gondardennes joined the project by producing the packaging for the Christmas ornaments.

This event sold 245 Christmas ornaments and donated €3,500 to Unicef, the equivalent of: 17,500 vaccines against polio, 9,000 food bags, 80 first aid kits, 18 boxes "school in boxes" for 720 children.



## Involvement in the local economy

The Arc Group is involved in its regional economic fabric. As such, three of our entities (AF, ANA and AGC) are represented within the Chambers of Commerce and Industry.

Arc France is involved in the regional strategic committee and participates in the European Meetings on Decarbonation and Territory.

In terms of integrating into the local entrepreneurial scene, we would also mention Arc's collaboration with EuraMaterials, of which Arc has been a member since the outset. EuraMaterials is an industrial hub for the materials processing industry, based in Tourcoing, and has the "Pôle de Compétitivité" label.

**Christophe BENON**  
(Head of R&D)



*"As well as the company's administrator role, this body is regularly called upon as part of calls for projects, to support or guarantee the technical aspects of funding applications, but also to forge links with potential partners, with EuraMaterials acting as a network. It was through this channel that we started a partnership with the Béthune Institute of Technology in late 2022 to develop biosourced resins for decorative products. This project is called "BioBaR" and it won the STIMuE1 prize from the Hauts-de-France Region."*

	Reference year		Total 2019	Total 2020	Total 2021	Total 2022
<b>Tonnes produced</b>	<b>463,572</b>	<b>2019</b>	<b>463,572</b>	<b>394,128</b>	<b>436,853</b>	<b>387,105</b>
<b>Sales (€ bn)</b>	<b>€ 0.811</b>	<b>2019</b>	<b>€ 0.811</b>	<b>€ 0.641</b>	<b>€ 0.741</b>	<b>€ 0.899</b>
<b>Total headcount</b>	<b>8,159</b>	<b>2019</b>	<b>8,159</b>	<b>8,142</b>	<b>7,789</b>	<b>7,601</b>
o/w permanent contract (%)	<b>94%</b>	<b>2019</b>	<b>94%</b>	<b>90%</b>	<b>94%</b>	<b>95%</b>
o/w temp (%)	<b>6%</b>	<b>2019</b>	<b>6%</b>	<b>10%</b>	<b>6%</b>	<b>5%</b>
<b>White collar employees</b>	<b>1,795</b>	<b>2019</b>	<b>1,795</b>	<b>1,700</b>	<b>1,655</b>	<b>1,481</b>
o/w men (%)	<b>76.4%</b>	<b>2019</b>	<b>76.4%</b>	<b>76.3%</b>	<b>73.6%</b>	<b>64.5%</b>
o/w women (%)	<b>23.6%</b>	<b>2019</b>	<b>23.6%</b>	<b>24.7%</b>	<b>26.4%</b>	<b>35.5%</b>
<b>Blue collar employees</b>	<b>6,364</b>	<b>2019</b>	<b>6,364</b>	<b>6,442</b>	<b>6,034</b>	<b>6,119</b>
o/w men (%)	<b>85.0%</b>	<b>2019</b>	<b>85.0%</b>	<b>82.4%</b>	<b>85.8%</b>	<b>83.97%</b>
o/w women (%)	<b>15.0%</b>	<b>2019</b>	<b>15.0%</b>	<b>17.6%</b>	<b>14.2%</b>	<b>16.03%</b>
<b>Training hours (h)</b>	<b>130,806</b>	<b>2019</b>	<b>130,806</b>	<b>106,993</b>	<b>151,339</b>	<b>112,821</b>
<b>Training hours per employee (h/employee)</b>	<b>16.42</b>	<b>2019</b>	<b>16.42</b>	<b>13.92</b>	<b>20.34</b>	<b>14.84</b>
<b>Accident frequency rate</b>	<b>9.52</b>	<b>2019</b>	<b>9.52</b>	<b>9.46</b>	<b>13.82</b>	<b>13.38</b>
<b>Accident severity rate</b>	<b>0.41</b>	<b>2019</b>	<b>0.41</b>	<b>0.54</b>	<b>0.59</b>	<b>0.78</b>
<b>Fatalities</b>	<b>0</b>	<b>2019</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>





	Reference year		Total 2019	Total 2020	Total 2021	Total 2022
<b>Tonnes of waste generated (excluding cullet)</b>	17,123	2019	17,123	13,882	18,313	13,992
o/w recycled internally	0	2019	0	0	0	0
o/w recycled externally	14,557	2019	14,557	10,646	11,605	8,025
o/w landfilled	2,568	2019	2,568	3,088	6,708	5,931
% of waste recycled (excluding cullet)	85%	2019	85%	77%	63%	57%
Kilo of waste generated (excluding cullet) / tonne produced	37	2019	37	35	42	36
<b>Tones of cullet generated</b>	191,669	2019	191,669	174,843	208,839	180,440
o/w recycled internally	177,425	2019	177,425	171,580	197,458	160,100
o/w recycled externally	12,639	2019	12,639	11,874	14,993	12,761
o/w not-recycled	5,336	2019	5,336	2,825	2,661	2,890
<b>Generated cullet recycled (%)</b>	99%	2019	99%	100%	100%	96%
<b>Tonnes CO<sub>2</sub> (scope 1)</b>	431,022	2019	431,022	396,839	419,978	376,617
<b>Tonne CO<sub>2</sub>/tonne produced</b>	0.93	2019	0.93	1.01	0.96	0.97
<b>Water consumption (m<sup>3</sup>)</b>	2,744,137	2019	2,744,137	2,349,384	2,496,512	2,412,946
of which surface freshwater (m <sup>3</sup> )	1,172,777	2019	1,172,777	1,122,741	1,179,065	1,060,575
of which fresh groundwater (m <sup>3</sup> )	547,428	2019	547,428	487,831	461,039	391,575
of which piped water (industrial - non-potable m <sup>3</sup> )	338,026	2019	338,026	277,333	302,518	326,027
of which drinking water (m <sup>3</sup> )	482,999	2019	482,999	461,479	553,890	635,192
<b>Water consumption/tonne produced (m<sup>3</sup>/t)</b>	5.92	2019	5.92	5.96	5.71	6.23



	Reference year		Total 2019	Total 2020	Total 2021	Total 2022
<b>Total energy consumption (MWh)</b>	2,471,734	2019	2,471,734	2,288,061	2,402,986	2,075,238
o/w gas (MWh PCI)	1,907,885	2019	1,907,885	1,752,097	1,849,580	1,656,265
of which electricity (MWh)	563,849	2019	563,849	535,964	553,405	518,860
<b>Renewable energy generation (MWh)</b>	0	2019	0	0	761	1,854
<b>Renewable energy consumption (MWh)</b>	119,616	2019	119,616	123,292	122,185	91,730
<b>Renewable energy purchased (MWh)</b>	56,940	2019	56,940	57,096	56,940	11,680
<b>Energy consumption (MWh) / tonne produced</b>	5.33	2019	5.33	5.81	5.50	5.36



Arc has supported the Global Compact since 2003

Arc was quick to understand the importance of sustainable development and was one of the first French companies to sign the United Nations Global Compact in 2003. The Group's values were and remain similar to those of the Global Compact's principles. As such, the company's employees fully understood and integrated the Group's membership.

In the following years, we started to identify and implement improvements and to report on them in a first sustainable development report in 2005.

The 10 principles of the Global Compact are universal and apply to all our businesses and sites. The United Nations Global Compact is recognized around the world and by all our customers, for whom it is a guarantee of good social and environmental practices.

These ten principles are illustrated through the different initiatives presented in this report. For ease of reading, the table below provides a link between good practice and the Global Compact principles.

**WE SUPPORT**



Categories	Principles	Policies and good practices	References
Human rights	1. Businesses are encouraged to promote and respect the protection of international human rights law	<ul style="list-style-type: none"> <li>• Internal regulations and HR policy</li> <li>• Code of Ethics</li> <li>• Supplier Code of Conduct</li> </ul>	Internal documents; Pages 10 to 11
	2. Ensure no complicity in human rights abuses		
International Labour Standard	3. Companies are urged to respect freedom of association and recognise the right to collective bargaining	• Internal regulations and HR policy	Internal Documents
	4. Help to eradicate all forms of forced or compulsory labour	<ul style="list-style-type: none"> <li>• Code of Ethics</li> <li>• Supplier Code of Conduct</li> </ul>	Internal documents; Pages 10 to 11
	5. Help to effectively abolish child labour	<ul style="list-style-type: none"> <li>• HR Policy</li> <li>• Code of Ethics</li> <li>• Supplier Code of Conduct</li> </ul>	Internal documents; Pages 10 to 11
	6. Help to eliminate discrimination in employment and occupation	<ul style="list-style-type: none"> <li>• Develop glassmaking talent</li> <li>• Promote diversity</li> <li>• Internal regulations and HR policy</li> <li>• Code of Ethics</li> </ul>	Internal documents; Pages 37 to 39; Pages 10 to 11
Environment	7. Companies are encouraged to take a precautionary approach to environmental issues	<ul style="list-style-type: none"> <li>• Comparative LCA and Eco-design</li> <li>• Reducing the impact of our supply chain</li> <li>• Innovating in our production process</li> <li>• Designing responsible packaging</li> <li>• Promoting re-use</li> </ul>	Pages 23 to 34
	8. Take initiatives to promote greater environmental responsibility		
	9. Promote the development and distribution of environmentally friendly technologies		
Anti corruption	10. Companies are urged to tackle corruption in all its forms, including extortion and bribery	<ul style="list-style-type: none"> <li>• Code of Ethics</li> <li>• Supplier Code of Conduct</li> </ul>	Internal documents; Pages 10 to 11



## Methodological note

This sustainability report, published in May 2023, addresses Arc's need to communicate the 2022 (01.01.2022-31.12.2022) sustainability performance to all its stakeholders, with information and referencing data from prior years as well.

The report considers Arc's performance from an environmental and social perspective. Although Arc's reporting is voluntary, we have been committed to structured non-financial reporting for many years. This enables an increasingly comprehensive and transparent presentation to key stakeholders.

The reporting scope of the sustainable development report includes Arc Holdings S.A.S., headquartered in Arques, as well as its entities Arc France (France), Arc North America (US), Arc Middle-East (United Arab Emirates) and Arc Glass China (China).

This report endeavours to follow the GRI Sustainability Reporting Standards (GRI Standards) published in 2021 by the Global Reporting Initiative, which is the most widely used international benchmark for sustainability reporting.

The core principles of definition and quality provided by the GRI standard followed in this edition are stakeholder inclusion, sustainability context, materiality, completeness, accuracy, balance, clarity, comparability, reliability and current relevance.

The topics covered in this report are considered relevant because of the environmental and social impacts of Arc's business or because they are likely to influence the decisions of our stakeholders. These substantive themes were identified by conducting a materiality analysis using an organized and coordinated approach.

This report has not been audited by an independent third party.

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