



Disclosure of the Future

Our Commitment to Sustainability



Message from our President



Jochen Michalski

The world is experiencing very challenging times and our hearts go out to those who have contracted COVID, lost their loved ones, or have been affected by this pandemic. Our primary focus has always been the safety and wellbeing of our employees and partners.

In light of this focus and in response to the COVID pandemic, we implemented additional safety measures in our companies around the world to safeguard the health of our employees and the wellbeing of our partners. Among the measures implemented are a shift to home office in job functions where it was possible, sanitizing our plants more



frequently, staggering work shifts and lunch breaks, reinforcing social distancing in our plants and offices, and encouraging our employees to wear masks, as well as many more.

We are also taking extraordinary measures to assure that our supply chain is robust and that our clients around the world can rely on timely and uninterrupted supplies.

We take pride in having a diverse work force in our group of companies. Our employees represent a variety of ages, ethnicities, and religions and we embrace all those who share our company values.

As a global company we adhere to each country's legal requirements, environmental regulations, and labor laws and pride ourselves in providing our employees with a rewarding and challenging workplace while contributing to the communities in which we operate.

The passion, dedication, integrity, and entrepreneurship of the people that we employ around the globe are what truly makes us different and what have allowed us to grow into the company we are today. Over the last almost 40 years of we have grown, changed, and adapted as a company but we have always maintained a firm belief that it is our responsibility to contribute to our communities, both locally and at larger scales.

Innovation and sustainability are key drivers of our short-, medium- and long-term strategy to continuously grow and maintain the health of our business. We subscribe to the United Nations sustainability goals as our guiding principles.

We are fortunate to work with cork - an extraordinary raw material that is highly sustainable and carries with it a negative carbon footprint.

We take pride in preserving what nature has gifted us and during the transformation process ensure that our operations have the least possible impact. As an example, today we use nearly all by products generated during the manufacturing process including cork dust that is used to produce our own energy to power our plants.

On a macro level we are being challenged with many countries taking a step back from globalization and imposing tariffs on imported wines. The world is facing more political extremism which could lead to instability and a delay in planned investments by companies around the world.

In the short-term the COVID-19 pandemic is slowing down a large part of the world's economies, but we feel positive as to the future. The products we offer are generally in high demand and with our continued emphasis on innovation and sustainability as the driver of everything that we do, we expect continued healthy growth to our business over the next 5 years.

Jochen Michalski
President and Founder



Scope and Goal



Cork Supply aims at driving Strategic Management to the next level with a systematical analysis of information related to sustainability. This will ensure that every decision that is made has sustainability at its' core."

Cork Supply activities started in the early eighties not long before the Brundtland report was presented in 1987. Sustainability was on our horizon before this mark, and has since then been a bigger focus for the company.

The Brundtland Definition (1987)

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Figure 1: the definition of sustainable development – Brundtland report 1987



Cork Supply has grown and developed over the past 40 years with a firm mission that encompasses the social, environmental and economic pillars. It is in Cork Supply's vision that it is not enough to be livable, fair or achievable, but rather Sustainable (**Figure 2**).

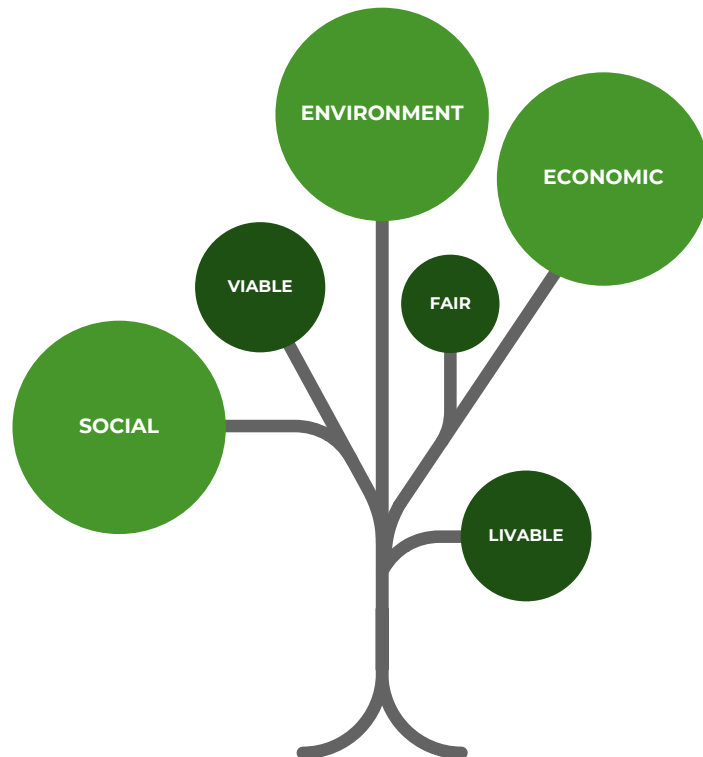


Figure 2: sustainability envelope

As the world's attention to sustainability grew, guidelines have been created for all types of activities, with suggested 'to-do lists', to help companies contribute to a more global Sustainable Development. This motion has been witnessed by the World and naturally followed by Cork Supply who decided to elaborate the first Sustainability report with the inspiration on the seventeen Sustainable Development Goals, that reflect the 2030 Sustainable Development Goals agenda, adopted by United Nations Member States in 2015.



Figure 3: the 17 Goals of Strategic Development (SDG) - the blueprint to achieve a better and more sustainable future for all (United Nations 2015)



This report represents a transparent snapshot of where Cork Supply is today. The purpose of elaborating it was to give the company a better understanding of what has been done, what should be done, and to help define the path forward. As an output of this process, the company will be able to better define an effective strategy and respective indicators.

01. Understanding the UN's SDGs

- What are the SDGs?
- Understanding Cork Supply Business Case 2019 Sustainability Report

02. Develop the Sustainability Strategy 20-30 based on the SDGs

- Map the value chain and identify impact areas
- Defining Priorities
- Select indicators and Collect data
- Create the Sustainability Team

03. Setting Goals

- Define scope of goals and Select KPI's
- Set Level of Ambition



04. Integrating Sustainability into Cork Supply's Strategic Priorities

- Anchoring Sustainability goals within the business
- Embed Sustainability across all functions
- Engage Partnerships

05. Monitoring & Reporting

- Effective Reporting and Communication
- Communication in SDG performance

Figure 4: Phases towards development the Sustainability Strategy



As a matter of fact, Cork Supply has been succeeding in following-up with balanced score-card strategic management, that has contributed to the growth and success of the Group. As such the current exercise aims at **driving the Strategic Management to the next level** enhancing the Responsibility of the Group Companies towards the three supportive pillars to Sustainability.

Beyond sharing with customers, suppliers, partners and official entities what Cork Supply is doing today, the exercise expressed in this report also hopes to contribute directly to the reputation of the cork industry as a whole. As a leader in the industry Cork Supply strives to connecting actions to innovative solutions to achieve social, economic, and ecological wellbeing.

To produce this report, the first stage involved a benchmark analysis and interviews with global external stakeholders.

This enabled the company to gather data for a better understanding on where to assist with ongoing programs, as well as on identifying differentiating and competitive advantage points.

This report was produced during the period of COVID restrictions, which has significantly affected its release on due time. However, it is the first demonstration that the relevance of the subject is far beyond any difficulties that may arise, confirming the commitment in building business for the future generations.







Table of Contents

Executive Summary	12
Context of Cork Supply's Activity	13
PART I - CORK SUPPLY'S CHARACTERIZATION	16
The Evolution	17
Our Mission and Values	18
Ethics & Integrity	18
Our Mission	18
Our Vision	19
Our Corporate Governance	20
Our People	22
Our Markets and Brand Portfolio	23
Our Operations - From Forest to Bottle	28
Management, Efficiency and Innovation	34
Certifications	40
PART II - MEASURING SUSTAINABILITY	42
Social Perspective	43
People / employees	44
Commitment whit Community	46
Environmental Perspective	48
The forest	51
LCA	53
Carbon Footprint of the corks and global environmental advantages	54
Circular Economy & Waste Management	58
Energy, Green House Gases and Water use	61
Economic Perspective	66
Sales	66
Operations and Main investments	66
PART III - Concluding notes	70
Works Cited	74



List of Figures

Figure 1: The definition of sustainable development – Brundtland report 1987	4
Figure 2: Sustainability envelope	5
Figure 3: The 17 Goals of Strategic Development (SDG) - the blueprint to achieve a better and more sustainable future for all (United Nations 2015)	5
Figure 4: Phases towards development the Sustainability Strategy	6
Figure 5: The players in a recycling process	15
Figure 6: Harv 81 Group	17
Figure 7: Cork Supply Evolution	17
Figure 8: Cork Supply vision	19
Figure 9: Cork Supply in the World	23
Figure 10: Diagram of product portfolio – environmental advantages of the cork closures	24
Figure 11: value propositions of the products	26
Figure 12: Brands portfolio	27
Figure 13: Production chain for natural and for technical corks	30
Figure 14: Cork stoppers finishing operations around the World	32
Figure 15: Talis operations in Portugal	33
Figure 16: Factory of Future Event	34
Figure 17: LEAN Thinking, Digitalization and Sustainability Strategy	35
Figure 18: Photo of the laboratories	35
Figure 19: DS100 operation	37
Figure 20: Value proposition of DS100 in detail	38
Figure 21: The DS100+ platform in 2018	39
Figure 22: The technologies that integrate the INNOCORK Circuit TM	39
Figure 23: Certification schemes in place	40
Figure 24: 2020 highlights related to employees' equity	44
Figure 25: Subjects of training during 2020	45



Figure 26: Environmental performance breakthroughs - measuring sustainability and environmental impact across the years_____ 50

Figure 27: Life Cycle Assessments calculate environmental impact of a product/package from sourcing – adapted from GreenBlue® _____ 53

Figure 28: Balance of Carbon Footprint of Natural Corks and Micro agglomerated Corks produced at Cork Supply (Sousa Amorim 2018) _____ 54

Figure 29: Representation of the methodology for the comparative study of end-of-life options for corks _____ 56

Figure 30: Analysis of alternative means for end of life of corks _____ 58

Figure 31: Cork materials breakdown - efficient use of all cork by-products _____ 59

Figure 32: Production of solid waste during 2020_____ 59

Figure 33: Yearly waste generation in each Portugal site_____ 60

Figure 34: Main streams for packaging selection having in mind alignment to EU Strategies towards plastic use_____ 61

Figure 35: Total energy consumption in Portugal at Cork Supply, GJ_____ 62

Figure 36: Energy mix usage 2018-2020_____ 62

Figure 37: Energy Intensity in Portugal - GJ/Thousands of euros_____ 63

Figure 38: Breakdown of CO₂eq emissions per source _____ 64

Figure 39: Sales growth Harv81 Group _____ 66

Figure 40: Innovation strategic path towards ‘The Perfect Cork’ _____ 68

List of Tables

Table 1: Analysis of incidents 2018-2020 _____ 46

Table 2: Graduation training programs facilitated by Cork Supply _____ 47

Table 3: Carbon Intensity evolution at the Technical Cork Unit in Portugal _____ 65



Executive Summary

“For Cork Supply, sustainability is at the core of who we are and how we do business.”

Cork Supply today is synonymous with success in the global cork industry due to the alignment of the company mission, vision, values and responsible business model with Sustainable Development Goals and stakeholders interests. For this, Cork Supply has been working together with its stakeholders, investing in Research, Development and Innovation, fostering a culture of social and environmental responsibility to enhance its impact on society.

Cork Supply publishes this Sustainability Report for the first time to share its practices and achievements with all internal and external stakeholders. Consequently, this report will highlight the contribution towards the SDGs, with special emphasis on: Gender Equality (Goal 5), Affordable and Clean Energy (Goal 7), Decent work and economic growth (Goal 8), Industry, Innovation and Infrastructure (Goal 9), Responsible consumption and production (Goal 12) and climate action (Goal 13).

Cork Supply has a long-standing reputation in the wine industry for being an industry leader in Quality Control and R&D. Through constant investment in these areas, the company revolutionized industry practices by implementing rigorous and demanding production and control processes. It is, therefore, considered the first company to offer Taint Free Technical and Natural Stoppers. To highlight the company's commitment to quality, a Bottle Buy Back guarantee for DS100 natural corks was developed in 2011.

Cork Supply promotes inclusiveness in all practices of the organization all over the world and is committed to having diverse teams in every possible aspect (gender, age, race and culture), considering it as fundamental to the company success. Within the Social pillar of Sustainability, is strongly committed to improving the development of its employees, while also committed to developing opportunities for people in vulnerable conditions.

Within the Environmental pillar, Cork Supply has been focusing on Climate Change, Ecosystems and Biodiversity and Reduction of waste through investments in Circular Economy options.



Context of Cork Supply's Activity

Cork Supply produces and finishes cork stoppers for global wines and spirits. The statement appears to be an obvious one, but it is in fact crucial to acknowledge inherent features to cork that bring a substantial value to the sustainability management within Cork Supply activities.

The cork industry is amongst one of the most economically relevant activities in Portugal, exporting most of the products across the globe. As the second largest cork production operation in Portugal, employing around 370 people, and with 4 different operation units, we contribute significantly to this economy.

Portugal and Spain represent the vast majority of cork oak forests and corkwood production, accounting for about 80% of the worldwide corkwood accessible. The role of cork oak forests for nature conservation are well recognized in various aspects such as:

1. the support to biodiversity, preserving the habitat for many rare or endangered species;
2. the contribution to water retention and to avoiding soil erosion with sedimentation decrease;
3. the performance as Carbon Sink, for which it is estimated a capture of 3.2 to 14.7 tons of CO₂ per hectare per year (APCOR 2019);
4. the *montado* contributes to sink more than 73 ton of carbon dioxide per ton of corkwood produced (Dias 2016).

The importance behind this information stands on the fact that most industries in their sustainability exercises, seek to develop projects to account with offsets to their own activities regarding Carbon Footprint. Within the scope of Cork Supply's activity, the cork transformation process has a favourable impact and therefore no foreign offsetting programs are needed.



Cork oak forests also play economic advantages to the forestry growers not only by using the corkwood but also developing agriculture and tourism. Those on their side contribute to support the local communities with proper means of living. For example, the cork extraction activity is one of the best paid agriculture and silviculture labor in the world.



Economic Highlights



€120 million euros in 2020
(Harv 81 Group)



3 Categories of Products



10 Manufacturing Units



Commercial activity in 24 Countries



5 Patent Families & 7 Registered brands



Social Highlights



472 employees involved in its activities worldwide in 2020



31% of management positions are held by female employees.



10+ Nationalities worldwide



Supported 20 associations and non-profit organizations



Consistent collaboration with educational institutions to help train future professionals



Environmental Highlights



Natural stopper

-8.9 grams (g) of CO₂eq (carbon dioxide equivalent) per stopper



Technical stopper

-2.1 grams (g) of CO₂eq (carbon dioxide equivalent) per stopper



Energy Intensity by Cork Supply Portugal

0.53 GJ/ thousand euros





In this context the cork industry in which Cork Supply is included represents a solid partner favoring the preservation of cork forest landscapes with an economic as well as social contribution because cork is a vital source of rural employment that guarantees the survival of local communities. On the point of view of the raw material used, one should review that cork is 100% renewable, 100% reusable, 100% recyclable, 100% natural as well as 100% biodegradable (CEN 2015).

Regarding the end-of-life options for the used corks, this should be analyzed considering the understanding of the source of the raw materials as well as the intrinsic aspects and characteristics of the used corks. In fact, as for wood, cork may be perpetually recycled which means that the carbon trapped during the corkwood production cycle in the forest is circulating and not liberated while continuing recycling. However, recycling programs lack of efficient collection of materials to the industries capable of using them. It is also known that the quality of the collected materials depends highly on the consumer behavior and ability to route properly the solid material to be recycled.

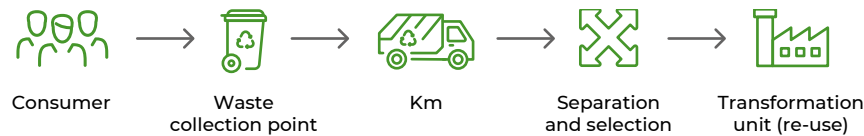


Figure 5: the players in a recycling process

Although cork stoppers may possibly be recycled this is not still a widespread practice due to the combination of these aspects that

potentially compromise the environmental burden of recycling activities. Moreover, cork is also an interesting source of energy because of its high calorific value (18.9 to 29.3 MJ/kg (Aroso, et al. 2017), (Pereira, et al. 2017)) and low moisture content (10 to 15 %). This fact justifies the interest of this biomass as a source of energy in furnaces for example for producing steam. For sustainability aspects it is then important to weigh the multiple factors in terms of environmental impact and avoided burdens (should these be environmental, economic, or social) as there is hardly a universal solution presenting the best performance in all situations.

Therefore, analysis of cork use advantages should take in consideration the diversity and combination of aspects involving complimentary yet sometimes apparently contradictory goals. Cork Supply has developed actions towards better understanding the benefits of alternative options with some of the conclusions included in the current report. The wine industry has been emphasizing on sustainable practices from viticulture to packaging, through vinification, transporting and storage. It was reported that packaging of wine represents most of the environmental burden, as such, an opportunity shows as cork stoppers suppliers by understanding and communicate the environmental benefits of cork. Likewise, Wineries invest more and more in global carbon capture projects to offset their emissions, some driving down their greenhouse gas emissions without using any offsets. Cork Supply is aware of this fantastic heritage and assumes therefore the responsibility in giving back at least part of the benefit it earns from this natural source of the materials it utilizes. Thus, the framework of Cork Supply operations drives the efforts towards enhancing the positive business / product character, before elaborating on broader aspects of the business.



Part I

Cork Supply's Characterization



The Evolution

Harv 81 Group

Up until 2020, our group was known as the Cork Supply Group. However, a brand audit process revealed a desire to clarify, integrate and differentiate the group's global portfolio. It was found that a new name for the group was important to better prepare for the future and reaffirm its position and ambition in the market. A new name, not associated to cork, would also help give each company a clear recognition of what each company operates as.

Harv 81 Group is now the holding company and is held by the same shareholders as Cork Supply, Tonnellerie Ô and Studio Labels. All companies are driven by the same mission and values, and are specialists in closures, oak and labels.

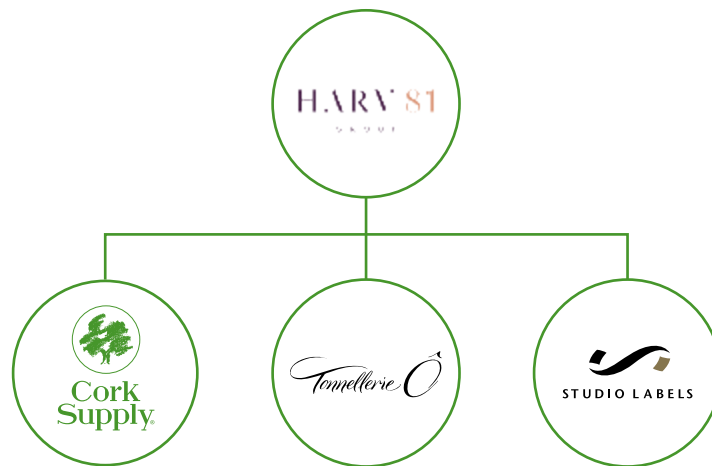


Figure 6: Harv 81 Group

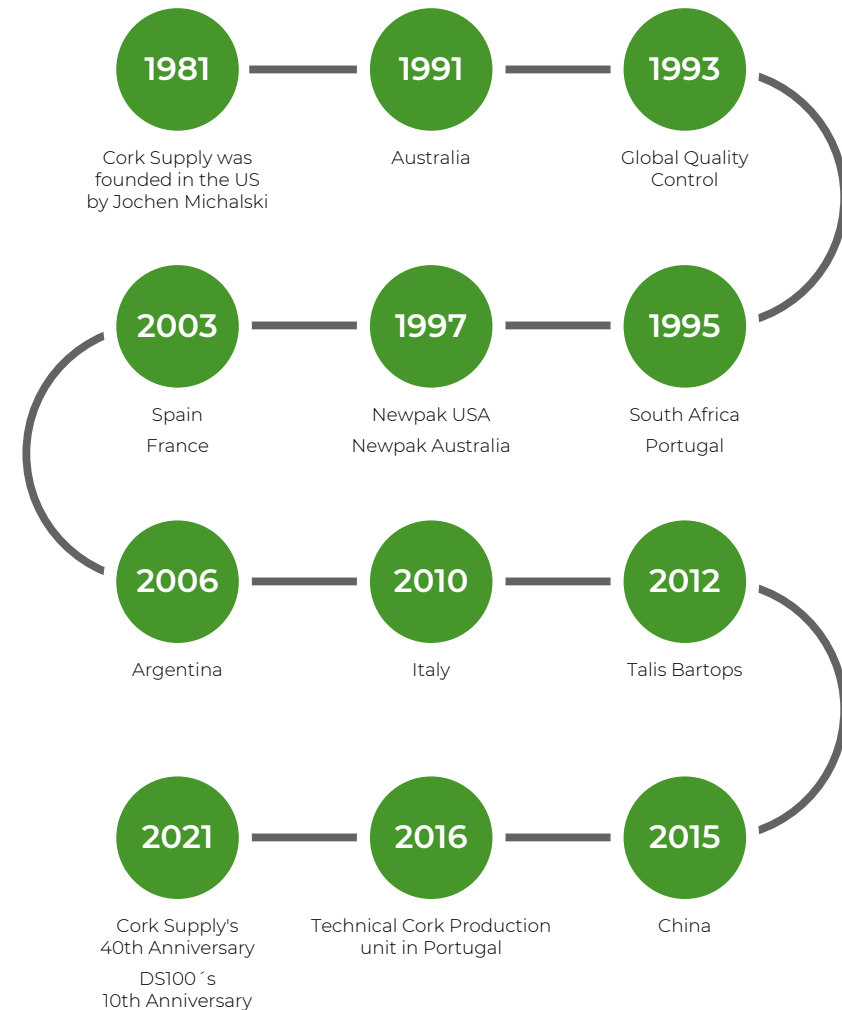


Figure 7: Cork Supply Evolution



Our Mission and Values

Cork Supply aims to provide a quality service to its customers, seeking a leadership position and maintaining an active stance and contribution towards the economic and social development of the country and communities where it operates.

Ethics & Integrity

The Company's ethics, vision and mission apply to every business unit across the globe. Together they highlight the main vectors of performance and behavior and, among other positive aspects, reinforce Cork Supply's institutional image, transparency and enhance employees' commitment towards the company's goals. These tools are part of our continuous improvement approach, being part of the solution for potential conflicts and internal problems.

These also highlight the importance of environmental topics to Cork Supply and its articulation with society. This includes the following matters:

- Values, Mission and Vision.
- Ethical principles, general principles of justice and equity.
- Sustainability Management.
- Standards for behavior in the company and its employees.

Our Mission

As global industry leaders, we focus on long-term business success through the production and distribution of superior wine related products and services, without ever losing sight of our goals to:

- Develop long-term **partnerships** with our customers and suppliers.
- Consistently meet our customers' expectations with our **service and product quality**.
- Work with **honesty, integrity and respect** at all times.
- Continuously improve our best practices to maximize **environmental, social and economic sustainability**.
- Embrace change and encourage **innovation**.
- Offer our employees a challenging and rewarding workplace that inspires **loyalty and success**.
- Seek **excellence** in everything we do.
- Respect the **environment and communities** within which we operate.
- Maximize **shareholder return**.



Our Vision

Cork Supply is committed to being the wine industry's most trusted and relied-upon partner, providing best-in-class products, exceptional expertise and a passion for quality and Customer satisfaction



R&D as a competitive advantage



Collaborative efforts with our clients



Implementation of Lean philosophy



Add value to all raw materials



Automation of operations and logistics in a socially responsible way

Figure 8: Cork Supply's Vision and Strategy





Our Corporate Governance

“Cork Supply recently enhanced the importance of sustainability and assigned clear responsibilities across the entire company.”

Recently, Cork Supply decided to further commit to sustainability and found necessary to define, assign and communicate clear responsibilities throughout the company structure.

Cork Supply established in 2020, a Sustainability Team, whose objective is to support Cork Supply management in the definition and monitoring of the sustainability strategy. This Group, led by the Director of Sustainability, is responsible for:

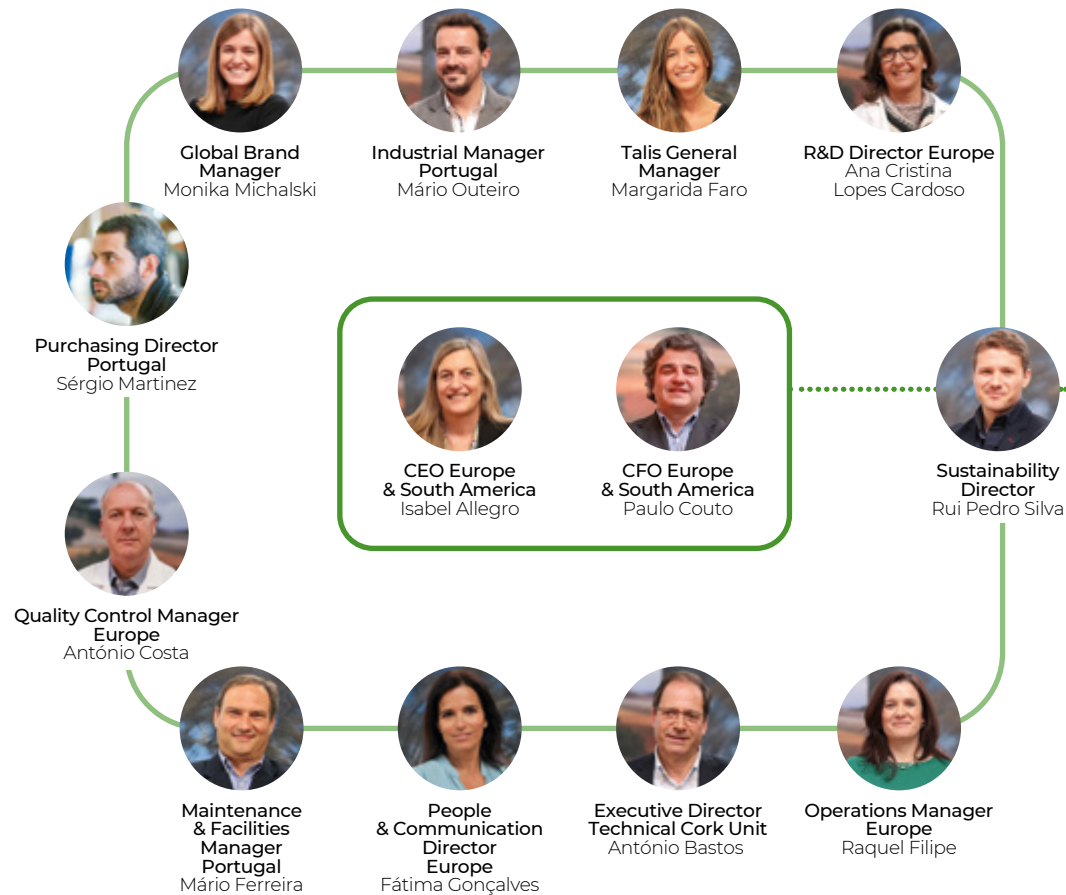
- 1.** Participate in the development of the *Sustainability strategy 20-30*; Regularly monitor the degree of compliance with the sustainability objectives set;
- 2.** Ensuring the alignment of *Sustainability 20-30* with the sustainable development goals set out in the United Nations agenda;
- 3.** Identify opportunities and propose new challenges for sustainable development.

The core Sustainability Team is based in Portugal and composed of 12 members and may, additionally, invite other elements of the Team to participate in meetings, internal or external to Cork Supply. The Team meets whenever necessary, ensuring at least one quarterly meeting. The guidelines established by the core team are then relayed to the Global Task Force by the Sustainability Director. The members of the global task force then align with their respective regional teams internally, and implements the major initiatives, adapting them to better meet local needs.



Strategic Development Team (based in Portugal)

This team, in alignment with the President and Founder of Cork Supply, works on defining the general strategy and objectives for sustainability in Cork Supply. These guidelines are then shared with the other countries.



Global Task Force

This team then develops these global guidelines with their teams internally.





Our People



In December 2020, Cork Supply had 472 employees worldwide, a fairly stable number compared to the 464 employees in 2018, considering the business growth that was achieved. Employees in management positions also grew from 28 in 2018 to 34 by 2020.

The company recognizes the importance of diversity and gender equality, promotes the inclusion and non-discrimination of all employees, regardless of gender, age, race, religion, disability and / or individual sexual orientation, guaranteeing all workers equal conditions and opportunities.

Cork Supply promotes gender equality for every function, including an equal pay policy for equal work. Cork Supply also integrates people with special needs through collaboration with social institutions contracting collaborators for specific functions.

The integration in the organization and conditions that allow employees to perform their respective functions in the best way, are seen with much care. A comprehensive procedure was implemented for welcoming any new collaborator. It starts with defining and disclosing tailor-made training programs about the Company, products and processes as well as direct contact with teams and supervisors. Then a follow-up by People & Communication team allows to check for adequate preparation of the trainee to embrace the new challenges.



Our Markets and Brand Portfolio

Cork Supply is a leading company in the cork sector, manufacturer of natural and technical cork stoppers for the wine and spirits industry. Since its beginning in the United States of America, Cork Supply quickly expanded globally with presence in the main wine regions of the world.



DISTRIBUTORS:

Austria	Czech Republic	Hungary	New Zealand	Switzerland
Belgium	England	Israel	Romania	Uruguay
Croatia	Germany	Mexico	Russia	

Figure 9: Cork Supply in the World

In 2020 the Harv 81 Group reached 120 million euros turnover. In the last decade the company has more than doubled sales. This growth results from new products categories introduced in the portfolio together with growing sales of existing products. The complete and dynamic portfolio offering all cork closures' options to customers, is the outcome of the vertical integration of Cork Supply, controlling the raw material from the source and adding value across the whole manufacturing chain.

In fact, the raw material breakdown demonstrates the perspective of circular economy using every piece of cork wood. Any by-product is valued in a separate stream or production chain which ultimately generates no unused materials. This breakdown is explored with more detail on the section relating to Circular Economy and Waste Management.

Cork Supply presents closures options for still wines, sparkling wines and spirits and fortified wines.



Products for Still Wines



Figure 10: diagram of product portfolio – environmental advantages of the cork closures



Products for Sparkling Wines



Products for Spirits (cork shank - capsule not considered)





Within the complete portfolio, the premium solutions for for wines and spirits as illustrated below have a special spotlight.



DS100 Line

The DS100 line, "dry soak inspection" process is a unique promise offered by Cork Supply, which guarantees the inspection of all existing cork stoppers in the same batch, to remove corks with any sensory deviation, and offer a 100% stopper TCA taint-free.



VINC Line

Cork Supply is proud to contribute and raise quality standards in the technical stopper market. In VINC stoppers, non-detectable releasable TCA is guaranteed in each individual stopper. Includes: VINC, VINC + and VINC Cuvée.



Sparkling Wines

From a careful selection and verification of the main raw components, Cork Supply offers Champagne and Sparkling Wine stoppers with excellent quality and performance. Includes: CS Cuvée 0 + 2, CS Cuvée 0 + 1, CS Cuvée Micro and CS Cuvée Agglomerated.



TALIS Bartops

The TALIS line responds to a request long demanded by the market: a premium performance bartop for wines and spirits of choice, offering quality and service together with customized design.

Figure 11: value propositions of the products



The full list of products and specifications is available at <https://www.corksupply.pt/pt/produtos/> or through contacts with our sales teams. For more technical information about the Cork Supply stopper portfolio, please see the website.

Measuring the sustainability of products, does not always provide obvious outputs as there are many ways “sustainable concerns” can be applied. For example, in relation to the source of the materials, cork is made from renewable sources, or in relation to the value stream, either the Carbon Footprint may be used as indicator, or it may be appropriate to determine the waste generation and related management.

Whereas it is very clear that cork is **100% biodegradable, 100% reusable, 100% recyclable**, in the case of cork stoppers for wine, the incorporation of recycled materials is mostly not applicable due to food safety concerns. On the other hand, besides the renewable and natural source of cork as reported across this document, Cork Supply can use any piece of cork by-product preserving it within the economy wherever possible, thereby creating further value.

So, when it comes to talk about Sustainability of a product, the analysis should be done together with the goals both from the supplier as well as from the customer side, consciously avoiding greenwashing attitudes. More than ranking products by points of view, Cork Supply R&D and Sales teams encourage face-to-face debate to support on mindful and valuable choices of closures, towards the Sustainability Goals that tie Customer and Cork Supply angles.

Cork Supply owns and manages a **valuable collection of brands and trademarks**. This important intangible asset has been increasing reputation and status associated with the quality of the products, services and technologies it relates to.



Figure 12: Brands portfolio



Our Operations From Forest to Bottle

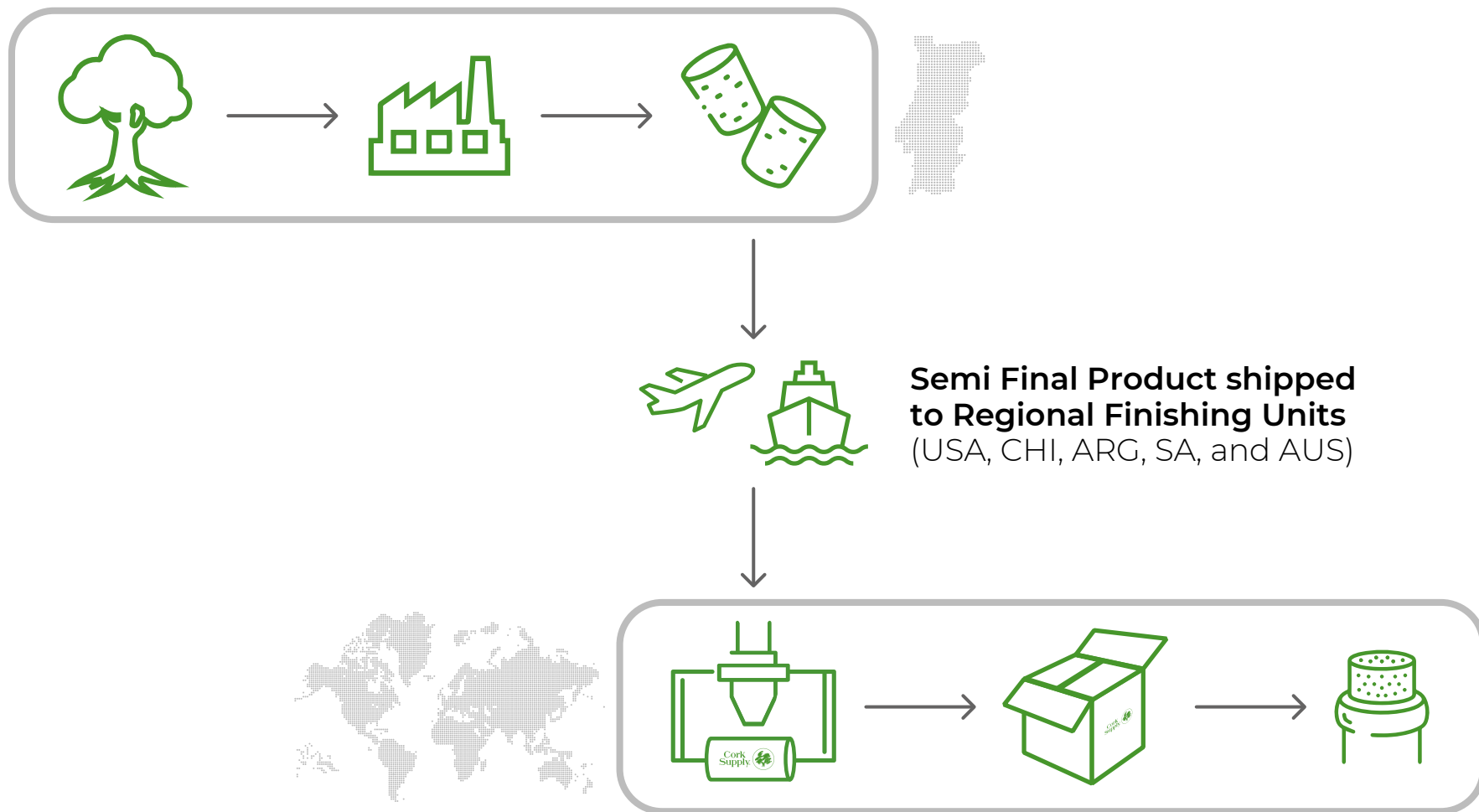
Cork Supply controls vertically integrated operations, from Forest to Bottle, to ensure that its cork closures are of the best quality. Our specialized team of forestry professionals in Portugal work with producers from the main cork oak Forest regions in both Portugal and Spain, implementing advanced forest management programs and selecting the best quality raw material for their corks. The cork preparation unit is in the South of Portugal, near the cork oak forests. The raw material that is purchased is stored here between 6 – 12 months. It is then prepared and shipped to the cork production units in the north of Portugal.

Cork Supply's natural and technical cork stoppers are produced in Portugal for all global markets. The semi-finished cork stoppers are then sent to the finishing units in Europe, North America, South America, Australia, South Africa and China. These regional finishing units have local production, quality control, sales, and customer service operations to better serve the expectations and specifications of the distinct markets.

Cork Supply has a long-standing reputation in the wine industry for being an industry leader in Quality Control (QC) and R&D. Through its constant investment in these areas, production and control processes have been optimized and matured, which revolutionized the way the industry operates. Quality Control processes encompass the entire product lifecycle, ensuring quality from Forest to Bottle.



Cork Production Operations in Portugal – From Forest to Bottle





Production chain for natural corks

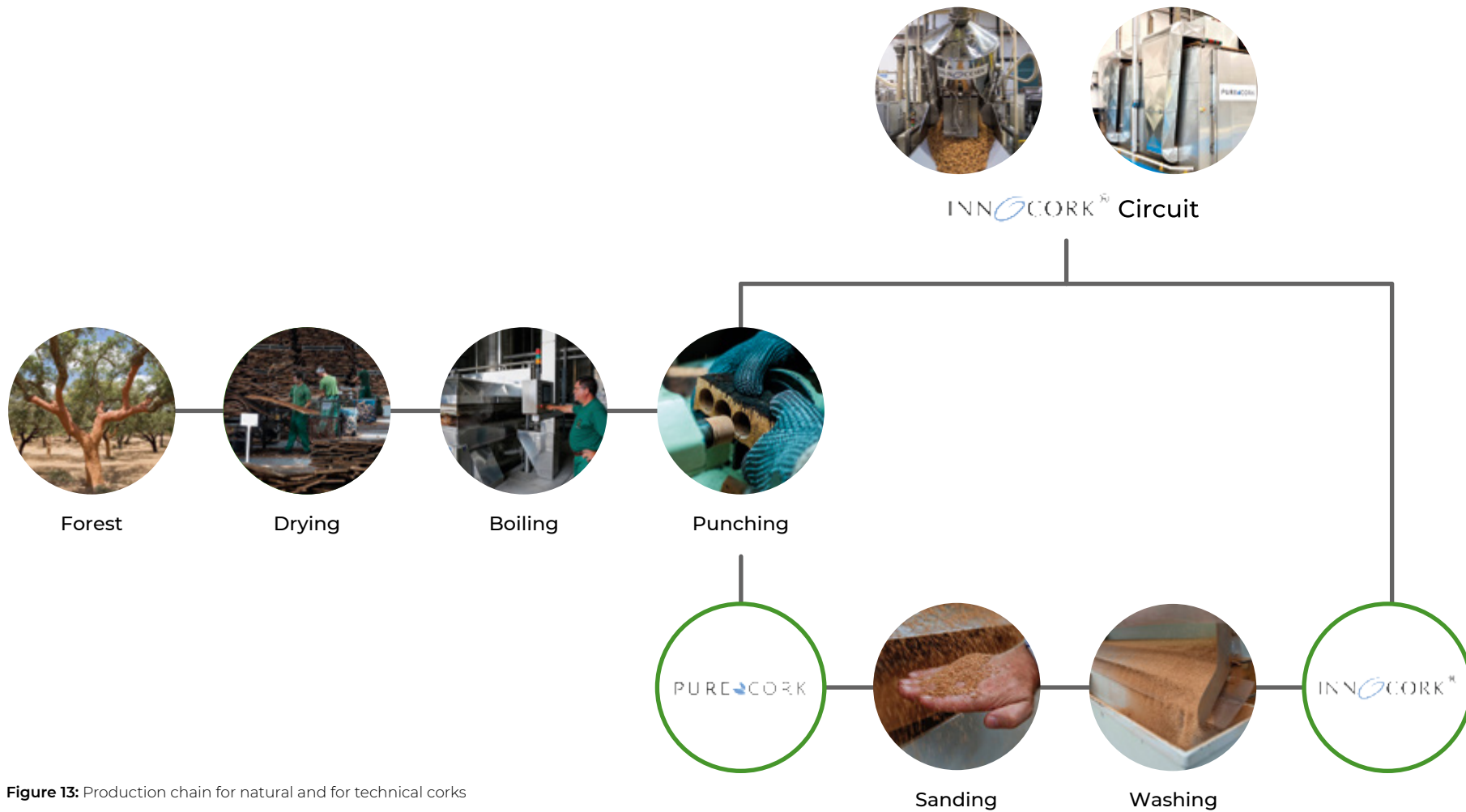


Figure 13: Production chain for natural and for technical corks



Production chain for technical corks

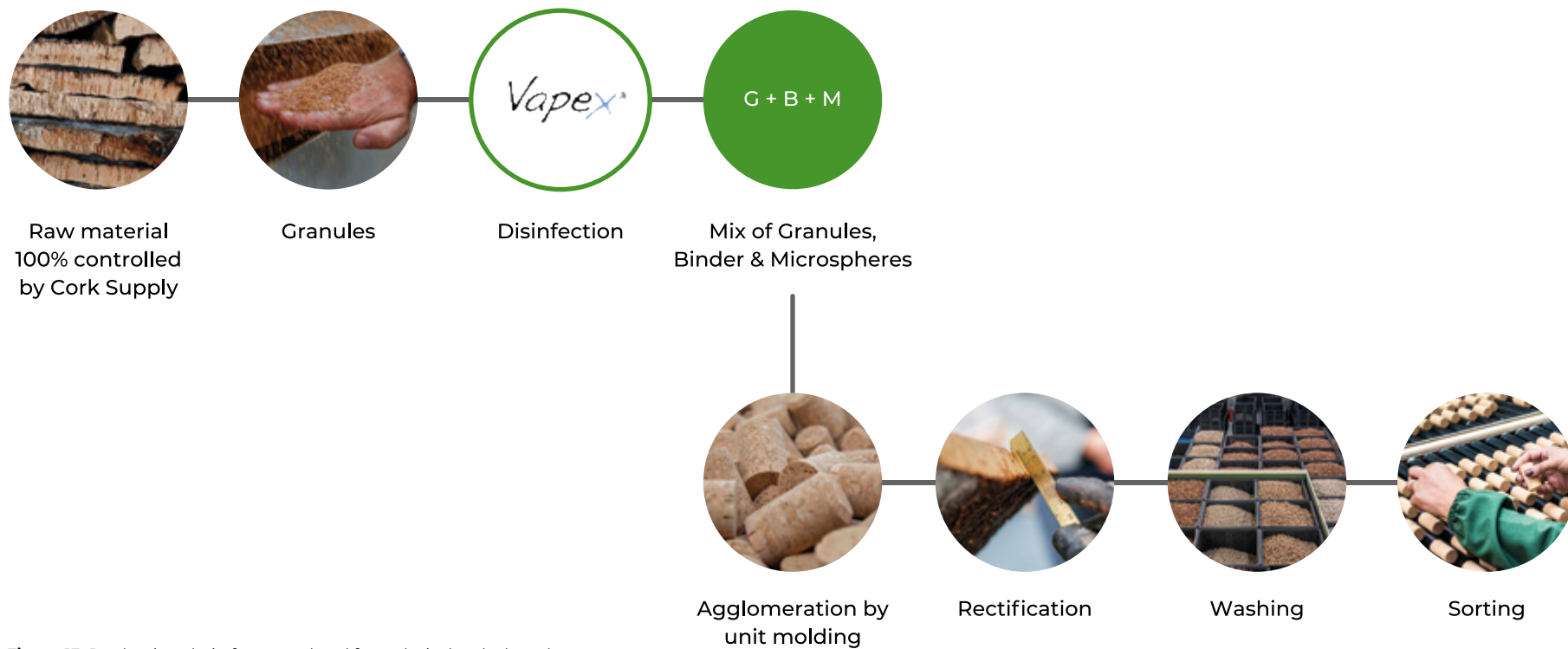


Figure 13: Production chain for natural and for technical corks (cont.)



Figure 14: Cork stoppers finishing operations around the World



Cork Supply invested in a dedicated division for bartop production, named Talis. The process starts with project development. The Talis team works with the customer to develop the final product, design, specification (size, color, finish, etc.).

The Talis bartop division uses natural and micro agglomerated corks produced by Cork Supply's respective production units. Specific surface treatments to the corks, defined according to the beverage, will be used to comply with customer specifications for color migration. The different capsules of different materials are provided by specialized suppliers. The assembly of the cork stoppers and the capsules is performed and controlled by a dedicated Talis production team.

All bartops are produced in our dedicated production unit in Portugal, and then sent directly to final customers globally.



Figure 15: Talis operations in Portugal



Management, Efficiency and Innovation

The Balanced Scorecard (BSC) is a business strategy tool used by Cork Supply. The BSC provides a view of financial measures with other objectives and key performance indicators related to customers, internal business processes, and organizational capacity.

With the BSC approach Cork Supply identifies a strategic number of financial and non-financial objectives related to business priorities. The four areas of the organization - Financial, Customer, Internal Processes and Organizational Capacity – are involved in thinking about how objectives can be measured first and then what initiatives can be put in place to satisfy the objectives.

In an increasingly competitive business world, the organization benefits from creating a more productive and efficient workplace. This thought drove Cork Supply to embrace improvements in efficiency, reducing costs, enhancing safety, becoming more agile and flexible. This was started in 2012 with the Lean Journey. Today, the Sustainability Goals are being defined and contributing to driving management to the next responsible level.

“The LEAN KAIZEN Roadmap is the tool to increasing efficiency and gaining sustainability.”

At Cork Supply we understand that Operations management plays an important role in delivering positive results. In this point of view Cork Supply Started in 2012 a LEAN KAIZEN Roadmap towards Operational Excellence. This Long-term thinking philosophy is transforming the organization into a LEAN company focusing in the principles of respect for people and society, continuous improving and learning using a process focus improvement mindset.

One of the lean operation goals is to use fewer resources to generate the same result which aligns naturally with environmental efficiencies of processes and products. Reducing materials usage also leads to cost savings, thus addressing the economic sustainability dimension. Moreover, the continuous journey towards LEAN transformation encourages empowerment of all co-workers which boosts moral and talent, contributing to the social aspect of sustainability.

LEAN Thinking is about using the better and reliable technology available respecting people and processes. In this scope in 2018 Cork Supply started the digital transformation journey, creating an Industrial Technological Plan with the goal to integrate I4.0 (Industry 4.0) concept technologies into operations. The first Cork Supply Operations Summit focused on this theme and was entitled Factory of The Future.

The agenda of the Summit focused on analyzing the operations and creating a plan of investments to integrate I4.0 Technologies.



Figure 16: Factory of Future Event



Cork Supply believes that between lean and sustainability there is an interaction that contributes to increasing competitiveness and making processes more efficient. It also considers that lean represents the holistic vision of sustainability and streamlines processes in terms of costs, time, waste, and quality.



Figure 17: LEAN Thinking, Digitalization and Sustainability Strategy

“Cork Supply’s dedication to R&D and QC is visible since its founding. It is a central part of the company’s DNA.”

Every year 5% of the annual turnover at Cork Supply is invested back into R&D and QC. Together these two areas account for 18% of all Cork Supply employees.

Quality Control has been an essential pillar since the company's founding, with a strong specialization in analytical chemistry and sensory analysis. The expertise in these two areas is used within the principles of continuous improvement, and in monitoring materials

and suppliers with regards to 2,4,6-trichloroanisol and related compounds incidence. The same services have also been made available to customers. The teams assist wineries with the available analytical means to assure the quality of the wines or to help monitor bottling lines and corking performances. Within the criteria used to inspect production and cork materials are TCA levels, for which Cork Supply is equipped with analytical state-of-the-art instruments and required resources to be able to systematically inspect every lot. Over 5 million corks are taken as samples for destructive testing every year, generating an impressive 250 000+ Gas Chromatography analysis.



Figure 18: Photo of the laboratories



All incoming materials are assessed, and suppliers are evaluated according to the type of materials they provide. The evaluation criteria follow specific checklist and weighing factors depending on the category of products the supplier provides.

Cork Supply has a long-standing reputation in the wine industry for being an industry leader in Quality Control and R&D. Through its constant investment in these areas, it revolutionized the way the industry operates, opting for increasingly rigorous and demanding production and control processes.

Research and Development aims at contributing to Cork Supply's growth and has set the specific mission for this area as:

- Anticipating solutions and specifications to the Market;
- Forward thinking to open opportunities, even for new businesses currently not in the scope of the corporate activity;
- Consolidating knowledge and know-how on current products and processes and their specifications;
- Thinking out of the box, adopting new, sometimes disruptive, ideas to products and processes.

R&D is key to all business units and departments of the company. The R&D teams are focused on three major research streams, which are each dedicated to key aspects of Cork Supply activities and / or products, specifically:

1. TCA & sensory neutrality
2. Cork performance
3. New cork closures

The team also develops actions related to the research of new technologies, services, processes, or products. From this Cork Supply has developed five patent families, of which 3 are integrated within the Cork Supply operations. In a brief chronology, the following were the milestones achieved since the foundation:

1984 – Introduction of cork-by-cork sensory analysis.

1995 – Sensory analysis in production control.

2000 – Use of gas chromatography with SPME (Solid Phase Micro Extraction) for detection of releasable TCA during all phases of production.

2007 – INNOCORK

Cork Supply, together with *Instituto Superior Técnico*, developed a patented technology - INNOCORK - which significantly reduces potentially offensive off aromas, especially TCA. The INNOCORK extraction process was developed as a tool for further improvement of the sensory properties of the corks supplied by the Group.

INNOCORK was a genuinely unique concept when compared to other existing extraction technologies, as it balances the physical and chemical aspects relative to diffusion of gas through solids and the volatility of components, when under steam. Moreover, the principles of adsorption/desorption, adjustment of polarity between the cleaning agent and the component to be extracted were considered. These questions encouraged CORK SUPPLY to develop INNOCORK in the form of a modified steam distillation extraction process for the suppression of TCA using ethanol. This patented Process was recognized with a silver innovation award at SITEVI, in France, in December 2007.

Today, INNOCORK is not only a fundamental part of the standard production chain but has also set the base for the INNOCORK Circuit launched in 2020.



2011 – DS100

“First company to offer individually guaranteed TCA Taint Free Natural and Technical Corks.”

Cork Supply developed and validated the “dry soak” non destructive sensory methodology for screening corks presenting some sort of off aroma. The DS100 process was tuned to detect and remove natural cork stoppers with TCA at levels below the sensory threshold, from the supply chain. Since 2011 DS100 became a service to the customer, upon demand.



Figure 19: DS100 operation





During the DS100 screening, highly trained sensory specialists inspect 100% of the stoppers of the lot therefore permitting that only the sensory neutral corks are delivered, eliminating any cork in which an off-aroma is identified.

Cork Supply has seen an amazing interest through the increasing sales of DS100. From an initial 100 thousand corks in the launching year, we have now reached over 20 million corks sold during 2020. These numbers demonstrate the value and success of the DS100 process not only for the sustainability of the company but also for the value-added to the customer.



Scientific Facts



Sensory Experts



Process Control



Guarantee

Figure 20: value proposition of DS100 in detail

The DS100 process celebrates its 10th anniversary in 2021 where sales are expected to reach nearly 30 million corks.



2016 – DS100 +



Figure 21: the DS100+ platform in 2018

Over the years the industry has developed technology and knowledge about sensory performance of corks, especially the ones related to the occurrence of TCA.

Our engineers have committed to the development of new systems and technologies to detect volatile compounds at sensory threshold levels, in corks. This is achieved with non-destructive and non-invasive means, using the same principles as 'dry soak' sensory methodology to which the R&D team delivered improved accuracy and throughput with highly sensitive machines.

The resources to assure the intended specifications were developed with cooperation of world leading companies in analytical instrumentation and suppliers to the analytical industry. Cork Supply presented a faster and more automated version for screening for TCA that is called DS100+.

The patented DS100+ process received a citation award at VINITECH, in France, in September 2016.

2020 - INNOCORK Circuit



Figure 22: the technologies that integrate the INNOCORK Circuit™

Redefining quality once again and taking our natural corks to the next quality standard we have introduced PureCork, a second TCA and off-aroma extraction technology for natural corks. The InnoCork Circuit is thus composed of two technologies – PureCork and InnoCork – that are a part of the production process and allow us to ensure that all of natural corks are free of TCA and other off-aromas at no additional cost to customers. Each technology is located at a different critical control point within production to ensure maximum efficiency, control, and results.



Certifications

“Cork Supply works according to the highest industry standards, be it in Quality, Environment or Food Safety. We recognize the importance of our certifications to clients and stakeholders and constantly push our sites and teams to find ways to do things better, more efficiently and reach for perfection.”

On a voluntary basis, Cork Supply embraces certifications that add value to the Organization and to the Customer, allowing for transparent communication in critical aspects as Food Safety and Sustainability.



Figure 23: Certification schemes in place



In the scope of Food Safety, FSSC22000 and HACCP were implemented in several units within the Cork Supply Operation sites.

On the scope of Sustainability - Forest Stewardship Council FSC _Chain of Custody – is implemented in Portugal. It is in place for over 10 years. Besides the fact that FSC certificate is one of the most renowned independently demonstration that the handled raw materials are sourced from sustainable forests, this certification enlarges the portfolio possibilities to the customers, with optional FSC certified natural or technical corks.

In the scope of Good Manufacturing Practices, SYSTECODE references are implemented in all units operating in Portugal. Cork Supply has embraced this certification since the very early stages of its publication. This standard aims at stimulating continuous improvement in cork companies, enhancing the confidence in the product for clients and consumers. Cork Supply has ever since reached the highest punctuation applicable with the top Premium and Excellence levels.



Part II

Measuring Sustainability



Social Perspective

The actions performed about the social pillar of sustainability contribute towards the following SDGs:



Social Highlights



Employees and labor management

- 472 employees
- 10+ Nationalities worldwide
- 47% of the total workforce were women
- 31% of management positions are held by female employees
- Promotion of inclusion and non-discrimination, guaranteeing all workers equal conditions and opportunities



Community Engagement

- Support 20 associations and non-profit organizations
- Consistent collaboration with educational institutions to help train future professionals
- Promote voluntary actions by Employees



Training & Development

- Extensive academic and on-the-job training programs
- Awareness campaign for safety, health and environment issues
- Performed an employee satisfaction assessment





People / employees

“The Company’s effectiveness in managing its people is considered a key factor for its success.”

The Company’s effectiveness in managing its human capital is considered a fundamental factor for its success. In a context of permanent and challenging changes in economic, social, and environmental conditions, Cork Supply believes that it can continue to differentiate itself through their employees. Therefore, Cork Supply aims at being a company of choice to talented people having all teams involved in adding value to the organization. Cork Supply is confident that showing corporate social responsibility is key to retain gifted people and attract new talents.

In 2020, the Company had 472 employees involved in its activities worldwide. The increase of female employees in management positions (27% in 2018 to 31% in 2020) proves the company diversity and promotion of equal opportunities. In addition, Cork Supply also supports gender equality for every function, including an equal pay policy for equal work.

For 4 years in a row, in the US, Cork Supply has been awarded one of The Best Places to Work in the North Bay, by the North Bay Business Journal.

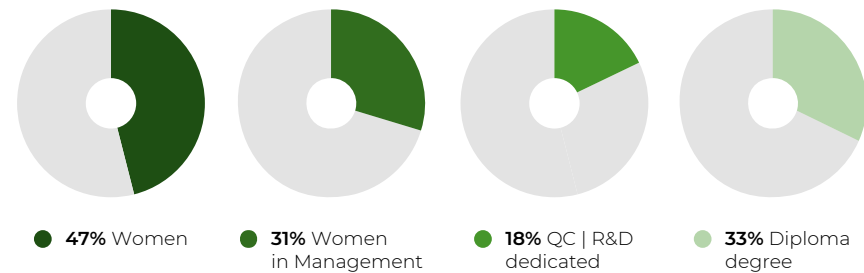


Figure 24: 2020 highlights related to employees' equity

Because the company seeks to provide their employees with an adequate integration in the organization and conditions that allow them to perform their respective functions in the best way, proper communication and follow-up of performances is considered key.

“Cork Supply continuously invests in training and employee qualification, both on the job and by providing academic scholarships.”

Annually, the Group defines and discloses to all employees a training plan, which is prepared according to the needs identified by each Area / Department / Business Unit. As mentioned before, any new person coming to Cork Supply benefits from a specific on-boarding training and further integration follow-up.



The investment in training for the Portuguese structure was on a growing trajectory by 2017 (19.5 hours per employee). The increase of the activities together with the uncertainties produced during the pandemic in 2020, compromised this growth. Therefore, the company is committed to take on the former track with intensive and dedicated training programs.

Moreover, caring about increasing capabilities of co-workers has been in the horizon of Cork Supply and visible also through the 7 (seven) graduation programs that Portugal's site promoted during the last 4 years.

“Health & Safety is a top priority for Cork Supply. The programs and initiatives implemented during the last couple of years resulted in a significant decrease of frequency and severity of accidents.”

Cork Supply believes that accidents and occupational illnesses can be prevented by integrating health and safety as its first lean philosophy principle, and business management, proactively fostering a strong culture of safety. Caring about your people, and ensuring their wellbeing, is the foundation of what it means to be a sustainable business.

In 2020, the Company reinforced its commitment towards Health & Safety by managing the risks associated to its activities and maintaining strict control and monitoring, including the systematic analysis of quasi-incidents and security audits. As a result of its Health and Safety strategy, in 2020 there were no fatalities and only 5 accidents have been recorded globally. Accidents in the workplace are quickly reported to identify the causes and define a corrective action plan.

Main areas of training

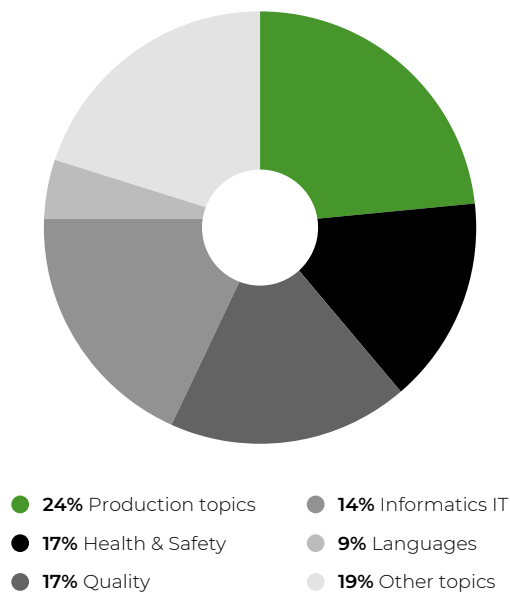


Figure 25: areas of training in 2020



Cork Supply monitors absenteeism data and its main causes, thus enabling a sustained diagnosis that allows to act in an incisive way on the aspects that influence the results, especially when they are justified due to illness or accidents. The absenteeism rate reached a total of 5,00% in 2020.

As for work incidents, frequency and severity index are considered to allow, like the analysis of absenteeism, informed action on the main causes and thus achieve the goal of decreasing incidents with loss of working days.

In 2020, the accident frequency rate was 13 (“Good” according to the International Labour Organization, ILO), corresponding to a 50% reduction compared to the 2019 index. As for the severity index, it was 0,50 (“Good” according to the ILO), maintaining the good results of 2019.

	2018	2019	2020
Accident Frequency Rate	38	26	13
Severity Index	0,62	0,47	0,50
Absenteeism (%)	-	5,25	5,00

Evaluation of the Frequency Index according to ILO: If < 20 Good | 20 - 50 Acceptable | 50 - 80 Insufficient | > 80 Bad
Evaluation of the Severity Index according to ILO: Ig < 0,5 Good | 0,5 - 1 Acceptable | 1 - 2 Insufficient | > 2 Bad

Table 1: Analysis of incidents 2018-2020

Commitment with Community

In fulfillment of its **citizenship commitment**, Cork Supply continues to promote and support social initiatives, aiming to integrate social responsibility into its culture. Aware that attention to others starts within the organization and extends abroad, social responsibility has been integrated in the Company’s strategy and culture, having contributed to social solidarity actions, Programs and Projects.

The Company has been collaborating regularly with around 25 social institutions in Portugal, in the United States and South Africa. Within those, with the participation of people with special needs in the execution of specific functions. As an example, in Portugal we support CERCI (Cooperative for the Education and Rehabilitation of Disabled Children), working within the process of prevention, habilitation, rehabilitation and social integration of youth and adults. In 2019, Cork Supply was proud to be named for a recognition award for its contribution to CERCI’s activities in recent years.

In the scope of higher education and technical training, since 2017 Cork Supply has collaborated 14 Masters in cooperation with renowned Universities and Pos-Graduation Schools from Portugal and France. Other 18 internship programs were also completed with cooperation with local high schools.



	2017	2018	2019	2020	Total
Internship for intermediate graduation (vocational and secondary school)	6	7	1	4	18
Master's degree in business environment	5	4	2	3	14

Table 2: Graduation training programs facilitated by Cork Supply

Concerning socially responsible attitude, Cork Supply not only observes the commitment with the employees themselves through investments in improving work conditions and promoting an outstanding work-life balance, but also encourages each one to citizenship, social responsibility, and sustainable growth. Examples of such programs are below:

Europe

Cork Supply is an active **volunteer for Junior Achievement** with the overall aim of promoting entrepreneurship in schools. As a part of this partnership, Cork Supply employees were assigned specific schools and gave lessons to these students about entrepreneurship, participated as members of the jury in project presentation events and served as mentors to students seeking assistance in career development.

Europe and USA

Internally the company created a program called – **“Taking Care of Tomorrow”**, which promotes a wide range of activities related to the preservation of the environment. Activities that include waste separation, trash collection in public places like beaches, eliminating the use of single-use plastic, among others.

The Cork Master Class is an initiative that aims to share the knowledge that the company has gained with new and future wine industry workers. Students are invited to explore and learn about our industry, from the forest to the consumer, specifically about Cork Supply vision, operations, and R&D. If possible, the Master Class occurs during an afternoon at Cork Supply facilities with direct contact with the operational environment, otherwise a session is prepared by our team and presented at the University.

USA

Cork Supply USA has created a **carpool program for commuters** and an incentive for our local employees to bike to work. It also organized **emergency drives** to donate supplies to the victims of the Northern California fires, and food drives for underserved communities.

Australia

Cork Supply Australia **prepared meals** for those who were helping **combat the Australian wildfires in 2019**.



Environmental perspective

As a starting point of the intended evaluation, the information was gathered in the scope of Cork Supply activities in Portugal. Therefore, the below lines aim at guiding with an estimate that is expected to be proportionally similar in the finishing units across the world.

Cork Supply is aware of the importance of environmental preservation and commitment to minimize the company footprint. The team continually assesses and improves their environmental practices, so they address both inbound and outbound impacts. It is worth mentioning that the results and information in this chapter reflect Cork Supply's most representative and material topics in terms of environmental impact, namely, biodiversity preservation, raw material and circular economy, energy optimization, greenhouse gases emissions' reduction, water saving and waste treatment. The actions performed prove our commitment towards the following SDGs





Environmental Highlights



Biodiversity

- Partnerships with suppliers to develop and implement montado rehabilitation plans
- 5.300 Hectares of Recovered Properties
- 28 cork producers included in the program



Energy

- Energy Consumption Rationalization Plan in Place
- Estimated ~7% reduction of energy consumption in the next four years
- Substitution of natural gas by biomass sourced energy



GHG Emissions

- Negative carbon footprint (-8.9 grams (g) of CO2eq) per stopper along its lifecycle
- 8018 ton CO2 scope 1 & 2 in Portugal operations
- Emission reduction program in place



Circular Economy

- Zero waste goal
- Zero waste of raw materials
- Centralized and automatic cork dust remover implemented
- 100% natural, renewable recyclable and biodegradable raw material





Assessing Cork Supply's environmental performance, and those of the products it sells, in cooperation with independent institutions has been in the list of priorities for over a decade. This can be seen in the chart below.

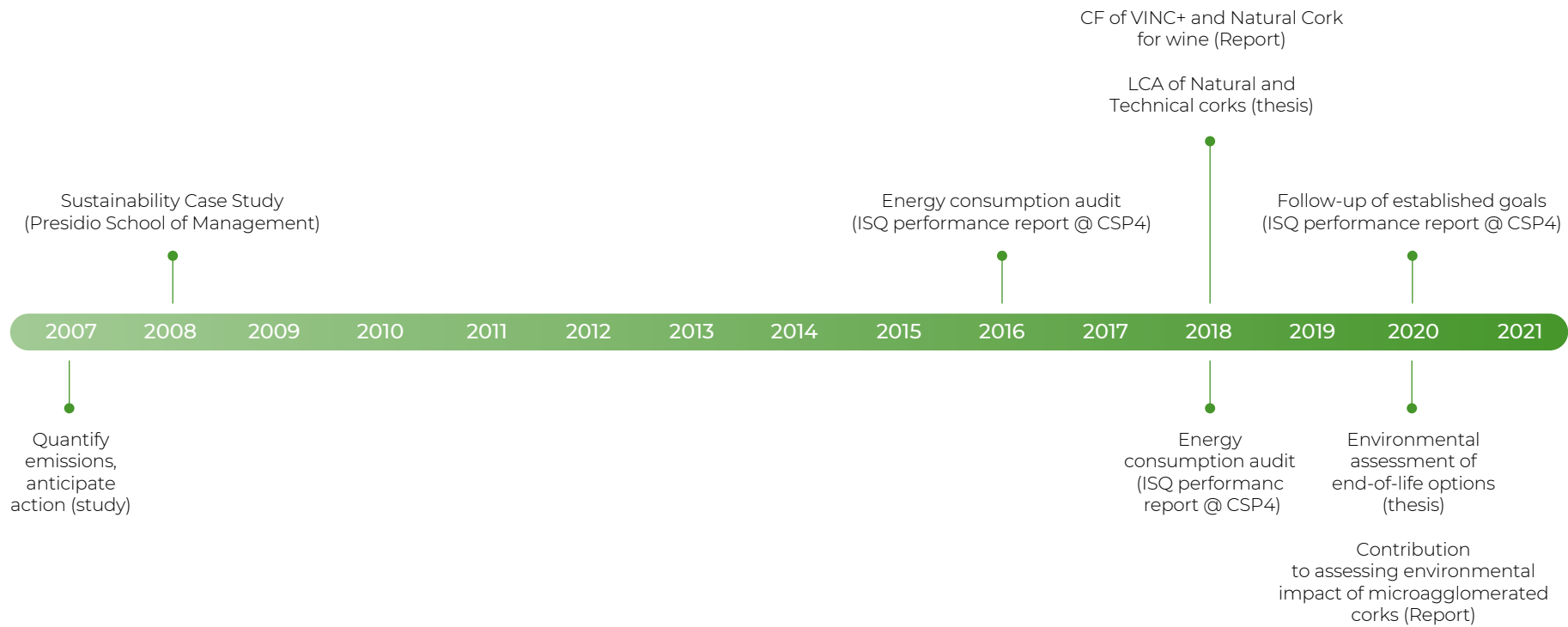


Figure 26: Environmental performance breakthroughs - measuring sustainability and environmental impact across the years



The forest

“Cork Supply maintains a very close relationship with cork forest owners as a strategic approach to build lasting partnerships and improve product quality.”

Cork Supply is aware of the importance of preservation of cork oak forests. Not directly owning cork forests, Cork Supply maintains close and strategic relationship with cork forest owners in Portugal and Spain, building lasting partnerships based on trust, shared knowledge, and quality. The acquisitions of raw materials imply the compliance with all legislation and regulations in force.

The management of cork raw materials is key to the success assuring materials originating from controlled sources. Corkwood represents the largest portion of the yearly investments in materials. The excellence of this source is behind the quality of the products and the economic soundness of the business. A unique corkwood evaluation program on the field has been developed and tuned along the years. The existence of a rigorous evaluation process has positively promoted the knowledge behind the forest panorama. Cork Supply is proud of the detailed database regarding performance of Estates and geographical spots. This has been a very important investment towards predictive evolution for the cork forest and its future capabilities.

In this scope, the Company supports cork oak growers in increasing *montado* prosperity and cork quality, pioneering the rehabilitation of producers' estates. Cork Supply's Forest engineers team supports its partners establishing a correct technical management of their estates and prevent any aggression against the biodiversity. Services as soil chemical composition and establishing nutrition programs together with defining the most appropriate forest management and soil conservation techniques, have been successfully developed.

“Cork Supply was a pioneer in the development of rehabilitation plans of producers' estates to promote cork oak quality and combat pests and diseases.”

Specific actions Cork Supply has been involved in relate to a homestead rehabilitation program, partnering with cork oak growers and establishing a correct technical forest management plan to their estates. The goals are of preventing any aggression against biodiversity, including control of shrub vegetation, mobilizations, pruning, cleaning, reforestation, and pastoral rotation. Cork Supply was a pioneer in this rehabilitation program with various activities with capabilities regarding improvement of cork oak quality and prevention of pests and diseases.



Results are remarkable and presented in technical reports of good forestry practices that show an optimization of both vegetative and sanitary conditions. Improvements of qualitative production (medium quality cork evolving to premium quality cork) and increase on natural regeneration are visible on specific interventions as on Herdade da Ameixoeira Nova with an area of action of 5 300 hectare that involved 28 cork oak trees growers.

The project *Reflorestação de Sobro em Linha* at *Ameixoeira Nova Estate* is an example of a successful rehabilitation plan. It included the management of soil fertility practices, corrections of nutritional and pH for protection of the root system. The results show a quantity increase (thickness / productivity) as well as quality increase (porosity / mass) of the cork produced. It is expected that these practices will effective and positively contribute for the outcomes of future harvests. Considering the estimated 100€/ha/year of the Ecosystem Services provided by cork oak forests, this intervention is expected to deliver a minimal benefit to environment of half a million euros every year in the future.

“Cork Supply promotes, enhances and enables forests that are important natural CO₂ sinks.”

The FSC certification scheme, is another aspect under the same subject. It aims at delivering independent assurance of the least impact and maximum advantage of the rich and naturally ecological products from the forests. Cork Supply maintains its own Chain of Custody certificate and encourages the certification to the cork growers.





Life Cycle Assessment (LCA)

Cork Supply is aware of the relevance the Life Cycle Assessment to understand the critical points and focus on improvement opportunities, adopting measures with real impact. This lifecycle thinking is stated by GreenBlue® (an environmental nonprofit dedicated to the sustainable use of materials in society): “Recovering more value out of the materials economy is synergistically related to the principle of using materials wisely, because outputs from one part of an industrial system should be used as inputs to some other part of the system, so design issues impacting sourcing and end of life considerations start to become aligned.”

An LCA approach delivers the multiple environmental criteria related to a specific product aiming at weighing the several aspects that contribute to a set of sustainability decisions whereas related to sourcing of raw materials, circular economy, production chain or end of life (Figure 27).

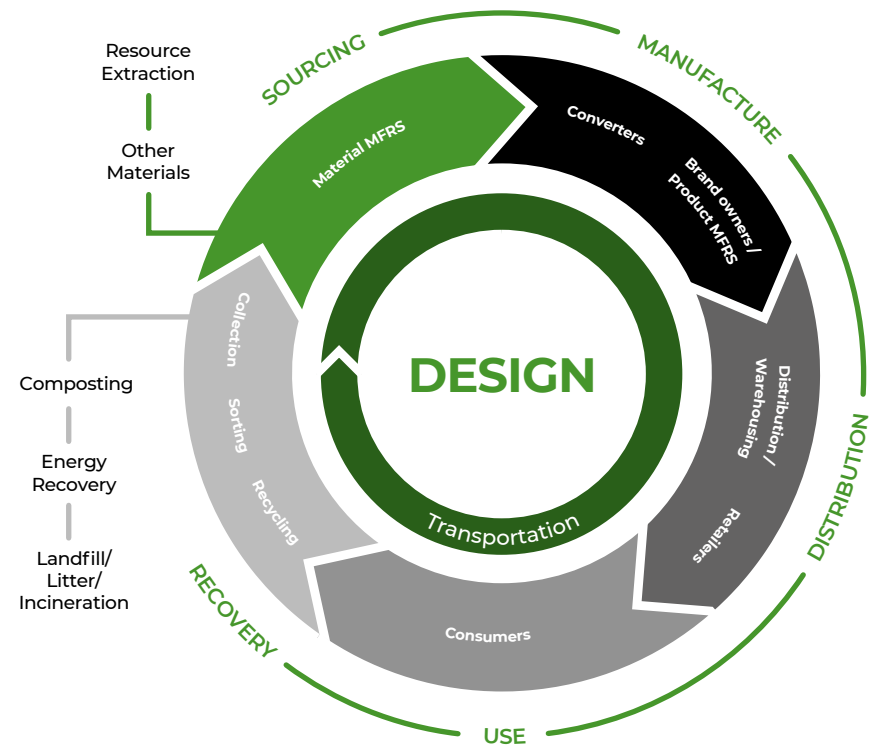


Figure 27: Life Cycle Assessments calculate environmental impact of a product/package from sourcing – adapted from GreenBlue®



The LCA accomplished recently considered operations under Cork Supply control, from corkwood harvesting to the finishing of the cork stoppers, including the transportation of materials among the distinct operation units in Portugal. The study concluded that for the manufacturing of natural corks none of the activities delivers greater to the impact, but for the manufacturing of technical corks the steps related to the manufacturing (granules production and molding the bodies) account for roughly 2/3 of the environmental burden. (Sousa Amorim 2018).

Carbon Footprint of the corks and global environmental advantages

“Both natural and technical stoppers present a negative carbon footprint when considering their entire lifecycle.”

During 2018, Cork Supply completed another cycle of quantitation of Carbon Footprint (CF) of micro agglomerate and natural corks. The study was developed in partnership with the Faculty of Engineering of Porto University, to comparatively assess the environmental impact associated with the life cycle of a natural cork stopper and a technical stopper produced by Cork Supply.

The adopted approach was the Life Cycle Assessment (LCA), therefore other than GHG were also evaluated from forest management practices to having corks ready for shipping to wineries (cradle-to-gate).

Each processing step was analyzed in detail for the environmental impact by adopting SimaPro 8.5.2 (Pre-Consultants, 2017) software, based on impact methodology described in CML-IA 3.04 (database that contains characterization factors for life cycle impact assessment). The detailed calculation of the carbon footprint of the natural cork stopper resulted in a carbon positive balance of -8.9 grams (g) of CO₂eq (carbon dioxide equivalent) per stopper. The results for the carbon footprint of the technical stopper showed a carbon balance with a positive impact of -2.1 g CO₂eq / stopper.

	Emission ¹	Offset ²	Net ³	
Nat corks	12,6	-21,5	-8,9	kg CO ₂ p/ 1000 corks
Microaggl	22,6	-24,7	-2,1	kg CO ₂ p/ 1000 corks

- 1 Refers to Emissions of pollutants & Consumption of natural resources
- 2 Refers to Carbon Sink while corkwood is being produced: proportion of **8% to natural corks and 12% to microagglos**
- 3 Balances contribution to Carbon Footprint! **Positive impact!**



Forest retains 1.04 to 5.18 Ton (CO₂) per ha year

Figure 28: balance of Carbon Footprint of Natural Corks and Micro agglomerated Corks produced at Cork Supply (Sousa Amorim 2018)



The implications of these numbers may be used to determine the contribution of cork closures for possible CO₂eq savings in wine packaging.

As emphasized in the chapter related to the Context of Cork Supply's Activity as well as on the chapter related to Cork Supply's Product Portfolio, the beneficial negative Carbon Footprint of the cork closure is only one aspect of the environmental advantages of the product. In fact, corks are made of corkwood generated from a renewable natural source, which is a biodegradable material. Corks are also recyclable therefore can be incorporated in many composite types. It is also highlighted that corks do not either cause changes in the municipal waste management circuits.

Thus, in front of options for the end of life of used corks, the company has invested in understanding the real advantages to Society through the investigation of effective performance of recycling options. The study was conducted in two main aspects explored within the next lines.

Study 1: Assessing Environmental Impact of Micro agglomerated Corks (Lopes Cardoso, et al. 2020)

This study was prepared considering guidelines available under 21 CFR 25.40 of FDA recommendations - TITLE 21 Food and Drugs - Chapter I. Food and Drug Administration - Department of Health and Human Services. Subchapter A. It focused on relevant environmental issues referring to the use and disposal from use, rather than the production. Information available suggested that there are no extraordinary circumstances indicative of any adverse environmental impact of micro

agglomerated corks use. This statement is supported by the analysis of the composition of micro agglomerated corks, acknowledgement of the geographical distribution of the corks at the final consumer site, identification of routes of used corks and practices of end of life, information gathered in the scope of LCA analysis performed at Cork Supply.

It was highlighted that the closures are utilized in patterns corresponding to the wine consumption population density and will be widely distributed across the World. This determines the way waste materials are handled because the ultimate consumer is the one that disposes the closures. Used corks are primarily conducted to the sanitary landfill or to incineration, discarded through the Municipal Solid Waste (MSW) Management systems in place in each Region or Country. The contribution of finished corks to worldwide annual Municipal Solid Waste (MSW) was estimated to be 0,0054%, an extremely low number. Moreover, it was confirmed that the materials within the composition of the closures are of similar nature found in many other products present in MSW, so corks will not significantly alter the magnitude or composition of environmental releases of MSW disposed of in landfills. Moreover, should corks be incinerated it was verified that not only negligible impact on the quality of air is expected but also that the high calorific power may contribute favorably to the latest energy recovery efficient incinerating technologies.

It was therefore concluded that there is no reasonable expectation of significant environmental impacts resulting from disposing the cork stoppers through the waste management circuits.



Study 2: Assessing environmental impact of scenarios for recycling corks (Faria 2020)

Recycling has gained notoriety for waste management mainly when related to hazardous materials, high cost or lack of raw materials, and value to other industries. Noteworthy the importance of recycling activities related to plastic materials, either made from petroleum-based monomers or from biobased produced monomers of identical chemical nature, currently a growing business and industry. This study looked only at the portion of the recycling process (Figure 5) related to the collection of used corks to be further processed. Rather than determining economic feasibility, it aimed at finding environmental benefits of recycling when facing the current landfill or incineration practices for solid waste and determining an environmental impact for the recycling activity, in itself, that could be still of environmental advantage (Figure 29: representation of the methodology for the comparative study of end-of-life options for corks).

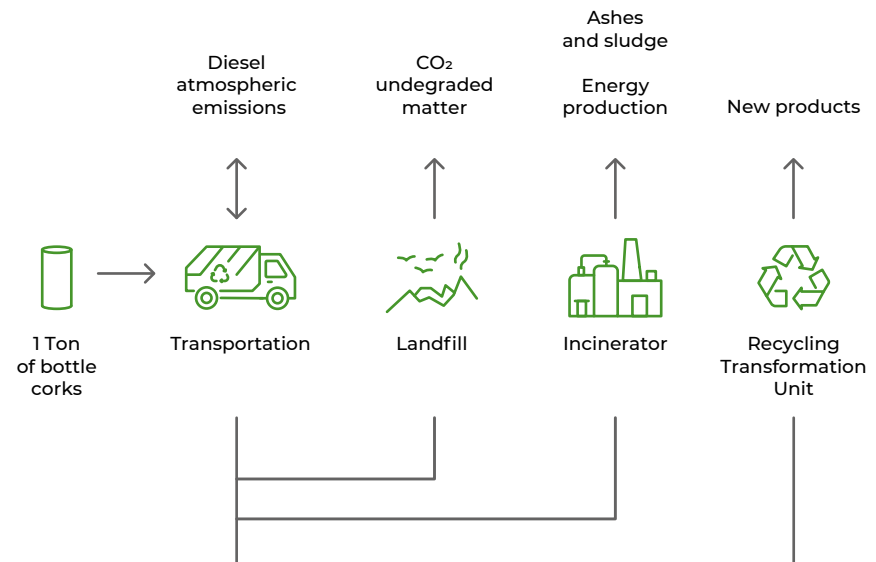


Figure 29: representation of the methodology for the comparative study of end-of-life options for corks



Data analysis was supported on SimaPro under ReCiPe and EcoInvent methods for measuring the environmental impact of the optional processes. Two variables were considered:

1. two rates of recycling potential, a realistic one (2% according to the global statistics on mature recycling programs) and an optimistic one (100% ability of collection);
2. evaluation of five routes from collection points to hypothetical transformation units geographically located in places that seemed to cover interesting volumes of used corks.

Initially a detailed analysis to the wine consumption and volume of corks used (bottled wine) per geographical area was elaborated. The countries that contribute more to the used corks were identified: USA, France, Italy, Germany, China, UK, Spain. For the assessment, inventory was performed using “t-km” units that represents the weight (ton) of available used corks (related to the wine consumption) to the distance required to bring the materials to the hypothetical transformation unit (km)¹. As expected, the results revealed that the performance of recycling is highly affected by the distances from collection to the transformation sites. As expected 100% recycling capability benefits the performance of the program, however for the existing cork recycling programs realistic ratio of 2% has been reported.²

1 Based on the the most populated cities in each geographical area (that would contribute to the majority of wine consumption of the country) an average distance was calculated for collecting 1 ton of used corks to be sent to hypothetical recycling units situated to minimize the distances between those cities.

2 To set a comparative number, the plastic recycling industry reports recycling rates of 30% in Europe and 9% in US according to (Parker, 2017)

The five potential recycling programs were compared to the alternative end of life processes, using the technologies applicable in the pertinent geographical areas. The results indicate that for some of the environmental impact categories and collection scenarios, there is still room for the recycling process to be environmentally valuable.

Despite those findings, other details should be considered when comparing to the alternative end of life processes. Regarding the landfill it is noted that most of the biogenic carbon present on the cork closures (98%) is never liberated, instead it is trapped permanently in the closure. This is because corks are not totally decomposed. Concerning incineration, process innovations have been developed during the last decades to achieve better performances for gaseous emissions and energy recovery. It has been reported that cork pieces not only present good heating power (Calorific value of 18.9 to 29.3 MJ/kg) but also produce less than 3% of their weight as ashes during incineration. Therefore, incineration of cork contributes favorably to implementing options of incineration technologies with energy recovery. (Demertzi, et al. 2015)



Natural Cork stoppers are biodegradable in light of EN 13 432 definition.

When brought to landfill, most of the cork closures (98%) is never liberated, instead it is trapped permanently in the closure. This is because corks are not totally decomposed.



Environmentally speaking, the widespread use of corks may jeopardize the advantage of recycling due to the collection efforts related to the distances.

How to materialize recycling: Recycling is interesting with strategically located collection points minimizing transportation burden to the recycling sites.

Recycling operation added to the transportation from collection points, must be designed avoiding overpass the burden of the alternative landfill or incineration technologies.



During incineration, gaseous emissions ashes are produced. Technology has improved significantly with the introduction of fumes treatment and energy recovery. Cork particles (calorific power around 15 MJ/Kg) with ashes residues below 3% after burning. Therefore are favorable to the energy efficiency in incineration furnaces.

Figure 30: analysis of alternative means for end of life of corks

Circular Economy and Waste Management

The ideas of Circular Economy are clearly present in the European Green Deal program and specifically in the circular economy action plan (CEAP) defined by the EU. This will be analyzed in the next lines in two main scopes: one related to the cork use (product perspective) and another related to indirect activities concerns (corporate perspective) such as support activities or the purchase of materials that are not part of the stoppers themselves.

As far as the cork material is concerned the complete portfolio of cork closures results from the efficient use of all cork materials (**Figure 31**). The recovery rate of all cork materials confirms the value added to by-products, integrating diverse production cycles (natural corks, discs, technical corks), therefore caring about efficient use of the raw materials.

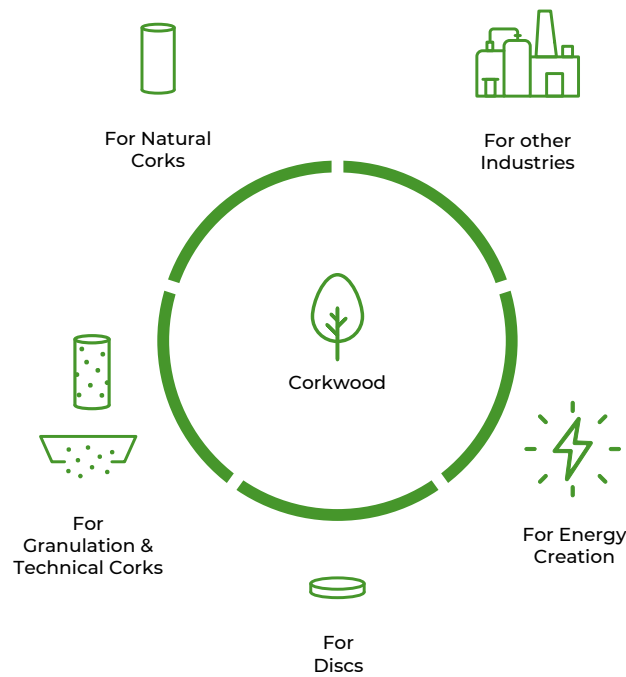


Figure 31: cork materials breakdown - efficient use of all cork by-products

Despite this valuable contribution to Circular Economy, Cork Supply is aware that there is still room for growth in this area and continues to demonstrate concern with the correct routing of waste generated (other than cork) including the means for recycling through certified companies responsible for waste management.

In 2020, the company was responsible for the production of 105 ton of solid waste resulting from the four manufacturing units in Portugal, of which 25 ton (24%) were recycled or sent for reuse. The vast majority - 68% - of the waste generated is non-hazardous, and consists of cardboard, ferrous and non-specified materials. Hazardous waste consists of cleaning lint, binders' residues and dry sludges from the waste water treatment plant. Cork Supply handles these waste categories according to the best available practices, compliant with legal aspects and committing to correctly route its waste to recycling and composting, through certified companies for its management.

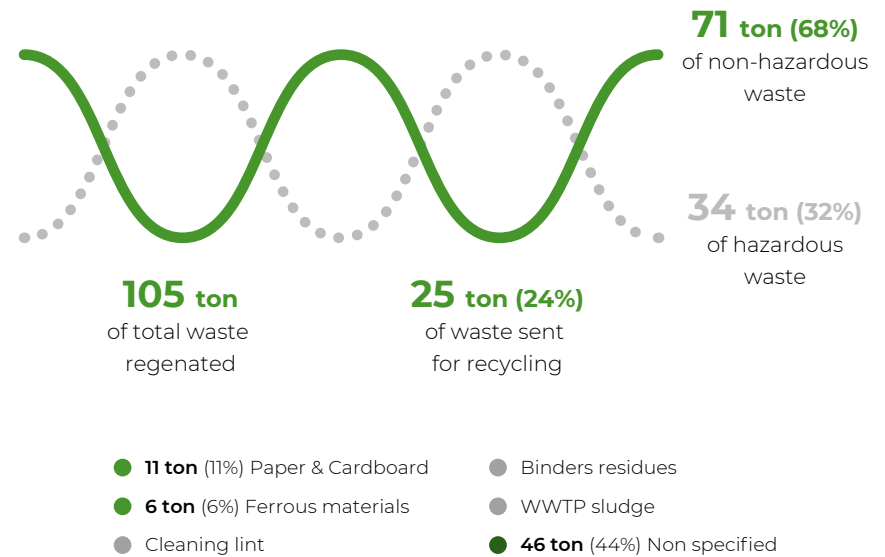


Figure 32: production of solid waste during 2020

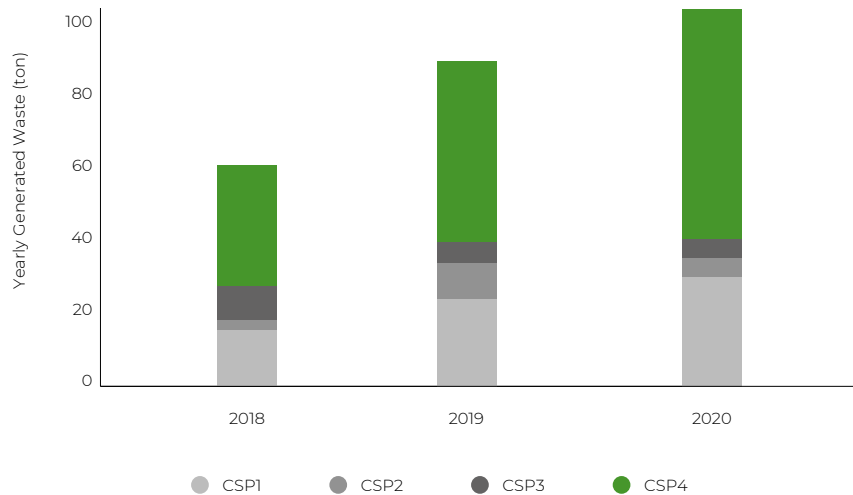


Figure 33: Yearly waste generation in each Portugal site

a“Zero waste is one of Cork Supply’s sustainability goals.”

The company is proactive in seeking to eliminate and reuse waste resulting from production operations. In addition to making improvements and investments that reduce the production of waste in operations, it seeks to reuse and recycle whenever possible. Important to be noted, the cork dust generated due to the cutting operations, in no circumstance is considered waste. Cork Supply

installed a centralized system to collect cork dust resulting from the manufacture of cork stoppers in our factories in Portugal. This process creates a cleaner and healthier working environment and simultaneously allows the reutilization of cork dust itself in a relevant economic cycle associated to energy production. According to the energy audit to the Technical Cork Unit in Portugal (ISQ 2018), investing in the new furnace to produce steam contributes to annual savings of 535,6 ton of CO₂eq by utilizing biomass (which includes cork dust as energy source).

Packaging materials, in particular the plastic based, significantly contribute to waste generation in organizations. One of the European Strategies involve the goal of 65% plastic packages to be recyclable by 2025, to which Cork Supply has been taking care. Other targets must be considered for aligning with the Global Strategy, including the immediate elimination of single use plastics and the selection of plastics for packages that are recyclable, reusable and composable by 2030. Therefore, aligning with the Strategy means caring about the specification of plastics required for the packaging of the corks, which should include clear details from suppliers about:



Figure 34: main streams for packaging selection having in mind alignment to EU Strategies towards plastic use.

On the same scope and specifically for cardboard boxes for the finished corks, since 2020 that the specifications for boxes acquisition considers the incorporation of recycled material in Portugal: the boxes utilized contain 70% recyclable material.

Energy, Green House Gases and Water use

“Cork Supply consistently deploys technological and environmentally friendly solutions on an early stage which is reflected lowest energy intensity of the sector.”

As in the previous chapter, this information was gathered within the scope of Cork Supply’s activities in Portugal only. The production of both natural and technical stoppers contributes to about 93% of Cork Supply’s global energy consumption. It is estimated that the energy consumption per finishing unit across the world is proportional to the finishing unit in Portugal.

The following lines aim at sharing Cork Supply’s contribution to mitigate climate change risks. The organization is committed to reducing its carbon footprint and seeks to engage partners in reducing their Carbon Footprint along the entire value chain.

In this regard, Cork Supply started addressing the optimization of its Carbon Footprint by investing in research to align with best practices already applied in the industry.

In 2020, Cork Supply totaled 27 535 833 kWh, equivalent to 99.129 GJ of energy consumption. When compared to 2018 and 2019 consumptions, these figures represent an increase of 31% and 20% respectively, which is justified by the annual growth in Cork Supply’s sales volume. The energy mix of the four units remains practically unchanged, with a small increase in natural gas and electricity.

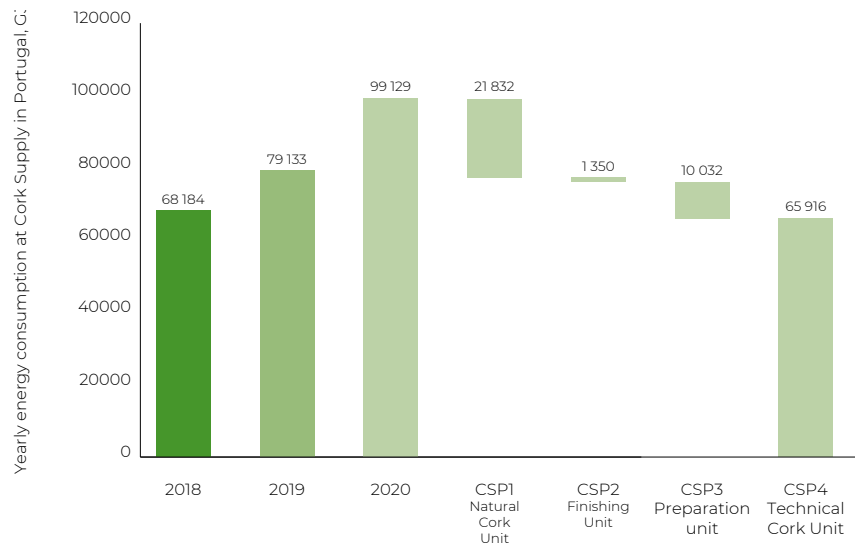


Figure 35: total energy consumption in Portugal at Cork Supply, GJ

During the last 10 years, the natural cork production unit, the preparation unit, and the European finishing unit performed several audits aimed at identifying opportunities for improvement in terms of optimal energy usage. These audits revealed that Cork Supply is very efficient and has been adopting technological and environmentally friendly solutions in a very early stage. Some of the examples are led lighting and installation of photovoltaic panels.

Within the energy mix, the use of natural gas and electricity account for around 80% of the total energy source. Having in mind that the electricity providers have strict institutional goals that substantially will reduce the carbon emission factors related to their supplies, there is an interesting opportunity of earning future credits by using this energy source, if the economic aspects will not be affected.

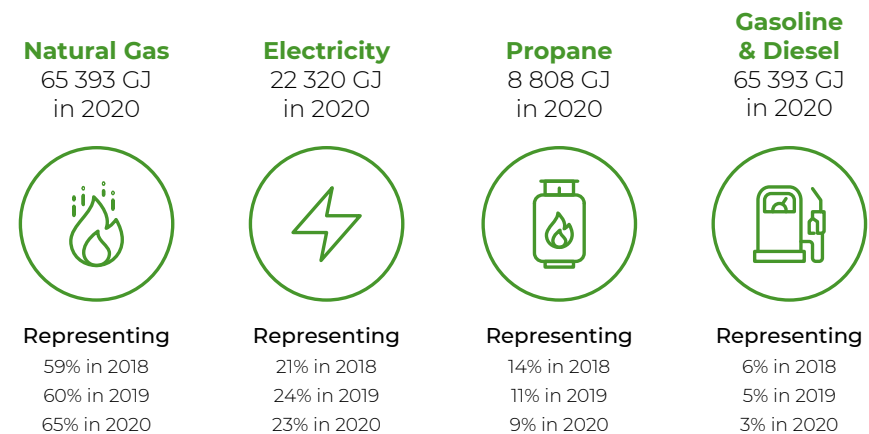


Figure 36: energy mix usage 2018-2020

The energy intensity, calculated considering the total energy consumed and the company sales, reflects Cork Supply's efforts to boost energy efficiency. The main initiatives implemented relate to the substitution of natural gas by biomass energy, the passive heating and cooling practices used throughout the warehouse to regulate the temperature (in the US) and the installation of more efficient electronic equipment.

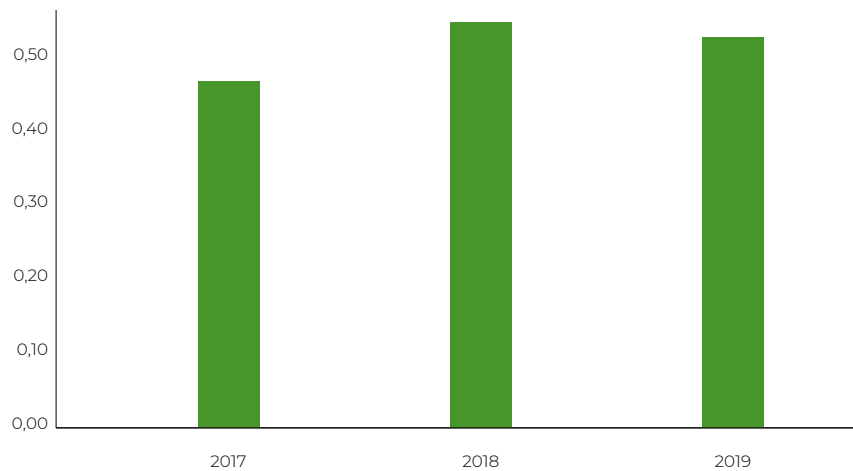


Figure 37: Energy Intensity in Portugal - GJ/Thousands of euros

The Portuguese operations are now focused on improving the technical cork production unit. This unit has been subjected to energy audits by ISQ (*Instituto da Soldadura e Qualidade*) to characterize the energy consumption and establish an energy consumption rationalization plan (PREN) for the period 2018-2026. Some of the measures to be implemented between 2020 and 2023 are:

- **Measure 1:** Replacement of natural gas steam generators by one that uses cork dust;
- **Measure 2:** Replacement of the natural gas thermofluid boiler by one that uses cork dust;
- **Measure 3:** Adjustment of the hot air generator burners;
- **Measure 4:** Implementation of a research and elimination program for compressed air leaks;
- **Measure 5:** Installation of a photovoltaic plant for self-consumption.
- **Measure 6:** Replacement of existing lighting systems with more efficient models.

These six measures will result in a 6.7% decrease of the total energy consumption of the technical cork production unit, with a payback period of approximately 4 years. During 2020, the energy mix at this facility included a relevant portion of biomass.



Within the current World concerns, all business activities are asked to make substantial investments to reduce the carbon intensity in their operations. On this scope and concerning Greenhouse Gas Emissions, during 2020, Cork Supply addressed the following topics:

- Revising the sources and measuring the GHG footprint.
- Adopting technologies and practices that prevent or reduce CO₂ emissions.
- Compensating for CO₂ emissions through investments in carbon offsets.

The graph in **Figure 38** shows the values of direct and indirect CO₂ emissions. Direct emissions result from controlled activities (scope 1), as emissions related to the consumption of propane, gas and natural gas. Indirect emissions result from electricity consumption (scope 2). Scope 1 and 2 emissions attained 8,018 t CO₂ in 2020, registering an increase over the previous year which is explained by the increase in activity and sales, specifically to the expansion of the Technical Cork Unit that accounts for 50% of the total emissions.

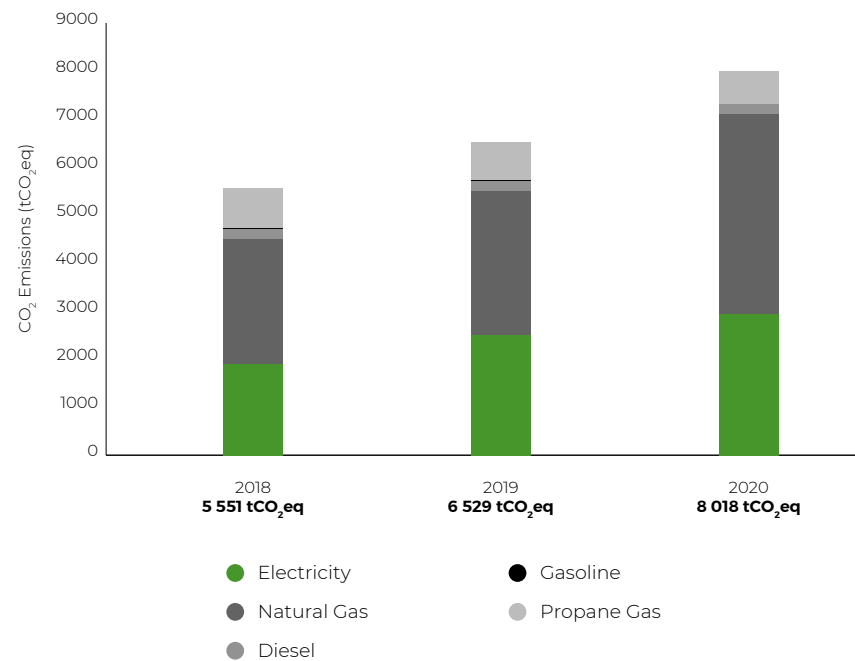


Figure 38: breakdown of CO₂eq emissions per source



By the end of 2020, the analysis of the Carbon Intensity indicator for the technical cork production unit (the activity that most contributes to the carbon emissions) shows the tendency of the expected reduction this indicator is to be monitored and expected to reach 1,07 by 2026.

Year	Energy consumption (tep)	CO ₂ emissions (ton)	Carbon Intensity
2018	1 133.7	2 789	2.46
2019	1 553.0	3 800	2.45
2020	1 997.9	3 976	1.99

Table 3: Carbon Intensity evolution at the Technical Cork Unit in Portugal

Concerning water use, four relevant operations are highlighted: boiling corkwood, washing corks, production of steam for disinfection purposes and moisturizing of corks. The remaining activities are residual in terms of water consumption. The technical cork unit accounts for 80% of water usage. In 2020, the total water consumption was 19.495 m³, which represents an increase of 20% to 2019 and 50% when compared to 2018.

The water source differs from site to site. At the preparation unit, the natural cork production unit and the technical cork production unit the company has installed its own water intakes. Wastewater is managed according to treatment practices that deliver the required quality standards for further release into municipal collectors (natural and technical cork production units) or employing biological treatment to later discharge into a stabilization lagoon.

“To boil our cork wood we have a highly efficient system that recovers 95% of the water by effective filtration and produces energy savings of 1 million kcal every day.”

Cork Supply installed a high-efficiency corkwood boiler system that optimizes both heat energy and water usage. After boiling each batch of corkwood, heated wastewater is reutilized to heat a new batch of clean water.

At the natural cork production unit, the washing circuit for the DS100 glassware has been improved to allow efficient water usage. This improvement was achieved by innovating the process without any associated investment and resulted from the integration of the knowledge and geniality of the employees in this section.



Economic perspective

Sales

Cork Supply has seen a steady growth across the years. The innovation, quality, and dedicated service path that the Company has been pursuing have been among the main contributing factors.

Cork Supply is the third largest worldwide manufacturer and exporter of natural and technical cork closures. The company strategy is based on having a motivated work force, investing heavily in R&D, supplying high quality products, and building lasting relationships with customers and partners.

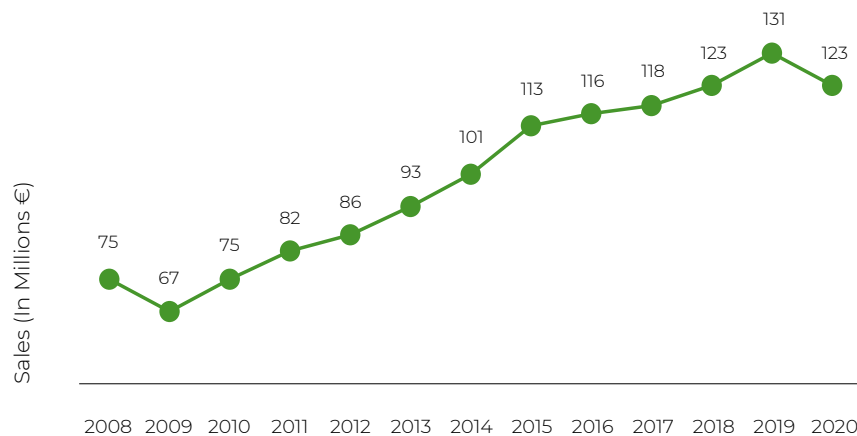


Figure 39: sales growth Harv 81 Group

Cork Supply has a sales presence in 34 countries and has 10 manufacturing units across the globe. They are present in all 4 continents. In 2020 the company had approximately 3 500 active customers.

Operations and Main investments

In 2016 Cork Supply expanded the Manufacturing Units with the starting of the Technical Cork Operations. The investments proceeded on increasing capacity and reinforcing Efficiency and Quality. This unit contributes substantially to the sustainability of the business in various fronts:

- **environment wise** – for the contribution to Circular Economy adding value to byproducts of the cork industry;
- **economically wise** – for the possibility of completing the portfolio of products for the wine bottling;
- **quality wise** – for the possibility of incorporating identical quality standards and valuing all materials for the production of technical corks.

As a result of impressive sales growth, the Group has invested in the expansion of Cork Supply's finishing plants, specifically EU, USA, ARG. Since 2012 Cork Supply has been consistently investing in training, in technology, and overall infrastructures. The results are visible in increased efficiencies and in the organization of the production units. In Portugal alone, in the past 3 years the company has invested 15 million euros and generated an increase in job creation of 10%. It is important to note that during the COVID pandemic, Cork Supply did not change or reduce the investment plans that had been decided prior to this. In the next three years the company is expecting to invest around



17 million euros in our facilities, increasing production capacity by 50%, and consequently generating more jobs and creating more wellbeing for local communities.

The company invests 5% of the previous year's annual turnover into R&D. With these investments, Cork Supply has been pursuing progresses on technologies and processes. The aim is to pursue for 'The Perfect Cork' sustaining awareness about the state-of-the-art solutions, with the drive of the XXI century technological world.

Considerable part of the investment that has been focused on digitalization and I4.0 as is demanded on the current environment.

“The significant investment made in product performance in terms of sensory and mechanical levels resulted on a citation award at VINITECH for DS100+ (2016) and a silver innovation award at SITEVI for INNOCORK (2007).”



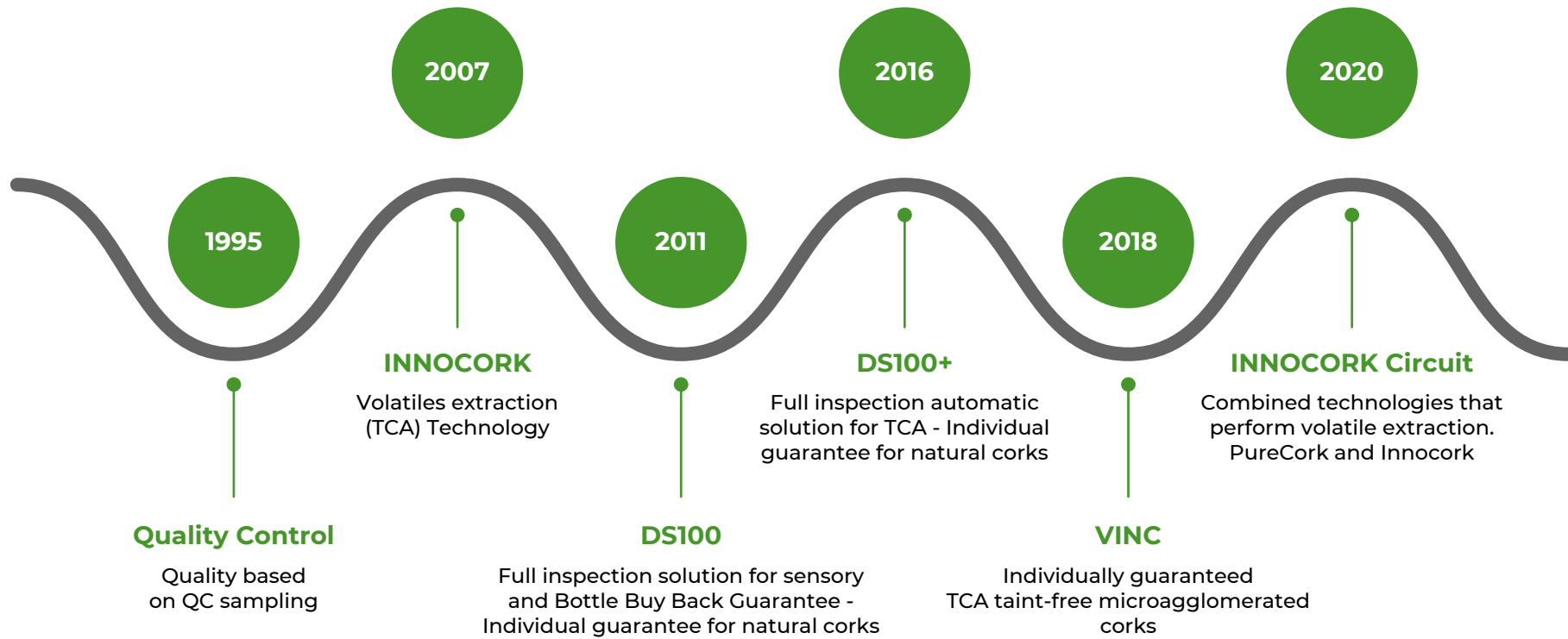


Figure 40: innovation strategic path towards 'The Perfect Cork'



During R&D activities, Cork Supply has applied for intellectual property rights through five patent families validated in multiple countries. Financially, Cork Supply is renowned among the companies with solid performance. The submission with accepted funding of one project application in the scope of productive innovation and three related to R&D in consortium, reflect the good reputation of Cork Supply in Portugal among the funding Institutions as well as the quality of the investments, ideas, and solutions.

“Innovation is far beyond product improvements. The company seeks to innovate management tools and digitalization means, within the path of Ind 4.0 generation.”



Part III

Concluding Notes



Cork Supply has succeeded to collect and interpret data to accomplish this first Sustainability report. Commitment with this exercise contributed significantly for Cork Supply awareness to the contribution of its business to achieve the 17 SDGs and to materialize the 2030 Agenda.

The several fronts of sustainability were assessed, and new challenges have risen towards creating processes, products and services that contribute to effective beneficial changes. Although interesting breakthroughs are highlighted, there is room for a myriad of actions favoring the community, the Planet and the business.

“With the endeavor conveyed in the current report, Cork Supply conducted strong progress in the commitment to sustainability matters.”

For Cork Supply, leading positive impact, means working along the value chain in collaborative end to end efforts, from suppliers to customers, from employees to communities.

While hovering through the contents of the current report, it is visible that Cork Supply strives to conduct every aspect of the business with integrity, by prioritizing safe, respectful, and fair work environment as well as promoting all aspects of diversity across collaborators.

Leveraging education and training level of employees has been of main concern and is certainly behind the success of achieving high rates of employee retention.

Support to the communities is visible through sponsorship of several programs and to intensive collaboration in training students from various education levels and originating from different Institutions. Products provided to customers have been considered with very high concern specifically assuring secure and sustainable cork closures for the wine industry. One important aspect relates to offering high-quality closures produced with corkwood sourced sustainably and ethically. This is visible in Cork Supply partnership with cork oak growers to develop and sustain cork oak forests, restore forests and favor positive impact on biodiversity.

In efficiency terms, the vision is to develop solutions contributing to prevent losses and waste across the value chain. Reinvent and re-imagine corks manufacturing so the circularity meets higher standards is to be supported on the investments in R&D and Product Development. New technical corks formulations, engaging with incorporating more of natural ingredients is a key specification to drive Product Development. Moreover, the monitoring of carbon footprint of operations and of products must be supported with the tools that assist with contributing to climate stability through decarbonisation of operations and products. Energy management solutions is necessarily one key aspect, to achieve smarter energy consumption and carbon emissions by 2030.

Regarding the products in particular, Cork Supply strives to provide clear and objective details regarding end of life options of products for a smart and conscious decision upon collection, recycling and littering, in line with sustainability goals of the supply chain.



“Cork Supply is ready for the next level of aligning actions with sustainability goals, and guaranteeing that the whole supply chain is concerned and alert.”

Engaging with transparency across value chain with active communication about sustainability activities is vital. Promoting sustainable economic growth, that preserve higher standards on labour conditions, should those be related to salary or gender equity. As important as those, the offering of products that are safe, that perform environmentally as well as in technical terms. Moreover, outputs that are globally and ethically produced, establishing the vision and setting the boundaries for the actions.



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