POLITECNICO DI TORINO

Master of Science Degree in Engineering and Management (LM-31)

Private Equity and ESG in Italy: the Ambienta SGR case

Supervisor

Prof. Enrico Luciano

Candidate

Letizia I. Taras

A.Y. 2024/2025
Graduation Session April 2025

Abstract

The growing importance of Environmental, Social and Governance (ESG) principles has redefined the financial landscape, leading companies to consider stakeholders' welfare alongside profits. This has influenced various sectors, including private equity, where financial returns have traditionally been the primary objective. This thesis explores how a sector that prioritizes financial returns copes with this upcoming trend, assessing both the theoretical foundation and the practical challenges that have emerged over time. It first examines the evolution of private equity and how ESG initiatives have laid the foundation for change, involving all stakeholders, including society and the broader economic system. Subsequently it focuses on existing literature to demonstrate the relevance of sustainability as a means to reduce corporate risk and ensure long-term financial stability. Having set the theoretical grounds, the core of this thesis is to analyze the performance of three different portfolio companies managed by Ambienta SGR, a prominent Italian and European asset management firm. Ambienta exclusively pursues sustainable investments, actively integrating ESG into its investment strategy. After a thorough examination of the portfolio of this company and the choice of three specific cases, the research methodology involves an accurate analysis of the financial statements of the target companies, their industry and business overview, with providing a detailed reconstruction of the investment pre-entry and post-exit. The aim is to assess the tangible impact of sustainability efforts, with particular attention to managerial, operational, and financial refinements implemented under private equity ownership. The purpose of this study is to determine whether sustainability-driven strategies can enhance economic value. The findings, albeit based on a very small sample, suggest that integrating ESG considerations does not merely complement financial prosperity but actively contributes to it, reinforcing the idea that responsible investment approaches can drive substantial business success.

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Introduction

In recent years Environmental, Social, and Governance (ESG) principles have become crucial elements to be integrated in both corporate and financial decisions. An increasing number of shareholders are becoming aware that adopting sustainable business practices is not merely an ethical or social endeavor, but also contributes to a long-term sustainable financial performance (Whelan et al., 2020). Amid this evolving framework, the private equity sector also faces the need to integrate these factors without having to give up its exceptional financial returns, being its core principle. While ESG integration has become more prevalent in the public sector as a way to bridge the gap between companies and consumers, its role in the private sector has remained less prominent. The urge for its growth in this sector did not only stem from studies asserting the correlation between value creation and sustainable practices, but also arose from the increasing demand of these practices from different stakeholders, for instance customers and regulators (Zaccone & Pedrini, 2020). This reflects a continued landscape of skepticism, raising the question of whether ESG integration can genuinely enhance value creation in private equity investments.

Despite the increasing prominence of ESG frameworks within financial markets, there still are numerous limitations to the empirical research assessing their impact on private equity. While some studies highlight the positive correlation between value creation, risk mitigation and reputation (Kaul, 2023), a few others argue that the companies adopting these measures could incur costs outweighing the benefits (Pitkanen, 2022). This thesis addresses this research gap by examining how a private equity company like Ambienta SGR integrates ESG principles both in its investment strategy and portfolio companies, assessing their impact on both the financial and operational performance. The focus is on whether sustainable practices contribute to delivering superior returns.

The research methodology applied in this study follows a case study approach. After collecting the data used to build Ambienta's portfolio, three target companies were selected for more detailed analysis. This includes the collection of all the financial statements and annual reports of the companies, to construct their history and development, covering three years before and after the investment timeframe. The focus of this research is to show the improvements of the portfolio companies under the private equity ownership, on managerial, operational and financial levels. Subsequently, all results are gathered to sum up the value creation generated, also supported by sustainability results, and it is evaluated the overall performance.

This thesis is structured in seven chapters. The first two chapters will provide an overview on the definition of both private equity and Environmental, Social, and Governance (ESG) principles, examining their historical evolution and current applications. The second chapter includes a literature analysis on how the interplay between ESG integration and private equity affects financial performance. Following this, the study presents a detailed analysis of Ambienta SGR as an asset management company, describing its activities and how it integrates sustainability into its investment strategy through its proprietary methodology. Next, it offers an in-depth examination of its investment portfolio, providing an overview of the target companies. Within this framework, three main companies headquartered in Italy and belonging to different investment funds are chosen to be evaluated. The following three chapters will be dedicated to each of the case studies; they are kept separated to ensure a clearer individual analysis and comparability. Each of them will go through the operational and financial performance overtime, bringing insight into the process of value creation which will be summarized at the end of each case. The conclusions will have the task of bringing all the results together for comparative insights, highlighting both the findings and limitations of the study, providing suggestions for further research.

1 Private Equity

1.1 Definition of Private Equity

Private equity (PE) refers to an investment strategy in which companies invest their capital in other companies that are not publicly traded, with the purpose of improving their value over a defined period of time. These improvements are made through specific operational, financial, and strategic interventions. It is more common that private equity companies engage a proactive attitude towards their portfolio companies, which means that they actively contribute to drive value creation; additionally, their objective is to enhance equity value prior their exit through mechanisms such as sales, initial public offerings (IPOs), or other strategic options (Kaplan & Strömberg, 2009).

The key characteristics of private equity are:

1. A long-term investment horizon: typically, the holding period ranges from three to seven years, believed to be the perfect duration to realize strategic improvements towards portfolio companies (Kaplan & Schoar, 2005).
2. Active ownership: as introduced in the definition, PE firms prioritize active ownership with the purpose of affecting strategic and operational decisions. For instance, if the private equity investment happens via a leverage buy-out, it is typical that the PE firm acquires the control stake, appoints board members and drafts the value creation plan to be implemented. There are cases in which the PE firm acquires the minority stake, in this case they have a lower influence but still they provide support and strategic guidance to deliver performance improvements.
3. Focus on superior returns: being PE investments risky and illiquid, due to the investment on assets, the aim of PE firms is to achieve returns that consistently outperform public market benchmarks, through the application of financial engineering, operational restructuring, and strategic governance (Ljungqvist, 2024).

To strengthen this statement, Jensen (1989) defines private equity firms as entities that possess controlling ownership stakes in their portfolio companies, offer their support by incentivizing professionals and have the capability to implement optimized organizational structures. These firms are characterized by teams of few investment professionals, mostly with a background in investment banking, that focus on efficient and decentralized operations. Over time these firms have grown in size, however, they remain modest in scale compared to the companies they acquire and manage. These entities are often referred to as Asset Management Companies (AMCs) on a global scale and Società di Gestione del Risparmio (SGRs) specifically in Italy.

1.2 Private Equity's structure

Private equity firms raise capital through private equity funds, which are typically closed end, meaning that they have a fixed maturity and amount. Indeed, investors commit to contribute with a predetermined amount of capital which serves to finance investments in companies and to cover management fees incurred by the private equity firm (Kaplan & Strömberg, 2009). The performance of these funds is influenced by several factors, for instance the capability of the fund managers to select investment targets with high potential, exploit their resources effectively in order to drive growth and innovation within portfolio companies and ensure an exit at favorable valuations. In addition, the success of these ventures is crucially contingent upon the alignment of fund managers' interests to those of their investors (Ljungqvist, 2024).

1.2.1 The Limited Partnership Model

Private equity funds operate under a limited partnership model, meaning from a legal standpoint that General Partners (GPs) are tasked with managing the fund and assuming unlimited liability for its debts, while Limited Partners (LPs) contribute the majority of the capital and bear liability only up to the extent of their investment (Lerner & Schoar, 2004). The limited partnership structure is pivotal to private equity's operational framework, as it clearly delineates the roles and responsibilities of the parties involved.

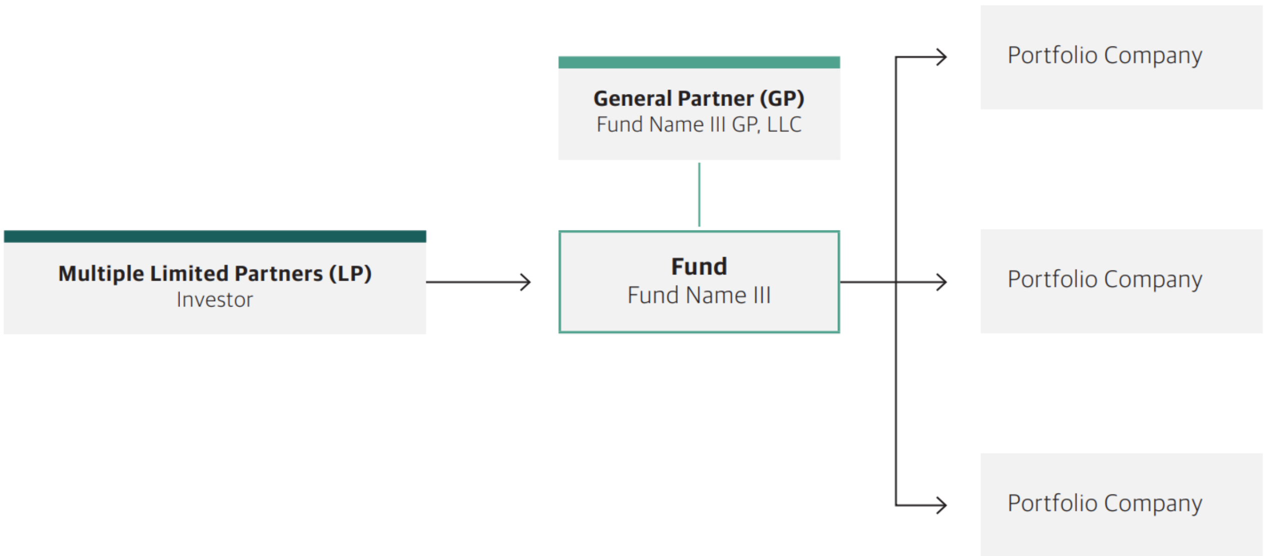


Figure 1.1: Typical structure of Private Equity's Fund[1]

Consequently, these two parties possess distinct yet complementary roles:

General Partners (GPs):

- They have the responsibility of managing the fund's operations, from deal sourcing to executing exits.
- In order to align interests with LPs and participate in the fund, GPs typically invest at least 1% of the fund's total capital.
- Their compensation includes management fees, representing around 1–2% of committed capital, and carried interest, usually amounting to 20% of net profits.

Limited Partners (LPs):

[1] Source: Blackstone (2021). Life Cycle of Private Equity. Retrieved from https://pws.blackstone.com/emea/wp-content/uploads/sites/20/blackstone-secure/Life-Cycle-of-Private-Equity-EMEA.pdf?v=1638976450

- Comprising high-net-worth individuals and institutional investors such as college endowments, foundations, insurance companies, family offices, pension funds, and sovereign wealth funds.
- LPs provide the bulk of the fund's capital but remain minimally involved in daily operations, benefiting from limited liability (Sahlman, 1990). Once they put money in the fund, the investment will be directly managed by the AMC together with the other money in the fund.

The relationship between GPs and LPs is regulated by the fund's Limited Partnership Agreement (LPA), a document which outlines the rights, obligations, and operational guidelines for both parties. The LPA typically specifies:

- The fund's purpose and investment strategy, including restrictions or exclusions on potential investments.
- The fund's term, often set at 10 years, with provisions for limited extensions before liquidation.
- The capital commitments made by LPs and the terms that define when there will be capital calls during the commitment period.
- The compensation details, including management fees that are typically 1–2% of committed capital, carried interest which is commonly around 20% of profits, and any return above hurdle, called preferred return, often set at 8%.
- The distribution of profits between LPs and GPs, assigned with the waterfall method.
- The policies regulating the transfer and the sale of LP's interests in the fund.
- The covenants to protect LPs' interests by preventing any leak of confidential information by GPs.

This model ensures both value creation and risk mitigation thanks to the active management of GPs and the financial support of LPs. Additionally, it highlights the main ingredient to private equity's success: the strategic alignment of interests.

1.2.2 The lifecycle of a Private Equity Fund

Private equity funds are characterized by a defined lifecycle, typically with a duration of 10 years which can be extended to up to three more years, and distinct phases with specific objectives and activities. The phases of the fund can be classified as follows:

1. **Fundraising:** during this phase the private equity firms, also known as Asset Management Companies (AMCs), collect capital commitments from Limited Partners (LPs). The Limited Partnership Agreement (LPA) is prepared, outlining the fund's strategy, its target returns, fees, risks, terms, and the fundraising duration, which typically lasts 12 to 18 months. This document also establishes a hard cap, the maximum amount of capital the fund can raise.
2. **Investment Period**: this phase involves the period over the first three to five years, in which GPs focus on identifying suitable companies that could contribute to the value creation of their portfolio companies. This phase comprehends due diligence and business plan development, culminating in the closing of deals. According to Gompers, Kaplan, and

Mukharlyamov (2015), for every 100 opportunities evaluated, PE investors thoroughly investigate fewer than 24, sign agreements with fewer than 14, and close on only 6. This highlights that due diligence is a time and resource-consuming activity, despite the low number of finalized investments. It can be business and commercial, financial, legal, environmental, and aimed at other specialized analyses, depending on the nature of the target company.

3. **Portfolio Management**: this phase is a more active phase, in which GPs actively manage the portfolio companies with the objective of enhancing their value through specific operations and preparing them for a profitable exit, while closely monitoring the progress. The GP can adopt two distinct approaches in management: the hands-on approach, in which the GP plays an active role in the company's operations, providing strategic guidance, enhancing governance, and supporting operational efficiency; and the hands-off approach, in which the GP adopts a more passive role, focusing more on monitoring and controlling performance, while leaving daily operations to the management team. To safeguard the value created, GPs often include protective clauses in the company's bylaws or shareholder agreements. These measures have been put in place to safeguard the investor's interests, acting as a barrier against any entrepreneurial actions that might harm the company's performance.
4. **Exit**: the divestment process can happen through the following mechanisms:
    a. IPOs: the portfolio company goes public, offering shares on a stock exchange to raise capital and provide liquidity.
    b. Trade Sales: the company is sold to a strategic buyer, often a competitor or a business seeking synergies.
    c. Secondary Buyouts: the company is sold to another private equity firm.
    d. Buybacks: the original owners or management team repurchase the company.
    e. Write-Offs: investments are written off due to failure, with minimal or no return.

    The proceeds from exits are distributed to LPs and GPs according to the terms of the LPA.

It is common for private equity companies to manage multiple funds concurrently, each at a distinct phase of their lifecycle. For instance, one fund may be actively investing, another may be preparing portfolio companies for sale, and a third may be in its exit phase.

The J-Curve in Private Equity

The lifecycle of private equity funds is frequently illustrated by the J-curve effect, as observed in a sample of funds raised between 1981 and 2000 (Ljungqvist, Richardson, & Wolfenzon, 2020). The J-curve reflects the temporal dynamics of returns during a fund's lifecycle:

- Early years: this period requires high capital calls needed to fund acquisitions and cover operating costs, leading to negative returns in the initial stages. By year four, approximately 73% of committed capital has typically been invested, creating a downward trajectory on the curve.

- Later years: return achieve a sharp increase as portfolio companies mature and start their exit phase, generating returns for the fund. As committed capital is return, the trajectory of the curve shows an upward trend, typically by the seventh year, with additional gains accruing in the final years.

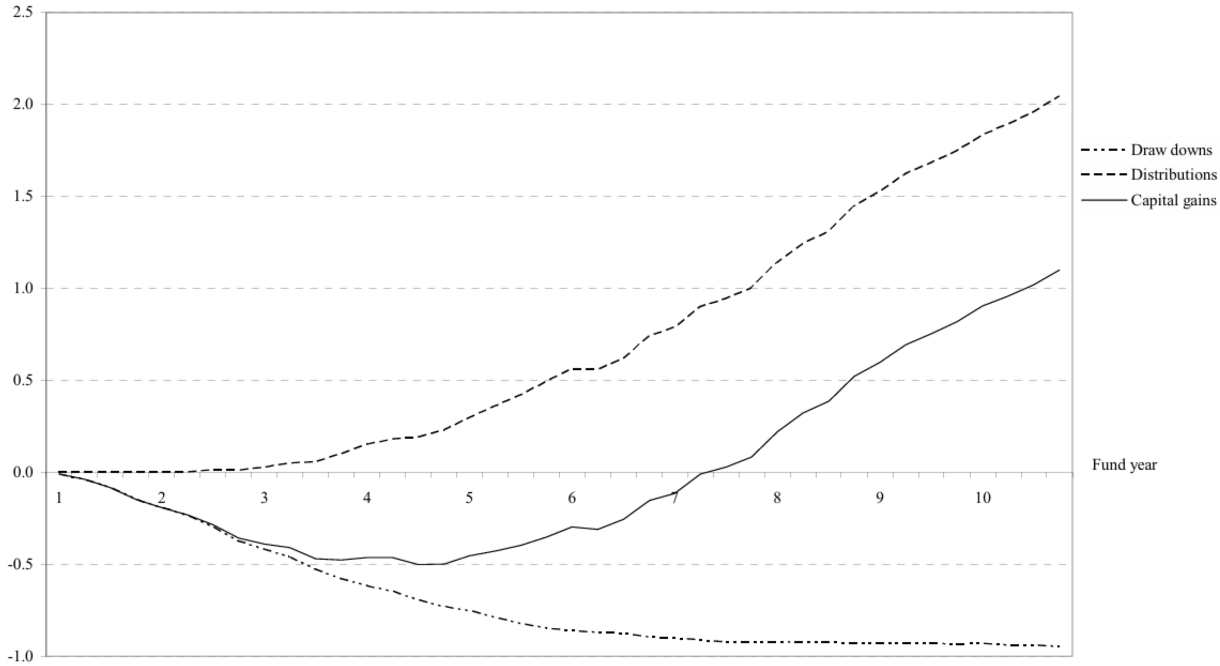


Figure 1.2: J-curve of PE funds raised in 1981-2000[2]

The implications of the J curve are twofold: first, it necessitates a long-term commitment from limited partners (LPs); second, it introduces liquidity constraints, given the fund's potential for substantial demand.

1.3 Types of Private Equity

Private equity encompasses a wide range of investment strategies, contingent upon the stage of company development and its financial needs. They include:

1. **Venture Capital (VC)**: primarily focused on early-stage startups, this type of investment targets companies with high growth potential but limited operating history, offering equity capital in exchange for significant ownership stakes.
2. **Growth Equity**: aimed at established businesses seeking funding for expansion; growth equity investments typically involve minority ownership positions and support initiatives such as market penetration, product development, or scaling operations.
3. **Buyouts**: it refers to the process of acquiring a controlling interest in a company. The most common strategy in buyouts is the leveraged buyout (LBO), which regards the acquisition of a mature company through a combination of equity and substantial debt financing. However, it should be noted that there exist other types of buyouts, including the

[2] Source: Ljungqvist, Richardson, and Wolfenzon (2020), as reproduced in Ljungqvist (2024)

management buyout (MBO) and the employees' buyout (EBO). In these scenarios, a controlling stake is acquired, respectively, from the management team or the employees.

4. **Turnaround**: it refers to the strategic investment in companies facing financial distress due to the fact they are performing below expectations, or they are suffering a period of operational challenges. This approach involves a thorough restructuring of both operations and capital structure to restore profitability, however, it is targeted only at companies that have potential for recovery.
5. **Mezzanine Financing**: it involves providing subordinated debt or preferred equity to finance a company's growth. It typically offers higher returns compared to traditional debt instruments due to its increased risk profile. Additionally, it frequently includes an option for conversion of the debt into equity, referred to as the "equity kicker."

1.3.1 Leveraged Buyouts (LBOs)

Jensen (1989) predicted that the LBO model would become a dominant corporate organizational form due to its robust governance structures, strong managerial incentives, and operational focus. Leveraged buyouts represent a cornerstone of private equity, distinguished by their heavy reliance on debt as a financing mechanism. Debt often represents the 60–80% of the total amount used to finance acquisitions, with loans initially secured from banks and later syndicated or sold to other investors. Additionally, equity bridge or subscription line facilities are often used as a means of temporarily funding equity (Ljungqvist, 2024). This financing structure allows for greater returns on equity at a cost of a higher financial risk, especially in adverse economic conditions (Kaplan & Strömberg, 2009).

LBOs use three primary engineering mechanisms to enhance value creation (Kaplan & Strömberg, 2009):

1. Financial Engineering in LBOs

Financial engineering is the core pillar of the LBO model, seeing that it focuses on the optimization of the capital structure, and it ensures the alignment of management incentives:

- Leverage utilization: in this mechanism debt plays a central role, as it allows the shareholders of the company to achieve higher returns as the debt is repaid over time.
- Optimization of the cost of capital: debt utilization enables the reduction of financing costs. These costs are reduced due to the capability of PE firms to refinance debt or negotiate favorable terms.
- Exit planning: disciplined leverage management and cash flow optimization are critical for maximizing valuation at exit (Kaplan & Strömberg, 2009).

Despite its numerous advantages, issuing a lot of debt implicates high risks, particularly during economic downturns when the cash flow required to service debt may be strained.

2. Governance Engineering in LBOs

A second important pillar of LBO according to Kaplan and Stromberg is governance engineering, which aims to reduce agency costs and enhance accountability by implementing robust monitoring mechanisms:

- Board structure: under PE ownership the board structure of the portfolio companies is reorganized comprising a lower number of members, typically 5-7, that meet more frequently and are more actively involved compared to public company boards. This structure allows the decision-making process to be more rapid and effective.
- Management changes: frequently it happens that underperforming executives are replaced post-acquisition, in fact around 50% of deals involve the recruitment of new senior management teams (Gompers, Kaplan, & Mukharlyamov, 2015).
- Intensified control: the performance is monitored more thoroughly to make sure that strategic goals are achieved.
- Incentive alignment: the typical incentives provided to managers are stock options and profit-sharing schemes, with the objective of aligning their goals with those of the partners that provide capital. This illiquidity discourages short-term manipulation of results.

3. Operational Engineering in LBOs

Operational improvement is a third critical component of value creation in LBOs, involving the application of industry-specific knowledge and operational expertise to improve performance. Due to these reasons, private equity firms are progressively hiring professionals with operational backgrounds. The value creation plans associated with operational engineering focus on:

- Revenue growth: the strategies to enhance revenues growth include the launch of new products and entering new geographies.
- Cost optimization: operations are streamlined by renegotiating contracts with suppliers, making processes more automated, and consolidating services.
- Add-on acquisitions: private equity firms acquire new companies to create synergies within their portfolios, with the goal of increasing investment returns and strengthening market positions.
- Strategic repositioning: this is reached through the redefinition of the business model and the increased focus on core competencies.

1.4 Value Drivers and Performance Measures

Private equity (PE) firms utilize a combination of engineering techniques to create value within their portfolio companies and to assess their performance effectively, in a similar way that is discussed in Section 1.3.1, which is more specific to LBOs. These value creation strategies, more in general, are supported by three core drivers:

1. **Operational Improvements**: the operational measures implemented, such as optimizing costs, the standardization of processes and revenue growth initiatives, aim to increase profitability and overall enterprise value (Sahlman, 1990).

2. **Financial Structuring**: it involves the finding of an optimized combination of debt and equity which is a trade-off between high potential returns and financial risks. This approach is the distinctive feature of PE investment strategies (Kaplan & Strömberg, 2009).
3. **Governance Alignment**: by establishing smaller, more focused boards and aligning management incentives with shareholder interests, PE firms ensure strategic execution and accountability. Active oversight and performance tracking are integral to achieving sustained value creation (Gompers, Kaplan, & Mukharlyamov, 2015).

In this section, the quantification and evaluation of these strategies are examined through key performance metrics.

1.4.1 Valuation Techniques in Private Equity

Private equity is an asset class often perceived as secretive due to the fact that the information regarding its operations is only disclosed with limited partners, rather than being available to the broader public. Additionally, these investments typically involve private and illiquid assets that are difficult to track and value. At the same time, the fact that they are combined with long investment horizons amplifies the complexity of evaluating outcomes. Nevertheless, valuation methodologies remain crucial to assessing the portfolio companies' value both at entry and exit. A way through which private equity firms estimate valuation at exit is to project cash flows over a five-year period and then determine terminal values beyond this timeframe. However, valuation methods built on CAPM-based perpetuity models are often foregone in favor of more pragmatic approaches. These valuation processes establish the groundwork for subsequent performance measurement, which will be examined in the following section.

To evaluate the return for investors during the investment period, it is essential to assess the market value of equity at both acquisition and divestment. Common valuation methods include:

- **Pricing Evaluation**: This approach relies on relative valuation techniques that utilize price multiples, such as Comparable Company Analysis (CCA). CCA benchmarks a target company's market value against similar businesses within the same industry by analyzing key financial metrics. Once the market value of the target asset is determined and the company's net debt is accounted for, the market value of equity for the specific company can be calculated. The underlying principle of multiples is to quantify the relationship between the price paid for an asset and the returns or value derived from it, providing a straightforward and market-aligned method for valuation. Not necessarily this means that the result is fully reflected in the balance sheet because it might occur that some assets are overvalued while some others undervalued.

The most important multiples are reported in the following table:

Multiple	Description

Enterprise Value to EBITDA (EV/EBITDA)	It assesses the value of a company relative to its operating performance. It is widely used across industries, particularly in capital-intensive sectors to determine the market value of equity. Equity = $\left(\frac{EV}{EBITDA} multiple\right) * EBITDA - Net\ Debt$
Price to Earnings (P/E)	It compares a company's market price per share to its earnings per share, commonly used to determine the market value of stocks.
Enterprise Value to Sales (EV/Sales)	It evaluates a company's value in relation to its total revenue, often used in industries where profitability metrics may be inconsistent, such as early-stage technology or high-growth sectors.
Price to Book (P/B)	It compares a company's market value to its book value. It is most relevant for companies with substantial tangible assets and may be less meaningful for firms with intangible assets, like technology companies.

- **Intrinsic Valuation:** it is commonly conducted using the Discounted Cash Flow (DCF) method, which calculates a company's enterprise value by projecting its future cash flows and discounting them back to the present. The discount rate is the company's cost of capital, based on its target capital structure.

Aspect	**Description**
Formula	$EV = \sum_{t=1}^{T} \frac{FCF_t}{(1+r)^t} + \frac{TV}{(1+r)^T}$
	- **FCF_t**: Free Cash Flows during the plan period (years 1 to T)
	- **r**: discount rate reflecting the risk
	- **TV**: Terminal Value, the value of the business beyond the plan period
Key Inputs	- Business Plan Cash Flows: detailed projections of Free Cash Flows over the explicit forecast period (typically 5 years).
	- Discount Rate: it reflects the risk of cash flows, typically based on the Weighted Average Cost of Capital (WACC) with equity's riskiness estimated through the CAPM (Capital Asset Pricing Model).
	- Terminal Value: it is estimated using either the perpetuity or the perpetuity growth method, then discounted back to the valuation date.

Purpose	To capture the intrinsic value of a business based on its cash-generating potential and the associated risks, without relying on market sentiment or comparable company analysis.

- **Real Options:** this approach views a company's opportunities as financial options, such as call or put options. This approach offers a more dynamic perspective than traditional valuation methods because it incorporates the possibility to make decisions responsive to the scenario, making it a better fit under circumstances of high uncertainty.

Among the various valuation approaches, the most widely used is the pricing valuation method. This preference is evident in the dominance of comparable company analysis multiples, which use metrics from public and private transactions to estimate terminal values and benchmark portfolio companies. In addition, entry multiples are widely used, with approximately 16% of investors relying on the same valuation multiples used at acquisition to guide exit valuations, ensuring consistency in pricing assumptions. In contrast, intrinsic valuation methods, such as those based on growing perpetuity formulas, are less commonly used. Less than 30% of investors use perpetuity-based models, reflecting a broader preference for market-driven comparable over theoretical approaches (Gompers, Kaplan, & Mukharlyamov, 2015).

1.4.2 Performance Measures in Private Equity

In private equity the success of value creation strategies is assessed with performance measures. They are crucial for making decisions at every stage, from evaluating potential acquisitions to managing existing investments. The main categories are:

Profitability metrics

- **EBITDA Margin** = $\frac{EBITDA}{Sales}$

  Description: EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) is a key element that measures the company's operating profitability. In private equity, it is considered a useful proxy for operating cash flow in a steady-state condition, without considering taxes, making it a useful indicator for assessing ongoing performance and potential value creation. EBITDA margin indicates how much revenues are translated into operational profit. On the one hand high value suggests lower operating costs relative to revenues, which are typical of retail industries; on the other hand, a lower margin may reflect higher costs and a potential greater value addition within the production process, common in heavy industries. In the private equity context, EBITDA is closely monitored and compared to the one of other companies within the same industry, with the purpose of helping investors to understand whether a portfolio company is generating sustainable growth and creating enough value so that return expectations are met.

- **Return on Invested Capital (ROIC)** = $\frac{Net\ Operating\ Profit\ After\ Tax}{Invested\ Capital}$

Description: ROIC is another important profitability metric in private equity, that measures how efficiently a portfolio company uses its invested capital to generate returns. This information is necessary to determine operational success and strategic capital allocation. If ROIC increases, it signals that the operating profits after tax are rising as well, suggesting effective value creation. In particular this happens when ROIC exceeds the company's cost of capital (WACC). In private equity, improving ROIC during the holding period is a synonym for enhanced valuation multiples and stronger exit outcomes.

Leverage metrics

- **Net Financial Position =** *Bank Debt + leasing debt + other financial debt – cash and cash equivalents*

Description: Net financial position (NFP), or net debt, is a measure of a company's overall financial health because it reflects the level of debt in the company. A higher value of the NFP signals greater reliance on borrowings. In private equity, it helps gauge how well a portfolio company can manage its debt, stay financially stable, and handle cash flow. It also plays a role in boosting capital gains and driving overall value creation.

- **Deal leverage ratio =** $\frac{Net\ Debt}{EBITDA}$

Description: it is a key private equity ratio that indicates the level of debt financing relative to a company's operating income. It measures both financial risk and the approximate number of years it would take to repay all debt from operating profitability alone, assuming no other obligations. A ratio greater than 4 often signals increased financial risk and difficulty in repaying debt. As a result, private equity firms closely monitor this ratio and focus on reducing it as a driver of value creation.

- **Financial Leverage ratio** = $\frac{Net\ Debt}{Equity}$

Description: it measures the extent to which a company relies on debt in relation to equity in its capital structure, and particularly its stability. The higher it is, the more the company relies on debt to finance its own growth and operations. Net Debt instead of debt itself is used for a more accurate result. As mentioned before, it is highly common, especially in companies backed by private equity firms, to be financed by a high amount of debt, especially through LBOs. High leverage ensures having more optimized returns, but it must be managed carefully to avoid potential solvency issues. By monitoring leverage during the investment period, private equity firms can make sure a portfolio company's capital structure stays in line with its goals and market conditions. A leverage ratio above 2 is generally seen as a warning, but its significance can vary depending on the industry.

- **Interest Coverage ratio** = $\frac{EBIT\ (Earnings\ Before\ Interest\ and\ Taxes)}{Interest\ Paid}$

Description: it evaluates how a company can cover its interest payments through its operating earnings. If the ratio is high, it means that the company can service debt, while a lower ratio may be a symptom of potential financial distress. In private equity this metric is fundamental to determine whether financing the company with leverage is sustainable or not, in particular when revenues fluctuate, or interest rates rise.

Return metrics

Compared to the previously mentioned metrics, these measures are specifically employed to evaluate performance based on estimates of portfolio company valuations, placing greater emphasis on the overall return of the investment throughout the fund's lifespan. The most common return metrics are:

1. **Internal Rate of Return (IRR)**

$$IRR = \left(\frac{FV}{PV}\right)^{\frac{1}{n}} - 1$$	**IRR**: it is the rate of return that makes the present value of future cash flows equal to the initial investment, or more clearly the rate that makes the net present value of future cash flows equal to 0.
	FV: Final Value, the total cash inflow received at the time of divestment.
	PV: Present Value of the investment, the initial cash outflow, representing the amount paid for the investment.
	n: duration of the investment.

Description: this measure is widely used, and it assesses the return on investment considering the timing of cash flows. This approach is generally preferred by financial investors over strategic ones because it better reflects the high profit expectations of their investments, rather than focusing on synergies and long-term goals. If the IRR is greater than the hurdle rate set by financial investors, which is the minimum expected return above invested capital, then the investment is pursued; otherwise, it is rejected. According to Gompers, Kaplan, and Mukharlyamov (2015), private equity firms typically target an IRR in the range of 20% to 25%.

2. **Multiple on Invested Capital (MOIC)** = $\frac{Return\ at\ exit}{Capital\ invessted\ at\ acquisition}$

Description: This metric reflects the total return on invested capital over the investment period, offering an absolute measure of performance. It is also called *Money on Money (MoM).* The target median MoM is in the range of 2.0x to 3.0x (Gompers, Kaplan, and Mukharlyamov, 2015).

IRR and MoM provide an initial framework for understanding private equity fund performance, but they offer only a limited perspective. In fact, additional metrics are used by general partners

(GPs) and limited partners (LPs) to comprehensively evaluate a fund's success. The following three metrics are all divided by paid-in capital, which is the total amount of money that LPs have contributed to date, not necessarily equal to the commitment amount, but the portion that has been called by the fund manager.

3. **Distributed value to Paid-In (DPI)** = $\frac{Cumulative\ distributions}{Paid-in\ Capital}$

Description: this measures the total capital a private equity fund has returned to its limited partners (LPs) relative to the total amount they have originally invested. This ratio typically increases over the fund's lifecycle; once it exceeds 1, it indicates that investors have received a return greater than their initial contributions.

4. **Residual value to paid-in (RVPI)** = $\frac{NAV}{Paid-in\ Capital}$

Description: it represents the unrealized value within a private equity fund. It is calculated by dividing the fund's Net Asset Value (NAV) by the total capital called at the valuation date. Early in a fund's lifecycle, when most value resides in ongoing investments, RVPI tends to be high. Over time, as the fund exits its investments, RVPI steadily decreases until it eventually reaches zero.

5. **Total Value to Paid-In (TVPI)** = $\frac{Cumulative\ distributions + NAV}{Paid-in\ Capital}$

Description: TVPI evaluates the distributions received by LPs net of fees, combined with the estimated value of the residual assets in the portfolio, divided by the LPs' capital contributions. A TVPI greater than 1 is a positive sign, meaning that the investors are getting a positive return on their investment, however, it does not account for the time value of money.

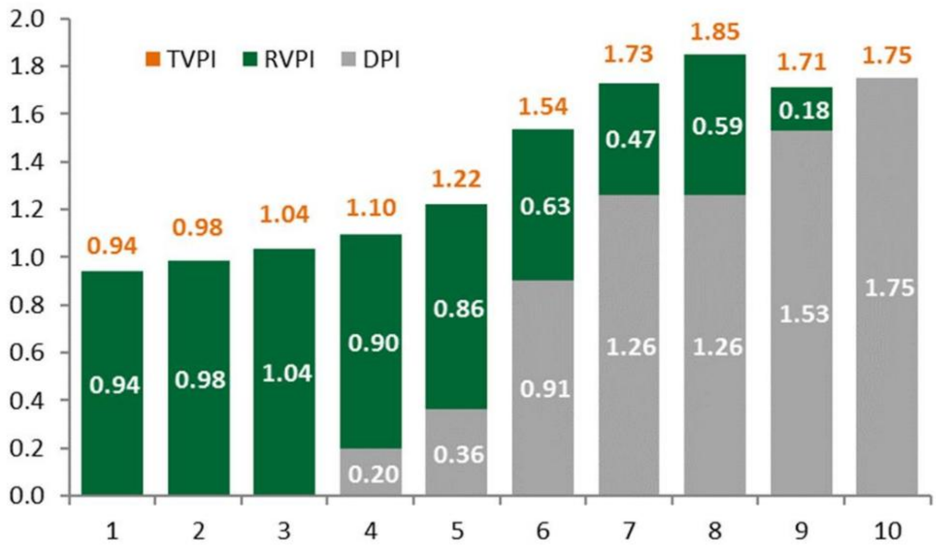


Figure 1.3: Evolution of TVPI, RVPI and DPI over a fund's life[3]

All these metrics are essential for a comprehensive evaluation of a private equity investment's performance. Because metrics such as DPI, RVPI, and TVPI do not account for the time value of money, they should be used together with IRR and other time-sensitive measures to provide a more robust assessment.

1.4.3 Emerging Trends in Value Creation

Private equity is an evolving industry with the continuous need to adapt to new challenges and opportunities in order to deliver value creation. Due to its dynamic nature, except for its traditional financial and operational strategies, the private equity investment approach is strongly shaped by emerging trends. Some of these trends are the integration of technology to optimize operations, the implementation of digital technologies within portfolio companies and the adoption of sustainable investment practices (Bain & Company, 2023). Regarding this latest trend, the importance of integrating environmental, social, and governance (ESG) factors into investment decisions and portfolio management is rapidly growing. These factors are considered beneficial not only towards the identification of risks and opportunities, but also they are believed to drive long term value creation. A survey conducted by Preqin in 2021 shows that a majority of limited partners now view ESG as a critical aspect of the investment process. This shift shows that modern investors consider it important to align investment strategies with societal and environmental goals. (McKinsey & Company, 2022).

The next chapter will closely examine ESG definition, its core principles and its growing importance in the investment universe.

1.5 References

[1] Albers-Schoenberg, A., Zeisberger, C., Prahl, M., & White, B. (2019). *Measuring private equity fund performance*. INSEAD Global Private Equity Initiative.
[2] Bain & Company. (2023). *Global private equity report 2023*.
[3] Blackstone. (2021). *Life cycle of private equity*.
[4] Gompers, P., Kaplan, S. N., & Mukharlyamov, V. (2015). *What do private equity firms say they do?*
[5] Jensen, M. C. (1989). *Eclipse of the public corporation*. *Harvard Business Review*, Sept.–Oct. (Revised 1997).
[6] Kaplan, S. N., & Schoar, A. (2005). Private equity performance: Returns, persistence, and capital flows. *The Journal of Finance, 60*(4), 1791–1823.
[7] Kaplan, S. N., & Strömberg, P. (2009). Leveraged buyouts and private equity. *Journal of Economic Perspectives, 23*(1), 121–146.

[3] Source: Albers-Schoenberg et al. (2019)

[8] Lerner, J., & Schoar, A. (2004). The illiquidity puzzle: Theory and evidence from private equity. *Journal of Financial Economics, 72*(1), 3–40.
[9] Ljungqvist, A. (2024). *The economics of private equity: A critical review*.
[10] Ljungqvist, A., Richardson, M., & Wolfenzon, D. (2020). The investment behavior of buyout funds: Theory and evidence. *Financial Management, 49*(1), 3–32.
[11] Luciano, E. (2024). *Slides from the "Applied Corporate Finance and Private Capital" course*. Politecnico di Torino, Torino.
[12] McKinsey & Company. (2022). *ESG report 2022*.
[13] Preqin. (2021). *ESG solutions*.
[14] Sahlman, W. A. (1990). The structure and governance of venture-capital organizations. *Journal of Financial Economics, 27*(2), 473–521.

2 ESG

2.1 Definition of ESG

The European Commission defines Environmental, Social and Governance (ESG) as “a framework or criteria to measure the sustainability and ethical impact of an investment or a company focusing on three fields: Environmental, Social, and Corporate Governance.” The term was coined in 2005 with the publication of *Who Cares Wins – Connecting Financial Markets to a Changing World*, a report launched by the United Nations Global Compact. This report provided guidelines for integrating environmental, social and governance into corporate strategy. They argued that integrating these factors into corporate decisions would help to mitigate risks and deliver growth (Lund and Pollman, 2021).

While ESG is often associated with investing, as the European Commission states, it also involves other stakeholders, such as customers, suppliers, and employees, who are becoming progressively interested in how a company integrates sustainable matters in its daily operations. The concept is closely linked to Corporate Social Responsibility (CSR), which is described by the European Commission as “the responsibility of enterprises for their impact on society”. To achieve social responsibility, all stakeholders, including enterprises, the EU economy, and society, must collaborate to build a more sustainable economic system that encourages innovation and profitability. ESG serves as a critical tool to monitor and measure progress toward this goal (European Commission).

Moreover, ESG analysis relies on standardized frameworks such as Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB), ensuring consistent and comparable disclosures (GRI & SASB, 2021). At the core of ESG, there is the concept of materiality, which is the principle of defining the sustainable topics that are more of interest according to the industry the company belongs to, as well as its stakeholders (Khan et al., 2015). Investors use ESG to manage risks (Larcker et al., 2024), while regulators, particularly in the EU, implement measures such as the ‘Green claims’ directive to ensure transparency and combat greenwashing, a practice by which companies present an exaggerated image of their commitment to social issues, in order to protect consumers (European Commission). ESG is becoming more closely aligned with global initiatives such as the Sustainable Development Goals (SDGs), making it a key framework that links financial performance with sustainable business practices.

2.2 The ESG framework

The roots of modern sustainability discourse in the business world can be traced back to Howard Rothmann Bowen’s seminal 1953 book, Social Responsibilities of the Businessman (Carroll, 2008). Bowen was an American economist who served as chief economist for the Joint Congressional Committee on Internal Revenue Taxation during World War II. After the war, he worked briefly on Wall Street before entering academia. In fact, he went on to become president of Grinnell College, the University of Iowa, and the Claremont Graduate School (University of

Illinois Department of Economics, n.d.). Among his many research papers, as introduced, he argued that corporations hold responsibilities beyond mere profit generation, laying the groundwork for what would later be formalized as Corporate Social Responsibility (CSR) and sparking early conversations about balancing economic gains with broader societal and ethical considerations (Carroll, 2008).

In 1971, the Pax World Fund was created in the United States as the first mutual fund focused on Socially Responsible Investing (SRI), an early example of how investors tried to include social reasons in their investment. Also in 1971, Klaus Schwab founded what would become the World Economic Forum (WEF) in Geneva, which, with its annual gathering in Davos, became a high-profile venue for leaders to discuss topics beyond traditional economics, including governance, technological innovation, and environmental challenges (World Economic Forum, n.d.).

Meanwhile, in 1972, the United Nations organized the first Conference on the Human Environment in Stockholm, which is considered an important milestone in the global environment because it finally recognized the need for cooperation among nations to address environmental issues. (United Nations, n.d.). In 1983, the UN created the World Commission on Environment and Development (WCED) to explore how economic growth and environmental management can work together. In 1987, chaired by Gro Harlem Brundtland, their commission published *Our Common Future* in 1987, a landmark report that introduced and popularized the term "sustainable development" (European Union, n.d.). According to the European Union, the report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". It emphasized that economic growth and environmental responsibility must coexist to ensure long-term success. Both the Stockholm Declaration and the Brundtland Report are highly important because they represent the formal entrance of environmental and social issues into global policy discussions. Around the same time, the concept of social finance, which had its roots in the United States in the 1970s, began to emerge and helped anticipate ESG practices, as it was the first concept aimed at incorporating environmental and social impact into investment strategies in addition to financial returns. In 1994, business consultant John Elkington introduced the concept of the "Triple Bottom Line" (People, Planet, and Profit), highlighting that a company's success should be measured not just by financial performance but also by its social and environmental impact. Next, in 1997, the Global Reporting Initiative (GRI) was established to develop standardized sustainability reporting guidelines, becoming one of the most widely used frameworks for disclosing this type of data and allowing data comparison among companies.

In addition to these previous actions, there are several coming to expand CSR thinking but also in mainstreaming ESG as a value creation approach among institutional investors worldwide. Other examples include: the launch of the Carbon Disclosure Project (CDP) in 2000, that encouraged companies to disclose their greenhouse gas emissions; the publication of the UN Principles for Responsible Investment (UN PRI) that followed in 2006, to guide investors in incorporating ESG factors into their decision-making (Principles for Responsible Investments); the promulgation of *The Economics of Climate Change: The Stern Review* in 2006, which closely analyzed the impacts of climate change and its economy, concluding in its Executive Summary that "The benefits of strong, early action on climate change outweigh the costs" (Stern, 2006); also the global financial crisis of 2008 then triggered a widespread reevaluation of investment practices, leading to greater appetite for ethically responsible and resilient strategies (Benedikter & Roland, 2011). This turning point accelerated interest in social finance and highlighted the importance of mitigating systemic risks, including those tied to environmental degradation and social inequality. Building on earlier disclosure efforts, the Task Force on Climate-related Financial Disclosures (TCFD), in 2017, proposed a standardized framework to help investors and stakeholders better understand climate risks and opportunities.

The development of ESG can be situated within this broader context of a socio-cultural shift. Investors came to recognize the critical nature of sustainable business practices for long-term financial performance, brand reputation, and risk management. At the same time, other stakeholders demanded transparency around these practices. While the concept of Corporate Social Responsibility (CSR) has historically emphasized philanthropic or community-focused initiatives, ESG considerations adopted a more measurable approach by integrating their criteria into core business and investment strategies, focusing on metrics and risk management, while still built on the principles of CSR. ESG entered more deeply into the financial sector due to the increase in pressure by regulators and stakeholder expectations. Consequently, the financial sector became a critical element to better introduce sustainability goals on a global scale.

Beyond its foundational principles, ESG is used as a framework for evaluating how companies create value that does not depend on economic returns. According to Bellini (2025), this measurement is particularly useful because it helps to:

1. Direct financial resources toward sustainable projects
2. Improve risk evaluation by diversifying and reducing threats
3. Reduce information asymmetry and enhance transparency about genuine sustainability efforts
4. Attract a growing base of ethically minded investors
5. Support innovative financial instruments, such as green bonds and ESG-focused funds.

Finally, in recent years, sustainability has become a more tangible issue within corporate landscape. The reasons behind this are closely associated with global initiatives; in fact, on December 12, 2015, the Paris Climate Accord, the first universal and legally binding agreement on climate change, was reached by the 197 member states of the United Nations Framework Convention on Climate Change (UNFCCC). This Agreement was designed to ensure that global temperatures do not rise beyond 2°C, compared to years before industrialization, and to aim to reduce warming to 1.5°C by 2030. That same year, on September 25, 2015, the 17 Sustainable Development Goals (SDGs) were introduced by the United Nations General Assembly, with the objective of raising awareness and encouraging the international community to commit to initiatives promoting human well-being, economic growth, and planetary protection. These SDGs work together with ESG criteria not only to provide benchmarks to measure environmental, social, and governance progress, but also to represent how sustainability pervades all aspects of global development and corporate strategy.

2.3 The ESG Criteria

As the word suggests, ESG comprehends three pillars: Environmental, Social, and Governance. They strive to measure the sustainability and ethical impact of a firm. Each pillar is different and questions various aspects of how the firm operates and its interaction with stakeholders. Due to its nature, it serves both to the corporation to make internal decisions and to investors, guiding them during investment evaluations. As noted in the European Commission's definition, these matters can be understood as part of a company's social responsibility. Consequently, the ESG framework can be applied in various contexts, depending on the type of stakeholder involved.

1. The Investor's Perspective: if the stakeholder involved is the investor, ESG is used to perform both screening and due diligence, guiding them to decide which company to allocate capital, according to their sustainable and ethical effort. ESG framework also supports them with risk management and diversification, as sustainability initiatives help mitigate financial and operational risks.
2. The Company's Perspective: if the stakeholder involved is the company itself, ESG is a tool that helps to measure, manage, and communicate their performance across its dimensions. This is positive for sustainable companies because it allows them to reduce information asymmetry, and distinguish themselves among investors, customers, and other stakeholders. Additionally, for these companies, effective ESG implementation can help them to attract more capital, meet regulatory expectations, and enhance their competitive positioning. It is important to note, as anticipated, that since not all sectors face the same issues, companies report on material issues, those that have an impact on the company's financial performance.

The ESG framework is also used as a way to evaluate the performance of companies by measuring the sustainability of their investments beyond financial results, and this is done by providing ESG Ratings. These are crucial tools to define a company's commitment to sustainability by providing insights into impact and responsibility, and to guide not only investors' decisions, but also those of customers, and other stakeholders close to this issue. This evaluation assigns companies an ESG score based on their ability to operate according to ESG criteria, reflecting their environmental and social sustainability as well as the quality of their governance.

2.3.1 Environmental Criteria and Performance Metrics

The first pillar of ESG is the environmental pillar. Its purpose is to evaluate how a company interacts with the natural environment, and its impact; for instance, it measures how effectively the company uses and manages natural resources, minimizes waste, reduces carbon emissions, and adapts to climate change.

According to the World Economic Forum (2020), the seven themes of particular significance to the planet, society and business are:

1. Climate change: to mitigate the rise of global temperatures, extreme weather events, and the increasing severity of natural disasters, businesses should reduce greenhouse gas

emissions, adopt renewable energy sources, and incorporate strategies to protect climate change into their operations.
2. Nature loss: to fight phenomena such as deforestation, habitat destruction, and biodiversity degradation, that pose significant risks to planetary health, companies should protect and restore natural ecosystems, adopt sustainable practices for lands, and invest in biodiversity conservation to preserve the planet's vital resources.
3. Freshwater availability: to favor access to clean and sufficient freshwater, important to both life and economic activity, companies are increasingly responsible for managing water use efficiently, avoiding excessive consumption, and making sure not to generate water scarcity in vulnerable regions.
4. Air pollution: it is caused by industrial activities, transportation, and energy production, and it has significant public health and environmental consequences. Businesses must focus on reducing emissions of harmful pollutants like nitrogen oxides (NOx), sulfur oxides (SOx), and particulate matter to improve air quality and protect human health.
5. Water pollution: to prevent the contamination of water sources from industrial discharge, agricultural leakage, and inadequate management of waste that negatively impacts ecosystems and communities, companies should focus on waste disposal, treatment of effluents, and sustainable supply chain practices.
6. Solid waste: the generation of excessive solid waste, including plastics, contributes to environmental degradation and pollution. Actions to take are waste reduction strategies, circular economy practices, and recycling and responsible disposal of materials to minimize their bad footprint.
7. Resource availability: resources, such as minerals, metals, and fossil fuel, are not finite, and its depletion threatens long-term business and economic sustainability. Companies should embrace sustainable sourcing, efficient resource use, and innovation in renewable and recyclable materials to ensure future resource availability.

Figure 2.1: Environment ESG metrics example[4]

[4]Source: Quantive. (n.d.) *ESG Metrics: Your Guide to Common ESG Metrics*. Retrieved from: https://quantive.com/resources/articles/esg-metrics.

From a reporting perspective, the environmental pillar is often the most complex, requiring detailed data collection and analysis (Deloitte, 2022).

2.3.2 Social Criteria and Performance Metrics

The social pillar of ESG evaluates a company's impact on people and its relationships with employees, suppliers, customers, and the broader communities it interacts with. This criterion encompasses a range of factors, including human rights, working conditions, diversity and inclusion, and community engagement. It assesses how companies foster equitable and ethical practices across their operations and in their interactions with society.

According to the World Economic Forum (2020), the three social themes are:

1. Dignity and equality: it focuses on providing equitable opportunities to all employees in recruitment and selection, training, development and promotion. The assessment of progress is measured through several key metrics, including the percentage of diversity and inclusion, pay equality, and wage level.
2. Health and well-being: this theme requires organizations to ensure the health, safety, and mental, physical and social well-being of all people in their operations and value chains. Relevant metrics encompass the percentage of work-related injuries and the extent to which the organization facilitates access to healthcare services for these individuals.
3. Skills for the future: it means to prioritize the acquisition of skilled labor in order to ensure the company's long-term success. Consequently, it becomes incumbent upon these companies to allocate resources towards investments in training, education, and the reskilling of their existing workforce.

Companies reporting under the social pillar are expected to provide data and insights into their efforts to address these areas, demonstrating their commitment to social responsibility. Effective management of social factors not only benefits employees and communities but can also enhance a company's reputation, customer loyalty, and stakeholder trust.

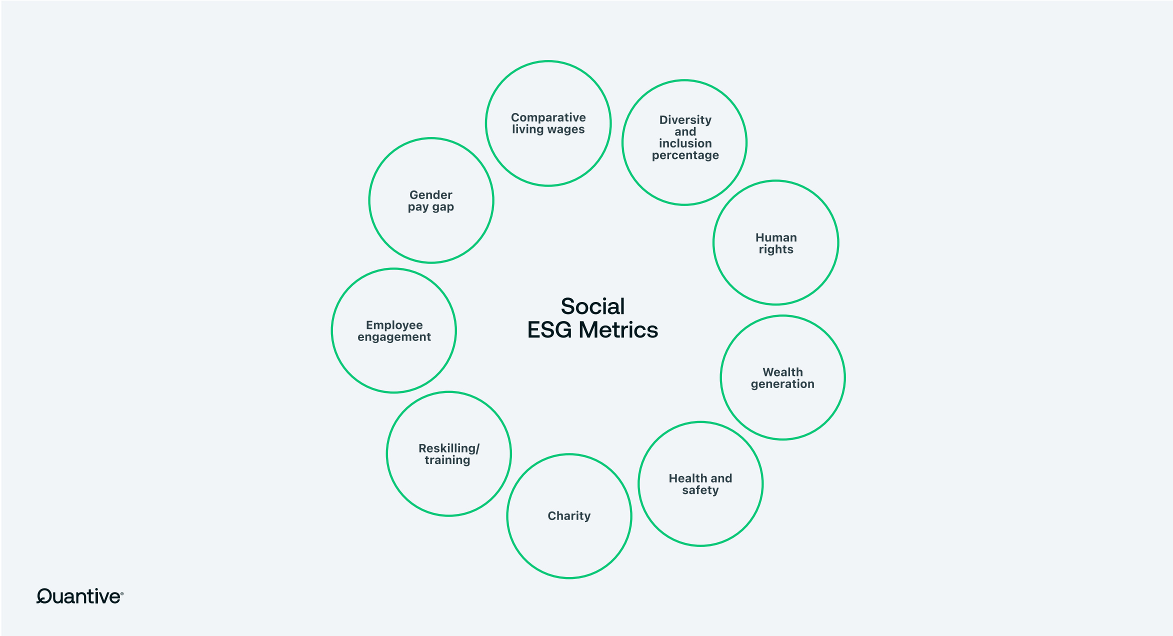


Figure 2.2: ESG Social metrics example[5]

2.3.3 Governance Criteria and Performance Metrics

The third and last pillar of ESG regards how a company is managed and what are its ethical principles. They evaluate how the company in question aligns leadership, policies, and its decision-making processes with best practices, moral principles, and stakeholder interests. This ensures greater transparency, fairness, and accountability in corporate operations.

According to the World Economic Forum (2020), the five themes that provide effective governance are:

1. Governing purpose: this emphasizes the significance of a company's mission and values in guiding its strategies and decisions. Companies should define their long-term purpose, which should be focused not only on making profits but also on creating value for all stakeholders including customers, employees, communities, and the environment.
2. Quality of governing body: the strength of governance relies on the skills, diversity, and independence of board members and leaders. It also emphasizes the need to monitor and improve corporate performance and establish effective controls over time.
3. Stakeholder engagement: it regards active and meaningful engagement with stakeholders to understand their concerns and integrate their expectations into business strategies. Specifically pursuing open communication with customers, employees, investors, and communities, which will enhance trust and alignment of interests.
4. Ethical behavior: it highlights the importance of integrity, accountability, and ethical conduct throughout the organization. It includes compliance with laws, fighting corruption, and fostering a culture of fairness and honesty in business deals.

[5]Source: Quantive. (n.d.) *ESG Metrics: Your Guide to Common ESG Metrics*. Retrieved from: https://quantive.com/resources/articles/esg-metrics.

5. Risk and opportunity oversight: this last theme points out the need for proactive monitoring to ensure better identification and management of risks and opportunities associated with the company's operations.

Figure 2.3: ESG Governance metrics example[6]

By the end of the year, companies typically publish an ESG report, detailing their performance across the Environmental, Social, and Governance pillars.

2.3.4 ESG Rating Companies

There are numerous organizations and rating agencies which provide ESG ratings to assess the sustainability performance of companies across environmental, social, and governance dimensions. They measure a company's performance in sustainability using their own proprietary methodologies. The work of rating agencies is of particular interest to investors, who are guided into making careful decisions, as companies with high ESG scores are perceived to both deliver superior long-term financial performance and present lower risks, including environmental, reputational, and operational risks.

However, the issue with ESG ratings is the lack of a standardized framework; in fact, these ratings cannot be compared as they use different methodologies. In addition to this, also ESG rating companies prefer not to disclose any information about their data collection processes and evaluation criteria. As a result, the United Nations and regulatory bodies are working to solve these issues and have recently established a new ESG Rating Regulation, whose provisions are set to take effect on July 2, 2026, with the aim to establish greater consistency and reliability in ESG assessments.

The most renowned ESG rating agencies, as noted by Bellini (2023), include MSCI ESG Research, Sustainalytics, Refinitiv, Moody's ESG Solutions, S&P Global Trucost, Bloomberg, FTSE Russell, Vigeo Eiris, and ISS ESG.

[6]Source: Quantive. (n.d.) *ESG Metrics: Your Guide to Common ESG Metrics*. Retrieved from: https://quantive.com/resources/articles/esg-metrics.

2.4 ESG Reporting Standards

Despite the absence of a universally accepted ESG framework, a broad consensus has emerged on the issues it comprehends. This consensus, however, is not uniform across all data points, which can lead to significant variations in reporting practices. Consequently, companies often rely on sustainability reporting standards to guide their reporting processes. These standards, which are typically applied using one or more frameworks, serve as a benchmark for the content and structure of ESG reports. The Global Reporting Initiative (GRI) and the Sustainable Accounting Standards Board's (SASB) standards are the two most commonly used reporting standards for ESG reports.

2.4.1 Global Reporting Initiative

Figure 2.4: Global Reporting Initiative logo[7]

The Global Reporting Initiative (GRI) is an independent organization recognized all around the world, that develops sustainability reporting standards to help companies communicate their environmental, social, and governance (ESG) performance. Established in 1997, GRI has become one of the most widely adopted frameworks, with over 14,000 organizations in more than 100 countries using its standards. Its objective is to provide a consistent approach for organizations to measure and disclose their sustainability efforts, enabling comparability, transparency, and accountability. By offering a modular and adaptable framework, GRI allows businesses to address both universal sustainability concerns and industry-specific challenges. Alignment with changing regulations and disclosure practices is guaranteed by the Global Sustainability Standards Board (GSSB), an independent body overseen by GRI, which reviews and updates the Standards every three years.

GRI plays a key role in global sustainability efforts, serving as a tool for business partnerships under the UN Global Compact (UNGC) and by helping companies to align their reporting with the UN Sustainable Development Goals (SDGs), addressing global challenges like poverty, inequality, and climate change. Notably, together with the UNGC, GRI developed the SDG Action Platform, helping companies to monitor and disclose progress with these objectives. As a matter of fact, in collaboration with the UNGC, GRI developed the SDG Action Platform, allowing

[7] Source: Global Reporting Initiative. (n.d.). Retrieved from: https://www.globalreporting.org/.

companies to monitor and disclose progress toward these objectives. The GRI Reporting Standards are comprised of three primary components:

1. Universal Standards: these form the basis for all organizations and focus on core sustainability considerations related to environmental, social, and economic impacts. These standards, updated in 2021, are aligned with emerging sustainability requirements, including those in the European Union, and provide a benchmark of main indicators for all organizations.
2. Sector Standards: these standards are tailored to industries with significant environmental or social impacts, such as oil and gas, and they help companies report on material topics specific to their sector, ensuring relevance and comparability.
3. Topic Standards: these standards provide guidance on a wide range of specific sustainability issues, such as biodiversity, water usage, or labor practices. While optional, companies are expected to disclose any material topics they identify, even if not covered in the GRI framework.

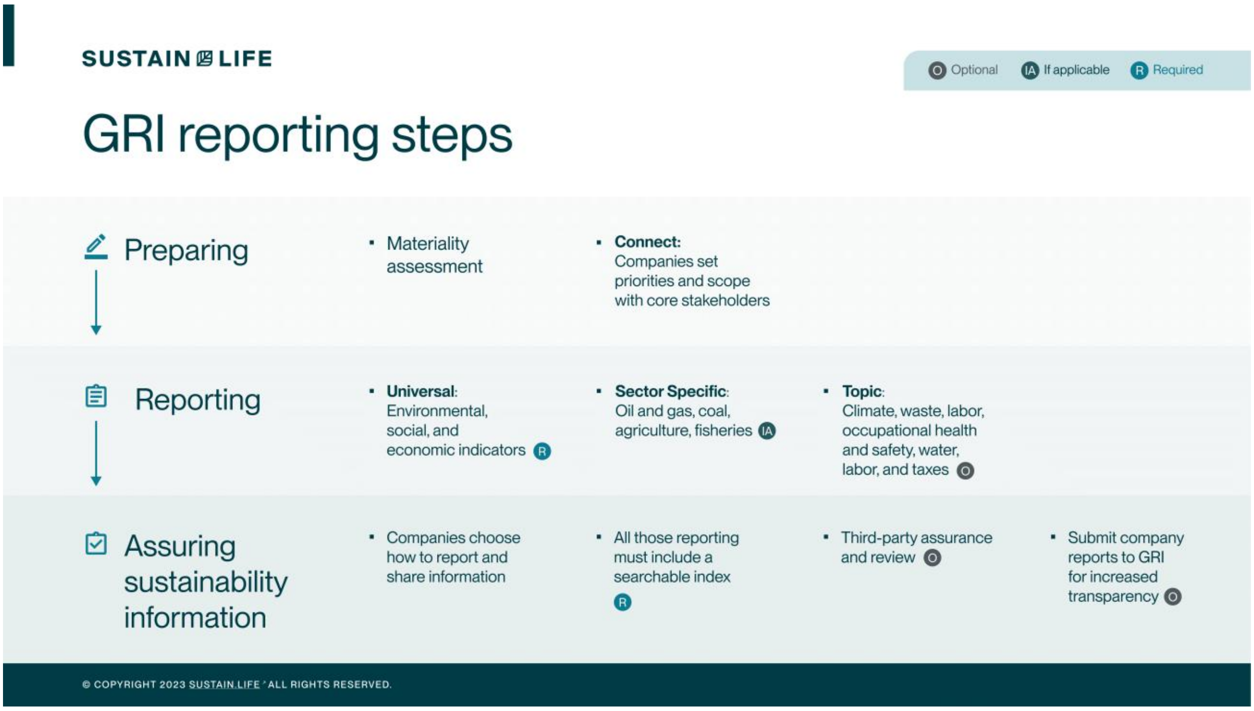


Figure 2.5: GRI reporting steps[8]

Together, these components make sure that GRI reporting is comprehensive and adaptable, allowing companies to address both universal and sector-specific concerns while offering flexibility for material topics most relevant to their business. However, this flexibility might lead to reports that are not uniform with each other beyond Universal Standards, limiting comparability even for companies within the same sector. Finally, the reports completed can be directly published on the GRI website or made available to third parties, allowing stakeholders to evaluate and compare sustainability initiatives across different organizations and industries.

[8] Source: Molfetas, M., & Rade, A. (2024, November). What are the GRI Standards? Sustain Life. Retrieved from: https://www.sustain.life/blog/gri-standards#standard

2.4.2 Sustainability Accounting Standards Board

Figure 2.6: Sustainability Accounting Standards Board logo[9]

The Sustainability Accounting Standards Board (SASB) is a non-profit organization, similarly to the Global Reporting Initiative (GRI), that was founded in 2011 by Jean Rogers to address the growing need for ESG reporting standards. The objective of SASB was to create a framework that would allow financial analysts and investors to compare companies' ESG performance and provide them with relevant information about the companies they invest in. The SASB Standards were officially launched in 2018, and in August 2022, their responsibility switched to the International Sustainability Standards Board (ISSB) under the IFRS, thereby further strengthening their global relevance.

The SASB Standards have been developed for 77 industries, grouped into 11 sectors using the Sustainable Industry Classification System (SICS), a proprietary system that combines traditional classification factors with sustainability risks and opportunities to categorize industries. The 11 sectors defined by this system include Consumer Goods, Extractive & Mineral Processing, Financials, Food & Beverage, Health Care, Infrastructure, Renewable Resources & Alternative Energy, Resource Transformation, Services, Technology and Communications, and Transportation (IFRS Foundation). Within these sectors, individual industries are further classified; for example, the Consumer Goods sector contains seven industries, including Appliance Manufacturing and E-commerce. This structure unifies companies with similar activities, enabling easier comparisons and more consistent data for investors.

Before reporting, it is important that a firm first understands SASB Standards terminology and structure, in order to identify its industry through the Sustainable Industry Classification System (SICS), review the SASB Standards for the industry most relevant to its activities, and determine which standards and disclosure topics apply.

The sustainability topics within SASB are categorized into five key dimensions, as the IFRS Foundation states:

[9] Source: International Financial Reporting Standards Foundation. (n.d.). Retrieved from: https://sasb.ifrs.org/

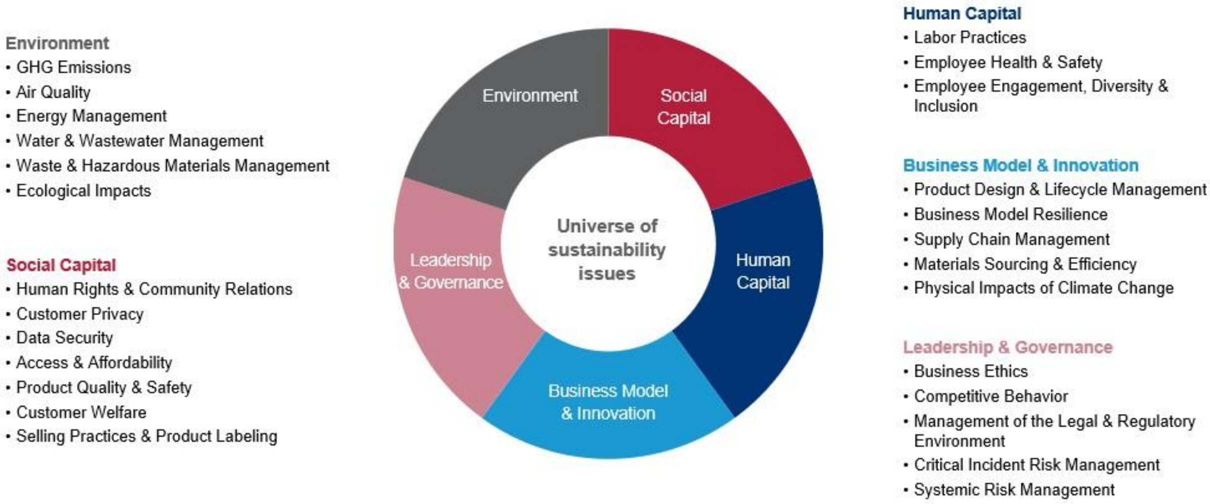


Figure 2.7: Sustainability dimensions[10]

Clearly, the activities that contribute to long-term value creation differ across industries and organizations. Determining what a company should disclose requires careful evaluation of key issues within the context of its specific circumstances. These issues are addressed by SASB Standards through the identification of industry-specific disclosure topics and by providing standardized quantitative and qualitative metrics to measure company performance. Each metric comes with technical protocols to ensure clarity in definitions, application, and reporting. In addition, activity metrics are included to standardize data, enabling comparisons across organizations and improving the analysis of disclosed information.

2.4.3 GRI vs. SASB

The 2024 KPMG Survey of Sustainability Reporting reveals that GRI continues to be the most widely adopted global standard, with strong usage across all regions: 75% in Asia-Pacific, 71% in Europe, 70% in the Americas, and 64% in the Middle East & Africa. Its adoption among both large (G250) and medium (N100) corporations either increases or remains stable. On the other hand, the survey underscores the growing importance of the SASB Standards, particularly in the Americas, where 67% of companies adopt them, nearly twice the rate observed in other regions: over 70% of N100 companies in Brazil, Canada, Chile, and the United States have implemented SASB. Outside the Americas, its implementation is 96% in Taiwan, 86% in South Korea, and 65% in Ireland. The growth in popularity of SASB is closely linked to its alignment with new global regulatory frameworks, including the ISSB Standards and TCFD recommendations, that are driving the evolution of ESG reporting as they seek for consistent, comparable, and financially material disclosures. The approach that SASB provides, which closely focuses on the industry, helps companies prepare for compliance with these evolving regulations, which are increasingly being adopted by governments and financial markets worldwide.

[10] Source: IFRS Foundation. Implementation primer: A practical guide to using SASB standards. Retrieved from: https://sasb.ifrs.org/implementation-primer/.

According to Dunstan (2018), Tim Mohin, chief executive of GRI, and Jean Rogers, chair of SASB, described GRI and SASB as complementary and "mutually supportive" because they target different areas and serve distinct purposes. Mohin said: "The GRI framework focuses on a company's impacts on the broader economy, environment and society to determine its material issues." making it stakeholder oriented. In contrast, Rogers noted: "At the SASB, the audience we're trying to serve is financially motivated mainstream investors… seeking access to standardized performance information on the small handful of sustainability factors that are reasonably likely to materially affect the financial condition or operating performance of their portfolio companies." This underscores how SASB is industry-focused and serves the needs of financial markets, while GRI adopts a broader, multi-stakeholder approach.

2.5 ESG Recent Regulations

ESG regulations define the parameters for corporate reporting and the disclosure of information, with a particular emphasis on sustainability and ethical impacts. Despite progress in regulating sustainability performance, the lack of a unified ESG standard has resulted in a fragmented reporting landscape with various frameworks and methodologies, leading to difficulties in determining priorities, disclosing relevant data, and comparing sustainability performance, risks, and decision-making across companies and investors. The European Union is constantly working to provide clear rules to regulate sustainability risks.

The most recent regulations are:

1. Corporate Sustainability Reporting Directive (CSDR):

Since January 5, 2023, the European Union has implemented the Corporate Sustainability Reporting Directive (CSRD), a regulatory framework designed to modernize and strengthen sustainability information provisions. The main objective of the directive is the promotion of transparency. It applies to all large companies and listed small and medium enterprises (SMEs), it imposes the use of uniform and compulsory standards for reporting, and it extends to non-EU companies that generate over 150 million euros within the EU market. Enhanced transparency is obtained by making sure that the information disclosed by companies is accessible both to investors, enabling them to assess the financial risks and opportunities associated with their investments, and to other stakeholders, allowing them to evaluate the environmental and social impact of companies. The implementation of enhanced regulations and greater alignment leads to a reduction in the financial burden on companies over time.

Companies subject to the CSRD are obligated to report in accordance with the European Sustainability Reporting Standards (ESRS), which have been developed by the European Financial Reporting Advisory Group (EFRAG) and are tailored to align with EU policies.

2. Sustainability Finance Disclosure Regulation (SFDR):

The European Commission's Regulation (EU) 2019/2988 on the disclosure of relevant sustainable information in the financial services sector, named SFDR, came into force on March 10, 2021. The aim of this regulation is to enhance transparency around ESG investment processes by encouraging financial market participants, companies offering financial products, and entities involved in sustainable investments to disclose detailed reports on how financial products address environmental and social characteristics and pursue sustainable investment objectives. The SFDR establishes a classification system for financial products, which are divided into three categories: Article 6 encompasses products that do not have a specific focus on sustainability, Article 8 includes products that promote environmental or social characteristics, provided that companies meet certain ESG standards, and finally, Article 9 concerns products that target sustainable investments, with an explicit focus on achieving sustainability objectives alongside financial returns. A central component of the SFDR is the Principal Adverse Impact (PAI) disclosure requirement, which mandates that financial market participants assess and report the potential negative effects that their investment decisions have on sustainability factors, such as greenhouse gas emissions, biodiversity, water usage, waste management, and social issues including violations of human rights. Entities must disclose the actions implemented to handle the impact of these issues and how their investment strategies align with sustainability goals. For those that choose not to provide this information, the regulation enforces a "comply or explain" principle, requiring them to justify their decision.

3. ESG ratings regulation:

The Council of the European Union officially approved the European Union's ESG Ratings Regulation on November 19, 2024. This regulation states that any entity performing ESG ratings must be authorized and undergo supervision by the European Securities and Markets Authority (ESMA). These providers will be subject to stringent transparency requirements, particularly with regard to their methodologies and sources of information. Furthermore, ESG rating providers based outside the EU that aspire to operate within the EU must obtain endorsement of their ESG ratings from an EU-authorized ESG rating provider, a designation based on a quantitative criterion or be included in the EU registry of ESG rating providers through an equivalence decision.

2.6 ESG and financial performance

The relationship between environmental, social, and governance (ESG) factors and financial performance has been the subject of several studies. First, Whelan, Atz, Van Holt, and Clark, after a thorough examination of 1,000 research papers published between 2015 and 2020 on the subject, revealed that companies which effectively manage ESG issues tend also to improve profitability metrics, such as return on assets (ROA), return on equity (ROE), and stock price, and often perform better during economic or social crises. Additionally, they found out that ESG has a greater impact over longer time horizons, with ESG integration strategies outperforming negative screening approaches. Furthermore, sustainability initiatives appear to enhance financial performance through factors like improved risk management and increased innovation, while disclosure alone does not necessarily drive financial gains. Finally, they also highlighted that companies preparing for a low-carbon future tend to achieve better financial outcomes. Some limitations of this study are the lack of standardized definitions for ESG and sustainability, contributing to mix investment strategies that prioritize financial returns, such as ESG integration and socially responsible investing, with those that are willing to accept lower financial returns as long as they generate a positive environmental or social impact, commonly referred to as impact investing. Additionally, the absence of a unified standard for measuring ESG poses significant challenges in obtaining accurate and reliable data. For instance, Eccles et al. (2017) found that institutional investors often struggle with inconsistent and low-quality ESG data, while Berg et al. (2019) highlighted the limitations of accounting metrics and ESG scores, noting that 40% of studies rely on third-party ratings, which tend to vary significantly.

Another critic refers to the necessary distinction of material and immaterial ESG issues that can generate different results. In fact, the study of Khan, Serafeim, and Yoon (2015) argue that corporate sustainability investments yield different financial outcomes depending on their materiality to an industry or firm, with investments in material sustainability issues significantly outperforming those in immaterial issues in terms of stock returns and accounting performance. The results underscore the importance of focusing on material sustainability issues for asset managers integrating sustainability factors into capital allocation decisions.

Another recent paper evaluates the integration of ESG practices in the company (Barbosa et al., 2023). It attempts to evaluate this from the perspective of both operations and employees, which was outlined as a gap in literature. The study was conducted using a combination of qualitative and quantitative methods, as the research methodology incorporated a bibliometric approach, meta-analysis, and content analysis. These approaches were employed to mitigate the potential for errors or biases, such as the use of ambiguous keywords, variations in database functionality, or personal interpretations during results analysis. The outcome of this research emphasizes a rapid rise of studies related to ESG factors, with a notable increase from 97 publications in 2017 to 649 in 2021, resulting in an approximate growth of 570%. The integration of ESG criteria has been demonstrated to offer organizations numerous benefits, including enhanced reputation among stakeholders, improved competitiveness, promoted sustainability, fostered gender diversity, and generated intellectual opportunities. Nevertheless, there still are many recommendations for future research, particularly concerning the standardization of ESG metrics across geographies and sectors, the need to expand the scope of reporting to include perspectives from employees and to investigate the role of technology in ESG, such as AI and blockchain.

Given the established link between ESG performance and financial outcomes, it is crucial to explore its integration within specific financial investments, particularly private equity, a sector that is about anticipating trends of value creation.

2.7 ESG and Private Equity

While Private Equity possesses the capability to anticipate long-term value creation trends ahead of other investment strategies, ESG represents one of the most prominent trends shaping contemporary investment practices. The growing success of ESG investing, as highlighted in the Bain Report (2021), is largely due to its appeal to all stakeholders involved in the investment process. Customers, employees and limited partners are becoming increasingly conscious of sustainability issues and are demanding more responsible corporate behavior. Customers expect positive environmental contributions in response to critical global changes; employees seek a more sustainable work environment, where ESG is often linked to overall corporate health; and financial institutions favor ESG integration as an indicator of lower investment risk. Indeed, a study conducted by Lagerkvist et al. (2020) among 559 Swedish investors identified three sub-groups, which represented 76.3% of respondents, who exhibited strong ESG preferences, whereas the remaining investors were categorized as high-risk takers with minimal sustainability concerns. In particular, among the 76.3% of investors with strong ESG preferences, 52.2% expressed a clear preference for Socially Responsible Investing (SRI), acknowledging the trade-off between financial returns and social impact. These results highlight the growing appeal of SRI equity funds, especially those that give special attention to environmental factors within the broader ESG framework. Also limited partners (LPs) contribute to the increased demand for investments focused on ESG integration. According to the Bain Report (2021), which cites data from Preqin, the proportion of investments committed to Principles for Responsible Investment, the Net-Zero Asset Owner Alliance, and the Task Force on Climate-related Financial Disclosures stands at 45% in the Americas, 55% in Asia, and 80% in Europe. Clearly, these results confirm Europe as the leader in responsible and sustainable investments, with European LPs demonstrating the strongest commitment to ESG principles. Similarly, the trend suggests a profound change within the private equity landscape, which is increasingly integrating sustainability in its investment decision-making process.

The adoption of ESG consideration in investment strategies is further growing due to its reported benefits: according to Kaul (2023), it is associated with reduced risk exposure, enhanced reputation, and expanded market access, which means new opportunities. However, ESG integration also presents challenges, including higher operational costs and limited data availability. Despite these complexities, ESG alignment is suggested to drive long-term financial returns while reinforcing investors' personal value alignment. Supporting this perspective, Pitkanen (2022) examined private equity buyout firms by integrating company-level financial data with fund-level ESG metrics, revealing a significant relationship between ESG practices and financial performance. He also argued that the correlation between annual ESG reporting and profitability is likely to come from higher company valuations and the ESG's potential for improving operational efficiency. The study revealed that portfolios with lower ESG scores actually outperformed those with higher scores. This suggests that while integrating ESG factors can boost financial returns, portfolios with high ESG ratings may face challenges because of the extra effort and costs involved in meeting sustainability standards.

Even though several studies show a positive correlation between ESG and profitability, some skepticism remains, especially in the private equity sector, due to the limited conclusive evidence available. Nonetheless, the growing demand for ESG integration is pushing private equity investors, particularly in Europe, to adopt sustainable practices in order to stay competitive. Research by Zaccone and Pedrini (2020) involving 23 top private equity firms revealed that ESG integration is driven not only by risk mitigation and value creation, but also by increasing pressure from investors, regulators, and other stakeholders. Their study also highlights the difficulties investors face in assessing ESG criteria because of the lack of standardized evaluation frameworks, which poses a significant obstacle to widespread implementation.

In response to this growing emphasis on ESG, ESG-focused private equity funds have emerged as key players in the European market, particularly in Italy. One notable example is Ambienta SGR, a leading European asset manager focused on sustainability and specialized in private equity investments that generate positive social and environmental impacts. Indeed, Ambienta has successfully implemented ESG principles across its investment portfolio, actively supporting companies that integrate sustainability into their core business models.

The following chapter will examine Ambienta SGR's investment strategy, its funds, and how ESG practices are integrated into its investment process. The thesis also presents three case studies of three companies in Ambienta's portfolio, evaluating in detail the improvements, the key value drivers, and the benefits generated at the environmental, social, and governance levels under Ambienta's ownership. Finally, the financial returns for all stakeholders involved will be assessed. The purpose is to highlight how private equity firms are no longer solely driven by financial returns but are actively reshaping investment strategies to meet sustainability standards and investor expectations.

2.8 References

[1] Barbosa, A. d. S., Crispim da Silva, M. C. B., Bueno da Silva, L., Morioka, S. N., & Fernandes de Souza, V. (2023). Integration of environmental, social, and governance (ESG) criteria: Their impacts on corporate sustainability performance. *Humanities and Social Sciences Communications, 10,* Article 410.

[2] Bellini, M. (2023). ESG rating agency: La sfida di misurare la sostenibilità. *ESG360.*

[3] Bellini, M. (2025, January 7). ESG: Tutto quello che c'è da sapere per orientarsi su environmental, social, governance. *ESG360.*

[4] Benedikter, R. (2011, January 13). *Social banking and social finance: Answers to the economic crisis.* Springer Science & Business Media.

[5] Berg, F., Kölbel, J., & Rigobon, R. (2019). Aggregate confusion: The divergence of ESG ratings.

[6] Carroll, A. B. (2008). A history of corporate social responsibility: Concepts and practices. In A. Crane, A. McWilliams, D. Matten, J. Moon, & D. Siegel (Eds.), *The Oxford handbook of corporate social responsibility* (pp. 19–46). Oxford University Press.

[7] Cibin, A. (2024, July). ESG in 2024: From regulatory maze to clarity in the European Union. *Modefinance.*

[8] Council of the European Union. (2024, November 19). Environmental, social and governance (ESG) ratings: Council Greenlights New Regulation.

[9] Deloitte. (2022, March 2). ESG explained: What is ESG?

[10] Dunstan, A. D. (2018, January 2; updated 2024, July 24). Can GRI and SASB reporting frameworks be collaborative? *Trellis.*

[11] Eccles, R. G., Kastrapeli, M. D., & Potter, S. J. (2017). How to integrate ESG into investment decision making: Results of a global survey of institutional investors. *Journal of Applied Corporate Finance, 29*(4), 125–133.

[12] Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business.* Capstone.

[13] European Commission. (n.d.). Corporate sustainability and responsibility.

[14] European Commission. (n.d.). Corporate sustainability reporting.

[15] European Commission. (n.d.). Green claims. *European Commission - Environment.*

[16] European Union. (n.d.). Sustainable development. *EUR-Lex.*

[17] Global Reporting Initiative. (n.d.). About GRI.

[18] Global Reporting Initiative (GRI) & Sustainability Accounting Standards Board (SASB). (2021). *A practical guide to sustainability reporting using GRI and SASB standards.* GRI & SASB.

[19] IFRS Foundation. Find your industry.

[20] IFRS Foundation. *Implementation primer: A practical guide to using SASB standards.*

[21] Kaul, S. (2023). ESG and value creation in private equity investments: Analysing the effects. *Asian Journal of Interdisciplinary Research, 6*(3), 1–7.

[22] Khan, M., Serafeim, G., & Yoon, A. (2015). Corporate sustainability: First evidence on materiality. *Harvard Business School.*
[23] KPMG. (2024). *The move to mandatory reporting: Survey of sustainability reporting 2024.*
[24] Lagerkvist, C. J., Edenbrandt, A. K., Tibbelin, I., & Wahlstedt, Y. (2020). Preferences for sustainable and responsible equity funds: A choice experiment with Swedish private investors. *Journal of Behavioral and Experimental Finance, 28,* 100406.
[25] Larcker, D. F., Lee, L.-E., Seru, A., & Tayan, B. (2024). *2024 institutional investor survey on sustainability.* Corporate Governance Research Initiative, Stanford Rock Center for Corporate Governance, Hoover Institution Working Group on Corporate Governance.
[26] Lund, D. S., & Pollman, E. (2021). The corporate governance machine. *Columbia Law Review, 121*(8), 2563–2634.
[27] Molfetas, M., & Rade, A. (2024, November). What are the GRI Standards? *Sustain Life.*
[28] Pitkänen, J. (2022). Incorporation of ESG criteria in private equity investments (Master's thesis, University of Vaasa, School of Accounting and Finance). University of Vaasa.
[29] Principles for Responsible Investment. (n.d.). About the PRI.
[30] Quantive. (n.d.). ESG metrics: Your guide to common ESG metrics.
[31] Stern, N. (2006). Summary of conclusions: Executive summary (short). *Stern Review Report on the Economics of Climate Change (pre-publication edition).* HM Treasury.
[32] Ufficio federale dello sviluppo territoriale (ARE). (n.d.). Rapporto Brundtland: Sviluppo sostenibile.
[33] Ughetto, E. (2024). *Entrepreneurial finance.* Business Financing Course, Politecnico di Torino, Torino.
[34] United Nations. (n.d.). Stockholm 1972 – UN Conference on the Human Environment.
[35] University of Illinois Department of Economics. (n.d.). Bowen, Howard R.
[36] Whelan, T., Atz, U., Van Holt, T., & Clark, C. (2020). ESG and financial performance: Uncovering the relationship by aggregating evidence from 1,000 plus studies published between 2015–2020. *NYU Stern Center for Sustainable Business and Rockefeller Asset Management.*
[37] World Economic Forum. (2020). Measuring stakeholder capitalism: Towards common metrics and consistent reporting of sustainable value creation.
[38] World Economic Forum. (n.d.). Klaus Schwab.
[39] Zaccone, M. C., & Pedrini, M. (2020). ESG factor integration into private equity. *Sustainability, 12*(14), 5725.

3 Ambienta SGR's Portfolio Case

Figure 3.1: Logo of Ambienta SGR S.p.A.[11]

3.1 Introduction of Ambienta SGR

Ambienta SGR S.p.A. was founded in June 2007 in Milan by a group of five experienced professionals, led by Nino Tronchetti Provera as CEO, together with his business partners Rolando Polli, Guido Rivolta, Jonathan Gibson, and Mauro Roversi. Each of the founders brought diverse expertise to the company, particularly entrepreneurial experience, which they had developed over the decade preceding Ambienta's establishment. Before founding Cam Tecnologie in 1997, a company dedicated to cleantech products, and serving as an executive within the Telecom Italia group, Nino Tronchetti Provera had gained experience as a consultant at McKinsey & Co, where he pioneered their environmental business practice. Similarly, Rolando Polli spent his entire career at McKinsey & Co before Ambienta, where he not only gained extensive consulting experience but also served as head of the Italian office. Subsequently, Polli founded Atmos and IG Partners, a pioneering Italian consulting firm specializing in renewable energy. Jonathan Gibson contributed his expertise as the former finance director at ERG, an Italian oil company, where he led the company's strategic expansion into wind energy. Guido Rivolta added further depth to the team as the former general manager of Pirelli Ambiente Eco Technology. Finally, Mauro Roversi, who spent seven years as Partner at SG Capital Europe, and five years at Groupe Zodiac. Together they own 70% of the company, while Intesa Sanpaolo holds 20% and the remaining 10% of the ownership is divided among other financial institutions and private investors, including entities such as Italmobiliare, Api, Camfin, and Coeclerici, as well as pri vate investors like Nerio Alessandri, Luca Marzotto, Carlo Micheli, and Carlo Pesenti (D'Ascenzo, 2008; Lepido, 2008).

Authorized by the Bank of Italy on 5 November 2007, Ambienta SGR is a pioneering Italian initiative in the field of environmental investment. The company was conceived to promote environmental sustainability while fostering a positive image of Italy. The CEO emphasized teamwork as a cornerstone of the business strategy, with a focus not only on renewable energy but also on clean coal, biofuels, energy savings, pollution control and reduction, waste and water resource management. From its inception, Ambienta was conceived as a growth capital and LBO firm, supporting companies in their expansion while underlining the importance of a skilled, high quality team dedicated to contributing to Italy's development.

Nowadays, Ambienta has become a leading European asset manager specializing in sustainable investments. With its headquarters in Milan, offices in London, Paris, and Munich, and over 90 professionals, the firm invests in private and public companies shaped by global environmental

[11] Source: Ambienta SGR. (n.d.). Retrieved from: https://ambientasgr.com/.

megatrends. Guided by the principle that "Sustainability drives value", Ambienta focuses on companies whose products and services address critical global challenges in resource efficiency and pollution control, thereby strengthening long-term competitive advantages. It also manages over €3.0 billion of assets across private equity, private credit (recently), and public markets. Its diverse investor base includes insurance companies, banks, pension funds, foundations and asset managers.

Nino Tronchetti Provera, along with his team, has been a pioneer in identifying sustainability as a key value driver within investment strategies and building one of the first private equity sustainable funds in Europe during a period where the notion of ESG was still in its early stages of development. His early view of ESG integration and sustainable business models has subsequently been validated by numerous studies such as the ones cited both in section 2.6 and 2.7, demonstrating the financial and strategic advantages of investments focused on sustainability. These findings further reinforce the role of ESG factors in driving long-term success and in raising investor returns.

3.1.1 Commitment

To understand its commitment, it is important to know that Ambienta has long been a pioneer in sustainability and responsible investment. As one of the first signatories of the UN Principles for Responsible Investment (UN PRI) in 2012, Ambienta continues to receive top scores for its best-in-class ESG in Action program. In 2019, it achieved B Corp certification, demonstrating high standards in governance, social, and environmental performance, as well as transparency and accountability. Since this same year it was recognized as a Climate Neutral Company, and it further strengthened its climate leadership by joining the Institutional Investors Group on Climate Change (IIGCC) in 2020, contributing to net-zero guidance for both private equity and private credit sectors.

In 2023, the company reaffirmed its leadership by joining the Science-Based Targets initiative (SBTi), aiming to set short-term goals for reducing emissions across the organization and to submit these for validation in Q1 2024. Moreover, Ambienta is engaged in various industry initiatives, including the Invest Europe Responsible Investment Roundtable, where it plays a role in developing guidelines to support the integration of climate factors into investment strategies. Through these actions, Ambienta is committed to funding the low-carbon transition, establishing itself as a role model for sustainability in the investment field.

3.2 Ambienta SGR's Asset Classes

3.2.1 Private Equity

Ambienta targets European environmental niche SMEs operating in markets with high growth potential. These businesses are characterized by scalability, low capital intensity, and the ability to generate sustainable long-term profits. Ideal candidates are market leaders with minimal competition within their niche. Ambienta typically invests in companies with enterprise values between €100 million and €300 million, allocating equity investments ranging from €50 million to €200 million, and often acquiring majority control. This approach enables Ambienta to provide the necessary infrastructure and expertise to drive further growth and expansion.

To achieve this, Ambienta focuses on four key areas:

- Organizational Strengthening: restructuring the business to meet new operational needs.
- Strategic Add-Ons: identifying complementary businesses to enhance production and supply.
- Internationalization: expanding the original business to access new markets and demand.
- ESG Integration: making sure sustainability is aligned with growth objectives through its proprietary ESG in Action program.

Ambienta prioritizes partnerships with entrepreneurs and family-owned businesses, leveraging its extensive network and fostering alignment by encouraging management teams to co-invest in the projects. Even though sustainability trends are central to its strategy, for Ambienta the primary objective remains to deliver superior financial returns to its investors.

To select the right companies, Ambienta uses its proprietary Environmental Impact Analysis (EIA), supported by a dedicated Sustainability and Strategy Team. The firm's typical transactions include buyouts, growth capital, family successions, corporate spin-offs, and buy-and-build projects, but it avoids start-ups, as they locate in an earlier stage of the company's history.

Funds and Underwriters

Ambienta has launched four private equity funds since its inception:

1. Ambienta I (2008):

- Fund Size: €217.5 million, slightly below the €250 million target.
- Underwriters: 70% institutional investors and 30% entrepreneurs, companies, and family offices. Important backers were Intesa Sanpaolo, which contributed €40 million through Finopi and EurizonVita, along with Fonsai, Cattolica, and CNP Assurances SA (France's largest life insurance company); international investors included the Macquarie Clean Technology Fund I and Doughty Hanson. (Kneller, 2008; Kenna, and Ebhardt, 2008)

2. Ambienta II (2014):

- Fund Size: €323.5 million, exceeding the €300 million target.
- Underwriters: International investors included the European Investment Fund (EIF), HarbourVest, Hermes, Pantheon, RobecoSAM, Stafford Capital Partners, Unigestion, and Zurich Insurance Group; Italian investors included Assicurazioni Generali, CNPADC (the pension fund for accountants), Fondazione Enasarco, Intesa Sanpaolo, Fondo Italiano di Investimento (FII), and Poste Vita. (Bebeez, 2014)

3. Ambienta III (2018)

- Fund size: €635 million, reaching its hard cap, significantly exceeding the initial target of €500 million. Investor demand was exceptionally high, surpassing €1 billion in total commitments.
- Underwriters: 75% from continental Europe, 15% from the UK, and 10% from the USA. Investors participating in previous funds increased their commitments, whereas some of the new contributors were the Commonwealth Fund, Environment Agency Pension Fund, European Investment Bank, European Investment Fund, and Nest Sammelstiftung (a Swiss pension fund) (Pitchbook, 2018).

4. Ambienta IV (2022)

- Fund Size: €1.55 billion, reaching the hard cap in less than six months.
- Underwriters: 55% from the EU, 20% from other European nations, and 25% from the USA, Canada, South America, and Asia. Investors included pension funds, insurance companies, sovereign wealth funds, banks, universities, foundations, funds of funds, and family offices. Notable contributors included Bay Trust (a New Zealand-based charitable trust), the Environment Agency Pension Fund (UK), the European Investment Fund, and Pantheon International. Additionally, strong support came from existing investors, with many reinvesting more than 100% of their previous commitments (Pitchbook, 2022).

3.2.2 Public Markets

The Ambienta X division was established in 2020 to facilitate expansion into public markets. Its core concept is the creation of an absolute return fund entirely dedicated to environmental sustainability, the first of its kind in the world. The fund operates as a long/short strategy, taking long positions in robust companies with a market capitalization of more than USD 1 billion, with solid competitive advantages and likely to benefit from sustainability megatrends. At the same time, it takes short positions on weaker companies that are overly exposed to exaggerated environmental trends or have unreliable, underdeveloped business models. This strategy has generated attractive risk-adjusted returns. The fund is open to both institutional and private investors. In order to select the right companies for this asset class, Ambienta has developed its own scoring system for listed equities: Environmental Sustainability Scoring (ESS).

3.2.3 Ambienta Credit

Ambienta Credit was launched in 2023 as the third asset class within Ambienta's portfolio. It represents a natural extension of the private equity company's strategy, leveraging its European reach, sector-agnostic approach and exclusive focus on environmental sustainability. Through interactions with European mid-market environmental leaders, Ambienta identified that many companies value its expertise and insights, but are not yet ready for a private equity transaction. To address this and to complement its existing offerings, Ambienta provides tailored credit financing solutions to support their growth. The proprietary methodology of the Environmental Impact Analysis (EIA) and the ESG in Action program have been adapted to the credit strategy and serve as tools to identify and target the right investments.

3.3 ESG in Action Program and EIA (Environmental Impact Analysis)

According to Ambienta's philosophy, ESG and sustainability are two distinct concepts: sustainability for Ambienta refers to the long-term viability of a company's business model, specifically in terms of improving resource efficiency and pollution control in a significant and quantifiable way; on the other hand, ESG, addresses how a corporation is managed internally, focusing on effective governance and robust operational practices.

Ambienta emphasizes that ESG alone is insufficient; it must be paired with sustainability to achieve a more comprehensive and impactful outcome. Therefore, they integrate both ESG principles and their proprietary Environmental Impact Analysis (EIA) into their approach.

3.3.1 Environmental Impact Analysis (EIA)

Ambienta has developed Environmental Impact Analysis (EIA), a proprietary methodology to compensate for the lack of reliable frameworks regarding the field of sustainability assessment, where ESG practices often fall short of ensuring full transparency. As a leader in this discipline, Ambienta applies the methodology to its private equity investments. The equivalent methodology for public market investments is the Environmental Sustainability Scoring (ESS) system, designed to evaluate the contribution to environmental sustainability at both individual and portfolio levels within its public market strategies.

The methodology is based on 11 Environmental Metrics that enable to comprehensively assess firms across diverse sectors, business models, and stages of the value chain. It measures the Environmental Impact of a business based on the timing of its effects, which can occur either when the product is sold or throughout its operational life. The evaluation focuses on two core areas that are resource efficiency and pollution control, as detailed below:

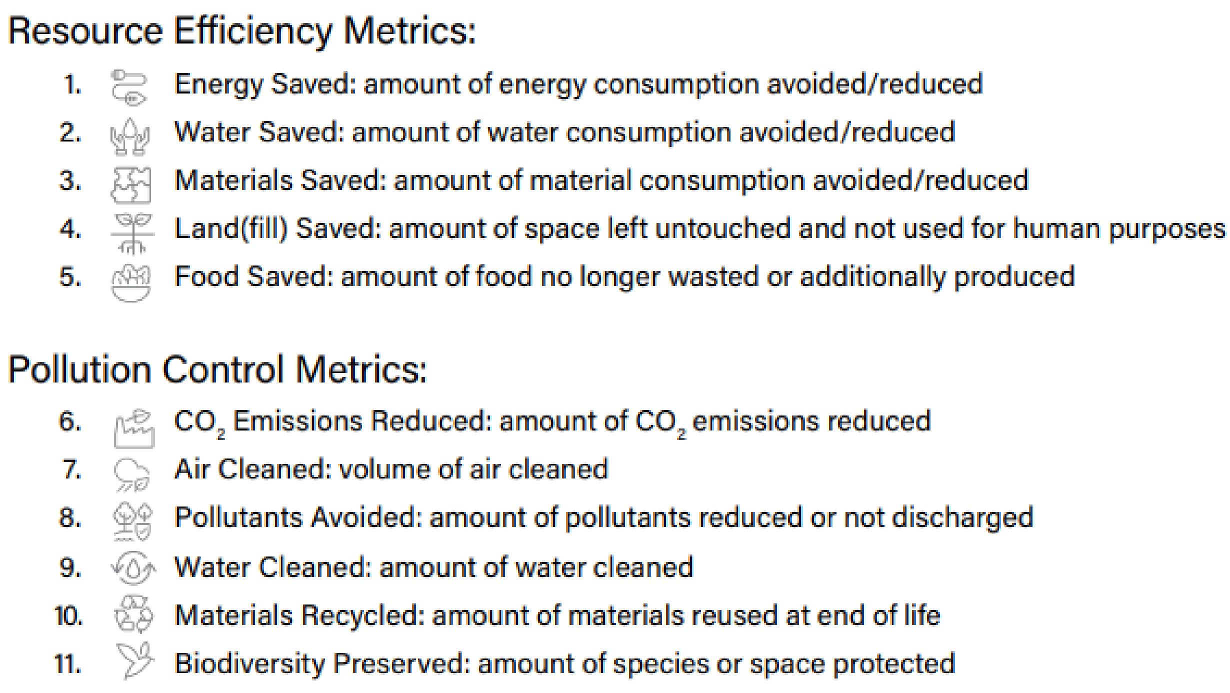


Figure 3.2: Resource Efficiency and Pollution Control Metrics[12]

Additionally, in September 2015, the United Nations (UN) introduced the Sustainable Development Goals (SDGs), a framework of 17 objectives that address interconnected social, economic, and environmental issues on a global scale. This framework aligns closely with Ambienta's investment strategy, as many of the SDGs relate to its environmental metrics. For this reason, Ambienta has developed a taxonomy that maps the impact of portfolio companies to specific SDGs, thereby facilitating systematic monitoring of how its investments face global challenges and what contributes to their resolution. The firm focuses on 10 key goals (2, 3, 6, 7, 8, 9, 11, 12, 14, and 15).

3.3.2 Integration between EIA and ESG across the investment process

According to the company's recent ESG reports of 2021 and 2023, Ambienta integrates its ESG in Action program and Environmental Impact Analysis (EIA) methodology into its standard operations, embedding ESG principles at every stage of the investment lifecycle. This approach streamlines the creation of long-term value, which is implemented through the following phases:

1. Pre-Investment Due Diligence
   - EIA Screening: the environmental impact of target companies is assessed with Ambienta's EIA methodology, with an emphasis on resource efficiency and pollution control. Only positive, measurable, and material impacts are considered for potential investment.
   - ESG Due Diligence: it involves the thorough evaluation of potential ESG risks before pursuing an investment.
2. Investment Decision

[12] Source: Ambienta SGR. (2024). 2023 Environmental Impact Analysis. Retrieved from: https://ambientasgr.com/wp-content/uploads/2024/04/Ambienta-Flyer-EIA-2023.pdf

    - Full EIA Development: it regards the collection of relevant Key Performance Indicators (KPIs), its benchmarking against external standards, and the subsequent consolidation of this data into a comprehensive model for the calculation and analysis of results.
    - ESG Policies Approval: the Board formalizes three goal-oriented ESG Policies as part of the decision-making process.
3. Post-Investment Management
    - Materiality Analysis: for each company important material ESG factors are identified, followed by the formulation of targeted actions to address them.
    - Carbon Footprint Analysis: a third party quantifies Greenhouse gas (GHG), with the purpose of developing a carbon strategy.
    - ESG Action Plan: Ambienta works with portfolio companies to set specific targets and address material aspects, for instance:
        - Providing a healthy, safe, and supportive work environment to foster skill development.
        - Improving environmental footprints by upgrading facilities and organizational practices.
        - Enhancing risk management practices.
4. Portfolio Management
    - Monitoring and Metrics: progress and outcomes are tracked through reports that are regularly drafted by portfolio companies on ESG Key Performance Indicators (KPIs) and EIA parameters.
    - Alignment with SDG Taxonomy: the investments are evaluated making sure UN Sustainable Development Goals (SDGs) are associated with EIA metrics.
5. Exit Phase
    - This last phase involves the collection of ESG and EIA outcomes to demonstrate improved sustainability and operational performance.

By integrating ESG and EIA across all stages of the investment lifecycle, Ambienta drives measurable environmental and social improvements while delivering long-term value creation.

3.3.3 Sustainability and Strategy Team

It is the Ambienta's Sustainability & Strategy (S&S) team, composed of 10 scientists and engineers, that is dedicated to integrating sustainability into the firm's investment processes. Its main functions are classified into:

1. Idea Generation: in order to develop innovative solutions, the S&S team identifies environmental challenges and analyzes trends. They monitor sustainability hot topics and meet the investment team every month to propose new investment ideas, support existing investments, and assess market leaders and followers.
2. Participation in the Investment Committee: the Head of S&S participates in the investment decision-making process, to verify that all decisions are compliant with sustainability considerations.

3. Portfolio Management: this function involves the post-investment phase, where the S&S team is designated to support due diligence, to annually update both the Environmental Impact Analysis (EIA) and the Ambienta Sustainability Index (ASI), and to ensure that ESG principles across all asset classes are integrated.

This structured approach enables Ambienta to effectively incorporate sustainability into its operations, driving value creation and positive environmental impact.

3.4 Ambienta's Full Portfolio

Ambienta's private equity portfolio reflects the company's internation reach because it consists of approximately 82 acquisitions spread across 150 countries. Of the 71 primary acquisitions, only 31 have been classified as front investments, in which Ambienta has taken a leading role in fostering strategic growth. Among these, 14 companies are still part of the portfolio and have not been fully divested, with Nactarome and Namirial each counted as 0.5 because of their partial divestment. The remaining 17 companies have been fully divested, except for Nactarome and Namirial, which retain a partial divestment status. The partial divestment status indicates that they divested a portion of their stake in the company while reinvesting in the deal and retaining a minority position. The additional primary acquisitions consist of add-ons executed during Ambienta's involvement with each portfolio company. Through its investments, Ambienta fosters the growth of its portfolio companies by leveraging industrial and managerial expertise alongside global networking opportunities.

	COMPANY	SECTOR	INVESTMENT DATE	DIVESTMENT DATE	INVESTMENT FUND	ENVIRONMENTAL METRICS	SDGs	REVENUES pre investment date (in mln)	Latest REVENUES (in mln)	Currency	% stake at investment date	HQ
1	**Babcock Wanson Group**	Industrial heat	June 2024	-	IV	• Energy saved • CO2 Emissions reduced • Pollutants Avoided	• 12: Responsible Consumption and Production • 9: Industry Innovation and Infrastructure • 7: Affordable and Clean Energy	295.0	295.0	EUR	57.8%	FR
2	**Maccaferri Group**	Environmental Engineering	February 2024	-	IV	• Materials saved • CO2 Emissions reduced	• 9: Industry Innovation and Infrastructure • 11: Sustainable Cities and Communities	643.5	643.5	EUR	>50%	IT
3	**Frigoveneta**	Commercial refrigeration	January 2024	-	IV	• Energy saved • CO2 Emissions reduced	• 9: Industry Innovation and Infrastructure • 12: Responsible Consumption and Production	42.0	42.0	EUR	70.0%	IT
4	**The Rent Company**	Educational Device-as-a-Service	December 2023	-	IV	• Materials saved • CO2 Emissions reduced	• 12: Responsible Consumption and Production • 4: Quality Education	52.2	48.1	EUR	>50%	NL
5	**Spaggiari**	Education dematerialization (software)	May 2023	-	III	• Energy saved • Water saved • Materials saved • CO2 Emissions reduced	• 9: Industry Innovation and Infrastructure • 12: Responsible Consumption and Production	29.5	32.7	EUR	~70%	IT
6	**Previero**	Plastic recycling	May 2023	-	IV	• Energy saved • Landfill saved • Materials recycled • CO2 Emissions reduced	• 9: Industry Innovation and Infrastructure • 12: Responsible Consumption and Production	82.1	80.9	EUR	75.0%	IT
7	**Lässig**	Baby & kids products	November 2022	-	III	• Energy saved • Water saved • Pollutants avoided • Materials recycled • CO2 Emissions reduced	• 12: Responsible Consumption and Production	42.9	44.5	EUR	>50%	DE
8	**Cap Vert**	Green S.p.A.ce management	December 2021	-	III	• CO2 Emissions reduced • Biodiversity preserved	• 11: Sustainable Cities and Communities • 15: Life on Land	-	84.8	EUR	>50%	FR
9	**Wateralia**	Centrifugal pumps for the integrated water cycle	February 2021	Partially divested in December 2024	III	• Energy Saved • Food saved • Water cleaned	• 2: Zero Hunger • 6: Clean Water and Sanitation • 9: Industry Innovation and Infrastructure	67.3	264.1	EUR	100%	IT
10	**Collingwood Lighting**	LED Lighting	February 2021	-	III	• Materials saved • CO2 Emissions reduced • Energy saved	• 7: Affordable and Clean Energy • 9: Industry Innovation and Infrastructure • 12: Responsible Consumption and Production	30.5	35.4	GBP	~75%	UK
11	**Namirial**	Digital transaction management	May 2020	-	III	• Water saved • Energy saved • Landfill saved • Materials saved • CO2 Emissions reduced	• 9: Industry Innovation and Infrastructure • 12: Responsible Consumption and Production	51.9	124.5	EUR	~65%	IT
12	**REPAKT**	Bag-making machinery	August 2019	-	III	• Pollutants avoided • Materials recycled	• 9: Industry Innovation and Infrastructure • 11: Sustainable Cities and Communities • 12: Responsible Consumption and Production	18.3	140.0*	EUR	100%	IT
13	**Phoenix**	Mission-critical components for aluminium extrusion process	May 2019	-	III	• Energy saved • CO2 Emissions reduced	• 7: Affordable and Clean Energy • 9: Industry Innovation and Infrastructure	89.4	110.1	EUR	~70%	IT
14	**Next Imaging**	Machine vision distribution	December 2018	May 2023	II	• Food saved • Materials recycled	• 2: Zero Hunger • 9: Industry Innovation and Infrastructure • 12: Responsible Consumption and Production	28.6	-	EUR	79%	IT
15	**Nactarome Group**	Natural flavours for food industry	November 2018	Partially divested in February 20221	II/III	• Pollutants avoided	• 12: Responsible Consumption and Production	30.1	191.0	EUR	74%	IT
16	**Pibiplast**	Sustainable packaging for cosmetics	September 2018	-	II	• Energy saved • Landfill saved • Materials saved • CO2 Emissions reduced • Materials recycled	• 12: Responsible Consumption and Production • 9: Industry Innovation and Infrastructure	58.2	63.7	EUR	30%	IT
17	**Energy Wave**	Residential energy efficiency services	August 2017	November 2019	n.d.	• Energy saved • CO2 Emissions reduced	• 7: Affordable and Clean Energy • 9: Industry Innovation and Infrastructure	172.3	-	EUR	80%	IT
18	**Safim**	Highly-efficient hydraulic components	July 2017	September 2019	II	• Energy saved • CO2 Emissions reduced	• 7: Affordable and Clean Energy • 3: Good Health and Well-being	28.1	-	EUR	70%	IT
19	**Calucem**	CAC producer to reduce emissions	April 2016	November 2021	II	• Materials saved • CO2 Emissions reduced	• 8: Decent Work and Economic Growth • 12: Responsible Consumption and Production	50.0*	-	EUR	>50%	HR, DE
20	**SF-Filter**	Distributor of mobile and industrial filters	January 2016	September 2022	II	• Air cleaned • Pollutants avoided • Water cleaned	• 12: Responsible Consumption and Production • 6: Clean Water and Sanitation	80.0*	-	CHF	~80%	CH
21	**Oskar Nolte**	Environmentally friendly water-based wood coatings	April 2015	May 2018	II	• Energy saved • CO2 Emissions reduced • Pollutants avoided	• 3: Good Health and Well-being • 12: Responsible Consumption and Production	n.d.	-		~30%	DE
22	**IP Cleaning**	Machines to automate industrial cleaning	June 2014	April 2017	I/II	• Energy saved • Water saved • Pollutants avoided	• 7: Affordable and Clean Energy • 6: Clean Water and Sanitation	171.0	-	EUR	100%	IT
23	**Lakesight**	Machine vision for industry 4.0	October 2012	November 2018	I	• Energy saved • CO2 Emissions reduced	• 9: Industry Innovation and Infrastructure • 11: Sustainable Cities and Communities	41.0*	-	EUR	100%	IT
24	**FoundOcean Group**	Offshore construction services	June 2012	December 2018	I	• CO2 Emissions reduced	• 7: Affordable and Clean Energy	12.0*	-	GBP	35%	UK
25	**Tower Light**	Energy efficient lighting towers	February 2012	July 2013	I	• Energy saved	• 9: Industry Innovation and Infrastructure	30.0*	-	EUR	82%	IT
26	**Envirogen Group**	Water treatment and filtration	October 2011	October 2015	I	• Water cleaned	• 6: Clean Water and Sanitation	35.0*	-	EUR	28%	US, IT, UK
27	**MBA Polymers**	Low-cost recycled plastics	February 2011	May 2017	I	• Energy saved • Materials saved • Landfill saved • CO2 Emissions reduced • Materials recycled	• 12: Responsible Consumption and Production	36.0*	-	USD	25%	UK
28	**Spig**	Industrial cooling systems	June 2010	July 2016	I	• Water saved	• 6: Clean Water and Sanitation	104.0*	-	EUR	30%	IT
29	**Aico/Ravelli**	Pellet-fed stoves and boilers	May 2010	November 2018	I	• CO2 Emissions reduced	• 7: Affordable and Clean Energy	20.0	-	EUR	60%	IT
30	**Icq Holding**	Renewable energy	December 2008	September 2017	I	• CO2 Emissions reduced	• 7: Affordable and Clean Energy	51.1*	-	EUR	15%	IT
31	**Ambienta Biomasse**	Wood pellets	August 2008	October 2013	I	• CO2 Emissions reduced	• 7: Affordable and Clean Energy	28.1	-	EUR	80%	IT

Table 3.1: Full Portfolio of Ambienta SGR[13]

The revenues' estimation has been sourced from Orbis and AIDA, both databases provided by Bureau van Dijk. The revenues marked with (*) are sourced from Ambienta SGR's Press Releases.

3.5 References

[1] Ambienta. (2009, October 16). Ambienta I closing [Press release].

[2] Ambienta SGR. (2022). *Ambienta ESG Environmental Impact report 2021.*

[3] Ambienta SGR. (2024). *Ambienta ESG report 2023.*

[4] Ambienta SGR. (2024). 2023 Environmental Impact Analysis

[5] Bebeez. (2014, November 4). Ambienta II chiude la raccolta a quota 323 milioni di euro.

[6] D'Ascenzo, M. (2008, September 30). Ambienta Sgr entra in ICQ Holding. *Il Sole 24 Ore*, p. 41.

[7] D'Ascenzo, M. (2008, October 10). Doughty Hanson conquista TMF: Acquisizione da 750 milioni di euro – In Italia ingresso in Ambienta. *Il Sole 24 Ore*, 280.

[8] D'Ascenzo, M. (2009, March 31). Ambienta, obiettivo a 250 milioni: A un anno dalla partenza gli investitori hanno versato 160 milioni. *Il Sole 24 Ore*, 89.

[9] Kenna, A., & Ebhardt, T. (2008, June 12). Ambienta raises €150 mln in funds in first year (Correct). *Bloomberg.*

[10] Kneller, P. (2008, May 15). Italian green fund chases €250M. *Clean Technology.*

[11] Lepido, D. (2008, February 15). Ambienta, salotto «verde» dei fondi. *Il Sole 24 Ore*, 45, 39.

[12] PitchBook. (2018, May 14). Ambienta III fund profile & benchmark.

[13] PitchBook. (2022, June). Ambienta IV fund profile & benchmark.

[13] Source: Ambienta SGR. (n.d.). Private equity portfolio. Retrieved from https://ambientasgr.com/our-businesses/private-equity/portfolio/

Introduction to the Case Studies: Research Methodology

This chapter outlines the methodology used to analyze the private equity (PE) investment strategies employed by Ambienta in its portfolio companies, with a focus on their growth and value creation potential. It is important to note that no prior case study exists in the literature specifically addressing the three operations chosen for this research. Therefore, this study provides a unique perspective by offering detailed insights into these specific cases. The research methodology was conducted through the following phases:

1. **Data Collection on Ambienta's Portfolio**: Ambienta's full portfolio was reorganized in an Excel file, containing details of investment and divestment dates, revenues at the time of investment and, for those not divested yet, the most recent revenues available, environmental metrics associated with the relative SDGs, the percentage of controlling stake acquired and the country in which the main company was based in. The sources for this data included the website of Ambienta, various business press such as *Il Sole 24 Ore* and *Milano Finanza*, while all financial data were retrieved from AIDA and Orbis, both provided by Bureau van Dijk (a Moody's Analytics company). These databases are widely used for corporate financial research, particularly in the context of private companies, enabling access to financial statements and ownership structures.
2. **Selection of Target Companies and Financial Data Compilation**: the full portfolio provided the baseline to choose the three companies to be further analyzed. This choice targeted three companies all located in Italy, belonging to different time periods and investment funds. For these target investments, all annual reports were collected from the AIDA database, for a timeframe spanning three years before investment to three years after, providing context for pre- and post-investment performance. Additionally, the financial statements were downloaded in Excel format. Both the annual reports and the financial statements were sourced from the AIDA database, and they were used to compile all numerical data into detailed Excel documents for subsequent analysis.
3. **Analysis of business improvement and Strategic Changes**: both the annual reports and the financial statements collected through the AIDA database, provided by Bureau van Dijke, were analyzed to assess the improvements and changes implemented by Ambienta across three dimensions:
    a. Management improvement: examination of changes in the Board of Directors, the acquisition process, and the shareholder structure overtime.
    b. Financial improvement: focusing on the capital structure, analyzing the quantity of debt and equity used to finance the acquisition and the actions undertaken to manage financial ratios such as deal and financial leverage, addressing any critical pre-existing situations.
    c. Operational improvement: evaluation of strategies aimed at improving profitability, enhancing cash management, driving internationalization, and implementing strategic add-ons, complemented by an analysis of the evolution of key operational ratios.
4. **Performance Evaluation:** evaluation of the results achieved by the target company post-investment, and the returns for the private equity company, focusing on the financial, operational and sustainable drivers of value creation.

4 IPC (International Professional Cleaning) Group

Figure 4.1: International Professional Cleaning logo[14]

The IPC Group was established on May 30, 2005, through the consolidation of the following companies:

- Portotecnica, founded in 1976, headquartered in Summaga di Portogruaro, in province of Venezia (VE), Italy.
- Soteco, founded in 1975, headquartered in Castelverde, in province of Cremona (CR), Italy.
- Faip, founded in 1985, headquartered in Vaiano Cremasco, in province of Cremona (CR), Italy.
- Gansow, founded in 1965, headquartered in Reggio Emilia, in province of Reggio Emilia (RE), Italy.
- Euromop, founded in 1980, headquartered in Villa del Conte, in province of Padova (PD), Italy.
- Ready System, founded in 1990, headquartered in Ronchi di Villafranca, in province of Gorizia (GO), Italy.
- Pulex, founded in 1963, headquartered in Brescia, in province of Brescia (BS), Italy.

This creation was facilitated by X-Equity S.p.A., a special purpose vehicle established to manage and finance the operation. X-Equity acquired the majority stake in IP Cleaning S.p.A., the newly formed entity consolidating all these companies. In 2007, X-Equity S.p.A. and IP Cleaning S.p.A. underwent a reverse merger, after which IP Cleaning S.p.A. became the operational holding company for the group.

IPC Group is headquartered in Summaga di Portogruaro (VE), where Portotecnica is located. The Group was born through the merge of all these companies based in Northern Italy and with the purpose of creating a major player in the professional cleaning equipment industry. The new entity benefited from the synergies created by this consolidation, including a wider and diversified product portfolio, a broader customer base, and economies of scale, while allowing each company involved in the acquisition to strengthen its position in the global market.

The four main categories of products are:

1. Scrubbers/Sweepers

[14] Source: IPC Worldwide. (n.d.). Retrieved from https://www.ipcworldwide.com/

2. Hot and cold pressure washers
3. Vacuum cleaners
4. Manual cleaning tools

Figure 4.2: IP Cleaning product categories[15]

4.1 Business and Industry Overview Before Entry

The period following the establishment of IPC Group was marked by the global financial crisis of 2008 and its subsequent repercussions. This framework, accompanied by reduced spending, contributed to leading a dynamic sector such as the professional cleaning industry to suffer for a temporary slowdown. This sector is characterized by the provision of cleaning equipment,

[15] Source: IPC Worldwide. (n.d.). Retrieved from https://www.ipcworldwide.com/

solutions and services to various businesses and institutions. However, the market demonstrated resilience, gradually recovering as global economies stabilized in the subsequent years.

Figure 4.3: Logo of competitors: Tennant Company, Kärcher and Nilfisk Advance[16]

By 2013, the professional cleaning industry, focused on the provision of cleaning equipment, solutions and services to various businesses and institutions, was characterized by fragmentation and diverse customer needs, with no single company in the market emerging as a leader. The industry had several renowned players, including:

- Tennant Company: headquartered in Minneapolis, USA, it focused on professional and industrial cleaning solutions with a strong emphasis on high-end equipment and innovation.
- Kärcher: based in Germany, it offered a wide range of cleaning solutions, targeting both consumers and professional markets.
- Nilfisk Advance: a Danish company specializing in professional cleaning equipment, serving a broad market that included both consumers and professional segments.
- IPC Cleaning Group: as a prominent European player, addressing specific niches within the professional cleaning industry, offering diverse products under different brands and focusing on affordable, mid-sized solutions.

Despite these major players, the market was fragmented because a large portion of it was characterized by multiple small companies, each of them specialized in a specific product category. The diversity in customer requirements and geographic preferences further contributed to this segmentation, preventing any single company from achieving uncontested leadership (Muriithi et al., 2016; Fidelman & Co., 2018). The company which was the most similar to IP Cleaning, was Tennant Company, because it catered to the professional and industrial cleaning segment, even though IPC distinguished itself through its affordability and niche specialization. In contrast, Kärcher and Nilfisk stood out for their wider product ranges, serving both consumer and professional markets.

Major Trends

Several key trends were shaping the industry:

- ➔ Technology and Innovation: all companies within this industry have increased the adoption of automation and advanced cleaning technologies.
- ➔ Regulatory Changes: the development of eco-friendly solutions was enhanced by stricter regulations, which contributed to the increase in demand for green cleaning products.
- ➔ R&D Investment: usually 2-5% of revenues were allocated to R&D, reflecting the importance of innovation to stay competitive and meet market demands.

[16] Sources: Tennant Company. (n.d.). Retrieved from https://www.tennantco.com/it_it.html; Kärcher. (n.d.).Retrieved from https://www.kaercher.com/it/; Nilfisk. (n.d.). Retrieved from https://www.nilfisk.com/it-it/.

Operating in a market valued at €5 billion with promising long-term growth, IPC possessed a broad product range, and a resilient business model built on a strong international footprint, 90% of its sales come from outside Italy, with a notable share from regions beyond Europe. Its industrial operations are primarily based in Northern Italy, where the company runs five manufacturing plants and employs over a thousand people, reinforcing its leading position in the professional cleaning industry.

4.1.1 Industrial & Commercial activities

The IPC Group was structured into two main categories of companies, reflecting its dual focus on production and commercialization:

- Industrial Companies: these were responsible for the production and sale activities and were concentrated in Northern Italy within specialized business units:
    1. IPC Portotecnica: hot and cold-water pressure washers for professional and semi-professional markets.
    2. IPC Gansow: sweepers and floor scrubbers for professional cleaning.
    3. Soteco S.p.A.: vacuum cleaners, wet-dry vacuums, and carpet cleaners for professional use.
    4. Euromop S.p.A. and Ready System Srl: manual cleaning equipment like trolleys, mops, and brooms.
    5. Pulex Srl: manual cleaning tools for glass and floors.
- Commercial Companies: These handled the distribution of IPC's products globally and included IPC Gansow GmbH (Germany), IPC Eagle Inc. (USA), Western Floor Private Ltd (India), IPC Industrie e Commercio Ltda (Brazil), Interclean Assistance ICA S.A. (France), IPC Cleaning España S.L. (Spain), Soteco Benelux B.V.B.A. (Belgium), CT Corporation Ltd (China), IPC Euromop Iberica S.L. (Spain), Forma Norge AS (Norway) and IP Cleaning Sverige AB (Sweden).

Through its commercial companies, IPC ensured a global presence in key markets, including France, Spain, Germany, Scandinavia, North America, Benelux, Brazil, India, and China.

To provide further context, in 2013, right Before Ambienta's entry, the organizational structure of the Group was the following:

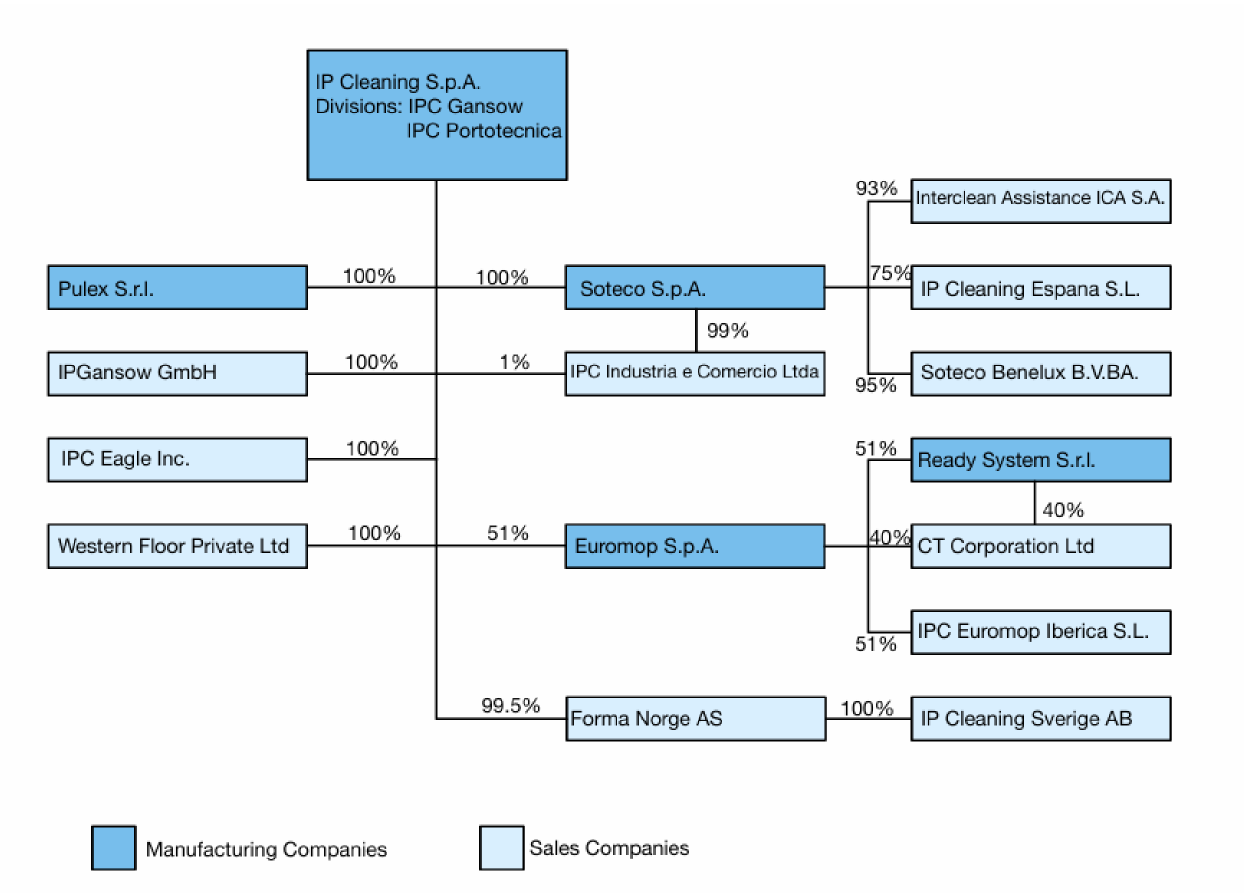


Figure 4.4: Organizational chart of IPC Group in 2013[17]

4.1.2 Shareholding Structure

By the end of 2013, the year previous Ambienta's entry, that happened on July 4, 2014, the shareholding structure was characterized by Synergo SGR S.p.A. holding the majority control of the company with a combined total of 97.13% of the share capital, split across three investment funds: IPEF IV Italy, Sofipa Equity Fund I and II, while the remainder minority was held by BS Private Equity S.p.A., Giovanni Cianci and Italo Da Rif.

The share capital is composed of 11,762,428.00 shares, with the nominal value of €1.00 each.

4.2 Historical Operational and Financial performance

4.2.1 Operational Performance

The years prior to Ambienta's investment showed a strong decline in sales, approximately 5% per year. The one between 2010 and 2011 is due to the closure of the Faip division to streamline the group's operations and continued due to the instability of the market driven by the financial crisis

[17] Source: own elaboration based on IP Cleaning S.r.l. (2014). Annual Report 2013 (Consolidated accounts). Retrieved from AIDA database.

of 2008 and the Greek debt crisis, affecting mainly the European markets of Italy and Spain, while sales in the European market actually increased in markets such as France, Germany and the UK. Sales outside Europe, moreover, were negatively affected by unfavorable exchange rate trends, particularly impacting countries such as the United States, Brazil, and Norway. Additionally, also the net income exhibited a downward trend, culminating in a dramatic loss valued €42.9 million in 2013. This loss was registered due to a devaluation totaling € 52.8 million and calculated during the sale process with Ambienta. Without this, the net income would have been positive and valued € 3.4 million.

	2010	2011	2012	2013
Revenues (€ million)	200.0	188.2	179.8	171.0
EBITDA (€ million)	27.5	28.5	28.5	27.2
EBITDA margin	13.75%	15.14%	15.83%	15.91%
Net income (€ million)	3.1	2.1	2.6	-42.9

Sales per Area (€ million)	2012	2013
EMEA	141.7	135.5
THE AMERICAS	21.5	19.4
FAR EAST	16.7	16.1
TOTAL	179.8	171.0

Additionally, the Group's commitment is evident by its capability of generating operating cash and its ongoing investment in research and development, approximately 3.5% of revenues, even during such a challenging period.

(€ million)	2011	2012	2013
Free Cash Flows	9.468	18.364	14.890
CAPEX	-6.527	-6.051	-6.093

In summary, even though the IPC management team attempted to mitigate the decline, it was inevitable and strongly affected the global operational performance of the group and its value.

4.2.2 Financial Performance

The financial performance of IP Cleaning Group prior to Ambienta's investment was critical. Although equity showed an upward trend until 2012, 2013 reported a dramatic shift, likely driven by the significant devaluation effect incurred in the same year. While net debt had been declining over time, the Net Debt/EBITDA ratio remained high, highlighting that the company was still heavily indebted. Additionally, the Net Debt/Equity ratio reached a worrying 3.4 in 2013, indicating a phase of distress that required immediate corrective actions.

	2010	2011	2012	2013
Equity (€ million)	68.3	73.8	74.4	28.6
Net Debt (€ million)	120.7	113.1	102.5	96.5
Net Debt/EBITDA	4.4	4.0	3.6	3.5
Net Debt/Equity	1.8	1.5	1.4	3.4

Analyzing more closely the situation of 2013, dramatic results also come from a capital turnover of 0.74 and a current ratio of 0.5. This situation became even more concerning due to the fact that this same year all the financial liabilities were marked as current, leading to a total current financial debt of € 111.53 million.

The reasons are explained as follows:

Year	Details
2013	IPC signed a moratorium agreement to postpone a €6.7M installment to Q1 2014, addressing financial covenant breaches.

Q1 2014	Delays in selling the majority stake prevented IPC from paying: - €6.7M installment - €17.5M installment (due April 18, 2014) - IPC lost the benefit of the term, and the entire €111.530M debt was classified as short-term.

The situation was eventually addressed during the negotiation of the company's acquisition. As part of the acquisition process, the buyer, Ambienta, played a key role in facilitating the debt restructuring. The new terms were formalized in a Comfort Letter signed by the financing banks, with three suspensive conditions:

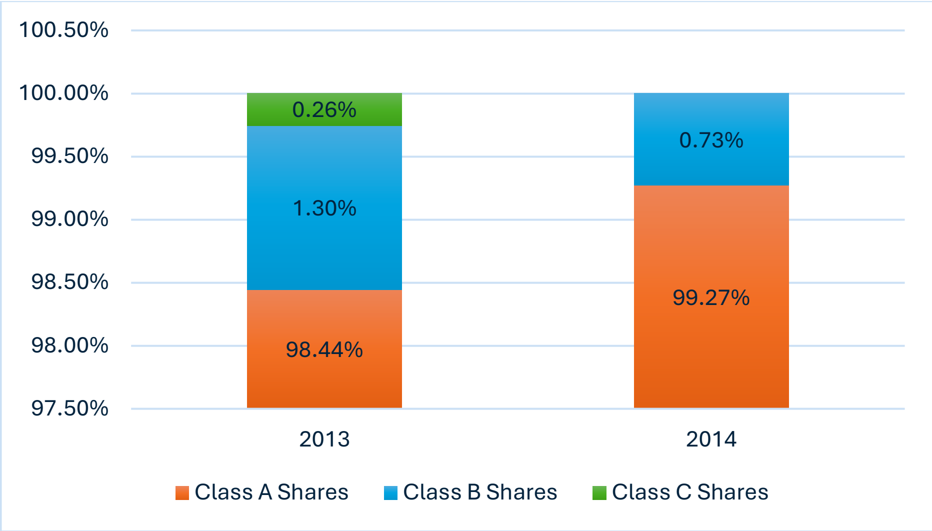
1. the closing of the share purchase agreement
2. certification of a new industrial plan under Italian bankruptcy law (ex. Art. 67, comma 3, lett. d)
3. formal approval of the debt restructuring agreement by the decision-making bodies of each financing bank.

4.3 Ambienta's Investment

On July 2, 2014, following the signing of the Senior Facility Agreement between IPC Cleaning and its financing banks (UniCredit, Intesa, UBI Banca, Banca popolare dell'Emilia Romagna, Banco Popolare, IKB and Banca Monte dei Paschi di Siena), Ambienta SGR S.p.A. completed the acquisition of the company's entire share capital. Ambienta committed to recapitalizing the company to restore its long-term financial stability, a critical condition for ensuring sustainable growth. The restructuring agreement was going to be formalized under the provisions of Article 67, paragraph 3, letter d) of the Italian bankruptcy law (R.D. 1942 n.267), with the appointment of an independent professional to certify the validity of the proposed restructuring plan. Ambienta committed approximately € 50 million of capital, €13 million destined to Synergo sgr, €33 million as capital injection and the remainder to support other operations such as the acquisition of Vaclensa Ltd.

4.3.1 New Shareholding Structure

The change of ownership in IPC Group between 2013 and 2014 involved a shift from the previous major shareholder, Synergo Sgr, to Ambienta. Ambienta became the new major shareholder, controlling 99.27% of the shares through its vehicles Ambienta I, Ambienta II, and Ambienta II bis, compared to the 98.44% held by Synergo Sgr.



It is notable that almost all the shares with special rights were either eliminated or significantly reduced. Class B shares were entirely owned by Giovanni Cianci, who served as the company's CEO from 2005 until Ambienta's entry, while Class C shares were held by Italo Da Rif, Cianci's business partner and advisor in the Board of Directors since 2005. This shift can be attributed to the change in management following Ambienta's acquisition and the strategic decision to reduce the privileges associated with preferred shares in favor of ordinary shares, which combine both administrative rights of control and patrimonial rights. Following the acquisition, 0.73% of the new shares were allocated to the Senior Management team, including the new CEO and senior managers such as Giulio Vernazza, Antonio Perosa, and Pietro Corsano Annibaldi, to align their interests with the company's goals.

4.3.2 Management Improvement

After the acquisition of 100% of the share capital of IP Cleaning, Ambienta appointed a new Board of Directors, to use its resources to address the company's challenges and fully exploit its potential. The new leadership was composed of individuals deeply trusted by Ambienta, ensuring close alignment between the investment firm and IP Cleaning's operations. Federico De Angelis, with a background in restructuring and growth, was appointed as the new Chief Executive Officer and President. In his agenda he set specific objectives: an increased focus on product innovation, integration of business units, development of key accounts, and fortification of the distribution network. De Angelis was joined by Mauro Roversi, Ambienta's Chief Investment Officer, and Francesco Lodrini, an Investment Manager at Ambienta. This significant management transition highlights Ambienta's dedication to enhancing value creation and implementing a fresh, strategic vision. The Board of Directors is summoned as follows:

Board of Directors	Role
Federico De Angelis	President of the BoD and CEO
Mauro Roversi	Vice President and Advisor
Stefano Michele Bacci	Advisor
Francesco Londrini	Advisor
Federico Zancanella	Advisor (from 2015)

4.3.3 Financial Improvement

During the negotiation between IPC Group and Ambienta SGR, new terms were negotiated in order to restructure the company financially.

Equity Reinstatement

This phase involved:

- Covering the loss of 2013 and past loss carried forward by using:
  - €20,061,133.00 from the merger deficit reserve for the current year loss;
  - €3,199,881.00, €5,589,087.00, and €18,966,766.00 from the merger deficit reserve, extraordinary reserve, and share premium reserve, respectively, to cover past losses carried forward.
- € 33 million injection from Ambienta that contributed to complete major operations such as:
  - € 19.1 million to the purchase of the minority package of Euromop S.p.A to fully acquire the company (from 51% to 100%)
  - € 10 million to reimburse a part of the debt.

Debt Restructuring

The main actions undertaken involved:

- The debt restructuring agreement:

	After (€ million)	Rate	Expiration
Tranche A	24.278	Euribor (1, 3, or 6 months) + margin (*)	31/12/2020
Tranche B	31.637	Euribor (1, 3, or 6 months) + margin (*)	31/12/2021
Tranche C	31.637	Euribor (1, 3, or 6 months) + margin (*)	31/12/2021
Revolving Facility	10.000	Euribor (1, 3, or 6 months) + margin (*)	31/12/2020
	97.552		

* = a variable margin to be related with "Consolidated total net borrowings/Consolidated EBITDA".

- The reimbursement of € 10 million total of both Tranche A and B
- The definition of a new payment schedule:

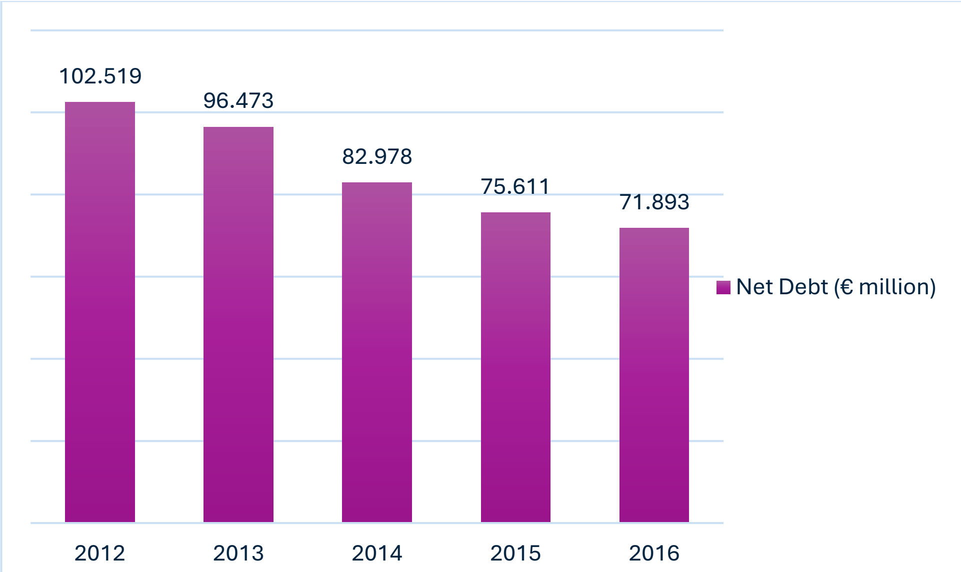
Expiration within	**Amount to be repaid (€ million)**
1 year	4.000
2 years	4.000
3 years	4.500
4 years	7.500
5 years	9.998
after 5 years	47.555
Debt for Senior Financing	77.553

- The reinstatement of current liabilities, showing a more sustainable situation

	2013	2014	Delta
MLT Financial Debt (€ million)	0	73.553	73.553
ST Financial Debt (€ million)	111.530	14.544	-96.986

Evolution of the Net Debt throughout the investment horizon

From 2013 to 2016, the debt was reduced by approximately 25.5%, a development that can be attributed to IPC's effective cash generation capabilities and its recent capital injection.



4.3.4 Operational Improvement

Revenue and EBITDA Growth

- Implemented lead-generation programs and enhanced marketing strategies to attract new customers and boost turnover.
- Focused on optimizing revenues while reducing costs, to keep margins above 50%.
- Increased collaboration with suppliers in the Far East to achieve the best trade-off between product cost and quality.
- Explored low-cost production opportunities abroad while improving production processes domestically in Italy.

Organizational Changes

- Business unit analysis and reorganization:
    - revision of Forma Norge AS
    - acquisition of the full 100% of Euromop S.p.A by buying the minority package
    - inactivity of IP Cleaning Sverige AB, IPC Euromop Iberica S.L. and Eagle International LLC

- enhancing the workforce in all the business units, by changing management in the Indian facility, as well as changing its name into IP Cleaning India Pvt Ltd, and creating cross-functional teams.

- Corporate simplification: creation of two poles, to simplify the value chain and to benefit from synergies.
    - Merge of IP Cleaning S.p.A. with Soteco S.p.A. to have a manufacturing and commercial pole about professional cleaning machinery.
    - Merge of Euromop S.p.A., Ready System S.r.l. and Pulex S.r.l., to have a manufacturing and commercial pole about professional cleaning tools. The production layouts have been re-designed.
    - Standardization of process and HR management by centralizing payroll, tracking attendance/absence, and creating corporate certifications to streamline administrative tasks.

By 2016 the new organizational chart of the Group appeared as follows:

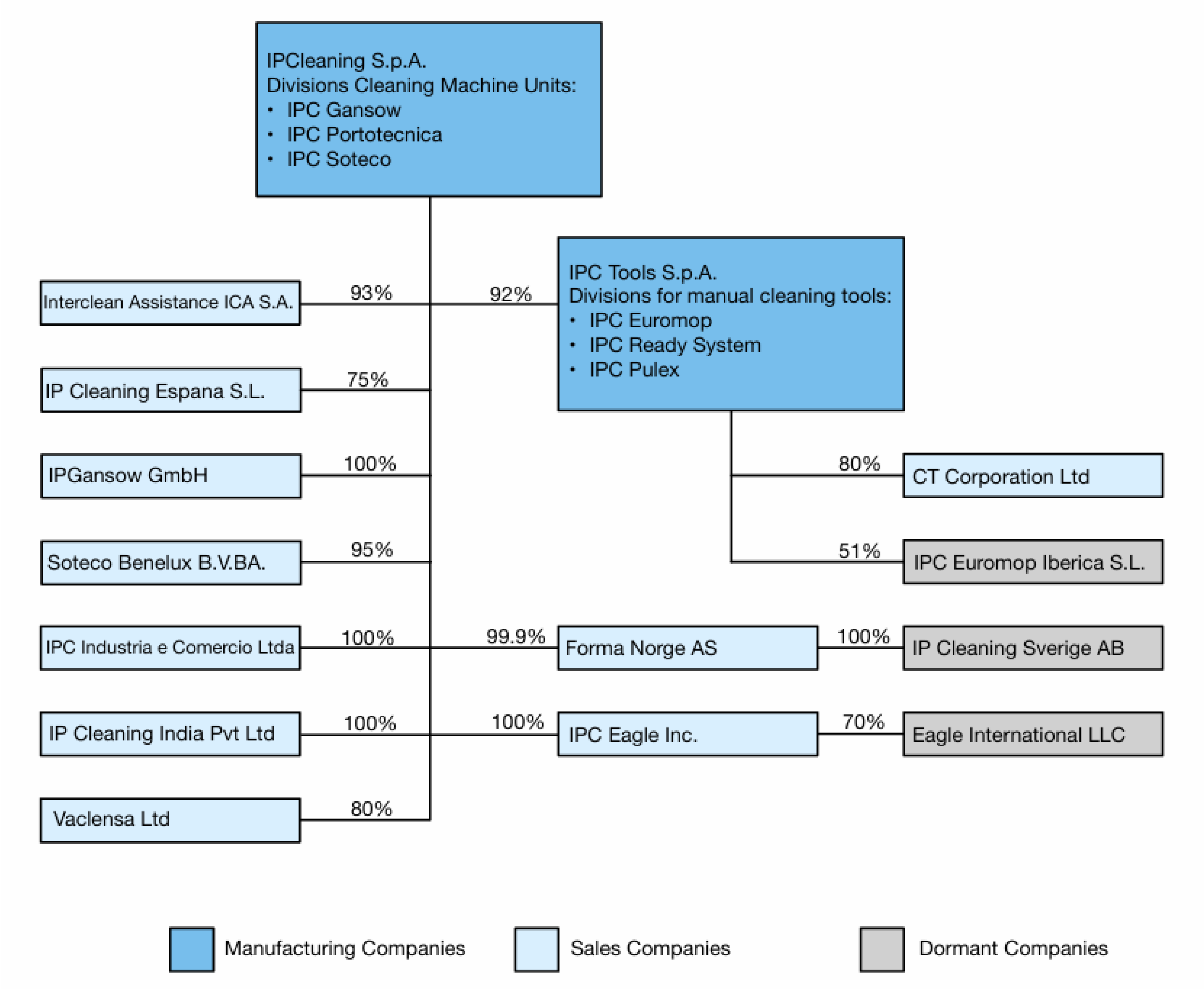


Figure 4.5: Organizational chart of IPC Group in 2016[18]

[18] Source: own elaboration based on IP Cleaning S.r.l. (2017). Annual Report 2016 (Consolidated accounts). Retrieved from AIDA database.

Industrial Strategy and Process Innovation

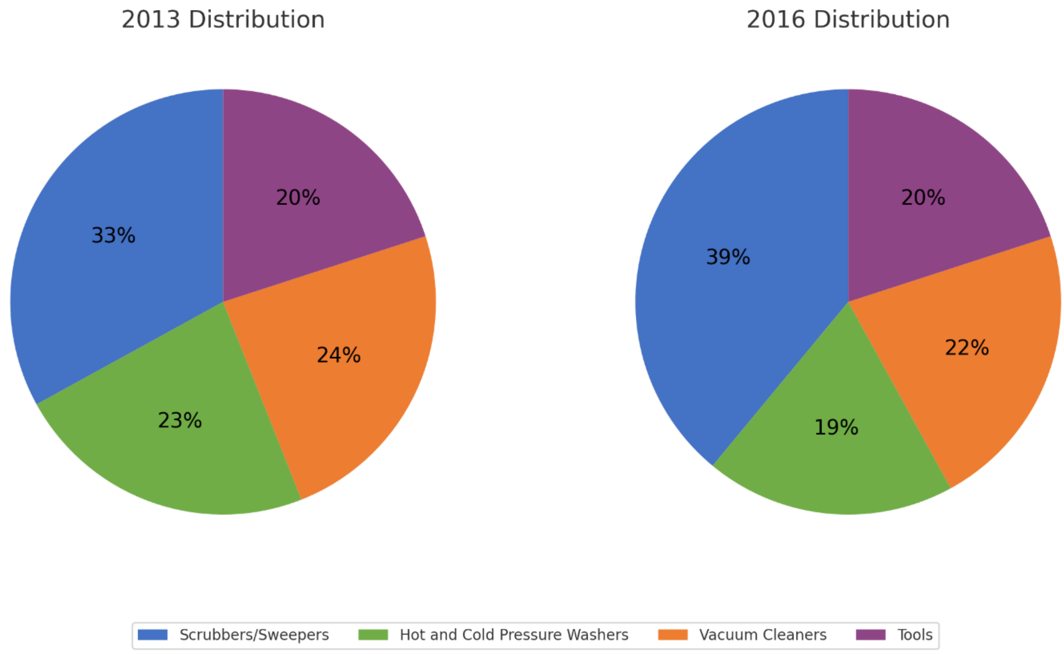
- Supply chain streamlining: setting short- and long-term objectives, creating cross-functional teams to optimize logistics and cross selling, and appointing a dedicated leader.
- Digitalization and IT integration: creation of an information technology and controlling area by installing hardware for data normalization and unifying management databases. This allowed better communication among subsidiaries leading to scale benefits, the diffusion of best practices, a greater market share, improved working capital management and better clients and suppliers management.
- New strategic planning for business units: standardization of information systems, simplification of legal structure for Italian BUs, new approach of product portfolio by developing dedicated business cases, analyzing competitive positioning, and defining tailored plans for each area of activity.

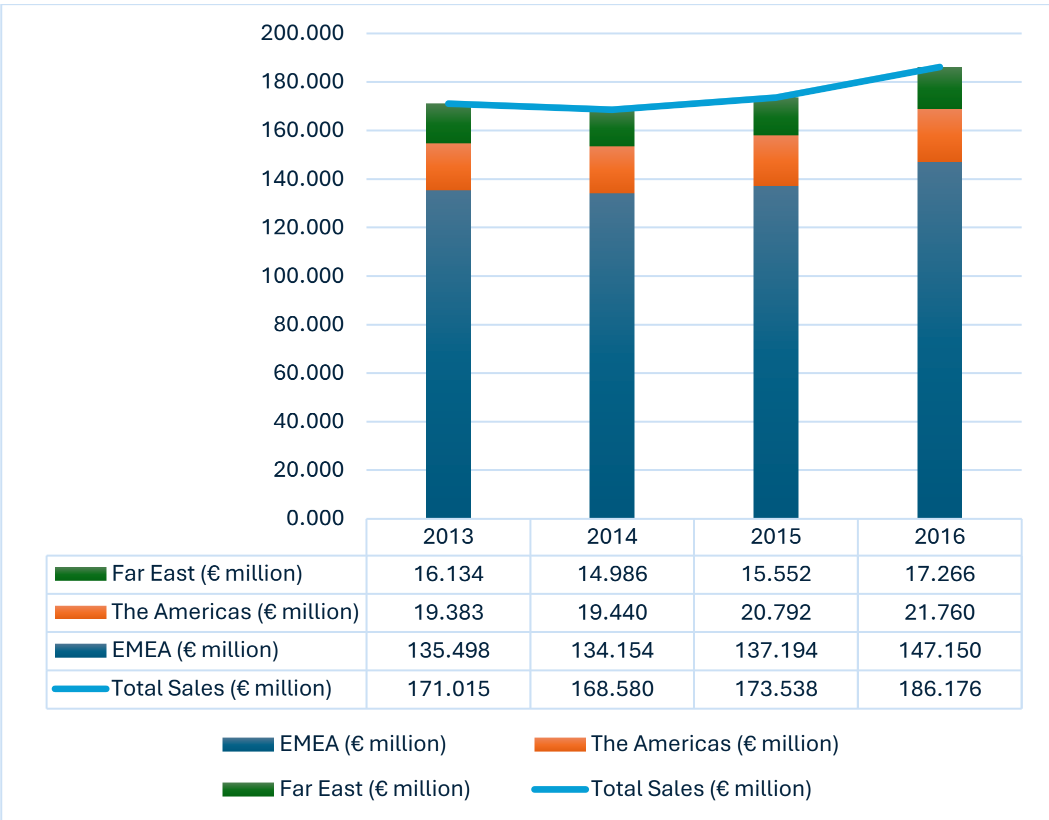
External Growth and International Expansion

- The acquisition of 80% of share capital of Vaclensa Ltd, located in the UK and among the biggest retailers of cleaning machinery in the UK, allowing for a wider network after sales.
- Scouting to search for an expanded product/service portfolio: leveraging new acquisitions to widen the commercial offering, enabling cross-selling opportunities and revenue growth.

Evolution of the main operating performance ratios during the investment horizon

The subsequent results demonstrate Ambienta's substantial impact on the company's global profitability. The growth trend in sales of scrubbers and sweepers was supported by the acquisition of Vaclensa Ltd., allowing also for a further expansion of the Group's international presence, with over 90% of sales maintained abroad, thereby enabling the company to achieve its strategic targets. Notably, the gross margin remained above 50%, while the EBITDA margin also improved, reflecting Ambienta's successful efforts in driving growth worldwide.





	2013	2014	2015	2016
EBITDA Margin (%)	15.9	15.1	15.5	15.7
Gross Margin (%)	50.2	50.2	50.1	50.7

4.4 Divestment

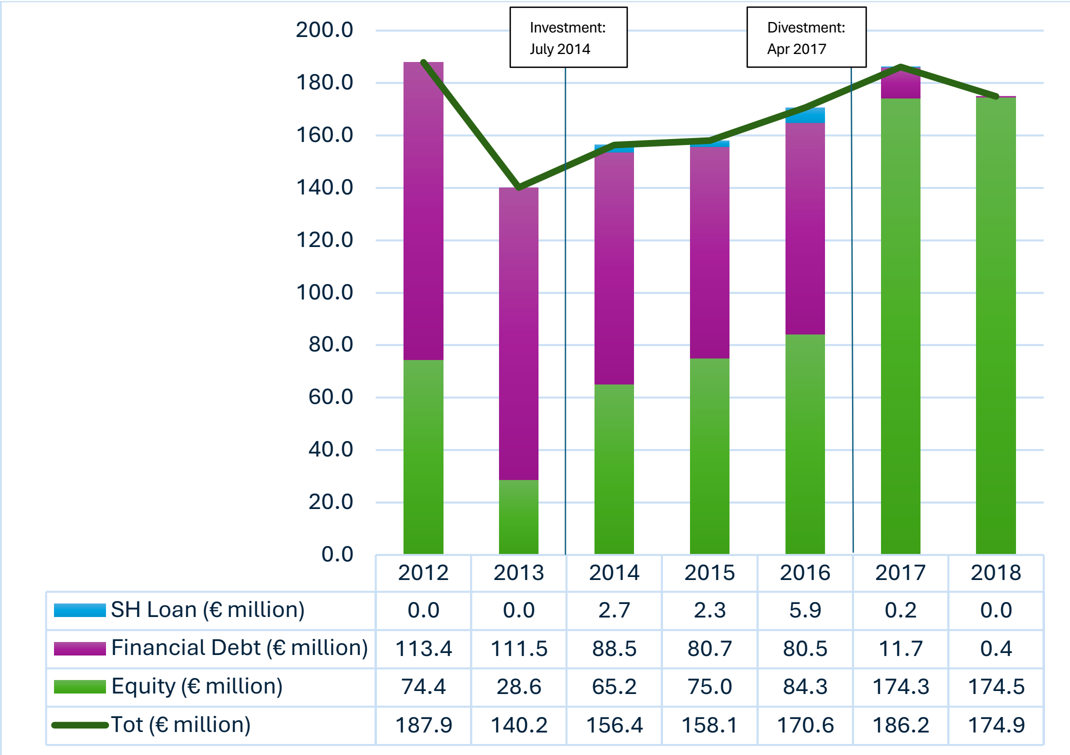
The divestment by Ambienta was finalized on April 6, 2017, with the full sale of IPC Group to Tennant Co., a company based in the U.S. and a direct competitor of IPC, alongside others such as Kärcher in Germany and Nilfisk Advance in Denmark. Tennant Co., with total revenues of $808 million in 2016 and listed on the New York Stock Exchange, leveraged this acquisition to secure a 20% global market share and achieve consolidated revenues exceeding $1 billion.

This strategic move yielded notable synergies for both entities, encompassing enhanced service efficiency, an expanded product portfolio, access to a more extensive global customer base, an upgraded distribution network, and economies of scale. Moreover, the integration process led to opportunities for cross-selling, further enhancing the value proposition of the combined entity. The agreement settled for the sale of IPC Group at €330 million (approximately $353 million), inclusive of the complete repayment of its outstanding debt obligations. Specifically, the bank debt was replaced with an intercompany loan of €150 million through Tennant Holding Italy S.r.l., a special purpose vehicle (S.P.V.) that was merged with IP Cleaning S.r.l. following its transformation from an S.p.A. to an S.r.l. The newly formed entity is built on the initiatives and strategic direction established by Ambienta, ensuring the continued profitability and success of its products.

4.4.1 Value Creation

Debt and Equity Evolution

During the investment period spanning 2014 to 2016, the equity of the company increased and underwent a significant recovery between 2013 and 2014. This recovery was driven by the equity reinstatement applied during the change of ownership between the previous owners to Ambienta, leading to a substantial increase in the share premium reserve. The value creation of the group was also supported by a debt reduction with a notable decrease from €96.8 million in 2013 to €71.6 million in 2016. This decline is primarily attributable to the company's ability to generate substantial operating cash flow, which enabled a reduction in both short-term bank debt and medium- to long-term debt, with €12.5 million attributed to debt repayments and other €10 million to the debt reimbursement of the two tranches of senior debt as outlined in the restructuring process and the Financial Senior Agreement. In fact, the company demonstrated enhanced efficiency and cash management generating € 13 million in operational cash flow in 2014, and € 22.3 million in 2015. This cash flow enabled the company to meet its debt obligations, support the financing of the acquisition of Vaclensa Ltd., while also allocating €6–7 million annually in tangible and intangible assets to support growth. Despite a slight negative residual cash flow of €-1.2 million in 2016, compared to a positive €3.2 million in 2015, the company maintained financial discipline, leveraging strong cash flow and shareholder support to reduce debt and position itself for sustainable growth.

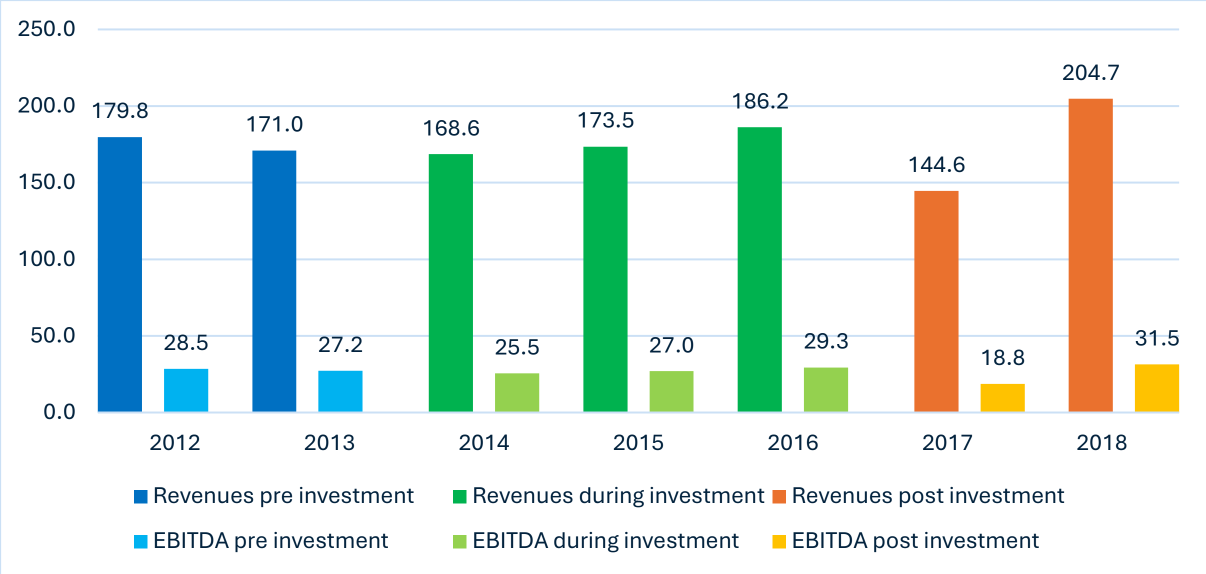


	2012	2013	2014	2015	2016	2017	2018
SH Loan (€ million)	0.0	0.0	2.7	2.3	5.9	0.2	0.0
Financial Debt (€ million)	113.4	111.5	88.5	80.7	80.5	11.7	0.4
Equity (€ million)	74.4	28.6	65.2	75.0	84.3	174.3	174.5
Tot (€ million)	187.9	140.2	156.4	158.1	170.6	186.2	174.9

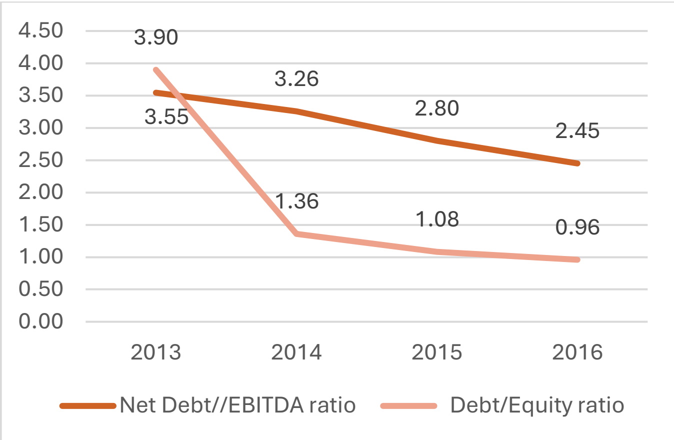
Amount (€ million)	2013	2014	2015	2016
EBT (Earning Before Tax)	4.8	9.9	10.8	12.4
Net cash flow from operating activities	21.0	13.0	22.3	21.6
Capex	-6.1	-6.0	-6.9	-6.5
Free Cash Flow	14.9	7.0	15.4	15.1
Net cash flow	6.3	3.7	3.2	-1.2

Financial and Operational improvements

During the investment period, Ambienta's expertise helped the group, previously in a difficult position, recover from the crisis, leading to an upward revenue trend after years of losses. In fact, all key metrics showed growth between 2013 and 2016. Revenues and EBITDA grew by approximately 8% over the period, translating into a Compound Annual Growth Rate (CAGR) of around 2.5%. This steady annualized growth reflected Ambienta's efforts to improve the company's operational efficiency and market positioning compared to the previous period. In 2017, once Ambienta divested, both revenues and EBITDA declined, likely reflecting the transition in ownership and the adjustments needed to align with the new management. By 2018, however, the group had returned to growth.



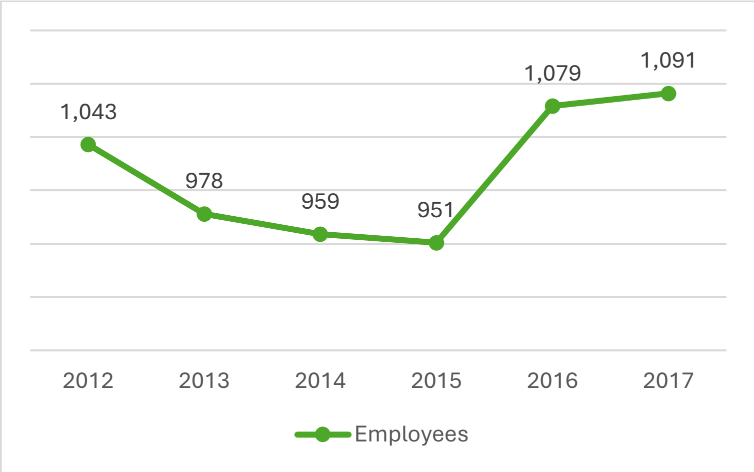
In financial terms, the improvements can by noted through the deal leverage ratio (Net Debt/EBITDA) and the financial leverage ratio (Debt/Equity) which showed a significant decline, reflecting a more sustainable debt structure. These positive changes can be attributed to the debt restructuring agreement and the new payment schedule implemented by Ambienta SGR.



4.4.2 Sustainability Results

Ambienta's decision to invest in IPC was motivated by sustainability considerations, aligning with its philosophy that "Sustainability drives value". IPC's operations are in full compliance with current regulations, particularly in its production processes, which are centered on mechanical and textile manufacturing, plastic molding, and component assembly. These processes are conducted in a manner that prevents the emission of pollutants into the environment; as a consequence, during the production process IPC prioritizes eco-friendly material and selects its suppliers according to those who align to its environmental protection standards.

IPC was able to reinforce its commitment under Ambienta's guidance, achieving savings in energy, water and maximizing the use of recycled plastic. However, in order to reduce costs, improve production efficiency, and optimize logistics in the equipment sector, Pulex's manufacturing operations were relocated in the production site of Ready System S.r.l., between 2014 and 2015, from Brescia to Villafranca Padovana, creating some tension. Approximately 30 out of 37 employees refused to relocate, and the company concluded agreements to facilitate their exit. Despite this, during this period the number of IPC's workforce remained relatively stable, as shown by the figures. While a slight decline can be observed between 2013 and 2015, the company quickly recovered and continued to grow. In addition, IPC maintained excellent relations with employees, unions, and worker representatives, even during a period of uncertainty and reliance on wage support measures under applicable laws to sustain efficiency in the Group's production sites.



Employee health and safety metrics also remained strong, with a very low and insignificant rate of workplace accidents, both in terms of the number of incidents and lost workdays. IPC's employees regularly participated in safety training programs and professional development courses to support their growth.

In this context, during 2015, the parent company's Board of Directors approved policies to regulate employee conduct in sensitive areas such as labor, environment, safety, and business integrity, with standards including the maintenance and expansion of ESG certifications supported by the completion of a tailored certification program.

This effort was shared by both IPC and Ambienta, showing that they both committed to integrating sustainability and operational excellence into all aspects of their business.

Numerical Results

Under Ambienta's leadership, IPC placed sustainability at the center of its technological development and market competitiveness in the professional cleaning industry. In 2016, IPC introduced innovative solutions in its product portfolio, with the aim of delivering significant environmental benefits. As a result, it contributed to energy savings of approximately 19,000 tons of oil equivalent (Toe), water savings of 73,000 cubic meters, and a reduction of 2,200 tons of pollutants from harmful detergents. According to these results, using Ambienta's Environmental Impact Analysis (EIA) methodology, IPC's contributions were:

- Resource efficiency: energy and water savings.
- Pollution control: the avoidance of pollutants by reducing the use of harmful detergents.

These initiatives have enabled IPC to align with the United Nations' Sustainable Development Goals (SDGs), specifically Goals 6 (clean water and sanitation) and 7 (affordable and clean energy). These environmental achievements, together with the financial and operational improvements, have laid a strong foundation for IPC to pursue its next phase of expansion, combining operational excellence with innovation driven by sustainability.

4.5 Return on the Investment

In order to estimate the return on investment for all stakeholders involved in the project, several assumptions are made to ensure consistency. The analysis assumes a three-year investment horizon, starting from the acquisition of IPC Group on July 2, 2014, to the full sale to Tennant Co. on April 6, 2017, providing the duration to estimate shareholders' returns. General Partners (GPs) are assumed to receive management fees at 2% of the invested capital and a carried interest of 20%, while Limited Partners (LPs) are allocated 80% of the total profits generated above the hurdle rate of 8%, which aligns with common standards in the private equity industry. Additionally, to make sure to align the interests of the General Partners with those of Limited Partners, it is assumed that GPs invest 2% of the invested capital, while LPs contribute 98%.

The results, summarized in the table below, report high returns for both GPs and LPs. As a matter of fact, the project achieves an overall IRR of 72.8%, reflecting exceptional performance, and a money on money multiple greater than 5 indicating that the investment has returned more than five times the initial capital. However, in the absence of precise information on other costs or specific arrangements, these estimates are subject to potential inaccuracies and should be interpreted with caution.

Assumptions & Inputs	
Holding period (years)	3
Invested Capital (€ million)	50.000
Net Debt at exit (€ million)	71.893
EV at exit (€ million)	330.000
Equity at exit (€ million)	258.107
Hurdle Rate	8%
Management fees rate	2%
Tot Management fees (€ million)	1.000
% Invested Capital LPs	98%
% Invested Capital GPs	2%

Returns (€ million)	
Proceeds net of fees	257.107
Step 1: Return of Capital	
LPs	49.000
GPs	1.000
Net value	207.107
Step 2: Preferred Return	
LPs	12.986
GPs	-
Net value	194.121
Step 3: Carried Interest	
LPs (80%)	155.297
GPs (20%)	38.824

Summary of Results	
Equity at entry (€ million)	50.000
Equity at exit (€ million)	258.107
Gross IRR	72.8%
Gross MoM	5.16
Tot Proceeds LPs (€ million)	217.283
Tot Proceeds GPs (€ million)	40.824
Net Proceeds LPs (€ million)	168.283
Net Proceeds GPs (€ million)	39.824
Net MoM (LPs)	4.43
Net IRR (LPs)	64.3%

Due to the fact that with the investment in IPC Group Ambienta achieved exceptional results, it won in 2017 two awards, one by Real Deals, a Private Equity magazine and the other from AIFI, the Italian Private Equity, Venture Capital and Private Debt Association:

Figure 4.6: Ambienta awards for the IPC Deal[19]

4.6 Summary of Value Creation

Three years before Ambienta's acquisition, IP Cleaning Group faced financial distress due to declining sales and poor management, exacerbated by economic instability from the 2008 financial crisis and the Greek debt crisis. Since its birth, due to its fragmented structure, the group struggled with integrating business units, consolidating its distribution network, and promoting innovation. However, given the peculiar position of IPC in a fragmented market with a niche position, it represented a potential investment for growth and value appreciation. In 2014, the Group was acquired by Ambienta for €50 million, which implemented an Action plan restructuring its debt, reinstating its equity and providing financing for a rapid transformation. The organizational improvements which contributed the most to value creation included dedicated manufacturing hubs, cross-functional teams, and the acquisition of Vaclensa Ltd, which helped to strengthen the distribution network and increase revenues. The company was then sold to Tennant Co., a US Company, at a price of € 330 million. This suggests that the great rise in enterprise value was the main driver of this investment, going from an EV/EBITDA multiple of approximately 5x to 11.3x throughout the investment horizon. This notable increase can be attributable to the capability of Ambienta to negotiate an advantageous deal both at entry and at exit, leveraging the financial struggle of the group, and the positive effect of sustainability in reaching appreciation in the market. Finally, the investment delivered an impressive 72.8% internal rate of return (IRR).

4.7 References

[1] Fidelman & Company. (2018, October 12). Market size of the mop industry (global report).
[2] IP Cleaning S.r.l. (2011). *Annual Report 2011 (Consolidated accounts).* Retrieved from AIDA database.
[3] IP Cleaning S.r.l. (2012). *Annual Report 2012 (Consolidated accounts).* Retrieved from AIDA database.
[4] IP Cleaning S.r.l. (2013). *Annual Report 2013 (Consolidated accounts).* Retrieved from AIDA database.

[19] Source: Ambienta SGR. (n.d.). *Awards.* Retrieved from: https://ambientasgr.com/firm/awards/

[5] IP Cleaning S.r.l. (2014). *Annual Report 2014 (Consolidated accounts).* Retrieved from AIDA database.
[6] IP Cleaning S.r.l. (2015). *Annual Report 2015 (Consolidated accounts).* Retrieved from AIDA database.
[7] IP Cleaning S.r.l. (2016). *Annual Report 2016 (Consolidated accounts).* Retrieved from AIDA database.
[8] IP Cleaning S.r.l. (2017). *Annual Report 2017 (Consolidated accounts).* Retrieved from AIDA database.
[9] IP Cleaning S.r.l. (2018). *Annual Report 2018 (Consolidated accounts).* Retrieved from AIDA database.
[10] IP Cleaning S.r.l. (2019). *Annual Report 2019 (Consolidated accounts).* Retrieved from AIDA database.
[11] IPC. (n.d.). Integrated professional cleaning.
[12] Kärcher. (n.d.). Cleaning equipment for home & industrial applications.
[13] Muriithi, S. M., Omolo, J. A., & Wachira, M. (2016, October 10). Strategies employed in the cleaning industry in an effort to attain sustainable competitive advantage. *International Journal of Economics, Commerce and Management.*
[14] Nilfisk. (n.d.). Nilfisk global.
[15] Tennant Company. (n.d.). Industrial & commercial floor cleaning machines.
[16] Wikipedia contributors. (n.d.). Kärcher. *Wikipedia, The Free Encyclopedia.*
[17] Wikipedia contributors. (n.d.). Nilfisk. *Wikipedia, The Free Encyclopedia.*

5 Safim S.p.A.

Figure 5.1: Safim S.p.A. logo[20]

Safim S.p.A. was founded in 1977 by Mamei brothers, Eronne and Omer, in Modena, where its headquarters are currently located; they set out to develop safer and more efficient braking systems for agricultural machinery. Modena is renowned as one of the most prestigious locations for mechanical engineering globally, situated at the heart of the iconic Motor Valley. Safim S.p.A. achieved several milestones since its foundation, contributing to its expansion: in 2014, the company established its second production facility in Pune, India; in 2016, it strengthened its international presence by setting up a holding entity in France; in 2017, Safim entered into a strategic collaboration with Ambienta SGR, a private equity investment fund, allowing further growth; during Ambienta's investment period, they established another subsidiary in the United States, enhancing Safim's access to the North American market; in 2018 the advancement kept going on, with the opening of a new branch in Germany which contributed to the consolidation of its presence in Europe. Finally, after Ambienta's divestment, the company joined the AL-KO Vehicle Technology Group, a subsidiary of DexKo Global Inc.. Together with another company named Fluid-Press, they contributed to constitute the group's hydraulic unit, as the following image shows. The synergy generated by this unit allowed Dexko Global Inc. to further strengthen its position in the global hydraulic braking systems industry and market while keeping intact the identity of the add-ons (Safim S.p.A., 2023).

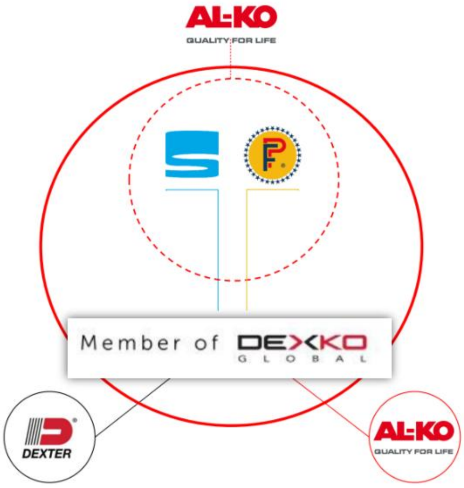


Figure 5.2: Dexko Global hydraulic business unit in 2023[21]

[20] Source: SAFIM. (n.d.). Hydraulic brake system. https://www.safim.it/

[21] Source: Safim S.p.A. (2023, November). Hydraulic Business Unit Corporate presentation. Safim S.p.A. Retrived from: https://www.safim.it/wp-content/uploads/2023/11/CORPORATE-PRESENTATION-Hydraulic-Business-Unit.pdf

Safim specializes in the production of highly efficient hydraulic components, with a particular focus on braking systems for off-highway vehicles and trailers. These products are employed in multiple industries, such as agriculture, material handling, earth moving, urban cleaning and the aerospace sector, highlighting the broad presence of Safim in a wide range of sectors.

The main categories of product are:

1. S6 Brake Valves
2. Master Priority Valve
3. Pumps
4. Trailer Brake Valves
5. Parking Brake Control Valve
6. Brake Cylinders
7. Trailer Braking Components
8. Hydraulic Valves
9. Accessories

Figure 5.3: Safim product categories[22]

[22] Source: SAFIM. (n.d.). *Prodotti.* Retrieved from: https://www.safim.it/prodotti/

Due to its strong engineering expertise and its approach focused on the customer, Safim has experienced significant growth over the past few years. They offer high quality solutions that are tailored to the specific needs of their customers, designed to ensure both operator comfort and overall system efficiency, all in rapid turnaround times. These characteristics contributed to generating a strong competitive advantage compared to other similar companies, leading to the positioning of Safim as a leading player in its niche market. As a result, the company serves prestigious global clients, including Caterpillar, CNH, John Deere, Same, Manitou, Volvo, Liebherr and JCB (Bilancio di sostenibilità, 2019).

Other than its expertise, Safim is also known for its commitment to sustainability, including its interest on workplace safety and environmental responsibility, which is reflected in its products, designed also to meet sustainability standards without compromising quality or performance.

5.1 Business and Industry Overview Before Entry

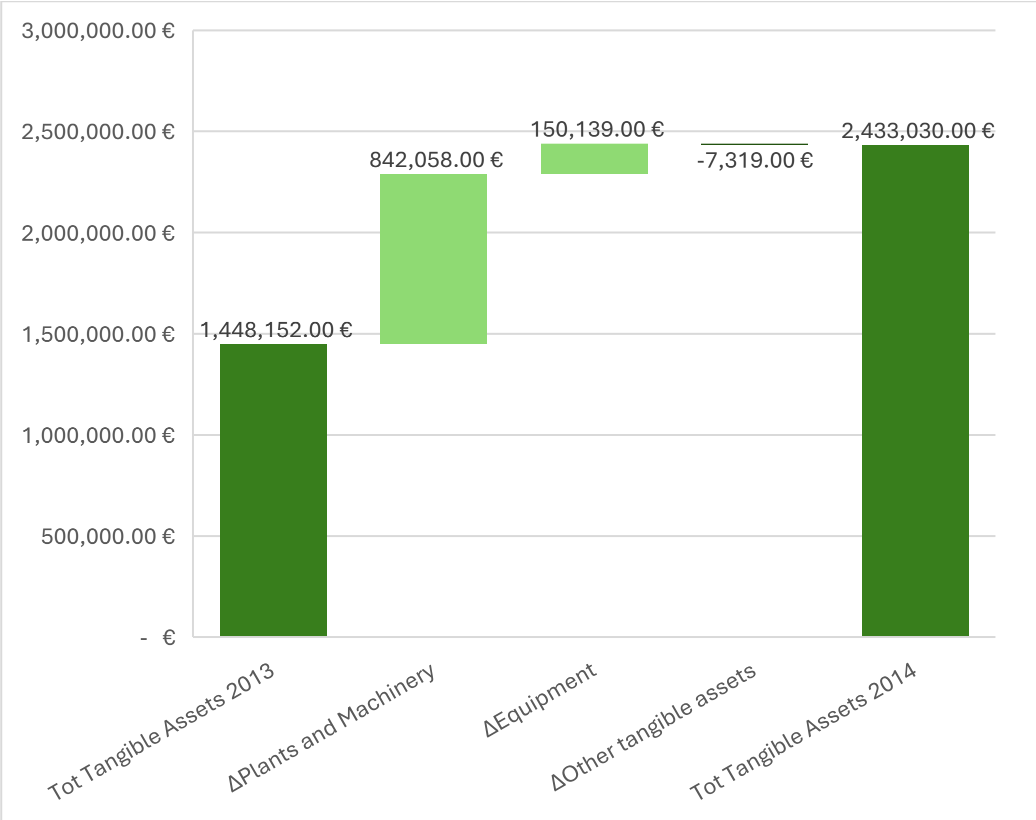
Between 2014 and 2017, the global economy underwent uneven growth and notable volatility. Although advanced economies, particularly the United States, showed signs of recovery, several emerging markets, such as China, Japan, and Russia, experienced substantial slowdowns as a result of geopolitical tensions and fluctuating commodity prices. Despite these macroeconomic challenges, Safim's core business sectors, most notably the earth-moving machinery market, continued to expand and were projected to grow further in the subsequent years.

In 2014, Safim truly embraced the opportunity presented by a global shift towards safer and more efficient industrial machinery. The company experienced steady growth across several regions, 8% in Italy, 10% throughout Europe, and 17% in other international markets. These figures underscore Safim's talent for exploiting diverse market opportunities and its commitment to staying ahead of evolving customer needs. As anticipated in the previous section, much of Safim's success is to be attributable to the dedication of the Mamei family, which played a crucial role in making Safim a leading supplier of valves, brake pumps, and other essential components for the safety and energy efficiency in the hydraulic systems of heavy vehicles. They fostered continuous innovation and demonstrated the capability to anticipate long term sustainable trends. Only in 2016, its product portfolio approximately reduced 2,500 tons of CO_2 emissions. Today, Safim serves all major global manufacturers of agricultural, construction, and logistics vehicles, firmly securing its position as a trusted and innovative leader in the industry.

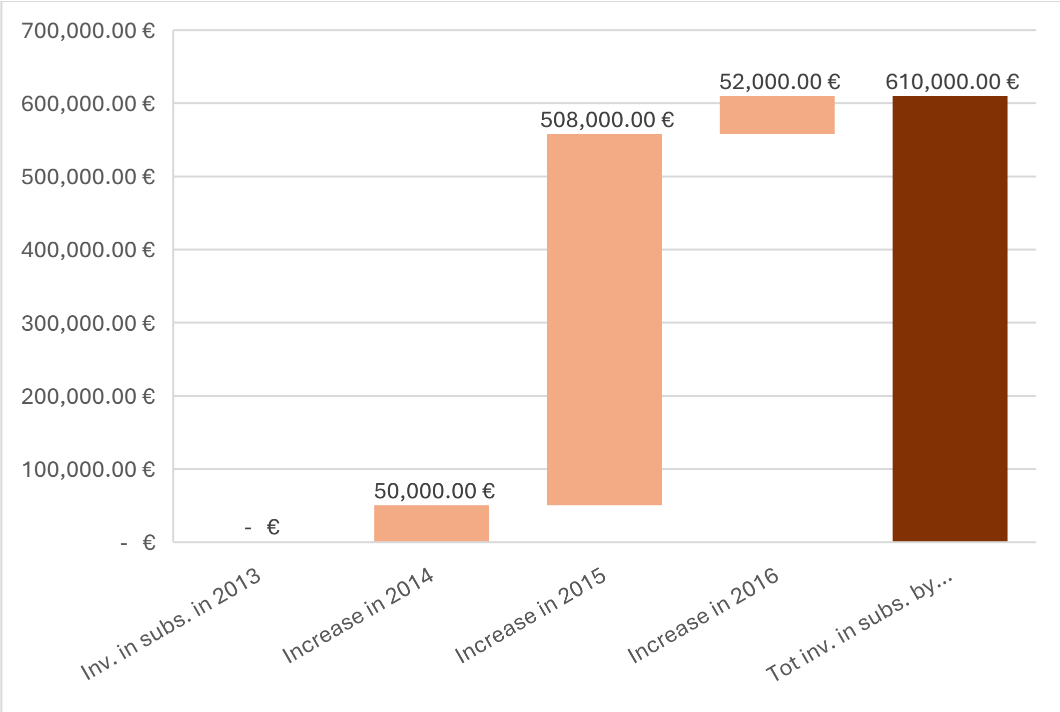
5.1.1 Industrial & Commercial activities

During the years preceding Ambienta's acquisition, Safim implemented several strategic initiatives aimed at enhancing its production capabilities and penetrating new markets. Notably, in 2014 was the establishment of Safim Brake India Ltd, which was considered a pivotal step for the company's future growth. According to the Annual Report of 2014 (p. 26), this expansion provided Safim with access to a high-growth market, particularly within the agricultural sector. The objective was to introduce products with a lower technological complexity and quality standard, making them more accessible to local machinery manufacturers and targeting other Asian markets. A crucial milestone was achieved in 2016 when Safim Brakes India PVT Ltd officially began operations, setting the stage for the industrial and commercial activities to reach full operational capacity by 2017. Additionally, on July 15, 2016, Safim established another subsidiary in France Safim Brakes France SAS, as part of its strategic expansion plan. The decision to expand into Dourdan, France was driven by the country's significant role in Safim's industry, enabling the company to strengthen commercial relations and access a critical market for its products.

These initiatives were reflected in Safim's financial statements, which recorded a notable increase in tangible assets, primarily in machinery and equipment, between 2013 and 2014, likely driven by the investments for the Indian facility.



And also during this period it is shown the growth of the investments in subsidiary companies, which further illustrates the company's commitment to broadening its operational footprint.



Out of the total participations on subsidiaries in 2016, € 600,000.00 are referred to the participation of Safim in Safim Brakes India PVT LT, while €10,000.00 are attributable to the participation in the Safim Brakes France SAS company. Building upon this momentum, Safim set its sights on further international expansion, with the United States identified as the next key target market for business development.

5.1.2 Company facilities and subsidiaries

By the time Ambienta commenced its investment in 2017, Safim's primary operational sites included:

1. Safim S.p.A. in Modena, Italy: the original headquarters and principal production facility, encompassing research and development, administrative functions, and the core manufacturing base.
2. Safim Brakes India PVT Ltd in Pune, India: the company's secondary manufacturing plant, acquired in 2014 but started its activity in 2017.
3. Safim Brakes France SAS in Dourdan, France: A strategic commercial office and holding entity, which officially commenced its operations in 2017.
4. Safim Brakes USA Inc in Brooklyn Center, Minnesota, USA: another strategic commercial office not yet active in 2017, started registering revenues in 2018.

5.1.3 Shareholding Structure

Prior to Ambienta's entry, Safim was wholly controlled by EEAM S.r.l., which managed and oversaw the company in accordance with Article 2497 et seq. of the Italian Civil Code. The President of the Board of Directors for both Safim S.p.A. and EEAM S.r.l. was Mr. Eronne Mamei, reflecting the pivotal role of the Mamei family in corporate governance. Mr. Andrea Mamei and

Mr. Enrico Mamei, both sons of the founder, served respectively as Advisor and Vice President of the Board of Directors. This signals how the company is a familiar business, all handled by the Mamei's family since its foundation.

The share capital is composed of 1,000,000 shares valued €1,00 each.

5.2 Historical Operational and Financial performance

Safim demonstrated strong financial health in the years prior to Ambienta's investment, maintaining steady revenue growth despite global economic challenges. Revenues increased from €26.57 million in 2014 to €28.06 million in 2016, while EBITDA remained stable at around 20% of revenues, reflecting consistent profitability. The profitability ratios also confirm this trend. ROS, ROA and ROE experienced a slight decline in 2015, but recovered in 2016, demonstrating the company's resilience and ability to sustain earnings. Net income remained positive throughout the period, reinforcing operational efficiency.

From a financial stability perspective, stockholders' equity showed no significant fluctuations, and the absence of financial debt underscores Safim's solid capital structure. Moreover, the return on investment remained strong, reaching 13.6% in 2016, highlighting the effective use of capital.

In summary, Safim maintained stable profitability, financial independence and operational efficiency, positioning itself as a strong and sustainable business prior to Ambienta's entry.

	2014	2015	2016
Revenues	26,567,074.00 €	26,888,299.00 €	28,062,710.00 €
EBITDA	5,476,298.00 €	5,296,195.00 €	5,996,941.00 €
Net Income	2,346,461.00 €	2,221,155.00 €	2,612,636.00 €
Total Assets	29,012,405.00 €	30,221,741.00 €	29,705,392.00 €
Stockholder's Equity	22,255,823.00 €	23,276,978.00 €	22,272,246.00 €

%	2014	2015	2016
ROS	14.1	12.9	14.7
ROA	13.0	11.7	14.1
ROE	10.5	9.5	11.7
ROI	12.7	11.2	13.6

5.3 Ambienta's Investment

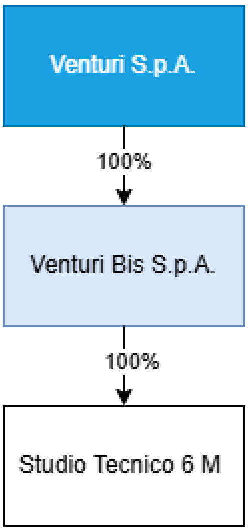
In July 2017, the deal between Ambienta and the Mamei family was finalized, representing a remarkable milestone in Safim's strategic expansion. The objective was to leverage Ambienta's financial and managerial expertise to accelerate Safim's internationalization and revenue growth, while also strengthening its market position through targeted investments in both fixed and human capital. The transaction between these two companies involved a reverse merger, through which Studio Tecnico 6M S.r.l. and Venturi Bis S.p.A. were incorporated into Safim S.p.A., facilitating both Ambienta's entry and allowing for the restructuring of Safim in terms of governance optimization and operational efficiency.

The investment is analyzed applying the typical three sets of changes of a private equity transaction: governance, financial and operational engineering (Kaplan & Strömberg, 2009).

5.3.1 New Shareholding Structure

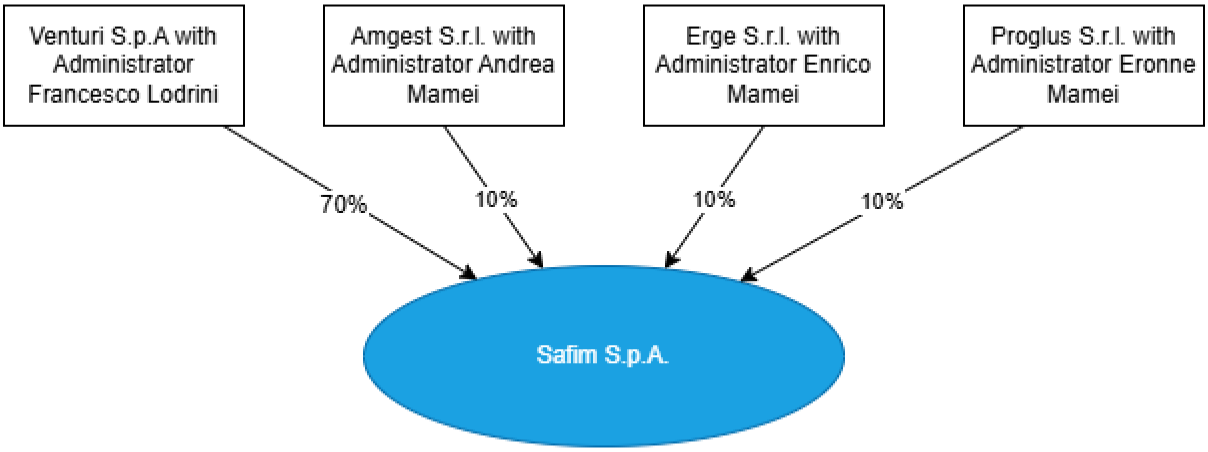
Prior to the merger, both Studio Tecnico 6M S.r.l. and Venturi Bis S.p.A. were fully controlled by Venturi S.p.A., a holding entity with a diversified ownership structure. The shareholders included

Ambienta, Antonio Corbani as the financial advisor of the operation, Pietro Santoro as the new appointed CEO and members of Safim's existing workforce, specifically Leonardo Mori, Marco Pramarzoni, and Stefano Togninelli. The fact that the new ownership structure involved key members of both Ambienta and Safim, further facilitated the integration process.



Entity	% stake
Ambienta SGR S.p.A.	95.80%
Antonio Corbani	2.74%
Pietro Santoro	0.98%
Leonardo Mori	0.16%
Marco Pramarzoni	0.16%
Stefano Togninelli	0.16%

The reverse merger resulted in Safim S.p.A. remaining as the principal entity while absorbing Venturi Bis S.p.A. and Studio Tecnico 6M S.r.l. The post-merger ownership structure, illustrated in the following figures, shows that Ambienta and the management team acquired a controlling 70% stake, while each of the three Mamei family members retained a 10% stake, totaling a significant 30%.



By the end of 2017, the investment process was fully implemented. In terms of financial structuring, Ambienta utilized capital from its Ambienta II fund and secured additional financing through a banking syndicate comprising Banca Popolare di Milano S.p.A. and Crédit Agricole Cariparma S.p.A.

Beyond financial investment, Ambienta played a fundamental role in reorganizing Safim's corporate structure to accelerate growth and enhance operational efficiency. The investment focused on capitalizing on emerging market opportunities by strengthening both fixed capital investments and human capital (Annual Report, 2017). These strategic initiatives were aimed at positioning Safim for sustained long-term expansion while optimizing its competitive edge in the global market.

5.3.2 Management Improvement

As a result of the strategic partnership between Ambienta, its management team, and the Mamei family, modifications were made to the composition of both the Board of Directors and the executive management team to ensure alignment with the interests of all stakeholders. The revised governance structure is outlined in the table below:

Board of Directors	Role
Eronne Mamei	President of the BoD
Pietro Santoro	CEO
Giuseppe Tronchetti Provera	Vice President of the BoD
Francesco Lodrini	Advisor
Giovanni Scarlini	Advisor
Antonio Corbani	Advisor

Eronne Mamei retained his position as President of the Board of Directors, maintaining significant influence over corporate governance. Concurrently, Ambienta appointed key representatives to the Board to safeguard its investment and facilitate strategic decision-making in line with the company's long-term growth objectives. Notably, Francesco Lodrini, a Partner at Ambienta, joined the Board as an Advisor, reinforcing Ambienta's direct involvement in the company's strategic direction. This revised governance structure ensured a balanced approach, integrating continuity from the Mamei family with the expertise and oversight provided by Ambienta's representatives. Additionally, the Board's diversified composition, combining expertise in strategic, industrial, engineering, and financial domains, fostered well-rounded decision-making, innovation, and a broader perspective on corporate governance. Quarterly board meetings, supplemented by monthly directional meetings, ensured continuous alignment and effective governance.

5.3.3 Financial Improvement

Ambienta's entry into Safim's shareholding structure involved the injection of new finances. The following two sections explain how the capital structure of the company was modified and provide an estimation of the capital invested.

Equity Change

The reverse merger of Safim S.p.A. entailed the incorporation of Venturi Bis S.p.A. and Studio Tecnico into Safim itself. This structural consolidation led to the cancellation of the shareholdings associated with the two merged entities, amounting to €29,815,203.00 for Venturi Bis S.p.A. and €1,500,000.00 for Studio Tecnico.

As a result of these adjustments, alongside the retroactive application of accounting and tax effects from January 1, 2017, the company's post-merger net equity decreased by €9,636,711.00. Additionally, a merger deficit of €22,143,731.00 was recognized, reflecting the excess value generated by the transaction. This merger deficit was fully recorded as goodwill, representing the intangible value of the merger, in compliance with OIC 24, paragraphs 66-70. (Annual Report, 2017, p. 12). Despite the short-term reduction in stockholders' equity, the merger strengthened the company's financial foundation, positioning it for long-term growth and expansion.

According to a report published in 2017 by Private Equity Monitor, Ambienta SGR invested a total amount of € 25.8 million.

Debt Change

The total liabilities of Safim S.p.A. increased from €35,588,858.00 to €54,150,024.00, mainly due to the additional debt incurred as part of the acquisition process. This significant increase in financial obligations strongly indicates that the investment made by Ambienta followed a leveraged buyout (LBO) model, aligning with the observations made by Kaplan and Strömberg (2009).

The typical characteristics of an LBO in this investment reflect:

1. The use of two Special Purpose Vehicles (SPVs)
2. The rapid increase in financial debt in 2017. In fact, prior to Ambienta's entry, Safim had no financial debt. However, after the acquisition, the company assumed financial debt of €24,277,261.00, payable to a pool of banking institutions composed of Banca Popolare di Milano S.p.A. and Crédit Agricole Cariparma S.p.A..

This newly incurred debt was secured by the Company's intangible assets, specifically trademarks and patents. The repayment schedule for this financial debt was organized in two tranches, with €12.5 million due by May 31, 2023, and another €12.5 million due by May 31, 2024 (Annual Report, 2017, p. 28).

The significant reliance on debt financing is consistent with the typical characteristics of LBO transactions, in which an acquiring company uses external financing to maximize returns while using the assets of the acquired company as collateral.

Total Assets

All the changes determined by the new capital structure of the company, pre- and post-merger, primarily affected intangible assets under goodwill, development costs, patent rights and current intangible assets.

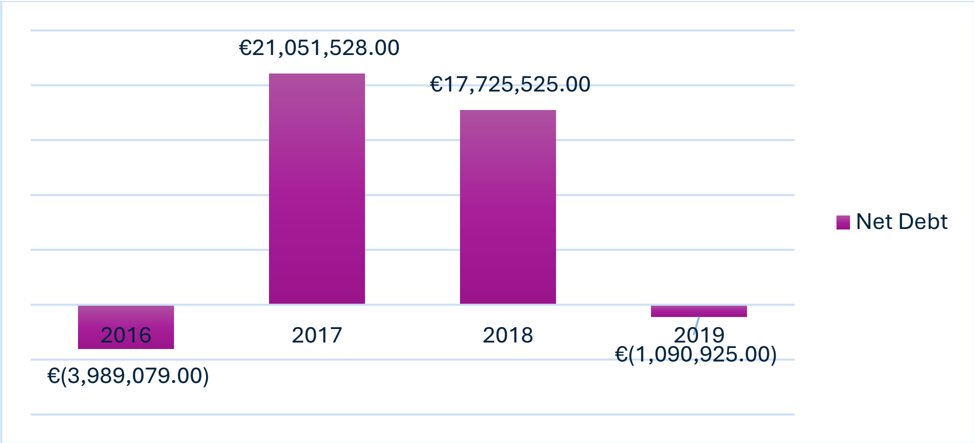
	31/12/2017 (post merge)	31/12/2017 (pre merge)	Variation
FIXED ASSETS	29,756,590.00 €	9,676,427.00 €	20,080,163.00 €
Intangible Asstes	25,746,398.00 €	5,666,236.00 €	20,080,162.00 €
Tangible Assets	2,559,176.00 €	2,559,176.00 €	- €
Financial Assets	1,451,016.00 €	1,451,016.00 €	- €
CURRENT ASSETS	24,220,474.00 €	25,739,470.00 €	- 1,518,996.00 €
Inventory	10,276,715.00 €	10,276,715.00 €	- €
RECEIVABLES	10,718,026.00 €	12,389,751.00 €	- 1,671,725.00 €
Trade receivables	10,114,798.00 €	10,114,798.00 €	- €
Tax receivables	432,035.00 €	2,104,886.00 €	- 1,672,851.00 €
Deferred tax assets	57,966.00 €	57,745.00 €	221.00 €
Other receivables	113,227.00 €	112,322.00 €	905.00 €
NON-FIXED FINANCIAL ASSETS	- €	- €	- €
CASH AND CASH EQUIVALENTS	3,225,733.00 €	3,073,005.00 €	152,728.00 €
ACCRUED INCOME AND PREPAID EXPENSES	172,961.00 €	172,961.00 €	- €
TOTAL ASSETS	**54,150,024.00 €**	**35,588,858.00 €**	18,561,166.00 €

Evolution of the Net Debt throughout the investment horizon

Between 2016 and 2017, net debt increased significantly due to the new debt financing secured by Ambienta as part of the leveraged acquisition structure. The total repayment was originally scheduled in two tranches, with €12.5 million due in 2023 and another €12.5 million in 2024. However, early repayments were made, leading to a gradual reduction of debt, with €1,312,575.00 repaid in 2017 and an additional €3,750,000.00 in 2018. This strategy reflects effective cash flow management, likely aimed at enhancing financial stability and reducing interest costs ahead of the scheduled maturities.

In 2019, the Safim's acquisition by DexKo Group Inc., entailed a financial reorganization of the company that led to a significant reduction in bank debt. The existing debt was largely replaced by a shareholder loan provided by the new controlling shareholders, reflecting a strategic shift in the company's financing structure. While this shareholder loan is recorded under the debt section in the financial statements, it is not included in the calculation of the net financial position, suggesting that the company treated it as a non-financial debt or quasi-equity.

The rationale behind DexKo Group Inc.'s use of a shareholder loan could be to enhance the protection of its investment while maintaining financial flexibility. This loan was issued at an interest rate close to market levels and was set to mature on July 24, 2024. Additionally, shareholder loans are typically subordinated to other financial liabilities and often feature more flexible repayment terms, reinforcing their equity-like characteristics rather than those of conventional debt. As a result, although formally recognized as a liability, this financial instrument does not impact the company's financial leverage in the same manner as traditional bank debt, contributing to greater financial stability and operational flexibility, as shown by the Net Financial Position registered in 2019.



The financial structure of Safim remained healthy and stable throughout the two years during which it was primarily financed through debt.

	2017	2018
Net Debt/EBITDA	2.74	1.31
Net Debt/Equity	1.22	0.79

5.3.4 Operational Improvement

According to Ambienta (2019), the strategic collaboration between Ambienta and the Mamei family generated multiple benefits, many of which were directly linked to Ambienta's ESG in Action Programme. This initiative is implemented by Ambienta in each of their investments, to ensure the full integration of ESG principles in daily operations as a value creation driver.

Revenue and EBITDA Growth

- Facilitated the expansion of the market share, exploiting the advantages of a growing demand, particularly in the agricultural, construction, and material handling sectors.
- Optimized pricing and product mix strategy to enhance profitability.
- Capitalized on market demand growth to maximize business opportunities.
- Strengthened relationships with important clients, to achieve long-term commercial stability.
- Achieved a 44% revenue increase in 2018, with half of that growth attributed to the new 'Dual-Line Trailer Brake Valve', introduced under a condition close to monopoly.

Organizational Changes

- Reinforced the strategic vision and governance by appointing a new CEO, CFO, and an independent board member.
- Introduced clear role definitions and accountability frameworks to enhance efficiency.
- Strengthened workforce expansion and training initiatives, delivering 2,400 hours of training in 2018 focused on quality, environment, and safety, engaging 90% of employees.

- Implemented a performance-based incentive system covering 25% of employees, promoting motivation and productivity.
- Redesigned plant layout following lean production principles and continuous flow operations, resulting in a twofold increase in daily deliveries.

The new organizational structure, introduced by Ambienta as an operational enhancement, incorporated a diversified board and a refined division of roles, ensuring greater strategic alignment and governance efficiency. It was composed as follows:

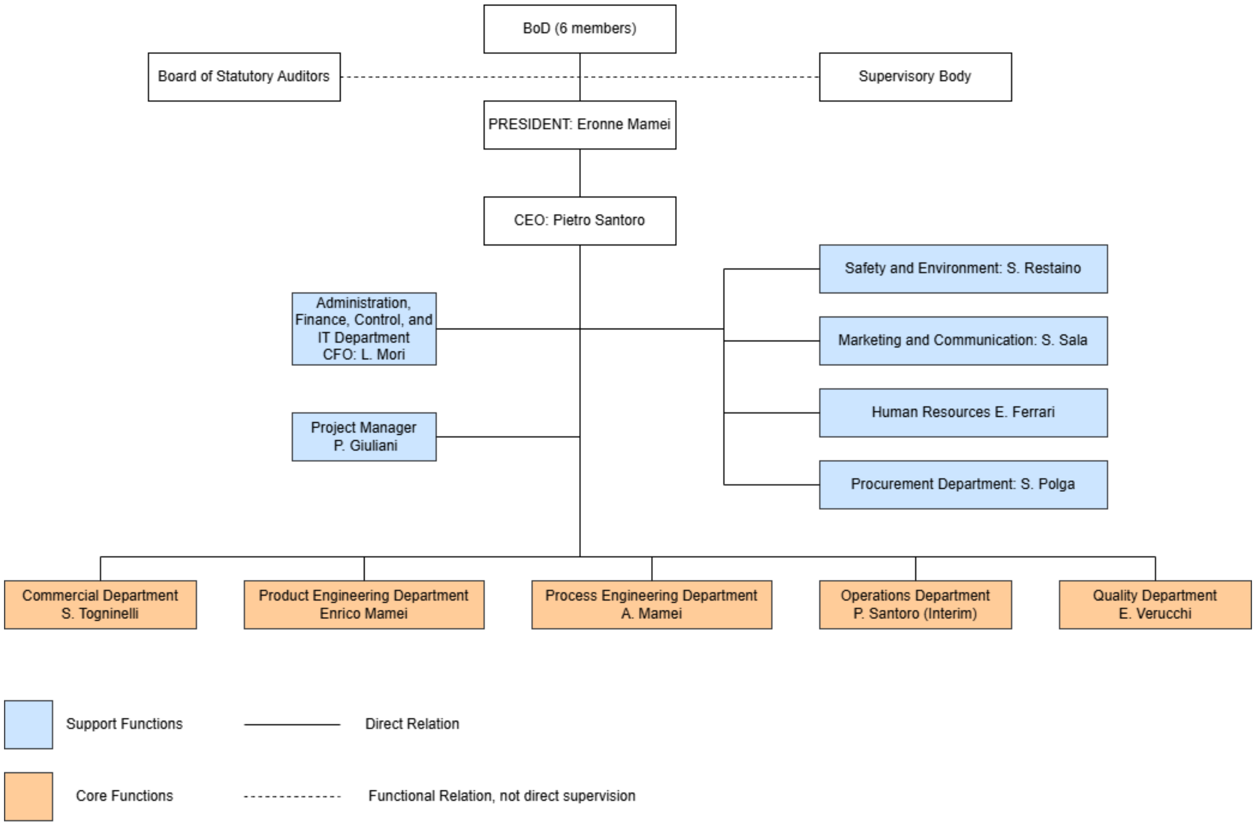


Figure 5.4: Safim organizational structure under Ambienta's control[23]

Industrial Strategy and Process Innovation

- Established an integrated production planning system that ensured the full availability of raw materials.
- Expanded the headquarters and main manufacturing site in Italy by adding 2,000 m² in 2018 and an extra 1,600 m² in 2019, bringing the total area to 15,000 m² to better support growing operational demands.
- Launched a world-class manufacturing programme, increasing operational efficiency above 90% and reducing delivery backlog by 90%.
- Invested approximately €1,700,000 in R&D during 2018 (about 4% of annual expenditure), resulting in 54 international patents covering 60% of production.
- Established a new business unit in 2019 dedicated to electronics applied to hydraulic systems (ABS, brake by wire, steering by wire, traction control), in exclusive partnership

[23] Source: own elaboration according to Safim's sustainability Report of 2018.

with a spin-off from the University of Ferrara and the Research Center for heavy vehicles, later joined by the Politecnico di Milano's Vehicle Domotics Department.

- Introduced new hydraulic test benches in the experimental area, with a total investment of €380,000, and reorganized laboratories for climate-chamber, salt-spray, and contamination testing.
- Initiated Industry 4.0 projects worth €1,500,000.00 to build two robotic machine-tool lines, featuring remote access.
- Launched in 2018 Safim's website to share its growth trajectory, new products, and industry events.

External Growth and International Expansion

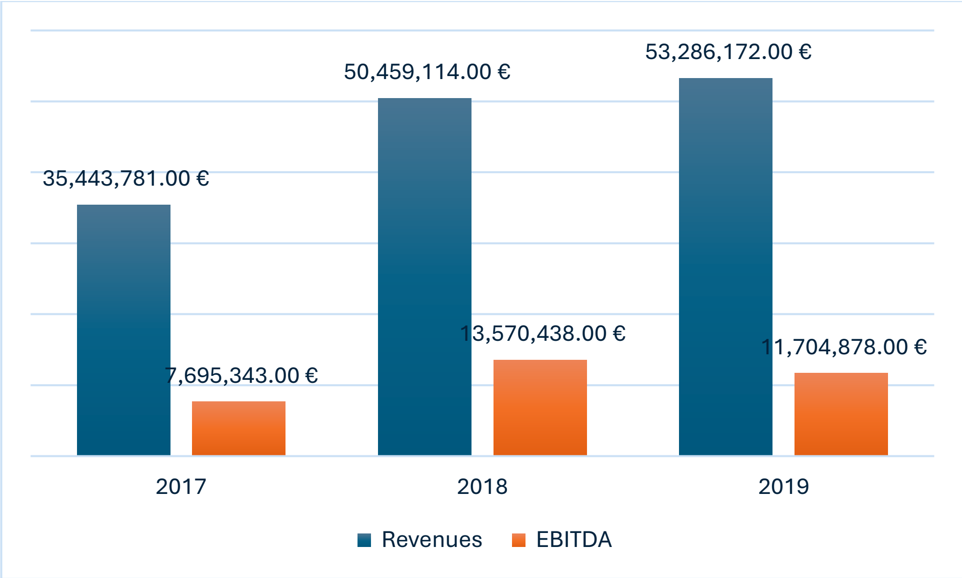
- Reinforced operations in its secondary manufacturing facility in India, active since 2017, and supported the commercial offices in France and North America.
- Expanded international presence through the acquisition of a majority stake in OMNI Hydraulik Ritter GmbH (OHR), a key German distributor of Safim products. This acquisition was instrumental in Safim's market expansion in the DACH region, which includes not only Germany but also Austria and Switzerland, strengthening its strategic position in Germany. The participation was valued at €25,600.00, while the acquisition price amounted to €3,390,305.00 (Annual Report, 2019, p. 58). Following the acquisition, the company was renamed Safim Deutschland GmbH.

ESG initiatives

- Sponsored summer camps for employees' children, reinforcing corporate social responsibility.
- Provided financial support to local community initiatives, including aid to poor areas in Modena.
- Achieved significant environmental improvements, reducing gas, energy and water consumption per man-hour by 30% in 2018.
- Invested € 62,030.00 in new technologies to reduce environmental impact in 2018.
- Digitized company processes, eliminating printed documents and payroll to reduce paper, ink, and energy consumption.
- Introduced Hybrid Cups for coffee machines, resulting in a 499 kg reduction in CO_2 emissions in 2018.

Evolution of the main ratios across the Operational Restructuring

The following table summarizes the main operational indicators undergone through the intervention of Ambienta under Venturi S.p.A..



Safim and its consolidated subsidiaries experienced significant revenue growth, increasing from €35.4 million in 2017 to approximately €51 million in 2018, reflecting a 42% annual growth. This was possible thanks to the stronger international presence and strategic investments achieved by Safim in prior years.

Growth was particularly strong across European and non-European markets, leading to consolidated revenues of € 51,036,570.00:

- European markets saw a 38% revenue increase, generating €27.8 million, thanks to the role of Safim Brakes France SAS which recorded €1.3 million in revenue and an 18% increase from the previous year.
- Also non-European markets experienced an increase, specifically a 50% revenue increase, reaching €8.9 million. Within this segment:
  - Safim Brakes India PVT LTD registered €162,000 in sales in 2017 and €502,000 in 2018.
  - Safim Brakes USA Inc. reported annual sales of approximately $354,000 in 2018.
- The Italian market also grew substantially, with revenues rising from €8.7 million in 2017 to €13.4 million in 2018, registering a 54% increase.

This consolidated growth among various regions underlines the success achieved by Safim with its international expansion strategy and the key role of its subsidiaries in favoring market penetration.

5.4 Divestment

On September 23, 2019, Ambienta finalized the divestment of its 70% stake in Safim, alongside the Mamei family, which also sold its remaining 30% participation. The transaction was carried out through a reverse merger with Venturi S.p.A., followed by the direct acquisition of the Mamei family's stake in Safim. This led DexKo Hydraulics S.r.l., a subsidiary of DexKo Global Holdings Inc., to acquire full ownership of Safim (Annual Report, 2019, p. 59).

The objective of Dexko Hydraulics S.r.l. was to keep supporting the trajectory growth of Safim by introducing new managerial and financial resources. The acquisition was strategic for both parties: DexKo, a global leader in engineered components, gained a higher market presence because it entered the hydraulic and off-highway sectors, while Safim benefited from DexKo's wider network, new financial resources and industry expertise to drive long-term expansion (Ambienta, 2019 September 23).

Furthermore, the transaction aligned the strategic growth objectives of both companies. This was enhanced also by the fact that the deal expected both the involvement in the management team of the previously existing members of Safim's workforce and the Mamei family, ensuring continuity in operations while benefiting from DexKo's enhanced resources and international footprint.

5.4.1 Value Creation

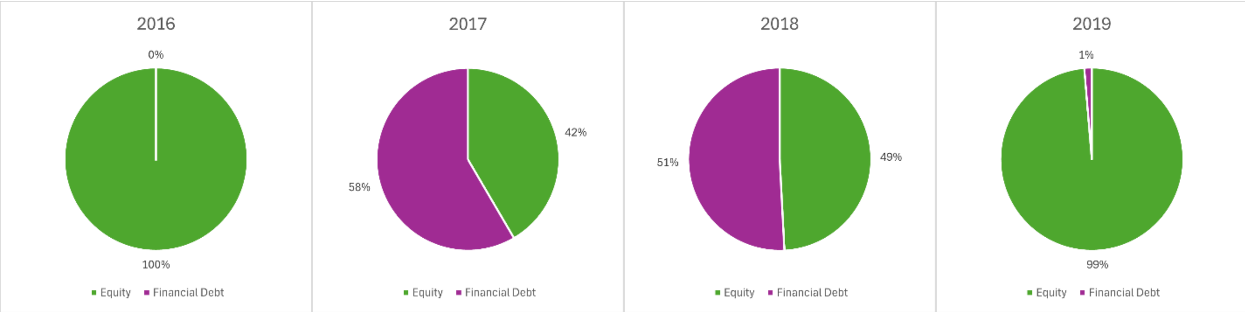
Ambienta's investment in Safim is a clear example of how to create value through operational improvements focused on sustainability, and strategic expansion. Ambienta has shown its talent in identifying potential for growth in Safim, in an industry characterized by environmental trends, and has proven the success of its ESG in Action Programme, used as a support. Within just two years, Safim doubled its revenues and workforce, scaled its global presence, and secured leading multinational clients, all while enhancing its environmental performance. This success was also recognized by the industry when Ambienta was honored with the Claudio Dematté Award, Private Equity of the Year 2020 (Buy Out category).

Equity and Debt Evolution

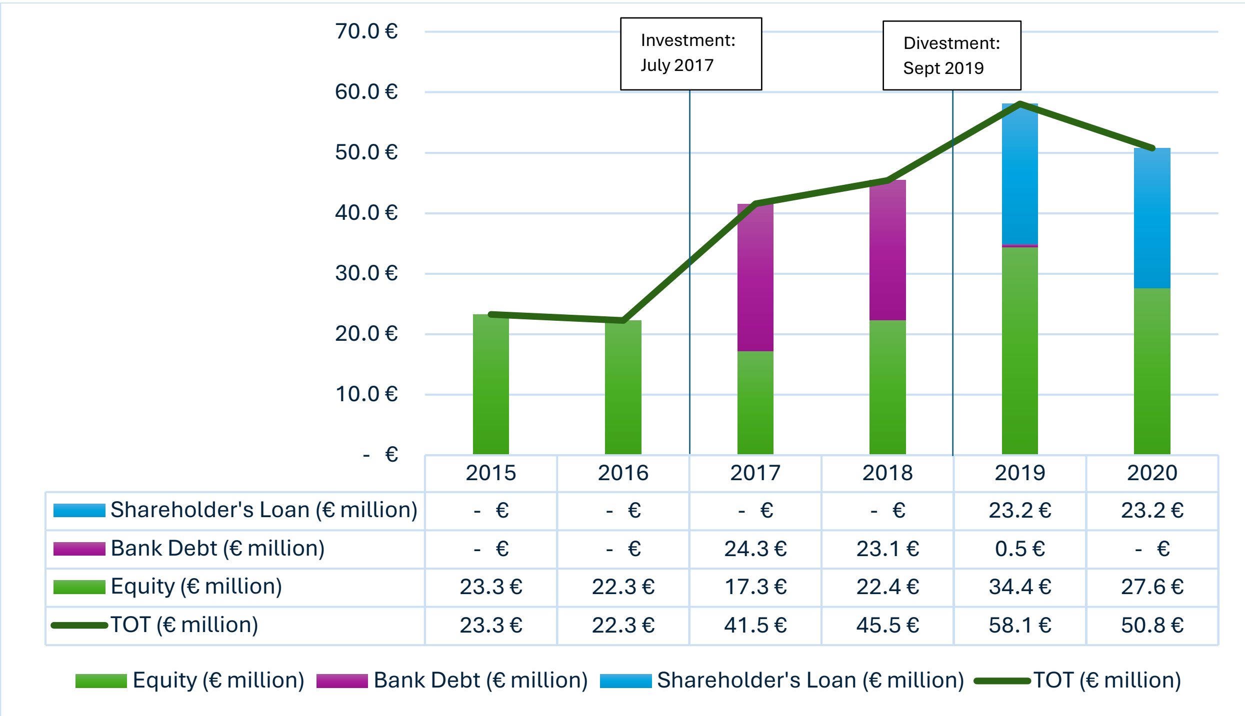
Safim over the investment period encountered a continuous transformation of its capital structure. In 2017, prior to its acquisition, Safim had no financial debt, as evident from the 2016 data, while after its acquisition through a Leveraged Buyout (LBO), the company's financial structure shifted, with a substantial increase in debt financing, reflecting the typical leverage strategy employed in private equity transactions.

During the holding period (2017–2019), the total enterprise value of the company exhibited a steady upward trajectory, indicating strong financial performance and value creation under the private equity ownership. The proportion of financial debt to equity peaked in 2018, highlighting the heightened leverage used to finance growth and expansion initiatives.

Upon exit in September 2019, the capital structure underwent a notable adjustment. The DexKo Group, the acquiring entity, partially repaid the financial debt, significantly reducing the bank debt while substituting it with a shareholder loan. This strategic restructuring aligns with common financial engineering practices post-acquisition, where new ownership optimizes the capital structure for long-term sustainability and integration within the parent company.



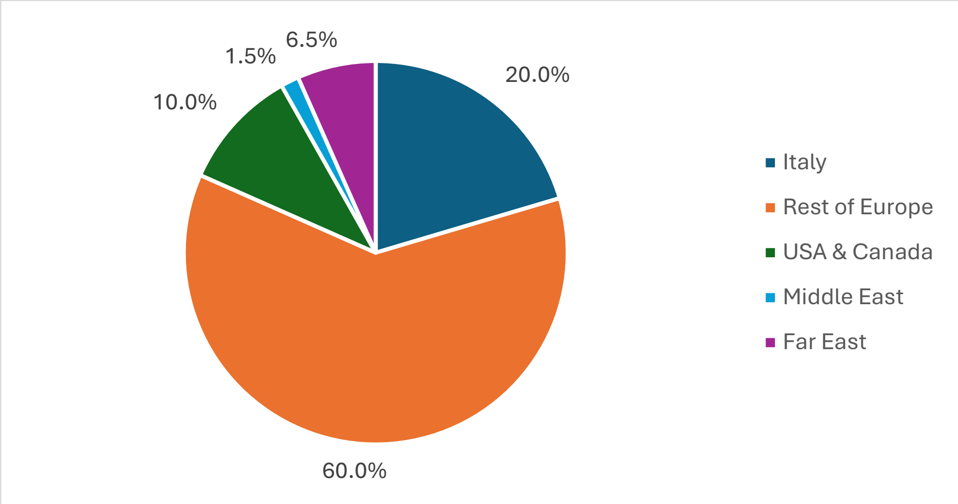
Despite the fact that the mix of debt and equity substantially changed over the years, the enterprise value was not negatively affected, instead it consistently increased, validating the financial growth and operational improvements achieved throughout the investment cycle. This progression proves again the efficient method of the leverage buyout model in driving corporate value while also demonstrating the impact of capital structure optimization post-exit.



	2015	2016	2017	2018	2019	2020
Shareholder's Loan (€ million)	- €	- €	- €	- €	23.2 €	23.2 €
Bank Debt (€ million)	- €	- €	24.3 €	23.1 €	0.5 €	- €
Equity (€ million)	23.3 €	22.3 €	17.3 €	22.4 €	34.4 €	27.6 €
TOT (€ million)	23.3 €	22.3 €	41.5 €	45.5 €	58.1 €	50.8 €

Financial and Operational improvements

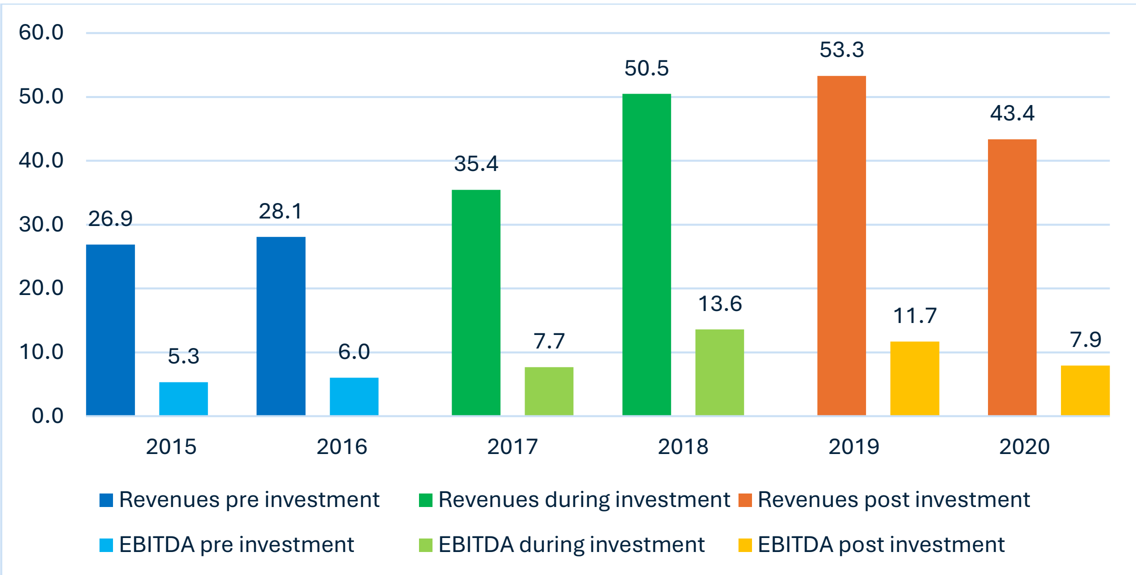
The operational improvements achieved during the investment period (2017-2019) were further supported by favorable market conditions, which positively contributed to Safim's growth across its sectors. The company registered expected revenue increases, particularly in China and North America, as well as in Europe and India, despite ongoing global uncertainties that had been evident since before 2016. According to the 2018 Sustainability Report, an analysis of Safim's global market impact shows approximately that Italy accounted for 20% of total revenues, while the rest of Europe contributed 60%. The remaining 20% came from global markets, including 10% from the USA and Canada, 1.5% from the Middle East, and 6.5% from the Far East.



As mentioned in the previous sections, the involvement between the Mamei family and Ambienta delivered significant results, particularly in 2017 and 2018, thanks to the role played by Ambienta's ESG in Action Programme. Between 2016 and 2019, Safim's revenues grew from €28.06 million to €53.29 million, while EBITDA increased from €6.00 million to €11.70 million, reflecting a compound annual growth rate (CAGR) of 23.8% in revenue and approximately 25% in EBITDA.

Although net income peaked at €5.08 million in 2018, it declined to €2.31 million in 2019 but still maintained an impressive CAGR of 42% when looking at the period through 2018. Overall, Safim strengthened its market leadership, increased its market share, and became increasingly attractive to potential investors.

EBITDA showed the strongest growth between 2016 and 2018, while during 2019, it slightly declined, probably due to the ownership change happening in September 2019, when the company transitioned from being part of Venturi S.p.A. under Ambienta SGR S.p.A. to full ownership by DexKo Global Inc. This shift that may have temporarily affected overall performance. The results in the following figure are reported in € million.



	2016	2017	2018	2019
Revenues	28,062,710.00 €	35,443,781.00 €	50,459,114.00 €	53,286,172.00 €
EBITDA	5,996,941.00 €	7,695,343.00 €	13,570,438.00 €	11,704,878.00 €
EBITDA Margin (%)	21.4%	21.7%	26.9%	22.0%
Net Income	2,612,636.00 €	1,153,821.00 €	5,084,964.00 €	2,311,906.00 €

5.4.2 Sustainability Results

It is under Ambienta's control, in 2018, that Safim published its first Sustainable Report, to better communicate with its stakeholders, ensuring higher transparency.

The Sustainability Report was prepared in line with Safim's ESG policy, following the Global Reporting Initiative (GRI) guidelines and integrating the core subjects of ISO 26000. According to the 2018 report, the process was structured into four phases: benchmarking with industry leaders on ISO 26000 core subjects, stakeholder mapping and analysis, which was aligned with Safim's risk assessment and ISO standard updates, and a materiality analysis to identify the most relevant topics for both Safim and its stakeholders. The materiality matrix prioritized three main ESG matters: sustainable impact for the environmental criteria, health and safety for the social one and finally ethics and compliance for governance. This served to reinforce commitment to responsible business practices.

Both Ambienta and Safim shared the same idea that sustainability drives long-term value growth, believing that this goes together with sustainable development, environmental protection and adaptation to change. Their strategy reflected this commitment while upholding customer-centric values and traditional service excellence. Being the ESG in Action Programme central to this strategy, it began with the assessment of non-financial risks to mitigate potential value loss. This led to the development of KPIs to monitor and manage these risks effectively, reinforcing a sustainability-driven growth strategy.

Under Ambienta's control, Safim achieved important international certifications, reflecting its commitment to quality, environmental sustainability, and workplace safety. The company obtained ISO 14001 for its adherence to environmental management standards, ensuring sustainable operational practices, while ISO 9001 certified its rigorous quality control systems. Additionally, in 2018, Safim became one of the first European companies to achieve ISO 45001, the highest recognition for Occupational Health & Safety, awarded with TÜV certification.

Environmental Commitment

From the environmental point of view, Safim collected data from 2016 and 2019 on both consumption and management costs. The results are shown in the following table:

	2016	2017	2018	2019	Resource Intensity Change (% per € Revenue) 2016-2018	Resource Intensity Change (% per € Revenue) 2016-2019
KW USED	1,546,550	1,823,893	2,207,459	2,723,828	-20.6%	-7.2%
MJ USED	5,567,580	6,566,014	7,946,852	10,080,000	-20.6%	-4.7%
WATER USED (m³)	2,375	3,018	2,881	3,568	-32.5%	-20.9%
GAS USED (m³)	59,499	86,908	96,568	106,537	-9.7%	-5.7%
KG WASTE COLLECTED	224,448	287,146	355,572	459,000	-11.9%	7.7%
KG WASTE SENT FOR RECOVERY	141,558	172,251	236,452	315,000	-7.1%	17.2%
Waste Recovery Rate (%)	63.1%	60.0%	66.5%	68.6%		
WASTE DISPOSAL COST (€)	10,432.85 €	16,680.47 €	19,343.37 €	25,000.00 €	3.1%	26.2%
TOE (Tonnes of Oil Equivalent)	389.03	472.52	564.83	697.00	-19.3%	-5.6%
Revenues	28,062,710.00 €	35,443,781.00 €	50,459,114.00 €	53,286,172.00 €	79.8%	89.9%

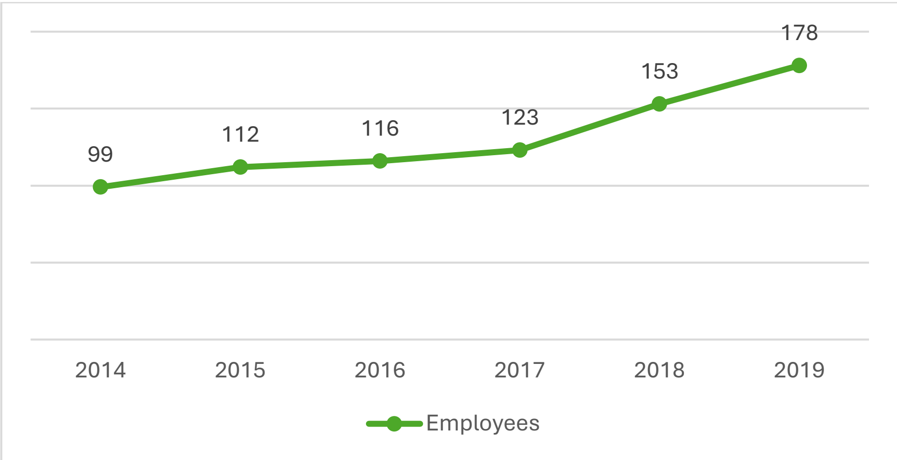
Given that revenues nearly doubled between 2016 and 2019, as a natural consequence it is supposed to generate a corresponding increase in energy, water, and waste. However, this is not what happened. Instead, a notable improvement in efficiency emerges between 2016 and 2018 by looking at the resource use relative to annual revenues. During this period, environmental metrics, including electricity, gas, and water consumption, decreased in intensity, indicating a lower resource consumption per euro of revenue. For instance, electricity usage declined by approximately 20.6%, while water consumption by 32.5%, both relative to revenues. These trends suggest that Safim optimized its production making it more resource-efficient, enabling nearly 80% revenue growth while maintaining a proportionally lower resource input.

Furthermore, while the total waste collected and waste sent for recovery decreased between 2016 and 2018, both increased in 2019 relative to revenue levels. To better evaluate this trend, it is essential to analyze the waste recovery rate, which measures the proportion of collected waste that is effectively recovered. The data indicates a continuous improvement in this rate, reflecting positive sustainability efforts. Additionally, the increase in waste disposal costs relative to revenue suggests that the company has prioritized sustainable waste management investments, reinforcing its commitment to environmental responsibility. Despite these positive developments, the overall efficiency gains observed in previous years weakened somewhat in 2019. This downturn may be partially attributed to the change in ownership from Ambienta to DexKo, which likely led to adjustments in environmental policies, strategic priorities, and operational practices. Nevertheless, Safim's environmental performance in 2019 remained relatively strong when analyzed in proportion to its ongoing product expansion and broader sustainability trajectory.

As mentioned in the ESG initiatives in the previous sections, Safim has implemented multiple sustainability measures to enhance environmental responsibility beyond production efficiency. These include the transition to digital documents and payroll, contributing to the reduction of paper, ink, and energy consumption, the adoption of Hybrid Cups for coffee machines resulting in a 499 kg reduction in CO_2 emissions in 2018, and helping Safim's to enhance its commitment to minimizing its environmental footprint. Safim also strengthened its renewable energy initiatives by investing in photovoltaic solutions. The company installed 9,000 m² of solar panels, covering nearly its entire 10,000 m² available surface area. These installations contributed 10% of total energy consumption, generating 271,506 kW of renewable electricity in 2018 and achieving a compound annual growth rate (CAGR) of 2.4% from 2016 to 2019. This transition led to avoid 92 tons of CO_2 emissions in 2018 and 75 tons in 2019, further reducing the company's carbon footprint and reinforcing its commitment to environmental sustainability.

Social Commitment

The achievement of the certificate ISO 45001 underscores Safim's dedication to employee well-being and operational excellence, being that safety remains a crucial social issue, with over 7,600 people dying daily from work-related accidents or diseases, as reported by the International Labour Organization. Developed in 2018, ISO 45001 provides a framework for employers to enhance safety measures, minimize workplace risks, and create better, safer working environments, objectives that Safim has actively pursued under Ambienta's guidance. In addition, as part of Ambienta's ESG in Action Programme, the company successfully expanded its workforce, increasing from 116 employees in 2016 to 178 in 2019. When including temporary and agency workers, the total workforce grew from 187 in 2017 to 242 in 2019. This growth reflects Safim's strong commitment to job creation and providing employment opportunities, reinforcing its dedication to sustainable and responsible business practices. Although only the 26% of employees in 2018 were women, the company keeps investing in initiatives aimed at reducing this gap and remains committed to ensuring equal opportunities for men and women.



Governance Commitment

The ethical code of Safim provides the definition of corporate values and behavioral guidelines, ensuring good governance. This was adopted in 2012 and revised in 2018 to align with regulations, and an independent Supervisory Body has the duty of oversee and enforce bad behaviors. No violations have been reported yet, and the workforce is periodically trained to keep compliance. Moreover, the company policies are also focused on quality, environmental protection, safety, business integrity, and employment rights, always with the idea that they are accountable to deliver sustainable growth and responsible business practices across the Group. All stakeholders involved, including employees, suppliers, and business partners, the community and banks, are expected to adhere to these principles, fulfilling their responsibilities in maintaining ethical standards and fostering a transparent corporate culture.

Results with Ambienta's EIA

Using Ambienta's Environmental Impact Analysis (EIA) methodology, Safim's contributions were quantified in two key areas:

- Resource efficiency: achieved through energy savings of approximately 14,077 Toe (Tons of oil equivalent).
- Pollution control: realized by reducing approximately 13,589 tons of CO_2 emissions.

These initiatives have enabled Safim to align with the United Nations' Sustainable Development Goals (SDGs), specifically Goals 7 (affordable and clean energy) and 3 (good health and well-being).

5.5 Return on the Investment

The return on investment for Safim can be accurately estimated due to its disclosure in various official documents. This transparency was necessitated by Ambienta's receipt of the Claudio Demattè Private Equity of the Year 2020 award for its investment in Safim S.p.A. The disclosed information reports an internal rate of return (IRR) of 80% for Ambienta's investors. While official records indicate that the investment period spanned from July 2017 to September 2019, the timeframe used for evaluating the return is stated as 24 months. By integrating this information with data from the Private Equity Monitor (2017), which reports that Ambienta invested €25.8 million, and all the assumptions reported in section 4.5 according to the standards in private equity, it is possible to approximate the Enterprise Value (EV) at exit. However, the precise acquisition price paid by DexKo Group Inc. remains undisclosed.

Additionally, it is important to note that Ambienta's investment in Safim was executed through Venturi S.p.A., acquiring a 70% stake. The Limited Partners (LPs) contributed the majority of the invested capital and, as such, received €72.5 million, yielding an IRR of 69.3%. Meanwhile, the General Partners (GPs), who invested a smaller portion, received a total estimated return of €11.1 million.

Assumptions & Inputs	
Holding period (years)	2
IRR	80%
Invested Capital (€ million)	25.800
Net Debt at exit (€ million)	17.726
EV at exit (€ million)	137.143
70% Equity at exit (€ million)	83.592
100% Equity at exit (€ million)	119.417
Hurdle Rate	8%
Management fees rate	2%
Tot Management fees (€ million)	0.516
% Invested Capital LPs	98%
% Invested Capital GPs	2%

Returns (€ million)	
Proceeds net of fees	83.076
Step 1: Return of Capital	
LPs	25.284
GPs	0.516
Net value	57.276
Step 2: Preferred Return	
LPs	6.701
GPs	-
Net value	50.575
Step 3: Carried Interest	
LPs (80%)	40.460
GPs (20%)	10.115

Summary of Results	
Equity at entry (€ million)	25.800
Equity at exit (€ million)	83.592
Gross IRR	80.0%
Gross MoM	3.24
Tot Proceeds LPs (€ million)	72.445
Tot Proceeds GPs (€ million)	11.147
Net Proceeds LPs (€ million)	47.161
Net Proceeds GPs (€ million)	10.631
Net MoM (LPs)	2.87
Net IRR (LPs)	69.3%

Although these estimations rely on assumptions and do not consider transaction costs, they provide valuable insights on the dynamics of value creation for this specific case.

5.6 Summary of Value Creation

The investment of Ambienta in Safim exemplifies a profitable private equity transaction, with the particular focus on sustainable business. On the one hand Safim represented the perfect target, as a family business and as a leader in its niche, seeking for financial resources and expertise to scale and expand; on the other hand, Ambienta represented an excellent match by facilitating its transformation through financial backing, managerial expertise, and an international expansion strategy, activating operations in France, North America, and Germany. Additionally, the launch of the activity of the second production facility in India, further contributed to enhance cost efficiency and access to the Asian market. The organizational restructuring of the company, supported by the ESG in Action Plan, led to streamlined processes, revenue and EBITDA growth, with enterprise value more than doubling, even if proportionally to EBITDA. The additional component of value creation, regardless other major private equity transactions, was sustainability, which, with reductions in energy consumption, workforce expansion, and ESG investments led to further growth and contributed to a higher market valuation. The investment delivered an 80% IRR, solidifying Ambienta's reputation in sustainable private equity.

5.7 References

[1] Ambienta SGR. (2017, July 10). Ambienta completes an investment in Safim SpA, a leading manufacturer of critical components for hydraulic systems on-board heavy vehicles.

[2] Ambienta SGR. (2019, January 14). Ambienta portfolio company: Safim among the first companies in Europe to be awarded the new Occupational Health & Safety standard.

[3] Ambienta SGR. (2019, February 25). Safim completes the acquisition of a controlling stake in OMNI GmbH, further strengthening its presence in the strategic DACH market.

[4] Ambienta SGR. (2019, September 23). Ambienta, Europe's largest sustainable investment fund, completes sale of Safim S.p.A.

[5] Ambienta SGR. (2020, July). *Ambienta ESG in action programme 2019.*

[6] Ambienta SGR. (2020, December 18). Ambienta wins the Claudio Demattè Private Equity of the year 2020 Award for Safim S.p.A.

[7] Ambienta SGR. (n.d.). Safim. Ambienta SGR.

[8] DexKo Global Inc. (2019, September 20). DexKo Global acquires Safim S.p.A. DexKo Global Inc.

[9] International Organization for Standardization. (2018). *ISO 45001:2018 - Occupational health and safety management systems – Requirements with guidance for use.* ISO.

[10] Kailios Capital. (2020, December 20). Ambienta wins the Demattè award with SAFIM.

[11] Kaplan, S. N., & Strömberg, P. (2009). Leveraged buyouts and private equity. *Journal of Economic Perspectives, 23*(1), 121–146.

[12] Private Equity Monitor. (2017). *Rapporto PEM 2017.* LIUC - Università Cattaneo.

[13] Safim S.p.A. (2014). *Annual Report 2014 (Unconsolidated accounts).* Retrieved from AIDA database.

[14] Safim S.p.A. (2015). *Annual Report 2015 (Unconsolidated accounts).* Retrieved from AIDA database.

[15] Safim S.p.A. (2016). *Annual Report 2016 (Unconsolidated accounts).* Retrieved from AIDA database.

[16] Safim S.p.A. (2017). *Annual Report 2017 (Unconsolidated accounts).* Retrieved from AIDA database.

[17] Safim S.p.A. (2018). *Annual Report 2018 (Consolidated accounts).* Retrieved from AIDA database.
[18] Safim S.p.A. (2019). *Annual Report 2019 (Unconsolidated accounts).* Retrieved from AIDA database.
[19] Safim S.p.A. (2019). *Bilancio di sostenibilità 2018.*
[20] Safim S.p.A. (2020). *Annual Report 2020 (Unconsolidated accounts).* Retrieved from AIDA database.
[21] Safim S.p.A. (2020). *Bilancio di sostenibilità 2019.*
[22] Safim S.p.A. (2021). *Annual Report 2021 (Unconsolidated accounts).* Retrieved from AIDA database.
[23] Safim S.p.A. (2023, November). *Hydraulic Business Unit Corporate presentation.* Safim S.p.A.

6 Nactarome S.p.A.

Figure 6.1: Nactarome's logo[24]

Nactarome S.p.A. is a buy-and-build project created by Ambienta SGR S.p.A. precisely on the 6th of November 2018, marking the entry of this player into the food sector. A buy-and-build project is a business growth strategy used particularly in sectors such as private equity, in which the private equity company buys a platform company already developed in the sector, and acquires other small companies called add-ons to create a larger player (Hammer et al., 2017). In this case, the aim of Ambienta was to create a player in the European industry, making it the leader of the market of the development and manufacturing of natural flavors and colors used in the food & beverage industry, taking advantage of the shift from synthetic ingredients to natural ones. The categories of product offered by the group can be summarized in:

1. Flavor solutions, coming in different forms to better encounter the needs of customers. This category comprehends natural flavorings, extracts from citrus, vanilla, botanical or coffee, flavors reminding caramel, smoke notes and seafood.
2. Taste Ingredients, tailored to countries. It includes seasonings, umai flavors, marinades, nut pastes and aromatic caramel.
3. Taste Modulators, designed to improve and change the perception of taste. They are designed in compliance with EC 1334/2008, the regulation to define and control the use of flavorings in food products to ensure consumer safety and product quality. They modulate the taste of sugar, fat, salt and alcohol beverages.
4. Texture solutions, involved in the production of ingredients that change the texture of food products. This includes batter and breadcrumbs, filling solutions for stuffed pasta, nut pastes and texturing agents for both dairy and meat products.
5. Color solutions, provided in different forms such as powder or liquids and approved by the FDA (Food & Drug Administration).

[24] Source: Nactarome. (n.d.). Retrieve from: https://www.nactarome.com/.

Figure 6.2: Nactarome's categories of product[25]

The project started in November 2018 with the acquisition of AromataGroup S.r.l., followed by six other major acquisitions. In February 2022, Ambienta sold its stake to TA associates, a leading global private equity firm, and reinvested in the deal retaining nowadays a minority position. Under the ownership of TA Associates, the company made four other additional acquisitions.

6.1 Business and Industry Overview in the Early Years

As the president of AromataGroup, Hans Udo Wenzel, stated in 2018, the market for flavors and natural colors during that period was strongly fragmented and composed of small companies playing a central role in their regions only. This was the primary reason to encourage the creation of a buy and build project within this industry, characterized by strong fragmentation and high growth expectations. The growth projections for this industry forecasted a compound annual growth rate (CAGR) of 5.4% between 2020 to 2025, with the market increasing from a value of USD 5.0 billion in 2020 to USD 6.8 billion by 2025. Moreover, the European segment is expected to dominate the market due to a higher demand for natural products (Marketsandmarkets, 2020). According to this research, the Clean Label Alliance observed that 75% of customers are willing to pay more in order to have clean label products, defined as food and beverage items made with natural ingredients and free from artificial additives. These findings align with the Bain Report of 2021, which highlighted the increasing demand for sustainable products by customers, driven by both the outbreak of Covid-19 and greater health awareness.

However, Covid-19 caused a slowdown in the market, due to lower demand driven by the temporary closure of hotels, restaurants and cafés, as well as higher transportation costs. In fact, demand trends were closely linked to the social distancing measures adopted by the Government, with the Ho.Re.Ca (Hotels, Restaurants, and Cafés) and the out-of-home consumption sectors being the most affected. This disruption was partially offset by the personal care sector, which helped the Group to counterbalance this drastic contraction of sales, and it also led to positive effects, such as lower cost of raw materials and an accelerated shift toward more sustainable food habits.

The key market players in Europe, reported at the year of 2020 by Marketsandmarkets, are Givaudan (Switzerland), Kerry Group Plc (Ireland), Mane (France), Besmoke Ltd (UK), and Aromata Group (Italy).

[25] Source: Nactarome. (n.d.). Products. Retrieved from: https://www.nactarome.com/products/

6.1.1 Industrial & Commercial activities

The most important milestones of the project and its organizational structure are reported in detail as follows:

- November 2018: acquisition of 100% (initially 74.44%) of AromataGroup S.r.l., a company established in 2011 through the merger of four companies, as depicted in the following figure, now operating as business units of the group. This company is based in Gessate, with production sites in Gessate and Concorezzo, located respectively in the provence of Milan and Monza Brianza, all in the north of Italy. They had an additional production site in Bresso (TO), which was dismissed between 2022 and 2023. AromataGroup offers a broad range of products across various sectors of the food & beverage industry. Its core business is focused on the production of natural flavors and extracts intended for the food and beverage industry; specifically, the confectionery industry, baked goods, ice cream, alcoholic and non-alcoholic beverages, as well as the cosmetics and dietary supplements industry. At the time of Ambienta's acquisition, 60% of the revenues generated by AromataGroup were derived from the industry of flavors and natural colors.

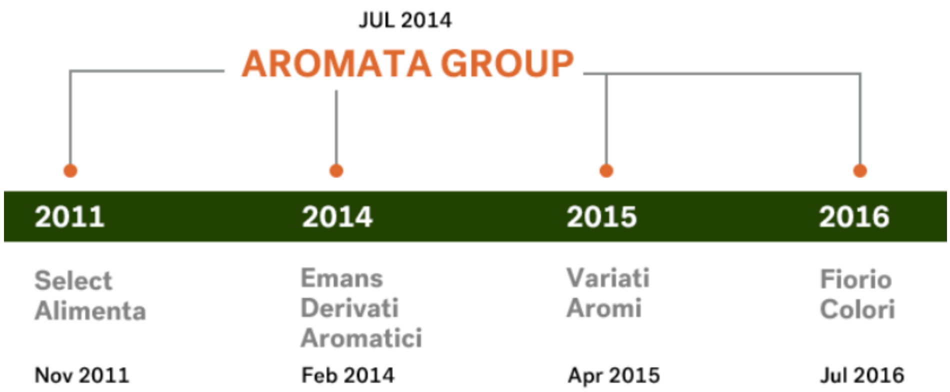


Figure 6.3: Aromata Group's structure[26]

- July 2019: acquisition of 100% of IPAM (Industrie Prodotti Alimentari Manenti), located in Zibello, in the province of Parma, Italy. This company is provided with two production sites and specializes in products for breading and batters, marinades and seasonings. Its strength lays in the offering of high quality and tailor-made products, representing a strategic investment for the group, which expanded its presence in the savory industry.
- December 2019: acquisition of 100% of Nactis Flavours, headquartered in Bondoufle, France, a market leader in France and Belgium. It is composed of four production sites across France and Belgium, having subsidiaries also in Poland and Tunisia and a broader network of commercial executives. It produces aromatic raw materials, food flavors and

[26] Source: AromataGroup. (n.d.). *Corporate*. Retrieved from: https://www.aromatagroup.net/corporate/

aromatic and functional ingredients, a strategic move that has enabled further expansion in the European market, in particular the DACH region.

The merger of these three companies officially establishes the birth of the Nactarome Group registering € 100 million of revenues in 2019 and a customer base of more than 4,000 people.

- April 2020: acquisition of the 100% stake in Create Flavours, an important player with high marginalities based in Clevedon, UK, allowing the penetration of Nactarome in the English market, distinguished by its high growth rates. It was founded in 2001, and its specialty is clean label flavoring both for the sweet and savory segment.
- March 2021: acquisition of both TasteConnection and Pharmorgana. TasteConnection is the second add-on in the UK, as the company is headquartered in Alderley, Gloucestershire. It was founded in 2002, and it provides natural seasonings based on studies performed by its own employees of emerging trends, ensuring to anticipate future growing tastes. This acquisition further expanded the entrance of Nactarome in the savory market, particularly the one of snacks. Pharmorgana is the fifth acquisition of the group and the second of 2021. This company is based in Eppstein, Germany, and the purpose of this acquisition was to expand the reach of the group in Germany and more broadly, in continental Europe. Its focus is on natural food colorings, aluminum-lacquered synthetic dyes, pigments, and dye mixtures.
- November 2021: acquisition of 100% of FIAS, Fabbrica Italiana Aromi Speciali S.r.l., based in Italy, reinforced the group's presence in natural products. The company boasts strong production capabilities in vanilla, flavors for baked goods, dairy (with particular emphasis on ice cream), confectionery, beverages, savory foods, and healthcare products, especially nutraceutical and pharmaceutical items. FIAS proved to be a perfect fit for AromataGroup in terms of product portfolio and technology, allowing for deeper penetration into both the Italian and German markets, where it accounts for approximately 40% of its sales.

Figure 6.4: Nactarome's Group composition under Ambienta's control[27]

At this point the reach of the group was huge, reaching revenues of almost € 135 million in 2021 and broadening the customer base up to 4,500 clients across 100 countries. AromataGroup brought 1,200 clients, IPAM over 300, Nactis, being the largest, 2,500 clients, and TasteConnection 70.

[27] Source: Nactarome. (n.d.). Retrieved from: https://www.nactarome.com/

February 2022: partial divestment of Ambienta, which sold the group to TA Associates and reinvested a minority stake in the deal.

- February 2023: acquisition of Trablit, based in Morangis, Essonne (Île-de-France), France, specialized in extraction of coffee.
- March 2023: acquisition of Foodtaste, located in Bouafle, Eure (Normandy), France, specialized in the production of powders and marine extracts for the food industry.
- May 2023: both acquisition of Calaf Nuances and Royal Buisman. Calaf Nuances, headquartered in Calaf, Barcelona, Spain, focused on the production of aromas for the food industry. Royal Buisman, based in Rotterdam, the Netherlands, is dedicated to the production of caramel and caramelized sugars.

The evolution of Nactarome's milestones can be resumed by the following figure:

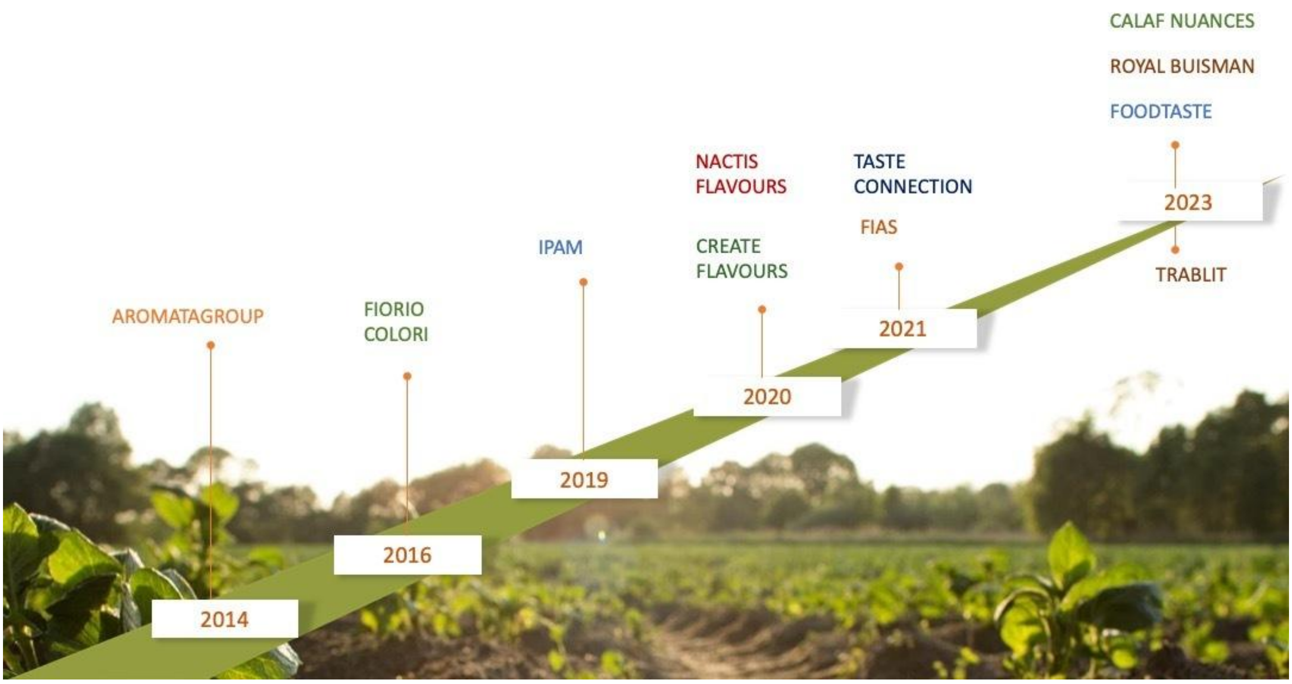


Figure 6.5: Evolution of Nactarome's add-ons acquisitions[28]

6.1.2 Shareholding Structure

By the end of 2017, the year prior to the investment by Ambienta in the platform company AromataGroup S.p.A., the shareholding structure was fragmented: 45.19% was held by Arominvest S.r.l., 28.76% by WHS Wenzel Holding & Services, 21.09% by Variati & Co S.p.A., 3% by Tonio Grassman and 1.96% by Mauro Chiusano. Its share capital had a value of € 133,980.00.

[28] Source: Nactarome. (n.d.). *History*. Retrieved from: https://www.nactarome.com/about-us/history/

6.2 Historical Operational and Financial performance

Nactarome was born in 2018, with the consolidation of two main companies, AromataGroup S.r.l. as the platform company and I.P.A.M. - Industrie Prodotti Alimentari Manenti – S.r.l. in 2019.

To closely understand the historical financial and operational performance of Nactarome, the activity of these primary companies was monitored. Fiorio Colori S.r.l. should have been included in the balance sheet of Aromata Group, but its consolidation into the Group had only occurred in 2020, and therefore it is analyzed separately in this assessment.

6.2.1 Operational Performance

As anticipated, the following table serves as a proxy to understand the operational situation before the buy-and-build project started by Ambienta in November 2018.

€ million

AromataGroup	2016	2017	2018	2019
Revenues	16.22	16.57	18.10	19.19
EBITDA	2.10	2.07	2.48	2.66
EBITDA margin	12.94%	12.50%	13.70%	13.84%
Net Income	0.91	0.95	0.95	-3.98

Fiorio Colori	2016	2017	2018	2019
Revenues	10.49	11.66	12.37	13.44
EBITDA	1.46	1.83	1.82	2.50
EBITDA margin	13.93%	15.72%	14.70%	18.61%
Net Income	0.72	0.36	0.17	0.66

IPAM	2016	2017	2018	2019
Revenues	13.69	17.79	19.46	24.11
EBITDA	1.63	2.03	2.31	3.32
EBITDA margin	11.89%	11.42%	11.85%	13.78%
Net Income	0.78	0.92	1.16	1.72

AromataGroup together with its subsidiary Fiorio Colori, within this timespan, reported revenues with a CAGR of 5.8% and 8.6% respectively, while IPAM outperforming them with a 20.8% revenues CAGR. Overall, other performance metrics showed an upward trend before the change of ownership in 2018 for Aromata and in 2019 for IPAM, indicating that both companies were capitalizing on market growth. The slowdown in growth from 2018 and 2019 resulting in a negative net income for the AromataGroup in 2019, is a consequence of the uncertain market scenario driven by the pandemic of Covid-19 which affected the Ho.Re.Ca. segment, affiliated to the activity of this group.

The acquisition of the Nactis Group, based in France, at the end of 2019 further strengthened the market presence and operational performance of Nactarome S.p.A., contributing to its confirmation as a major player.

6.2.2 Financial Performance

Given the lack of Group data from the inception of the Nactarome Group, the initial financial performance is assessed with the balance sheets of Aromata Group, Fiorio Colori and IPAM.

€ million

AromataGroup	2016	2017	2018	2019
Equity	6.61	7.56	8.99	24.41
Net Debt	2.60	1.77	1.64	-1.46
Net Debt/Equity	0.39	0.23	0.18	-
Net Debt/EBITDA	1.24	0.85	0.66	-

Fiorio Colori	2016	2017	2018	2019
Equity	5.12	3.47	3.62	4.31
Net Debt	-0.28	5.06	5.19	-0.74
Net Debt/Equity	-	1.46	1.43	-
Net Debt/EBITDA	-	2.76	2.85	-

IPAM	2016	2017	2018	2019
Equity	4.25	6.90	7.68	9.40
Net Debt	-0.62	-0.90	-0.13	-2.11

Based on these initial figures, it appears that the companies were generally in a solid financial position.

AromataGroup shows an upward trend in equity, with a marked increase between 2018 and 2019, probably reflecting Nactarome's entry into the business and related financing. Indeed, the reason behind this is the incorporation, through reverse merger, of BidCo28 S.r.l., the special purpose vehicle initially used to acquire AromataGroup and allowing the reach of 100% ownership stake. Its net financial position improved in the year prior to Ambienta's investment, suggesting good cash management and successful debt repayment. Furthermore, on November 20, 2018, Crédit Agricole and BPM provided bank loans totaling € 3,844,000 to the AromataGroup, which were subsequently repaid on July 24, 2019, through a loan from the parent company, Nactarome S.p.A., explaining the negative net financial position of 2019.

Fiorio Colori became a subsidiary of the AromataGroup in 2016, likely supported by additional borrowing, given that its net debt, initially negative, increased during this period. This company was then formally merged into AromataGroup in 2020.

IPAM shows a growing equity alongside a negative financial position, a synonym of financial health and company solidity.

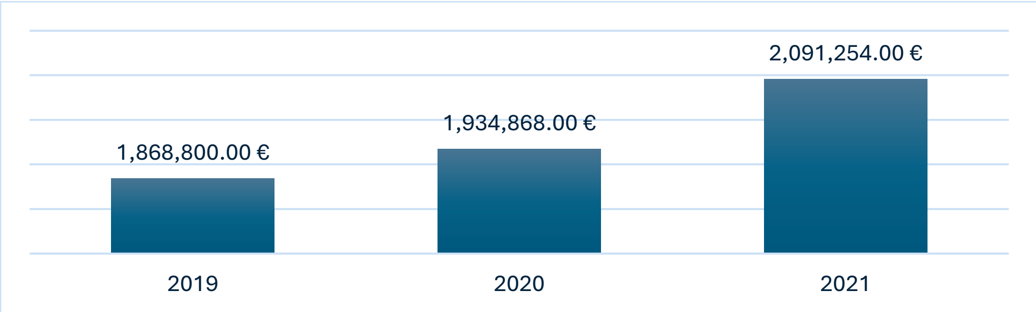
In 2019, all three companies still maintained a favorable net financial position. However, to fully grasp the impact of these figures, it will be important to examine Nactarome's own financial improvements, done in the dedicated "Financial Improvements" section. Overall, the environment in which the company took shape was characterized by a growing market, as outlined in the previous section, with growing revenues, and a stable financial foundation.

6.3 Ambienta's Investment

Although Nactarome S.p.A. was established in November 2018, its operations truly commenced with the incorporation of IPAM in July 2019 and Nactis Flavours in December 2019. It is important to note that the changes implemented by Ambienta became visible and effective starting from this period onward, after a period of initial adjustment. Consequently, the analysis of changes and improvements primarily focuses on this later phase, particularly since consolidated data only began to be provided in 2020, with the 2019 documentation offering limited effective results.

6.3.1 New Shareholding Structure

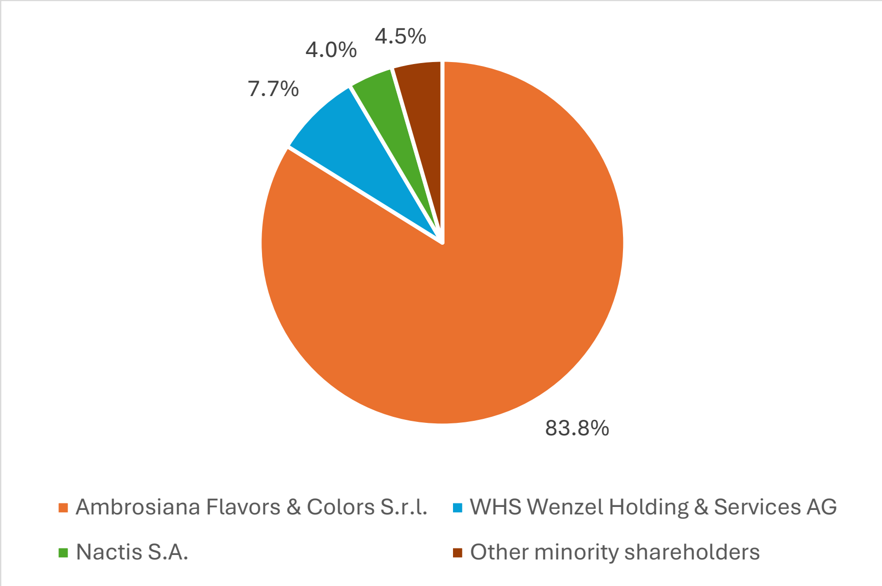
The shareholding structure underwent several changes throughout the years given by its several acquisitions. The evolution of the paid-in capital during the period before the partial divestment of Ambienta can be represented as follows:



Year 2019

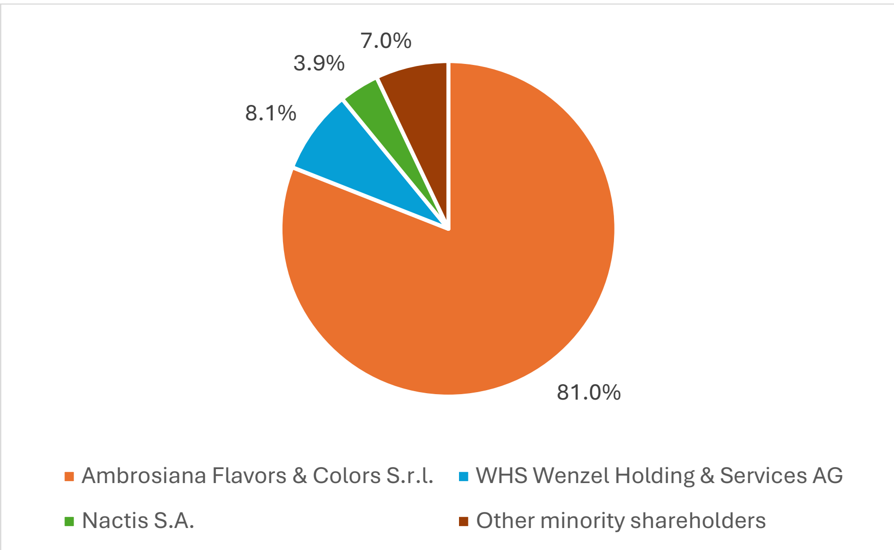
In year 2019 the shareholding structure was composed of a major shareholder called Ambrosiana Flavors & Colors S.r.l. entirely controlled by Ambienta SGR S.p.A. and other minority ones:

- WHS Wenzel Holding & Services AG, a family-owned holding company owned by Dr. Hans Udo Wenzel and another operating partner. Dr. Hans Udo Wenzel has been President of AromataGroup since 2011 and has been appointed President of Nactarome S.p.A. since 2019.
- Nactis S.A., the company that entered the Group in 2019, represented by Sig. Hervé Lecesne, its CEO and President since 1998.
- Other minority shareholders composed by several investors comprehending Variati & Co. – S.p.A. an historical shareholder of AromataGroup, Dr. Tonio Grassmann, a managing director and partner at Aromata since 2011 and part of Nactarome's Board of Directors, Dr. Mauro Chiusano, the commercial director of a subsidiary of the AromataGroup, Gluca S.r.l. and Ma.Par. S.r.l., a company controlled by the Manenti family, founder of IPAM.



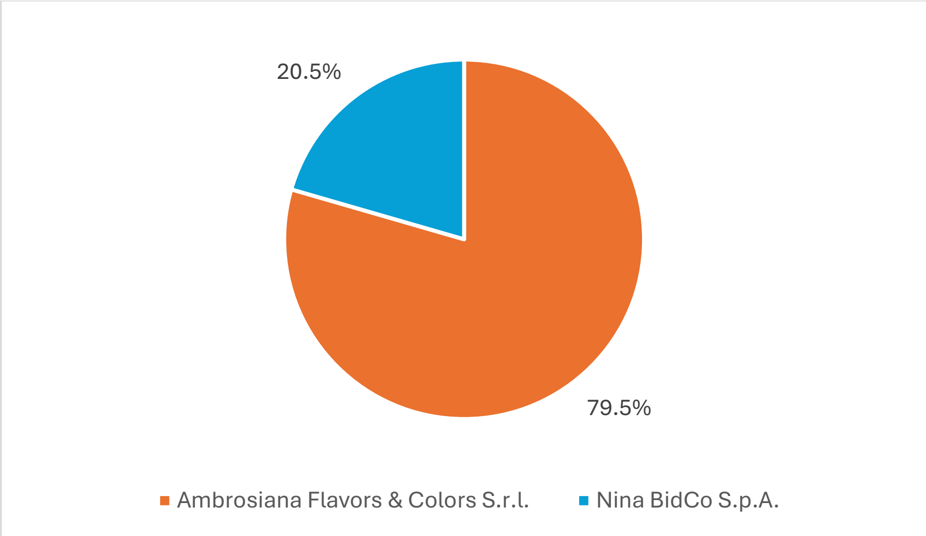
Year 2020

In 2020, the paid-in capital amounted to € 1,962,768.00, while the authorized share capital amounted to € 2,005,191.00. The additional number of shares compared to 2019 resulted in a partial dilution of the existing shareholders, in favor of the entry of new ones, contributing to the alignment of interests of the different parties involved. The new minority shareholders are Mr. Jonathan Mark Jones, who also became a member of the Board of Directors being the Founder and President of Create Flavours, Mr. Nicholas Leonard Dyson, a director at Create Flavours Ltd. since 2013, Mr. Bryan Jones, Mr. Mario Sinigaglia, Sig. Thomas Ungerbiller as managing director at Pharmorgana since 2020, Mr. Andrew James Sainsbury and Sig. Nicholas Charles Eskins both Directors at Taste Connection since 2006, and Sig. John Kelvin Gregory-Wood. This structure reflects a strategic approach in which all minority shareholders were key figures of the companies subsequently acquired by the group, reinforcing alignment between management and ownership while ensuring continuity in leadership and expertise.



Year 2021

Finally, the paid-in capital was increased to € 2,091,254.00 in 2021. This new structure comprised Ambrosiana Flavors & Colors as the majority shareholder, while Nina BidCo S.p.A. as minority shareholder. This company was composed of all the existing minority shareholders and other shareholders related to the companies acquired during the project, in order to promote the alignment of interests. This system ensured a more streamlined shareholding structure.



6.3.2 Management Improvement

Since the inception of the Nactarome Group, Ambienta has appointed a management team which best aligned with the strategy of their company as well as the one of the several add-ons. Moreover, as the company's structure evolved, these changes were clearly reflected in its management team.

2019		2020		2021	
Board of Directors	**Role**	**Board of Directors**	**Role**	**Board of Directors**	**Role**
Dr. Hans-Udo Wenzel	President of the BoD	Dr. Hans-Udo Wenzel	President of the BoD	Dr. Hans-Udo Wenzel	President of the BoD
Dr. Andrea Venturini	CEO	Dr. Andrea Venturini	CEO	Mr. Patrick Sader	Vice President
Mr. Hervé Lecesne	Advisor	Mr. Hervé Lecesne	Advisor	Dr. Luigi Del Monaco	CEO
Dr. Tonio Grassmann	Advisor	Dr. Tonio Grassmann	Advisor	Mr. Christopher Parkin	Advisor
Dr. Mauro Roversi	Advisor	Dr. Mauro Roversi	Advisor	Dr. Mauro Roversi	Advisor
Dr. Fabio Ranghino	Advisor	Dr. Fabio Ranghino	Advisor	Dr. Giovanni Fantini	Advisor
		Dr. Luigi Del Monaco	CEO		
		Mr. Jonathan Mark Jones	Advisor		

To ensure the right alignment with Ambienta's strategy, it appointed important members of its own team such as Mauro Roversi, Founding Partner and Chief Investment Officer, Andrea Venturini, a Partner, and Fabio Ranghino, a Partner and Head of Sustainability.

The other board members are individuals who have held significant roles in companies acquired over time, and their presence on the board symbolizes a commitment to forming a cohesive and diverse group, enabling the sharing of expertise to foster collective growth. For instance, Hans-Udo Wenzel has been President of AromataGroup since 2011, Hervé Lecesne CEO and President of Nactis since 1998, Tonio Grassman the CEO at Aromata since 2011.

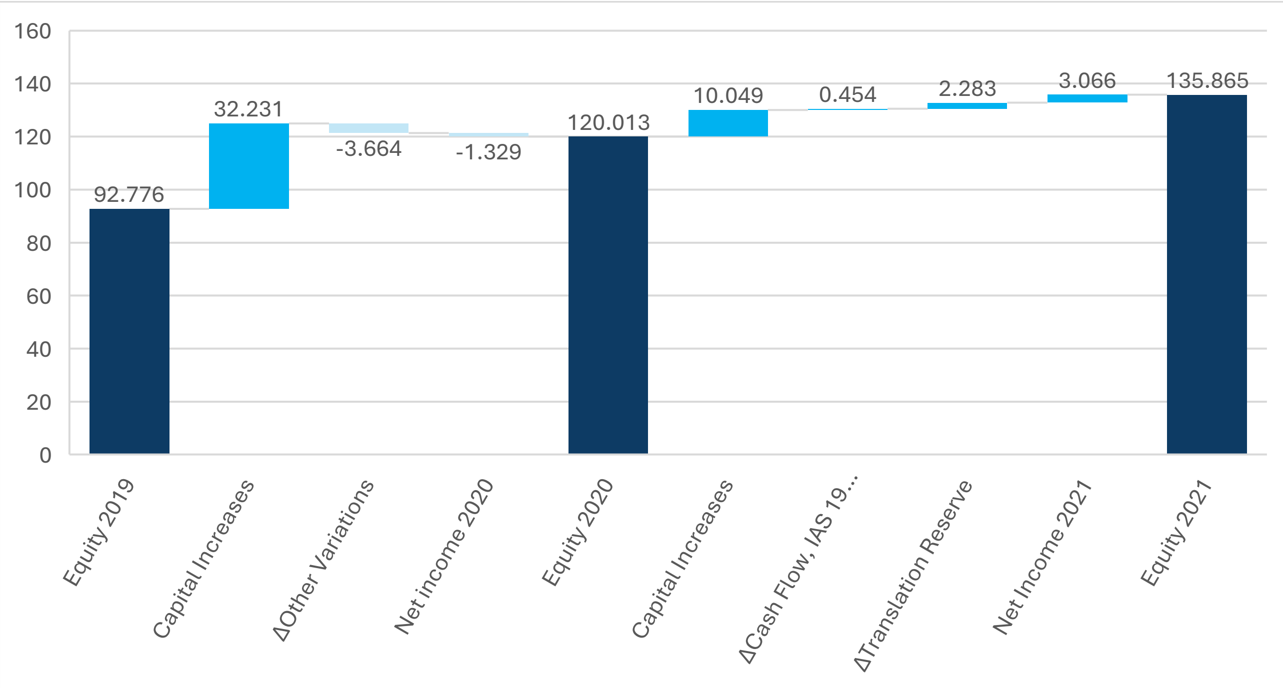
The additional members appointed in 2020, Luigi Del Monaco and Johnatan Mark Jones, are highly accomplished professionals with extensive expertise in the food sector. Luigi Del Monaco, for instance, served as General Manager at Parmalat Italia for over four years starting in 2012, then as Group CEO at Castelli 1892 Group for another four years, and has been with Nactarome since 2021. Meanwhile, Johnatan Mark Jones serves as the CEO and President of Create Flavours Ltd.

In 2020, appointing two CEOs was likely a decision to support Luigi Del Monaco's integration into the team, a strategy that proved successful 2021. Additionally, the new members, Patrick Sader and Christopher Parkin, have been appointed to ensure alignment with TA Associates, the company that would buy the majority of the group's shares in 2022, being co-heads of TA's European Investments and Services Group, respectively. In fact, the second half of 2021 was dedicated to the transaction deal between the two major private equity companies.

6.3.3 Financial Improvement

Equity Change

The equity changes resulting from the establishment of the group in 2019 and its partial divestment at the beginning of 2022 are closely linked to the capital increases incurred during these years following several add-on acquisitions.



The capital increases incurred during this time span registered an increase of approximately 47% from 2019 to 2021.

Capital Increases (€ million)	2019	2020	2021
Share capital	1.414	1.950	2.091
Share premium reserve	87.967	119.662	129.569

Debt Change

Debt increased from €216.9 million in 2019 to €296.0 million in 2021, with financial debt rising from €73.0 million to €96.7 million. This rise is largely due to the group financing its acquisitions through both additional equity and increased borrowing to drive growth. Financial debt includes both bank loans and right-of-use obligations, introduced by IFRS 16. In 2020, AromataGroup extended certain lease agreements alongside its investment project at the Concorezzo plant, which contributed to the higher right-of-use balance.

This case, as well as the previous one, implies that all the acquisitions are financed with a portion of debt, hinting the use of the LBO model and aligning with the characteristics observed by Kaplan and Strömberg in 2009:

1. The use of Special Purpose Vehicles (SPVs) in all acquisitions:
    a. AromataGroup in 2018, completed via a reverse merger with its SPV, BidCo 28 S.r.l.
    b. IPAM S.r.l. in 2019, finalized in 2020 through a reverse merger involving the SPV BidCo32 and its shareholders' vehicles Belbafor S.r.l., Forecast S.r.l., and Preca S.r.l.
    c. Create Flavours Ltd in 2020, using the vehicle Nactarome UK Ltd, followed by TasteConnection in 2021 using the same company.
    d. FIAS S.r.l. in 2021, carried out through BidCo39 S.r.l.
    e. Pharmorgana in 2021, with AromataGroup acting as an SPV.
2. The additional bank debt injections, with a rise of the bank debt from €71,039,000 in 2019 to €84,401,000 in 2020 and €89,830,000 in 2021, all coming from a pool of banks (Crédit Agricole and BNL) with maturities set for March 2027 and March 2028.

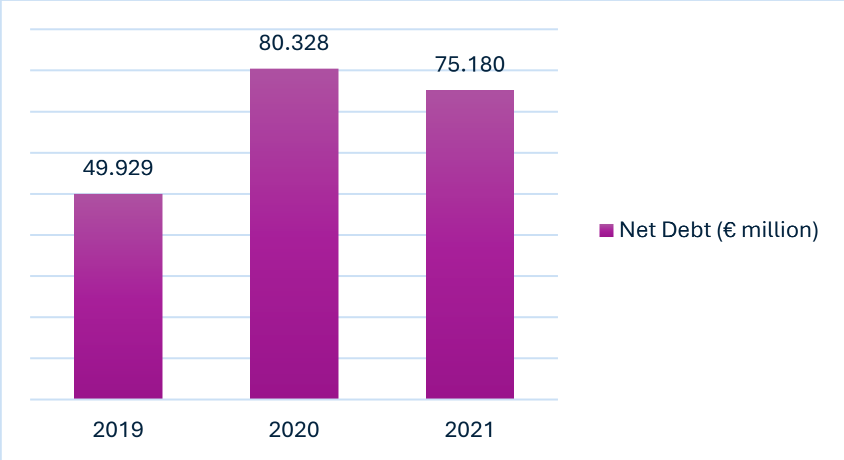
Additionally, another source of financing came from the controlling shareholders Ambrosiana Flavors & Colors S.r.l. and WHS Holding S.A. which lent € 12.3 million and € 1 million respectively in 2019.

Total Assets

The changes in the capital structure are all reflected in the assets of the company, in particular under goodwill, which increased due to the appreciated value of the multiple add-ons. The variation registered from 2019 and 2020 is € 39.261 million and between 2020 and 2021 o € 24.608 million.

Evolution of the Net Debt throughout the investment horizon

In 2019, the net financial position appears relatively low compared to the overall financial debt, largely due to a high level of cash and cash equivalents (approximately €23.1 million). Of this amount, €13 million is linked to credit lines used in January 2020 to settle the medium- and long-term loans of Nactis Flavours SASU, as stipulated with the reference banks. The sharp increase from 2019 to 2020 stems from additional financing provided for new add-on acquisitions. Although the company took on further financial debt between 2020 and 2021, its net financial position remained higher, likely as a result of extra cash obtained through bank loans.



Finally, the values of Net Debt/Equity remained stable over the investment period ranging from values between 0.5 and 0.7, while Net Debt/EBITDA exhibited a critical value of approximately 9 in 2020. This can be explained by the several acquisitions undergone in 2020 and the large amount of money needed to finance this. In fact, as expected, this ratio decreased to 4 in the following year, reflecting improved EBITDA performance and the realization of operational synergies.

6.3.4 Operational Improvement

Revenue and EBITDA Growth

- Streamlined production processes and enhanced savings, especially in Nactis Flavours, in which experts focused on indirect processes.
- Exploited the positive outcomes of COVID-19 pandemic including the lower cost of raw materials, including Vanilla.
- Adopted an attentive pricing strategy and carefully anticipated the rise of raw material costs of 2021 with the implementation of forecasting systems (Mintec), a platform that analyzes the expected price trends for raw materials and energy.
- Optimized costs in the IPAM production sites due to better process planning and use of all resources.
- Involved the AromataGroup in a cost optimization project, supported by ERA Global Management, focusing on expense categories such as transportation, rentals, maintenance, cleaning, and waste.

Organizational Changes

- Rationalization of organizational and business processes through the implementation of an ERP (Enterprise Resource Planning) system (SAP B1). The objective was to have a common database comprising all the companies in the group, thereby improving the monitoring of important KPIs for process planning and the ability to expand into new markets by broadening the customer base. This investment was estimated to be around € 1 million. In addition to SAP software, also others such as PLM Hazex/Devex and ArXivar were implemented. The benefits reached include enhanced product traceability, formulation standardization, warehouse evaluation, and reporting.
- Incorporated Fiorio Colori, a subsidiary of AromataGroup, in AromataGroup during 2020 benefiting from a leaner structure and the creation of synergies.
- Introduced new roles in management, in particular it strengthened the management workforce in the IT, HR and Sales sectors of the AromataGroup, leading to an increase of +4% in personnel costs between 2019 and 2020.
- Reorganized multiple R&D, Sales and Supply Chain teams at Group level, to enhance the sharing of expertise and service development.
- Ended contracts with previous managers, as not being in line with future prospects, with lay off costs of € 600k between 2019 and 2020.
- Carved out two businesses from Nactis Flavour SASU, named Synarome SAS and Tradismoke SAS, both French companies operating in the chemicals and liquid sectors, areas not consistent with the Group's focus on sustainability. The sale of these assets led to a recognition of a capital loss of approximately € 4 million.
- Started the negotiation for a new production site for Nactis in Luisant, France, to transfer the production from the headquarters in Bondoufle. The investment was valued at € 8.8 million, expected to be partially covered by the sale of the site in Bondoufle with € 4.5 million, thereby avoiding the extra expenses required to adjust the existing facility for new improvements.

Covid-19 Operational Adjustments

- Stocked raw materials and main ingredients to prevent eventual future shortages, allowing to maintain a positive trend.
- Temporary closures due to a sharp drop in demand.

Industrial Strategy and Process Innovation

- Expanded the production site for the company AromataGroup, in Concorezzo, supported also by Variati Holding S.p.A. which helped by providing finance for the 45%.
- Enhanced the infrastructures, machinery and leased specific laboratory tools within the AromataGroup and the UK companies to develop solutions for faster production.
- Worked to make sure the product offerings were in line with the highest market standards and implemented new low-impact technological innovations.
- Developed solutions to meet emerging market trends, including the "beyond natural" trend through clean label offerings, the health trend by reducing salt, fat, sugar, and allergens, and the exploration of new flavors to address the need of diverse cultures.

- Embraced R&D projects according to the main business sectors:
    - Natural Colors: focused on identifying substitutes to favor the use of natural products while ensuring compliance with regulations and preserving the desired properties.
    - Savory: research on new raw materials, extraction of novel aromas through the use of advanced analytical instruments, development of salted emulsions, recreation of the meat aroma for plant-based alternatives and respond to market trends by developing clean label solutions with a partnership between AromataGroup and the Nactis group.
    - Sweet: creation of new natural aromas to ensure compliance with regulatory changes, adaptation to kosher and Halal certifications, which adhere respectively to the Jewish and Islamic laws, improve the vanilla's extraction process and respond to market trends by reducing the contribution of sugar, fat and sodium.
    - Beverage: innovate the extraction and distillation process with the use of new analytical instruments such as LCMS.
- Anticipated eventual speculative phenomena and raw material shortages by stocking key inventory items in advance and preparing appropriate lines of credit to address potential periods of financial strain. shortage of raw materials due to global tensions between Russia and Ukraine by the end of 2022.

External Growth and International Expansion

The Group started with the acquisition of AromataGroup in 2018 in Italy as the platform company.

- Acquired IPAM in 2019 (Italy).
- Acquired Nactis Flavours in 2019, located in France and Belgium, with subsidiaries in Poland and Tunisia.
- Acquired Create Flavours in 2020 (UK).
- Acquired Taste Connection Limited in 2021 (UK).
- Acquired Pharmorgana Gmbh in 2021 (Germany).
- Acquired FIAS S.r.l. in 2021 (Italy).
- Opened a representative office in Bangkok, Thailand, in 2021 to enhance its market presence in less served areas.

The growth was led by new acquisitions both in the Italian and the external market, boosting the group's international presence. The organizational chart of the Group by the end of 2021, the final period of the full ownership of Ambienta SGR was:

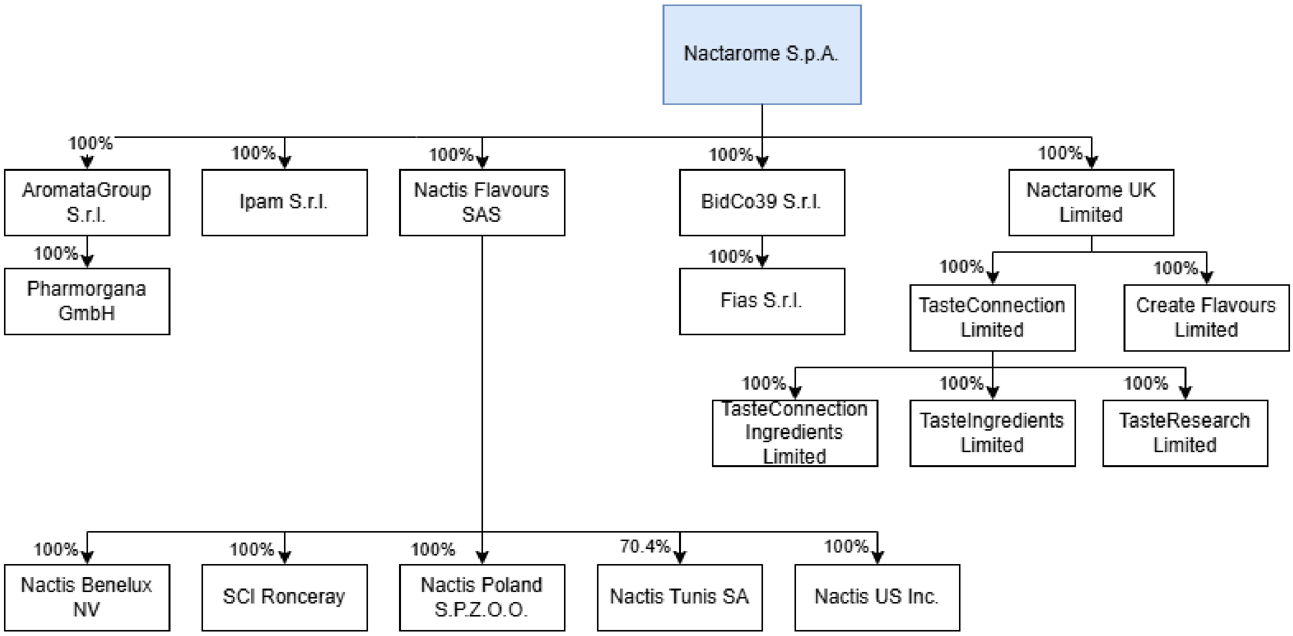


Figure 6.6: Organizational Structure of Nactarome in 2021[29]

ESG initiatives

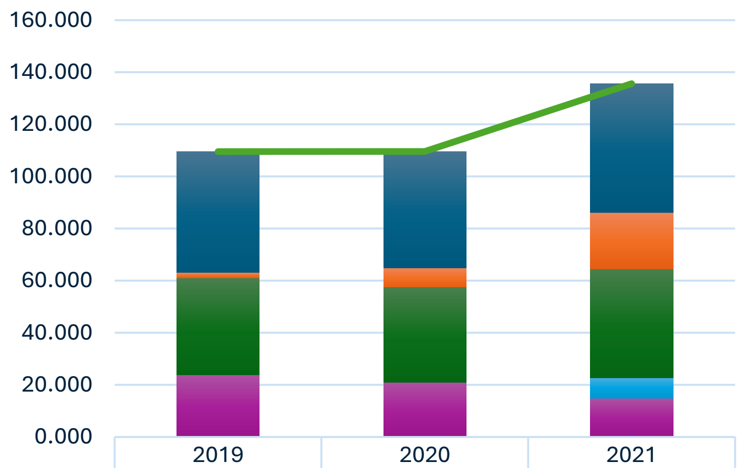
- Promoted initiatives to integrate sustainability in the company's activities to water and energy savings, waste reduction and increase of natural raw materials.
- Installed a photovoltaic system of power 170 kWp in Concorezzo, and of 168.15 kWp in Gessate, with 590 solar panels.
- Worked to obtain certifications of ISO 14001/50001 and 45001, respectively with the first one focusing on sustainable performance and energy optimization, and the second one focusing on workplace health and safety.
- Worked to maintain ISO 9001, a certificate ensuring product and service quality, and ISO 22000, to guarantee safe food production and distribution.
- Adopted the 'model 231', established by the Italian Legislative Decree 231/2001 in the Italian facilities, which regulates how a company should be structured and should handle its sensible processes to reduce the risk of committing corporate-related crimes.
- Invested in extraordinary activities to ensure sanitation in all its sites and implemented the sanitary protocols, with the support of the occupational physician and the workers' representatives, to contain the expansion of the pandemic of Covid-19. In 2020 and 2021 the employees had adequate health coverage.
- Contributed to maintain the certificates BRC (British Retail Consortium) and IFS (International Featured Standards) for food safety, Kosher for compliance with Jewish laws, BIO attesting the use of biologic agriculture, Sedex certifying the sustainable and ethical business, and finally Halal for compliance with Islamic laws in IPAM.
- Ensured that all investments made are projected towards positive environmental impact, as well as economic, and that the new infrastructure provide a safer working environment.

[29] Source: own elaboration according to Nactarome's Annual Report of 2021.

Evolution of the revenues across Operational Improvements

During the group's initial phase of operations, from 2019 to 2020, the economic framework was challenging due to the rise of the pandemic of Covid-19. This period was characterized by uncertainty both in demand and towards the future. Despite these challenges, the Group continued to expand, helped by the fact that in 2019 the market for aroma and natural flavors grew at twice the rate of the overall food industry, which was estimated at 2-3%. The reduction of sales compared to the previous year and the expected growth suffered both due to the early stockpiling incurred to ease the implementation of the SAP-B1 software and to a sales contraction of 20% in the "Sweet" sectors, in particular those related to the production of ice cream, and 11% in the beverage sector. However, as anticipated in the industry overview, not all sectors negatively suffered, for instance the segment controlled by IPAM, the one of batter, breading or seasoning for coated meat and poultry registered a growth of 13%. Overall, the reduction in sales for the first two years of operations in Italy and France/Belgium can be attributed to both the activities of AromataGroup and Nactis, while the drop in revenues in the rest of the world is due to stricter restrictions imposed by the pandemic of Covid-19. The year 2021 represented a rise for the general global economy, with a growth of 5.69% reported in the food and beverages sector (Innova Market Insights, Annual Report, 2021, p. 50). However, this rise coincided with inflation and product scarcity, in particular for goods sourced from outside Europe, leading to increased raw material costs and greater energy expenses.

Revenues by region can be divided into:



	2019	2020	2021
Italy	46.431	44.731	49.382
UK	2.036	7.414	21.735
France/Belgium	37.295	36.572	41.895
DACH region	0.000	0.000	7.867
The rest of the world	23.806	20.951	14.771
Total revenues (€ million)	109.568	109.668	135.650

The most significant growth in revenues is registered between 2020 and 2021 in the UK, boosted by the entrance of two England players such as Create Flavours and TasteConnection in the Group. Another increase represents the entry in the DACH market with the acquisition of Pharmorgana based in Germany while the rest of the world encountered a slowdown due to the Covid-19 pandemic, as previously anticipated. Overall, all the companies in the Group registered greater revenues, following the global market trend. Given the short history of the Group, the evolution of the operational improvements implemented by Ambienta will be closely analyzed in the Value Creation section.

6.4 Partial Divestment

February 2022 defined an important milestone for the group of Nactarome S.p.A., as it determined the change of ownership from Ambienta SGR to TA Associates, important asset manager within the private equity sector. Ambienta decided to sell 100% of the company and reinvest in the deal maintaining a minority position, to support the continuous growth of this sustainable business. TA Associates is a global private equity leader, with offices in Austin, Boston and Menlo Park in the United States, and in London, Mumbai, and Hong Kong worldwide. It invested in this project, leveraging its experience overseeing investments in more than 560 companies worldwide, known for their high margins and sustainable growth, and managing approximately $3 billion in assets each year. The sale of Nactarome involved a tender among the top market players in the flavors and food ingredients industries, implying a competitive bidding process among TA Associate, and other companies such as Firmenich headquartered in Switzerland, Symrise based in Germany, the Kerry Group in Ireland and McCormick & Company in the USA. The framework in which TA associates established it ownership was characterized by the outbreak of the war among Russia and Ukraine. After the company's sale, the new shareholding structure featured TA Associates owning 81.10% of the company, Ambienta holding 9.73%, and the Managers accounting for 9.17%.

The deal involved acquiring Ambrosiana Flavors & Colors S.r.l. from Ambienta SGR, which owned 79.48% of Nactarome. The remaining 20.52% of Nactarome was then purchased by a newly formed special purpose vehicle (SPV), Nina BidCo S.p.A. As a result, Nina Holdco S.p.A. emerged as the main shareholder. The transaction was completed with a significant equity contribution from investors and the issuance of three series of bonds: a €60 million PIK bond at Nina Holdco S.p.A. and two bonds (Series A and B) totaling €150 million at Nina BidCo S.p.A., with bondholders affiliated with Goldman Sachs. This structure indicates that the deal was executed using a leveraged buyout (LBO) method, typical method of acquisition of PE companies (Kaplan & Strömberg, 2009).

The deal was executed under a valuation of the enterprise of approximately € 500 million, as stated in Nactarome's consolidated Annual Report of 2021, p. 48. The deal was closed on February 8, 2022 following a preliminary agreement in November 2021.

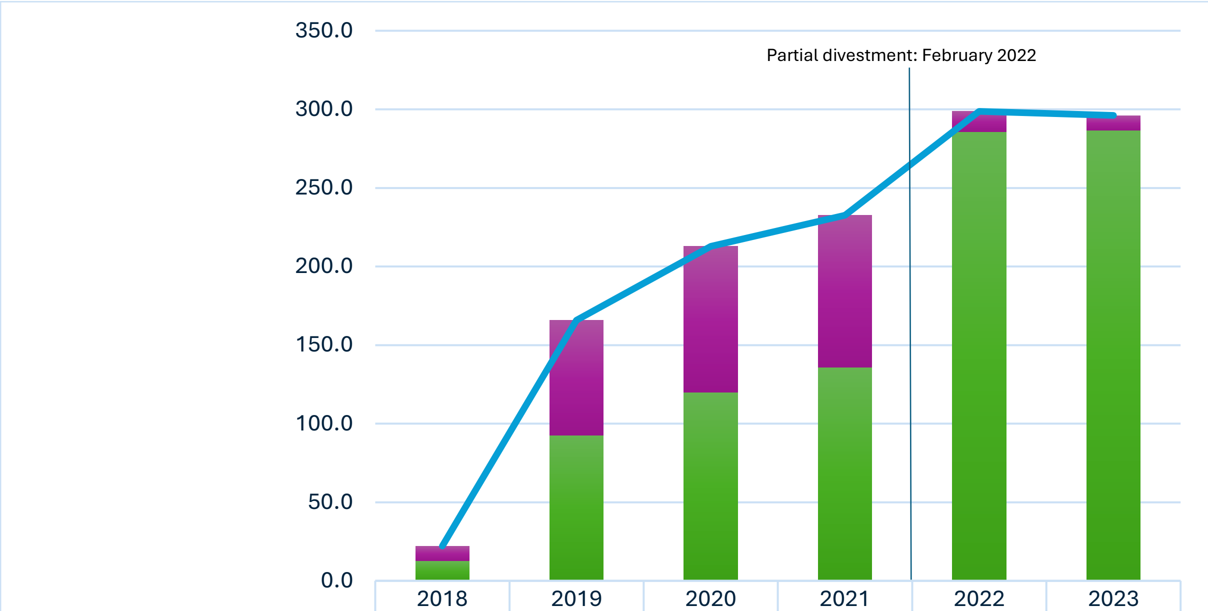
6.4.1 Value Creation

The peculiarity of a buy and build project in private equity is the value creation driven by multiple arbitrage, that is, the strategy of acquiring smaller companies at lower EBITDA multiples and then combining them into a bigger entity that holds a higher valuation at exit than the sum of its add-ons (Lertora & Gervasoni, 2024). By the time of its divestment, the player created by Ambienta's efforts reached a number of around 4,500 clients in 100 different countries, 11 platforms across Europe, and increased their revenues from approximately € 30 million to € 135 million.

Equity and Debt Evolution

During the investment period from 2018 to 2021, Nactarome's equity and debt evolved to support the company's growth and finance its multiple add-on acquisitions. Given that complete data for 2018 are unavailable, the equity figure for that year is estimated by combining the equity of Aromata Group and Fiorio Colori, the platform company and its subsidiary, which was the first acquisition by Ambienta. It is evident that both debt and equity rose significantly due to Ambienta's reliance on the LBO method, which involves funding acquisitions primarily with debt. Meanwhile, the increase in equity reflects the integration of newly acquired companies as well as additional capital injections from limited partners to facilitate these transactions. A change in capital structure becomes evident following the sale of the company. The incoming owner repays existing debt and uses Nina HoldCo S.p.A. as a special purpose vehicle (SPV), leveraging the Group's assets to secure the portion of debt used to finance the SPV. In 2022, the company's valuation increased substantially, on the one hand due to four major acquisitions carried out by the new owner, outlined in the "Industrial & Commercial Activities" section, and on the other hand because of synergy gains realized among the Group's existing entities.

Equity has grown with a CAGR of 120% up to 2021, nearly matching the growth rate of financial debt. Both have increased portionally in order to sustain the group's investments.

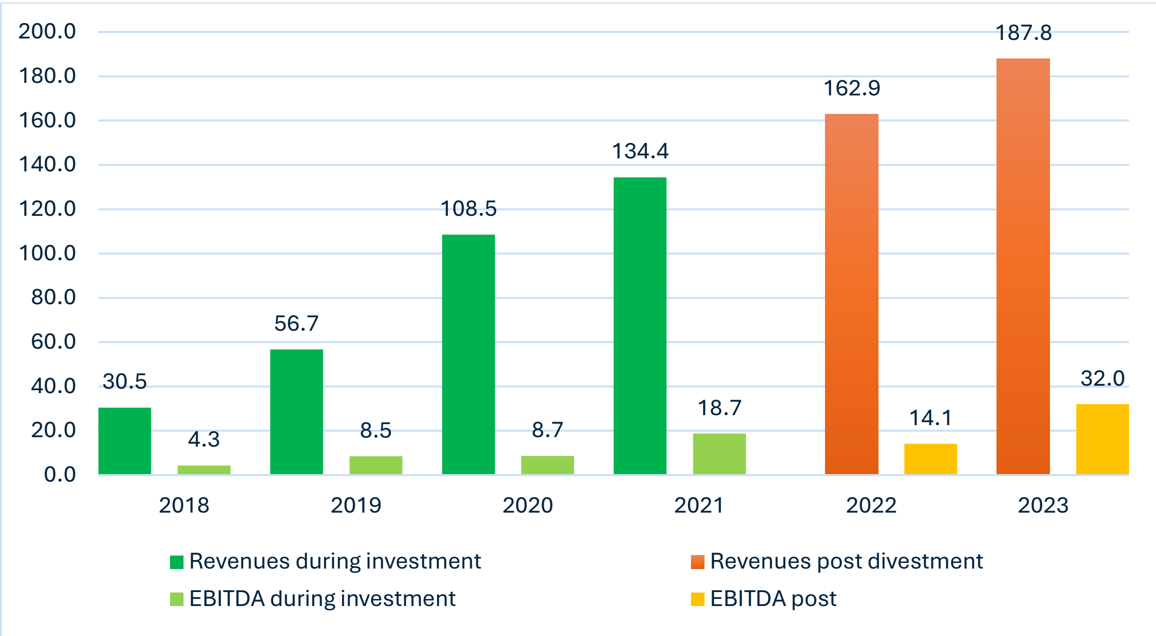


	2018	2019	2020	2021	2022	2023
Financial Debt (€ million)	9.5	73.0	92.8	96.7	13.0	9.5
Equity (€ million)	12.6	92.8	120.0	135.9	285.7	286.6
TOT (€ million)	22.1	165.8	212.8	232.5	298.7	296.1

Financial and Operational improvements

To assess the gradual growth of the group, it is assumed to account for the revenues of Nactis Flavours from 2020, because Nactis was acquired in December 2019, and its data for this period would not accurately reflect the group's real growth. The 2018 revenues include those of Aromata Group and Fiorio Colori, while the 2019 figures also include IPAM, acquired in July 2019.

The growth of the Group becomes evident by the following figures. By 2021, both revenues and EBITDA rose to 2021 at a CAGR of 64%, marking a significant result. The revenues kept increasing even after Ambienta sold the majority of its shares to TA Associates. The EBITDA of 2020 and 2022 were not in line with the growth of the revenues, due to major disruptions incurred in those years: the Covid-19 pandemic and the outbreak of hostilities between Russia and Ukraine, leading to an increase of the price of energy and raw materials. Despite these challenges, the company demonstrated resilience.



6.4.2 Sustainability Results

Nactarome's operational focus aligns with the environmental principles that guide Ambienta's investment strategy, as the group's products are naturally based and replace synthetic flavors and colors, which contain chemical and polluting substances in their formulations. Although the first sustainability report published by Nactarome accounts for the period of 2023 and was not published under the full control of Ambienta, the ongoing investment and implementation of Ambienta's sustainability practices allow us to gather some information to quantify the progress and environmental impact of the company, given the absence of other documents detailing these results.

The sustainability report was drafted following the GRI Standards, comprehending a Materiality Analysis and identifying the sustainability topics most relevant to the company and its stakeholders. An accurate analysis through the materiality matrix, determining a score based on the weighted average of the evaluations provided, identified Health and safety at work, Product quality & safety, Data privacy and cybersecurity, and R&D, innovation and digitalization as the most important topics. These topics were already prominent even before the establishment of the new owner, since all the ESG initiatives were targeted to promote health and safety in the working environment, particularly in the food sector, with most companies being certified. For instance FIAS was certified FSSC 22000, ensuring that companies implement robust management systems to control food safety hazards and was part of IOFI (International Organization of the Flavour Industry) providing guidance on regulations and best practices concerning the flavors sector. Additionally, R&D, innovation and digitalization was central to the strategy of Ambienta.

Environmental Commitment

In 2018, Nactarome prevented the emission of 83 tons of pollutants, and in 2020, focusing only on its best-selling SKUs (Stock Keeping Units), it avoided the use of around 216 tons of pollutants. Additionally, several initiatives implemented during Ambienta's full investment period resulted in the installation of a photovoltaic system at AromataGroup's two production sites, enabling the company to boost its production capacity from 2021 onward without needing to acquire new assets. Moreover, the relocation of the site of Nactis from Bondoufle to Lieusaint in France ensured higher efficiency designated to improve in the long-term horizon. By 2023, each company in the Group contributed to strategies for reducing energy consumption and increasing efficiency. Through these initiatives, they reinforced their commitment towards the reduction of CO2 emissions and climate change mitigation. Alongside its commitment to reducing GHG emission, the group also initiated projects to better manage water, waste, and enhance circularity. By 2023, it registered a lower water consumption but a higher water withdrawal, generated more waste overall yet kept hazardous waste stable, and increased non-hazardous waste. In these final areas there is still room for improvement, although the higher volumes are partly influenced by new acquisitions.

Social Commitment

The company is dedicated to ensuring equal opportunities and fairness in treatment among employees, regardless of their gender, religion, age or nationality. They also care about employee wellbeing and development, and they implemented programs to safeguard their mental and physical health and ensure professional growth. Additionally, they are committed to guaranteeing health and safety in the work environment, keeping a low number of work-related injuries both for type and number across all years of operation and no fatalities were registered. In 2023 the occupational health & safety system covered 100% of employees. Even during the Covid pandemic, this mindset was already firmly established, and the virus containment procedures proved successful in keeping infection rates low. Finally, local communities play an important role, and Nactarome strives to support them.

The social criteria entail other materiality issues such as product responsibility, procurement responsibility, and R&D. These are all the outcomes of the projects started by Ambienta, as reported under the operational improvements section. All legal entities within Nactarome have obtained the FSSC 22000 certification, ensuring food safety and quality. Meanwhile, Nactarome Ltd, composed of the former Taste Connection and Create Flavours, holds BRCGS Grade A*, certifying that its products and processes meet the highest international standards in food safety, quality, and regulatory compliance, while continuously evolving its SAP and DEVEX implementations. R&D investments report an increasing trend over time; between 2022 and 2023, they grew by 45%, with spending on software platforms increasing while investments in laboratory equipment decreased.

The number of employees was not disclosed during the investment period; however, Aromata Group reported about 120 employees in 2018, growing to 540 by 2023. Given the various add-ons, it is unclear whether synergies among the different companies in the group resulted in the creation of new jobs.

Governance Commitment

The model 231 seems to have been successfully implemented as Nactarome registered that no legal entities experienced corruption in 2022 and 2023, and employees kept receiving anti-corruption policy communications, which more than doubled between 2022 and 2023. They emphasize a continuous commitment to an ethical business conduct by proper training the employees while maintaining the identity of the different operational contexts. A thorough code of conduct is kept in each of the companies of the group, with some of them adhering to the methodology of the SMETA Four Pillars and Fairtrad and Sedex audits, meaning that they systematically implement rigorous ethical, social, and environmental standards throughout their operations. In addition, as Nactarome prioritizes data privacy and cybersecurity as a materiality issue, it has implemented measures to ensure digital data security and to train its employees in anti-phishing. Since these actions were not part of its ESG initiatives, they appear to have been implemented under TA Associates ownership.

Results with Ambienta's EIA

Using Ambienta's Environmental Impact Analysis (EIA) methodology, Nactarome's contributions were quantified in one key area:

- Pollution control: realized by avoiding pollutants.

These initiatives have enabled Nactarome to align with the United Nations' Sustainable Development Goals (SDGs), specifically Goal 12 (Responsible consumption and production).

6.5 Return on the Investment

The return on investment for the buy and build project can be estimated due to several assumptions. According to Ambienta, the initial investment was approximately €110 million, while the Enterprise Value at exit was estimated at around € 500 million, as reported in p. 48 of the

Consolidated Annual Report of 2021. Considering that the exit deal was achieved due to a competitive bidding process involving several companies it is possible that the final sale price was even greater. The investment duration is estimated at three years, considering that the deal occurred between November 2018 and February 2022, which the second half of 2021 dedicated to finalizing the transaction deal. Other assumptions regarding the invested capital of GPs and LPs, management fees and proceeds are based on private equity standards, as detailed in Chapter 1 of this thesis and in section 4.5.

The results, summarized in the tables below, indicate an IRR of 56.9% and a Money-on-Money multiple of nearly 4, meaning that the investment returned almost four times the initial capital. Although this multiple is slightly lower than those of the previous cases analyzed, it still represents exceptional performance, particularly considering the several acquisitions involved. However, as this evaluation is based on assumptions, it is subject to potential inaccuracies and should be interpreted carefully.

Assumptions & Inputs	
Holding period (years)	3
Invested Capital (€ million)	110.000
Net Debt at exit (€ million)	75.180
EV at exit (€ million)	500.000
Equity at exit (€ million)	424.820
Hurdle Rate	8%
Management fees rate	2%
Tot Management fees (€ million)	2.200
% Invested Capital LPs	98%
% Invested Capital GPs	2%

Returns (€ million)	
Proceeds net of fees	422.620
Step 1: Return of Capital	
LPs	107.800
GPs	2.200
Net value	312.620
Step 2: Preferred Return	
LPs	28.568
GPs	-
Net value	284.052
Step 3: Carried Interest	
LPs (80%)	227.241
GPs (20%)	56.810

Summary of Results	
Equity at entry (€ million)	110.000
Equity at exit (€ million)	424.820
Gross IRR	56.9%
Gross MoM	3.86
Tot Proceeds LPs (€ million)	363.610
Tot Proceeds GPs (€ million)	61.210
Net Proceeds LPs (€ million)	255.810
Net Proceeds GPs (€ million)	59.010
Net MoM (LPs)	3.37
Net IRR (LPs)	50.0%

Finally, this deal also received an award: the Premio Dematté, 2022 Private Equity of the Year, Buyout Category from AIFI for Nactarome SpA.

6.6 Summary of Value Creation

The investment made by Ambienta in this buy and build project, Nactarome SpA, represented another typical private equity strategy that generates value by creating a bigger player in the market and benefiting from greater market share and diversification of its product offering. In this instance, the primary value creation was achieved through the strategic enhancement of the EBITDA multiple. This increase in the multiple was identified as the predominant driver of this investment by Lertora and Gervasoni in 2024, when conducting their analysis of such projects. Another important aspect was market timing, which ensured the highest possible value at exit. Although this investment strategy entailed six acquisitions over a period of approximately three years, coinciding with a framework of global economic turbulence due to the Covid-19 pandemic and the tensions between Russia and Ukraine, the operation succeeded thanks to the great expertise of the general partners and the designed management team of each acquired company, which collaborated to face market challenges and capitalize on the growth in the flavors and aroma sector. Additionally, as the demand shifted toward more natural products, sustainability played an important role in driving value and reducing costs through ESG initiatives. The final results are an impressive IRR of 57% and a MoM of 3.9x, confirming Ambienta's reputation for successful sustainable investments.

6.7 References

[1] Ambienta. (2018, November 21). *Ambienta, the largest European sustainability-focused fund, enters the food industry with AromataGroup.*

[2] Ambienta. (2019, July 31). *AromataGroup completes the acquisition of IPAM, strengthening its presence in the savoury market.*

[3] Ambienta. (2020, January 13). Ambienta completes the acquisition of Nactis Flavours, further expanding the platform of AromataGroup in natural flavours and colours

[4] Ambienta. (2020, May 11). *Ambienta completes the acquisition of Create Flavours, expanding the platform of Nactarome to the strategic UK market.*

[5] Ambienta. (2021, April 13). *Ambienta completes the acquisition of TasteConnection, expanding Nactarome's reach to the UK and European natural seasoning market.*

[6] Ambienta SGR SpA. (2021, November 19). *Ambienta's portfolio company Nactarome completes the acquisition of FIAS.*

[7] Ambienta SGR. (2021, November 25). *Ambienta announces the sale of its platform company Nactarome*.

[8] AromataGroup. (n.d.). *Corporate.*

[9] AromataGroup S.p.A. (2016). *Annual report 2016 (unconsolidated accounts)*. Retrieved from AIDA database.

[10] AromataGroup S.p.A. (2017). *Annual report 2017 (unconsolidated accounts)*. Retrieved from AIDA database.

[11] AromataGroup S.p.A. (2018). *Annual report 2018 (unconsolidated accounts)*. Retrieved from AIDA database.

[12] AromataGroup S.p.A. (2019). *Annual report 2019 (unconsolidated accounts)*. Retrieved from AIDA database.

[13] AromataGroup. (2021). *Il gruppo Nactarome acquisisce la tedesca Pharmorgana.*

[14] Bain & Company. (2021). *Global private equity report 2021.*

[15] Create Flavours. (n.d.). *Home.*

[16] Hammer, B., Hinrichs, H., & Schweizer, D. (2017). *Buy and build strategies in private equity: Boost or transformation?*

[17] IPAM. (n.d.). *La storia.*

[18] Kaplan, S. N., & Strömberg, P. (2009). Leveraged buyouts and private equity. Journal of Economic Perspectives, 23(1), 121–146.

[19] Lertora, M., & Gervasoni, A. (2024). *Buy-and-build strategy: Evidence from a survey of private equity general partners.* Official Journal of Italian Society of Management.

[20] MarketsandMarkets. (2020, November). *Natural colors & flavors market by Color Type (caramel, carotenoids, anthocyanins, curcumin, annatto, and copper chlorophyllin), Flavor Type (natural extracts, aroma chemicals, & essential oils), Application & Region - Global forecast to 2025.*

[21] Nactis Flavours. (n.d.). *Home.*

[22] Nactarome. (n.d.). *Products.*

[23] Nactarome S.p.A. (2019). *Annual report 2019 (non-consolidated accounts)*. Retrieved from AIDA database.

[24] Nactarome S.p.A. (2020). *Annual report 2020 (consolidated accounts)*. Retrieved from AIDA database.

[25] Nactarome S.p.A. (2021). *Annual report 2021 (consolidated accounts)*. Retrieved from AIDA database.

[26] Nactarome S.p.A. (2022). *Annual report 2022 (consolidated accounts)*. Retrieved from AIDA database.

[27] Nactarome S.p.A. (2023). *Annual report 2023 (consolidated accounts)*. Retrieved from AIDA database.

[28] Nactarome. (2024). *Nactarome Sustainability Report 2023.*

7 Conclusions

7.1 Main findings

The existing literature on private equity and sustainability suggests that integrating Environmental, Social, and Governance (ESG) factors into investment strategies creates both financial and social value. Multiple studies further demonstrated that who incorporates these factors into investment decisions does it not only as an ethical choice, but also to mitigate risks, enhance financial performance, and drive long term value creation. In fact, firms embracing these solutions tend to outperform their competitors, as they enhance operational efficiency and benefit from a solid reputation which favors access to capital. Other theoretical findings on the private equity sector also show that what is driving the most private equity firms' behavior is the demand of institutional investors, regulatory shifts and the changing of market preferences. European investors are those that pose a strong support in investments focused on ESG matters, a trend reinforced by regulatory initiatives such as the Sustainable Finance Disclosure Regulation (SFDR).

Building on these theoretical insights, the aim of this study is to investigate whether the existing literature aligns with the financial and operational outcomes observed in ESG-focused private equity investments. In particular, this research focuses on a prominent European private equity firm, Ambienta SGR, which has posed a significant interest in embedding sustainability into its investment framework, to evaluate whether ESG integration has been a decisive factor in driving superior financial and strategic outcomes. As a result, a deep analysis of Ambienta's investment strategies and portfolio companies followed, focusing on three main case studies, IPC Group, Safim S.p.A., and Nactarome, which offer diverse examples of how strategies oriented towards ESG can be adapted to different industries and business models. The criteria used in the selection process considered their distinct beginning conditions, investment approaches, and strategic goals, while being headquartered in Italy. IPC Group, a well-established but fragmented industrial cleaning company with a strong international presence, was acquired through a secondary buyout despite facing financial instability and structural difficulty. Ambienta's approach here consisted of corporate reorganization, net debt reduction, equity restoring, and focusing on core activities to establish financial stability. In contrast, Safim S.p.A., a family business that sought private equity support to pursue international expansion and organizational restructuring. The strategy for Safim focused on driving revenue growth through market expansion, strengthening internal governance and employing debt financing as a new source for the company. Finally, Nactarome, a more recent investment that began as an Italian business in a fragmented market, benefited from a buy-and-build strategy, acquiring complementary firms across Europe to consolidate its market presence, achieve economies of scale, and evolve into a market leader.

The results observed in these cases confirm what is stated by the theory, in other words that investments focused on ESG can deliver superior business performance. Each company experienced significant revenue growth, EBITDA expansion, and increased enterprise value, all while enhancing their sustainability metrics and governance frameworks. Evidence suggests also that value creation in private equity is not merely financial engineering or cost-cutting; it also involves active ownership, strategic oversight, and long-term operational improvements that align with ESG objectives. These three companies all shared strong growth potential and a focus on sustainability, proving that is possible to yield competitive financial returns without giving up the integration of sustainable business practices. This point is further reinforced by the fact that each case achieved an internal rate of return (IRR) exceeding 56.9%, as shown in the following table.

	Revenues (€ million)		EBITDA (€ million)		Equity (€ million)		Investment		Holding period	IRR
	Entry	Exit	Entry	Exit	Entry	Exit	Entry	Exit	-	-
IP Cleaning	171.0	186.2	27.2	29.3	50.0	258.1	June 2014	April 2017	3 years	72.8%
Safim	28.1	50.5	6.0	13.6	36.9	119.4	July 2017	September 2019	2 years	80.0%
Nactarome	30.5	134.4	4.3	18.7	110.0	424.8	November 2018	February 2022	3 years	56.9%

Finally, another finding of this research highlights the pathway of Ambienta, focusing on how early recognition of sustainability trends can confer a strategic and competitive advantage, specifically in a risky sector as the one of private equity. Its success in anticipating ESG factors before their diffusion in the market, led to positioning itself as a pioneer in sustainable private equity and a leading player in the European framework.

7.2 Limits of the current research

Despite the valuable insights generated by this research, there are still several limitations to be taken into consideration. A primary constraint lies in the availability and standardization of ESG data; in fact, although ESG reporting frameworks have advanced, the fact that there are still discrepancies in methodologies, assessments made by rating agencies, and sector-specific benchmarks continue to challenge both research and investment evaluations. The precision of ESG performance assessments is further undermined by the reliance on third parties which often exhibit poor quality of data and inconsistencies. Moreover, the lack of a unique definition and accounting method for ESG principles further enhances the introduction of bias in data interpretation. In this context, ensuring data quality would validate that studies are robust and that the reported information genuinely contributes to value enhancement. Another limitation is the focus on a single private equity firm, Ambienta SGR, which prevents to capture the broader scenario of private equity investments and avoids the comparison with different methodologies. In fact, some firms may prioritize financial performance over sustainability, whereas others might adopt impact investment strategies that compromise financial returns for measurable environmental and social outcomes. As a result, the findings may not fully represent the diverse strategies across the entire private equity industry, particularly beyond the European market.

The most important limitation of this study is that the evaluation was based on a sample of only three companies, which is a limited small number for effectively assessing the integration of sustainable practices within the investment strategy and, by extension, the overall success of a private equity firm. Moreover, the exceptional results observed in these case studies may not be representative of the broader portfolio or directly attributable to sustainable practices alone.Furthermore, this research evaluates primarily short-term results, without offering a long-term perspective of the value creation driven by sustainability initiatives. This is a limitation because ESG strategies, such as the reduction of carbon emissions, the shift to circular economy practices, and the implementation of supply chain sustainability, tend to show their full effects over extended periods of time. Future studies would benefit from approaches that track portfolio companies particularly post-exit, to assess whether the sustainability gains achieved under private equity ownership persist over the long run.

Finally, another limitation arises from the strategic way in which Ambienta targets its portfolio companies. In addition to already being active in ESG practices, they operate in high-potential, niche or fragmented markets, which means that Ambienta may benefit from factors beyond sustainability initiatives alone. This selection bias makes it difficult to attribute superior results solely to ESG integration, as the inherent growth prospects of these industries may independently drive strong performance.

7.3 Suggestion for further research

The findings and limitations outlined different aspects of this research that further need detailed study. First, there is a critical need for greater standardization of ESG metrics, especially in the private equity sector. In particular, it should be explored the potential for creating a framework tailored for companies that integrate both financial and sustainability performance, thereby increasing comparability and visibility across funds and investment strategies. Moreover, emerging technologies, such as artificial intelligence and blockchain, could be used as tools to verify ESG data and measure impact. They could hold a dual role, both improving transparency and reducing the risk of greenwashing, and help companies disclose more accurate and relevant information, ultimately benefiting both investors and the companies.

Another promising hint is to expand the analysis beyond European private equity firms to capture global variations in ESG integration. Although Europe currently leads in sustainable investment practices, financial ecosystems in regions like North America and Asia are quickly adopting ESG principles. Comparing different regulatory environments, cultural contexts, and economic structures can provide deeper insight into how ESG factors shape private equity investments globally. Additionally, future research should consider the views of employees within portfolio companies to understand how ESG-driven initiatives impact job satisfaction, diversity, and overall workplace culture, an area that remains underexplored.

Given the size of the sample, including only three cases, as outlined, is a limitation. Future research must address this issue by expanding the sample size to obtain more reliable findings regarding the success of integrating sustainable practices within investment strategies and the broader performance of private equity firms.

Moreover, further research should focus on assessing the financial trade-offs associated with ESG-focused investments, particularly the balance between costs and benefits. While existing studies generally suggest a positive correlation between ESG integration and financial performance, some evidence points to potential underperformance in high-ESG portfolios due to increased compliance costs and the financial burden of operational adjustments.

Additionally, it should also be investigated if certain industries benefit more from ESG strategies than others. The impact of sustainability initiatives can vary greatly depending on factors unique to each sector, such as regulatory requirements, supply chain challenges, or consumer expectations for responsible business practices. A more detailed, industry-focused analysis could reveal whether ESG factors are more competitive in some markets while being less influential in others.

A final area of focus, given the issue of limited data regarding long term effects of ESG practices among private equity investments, could be to conduct extensive research to track the long-lasting effects of sustainable initiatives beyond the period of the private equity ownership and to observe whether companies maintain commitment over time or gradually abandon them once investor oversight diminishes. The results would help determine whether ESG is truly a value driver and contributes to enduring corporate transformation.

In conclusion, given the continuous evolution of both the regulatory frameworks and investors interest, the relationship between sustainability and financial performance remains a critical area for further investigation. Filling these gaps in research will help understanding how private equity can deliver both financial growth and positive impact in environmental, social and governance matters, ultimately contributing to long-term stability in a dynamic market landscape.

References

[1] Albers-Schoenberg, A., Zeisberger, C., Prahl, M., & White, B. (2019). *Measuring private equity fund performance*. INSEAD Global Private Equity Initiative.

[2] Ambienta SGR SpA. (2021, November 19). *Ambienta's portfolio company Nactarome completes the acquisition of FIAS*.

[3] Ambienta SGR. (2017, July 10). Ambienta completes an investment in Safim SpA, a leading manufacturer of critical components for hydraulic systems on-board heavy vehicles.

[4] Ambienta SGR. (2019, February 25). Safim completes the acquisition of a controlling stake in OMNI GmbH, further strengthening its presence in the strategic DACH market.

[5] Ambienta SGR. (2019, January 14). Ambienta portfolio company: Safim among the first companies in Europe to be awarded the new Occupational Health & Safety standard.

[6] Ambienta SGR. (2019, September 23). Ambienta, Europe's largest sustainable investment fund, completes sale of Safim S.p.A.

[7] Ambienta SGR. (2020, July). *Ambienta ESG in action programme 2019.*

[8] Ambienta SGR. (2020, December 18). Ambienta wins the Claudio Demattè Private Equity of the year 2020 Award for Safim S.p.A.

[9] Ambienta SGR. (2021, November 25). *Ambienta announces the sale of its platform company Nactarome*.

[10] Ambienta SGR. (2022). *Ambienta ESG Environmental Impact report 2021.*

[11] Ambienta SGR. (2024). 2023 Environmental Impact Analysis

[12] Ambienta SGR. (2024). *Ambienta ESG report 2023.*

[13] Ambienta SGR. (n.d.). Safim. Ambienta SGR.

[14] Ambienta. (2009, October 16). Ambienta I closing [Press release].

[15] Ambienta. (2018, November 21). *Ambienta, the largest European sustainability-focused fund, enters the food industry with AromataGroup.*

[16] Ambienta. (2019, July 31). *AromataGroup completes the acquisition of IPAM, strengthening its presence in the savoury market.*

[17] Ambienta. (2020, January 13). Ambienta completes the acquisition of Nactis Flavours, further expanding the platform of AromataGroup in natural flavours and colours

[18] Ambienta. (2020, May 11). *Ambienta completes the acquisition of Create Flavours, expanding the platform of Nactarome to the strategic UK market.*

[19] Ambienta. (2021, April 13). *Ambienta completes the acquisition of TasteConnection, expanding Nactarome's reach to the UK and European natural seasoning market.*

[20] AromataGroup S.p.A. (2016). *Annual report 2016 (unconsolidated accounts)*. Retrieved from AIDA database.

[21] AromataGroup S.p.A. (2017). *Annual report 2017 (unconsolidated accounts)*. Retrieved from AIDA database.

[22] AromataGroup S.p.A. (2018). *Annual report 2018 (unconsolidated accounts)*. Retrieved from AIDA database.

[23] AromataGroup S.p.A. (2019). *Annual report 2019 (unconsolidated accounts)*. Retrieved from AIDA database.

[24] AromataGroup. (2021). *Il gruppo Nactarome acquisisce la tedesca Pharmorgana.*

[25] AromataGroup. (n.d.). *Corporate.*

[26] Bain & Company. (2021). *Global private equity report 2021.*

[27] Bain & Company. (2023). *Global private equity report 2023*.
[28] Barbosa, A. d. S., Crispim da Silva, M. C. B., Bueno da Silva, L., Morioka, S. N., & Fernandes de Souza, V. (2023). Integration of environmental, social, and governance (ESG) criteria: Their impacts on corporate sustainability performance. *Humanities and Social Sciences Communications, 10,* Article 410.
[29] Bebeez. (2014, November 4). Ambienta II chiude la raccolta a quota 323 milioni di euro.
[30] Bellini, M. (2023). ESG rating agency: La sfida di misurare la sostenibilità. *ESG360.*
[31] Bellini, M. (2025, January 7). ESG: Tutto quello che c'è da sapere per orientarsi su environmental, social, governance. *ESG360.*
[32] Benedikter, R. (2011, January 13). *Social banking and social finance: Answers to the economic crisis.* Springer Science & Business Media.
[33] Berg, F., Kölbel, J., & Rigobon, R. (2019). Aggregate confusion: The divergence of ESG ratings.
[34] Blackstone. (2021). *Life cycle of private equity*.
[35] Carroll, A. B. (2008). A history of corporate social responsibility: Concepts and practices. In A. Crane, A. McWilliams, D. Matten, J. Moon, & D. Siegel (Eds.), *The Oxford handbook of corporate social responsibility* (pp. 19–46). Oxford University Press.
[36] Cibin, A. (2024, July). ESG in 2024: From regulatory maze to clarity in the European Union. *Modefinance.*
[37] Council of the European Union. (2024, November 19). Environmental, social and governance (ESG) ratings: Council Greenlights New Regulation.
[38] Create Flavours. (n.d.). *Home.*
[39] D'Ascenzo, M. (2008, October 10). Doughty Hanson conquista TMF: Acquisizione da 750 milioni di euro – In Italia ingresso in Ambienta. *Il Sole 24 Ore*, 280.
[40] D'Ascenzo, M. (2008, September 30). Ambienta Sgr entra in ICQ Holding. *Il Sole 24 Ore*, p. 41.
[41] D'Ascenzo, M. (2009, March 31). Ambienta, obiettivo a 250 milioni: A un anno dalla partenza gli investitori hanno versato 160 milioni. *Il Sole 24 Ore*, 89.
[42] Deloitte. (2022, March 2). ESG explained: What is ESG?
[43] DexKo Global Inc. (2019, September 20). DexKo Global acquires Safim S.p.A. DexKo Global Inc.
[44] Dunstan, A. D. (2018, January 2; updated 2024, July 24). Can GRI and SASB reporting frameworks be collaborative? *Trellis.*
[45] Eccles, R. G., Kastrapeli, M. D., & Potter, S. J. (2017). How to integrate ESG into investment decision making: Results of a global survey of institutional investors. *Journal of Applied Corporate Finance, 29*(4), 125–133.
[46] Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business.* Capstone.
[47] European Commission. (n.d.). Corporate sustainability and responsibility.
[48] European Commission. (n.d.). Corporate sustainability reporting.
[49] European Commission. (n.d.). Green claims. *European Commission - Environment.*
[50] European Union. (n.d.). Sustainable development. *EUR-Lex.*
[51] Fidelman & Company. (2018, October 12). Market size of the mop industry (global report).
[52] Global Reporting Initiative (GRI) & Sustainability Accounting Standards Board (SASB). (2021). *A practical guide to sustainability reporting using GRI and SASB standards.* GRI & SASB.
[53] Global Reporting Initiative. (n.d.). About GRI.

[54] Gompers, P., Kaplan, S. N., & Mukharlyamov, V. (2015). *What do private equity firms say they do?*
[55] Hammer, B., Hinrichs, H., & Schweizer, D. (2017). *Buy and build strategies in private equity: Boost or transformation?*
[56] IFRS Foundation. Find your industry.
[57] IFRS Foundation. *Implementation primer: A practical guide to using SASB standards.*
[58] International Organization for Standardization. (2018). *ISO 45001:2018 - Occupational health and safety management systems – Requirements with guidance for use.* ISO.
[59] IP Cleaning S.r.l. (2011). *Annual Report 2011 (Consolidated accounts).* Retrieved from AIDA database.
[60] IP Cleaning S.r.l. (2012). *Annual Report 2012 (Consolidated accounts).* Retrieved from AIDA database.
[61] IP Cleaning S.r.l. (2013). *Annual Report 2013 (Consolidated accounts).* Retrieved from AIDA database.
[62] IP Cleaning S.r.l. (2014). *Annual Report 2014 (Consolidated accounts).* Retrieved from AIDA database.
[63] IP Cleaning S.r.l. (2015). *Annual Report 2015 (Consolidated accounts).* Retrieved from AIDA database.
[64] IP Cleaning S.r.l. (2016). *Annual Report 2016 (Consolidated accounts).* Retrieved from AIDA database.
[65] IP Cleaning S.r.l. (2017). *Annual Report 2017 (Consolidated accounts).* Retrieved from AIDA database.
[66] IP Cleaning S.r.l. (2018). *Annual Report 2018 (Consolidated accounts).* Retrieved from AIDA database.
[67] IP Cleaning S.r.l. (2019). *Annual Report 2019 (Consolidated accounts).* Retrieved from AIDA database.
[68] IPAM. (n.d.). *La storia.*
[69] IPC. (n.d.). Integrated professional cleaning.
[70] Jensen, M. C. (1989). *Eclipse of the public corporation*. *Harvard Business Review*, Sept.–Oct. (Revised 1997).
[71] Kailios Capital. (2020, December 20). Ambienta wins the Demattè award with SAFIM.
[72] Kaplan, S. N., & Schoar, A. (2005). Private equity performance: Returns, persistence, and capital flows. *The Journal of Finance, 60*(4), 1791–1823.
[73] Kaplan, S. N., & Strömberg, P. (2009). Leveraged buyouts and private equity. *Journal of Economic Perspectives, 23*(1), 121–146.
[74] Kaplan, S. N., & Strömberg, P. (2009). Leveraged buyouts and private equity. *Journal of Economic Perspectives, 23*(1), 121–146.
[75] Kaplan, S. N., & Strömberg, P. (2009). Leveraged buyouts and private equity. Journal of Economic Perspectives, 23(1), 121–146.
[76] Kärcher. (n.d.). Cleaning equipment for home & industrial applications.
[77] Kaul, S. (2023). ESG and value creation in private equity investments: Analysing the effects. *Asian Journal of Interdisciplinary Research, 6*(3), 1–7.
[78] Kenna, A., & Ebhardt, T. (2008, June 12). Ambienta raises €150 mln in funds in first year (Correct). *Bloomberg.*

[79] Khan, M., Serafeim, G., & Yoon, A. (2015). Corporate sustainability: First evidence on materiality. *Harvard Business School.*

[80] Kneller, P. (2008, May 15). Italian green fund chases €250M. *Clean Technology.*

[81] KPMG. (2024). *The move to mandatory reporting: Survey of sustainability reporting 2024.*

[82] Lagerkvist, C. J., Edenbrandt, A. K., Tibbelin, I., & Wahlstedt, Y. (2020). Preferences for sustainable and responsible equity funds: A choice experiment with Swedish private investors. *Journal of Behavioral and Experimental Finance, 28,* 100406.

[83] Larcker, D. F., Lee, L.-E., Seru, A., & Tayan, B. (2024). *2024 institutional investor survey on sustainability.* Corporate Governance Research Initiative, Stanford Rock Center for Corporate Governance, Hoover Institution Working Group on Corporate Governance.

[84] Lepido, D. (2008, February 15). Ambienta, salotto «verde» dei fondi. *Il Sole 24 Ore*, 45, 39.

[85] Lerner, J., & Schoar, A. (2004). The illiquidity puzzle: Theory and evidence from private equity. *Journal of Financial Economics, 72*(1), 3–40.

[86] Lertora, M., & Gervasoni, A. (2024). *Buy-and-build strategy: Evidence from a survey of private equity general partners.* Official Journal of Italian Society of Management.

[87] Ljungqvist, A. (2024). *The economics of private equity: A critical review*.

[88] Ljungqvist, A., Richardson, M., & Wolfenzon, D. (2020). The investment behavior of buyout funds: Theory and evidence. *Financial Management, 49*(1), 3–32.

[89] Luciano, E. (2024). *Slides from the "Applied Corporate Finance and Private Capital" course*. Politecnico di Torino, Torino.

[90] Lund, D. S., & Pollman, E. (2021). The corporate governance machine. *Columbia Law Review, 121*(8), 2563–2634.

[91] MarketsandMarkets. (2020, November). *Natural colors & flavors market by Color Type (caramel, carotenoids, anthocyanins, curcumin, annatto, and copper chlorophyllin), Flavor Type (natural extracts, aroma chemicals, & essential oils), Application & Region - Global forecast to 2025.*

[92] McKinsey & Company. (2022). *ESG report 2022*.

[93] Molfetas, M., & Rade, A. (2024, November). What are the GRI Standards? *Sustain Life.*

[94] Muriithi, S. M., Omolo, J. A., & Wachira, M. (2016, October 10). Strategies employed in the cleaning industry in an effort to attain sustainable competitive advantage. *International Journal of Economics, Commerce and Management.*

[95] Nactarome S.p.A. (2019). *Annual report 2019 (non-consolidated accounts)*. Retrieved from AIDA database.

[96] Nactarome S.p.A. (2020). *Annual report 2020 (consolidated accounts)*. Retrieved from AIDA database.

[97] Nactarome S.p.A. (2021). *Annual report 2021 (consolidated accounts)*. Retrieved from AIDA database.

[98] Nactarome S.p.A. (2022). *Annual report 2022 (consolidated accounts)*. Retrieved from AIDA database.

[99] Nactarome S.p.A. (2023). *Annual report 2023 (consolidated accounts)*. Retrieved from AIDA database.

[100] Nactarome. (2024). *Nactarome Sustainability Report 2023.*

[101] Nactarome. (n.d.). *Products.*

[102] Nactis Flavours. (n.d.). *Home.*

[103] Nilfisk. (n.d.). Nilfisk global.
[104] PitchBook. (2018, May 14). Ambienta III fund profile & benchmark.
[105] PitchBook. (2022, June). Ambienta IV fund profile & benchmark.
[106] Pitkänen, J. (2022). Incorporation of ESG criteria in private equity investments (Master's thesis, University of Vaasa, School of Accounting and Finance). University of Vaasa.
[107] Preqin. (2021). *ESG solutions*.
[108] Principles for Responsible Investment. (n.d.). About the PRI.
[109] Private Equity Monitor. (2017). *Rapporto PEM 2017.* LIUC - Università Cattaneo.
[110] Quantive. (n.d.). ESG metrics: Your guide to common ESG metrics.
[111] Safim S.p.A. (2014). *Annual Report 2014 (Unconsolidated accounts).* Retrieved from AIDA database.
[112] Safim S.p.A. (2015). *Annual Report 2015 (Unconsolidated accounts).* Retrieved from AIDA database.
[113] Safim S.p.A. (2016). *Annual Report 2016 (Unconsolidated accounts).* Retrieved from AIDA database.
[114] Safim S.p.A. (2017). *Annual Report 2017 (Unconsolidated accounts).* Retrieved from AIDA database.
[115] Safim S.p.A. (2018). *Annual Report 2018 (Consolidated accounts).* Retrieved from AIDA database.
[116] Safim S.p.A. (2019). *Annual Report 2019 (Unconsolidated accounts).* Retrieved from AIDA database.
[117] Safim S.p.A. (2019). *Bilancio di sostenibilità 2018.*
[118] Safim S.p.A. (2020). *Annual Report 2020 (Unconsolidated accounts).* Retrieved from AIDA database.
[119] Safim S.p.A. (2020). *Bilancio di sostenibilità 2019.*
[120] Safim S.p.A. (2021). *Annual Report 2021 (Unconsolidated accounts).* Retrieved from AIDA database.
[121] Safim S.p.A. (2023, November). *Hydraulic Business Unit Corporate presentation.* Safim S.p.A.
[122] Sahlman, W. A. (1990). The structure and governance of venture-capital organizations. *Journal of Financial Economics, 27*(2), 473–521.
[123] Stern, N. (2006). Summary of conclusions: Executive summary (short). *Stern Review Report on the Economics of Climate Change (pre-publication edition).* HM Treasury.
[124] Tennant Company. (n.d.). Industrial & commercial floor cleaning machines.
[125] Ufficio federale dello sviluppo territoriale (ARE). (n.d.). Rapporto Brundtland: Sviluppo sostenibile.
[126] Ughetto, E. (2024). *Entrepreneurial finance.* Business Financing Course, Politecnico di Torino, Torino.
[127] United Nations. (n.d.). Stockholm 1972 – UN Conference on the Human Environment.
[128] University of Illinois Department of Economics. (n.d.). Bowen, Howard R.
[129] Whelan, T., Atz, U., Van Holt, T., & Clark, C. (2020). ESG and financial performance: Uncovering the relationship by aggregating evidence from 1,000 plus studies published between 2015–2020. *NYU Stern Center for Sustainable Business and Rockefeller Asset Management.*
[130] Wikipedia contributors. (n.d.). Kärcher. *Wikipedia, The Free Encyclopedia.*
[131] Wikipedia contributors. (n.d.). Nilfisk. *Wikipedia, The Free Encyclopedia.*

[132] World Economic Forum. (2020). Measuring stakeholder capitalism: Towards common metrics and consistent reporting of sustainable value creation.
[133] World Economic Forum. (n.d.). Klaus Schwab.
[134] Zaccone, M. C., & Pedrini, M. (2020). ESG factor integration into private equity. *Sustainability, 12*(14), 5725.