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# WHY TO BE GREEN?

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## Introduction

According to Lancet each year 7 million people die in the world because of air pollution, up to New Scientist, each 20 minutes a plant or animal species becomes extinct.

Ellen MacArthur Foundation foresees that, keeping these rhythms constant, in 2025 we will have in the oceans 1 ton of plastic every 3 tons of fish and in 2050 plastic will exceed fish.

In the XX century, global population quadrupled, exceeding 6 billions of inhabitants, industrial production grew 40 times and energy consumption 16 times, the livestock – including the methane it produces – increased proportionally to the population, fishing increased 35 times, CO<sub>2</sub> and SO<sub>2</sub> emissions increased tenfold.

Experts in the field of ecology compute that the 40% of the net energy produced on the Earth from photosynthesis, is now allocated to the satisfaction of human activities. These data give an idea of how much our presence weighs on the planet and reveal that, in a little more than a century, mankind has damaged the environment more than ever (Dasgupta, 2007).

So, there are many effective agreements between Europe and other countries in order to reduce environmental damage due to human behavior.

Ursula Von Der Leyen, actual European Commission's President, launched the common Green New Deal with the total decarbonization in all Europe by 2050 as the aim.

My aim is to study some strategies that each company should comply with, in order to respect nature and have a better sustainable development.

I will focus on analyzing, studying and valuing how a real company is taking a green path, that should lead to an economic and productive improvement of the company.

In this thesis, I would also like to discuss about green economy, the incentives and the benefits for the companies and the institutions' role in the prevention from environmental pollution.

I will introduce some tools and methods (sustainability performance indicators) in order to assess, monitor and manage the data collected in a company and, in conclusion, I will present Master Italia S.p.A. and La Sportiva S.p.A cases; the first one finished some

months ago a 2-year project in collecting data with the final goal of developing an environmental sustainable strategy and I'll try to analyze and sum up the data collected. The second one is a company bigger than the first one and it undertook a green path with an ever increasing value that I will try to understand and analyze. I will finish the study with the economical analysis of the businesses in order to understand if the green path undertaken has been profitable or not.

## I – Green economy

Man's relationship with the environment has been subject to change for centuries; today it is particularly evident that this link is founded in reality by man's motivations: nature can be an element of the ecosystem to be protected or exploited, therefore it is charged with symbols attributed arbitrarily in order to pursue the achievement of own goals.

Sometimes, the environment can be invested with meanings that change its use and the idea that it has. An example is tourism, where travel is the main purpose of the social actor; in this case the meaning of nature is an end in itself and does not bring with it further values.

Human ecology, that is the subject that studies man's dependence on the environment and the effects it causes on the environment, highlights how human activities have a major impact on ecosystems. In the type of relationship that is established between the two elements – man and nature –, the type of society (and - consequently - of social organization) that is taken into consideration has a great impact, since values, knowledge and education shape the man's vision of the world and, at the same time, they change his interpretations and actions. In fact, a traditional type of company will have a much lesser impact than a consumerist one, both in terms of the exploitation of raw materials, both in the use of fossil or renewable energy, and in the use of hectares of land for production.

If attention is paid to natural resources (fresh water, fishing grounds, the atmosphere and, more generally, ecosystems), there are clear indications that the rate at which we are currently exploiting them is unsustainable.

In fact, ecology remember that ecosystems may not cope with the impact of human activity, and that science and technology alone cannot solve the problem; therefore, alternative solutions must be found that look at the complexity of human and environmental systems.

In fact, as it is said above, technological innovation and regulatory provisions are not sufficient to achieve the goals foreseen by human ecology, in the absence of widespread cultural awareness, thanks to which good sustainability practices can be done (Tacchi, 2011).

This assumption justifies the importance of educational paths and highlights the close link between sustainability education and social responsibility, involving both producers and consumers in the green economy.

For this, the Green Economy must be subjected to a critical analysis, so that the conflict dynamics connected to the social representations of environmental risks can be highlighted and publicly discussed.

Below, a model in order to better understand the relationship between man and nature.

## **1. Why environmental sustainability?**

It is clear that the performance and the success of a company are linked to green practices and sustainability.

This is an increasingly important business and organizational challenge that companies are starting to face.

Adopting sustainable practices makes companies aware of their environmental impact and it stimulates them to rethink their management systems. At the same time, companies can contribute to the resolution of some main problems of modern society. Caring for Climate, a sub-group of the United Nations Global Compact suggests that companies should adapt their business model through initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects (UN Global Compact, 2011).

Businesses, as fundamental cells of a given economic-social fabric, represent prime factors and engines of every change; regardless of the size, the sector in which it operates, the structure and the main purpose pursued, there can be no company without context. When we talk about Corporate Social Responsibility (CSR), or generally about corporate ethics, it is no coincidence that we refer - often or in part - to the growing awareness of the impact that human action has on the one hand on business environment, on the other on its stakeholders who interact in it. The environment offers opportunities and threats, and acts as a flywheel and at the same time as a limitation to corporate action. Hence, the need to include the environment itself within corporate strategies and processes, to 'bring it within the equation', so that it becomes (and in fact is in advance) a corporate stakeholder at all the effects, nowadays unavoidable. An

outside-in vision, considers the impact of changes by the natural environment on the business organization and on its performance, while an inside-out vision tends to oppose and prevail more and more and it is focused on the consequences of business activity on the environment. Companies therefore face pressures from their environment and external context, which in turn influence operations, decisions, core values, missions, and strategies. These pressures, for their part, involve responses of varying degrees, shapes, intensities, dimensions and depths.

The new paradigm is based on this shift towards a more voted approach to stakeholders and the care of their interests, whose genesis can be found in the Our Common Future report of the World Commission on Environment and Development (WCED) - the Brundtland Commission - of 1987, where sustainable development is defined as development "that meets the needs of the present, without compromising the ability of future generations to meet their own needs" (The World Commission on Environment and Development (WCED), 1987). Future generations, in other words, must not be left in worse conditions than today, which means "limiting environmental degradation, conserving the global environmental capital stock, preserving the functions of the ecosystem, and improving the quality of the life" (Worthington, 2012).

The concept - apparently oxymoronic - of sustainable (permanence) development (movement) is to be understood not as immutable, but as a continuous process, which promotes the three fundamental and inseparable pillars of development, i.e. economic, socio-cultural, and environmental dimension. Hart and Milstein (2003) say that "a sustainable enterprise is one that contributes to sustainable development by delivering simultaneously economic, social, and environmental benefits—the so-called triple bottom line".

Environmental sustainability is precisely the ability of an economic system to enhance the environment, while guaranteeing the protection and renewal of natural resources, and above all the ability to preserve over time the three functions recognized to the environment, that is to be: receptor waste; supplier of materials; and direct source of utility (Pearce & Turner, 1990).

There's a new way of conceiving green economy, as "an economy that generates growth, that creates jobs, and that eradicates poverty by investing and safeguarding the resources of natural capital, on which the survival of the planet depends" (Commissione

Europea, 20 giugno 2011) .This is a new economic model through which to create the necessary premises for the progress of society as a whole, and to pursue that same sustainable development (Amerighi & Felici, 2011); a way to manage the change towards a model of sustainable development, through economic, legislative, technological and social measures that set the following main goals: the general reduction of the consumption of energy and natural resources, the almost total use of alternative and renewable energy sources, the reduction of greenhouse gas emissions, the tendency to zero out any type of waste, promoting sustainable production and consumption patterns, the use of technologies capable of increasing the energy efficiency of machinery, homes, plants and cities, and therefore potentially capable of identifying new fields of application and new sectors, so employment and economic development.

Corporate sustainability means adopting green practices in the company, such as tools and organizational structures aimed at reducing the impact of the company's activity on the ecosystem and at implementing a strategy oriented towards environmental sustainability.

More in detail, it takes on declinations essentially attributable to 5 areas of activity:

- Production of energy from alternative and renewable sources,
- recovery of waste and products (circular economy),
- logistics optimization,
- product innovation,
- efficiency in production processes and / or staff structures.



## 2. DPSIR Model

The theme of the relationship between man and the environment is fundamental because environmental education must be aimed at making people understand the complexity of the relationships between nature and human activities, between inherited resources to be transmitted and the dynamics of their production and consumption, between the needs of the socio-economic development of the community and, at the same time, of the maintaining the quality of the environment.

The picture of human-environment relationships is extremely complex. A model is needed to bring order to the multiplicity of components and relationships. There are many useful patterns for observing, investigating, clarifying phenomena and seeking solutions to problems; but, the most specific and exhaustive is the DPSIR model.

The DPSIR model, developed by the European Environment Agency (EEA), represents a conceptual approach which is able to synthetically represent the set of elements and relationships that characterize any environmental theme or phenomenon: it tends to describe the cause-effect sequence between anthropogenic actions (driving forces and pressures), conditions/quality of the environment (states and impacts) and actions to resolve any critical issues (responses).

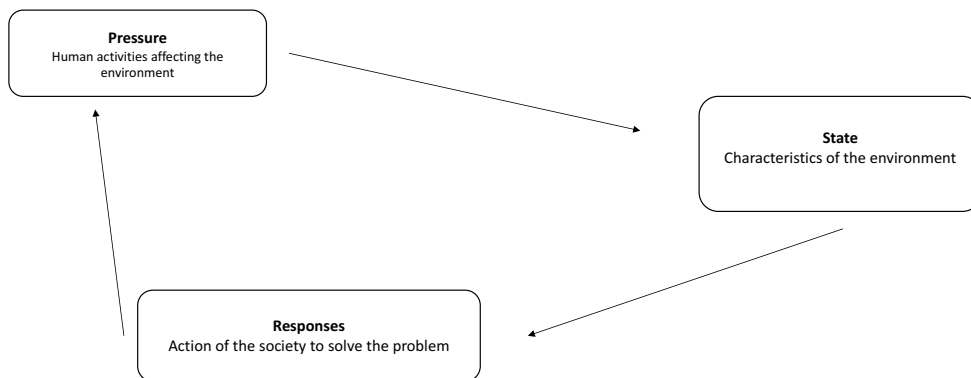
Parallel to the opportunity to represent the complex of the environmental system integrated with human activities according to the DPSIR model, the integration of the related accounting systems is under development, the financial one (traditionally represented through GDP and all other indicators economic) and the environmental one (under definition and construction). This formal integration process is becoming official practice in the national accounts of OECD countries.

The DPSIR framework has been used for many environmental resource applications, including management of agricultural systems (Kuldna, Peterson, Poltimäe, & Luig, 2009), water resources (Mysiak, Giupponi, & Rosato, 2005), land and soil resources (Gisladottir & Stocking, 2005), biodiversity (Maxim, Spangenberg, & O'Connor, 2009) and marine resources. The DPSIR model also can be used to integrate social, cultural, and economic aspects of environmental and human health into a single one framework. DPSIR has most commonly been used in the context of environmental management to link ecological and socioeconomic factors (Bradley & Yee, 2015).

It is the evolution of the PSR model.

Shortly, the PSR model schematizes the complexity of territorial systems by identifying three main components:

- Pressure,
- State,
- Responses.



*Figure 1: PSR model structure.*

It highlights the upstream existence of pressures on the environment caused by human activities, which by taking resources and interacting with the surrounding environment (scraps, emissions, waste, land use, etc.) produce impacts on the natural environment. The state of the environment is therefore determined by the quality level of the different matrices (water, air, soil, etc.)

These two elements - pressure and state - determine the responses of the administration (plan, interventions, projects), implemented to face the pressures and improve the quality of the environment.

The elements of the new model (DPSIR), which is an evolution of the previous one, constitute the nodes of a circular path that includes the perception of environmental problems, environmental monitoring, the formulation of measures, the assessment of the effectiveness of the measures taken.

The five categories are identified and explained below:

- Driving forces
- Pressures
- States
- Impacts
- Responses

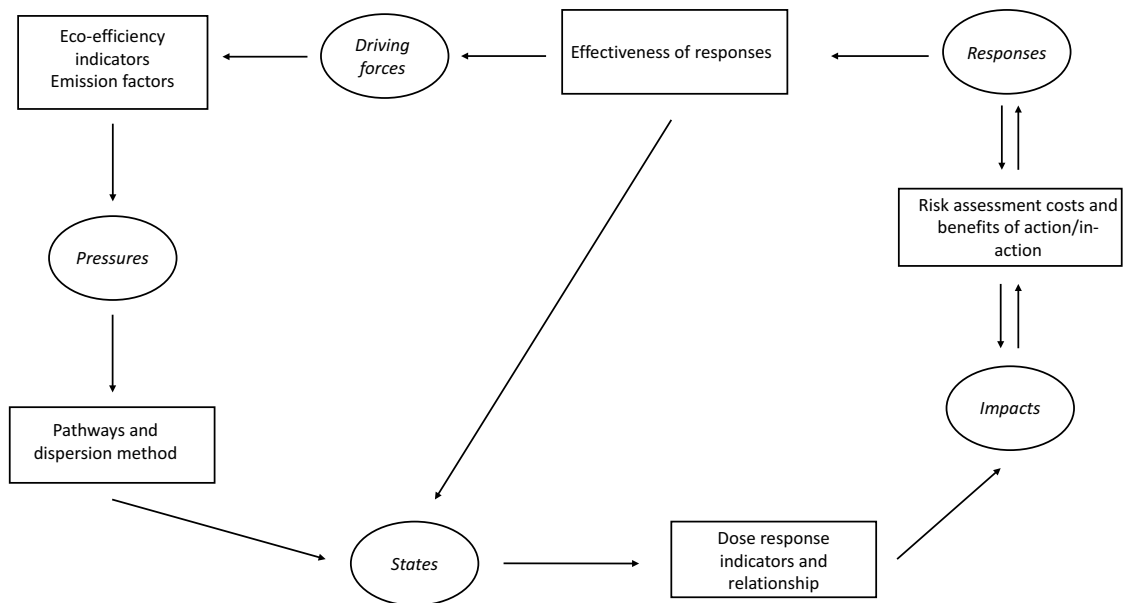


Figure 2: The DPSIR Framework. The DPSIR Framework (P. Kristensen, 2004)

## 2.1 Driving Forces

Driving forces represent the primary generating causes of environmental problems concerning economic and social activities that influence a range of relevant environmental variables. For instance, agriculture, industry and transport.

They are the factors that motivate human activities and fulfill basic human needs, which have been consistently identified as the necessary conditions and materials for a good life, good health, good social relations, security and freedom (Bradley & Yee, 2015).

Driving forces describe the social, demographic, and economic developments in societies (Gabrielsen & Bosch, 2003).

## 2.2 Pressures

Pressures describe the variables that directly cause environmental problems. For instance, atmospheric emissions, road traffic noise, industrial discharges and waste.

They are identified as human activities, derived from the functioning of social and economic driving forces that induce changes in the environment, or human behaviors that can influence human health (Bradley & Yee, 2015).

They are driving forces' effects.

Pressures are divided into two classes:

1. Environmental Pressures
2. Human Behavior Pressures

Talking about the environment, pressures are identified as a particular activity that implies a causal correlation between that activity and an environmental change (Bradley & Yee, 2015). For instance, they can be discharges of pollutants (pesticides, insecticides, smokestack emissions, etc), land-use changes (hydrologic modifications, land development, etc) or contact uses -manipulation of the environment – (dredging and filling, ballast discharge, fishing, harvesting, etc).

Instead, Human Behavior Pressures are defined as human activities that can increase the chances of developing a disease, disability, or syndrome (Bradley & Yee, 2015).

Regardless of the Environmental Pressures - that influence nature -, Human Behavior can affect human health. In fact, it includes self-care actions (nutrition, personal hygiene, medical care,... etc), lifestyle decisions (exercises, resource use and recycling, housing choice, tobacco and/or alcohol use,... etc) and mobility (walking, biking, driving car,... etc).

## 2.3 States

States show the current condition of the environment.

For instance, the quality of water, soils, air, the level of biodiversity, the noise levels near main roads.

Taking into account a certain area, states are related to the state of the natural and built environment (Bradley & Yee, 2015), giving an idea of the quantity and quality of physical (Gabrielsen & Bosch, 2003), biological and chemical phenomena.

Exploiting the environment, the status of this is altered and its functions change, because some resources can run out, biodiversity can be change or be lost.

Now, states can be described in two ways:

1. Environmental states
2. Human system states

Environmental state comprises the Abiotic state and the Biotic state. The first one includes - among other things - the climate, the temperature of the air and of the seas, the atmospheric level of CO<sub>2</sub> and the human-made constructions, like roads and buildings. The second one includes humans, the other ecosystem's biological elements and their interactions, for instance, sessile animals or plants.

Instead, human "health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO, World Health Organization, 1946). This comprises the environment: for instance, the green space.

## 2.4 *Impacts*

Impacts describe the ultimate effects of state changes.

For example, the impact on health (this can be the percentage of children suffering from health problems caused by lead), on ecosystems and on the economy.

Physical, biological or chemical changes in the state may have environmental or economic 'impacts' on the functioning of ecosystems. In fact, in DPSIR framework, impacts regulate ecosystems' quality and human being's welfare.

## 2.5 *Responses*

Responses show the society's measures to solve environmental problems.

They are actions taken by groups or individuals in society and government to prevent, compensate, improve or adapt to changes in the state of the environment (Bradley & Yee, 2015).

They can be laws (maximum level of atmospheric emissions allowed), plans, prescriptions, projects.

They can be split out, following the previous categories of DPSIR framework, in this way:

1. Driving Forces-based Responses
2. Pressure-based Responses
3. State-based Responses
4. Impact-based Responses

Driving forces can be controlled by responses through economic decisions or policies, including: food and energy policies (hunting and fishing policies, tests on emissions, credits on carbon, etc...), health policies, cultural policies (environmental and tourism education), trade and manufacturing policies (environmental compliance) and decision support tools (cost-benefit analysis, statistical analysis, trade-off evaluations, etc...).

Responses may also seek to control pressures through regulation or technology that limit human activities, or decisions designed to modify human behavior (Bradley & Yee, 2015), including: discharge limitations (monitoring and limiting pollution), technological innovations (using alternative energy sources like wind or solar power) and land-use management. The aim should be to modify human behavior, leading man to have healthier lifestyles throughout education programs, for instance one goal should be using more public transport systems.

Even the state of environment may be affected by responses, for instance throughout air and water monitoring and setting their criteria of quality.

Lastly, social, economic and environmental impacts can be compensated or quantified by suitably designed responses, monitoring the decisions taken and valuing the ecosystem services.

### **3. Is it worth to be green?**

The question to ask is: does being green pay? To address this, from a business point of view, caution should be carried.

Most of the time, companies focus on innovation and customer satisfaction, through the quality of the products and services offered, to achieve long-term benefits, leaving out elements such as people, the environment, governance and reputation. As it can be

seen in figure 3, this is a movement that has been started years ago and now it is becoming more and more relevant in the decision-making phase of people as consumers.

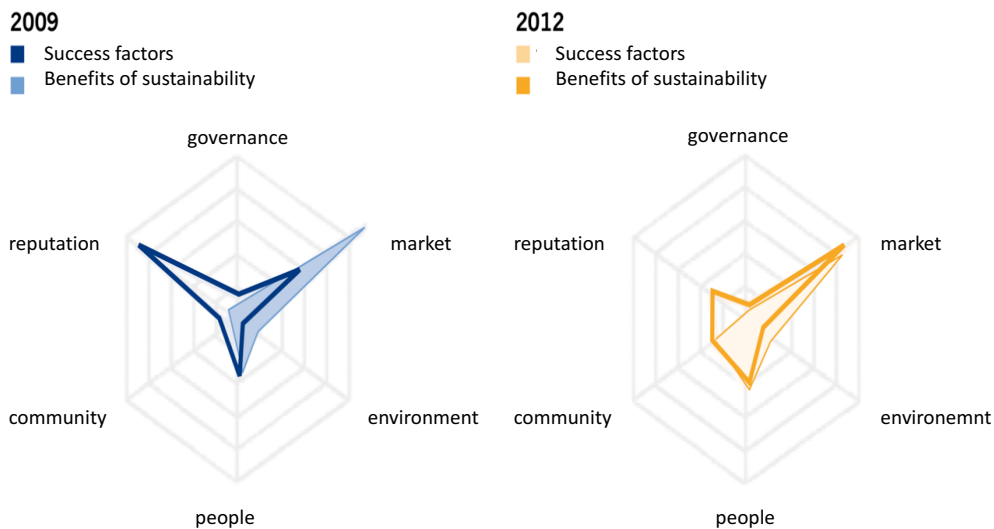


Figure 3: How the success factors are evolving. *Tempi insostenibili? Secondo report su sostenibilità e competitività. (Cici, Gallotti, Brambilla, & Rossetti, 2012)*

Research carried out by Accenture in 2011 in North America, Great Britain and China showed that, initially, in 72% of cases the results of sustainable initiatives are underestimated (Cici, Gallotti, Brambilla, & Rossetti, 2012), finding benefits that exceed the initial expectations, as it will be seen below.

The starting assumption should be that the corporate greening process must become routine and widespread culture in order to be defined as such. It must be literally introjected. This condition is considered necessary, but not sufficient for a company to be considered ecologically sustainable. The logical and practical leap is given by putting into practice all those actions attributable to the corporate environmentalism mentioned above.

In the last decade, people have started to ask with more and more strength, due to the great echo that this issue has acquired, environmentally friendly, sustainable, healthier products and services that respect the environment and that they do not give up in terms of trade-off price-quality. For anthropological and social reasons, also related to

communication, people prove increasingly attentive to certain issues, more easily informed, impressionable and pretentious. Reducing their environmental impact, businesses undoubtedly obtain advantages, managing to match the expectations of stakeholders and the community and achieving the market benefits which will be explained in the following paragraphs.

### 3.1 Help the environment

Adopting sustainable practices makes companies aware of their environmental impact and stimulates them to rethink their management systems.

At the same time, businesses can help to solve some of the major problems that the modern society is facing.

In Italy, 4,334,664 companies with up to 250 employees emit around 82 million tons of CO2 each year with an average of about 20 tons per company.

### 3.2 Reduce costs, increase turnover

Companies that invest in sustainability have higher returns than those that don't. Several researches show that companies that have invested in sustainability tend to improve profitability and increase market share.

Furthermore, becoming sustainable leads to a better use of resources, reducing operating costs and eliminating unnecessary waste - costs - thanks to a general increase in business efficiency.

In 2011 KPMG, in collaboration with the Economist, carried out a survey called "The corporate sustainability: a progress report". It lists the main benefits that are derived to some major US companies from the application of sustainability practices. Up to business managers, in 34% of cases these strategies have allowed the company to reduce its costs. Even a recent market research carried out by Buck Consultant, relating to a sample of 100 American companies of various sizes and operating in different sectors, confirms the growing presence of green programs that are undertaken above all in search of economic advantages and cost reductions. The strongly cost saving motivation for the development of sustainable practices is confirmed by the fact that



60% of the sample claims to have achieved cost savings up to 39% in relation to the use of the main energy inputs and natural resources such as water.

In 2014 the green companies (22%) that increased the turnover were double the other companies (10.2%). (Source: Relazione sullo stato della green economy in Italia, 2015)

### 3.3 Increase in brand value and development of competitive advantages

There is no doubt that sustainability increases the brand value and improves the corporate image. Poor environmental performance can cause serious reputational damage that is difficult to recover.

The NMI research institute in the USA, specialized in the wellness sector and in the analysis of green trends in all industries, says that, from 2002 to today, the number of consumers attentive to sustainability has been continuously increasing.

Consumers tend to lean towards the purchase and consumption of products made by companies aware of their environmental impact and who are working seriously and hard to reduce it.

Furthermore, according to a study by the BBMG Conscious Consumer Report, about 9 Americans out of 10 more willingly - for the same price and quality - buy products made through efficient use of energy (90%), are attentive to the health and safety of their purchases (88%), support companies that undertake fair trade actions, defining themselves as aware consumers (87%).

An other research states that 73% of consumers are interested in the company from which they buy and not exclusively in the product. (Source: BBMG)

### 3.4 Improvement of financial opportunities

A healthy company has more chances of receiving funding from private or institutional investors. Nowadays, investors are looking for companies that can grow with social and environmental integrity, to create solid foundations with other partners for the development of a lasting and successful businesses.

Financial analysts recognize the propensity to develop sustainability plans as a company evaluation criterion. In particular, attention is paid to actions for energy efficiency and the reduction of environmental impact.

Already in 2011, according to Global 500 Report 2011, created for the Carbon Disclosure Project (CDP) by the Price Waterhouse Coopers Advisory, there was found out a positive correlation between environmental performance and financial results.

Most committed companies to the ecological front rewarded investors with a yield twice higher than the average in the period 2005-2011. Now that the phenomenon is fortunately increasingly widespread, even higher returns can be imagined.

In this regard, financing programs have been created for the most deserving companies. Horizon 2020 is the largest research and innovation program ever created by the EU, with nearly 80 billion euros of funding available for a 7 year period (2014-2020). To have access to these loans, companies must submit to a very stringent set of rules.

### 3.5 Attraction and maintenance of human resources

Proactive companies towards environmental problems are those that attract the most motivated and talented human resources and that remain faithful over time.

The first research on the topic of sustainable management of human resources in Italian companies, carried out by the CSR manager network Italy, the association that brings together those responsible businesses for environmental and social policies of the major Italian companies indicates a strong alignment between CSR Managers (87.5%) and HR managers (80.5%) who consider CSR as an essential strategic element for the long-term development of corporate competitiveness.

It has been proven that working in a company where sustainability is incorporated into business strategies increases employee motivation and morale, as well as attracting new talent.

One of the ways to achieve the profound cultural transformations mentioned above is to leverage training programs through which workers feel more involved in the corporate values.

In fact, various benefits can be obtained by implementing specific training programs on environmental issues:

- to increase the level of involvement and sensitivity of staff towards environmental issues;
- to increase the company's image;
- increase staff awareness of the company's environmental impact.

### 3.6 Risk minimization

According to Ernst & Young, the top 10 risks for companies stated in his "Business Risk for Business" report include failure to comply with environmental laws and regulations and the risks associated with the use of fossil fuels whose availability is intended to decrease, and therefore costs to increase, over the next decade. So, companies will be able to cope with and not find themselves without such possible situations of difficulty only if they become aware in advance of the need to develop policies aimed at the use of sustainable energy sources and the reduction of their carbon emissions.

## 4. Role and incentives of institutions

The concept of sustainability has a multidimensional nature and each dimension aims to pursue specific objectives, such as economic, ecological and social ones. Furthermore, the concept is characterized by a dynamism in which it changes hand in hand with the economic, social and cultural systems to which it refers.

According to Huckle and Sterling (1996) as freedom, justice and democracy, sustainability does not have a single recognized meaning. In fact, it changes its meaning according to the different ideologies and the different programs promoted by different values, knowledge and philosophies.

Sustainability can be understood as a global public good (Kaul, Grunberg, & Stern, 1999), whose production is of global public relevance and whose usefulness goes beyond national and regional borders to embrace more groups of populations not only with reference to the territorial condition, but also from the socio-economic and generational point of view.

The challenge is complex either on the intellectual level because it requires a profound transformation in organizing scientific knowledge and research, either on the

operational level, that is the institutional one. Institutions (supranational, national and local) are the main actors as regards the government and the guide for an effective transition of modern societies towards sustainable systems.

In other words, institutional change must go hand in hand with scientific change. The role of institutions, through the implementation of adequate intervention policies, is crucial in putting into practice the principles dictated by the new scientific paradigms on sustainability.

The presence of a general system of public policies, that pursues the objective of sustainability and within it sustainable projects are integrated, is therefore essential.

The institutions are currently facing a scenario characterized by:

1. Global consumption of material resources increased by around 14 times from 1900 to 2015, which according to the forecasts of the European Commission (2018) should more than double between 2015 and 2050.
2. A 60% decrease in the vertebrate population in the world (WWF, 2018).
3. An increasing and alarming rate of global greenhouse gas emissions (European Commission 2019)
4. Phenomena such as poverty, inequalities and the slowdown of social mobility which are further aggravated by the great differences in population growth and living standards in the world and by the constant rise in global temperatures and the disappearance of ecosystems.

Currently the two largest lines of action on a global scale are: the 2030 Agenda which includes the 17 objectives for sustainable development signed by 193 countries and the Paris Climate Conference (COP21).

These agreements are the expression of a widespread awareness that issues such as sustainable development and climate change must be dealt with on a global scale, under the assumption of common responsibility.

Clearly the success or failure of these lines of action will depend on the concrete implementation of policies developed by governments, on the support of international institutions, on the participation and contribution of the private sector, civil society and the scientific community.

This part of the work wants to focus on how the institutions have translated the concept of sustainability into action strategies over time.

From here, the discussion is declined on sustainable infrastructure investments which represent a particular tool for implementing sustainability policies.

#### 4.1 International institutions' role

Rethinking a world management focused on sustainability should be at the top of the political and economic, international and national agendas.

The value of sustainability has become a necessity and an essential condition for society, however it is problematic to develop economic-political prescriptions suitable for it, involving more realities.

Advances in researches culminating in the emergence of sustainability science could allow for a more refined and comprehensive definition of sustainable development and ultimately contribute to the implementation of adequate policies.

In this regard, some scholars argue that the science of sustainability is also the science of sustainable development.

In terms of policy, the definition of sustainable development goes back as mentioned previously to the Brundtland commission in 1987.

Starting from the diffusion of the report, the principle of sustainable development therefore acquires a multidimensional meaning by embracing issues of environmental protection, preservation of natural resources, economic development and social progress as the right to development of the poorest countries.

Subsequently in 2002, during the World Summit on Sustainable Development (WSSD), it emerges more clearly that sustainable development represents the only way to achieve socio-economic growth that also takes into account environmental issues and build a more equitable social structure in towards future generations.

2015 is an important year in which the international community and institutions have set clear and ambitious goals.

Particularly, three crucial events occurred in that year:

1. the Third International Conference on Financing for Development;
2. the UN summit that adopted sustainable development goals and the 2030 Development Agenda;
3. the UN Climate Change Conference.

In light of these events, the three major challenges facing the global community are:

1. Rekindle global growth
2. Achieve the Sustainable Development Goals
3. Investing planet's future through strong climate action.

In the community context, the principle of sustainable development is defined in the community treaties as a guiding principle of legal nature.

In particular, with the Amsterdam Treaty of 1997, the principle of sustainable development qualifies as a legal principle and foundation of community policies and actions.

#### *4.1.1 Past environmental policies*

In 2001, in Gotemborg, the European Council approved for the first time a strategy for sustainable development which is subject to systematic monitoring by Eurostat through a set of indicators specifically prepared (Sustainable Development Indicators).

Since 2010, the European Union has adopted a ten-year strategic framework for growth and jobs: the "Europe 2020" strategy, which will have to be integrated with the new 2030 Agenda and the SDGs in order to avoid the coexistence of different and inconsistent agendas.

Some other European funds and funding between 2014 and 2020 for environmental sustainability are Life 2020, a program that has allocated 3,456 billions to the environment and the climate, whose calls have supported various types of projects - traditional, integrated, technical assistance, capacity-building and preparatory services - and included operating grants for NGOs and support through two financial instruments managed by the European Investment Bank (EIB).

Attention is also paid to sustainability in the Horizon 2020 research and innovation program.

In the 2018-2020 work programs, over 5 billion are dedicated to issues related to this aspect.

To encourage the transition towards a greener and more efficient economy, in line with the SDGs and the Paris agreement, the Commission makes little more than a billion

available in the final two years of programming, concentrating resources on these priorities:

- climate actions in support of the Paris Agreement;
- circular economy;
- raw materials;
- water for our environment, the economy and the society;
- innovate cities for sustainability and resilience;
- protect and exploit the value of our natural and cultural heritage.

Two billion are then dedicated, again in the 2018-2020 period, to the "Health and demographic change" work program, which focuses on a series of challenges in line with various sustainable development objectives: from aging populations to rising costs health, through access to health care.

Lastly, 2.2 billion are dedicated to the "Energy" work program for activities related to the priorities of the Energy Union, in line with the objective 7 of the 2030 Agenda:

- renewable energy;
- intelligent energy systems;
- energy efficiency;
- carbon capture utilization and storage (CCUS).

#### *4.1.2 Environmental policies for the future*

Instead, in post 2020, there is an even more determined direction towards sustainability, with the proposals of the European Commission for the EU budget 2021-2027: not only a quarter of the total resources will be dedicated to the climate; but investments must also have a strong orientation in this regard.

The areas indicated below are the areas of intervention of InvestEU, the fund that will bring together the currently existing financial instruments with the aim of mobilizing investments for 650 billion euros for:

- Sustainable infrastructures with guarantees of 11.5 billion for the financing of projects in renewable energy, digital connectivity, transport, circular economy, water, waste and other environmental infrastructures;

- Research, innovation and digitization with guarantees of 11.25 billion for the financing of research and innovation projects, commercialization of research results, digitization of industry, support for innovative companies, artificial intelligence;
- Support for SMEs, with guarantees of 11.25 billion to facilitate access to credit for small and medium-sized enterprises, and in duly justified cases, for small-sized enterprises;
- Social investments and skills growth, with guarantees of 4 billion for the financing of projects in skills, education, training, public housing, schools, hospitals, social innovation, long-term assistance and accessibility, but also microfinance and social entrepreneurship.

#### 4.2 National institutions' role

The national strategy for sustainable development (SNSvS – Strategia Nazionale per lo Sviluppo Sostenibile), approved by the Interministerial Committee for Economic Planning (CIPE) on 22 December 2017, defines the guidelines for economic, social and environmental policies aimed at achieving the objectives of sustainable development by 2030.

The SNSvS is structured in 5 areas, corresponding to the "5P" of sustainable development proposed by the 2030 agenda:

1. People: to promote health and well-being to ensure conditions for human capital development;
2. Planet: to guarantee sustainable management of natural resources, combating the loss of biodiversity and protecting environmental assets;
3. Prosperity: to affirm sustainable models of production and consumption, guaranteeing quality employment and training;
4. Peace: promoting a non-violent and inclusive society that fights illegality;
5. Partnership: to intervene in the various areas in an integrated manner.



The document also identifies a system of sustainability vectors, defined as transversal areas of action and fundamental levers for launching, guiding, managing and monitoring the integration of sustainability into national policies, plans and projects.

At national level, the implementation of the SNSvS must be linked to the existing documents, in particular with the Programma Nazionale di Riforma (PNR) and more generally the Documento di Economia and Finanza (DEF).

Furthermore, the proposed actions and operational instruments must be reconciled with existing and binding Community objectives. Indeed, the EU is also committed to the transposition and definition of the principles of the 2030 Agenda for sustainable development; hence, the methods for declining the objectives at Community level are intended to represent an important indication for the member countries in defining their respective strategic objectives.

Central and regional administrations, the world of research and academia were involved in the development phase. As for citizen participation, a bottom up approach was adopted, which enhanced the collection of requests and contributions capable of contributing to the identification of challenges and priorities to be addressed.

In addition, on 6 September 2018, the Foreign Affairs Commission unanimously approved the conduct of a fact-finding survey on Italy's international action for the implementation of the 2030 Agenda for sustainable development.

The survey, which ended on 31 December 2019, aimed to focus on Italy's contribution to achieving the objectives of the 2030 Agenda for sustainable development.

In continuity with the results of the surveys previously promoted, the survey aims to promote a timely verification of the adequacy and effectiveness of the regulatory instruments, of the organizational and financial resources made available by Italy for the implementation of the sustainable development objectives, monitoring at the same time, five years after the sector reform, the functionality of the Italian development cooperation system, which finds its reference time horizon in the 2030 Agenda.

A further purpose of the investigation is the evaluation of initiatives, financial aspects and any relations with international institutions useful to qualify the Italian position on the various global issues, as well as the identification of the most appropriate ways to give greater visibility, especially in the European offices, to the Italian commitment for the realization of the 2030 Agenda.



## II – Environmental Performance Indicators

### 1. What are environmental indicators? Why do we need it?

Sustainability is to “meet the needs of the present without compromising the ability of future generations to meet their own needs”. (The World Commission on Environment and Development (WCED), 1987)

When a decision involving sustainability aspects needs to be made, it requires scientifically based information on sustainability. This has been a new challenge for providing rational, coherent and transparent decision support towards sustainable consumption and production pattern. (Dong & Hauschild, 2017)

The word "indicator" comes from the Latin verb *indicare*, which means to disclose or point out, to estimate or to make publicly known. The indicators provide information on objectives such as sustainable development. An indicator is a quantitative or qualitative proxy that informs on performance, result, impact, etc. without actually directly measuring it. For example, a low carbon footprint indicates a low environmental impact for the category climate change, but it does not measure the impact, it refers to greenhouse gas emissions, i.e. the environmental pressure. (Pihkola, Pajula, Tapia, Ritthoff, & Saurat, 2017)

Alongside safety and quality, one of the characteristics increasingly requested by the market is the attention to the environmental sustainability of the products. The main motivation lies in the consolidated awareness that there is no development without sustainability.

The birth of initiatives capable of regulating the excessive exploitation of environmental resources and promoting sustainable development represents a response to the ecological and social impact of globalization. Among these, sustainability standards are often imposed in numerous production areas, for example, the obligation to put labels on household appliances to identify their energy consumption class.

“Communication is the main function of indicators: they should enable or promote information exchange regarding the issue they address. Our body temperature is an

example of an indicator we use regularly. It provides critical information on our physical condition.” (Gabrielsen & Bosch, 2003; Gabrielsen & Bosch, 2003)

Similarly, environmental indicators provide information and answers to the problem that are regarded for.

Communication demands simplicity. Indicators always simplify a complex reality. (Gabrielsen & Bosch, 2003)

They make information easily accessible to the customer and sometimes they are numerous in some areas and often the abundance of indicators and certifications conveys environmental quality in that specific area.

The system quality is assessed through indicators and corresponding methods.

Moreover, in relation to policy-making, environmental indicators are used for four major purposes:

1. To supply information on environmental problems, in order to enable policy makers to evaluate their seriousness;
2. to support policy development and priority setting, by identifying key factors that cause pressure on the environment;
3. to monitor the effects and effectiveness of policy responses;
4. to raise public awareness on environmental issues. Providing information on driving forces, impacts and policy responses is a common strategy to strengthen public support for policy measures. (Gabrielsen & Bosch, 2003)

### 1.1 Selecting sustainability performance indicators

Several indicators for environmental performance evaluation exist, but companies should now strive for internal development of indicators from the principle.

It will give a sense of gaining the environmental values and the needs of the business.

Before the choice of the indicators, companies have to set the objectives of the performance assessment.

In general, the selected performance indicators should enable enterprises in the following:

- to identify the areas where performance improvement options are most feasible (preferably using preventive measures);

- to assess whether the objectives and targets have been achieved;
- to assess legal compliance;
- to assess effectiveness of implemented measures; i.e. to assess the progress of particular projects;
- to enable development of the sustainability report that meets the requirements of key stakeholders. (Staniskis & Arbaciauskas, 2009)

Moreover, the selected indicators should have the following three criteria:

- Understandable: indicators should be simple to understand, use, and implement by non-experts.
- Applicable: indicators should be applicable to manufacturing industry and represent key concerns of local SMEs.
- Relevant: indicators should be directly relevant to continuous sustainability improvement. (Tan, Yeo, Ng, Tjandra, & Song, 2015)

Indicators provide useful information about the system that can be used to report its state and verify changes and usually the best approach is using the combination of quantitative and qualitative indicators.

Another particularly fundamental aspect to take into account in the indicators selection is the use of the product life cycle approach. In fact, companies usually tend to analyze and measure only the internal production performance and general economic indicators.

Instead, there are cases in which the use of the product weighs more on the environment than its production phase.

Finally, there are the following key requirements for environmental sustainability performance indicators, to develop an operating system that brings value to the business:

1. Comparability/measurability – indicators should help identify performance changes;
2. Meaningfulness – indicators should help identify losses, performance improvement options and increase decision-making effectiveness;
3. Integrity – indicators should cover all main aspects of sustainability;

4. Continuity – indicators should be used continuously (including the same measurement methods) to enable tracking of changes;
5. Clarity – indicators should be clear and specific to avoid misunderstandings;
6. Efficiency – indicators system should be reasonably simple to be functional and resource efficient. (Staniskis & Arbaciauskas, 2009)

## 1.2 How to evaluate sustainability performance in enterprise

Sustainability performance evaluation does not end with the selection of indicators. Indeed, eliminating the gap between the development of a measurement system and its implementation could be the solution.

A study conducted at the University of Alberta in Edmonton, Canada revealed that it is truly important to consider the role of indicators throughout the management system, from the beginning to the use of existing management systems to successfully implement them.

It is therefore necessary to develop and implement a well-structured performance evaluation methodology to ensure that management objectives are met. (Coelho & Moy, 2003)

So, it can be stated that performance evaluation systems and management systems are complementary, supportive and they should be integrated.

Here below, some examples of environmental qualitative and quantitative performance indicators in enterprises.

<b>Indicator</b>	<b>High Sustainability Performance</b>	<b>Medium Sustainability Performance</b>	<b>Low Sustainability Performance</b>
<i>Environmental Indicators</i>			
<i>Reduction in energy and water consumption</i>	Everyday search for options to reduce energy and water consumption, technical and organizational energy and water saving measures are used	Analysis of options for reduction in energy and water consumption use is carried out periodically, good housekeeping measures are used	Energy and water saving measures are not used or only obvious saving measures used
<i>Treatment of recyclable</i>	Waste is treated on the site of enterprise	Part of generated waste is treated in enterprise	Generated waste is transferred to other companies
<i>Improvement of product characteristics</i>	Improvement of product characteristics is part of the enterprise's policy	Improvement of product characteristics is done in specific areas	Improvement of product characteristics is not considered

Figure 4: Examples of qualitative environmental performance indicators. Adapted from Sustainability performance indicators for industrial enterprise management (Jurkis K. Staniškis et Valdas Arbačiauskas, 2009)

<b>Indicator</b>	<b>Calculation method</b>	<b>Measurements Units</b>
<i>Environmental indicators</i>		
Cost of air emission treatment	cost of air emission treatment, LTL	%
	total production costs, LTL	
Energy consumption	total energy consumption, kWh	kWh/product unit or ton
	Production, units or tons	
Use of recycled material	Use of recycled material, t	%
	Total material use, t	
Hazardous waste amount reduction due to material substitution	Absolute number	t

Figure 5: Examples of quantitative environmental performance indicators. Adapted from *Sustainability performance indicators for industrial enterprise management* (Jurkis K. Staniškis et Valdas Arbačiauskas, 2009)

Enterprise's sustainability evaluation process is complicated. So, businesses need some recommendations on how to develop the process in order to avoid waste of resources and time.

So, the process of developing the environmental performance assessment system will be explained below.

Generally, planning sustainability performance evaluation process is really similar to any other project. At this point, the decision to plan is made and the next step is the qualitative indicators' selection to evaluate the sustainability performance.

At that point, it is necessary to collect and analyze data and information for qualitative indicators to bring out the positive and negative aspects of the environmental business performance.

Then, sustainability evaluation needs a great amount of data to be analyzed due to both multiple levels (processes, production sites, products) and multiple dimensions (energy and resource use, emission, management). (Staniskis & Arbaciauskas, 2009)

Therefore, it may be useful to assess the relevance of these aspects and focus on the most relevant ones to continue the development of an environmental sustainability assessment strategy.

Quantitative indicators should consider the most relevant sustainable features and other important core aspects (products, services and operations) for the improvement of performance.

In fact, the indicators have the function of informing decision-makers in numbers about the factors linked to environmental impacts and being related to the way of operating. Generally, the material and energy balance is the best way to collect quantitative data and information. In fact, necessary data are marked in the reports and measurement records, although sometimes additional measurements are needed.

At this point, the internal sustainability report which contains the analysis and the study of qualitative and quantitative data is used to inform employees about the current situation, for their involvement in the development of new measures and strategies to improve the ecological performance and to ensure that the values of environmental sustainability are inherent in the corporate culture.

Once the greener strategy has been developed, the efficiency of this measure and the improvement in performance must be assessed.

Finally, the information that emerged from the analysis of the results provides the basis for an external sustainability report.

The last step is therefore to analyze and improve the sustainability performance evaluation system.

Below there is the simplified structural system.



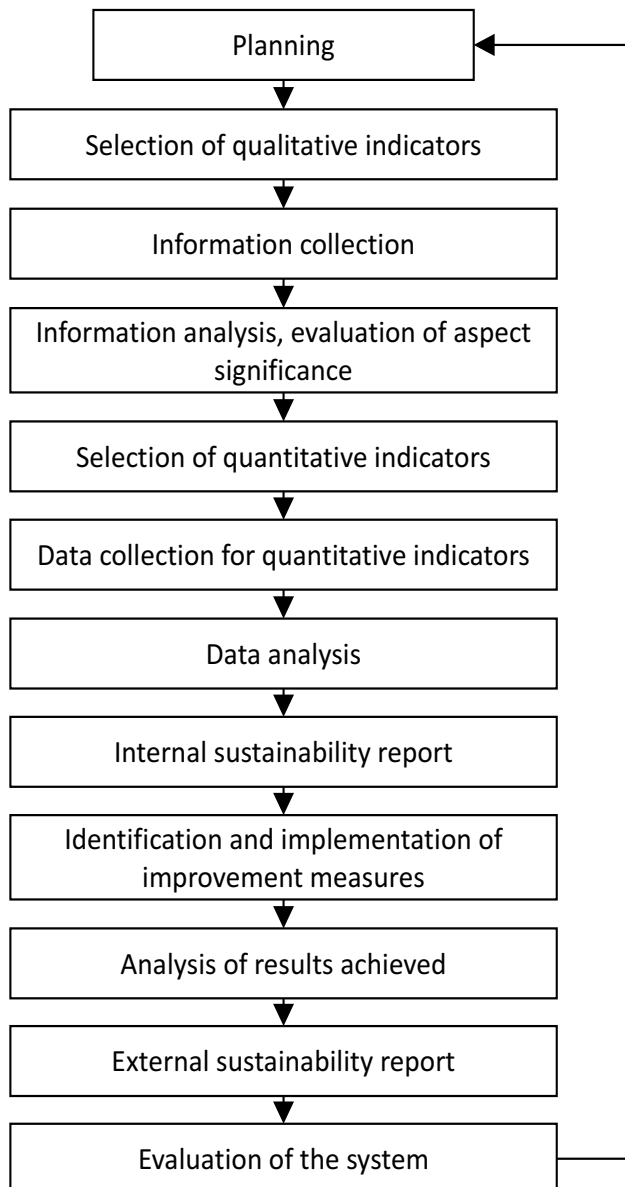


Figure 6: Structural system for sustainability performance evaluation. Adapted from *Sustainability performance indicators for industrial enterprise management* (Jurkis K. Staniškis et Valdas Arbačiauskas, 2009)

## 2. Different fields for indicators

Generally, there are three questions that need to be taken into account and answered considering sustainability of a business or system:

1. What is the system to be protected? Where is the system boundary?
2. What is the time scale?
3. What is the system quality that will be maintained or improved? (Dong & Hauschild, 2017)

The indicators represent a line that expresses the quality of the system to be maintained or achieved and that allows us to understand if things are going better or worse.

Here, the answer to three questions focusing on environmental sustainability assessment methods and their related indicators, although only the second two will be used later.

1. Planetary boundaries define a safe operating space for humanity based on the intrinsic biophysical processes that regulate the stability of the earth system. By estimating impacts towards planetary boundaries, it aims at protecting the functioning of the earth system within an ethical time horizon- short enough to influence today's decisions yet long enough to provide the basis for sustainability over many generations to come. Several key processes are identified and some methods were developed to quantitatively express the boundary level that should not be transgressed if we are to avoid unacceptable global environmental change (Dong & Hauschild, 2017).

By focusing on the stability of the planet Earth system, the planetary boundaries approach tends only to address the impacts on the natural environment and not those on human health for each of the borders were analyzed.

A table with nine planetary boundaries will be presented later. For each of these, indicators have been developed and implemented to help understand the distance from the border and the risk of crossing it.

Since the concept of planetary boundaries is new, the methods of evaluating indicators may have some shortcomings, but this is a simple concept to make people understand the right direction and verify the environmental impacts on an absolute scale, the planet Earth.

2. The LCA approach, on the other hand, quantifies all the resources consumed, their emissions and their impacts on health and the environment.

It will also be used in the following chapters.

By now this method, unlike the "planet boundaries" approach, is a safer method as it is more mature, for which there are also standard certifications, such as the ISO standard (ISO 14040/14044).

LCA - Life Cycle Assessment - is an approach that monitors and detects data in all phases of the product or service. Unlike the Planetary Boundaries approach, it is

relative in that it expresses the impacts on the environment in a non-absolute way. Indeed, it compares the alternatives, making it clear which option is the most sustainable, but is unable to say whether the option is sustainable in absolute terms.

The impacts on health and the environment caused by emissions are assessed using the LCIA - Life Cycle Impact Assessment method.

Indeed, there are many mature and safe methodologies available such as IMPACT 2002+ and ReCiPe.

There are also thirteen chains of cause effect from emission to damage on the environment, resources and human health. Each of these has various indicators located at an intermediate point in the chain between emissions and damage, where, in the latter, the end point indicators are present. It can therefore be understood that the sustainability of a product or service can be judged at intermediate points or at the end point and that the time scale is different for each sector and therefore for each category of impacts.

3. The very recent approach through the SDGs - Sustainable Development Goals - issued by the UN has a human-centered perspective.

They are part of a plan of action to stimulate all nations to “heal and secure our planet” and “shift the world on to a sustainable and resilient path” (Dong & Hauschild, 2017)

These goals and indicators, therefore, promote the decisions of regulatory institutions towards a more livable and sustainable place for all living things.

The approach, as already mentioned in the first chapter, includes 17 objectives (not all in environmental terms) and is supported by 169 targets to be achieved by 2030.

In addition, the UN, to help the monitoring, development and implementation of the SDGs, has launched the Sustainable Development Solution Network to develop the indicators. These indicators will clearly follow all seventeen objectives of the SDGs, but in this study the focus will be only on those at the environmental level.

They therefore try to ensure agreements and objectives for all stakeholders, from local residents to institutions.

These approaches just presented are just a few of all available.

To compare them, a table (Figure n. 7) will be proposed with a summary of the proposed indicators.

They will be proposed following the DPSIR model, which, as already mentioned in the first chapter, relates human activities to the natural environment.

It starts with the "driver" that identifies the needs and activities of humans and industries. Human activities then create pressures on the state of the environment and usually lead to a search for solutions and a response from politicians.

Moreover, the driver, pressure and response indicators are easy to regulate, but have a more indirect relevance than the status and impact indicators which are more robust, as they are objective because they represent the consequences (impacts) on the state of the environment.

In general, the Life Cycle Assessment and Planetary Boundaries approaches are science-based and have close and similar perspectives.

For both, various operational methodologies are available, while for the methods for the Sustainable Development Goals there are fewer details and this is mainly due to their short and recent history.

Furthermore, the LCA approach is mostly used on product systems, the SDG one at sectoral and national level, while the planetary boundaries approach at regional and global level and it is precisely for this reason that we will not use the latter in the following chapters.

In this study, the only aspect of this approach that may have more relevance is the fact that it provides good scientific information that can support the political world in making decisions at the environmental level.

Finally, here below it is presented a table with the indicators related to the five factors of the DPSIR model. Some of them will be used in the next chapters.

Impacts on		Drivers	Pressures	States	Impacts	Responses
Climate change	LCA			Radiative forcing as Global Warming Potential (GWP100)	Ecosystem damages. Human health damages	
	PB			Atmospheric CO2 concentration, energy imbalance at top-of-atmosphere		
	SDGs	GHG emissions intensity of areas under forest management (GtCO2e/ha). CO2 intensity of new power generation capacity installed (gCO2 per kWh) and of new cars (gCO2/pkm) and trucks (gCO2/ktm)	Net GHG emissions in the Agriculture, forest and land use (AFOLU) sector (tCO2e). Total energy and industry-related GHG emissions by gas and sector, expressed as production and demand-based emissions (tCO2e)		Losses from natural disasters, by climate and non-climate related events ( in US\$ and lives lost)	Implicit initiatives for low-carbon energy in the electricity sector. Availability and implementation of a transparent and detailed deep decarbonization strategy consistent with the 2°C - or below - global carbon budget, and with GHG emission
Acidification	LCA			Land and water: accumulated exceedance	Ecosystem damages	
	PB			Ocean: carbonate ion concentration		
	SDGs			Ocean acidity (measured in surface pH)		
Ozone depletion	LCA			Ozone Depletion Potential (ODP)	Human health damages	
	PB			Stratospheric O3 concentration		
	SDGs		Consumption of ozone-depleting substances (MDG Indicator)			
Atmospheric aerosol loading	PB			Aerosol Optical Depth (AOD)		
	SDGs			Aerosol Optical Depth (AOD)		
Eutrophication	LCA			Accumulated exceedance	Ecosystem damages	
	PB		Global: P flow from freshwater into ocean. Regional: P flow from fertilizers to erodible soils. Global: industrial and international biological fixation of N			
	SDGs	Nitrogen use efficiency in food systems. Phosphorus use efficiency in food			Eutrofication of major estuaries	
Air pollution	LCA			Intake fraction for the particles (kg PM2.5-eq/kg)	Human health damages	
	SDGs			Mean urban air pollution of particulate matter (PM10 and PM2.5)	Mortality from indoor air pollution - to be developed	
Ionizing radiation	LCA			Human exposure efficiency relative to U235	Human health damages	
Photochemical ozone formation	LCA			Tropospheric ozone concentration	Human health damages	
Chemical pollution/introduction of novel entities	LCA				Ecosystem damages. Human health damages	
	PB	No indicator currently defined. It may be for example chemical emissions, concentrations, or effects on ecosystem and health system functioning				
	SDGs		Indicator on chemical pollution - to be			
Waste treatment	SDGs	Proportion of the population connected to collective sewers or with on-site storage of all domestic wastewaters	Percentage of urban solid waste regularly collected and well managed. Percentage of wastewaters flows treated to national	Global Food Loss Index ( or other indicator to be developed to track the food lost or waste in the value		
Land system change	LCA			Soil Organic Matter	Ecosystem damages. Natural resource	
	SDGs	Ratio of land consumption rate to population growth rate, at comparable scale - to be developed		Annual change in degraded or desertified arable land		Indicator on the conservation of mountain ecosystems - to be developed
Marine system change	SDGs			Share of coastal and marine areas that are protected. Area of coral reef ecosystems and		Indicator on the implementation of spatial planning strategies for coastal and marine areas - to be

Change in biosphere integrity/biodiversity	LCA			Potential affected fraction of species	Ecosystem damages	
	PB			Extinction rate. Biodiversity intactness index		
	SDGs			Genetic diversity of terrestrial domesticated animals. Indicator on genetic diversity in agriculture - to be developed. Red List Index. Living planet index.		Indicator on global support to combat poaching and trafficking of protected species - to be developed. Protected areas overlay with biodiversity
Freshwater use	LCA		Water use related to local scarcity of water		Natural resource damages	
	PB		Blue water use			
	SDGs	Crop water productivity (tons of harvested product per unit irrigation water - to be developed)		Proportion of total water resources used (MDG indicator)		Indicator on water resource management - to be developed. Reporting of international river shed authorities on transboundary river-shed management - to be developed
Forest resources	PB			Area of forested land as % of original or potential forest cover		
	SDGs			Annual change in forest area and land under cultivation (modified MDG indicator). Area of mangrove deforestation		Area of forest under sustainable forest management as a percent of forest area. Improved tenure security and governance of forests
Fish resources	SDGs			Proportion of fish stocks within safe biological limits ( MDG indicator). Percentage of fish tonnage landed with Maximum Sustainable Yield (MSY)		Percentage of fisheries with a sustainable certification. Use of destructive fishing techniques indicator - to be developed
Energy resources	SDGs	Presence of urban building codes stipulating either the use of local materials and/or new energy efficient technologies or with incentive for the same. Rate of primary energy intensity improvement		Primary energy by type. Share of energy from renewables		Fossil fuel subsidiaries
Fossil and mineral resources	LCA			Scarcity	Natural resource damages	
Food and agricultural resources	SDGs		Global Food Loss Index ( or other indicator to be developed to track the food lost or waste in the value chain)	Crop yield gap (actual yield as % of attainable yield). Cereal yield growth rate. Livestock yield gap (actual yield as % of attainable yield)		

Figure 7: Summary of environmental sustainability indicators in different area. Adapted from: Indicators for environmental sustainability. (Y. Dong & M. Hauschild, 2017)

### 3. Sustainability assessment methods and tools

Sustainability assessment methods are needed for various industrial sectors to support sustainable technology development, decision-making and to evaluate the impacts of existing solutions, products and technologies. Ideally, sustainability assessment methods should address the environmental, economic and social aspects of technologies and cover the whole life cycle of the solutions. (Pihkola, Pajula, Tapia, Ritthoff, & Saurat, 2017) As mentioned above, the assessment methods should provide robust knowledge to support decision-making, and allow comparability of the results.

However, addressing all those aspects within one tool or assessment method is challenging, or even impossible. While there are aspects and indicators that are common to all process industries, sector specific methods, tools, or indicators are often required to address the specific features of each industrial sector in a fair and transparent way. (Pihkola, Pajula, Tapia, Ritthoff, & Saurat, 2017)

Now it is therefore necessary to define assessment methods and tools:

- Method: set of instructions describing how to calculate a set of indicators. Methods include official standards.
- Tool: artefact that assists with the implementation of a method. A tool is usually software but it could also be, for instance, a paper-based check-list. (Saurat, Ritthoff, & Smith, 2015)

There are different evaluation methods, tools and indicators used by businesses, but they generally differ in goal. The tools and methods also differ by level of evaluation.

In fact, they can evaluate the sector, the company or the product.

Therefore, often the problem is not the adequacy of the method or the tool, but the lack of knowledge of the context in which to apply them and how to do it.

Thorough understanding of the underlying mechanisms and calculation principles incorporated in the tool in question is often required to make a trustworthy assessment. Furthermore, it should be recognized which of the existing methods and tools are suitable for analyzing resource and energy efficiency within the process industries and across the different sectors of the industry. (Pihkola, Pajula, Tapia, Ritthoff, & Saurat, 2017)

The purpose of this chapter is to provide useful advice for standardization of assessment and for cross-sectoral assessment, borrowing methods and tools from SAMT project, whose goal is focused on increasing integration of sustainability assessment methods in decision making (Tiina Pajula). In fact, based on the product life cycle and development and decision-making needs, the purpose of this paragraph is to discuss the applicability of assessment methods in both sectoral and cross-sectoral contexts in the process industry by 2030, always considering the development needs of the industry.

The first thing to do is to review existing sustainability assessment methods and tools, to understand their characteristics and applicate them in the correct decision-making process.

There are several methods and tools, but SAMT project identifies some clusters (that will be useful later) for them:

<b>Methods</b>
Life cycle based methods
Hybrid methods
Integrated methods
Methods focusing on costs
Methods specifying to the chemical industry
Methods specific to the agricultural, forestry and food sectors
Other methods
<b>Tools</b>
Full LCA tools
Simplified LCA tools
Tools specific to chemical industry
Tools focusing on energy
Tools focusing on waste
Other tools

*Figure 8: Clusters of methods and tools Adapted from Sustainability assessment methods and tools for cross-sectorial assessment: (Pihkola, H. et al., 2017)*

Since later the case study will be on a business that produces caps, some of these methods and tools will not be considered. They have been listed simply to give you a complete overview of the various sectors in which they can be applied.

This also happens because often companies develop their own methods and tools based on the specific characteristics of the company. Starting from the knowledge of their business, companies try to develop them in such a way that they are specific to their company and that they are suitable for discovering and improving all the inefficiencies that emerge.



This is due to practical needs. Companies manage data differently from each other according to their needs; in fact, some companies, other times, develop methods that are simply extensions of existing methods.

For instance, the most useful and usable methods are the product life cycle ones. They can be applied across many industries and dimensions; not only in the environmental one, but also in the economic and social one. In addition, they are able to assess performance at the sector, industry, company or product level, upstream and downstream.

This analysis leads to the selection of 14 methods which are listed and briefly described below:

<b>Short name</b>	<b>Method</b>	<b>Description</b>
LCA	Life Cycle Assessment	Life cycle method
MIPS	Material Input Per Service	Life cycle method, focused on resources
CED	Cumulative Energy Demand	Life cycle method, focus on energy
E-LCA	Exergetic Life Cycle Assessment, Exergy analysis	Life cycle method
CF	Carbon Footprint	Life cycle method, focus on GHG emissions
WF	Water Footprint	Life cycle method, focus on water
LCA/PEM	Hybrid LCA + partial equilibrium model	Hybrid method
LCAA	Life Cycle Activity Analysis	Life cycle method
EEA	Eco-Efficiency Analysis	Integrated method
SEEBALANCE	Socio-Eco-Efficiency Analysis	Integrated method
PROSA	Product Sustainability Assessment	Life cycle method
LinX	Life Cycle iNdeX	Integrated method
SustV	Sustainable Value	Integrated method
EcoD	Ecodesign, Design for Environment	Life cycle method

*Figure 9: Some methods for further evaluation. Adapted from Sustainability assessment methods and tools for cross-sectorial assessment (Pihkola, H. et al., 2017)*

However, only four methods are able to assess all the three dimensions of sustainability and they are named integrated methods.

Below, a table explaining methods and tools clusters considered is attached.

<b>Method and tool clusters</b>	<b>Comments</b>
Life cycle methods	LCA, subsets or derivatives of LCA, and life cycle methods beyond environmental assessment
Hybrid methods	Fusion of existing methods (the limit between methods becomes blurred)
Integrated methods	Juxtaposition of well-delimited methods ("Russian dolls" construct) to support decision making. Usually includes a "weighting" scheme to aggregate sub-indicators into one or small number of indicators
Full LCA tools	Implementation of ISO-conform LCA and possibly other life cycle methods
Simplified LCA tools	Implementation of streamlined LCA and possibly other life cycle methods

*Figure 10: Detailed review of methods and tools clusters. Overview of existing sustainability assessment methods and tools, and of relevant standards (Saurat, M. et al., 2015)*

Moreover, there is another way to evaluate scientific methods and tools to support decision-making process and assess sustainability performance.

This practice is named RACER and it includes criteria for five key components that are:

- Relevant = i.e. closely linked to the objectives reached;
- Accepted = i.e. by staff and stakeholders;
- Credible for non-experts = unambiguous and easy to interpret;
- Easy to monitor = e.g. data collection should be possible at low cost.
- Robust = e.g. against manipulation. (Pihkola, Pajula, Tapia, Ritthoff, & Saurat, 2017)

The criteria used in the RACER method also take into account the industrial development needs identified with sustainability experts. Then, the RACER method has been modified to include the following aspects, which as mentioned above, are those used by the SAMT project:

- Cross-sectoral applicability: comparability among sectors cannot be fully achieved unless similar methods are applied to assess sustainability of the products and processes specific to each sector. Although each sector has its own specificities that should be tackled by means of tailor-made tools, a simultaneous

application of cross sectorial methods to assess different products and processes across sectors is needed for supporting e.g. cross-sectoral policy development.

- Focus on the whole life cycle of products: the results of a given sustainability assessment of a product or a process could vary substantially depending on the scope of the assessment. For instance, a product with a low environmental impact in its production phase could be difficult to reuse or recycle. This would not be reflected in the assessment if the end of use phase is neglected.
- Consideration of economic, environment and social issues: methods that cover the three dimensions of sustainability are needed in order to fully characterize the long-term sustainability of a given product or a process. However, it is difficult to find methods that consider all of them without losing relevance in any of the sustainability aspects.
- Inclusion of resource and energy efficiency criteria: energy and resource efficiency are two of the main priorities of European policies, and specific targets have been set for both dimensions in the main strategic documents of the EU. The process industries hold a great level of responsibility for these efficiency targets to be achieved.
- Relevance for decision making in the process industry: ultimately, enabling or improving decision-making is the main determinant for any sustainability assessment method to be accepted by the process industries. (Pihkola, Pajula, Tapia, Ritthoff, & Saurat, 2017)

Since evaluation methods are applied for different purposes, one of the most difficult challenges in this area is to find and define criteria that meet all needs. Indeed, it is the evaluation of methods and tools itself that poses challenges. As has just been said, environmental performance assessment methods have different purposes and judging them with predefined rules and criteria can have a misleading effect on their actual effectiveness and applicability.

Therefore, in order not to risk using methods incorrectly and despite the quantity of methods and tools available on the market, very few of them are applied frequently.

Moreover, industrial experts highlight another problem. It is really difficult to find sufficient and exhaustive information on the methods and tools available on the market.

It is therefore useful and necessary to have constantly updated information accessible to all on the methods and tools available: starting from the different purposes they have, up to the requirements for their applicability. Therefore, in large companies, developing or implementing a new method or tool is a path that requires a lot of time and effort to collect data and information. In fact, they are often oriented towards upgrades to new existing tools. In this way, the implementation by the company will be easier and faster than a totally new development and implementation approach, which despite these problems and challenges, remains a path that is still undertaken given the great potential of the new methods.

Here below a consistency matrix explaining methods and tools' efficiency, according to RACER evaluation:

	<b>General Criteria</b>				<b>RACER evaluation</b>						
	SC	AA	LA	Tools	Relevant	Accepted	Credible	Easy	Robust	Total	Score
LCA	Green	Yellow	Green	Green	Green	Green	Yellow	Yellow	Green	Green	25
CF	Green	Red	Green	Green	Yellow	Green	Yellow	Yellow	Yellow	Yellow	24
EcoD	Green	Yellow	Green	Green	Green	Green	Yellow	Yellow	Yellow	Yellow	22
EEA	Green	Yellow	Green	Green	Green	Yellow	Red	Red	Yellow	Yellow	21
CED	Green	Yellow	Green	Green	Green	Red	Red	Red	Yellow	Yellow	20
WF	Green	Red	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	19
MIPS	Green	Yellow	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	19
E-LCA	Green	Yellow	Green	Red	Green	Red	Red	Red	Red	Yellow	19
SEEBALANCE	Green	Yellow	Green	Green	Green	Yellow	Yellow	Yellow	Yellow	Yellow	18
IlInX	Green	Yellow	Green	Green	Yellow	Red	Green	Red	Yellow	Yellow	18
LCAA	Green	Yellow	Green	Red	Yellow	Red	Red	Yellow	Red	Yellow	17
LCA/PEM	Green	Yellow	Green	Red	Green	Red	Red	Red	Red	Red	15
PROSA	Green	Yellow	Green	Green	Green	Red	Red	Red	Red	Red	14
SustV	Yellow	Green	Green	Yellow	Red	Red	Yellow	Red	Yellow	Red	14
	SC	Sector covered									
	AA	Addressed aspects									
	LA	Level of assessment									
	Tools	Tools availability									

Figure 11: Consistency matrix of methods and tools efficiency. Adapted from Sustainability assessment methods and tools for cross-sectorial assessment (Pihkola, H. et al., 2017)

The RACER rating, just shown, highlights the fact that there is no method that scores high in all the criteria in which it was rated. Although the assessment could be deviated from subjectivity, the following conclusions were drawn regarding the applicability of the methods:

- When considering energy efficiency and resource assessment, it appears that all methods provide useful and relevant information, but for a comprehensive assessment it is necessary to combine multiple methods together.

- If we consider, for instance, the methods that evaluate only the energy aspects, such as the cumulative energy demand, and those of the resources such as the water footprint, the Exergetic-LCA (E-LCA) is the most relevant. It is in fact the method capable of evaluating the degradation in the quality of resources, but to be more applicable from the industrial point of view it needs a better management of the inventory phase, as it is necessary to transform all inputs and outputs into exergy units. On the other hand, to improve the robustness of the method, further standardization is required, which can also minimize the effects of the subjectivity of the method.
- Moreover, as mentioned above, from the point of view of the industries and considering all the methods evaluated, credibility, robustness and ease of use need further development.
- Finally, considering all three aspects of sustainability (economic, social and environmental), only four methods (SEEBLANCE, LInX, SustV and PROSA) out of fourteen cover all three aspects, even if unfortunately, they lack the availability of practical tools.

The conclusion that can be drawn is that, in the current situation, the solution that provides the most information is the combination of several methods, especially, as already mentioned, for resource and energy efficiency assessments.

Furthermore, since all the methods are able to support the decision-making process and since often there are conditions of limited resources, the most promising and relevant solution is the implementation of a life cycle method, as it increases the understanding of the needs of data.



### III – Masteritalia S.p.A. & La Sportiva S.p.A. case studies

#### 1. Sustainability report: what is it?

The past decades have seen an increasing attention of public opinion towards environmental issues, such as pollution and climate change. This attention has generated greater awareness of the causes of these negative phenomena for the environment; the demand for transparency towards large companies has thus increased over the years which, as is well known, contribute massively to the emission of greenhouse gases. Citizens and, more generally, corporate stakeholders have therefore begun to increasingly demand from companies a change of pace towards a sustainable conversion of their production system and of every other business process. Secondly, these requests were followed by the need to have a document certifying the environmental performance of a company, so that the impact it has on the environment could be verified: hence the concept of "Sustainability Report".

Initially this document was called "social report" to indicate the impact that the company had on the social structure in which it operated; then we moved on to the definition of "socio-environmental balance" in order to arrive at the sustainability report. Although there is no unequivocal definition of "sustainability report", as it is a tool whose use is growing but not yet so widespread, in general it can be defined as the document through which a company illustrates its social and environmental performance. When a company decides to prepare and then publish the sustainability report, it must indicate both the positive items (environmental protection) and the negative ones (environmental damage) since, being a balance sheet, the objective is precisely weigh the two aspects trying to understand their relationship and proportions. To prepare the sustainability report, the company must first have integrated a sustainable strategy into its corporate structure. This means that the company must set the objectives it intends to pursue and have the tools to measure the effectiveness of its applied strategy. In this phase it is useful to use specific KPIs (Key Performance Indicators) which allow you to calculate the benefits of the choices made. As already stated, there is no single source to which the realities that approach the creation of this document can refer to understand how to draft it, however there are several models to

refer to, in order to undertake this type of path. The first is the GRI (Global Reporting Initiative) Standard<sup>1</sup>. Global Reporting Initiative is an independent international body that offers support to companies to estimate their environmental impact and then communicate it to the outside, both negative and positive. This portal provides explanatory documents that clarify the way in which it is possible to measure one's environmental impact, then indicating the structure of the sustainability report that will be produced.

The second model is offered by the Italian legislation which transposes the Barnier Directive of the European Union on the non-financial reporting of companies. The directive is addressed to public interest companies, with more than 500 employees, which are obliged to publish the sustainability report. Although the directive refers only to that type of company, each company can take as a reference that model developed by the European Union, as the posts are very rigid and therefore reliable.

The last reference is found in the framework of the International Integrated Report Council, which indicates how to integrate the sustainable aspect in economic and financial reporting. The data published by Deloitte in collaboration with SDA Bocconi show that 77% of companies have adopted the model offered by the Global reporting initiative<sup>2</sup>.

Finally, when drafting the document, it is important to take into account the graphic aspect and usability of the same. In fact, it is preferable to distinguish the financial statements from the sustainability one as the targets of the two documents are distinct and the integration of the two aspects in a single document could reduce the ease of reading for the two target groups. The graphic aspect is also relevant, helping to make the document easily understandable and pleasant to read.

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<sup>1</sup> GRI, <https://www.globalreporting.org/standards/>

<sup>2</sup> Deloitte, SDA Bocconi, [https://www2.deloitte.com/content/dam/Deloitte/it/Documents/audit/Osservatorio%20DNF\\_I%20Report\\_Ottobre%202018\\_Deloitte%20Italia.pdf](https://www2.deloitte.com/content/dam/Deloitte/it/Documents/audit/Osservatorio%20DNF_I%20Report_Ottobre%202018_Deloitte%20Italia.pdf)



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## **2. Master Italia S.p.A.**

Master Italia, founded in 1995, is a company specialized in the design and production of high quality customized caps. In twenty-five years of business it has sold over a hundred million caps all over the world.

Over the years, Master Italia has shown that it has a growing sensitivity towards the climate crisis and the exploitation of natural resources.

They say that being sustainable for them is not an abstract concept, but a daily behavior. This shows that the cultural aspect of environmental sustainability has entered and will increasingly enter the values of Master Italia and its employees.

They are, in fact, convinced that there is a continuous need to question themselves and continue to improve, analyzing processes, choices and results.

And it is from this conviction that Master Italia has decided to embark on a path from 2017 with SGS, to integrate sustainability issues into corporate decisions and relationships with their stakeholders. By monitoring, studying and analyzing the business processes of hat production, from product conception to delivery to the final consumer, they tried to further reduce the impact deriving from the company's activity. The declared objective of Master Italia is to consolidate the Atlantis brand as a reference brand in the sector, keeping traditional B2B customers (business to business), but also trying to attract and stimulate the interest of the final customer through the reliable quality of the product and above all the ever-increasing sustainability.

Master Italia's business model is an example of this. The research and development of the product, its design and its realization make the Atlantis brand a clear synonym of continuous research of environmental sustainability.

Logistics also plays an important role in sustainability as transport is always a relevant voice when it comes to emissions.

Finally, customers, who carry out the last and perhaps most important step in the sustainability process, are targeted by communication campaigns aimed at reaching the most aware and attentive targets to sustainability issues.

Master Italia firmly believes in a sustainable and circular economy, which manages to combine economic growth with the protection and safeguarding of the environment and society.

The aim of the initiative is commendable. It is to involve the business world in a new form of collaboration through the adherence to ten universal principles relating to human rights, labor protection, environmental protection and the fight against corruption.

Another determining factor in this sense for Master Italia is membership of Confindustria. It is, in fact, seen as an opportunity for comparison with other local realities from a global market perspective, of great importance for the textile sector. There are many specific seminars and consulting services to support companies in benefiting from national and international contributions, as already mentioned in the first chapter. Furthermore, in 2017, Confindustria signed the "Patto di Milano".

The Milan pact outlines an important representation of the Italian industrial system with the aim of formalizing the commitment to become increasingly sustainable, promoting innovation in business models, partnerships with all stakeholders and the use of finance ethical and responsible to help achieve the sustainable development goals.

It is important to say that Master Italia is a joint stock company with a single shareholder. It operates under the brand name Atlantis Infinite Headwear and, as previously mentioned, manufactures and wholesales and online apparel and clothing accessories. As S.p.A, it is an atypical and innovative company. In fact, in 2018, it set up a Sustainability Committee to deal specifically with environmental and sustainable initiatives.

The Committee defines the sustainability strategy and oversees its implementation. It sets itself the objectives of integrating the initiatives for sustainability into corporate activities, promoting dialogue with interested parties, internal and external, on

sustainability issues and overseeing the activities relating to integrated communication and the communication of KPIs and relevant data to environmental and social problems.

### **3. How Master Italia face environmental sustainability's path**

Master Italia is always looking for new challenges, which translates into research and innovation. To make products with a view to sustainability, they are careful to verify that suppliers take the utmost care in production processes, focusing more attention on energy consumption, being a key point to reduce the environmental impact of the supply chain.

But building a more responsible future requires an even more important and direct commitment through the development of specific green products. In fact, Master Italia is constantly committed, day by day, to translating fashion trends into innovative products, starting with the development of the collections.

For instance, they use smart and ecological fabrics or technical fabrics with better resistance and durability performance.

Master Italia's intention to become as sustainable as possible is truly serious and result-oriented.

The Green line that includes clothing accessories in recycled or paste-dyed polyester or in organic and recycled cotton and in acrylic yarn in line with OEKO-TEX RRR standards is an example of Master Italia's commitment.

Indeed, various collaborations with universities have been undertaken for this purpose. In particular, the one with the Politecnico di Milano / Fashion Design.

Another very important aspect for Master Italia to demonstrate sustainability is product traceability. For the company, a tracked product is a "clean" product, with a specific identity and a certain origin. It is a verified process and in fact they have chosen to voluntarily join the traceability certification of the Chambers of Commerce. The user can in fact check the card and the journey of the product, step by step, from production to import in Italy.

A key, often overlooked, part of sustainability is that it needs to be communicated. In this, Master Italia has decided to play an active role, starting from the layout and contents of the website. The page dedicated to sustainability has become the manifesto

of the company and of the path towards a more responsible future, focused on strategies for a business model based on sustainability.

Finally, Master Italia has worked to use responsible materials, which are natural and recycled. In fact, over 30% of the products are made of cotton, the natural vegetable fiber par excellence. Organic cotton is a fiber obtained from natural crops without the use of toxic chemical additives and fertilizers, which could persist in the cotton itself and in the environment. Organic cotton comes from controlled and certified organic crops. Through this approach, water consumption is reduced, improving soil quality, ensuring better working conditions for the people involved in the supply chain. Furthermore, this fiber is versatile because it is recyclable. In fact, cotton allows you to reuse greater quantities of recovered product, both in pre and post consumption. In this way, the greater the amount of fiber reintroduced into the value chain, the larger the areas of land available for food crops or for reforestation, helping to tackle both the problem of food shortages and environmental protection. Polyester, which is the material of over 20% of Atlantis caps, is also a sustainable material because it does not avoid the use of non-renewable resources and due to its recyclability characteristics in line with the cradle-to-circular economy model. In fact, this fiber is made up of polymers obtained by recycling post-consumer plastic bottles. Furthermore, Master Italia seeks sustainability not only in materials, but also in processes. They use dyed polyester, which is a dyeing process in which color pigments are added to the melt prior to fiber formation, in order to avoid dye and water dispersion.

#### **4. Atlantis' sustainability report**

In recent years, the growing sensitivity towards the climate crisis, the exploitation of natural resources, the strong role of markets and companies in the environmental impact have awakened consciences and opened our eyes ... Our responsibility is not addressed only within the company and to the actors that make it up (collaborators, customers and suppliers), but it is open and outward-looking, local communities, young people, schools, the social fabric that surrounds us.

With these words, the President of Master Italia S.p.A., Alessandro Colle Tiz, presents the sustainability report of Atlantis, the company's brand. These phrases reveal the awareness that the company leadership has taken on environmental issues but, more importantly, regarding the consequences that company choices and policies may have in the environment and surrounding communities. This awareness is a reassuring fact as it guarantees that the company has implemented and will implement sustainable solutions aimed at environmental and social protection. In fact, Master Italia deals with different realities and can be grasped by reading the section dedicated to the company's stakeholders.

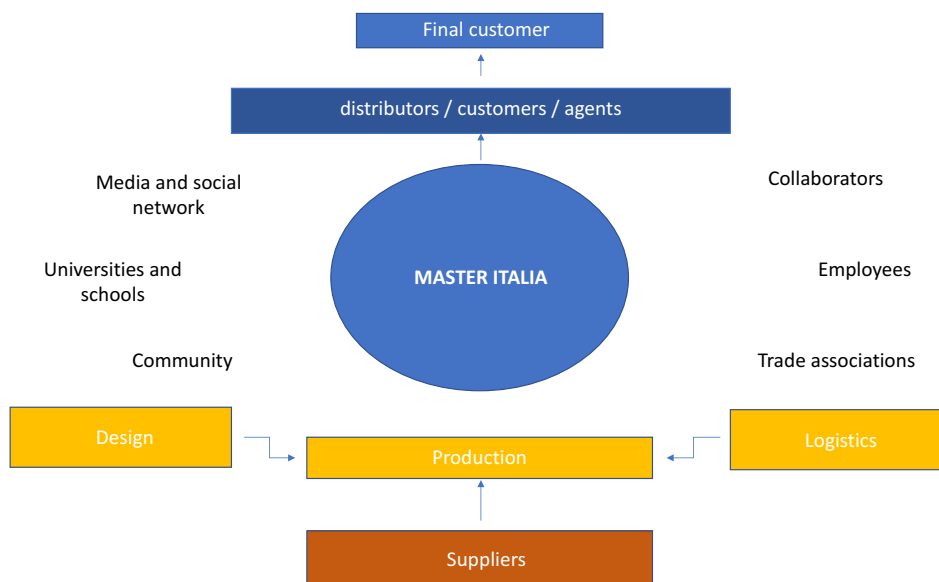


Figure 12 Master Italia's Stakeholders

As can be seen from figure 13. Master Italia does not interact only with suppliers, employees, customers and distributors ... The company has a direct relationship with universities, schools, communities. It is precisely in the light of this influence that the company has on the outside world that the need arises to adopt a generally sustainable business conduct.

In the sustainability report we initially find the values that guide Atlantis. They are: courage, strength, diversity and the Italian spirit. Thanks to the synergy between these values, the company intends to extend its business beyond the B2B line, creating a closer and direct relationship also with the final consumer, establishing itself not only as a distributor of quality hats but as a brand itself. In 2015, the United Nations issued the

Global Agenda for Sustainable Development which defines 17 objectives that every company should pursue in order to be able to fit into a perspective of growth that respects the environment and people. Since 2017 Atlantis has decided to start a path of sustainability by aligning with the objectives set by the Global Agency for Sustainable Development, identifying the sectors in which it is possible to guarantee a greater contribution. The areas in which the company is most committed to intervening are: education, gender equality, inclusive economic growth, sustainable consumption, the fight against climate change. With regard to education, Master Italia intends to ensure that minors are removed from labor exploitation in order to access education. To pursue this aim, a more restrictive Code of Conduct for Suppliers has been drawn up which aims to ensure that the company only interfaces with economic realities in which child labor is not exploited. Secondly, the company is working to promote youth employment, which represents an Italian structural problem, through collaboration with schools and universities regarding: school / work alternation, internships, internships, theses, workshops ... In terms of gender equality, Master Italia wants to bind its suppliers to respect for equality between men and women, both in terms of treatment and pay. Obviously, in order to ensure that the constraints placed on suppliers are respected, tools have been created to verify their conduct. From an internal perspective, it is intended to achieve and maintain fair remuneration for employees and equal opportunities to build a career within the company.

With regard to inclusive economic growth, the company wants to ensure that the economic and financial objectives and their achievement coincide with dignified treatment and respect for employees who are the engine of Atlantis' success. For this reason, a Company Code of Ethics has been established which aims to ensure that these rights are respected and guaranteed. The Code of Ethics drawn up by Master Italia is based on nine points: respect for the person; fight against the use of clandestine and child labor; exclusion of forced labor; safe workplace; freedom of association and collective bargaining; the refusal of discrimination; disciplinary procedures compliant with the law; adequate working hours; transparency and adequacy of remuneration. Sustainable consumption and production are the heart of Master Italia's green strategy. With this in mind, it tries to produce hats through the use of sustainable materials so as not to pollute the environment and reduce the emission of greenhouse gases; secondly,

the creation of sustainable packaging means that the impact from the point of view of waste is reduced. Ultimately, Master Italia participates in the fight against climate change by monitoring its CO2 emissions and planning a strategy to reduce them, involving both direct and indirect emissions. A significant part of the environmental impact is represented by transport. For this reason, the company is planning shipments by filling the containers in order to reduce the number of trips. Over the years, Master Italia has achieved various certifications that demonstrate its commitment to the use of sustainable materials and the reduction of harmful emissions to the environment.

Exchange's Organic Content Standard (OCS) is a chain of custody standard that provides companies with a tool to verify that one or more biological materials are in a final product.

Below are the results of an LCA analysis carried out by Textile Exchange:

- 46% potential reduction of greenhouse gas emissions
- 70% potential reduction of emissions responsible for acidification
- 26% potential to reduce eutrophication, i.e. the excessive enrichment of nutrients of the ecosystem
- 91% potential reduction in water consumption mainly for irrigation (excluding rainwater)
- 62% potential reduction in primary energy consumption

As Master Italia claims, these initiatives translate into greater health and safety for both the B2B customer and the end consumer.

Finally, the OEKO-TEX Standard which is the best known independent control and certification system for fabrics. Test the use of harmful substances in all stages of textile production, from raw materials to finished products. The standard is in fact synonymous with high product safety and consequent customer confidence.

Master Italia, to comply with all the certification standards to which it adheres and in order to enforce the REACH regulation for its suppliers, carries out sample tests to monitor the conformity and quality of the product.

This also guarantees constant updating with respect to REACH requirements or variations in the candidate list of SVHC (Substances of Very High Concern) problematic chemicals.

The attention to the materials used involves a strong focus on innovation, useful for identifying smart and green solutions, in order to extend the life cycle of products and reduce waste and waste. This research work is carried out in collaboration with the Politecnico di Milano, including, in this way, the world of young people in corporate planning activities. In this regard, Atlantis markets its green line which involves the use of recycled polyester and organic cotton. Organic cotton, which makes up about 30% of the products offered, reduces water waste and protects the soil, eliminating the use of chemical compounds and toxic fertilizers.

Master Italia has adopted an innovative technology called paste dyeing. This technology requires less water and energy consumption than traditional yarn or piece dyeing processes, thus reducing the release of dyes into wastewater, reducing greenhouse gas emissions. In particular, these were the improvements of Master Italia:

- - 12% of CO<sub>2</sub>
- - 85% of water
- -90 % of chemical agents.

In fact, in order to continue to reduce consumption more and more, Master Italia participates in the GRS (Global Recycled Standard), which certifies the use of recycled raw materials in the lines of certified caps. The standard also goes beyond the certification of the recycled content as it also requires the companies that adhere to it to guarantee compliance with environmental and social criteria extended to all stages of the production chain.

In particular, the use of recycled polyester allows to reduce energy consumption by 40-85% and greenhouse gas emissions by between 25 and 75% depending on the production methods adopted. Master Italia does not purchase raw materials directly, but designs the products and subsequently decides the type of materials and fabrics that suppliers are required to use.

Below, there is a graph shortly indicating how much materials had been used in 2018 and 2019.



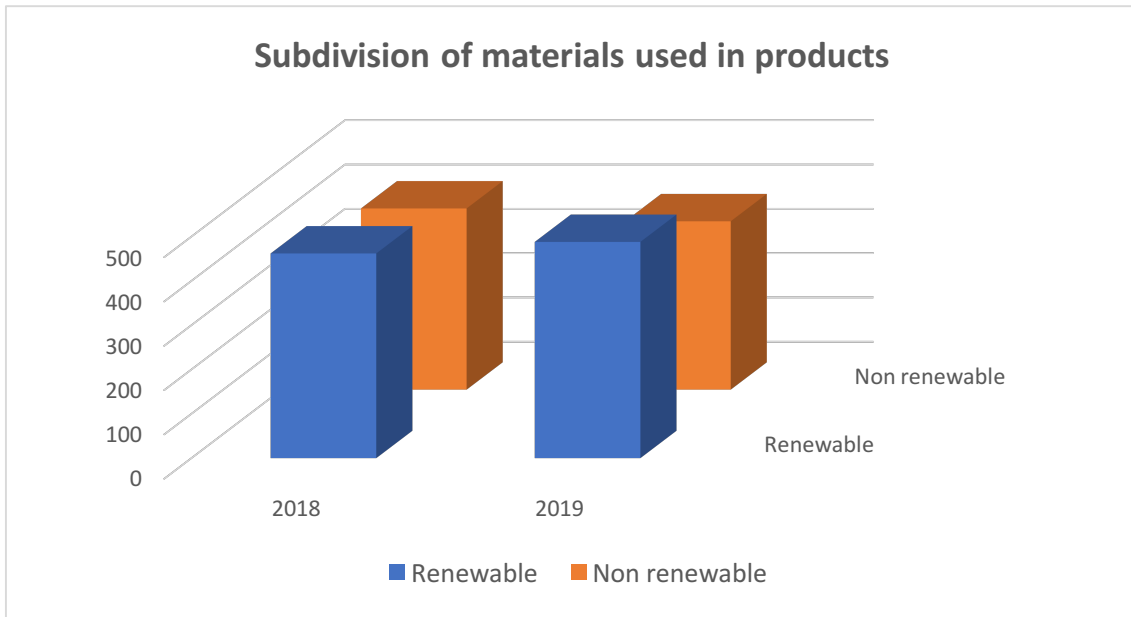


Figure 14: Subdivision of materials used in products. (Atlantis – Bilancio di sostenibilità 2019)

From figure 14 you can extract the renewability indicator of the materials used. This indicator is obtained by obtaining the percentage of renewable materials used compared to the total:

**Material renewability index % = amount of renewable material / total amount of material x 100**

In 2019, there were 380 t of non-renewable materials and 488 t of renewable materials. The total of materials used amounts to 868 t. From here the renewability rate can be obtained:

**Material renewability index 2019:  $488/868 \times 100 = 56,2\%$**

the renewability rate of the materials used is 56.2%; in 2018 the quantities amounted to 409 non-renewable and 462 tons renewable, for a total of 871 tons. Therefore:

**Material renewability index 2018:  $462/871 \times 100 = 53\%$**

In the following figure, we can see the type of materials used by Master Italia.

		2018	2019
Renewable	Cotton	217 t	206 t
	Viscose	1 t	2 t
	Other natural fibers (wool, linen, ...)	5 t	15 t
<hr/>			
Non-renewable	Synthetic fossil fibers	241 t	216 t
	Plastic	130 t	116 t
	Metals	26 t	39 t
	Others	3 t	3 t

Figure 15: Main types of materials used for caps. (data from: Bilancio di sostenibilità Atlantis)

	2018	2019
<hr/>		
<u>Paper and cardboard packaging and labels</u>		
	230 t	254 t
<u>Pallet</u>		
	9 t	12 t
Plastic material for packaging		
	7 t	6 t
<hr/>		

Figure 16: Main types of material used for packaging. (data from: Bilancio di sostenibilità Atlantis)

Indeed, section 5 of the SDS covers all information on health, safety and environmental regulations and legislation specific to candidate substances as substances of very high concern.

It is an integrated regulation for the registration, evaluation and authorization of chemicals, which aims to ensure a higher level of protection of human health and the environment, while aspiring to maintain and strengthen the competitiveness and innovative capacities of the European industry.

Here, it can be seen that the objectives of REACH certification (Registration, Evaluation, Authorization and Restriction of Chemicals) are in line with the benefits that being green brings to companies, the environment and the community.

Due to the type of activity that Master Italia carries out, it does not have significant direct environmental impacts, as it is part of a sensitive supply chain as regards sustainability. The company, to demonstrate the limited impact and to prepare its own sustainability report, monitored various parameters in the years 2018 and 2019.

The environmental impact data are shown below.

	2018	2019
Total consumption of fuels from non-renewable sources used by company cars and for heating the offices and warehouses of Master Italia.	356.186,5 MJ	503.858,8 MJ
Total electricity consumption of Master Italia offices and warehouses	360.619,2 MJ	368.683,2 MJ
Total	716.805,7 MJ	872.542,5 MJ

*Figure 17: Main energy consumption factors*

Mainly, energy consumption relates to electricity used in offices and warehouses, gas and company cars. From this table you can find a sustainability indicator that relates the total consumption to the company turnover, in order to obtain the quantity of energy

consumed for each euro invoiced. These indicators, which will be used here, are useful for comparing the impact of different companies. It is clear that comparing the absolute value without relating it to the economic and commercial size of the company would be an ineffective operation. Considering the following formula:

$$\text{Energy on turnover index} = \text{total energy consumed (MJ)}/\text{turnover (€)}$$

Here below it has been calculated the amount of MJ consumed in relation to the turnover in 2019:

$$\text{Energy on turnover index: } 872.452/16.956.021 = 0,05 \text{ MJ/euro billed}$$

	2018	2019
Company cars	128.839,9 MJ	229.837,2 MJ
Natural gas	227.346,6 MJ	274.021,6 MJ
Electricity	360.619,2 MJ	368.683,2 MJ

*Figure 18: Sources of energy consumption within the organization*

The increases are mainly due to the greater volume of activities carried out in the commercial sector, the extension of the areas dedicated to offices and the acquisition of two additional company cars. The company's total consumption is distributed as a percentage by use: 872,541.

Company cars: 26.3%

Natural gas: 31.4%

Electricity: 42.3%

An important section in terms of environmental impact is that dedicated to greenhouse gas emissions.

<b>Greenhouse gas emissions</b>	<b>2018 tCO<sub>2</sub>e</b>	<b>2019 tCO<sub>2</sub>e</b>
Direct emissions from fuels and refrigerant gases from the headquarters of Master Italia	68	78
Indirect emissions from electricity used by Master Italy - Location based	33	33
Indirect electricity emissions for Master Italia - Market based	60	61
Other indirect emissions	15.783	15.583

*Figure 19: emissions of greenhouse gas*

The data regarding greenhouse gas emissions remain almost unchanged, between 2018 and 2019, in the context of indirect emissions from electricity; Direct emissions from fuels and refrigerant gases at the Master Italia headquarters increased by 10 tCO<sub>2</sub>e, passing from 68 to 78. Indirect emissions, in other words those not directly attributable to the activities of Master Italia, but those on which it carries out, were reduced by 200 tCO<sub>2</sub>e minimal influence (suppliers, partners...). Master Italia, in the sustainability report, specifies that a strong commitment will be placed in the area of indirect emissions, seeking to positively influence its interlocutors. The emissions attributable purely to Master Italia amounted to 161 t in 2018 and 172 t in 2019. A useful indicator to contextualize the quantities of CO<sub>2</sub> emissions is to compare them to turnover, as follows:

**Emissions on turnover index = total emissions (kg)/ turnover (€)**

In the case of Master Italia, considering in 2019 the emission of 78 t of CO<sub>2</sub> and a turnover of 16,956,021, the indicator below:

**Emissions on turnover index:  $78.000/16.956.021=0,004$  kg/€ billed**

With regard to the use of water, it has been found that the main source of use, or 99.99%, is directly attributable to the production process of the caps, or the final product. It can be considered that the remaining part, or 0.01%, is not relevant in the planning of water saving processes. It is noted that the amount of water invested in the production process varies from country to country: 6,000 liters / kg in China, 22,500 liters / kg in India, 9,600 liters / kg in Pakistan. Master Italia mainly collaborates with Chinese companies, where water waste is less, as well as working on organic cotton which requires even less water.



*Figure 20: amount of waste produced by Master Italia in 2018 and 2019.*

As can be seen from figure 20, Master Italia produced a total of 194 tons of waste in 2019, mainly deriving from packaging, consisting of cardboard and plastic. An extremely

positive figure is found: over 95% of waste in 2019 was reused (185 t). Only 0.7 t were incinerated, while 0.9 t ended their cycle in a landfill. Even in the case of waste, obtaining the absolute figure is hardly indicative of a company's performance. Obviously, the more a company produces, the more waste it will produce. The indicator of company performance in terms of waste production is always obtained by relating the total quantity produced to the turnover:

**Waste production index: total waste produced (KG)/ turnover (€)**

In this specific case, in 2019, Master Italia achieved the following performance:

**Waste production index: 194.000 kg/16.956.021€= 0,01 KG/€ billed**

## **5. La Sportiva S.p.A.**

La Sportiva is an Italian company whose core business is the production of technical clothing and footwear for mountain sports. The company is a world leader in the sector and produces products used in sports such as: hiking, ice climbing, trail running, ski mountaineering. The company was founded in 1928 in Tesero, in the province of Trento, from the intuition of the founder Narciso Delladio. Initially the company produced wooden clogs for lumberjacks and operated mainly in the Val di Fiemme and Val di Fassa. At the beginning the name of the company was Calzoleria Sportiva. The company's business changes, resembling what we see today, in the 1950s when the founder's son Francesco Delladio began operating in the company. The first ski boots are produced and together a boot lacing system is patented which will then be exported to many other realities across the border. At this stage, La Sportiva's expansion begins on the European scene, where it will be noticed in the following decades. In the seventies the third generation joined the company, namely the founder's grandchildren: Lorenzo, Marco and Luciano Delladio. At this stage the production focuses on mountain boots. In the following decade, or in the eighties, La Sportiva focuses on footwear reserved for free climbing. The success of this business choice is considerable; the greatest climbers of the period, such as Heinz Mariacher, Maurizio Zanolla, Roberto

Bassi, Didier Raboutou use La Sportiva footwear. The company went through a phase, from 1998 to 2003, in which the American company The North Face enters the corporate structure, first by purchasing 20%, then planning to acquire 51% by acquiring, in fact, control. The change of pace of The North Face and the replacement of the top management with which La Sportiva had spoken put the project at risk; when it is clear that there is no synergy between the two components, the Delladio family requests the cancellation of the agreement with The North Face, repurchasing the share previously sold. In 2017 the corporate structure was revised, so Lorenzo Delladio became the sole shareholder with 100% of the company shares.

La Sportiva SpA boasted a turnover of € 96 million in 2018, with 341 employees and a commercial horizon that involves 74 markets around the world.

## **6. La Sportiva's sustainability report**

Over the years, the company has shown a strong focus on environmental issues, proving its ability to understand and accommodate the needs of the times. Among the issues relevant to the company and corporate stakeholders, La Sportiva identifies the following: circular economy and waste management; research and development; corporate welfare, training, safety in the workplace; air quality and emissions; energy management; environmental impact management; ethical-environmental assessment of suppliers; support for local employment; consumer safety. These four themes make up a system vision that the company pursues to limit its environmental impact as much as possible. This choice of marrying a sustainable production model does not seem to have penalized the economic performance of the company, which boasts an average growth of + 16.6% per year since 2012 and 12.7% per year since 2015. From a governance point of view, the company in 1984 was transformed into a joint stock company to be able to configure itself as an international company, albeit tied to its tradition and its territory. The coexistence of the protection of tradition and the innovative drive also coexist thanks to the contribution of Giulia Delladio, who sits on the board of the company and deals with the marketing aspect. Over the years, La Sportiva has created several companies in other countries, besides Italy, on which the



Italian management relies to operate in foreign markets. The composition of the La Sportiva group looks like this:

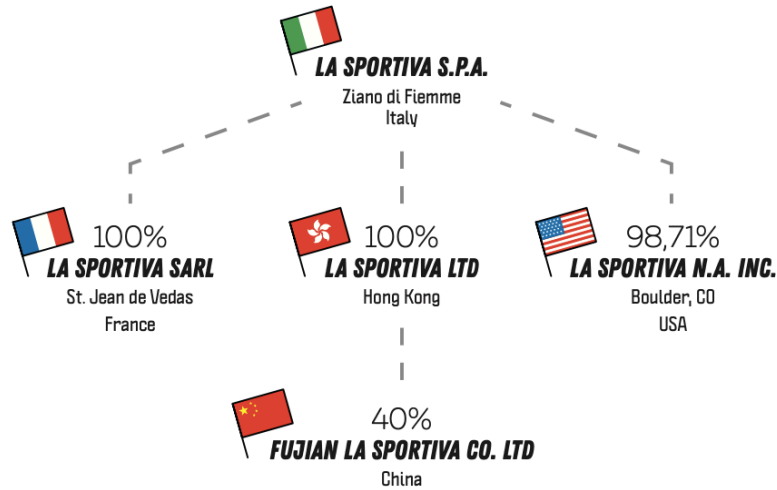


Figure 13: La Sportiva Group. (Bilancio di sostenibilità La Sportiva)

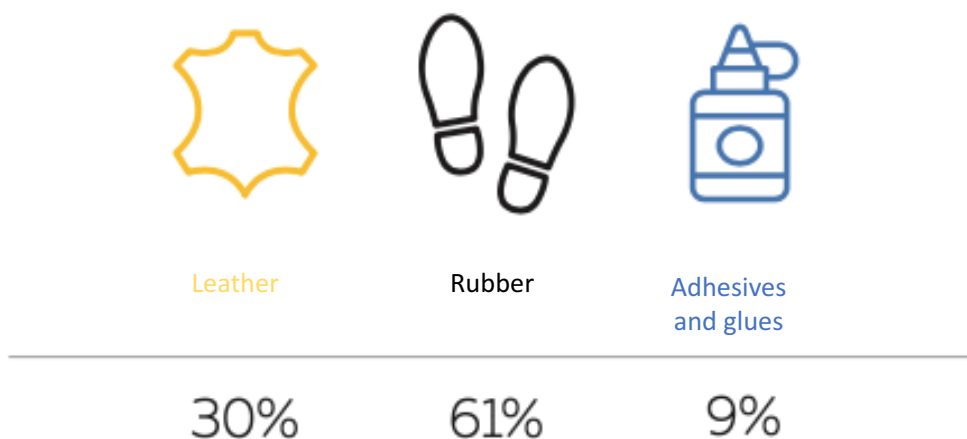
Eco-sustainability is one of the five guiding corporate objectives. La Sportiva emphasizes that environmental protection is a strategic assessment factor in every business sector, ensuring that every single process is carried out with a view to environmental protection. This stance is strongly reflected in the use of materials. Particularly, two models designed and produced by the company, represent a virtuous example.



Figura 22. Mythos Eco e Cobra Eco models.

These two models of footwear are composed of 85% and 95% of eco-sustainable materials. The company has made a commitment not to use perfluorocarbons, or chemical compounds that are harmful to the environment. With the aim of pursuing the use of ecological materials, a collaboration with Bluesign was started to obtain certifications regarding compliance with some parameters of the materials. A novelty offered by the company concerns the material with which the ski mountaineering boots are produced: it is a material obtained from castor plants from which the oil is first obtained which then, through the polymerization process, generates the final material. Considerable efforts have also been made on reducing the waste of materials. As far as leather is concerned, it was decided to calculate with extreme precision the quantities to which to apply the cut so as not to have many scraps that would become waste; as regards rubber, on the other hand, it is largely reused for internal use. This type of choices, in particular regarding the reuse of rubber, are fundamental as they make up a large part of the materials used.

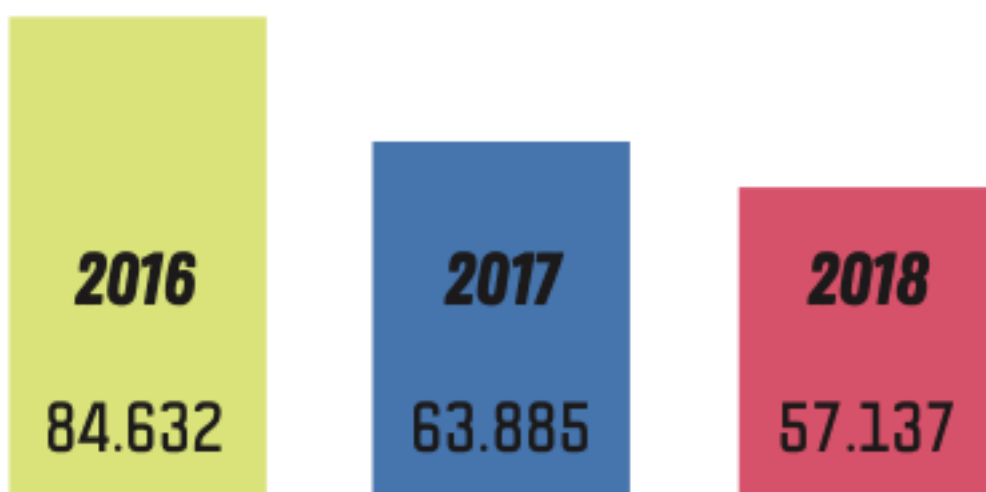
*Consumption of raw materials by type - 2018*



*Figure 14: Materials used by type. (Il bilancio di sostenibilità La Sportiva)*

The company is also active in supporting environmental associations that carry out projects in the area to stimulate an ecological transition in the name of fighting pollution

and climate change. This support is achieved by joining La Sportiva to EOCA (European Outdoor Conservation Association) which is committed to financing the activities of these associations. The company paid 20% of its proceeds from the sale of its products on Black Friday to this fund. Secondly, the company has decided to join the 1% for the planet initiative which provides that the participating companies donate 1% of their turnover to initiatives aimed at environmental protection. The company also offers support to the world of agriculture by applying a circular economy model, recovering part of the waste from the processing of organic fertilizers used in organic farming. Almost 18 tons of agricultural materials were recovered in 2018. Another example of circular economy is the practice of resoling promoted by the company. An effective way to reduce waste and pollution is to increase the life of a product: La Sportiva allows its customers to go to its stores to recover damaged or worn items, as well as having 37 authorized resoles that support the company in this task. The application of the various waste recovery policies has brought clearly positive results. In 2017, waste produced was reduced by 15%, while hazardous waste was reduced by 32% compared to the previous year. The amount of spent activated carbon decreased by 46% compared to the previous year. With regard to the so-called hazardous waste, there has been a clearly positive trend in recent years.



*Figure 15: Kg of hazardous waste produced in the three-years 2016-2018.*

By comparing the amount of hazardous waste generated to the turnover in 2018, it is obtained that:

**Hazardous waste on 2018 turnover index:  $57.137/96.000.000= 0,0005$  kg/€ billed**

This kind of conversion of company policies involves every area of the business, including the relationship with suppliers. For this reason, La Sportiva carries out a precise and detailed assessment of its suppliers to ensure that they too work in compliance with environmental and social sustainability. The check concerns the materials used, the supplies; the verification of the social aspect concerns the environment and work safety, the organization of human capital, corporate social responsibility ... The verification of suppliers is a method to avoid that the company, even indirectly, contributes to financially support companies that damage the environment. The company is also committed on drastically reduce water waste: thanks to a closed cycle washing system, the use of process water has been substantially eliminated, saving 297,000 liters of water. The use of water by the company is largely attributable to civil use, while marginally it is used in the irrigation of corporate green areas and in production.

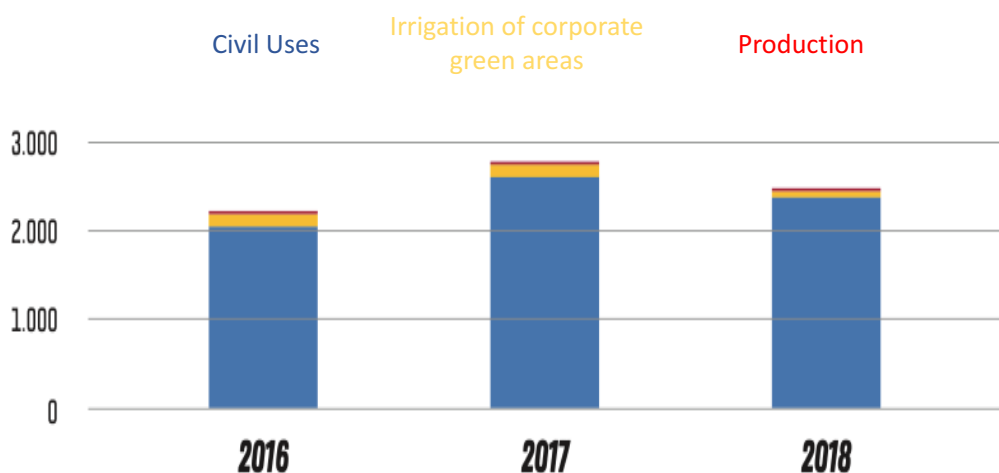


Figure 16: Water consumption by type (Cubic meters)

About 87% of La Sportiva's water consumption is attributable to civil use. A strategic chapter in reducing the environmental impact is that related to CO2 emissions. The company has implemented plans to reduce emissions, however, due to the expansion of the company headquarters in Ziano di Fiemme, emissions have increased by 24%.

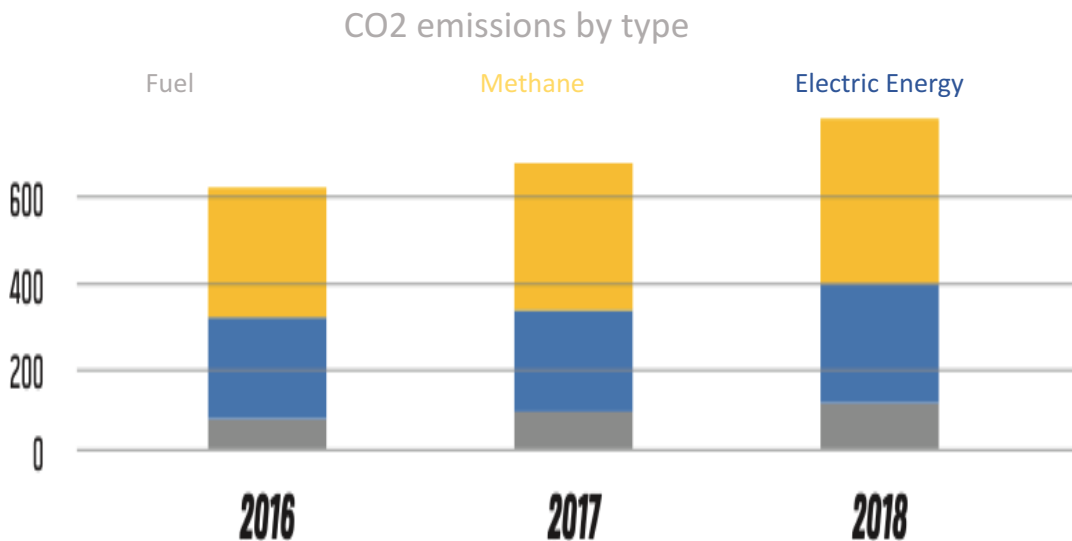


Figure 17: CO2 emissions by type.

The cause of the increase in emissions in absolute terms is also attributable to the increase in production. For this reason, it is appropriate to compare the level of emissions to the number of shoes produced. Following this method of analysis, it can be seen that CO2 emissions fell in the 2016-2018 three-year period.

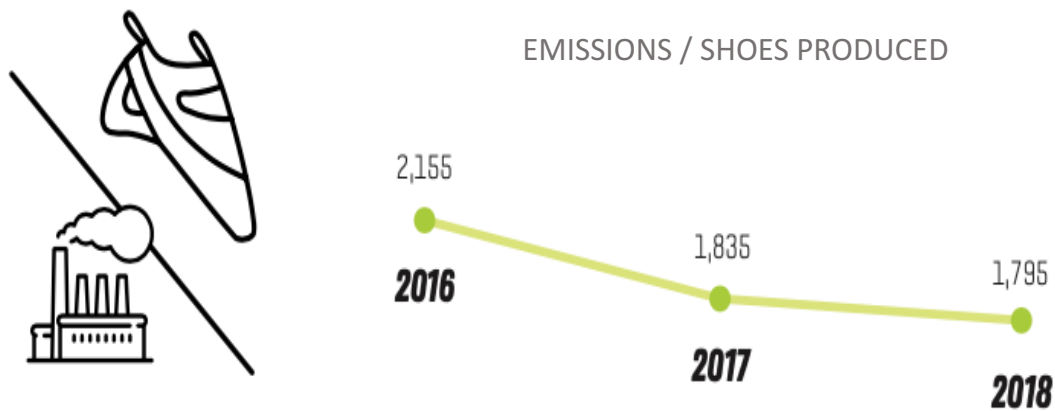


Figure 18: Ratio between CO2 emissions and number of shoes produced.

An indicator linked to emissions applied to Master Italia should also be proposed again for La Sportiva, i.e. the ratio between kg of CO2 emitted and turnover. Considering that in 2018 La Sportiva's CO2 emissions were around 780 t and turnover of € 96 million, the ratio is as follows:

**Emissions on turnover index :  $780.000/96.000.000= 0,008\text{kg}/\text{€ billed}$**

The calculation of this indicator shows how it is a useful tool to make a comparison between the different companies operating on the market. Master Italia, for example, presented an indicator of 0.004kg / € turnover, or half of that of La Sportiva. In this case it can be said that the environmental performance of Master Italia, in light of a different production system and a different company structure, is better than that of La Sportiva in terms of CO2 emissions.

An important aspect in terms of corporate sustainability is energy consumption.

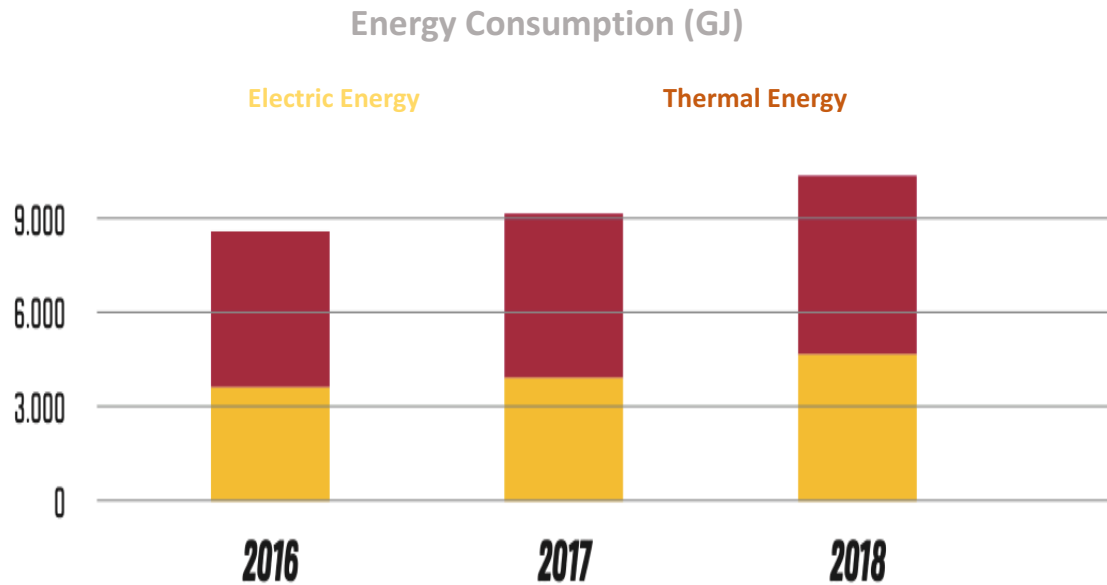


Figure 19: Energy consumption by type. (Il bilancio di sostenibilità La Sportiva)

In the three-year period 2016-2018, La Sportiva's energy consumption constantly increased, precisely by 17%, in the face of the expansion of the company headquarters. In 2016, the amount of energy consumed was just under 9,000 GJ, to slightly exceed them in 2017 and more clearly in 2018. It is noted, however, that the amount of energy consumed by the company has remained almost unchanged over the years if compared to turnover, as is customary to do. In fact, the figure went from 11.6% in 2016 to 10.9% in 2018. A fundamental fact is that concerning the origin of the electricity used by the company. In its sustainability report, La Sportiva highlights the fact that 100% of the electricity it has comes from renewable sources and with a reduced or no environmental impact. In fact, the consumption of electricity increased by 29% between 2016 and 2018, therefore more than proportionally with respect to the total, also in light of the fact that the company has installed photovoltaic systems at its premises that it uses in the self-consumption. The fashion industry is a highly polluting sector that negatively impacts the environment. The data tell us that 1.7 billion tons of CO<sub>2</sub> annually are attributable to this production chain, while 35% of the micro-plastics present in marine and ocean waters derive from the production of clothing. As for water, however, it is estimated that 90% of the water used in production is emitted into the system without filtering it and making sure that it is free of polluting chemicals. In light of the not very encouraging

situation of the entire supply chain, the commitment that Master Italia and La Sportiva are implementing to reverse the course towards a sustainable production and commercial model should be appreciated.



## **IV - Impact of corporate sustainability in the main economic and equity indicators – Master Italia S.p.A. and La Sportiva S.p.A. business cases**

Following the analysis carried out in terms of sustainability reports, an important question in business terms is to understand whether the commitment and devotion to environmental sustainability in compliance with the sustainable development goals criteria has an economic feedback.

The issue is very complex since the goal of the companies is economic profit, therefore the remuneration of risk capital contributors.

In a world system in which more and more regulations are introduced for the protection of the planet and respect for the people who work there, corporate competitiveness takes on increasingly complex characteristics with ethical issues as opposed to economic purposes.

The objective of this chapter is to identify for the two case studies or Master Italia S.P.A. and La Sportiva S.P.A. a correlation between these two important issues.

To develop this correlation, we will analyze the individual items that make up the income statement and balance sheet in which attention to the environment corresponds to an improvement in the company's economic and financial performance.

The correlation is not identifiable in every single item of the two prospectuses but attention will be paid to the indicators in which the path taken by companies in terms of SDGs goals is more verifiable.

Reducing the business activity to the profit itself or to the difference between revenues and costs, it will therefore be logical to think that a positive attitude should lead to lower costs or higher revenues, thus increasing the operating profit.

Obviously, to find these increases or decreases in income items, the prospectus to be analyzed will be the income statement which, together with the balance sheet, makes up the business balance.

All the goods and services that companies use to make a profit are collected in the balance sheet, the accounting statement that allows us to appreciate how the company carries out the production process and how the company has obtained these.

The contraposition of assets and liabilities allows us to outline equity, the latter will be the third point of our relationship between SDG choices and financial relationship.

## **1. Master Italia S.p.A.'s sustainability feedback**

The commitment of Master Italia S.P.A. adopting eco-sustainable behaviors is mainly attributable to choices of material with a lower environmental impact, to innovations in the production process that limit pollution and waste of energy and to find the method of product distribution that optimizes transport.

Citing the 17 objective SDGs mentioned in the United Nations 2030 agenda, these do not only concern reducing the environmental impact deriving from the processes of transformation, production and distribution of products but also a series of objectives in terms of equal access to education, achievement of gender equality, respect and protection of the worker which are difficult to quantify by analyzing the financial report of a company.

Certainly, the aforementioned purposes contribute to making the companies in question more competitive in the long term by promoting healthy and stimulating working environments for those who work there, but for the purposes of our analysis the focus will be more on seeking easily quantifiable relationships.

In this sense, it will be analyzed eco-sustainable managerial choices that can be found within the individual items of the income statement and balance sheet.

## **2. Master Italia S.p.A.'s income statement**

The income statement is the prospectus which, by definition, represents the contrast between company costs and revenues and the adoption of sustainable behavior if it is to be not only a morally shared choice for the purpose of safeguarding the planet but also an economically profitable choice we will have to translate it into lower costs higher revenues.

A sustainable economy must combine economic growth with environmental protection and the analysis of the production chain makes it possible to find new solutions that can reduce this impact, increasing and improving the economic and financial performance.

The main topic of analysis in this chapter is the study of the variability of costs and revenues with reference to the sustainability choices adopted by the company management.

Subsequently, the Master Italia S.p.A income statement for the 2019 commercial year will be reported.

The reference company has adopted an Income Statement with costs and revenues of the production set up and this methodology allows to highlight the positive components of income linked to production, therefore not from sales revenues but from the production carried out and allows to differentiate the value of goods and services acquired from internal resources employed.

The Production Value reflects a real economic vision and it is useful in order to highlight the value that the company has been able to add to the raw material and to all the services acquired externally, through the transformation process (added value). The added value therefore represents the part of the entire production attributable to the activity carried out internally.

For the purposes of our analysis, for each item in the prospectus reported, it will be highlighted whether the path towards sustainability undertaken by the company has affected it or not.

<b>MASTER ITALIA S.P.A.</b>	<b>2019</b>	<b>2018</b>
<b>A) Production value</b>	<b>17.649.842</b>	<b>15.439.830</b>
1) revenues from sales and services	16.956.698	15.439.830
5) other incomes	693.144	602.823
<b>B) Cost of production</b>	<b>14.297.275</b>	<b>13.254.715</b>
6) raw materials, ancillaries, consumables and goods	9.706.951	9.763.819
7) for services	2.882.736	3.118.081
8) for the use of third party goods	324.309	318.022
9) wages	1.474.609	1.206.426
10) depreciation and write-downs	309.354	229.621

11) variations for raw materials, ancillaries, consumables and goods	-443.780	-1.423.265
14) various management charges	43.096	42.011
<b>Difference between value and cost of production (A - B)</b>	<b>3.352.567</b>	<b>2.787.938</b>
<b>C) Financial income and expenses (15 + 16 + 17 + 17-bis)</b>	<b>-13.436</b>	<b>-3.074</b>
16) other financial incomes	71	2.230
17) interest and other financial charges	7.973	7.290
17-bis) profit and losses on exchanges	-5.543	1.986
<b>Result before taxes (A - B + - C + - D)</b>	<b>3.339.131</b>	<b>2.784.864</b>
20) taxes on income	928.881	791.123
current taxes	928.585	784.847
taxes related to previous fiscal year	/	283
deferred and prepaid taxes	296	5.993
<b>21) Profit (loss) of the year</b>	<b>2.410.250</b>	<b>1.993.741</b>

Figure 20: Master Italia's income statement (Documenti e informazioni di bilancio di Master Italia S.p.A.)

The first item to be considered is the Value of Production and, in order to make the products from a sustainable perspective, Master Italia S.p.A. takes care of the production process by focusing on the creation and production of "green products" that requires huge investments and high research and development costs to search for materials, technologies and innovations that can reduce the environmental impact and attract a market share that is attentive and pushed to this aspect.

This – not insignificant - detail can have a positive effect, for instance, an increase in turnover and therefore in revenues deriving from the sale.

The Income Statement also shows that despite a decrease in the number of pieces sold in 2019, from over 8 million to just over 7 million, compared to 2018, there was an increase in turnover which went from about 15.5 million euros to almost 17 million euros and this increase may be reflected in an increase in the average sale price from 1.90 euros to 2.41 euros.

	2018	2019
Pieces sold	8.117.578	7.027.075
Turnover	€ 15.439.830	€ 16.956.021

*Figure 21: Pieces sold on turnover (Bilancio di sostenibilità di Master Italia S.p.A.)*

A question arises spontaneously if Master Italia decreased the quantity of pieces sold and the quantity of goods produced from 2018 to 2019, but a global production value and a higher turnover emerge from the income statement, how can this phenomenon be explained?

An adequate discussion of the question is referred to the considerations on the balance sheet.

The second item of the Income Statement that assumes significant importance for the purposes of this analysis is the Cost of Production, which can be broken down into costs for raw and ancillary materials, costs for services, costs for the use of third party assets,

costs for personnel, depreciation and write-downs and changes in inventories of raw materials, ancillaries, consumables and goods.

From the point of view of research and development and production, to make its products in a sustainable perspective, Master Italia S.p.A. takes care of the production process by focusing on a number of key factors to reduce the environmental impact of the supply chain.

The company subject to our analysis does not purchase raw materials directly but first designs the product and only then communicates the type of material and fabric that the supplier must use.

Paying attention to the material for the products and packaging used in 2019 for a production of over 7.800.000 caps, compared to over 9 million in 2018, there is a more marked use of renewable resources and a clear example is the DYE product FREE, in 100% polyester dyed in the paste that allows to reduce the consumption of water and energy compared to traditional production processes and in addition to having a lower environmental impact it also allows savings in terms of production costs and therefore also in terms of costs for services.

These product responsibility initiatives also translate into greater health and safety for the customer and for the final consumer and this has a positive feedback for the whole company as it allows to increase the reputation of the products, the brand and the company itself. Moreover, it allows to increase the market share and therefore the demand for the product which indirectly leads to a decrease in production costs.

An important raw material for the analysis of the cost components that determine the cost of production and the cost for services is organic cotton, which is used for more than 30% of products.

Although the purchase cost of the organic cotton used by the company for its products is higher than the traditional industrial cotton used by competitors, the choice made is effective as it allows for higher quality products in terms of durability and resistance.

At the same selling price, if we wanted to compare the cost of production incurred by Master Italia with a competitive company, the contribution margin will be lower due to the higher variable cost component.

However, comparing the trend of the 2018-2019 economic results both concluded with a largely positive operating profit, it can be deduced that the lower mark-up adopted does not represent a deficit for the company performance.

In addition, not only the use of recycled and organic raw materials, but also saving energy and natural gas represent a relevant aspect for the purposes of this analysis.

In fact, for Master Italia being sustainable is not an abstract concept but is a daily behavior because day by day the company works to safeguard the environment and the decisions, actions and measures taken by management, as well as supporting a noble social and environmental cause, also have important economic results and the decrease in electricity consumption and a lower use of gas have led over the years to a decrease in the income statement item regarding costs for services.

To accurately assess energy consumption, an energy indicator can be adopted that measures the intensity of consumption in relation to the business activity. In particular the energy consumption expressed in MJ in relation to the number of pieces sold has been chosen as a parameter.

	2018	2019
MJ / Piece sold	0,088	0,124
MJ / Turnover	0,046	0,051

*Figure 22: Energy consumption (Bilancio di sostenibilità di Master Italia S.p.A.)*

In line with the orientation of the market from a focus on quantities to products with higher added value, in 2019 the number of pieces sold decreased compared to the previous year and consequently, the energy indicator recorded an increase which was however kept limited thanks to the environmental initiatives that the company has undertaken.

Following an analysis of ISTAT data on the prices of raw materials to businesses, it is possible to derive the average purchase cost of energy sources such as electricity and natural gas, which respectively cost 0.066 euros / Kwh and 0, 22 euros / Smc.

These units of measurement can be easily converted into MJ and allow us to roughly estimate how much weights within the income agglomeration under analysis to provide the production process with the energy necessary to manufacture the products.

Usually within the costs for services, the energy expenditure component represents a high cost for companies in this sector, as they deal with consumer goods.

The transition to renewable forms of energy could allow the company to further reduce this cost by highlighting in the accounting a revenue per production factor obtained in the economy.

On one hand, this investment would bring the positive effects of the reduction in the cost of services, promoting an important partial margin, such as higher EBITDA, but this should be commensurate with a reduction in EBIT due to higher depreciation costs.

In its campaign in favor of the environmental sustainability, Master Italia pays particular attention to the issue of water management.

In fact, water is used throughout the production process, not only for purely productive purposes, but also necessary for use in the daily life of the company.

Precisely for this reason, the company took charge of installing the GROHE Blue Home purification system, to allow employees to reduce the waste of plastic containers.

For the purposes of the economic analysis, however, the amount of water consumed converted into purchase cost represents an infinitesimal portion of the cost component just analyzed.

Throughout the process undertaken so far in order to demonstrate the economic value of a path towards sustainability, the treatment of waste produced during the production process by Master Italia is the most interesting element.



Through the reduction of waste and the operation of recycling and reuse in production, the company, despite having increased the total weight of waste produced from 165 tons in 2018 to 194 tons in 2019, managed to save over 10 thousand euros, increasing the reuse of more than one percentage point compared to the previous year on the total waste generated.

These data can be appreciated in the following table:

	2018	2019
Reuse	156 t	185 t
Recycle	7 t	7 t
Incineration	0,8 t	0,7 t
Dump	1 t	0,9 t

*Figure 23: Distribution of waste (Bilancio di sostenibilità di Master Italia S.p.A.)*

Master Italia S.p.A. has opted for a decidedly non-vertical business model, demonstrating this it is highlighted that the company imports semi-finished products very close to completion, almost entirely from the Asian market, as can be seen in the following figure:



Figure 24: Geography of suppliers in the world (Bilancio di sostenibilità di Master Italia S.p.A.)

The semi-finished products must travel many kilometers before reaching Italy for the final stages, mainly for the Shanghai - Venice crossing.

This operational choice involves two types of transport, either by sea via merchant ships or a faster solution by air.

In the sustainability report, the company mainly highlights the enormous disparity in consumption for the same mass transported between air and sea transport, thus choosing the latter.

The difference in CO<sub>2</sub> emitted for the same kilograms transported is a 20 to 1 ratio between aircraft and ship, but this is not the only convenience.

Following a research carried out by me comparing the prices of large cargo companies such as Maersk Line or airlines dedicated to the transport of goods such as DHL, not to mention other competitors, a price is demonstrated on average 10 times higher between the plane and the ship.

The choice made by the company therefore has an environmental value but also a significantly economic one given the volumes of transport.

Transport costs could therefore represent a significant component of the costs for services but it is really necessary to pay close attention to the cost configuration accepted by the company accounting in evaluating the production factors acquired.

In fact, the most complete cost configurations tend to include within the purchase cost the transport costs incurred to obtain the production factor, thus shifting this cost component from a cost for services to a purchase cost for raw materials, consumables and goods.

From the reported income statement, we can therefore appreciate how the policy adopted by the company, the sustainable choices of the managers and the company's mission have led to an increase in the Global Value of Production and a decrease in Service Costs compared to the previous year.

A further contribution to reducing the environmental impact derives from the catalog policy, which is an indispensable tool in the sector in which Master Italia operates.

In addition to promoting and introducing more and more digital catalogs, for all paper ones it was decided to use only FSC certified paper, i.e. paper that derives from forest and environmental management that is socially useful and economically sustainable and in addition to having a positive effect on potential customers, it also allows you to reduce your marketing and advertising expenses.

Finally, Master Italia, in addition to promoting sustainable economic growth with a low environmental impact, also focuses on offering a work environment that can guarantee personal and individual growth for all company employees, thanks to innovative organizations and management methods based on cooperation and on coordination.

The aim is to create social relationships that stimulate teamwork and all this has very positive implications on the work environment and on company performance as it guarantees the development of know-how, skills and abilities that allow to increase company profitability, its effectiveness and the efficiency of all the key processes for the creation of economic value.

The company promotes training courses for each business unit aimed at increasing staff skills, both from an environmental point of view and from a working and therefore technical, IT and linguistic point of view.

The commitment undertaken is aimed at training and developing highly competent and competitive individuals who, through their ability, can make the organization more and more efficient and effective in achieving its objectives.

### 3. Master Italia S.p.A.'s Balance sheet

In business administration, the balance sheet is one of the documents that together with the income statement, cash flow statement and explanatory note, make up the financial statements. The balance sheet defines the patrimonial situation at a certain date of a company and photographs the assets of the company at a given time, comparing assets and liabilities.

Through this document it is possible to identify which are the sources of capital and which are the investments made by the company.

A sustainable economy must combine economic growth with environmental protection, and the analysis of the financial situation allows to find new solutions that can reduce this impact, increasing and improving, consequently, economic and financial performance.

The main topic of analysis in this chapter is the study of corporate investments and financing with reference to the sustainability choices adopted by the company management.

Subsequently, the prospectus of the company's balance sheet for the 2019 business year of Master Italia will be reported:

<b>MASTER ITALIA S.P.A.</b>	<b>2019</b>	<b>2018</b>
<b>Assets</b>	<b>9.718.817</b>	<b>9.530.286</b>
<b>B) Assets</b>	<b>477.861</b>	<b>501.162</b>
<i>I - Intangible Assets</i>	<i>243.799</i>	<i>242.268</i>
3) industrial patent rights and rights to use intellectual property	89.817	98.231
4) grants, licenses, trademarks and similar rights	31.081	36.826
6) fixed assets in progress and advances	1.093	/
7) others	121.808	107.211
<i>II - Tangible Assets</i>	<i>229.603</i>	<i>257.494</i>
2) plants and machinery	21.187	24.110
3) industrial and commercial facilities	17.688	20.733
4) other assets	190.728	212.651

<i>III - Financial Assets</i>	4.459	1.400
d- bis) to others		
2) receivables due within the following year	4.129	1.400
2) Receivables due beyond the following year	330	/
<b>C) Current assets</b>	<b>9.224.054</b>	<b>9.012.233</b>
<i>I - Inventories</i>	4.852.092	4.432.349
4) finished products and goods	4.831.892	4.388.112
5) advances	20.200	44.237
<i>II - Receivables</i>	3.718.957	3.764.592
1) to customers due within the following year	3.718.957	3.764.592
4)to Parent company due within the following year	1.667	23.576
5-bis) fiscal receivables due within the following year	29.432	249.673
5-ter) deferred tax	6.003	5.838
5-quater) to others due within the following year	236.872	97.859
5-quater) to others due beyond the following year	24.981	45.331
<i>IV - Cash and equivalents</i>	354.050	393.015
1) bank and postal deposits	352.981	389.720
3) Cash	1.069	3.295
<b>D) Accruals and deferred</b>	16.902	16.891
<b>Liabilities</b>	<b>9.718.817</b>	<b>9.530.286</b>
<b>A) Equity</b>	<b>6.234.582</b>	<b>6.624.330</b>
<i>I - Share capital</i>	200.000	200.000
<i>IV - Legal reserve</i>	40.000	40.000
<i>VI - Other reserves</i>	3.584.332	4.390.589
<i>IX - Profit (loss) of FY</i>	2.410.250	1.993.741
<b>B) Provisions for risks and charges</b>	<b>4.543</b>	<b>1.642</b>
2) for taxes, including deferred ones	2.103	1.642
4) others	2.440	/
<b>C) TFR</b>	<b>274.953</b>	<b>245.643</b>
<b>D) Payables</b>	<b>3.160.556</b>	<b>2.628.558</b>
4) to banks due within the following year	580.340	/

6) advances due within the following year	166.633	126.129
7) to suppliers due within the following year	1.694.095	2.004.720
12) fiscal payables due within the following year	331.790	172.840
13) payables to welfare and social security institutions	92.188	80.613
14) other payables due within the following year	295.510	244.256
<b>E) Accruals and deferred</b>	<b>44.183</b>	<b>30.113</b>

Figure 25: Master Italia's Balance sheet (Documenti e informazioni di bilancio di Master Italia S.p.A.)

As can be seen from the balance sheet of Master Italia S.p.A., as regards the assets or goods and services in which the corporate wealth is incorporated, they are mainly made up of inventories of products and receivables from customers.

Another asset are tangible and intangible fixed assets which, consequently to the managerial decisions to derogate from outsourcing production, are justifiably less relevant than the two activities mentioned above.

In the company's balance sheet, it is possible to note the company policy undertaken to keep a large number of products available for sale in stock to meet the customer's needs in a timely manner.

The huge difference between receivables, inventories and fixed assets leads the reader of the financial statements to view the company from an increasingly commercial perspective.

As it is well known, on the Liabilities side there are the financing methods that can be divided into Third Party Capital (deriving from debt) and Equity Capital.

By analyzing the financial leverage, or the relationship between Assets and Equity, we obtain the ratio between the sources used by the company and we note how the Net Equity is double compared to the Debts.

To frame the sustainable choices made by the company within this accounting table, there will be initially a focus on the most important item, namely the inventories of finished products and goods.

Analyzing the income statement, a question arises spontaneously: how the company had managed to increase its turnover in the light of a decline in the units produced and sold.

The speech to be understood needs to be observed through the balance sheet since there's evidence that the value of inventories of finished products and goods in stock has increased.

An explanation for this phenomenon derives from the fact that producing eco-sustainable products with a lower environmental impact increases the quality of the product and the ease of conveying it to the market.

Generally, companies with a production that is decidedly attentive to environmental sustainability record higher values in the accounts of Patents and Trademarks.

This is not found in Master Italia since, as previously mentioned, patents and trademarks represent a minor part of active assets.

This phenomenon could be attributed to two explanations: on the one hand the adoption of a very prudent criterion in enhancing the company know-how, on the other the managerial decision to outsource production.

In conclusion, it will be highlighted how Master Italia S.p.A. manages to effectively combine business decisions that confer a lower environmental impact with very positive economic and financial performance.

Using the most common synthetic and income indices, it can be easily seen how the company makes significant profits against a low debt.

From the side of the income measurements we can note the operating profit (EBIT) of € 3.352.567 which demonstrates an effective operational management up by 20% compared to the previous year and the net profit of € 2.410.250 which demonstrates a growth of 21% compared to 2018.

As a demonstration of this growth, there's evidence of an increase in the profitability of sales (ROS) of 9.5%, obtaining a ROS of 20% in 2019.

In addition, a further synthetic indicator that confirms the positive trend of the company is the profitability of investments (ROI) which went from 30% in 2018 to 35% in 2019.

Finally, the return on equity (ROE), which is really important, in 2018 amounted to 42% and passed to 53% in 2019.

In conclusion, we can say that from the analysis of the financial statements, short-term payables are of little significance and the long-term economic and financial situation appears to be sustainable.

#### **4. La Sportiva S.p.A.'s sustainability feedback**

As discussed in the previous chapters, La Sportiva S.p.A. is a company that in recent years has adopted a business model that combines economic growth with an eco-sustainable approach.

Following the analysis carried out for Master Italia S.p.A. also in this case the compatibility between positive economic performance and environmental sustainability will be tested through a careful analysis of the behaviors adopted in relation to the accounting statements in the financial statements.

La Sportiva S.p.A. from 2012 to today has undertaken a project focused on high investments in research and development in order to create products with low environmental impact, eco-compatible and above all progressively reduce the CO2 emissions exhaled during the production process and the production of waste.

The company under analysis deals with producing sports equipment, in particular to satisfy mountain sportsmen.

The production of technical material due to the use of leathers, plastics and chemical agents for sizing has always been a particularly polluting sector but La Sportiva S.p.A., through constant research to reduce the environmental impact, differs markedly from its competitors in terms of eco-sustainability.

It will be mainly analyzed how the reduction of waste and the vision of waste as new production factors to be reused in the production process are an added value for the company.

Similarly, the use of renewable sources and the reduction of energy waste lead to lower costs that have a positive impact on the budget.

To confirm this, La Sportiva identifies circular economy solutions for the recycling and reuse of materials in production and innovation represents a characterizing aspect of the company's industrial development.



## 5. La Sportiva S.p.A's Income Statement

The first accounting statement object of our analysis is the income statement of Sportiva S.p.A. and as in the case of the company Master Italia S.p.A. it is stipulated on the basis of the costs and revenues of the production.

The following table shows the Income Statement for the 2018-2019 business year:

<b>MASTER ITALIA S.P.A.</b>	<b>2019</b>	<b>2018</b>
<b>A) Production value</b>	<b>105.859.459</b>	<b>99.837.942</b>
1) revenues from sales and services	101.860.188	95.682.975
2) variations in inventories of work in progress, semi-finished and finished products	2.905.263	3.595.897
5) other incomes	1.094.008	559.070
<b>B) Cost of production</b>	<b>96.479.551</b>	<b>90.902.718</b>
6) raw materials, ancillaries, consumables and goods	53.835.800	51.153.816
7) for services	20.829.371	21.268.187
8) for the use of third party goods	237.461	189.239
9) wages	13.643.545	12.506.869
10) depreciation and write-downs	6.697.919	6.084.060
11) variations for raw materials, ancillaries, consumables and goods	543.102	-1.167.972
12) provisions for risks	59.050	100.000
13) other provisions	421.824	584.619
14) various management charges	211.478	183.900

<b>Difference between value and cost of production (A - B)</b>	<b>9.379.908</b>	<b>8.935.224</b>
<b>C) Financial income and expenses (15 + 16 + 17 + 17-bis)</b>	-603.564	-485.171
15) incomes from participation in subsidiaries	15.085	16.484
16) other financial incomes	146.918	138.513
17) interest and other financial charges	965.409	888.223
17-bis) profit and losses on exchanges	199.842	248.055
<b>Result before taxes (A - B + - C + - D)</b>	<b>8.682.786</b>	<b>8.450.053</b>
<b>D) Value adjustments of financial assets and liabilities (18 - 19)</b>	-93.558	/
19) writedowns of financial fixed assets other than equity investments	93.558	/
20) taxes on income	2.632.320	2.730.776
current taxes	2.674.692	2.686.205
taxes related to previous fiscal year	19.503	16.196
deferred and prepaid taxes	-61.875	28.375
<b>21) Profit (loss) of the year</b>	<b>6.050.466</b>	<b>5.719.277</b>

Figure 26: La Sportiva S.p.A.'s income statement ((Documenti e informazioni di bilancio di La sportiva S.p.A.)

La Sportiva S.p.A, as can be easily seen from the income statement reported above, has a growing profit for the year and thanks to the data reported in the sustainability report it can be appreciated how the CAGR (Compound Annual Growth Rate) relating to turnover is positive from 2012 to today.

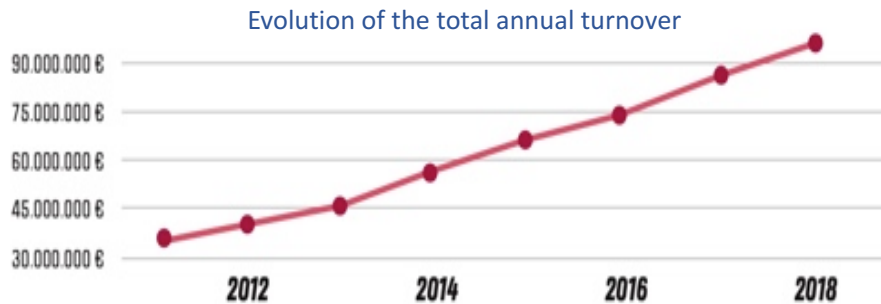


Figure 27: Total annual turnover evolution (La Sportiva S.p.A. sustainability report)

These data immediately provide the reader of the balance sheet with a picture of what type of company he is analyzing.

It will therefore be necessary to highlight the strengths of this growth with an eye to environmental sustainability.

Also in this case, it will be highlighted how greater attention to the environment can relate to higher revenues and lower costs.

There's to remind the reader that the intent to highlight this relationship cannot include every aspect of sustainable growth, for example La Sportiva is committed to creating a healthy work environment, without gender inequality, favoring youth employment and local roots by promoting many social initiatives.

These aspects are difficult to find in the income statement over a time interval of two administrative years but the indisputable benefits are appreciable only over a long period as companies are organizations of people and promoting a stimulating and proactive environment is the purpose of every business organization.

As previously mentioned, La Sportiva's commitment in making production less impactful as possible on the environment can be summarized around four key words: reduction

of waste, creation of an eco-sustainable product, reduction of energy waste and reduction of toxic waste.

It is important to find these behaviors in the accounting table under analysis mainly at the level of Revenues from sales and services, Costs for raw materials, consumables, ancillaries and goods and in the cost of services.

In the 2019 financial year, sales revenues reached the amount of 101,860,188 euros, an increase of 6.4% compared to 95,682,975 euros in 2018.

The managing director Lorenzo Delladio, recognized as a Knight of the Italian republic thanks to his constant commitment to respecting the environment, in the note on the management trend highlights how the decidedly positive trend of the company is closely correlated, despite the context of the economic situation general stagnant that has been going on for several years now, to have entered a highly technical and qualified sector in which the customer is looking for products with high quality.

This commercial strategy has certainly been a winner but it can only be achieved through a continuous investment in research and development in order to create more and more performing and ecological products.

As demonstration that the customer is satisfied with the attention to the environment that La Sportiva S.p.A. is paying, it is denoted by the increase in units sold of the new sustainable products introduced in the wide range of the company.

The creation of technical products for the mountains with a high innovative content makes it possible to attract sportsmen who require high-performance products with the most innovative technical materials, making them loyal to a product that is qualitatively very high and therefore equally expensive and this allows the company to continue its growth path from the point of view of revenues despite the stagnation of the market.

Again, with reference to sales revenues, it should be noted that 82% of sales are made up of exports, this phenomenon is associated with the opening of branches in France, USA, China and Hong Kong, but probably also thanks to the quality and sustainability certifications of the internationally recognized products that have helped to give the company a global appeal.



Figure 28: Markets served by La Sportiva S.p.A. (La Sportiva S.p.A. sustainability report)

In the international arena, it is important to underline the growth in sales recorded in "La Sportiva s.a.r.l." (France) which recorded an increase in turnover of 22% compared to the 2018 business year and in "La Sportiva N.A. INC. " (USA) which recorded an increase of 15% compared to the previous year.

Creating an eco-sustainable product as well as increasing sales revenues to the extent analyzed also means reducing production costs and the explanation will be presented below.

While sustainability means producing goods with the lowest environmental impact and therefore the use of ecological raw materials, on the other hand, it translates into being able to reduce processing waste, energy consumption and the production of toxic waste.

The first objective is therefore to minimize the waste of raw materials during processing, this behavior allows in fact to decrease the cost component for raw materials, ancillaries, consumables and goods, which in 2019 is around 50 million euros.

This cost component is particularly significant as 50% of the revenues is destined to cover this income component.

Since 2014, La Sportiva S.p.A., thanks to research and development, has introduced eco-bond technology, which is a PVC adhesive film that reduces the use of adhesives and glues which make up 9% of the raw materials used. .

Another micro-innovation of the production process obtained thanks to the professionalism of the employees is the use of a particular laser cutting carried out on the leather in order to minimize the waste of raw leather.

One of the most publicized company slogans is to combine the words "waste" and "resources" as during the production process the waste materials are collected and processed to be reused in order to obtain entirely recycled product lines.

This attitude benefits two income cost items, acting on the one hand on the cost of raw materials and on the other hand on the cost of services.

From the first point of view, the recycling of waste production factors allows the reuse of recycled products in the production process. The contribution margin is 100% revenue as the variable cost has already been previously incurred with the purchase cost.

To the reader of the sustainability report, the company highlights how from 2016 to 2018 there was a progressive decline in waste disposed of in favor of an increase in waste recovered, reaching all the waste produced in 2018.

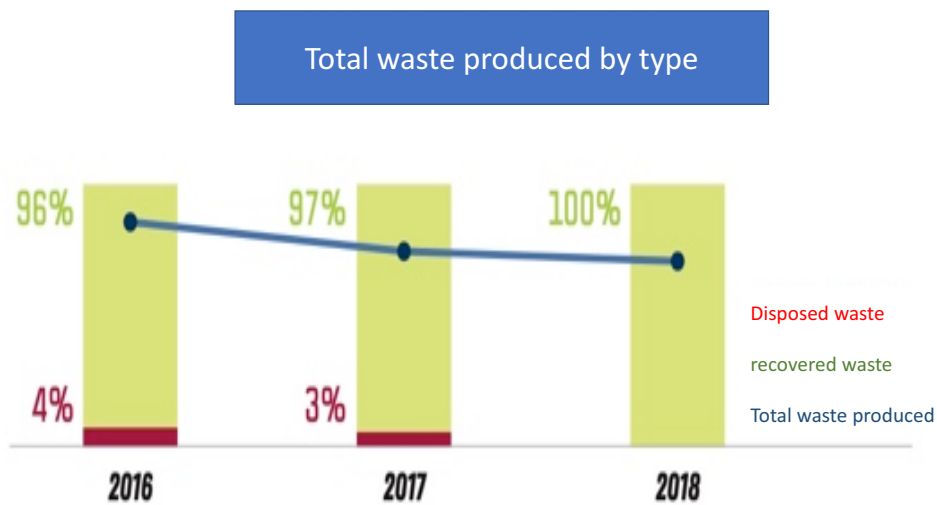


Figure 29: Total waste by type (La Sportiva S.p.A. sustainability report)

Reused waste concerns only waste that can be reused in the production process, excluding from this analysis the hazardous waste in which there is a gradual decrease thanks to research and development activities.

From the second point of view, the production of waste for the company always represents an incurred cost found within the income component "costs for services".

The purchase cost of the waste disposal service consists of a fixed portion and a variable one, so as the recycled production factors increase, the variable component decreases, thus obtaining a lower cost to bear.

Also within the income component costs for services which amounted to 20 million euros in 2019, a non-negligible component is the cost incurred in relation to the supply of energy services.

Energy is fundamental in the production process of any company and represents a significant cost component, the goal of every manager is to reduce this item and mainly through two behaviors: reduce energy waste by trying to optimize consumption and use renewable energy sources.

La Sportiva S.p.A. has drastically reduced the cost of purchasing electricity as it has installed numerous photovoltaic systems that make it possible to illuminate the offices

of the marketing and commercial department made self-sufficient from an energy point of view.

In addition, the self-sufficiency of these departments also extends to the need for heat thanks to the installation of heat pumps that reuse the heat generated by the production process, allowing to reduce the costs normally incurred by companies for the supply of gas.

It should be noted that in the face of an increase in production there has not been a proportional increase in the purchase cost of services, certainly also thanks to the investments made in order to reduce the quantity of energy purchased.

In conclusion, it is also important to report the constant reduction in water consumption not so much for economic purposes as in terms of environmental sustainability.

87% of water consumption is for civil use. This was achieved thanks to an investment made in 2012 which made it possible to recover rainwater by drastically reducing the purchase of water for the rinsing phases of the materials during the process. productive.

In economic terms, the saving is about 300.000 liters of water per year, which is not very impactful but takes on great environmental significance.

## 6. La Sportiva S.p.A.'s Balance Sheet

LA SPORTIVA S.P.A.	2019	2018
<b>Assets</b>	<b>9.718.817</b>	<b>9.530.286</b>
<b>B) Assets</b>	<b>58.770.367</b>	<b>62.496.101</b>
<i>I - Intangible Assets</i>	<i>27.421.631</i>	<i>30.718.194</i>
3) industrial patent rights and rights to use intellectual property	16.587	27.605
4) grants, licenses, trademarks and similar rights	296.904	309.591
5) goodwill	27.054.477	30.340.665
7) others	53.663	40.333
<i>II - Tangible Assets</i>	<i>26.571.322</i>	<i>27.194.334</i>
1) lands and buildings	19.558.793	19.667.987
2) plant and machineries	2.910.918	3.353.073
3) industrial and commercial facilities	2.147.482	2.355.333
4) other assets	1.858.673	1.810.002



5) fixed assets in progress and advances	95.456	7.939
<i>III - Financial Assets</i>	<i>4.777.414</i>	<i>4.583.573</i>
1) participation in subsidiaries	2.364.350	2.563.764
d- bis) to other companies	6.985	6.985
2) receivables to subsidiaries due beyond the following year	685.728	475.795
d - bis) to others	1.720.351	1.537.029
<b>C) Current assets</b>	<b>69.002.971</b>	<b>65.570.023</b>
<i>I - Inventories</i>	<i>35.776.230</i>	<i>32.796.035</i>
1) raw, ancillary and consumable materials	5.064.884	5.583.169
4) finished products and goods	28.782.892	25.885.827
5) advances	1.928.454	1.327.039
<i>II - Receivables</i>	<i>22.053.804</i>	<i>20.416.771</i>
1) to customers due within the following year	10.903.843	13.149.412
2) to subsidiaries due within the following year	5.434.014	5.730.441
3) to affiliated companies	/	217.013
5-bis) fiscal receivables due within the following year	5.312.809	898.501
5-ter) deferred tax	308.395	250.288
5-quater) to others due within the following year	94.743	171.116
<i>IV - Cash and equivalents</i>	<i>11.172.937</i>	<i>12.357.217</i>
1) bank and postal deposits	11.134.475	12.329.300
3) Cash	38.462	27.917
<b>D) Accruals and deferred</b>	<b>311.039</b>	<b>172.387</b>

Figure 30: La Sportiva S.p.A's balance sheet (Documenti e informazioni di bilancio di La sportiva S.p.A.)

The table above refers to the assets section of the balance sheet, or the goods and services in which corporate wealth is incorporated.

It denotes how investments are well balanced in the main classifications within the activities section.

In fact, the 128 million euros of assets, which remained practically unchanged compared to the previous year, are divided into 59 million which represent total fixed assets and 69 millions of current assets.

Fixed assets are classified as financial, tangible and intangible and the latter show the write-down of goodwill for 3 million euros, probably due to the administrative prudence criterion, leading to a reduction of the total fixed assets by the same amount compared to the previous year.

Compensating for this reduction is an increase in working capital of 4 million euros which is made up of inventories of production factors, products and goods (up by 3 million euros compared to 2018) and trade receivables (up by 1 million euros compared to the previous year).

The transition towards environmental sustainability undertaken in recent years by La Sportiva S.p.A. can mainly be seen from multiple points of view.

A first fundamental aspect is the evaluation of goodwill, in fact in the 21st century in which there is a progressive increase in environmental sensitivity, the lack of attention to it would lead to a progressive devaluation of this asset component.

In fact, we note how La Sportiva S.p.A. values the set of knowledge acquired in the fields of business organization, sustainable development, supply chain relations and customer relations for about 30 million euros.

The investments made in the last decade to make the company self-sufficient from an energy point of view (photovoltaic system) and reduce water waste certainly add value to the enhancement of tangible assets.

Ultimately, an important contribution made by the sustainability path can be found in the full cost valorization of current assets both in terms of product inventories, but also in terms of trade receivables.

The funding section is now shown:

<b><i>Liabilities</i></b>	<b><i>128.084.377</i></b>	<b><i>128.238.511</i></b>
<b>A) Equity</b>	61.863.094	55.832.127
<i>I - Share capital</i>	<b>1.032.000</b>	<b>1.032.000</b>
III - Revaluation reserves	8.992.827	8.992.827
<i>IV - Legal reserve</i>	<i>358.048</i>	<i>358.048</i>
<i>VI - Other reserves</i>	<i>45.457.373</i>	<i>45.457.373</i>
<i>IX - Profit (loss) of FY</i>	<i>6.050.466</i>	<i>5.719.277</i>
<b>B) Provisions for risks and charges</b>	<b>4.543</b>	<b>1.642</b>
1) for pensions and similar obligations	<i>1.510.002</i>	<i>1.109.191</i>

2) for taxes, including deferred ones	2.103	1.642
3) passive derivative financial instruments	27.620	8.119
4) others	734.125	870.527
<b>C) TFR</b>	<b>2.114.810</b>	<b>1.943.804</b>
<b>D) Payables</b>	<b>3.160.556</b>	<b>2.628.558</b>
2) convertible bonds due within the following year	1.800.000	1.800.000
2) convertible bonds due beyond the following year	12.600.000	14.400.000
4) to banks due within the following year	580.340	/
4) to banks due beyond the following year	5.371.509	9.683.171
6) advances due within the following year	300.368	46.164
7) to suppliers due within the following year	16.058.109	16.748.022
9) payables to subsidiaries due within the following year	542.414	416.294
10) payables to affiliated companies	31.507	7.348
12) fiscal payables due within the following year	513.693	1.347.922
13) payables to welfare and social security institutions	631.219	630.309
14) other payables due within the following year	1.731.191	2.199.110
<b>E) Accruals and deferred</b>	<b>154.571</b>	<b>433.185</b>

Figure 31: La Sportiva S.p.A's balance sheet (Documenti e informazioni di bilancio di La Sportiva S.p.A)

From the financing point of view, the company has a very high net worth which represents just under 50% of the total liabilities.

An important indicator that represents the financial structure of the company is the financial leverage, calculated as total liabilities / shareholders' equity, is equal to 2 and demonstrates how the loans are fairly balanced between own capitals and third party capital.

As a significant fact of the financial management trend in the year 2019 there is a decrease in payables for 7 million euros against an increase in this amount in equity.

With regard to the path towards increasing attention to corporate sustainability, it is highlighted in the financing branch that credit institutions in particular prepare financing plans at more favorable rates.

Sufficient information is not provided to the reader of the financial statements in defining this form of advantage but for comparative purposes we report the profitability of debts (ROD) which amounts to 1.9% obtained by dividing financial charges by the amount of debts.

In conclusion, we want to highlight how La Sportiva S.p.A. manages to effectively combine business decisions that confer a lower environmental impact with very positive economic and financial performance.

To carry out this analysis, some important synthetic and income indices are brought to the attention of the reader in order to evaluate the business performance.

From the side of the income measurements it can be noted the gross operating margin (EBITDA) which amounts to 14,573,857 euros with an incremental change of 211,482 euros compared to the previous year and the Net Result which amounts to 6,050,466 euros, an increase of 331,198 euros compared to 2018.

<b>La Sportiva</b>	<b>31/12/19</b>	<b>31/12/18</b>	<b>Variation</b>
Net Revenues	101.860.188	95.682.975	6.177.213
External Costs	73.642.786	68.813.731	4.829.055
<b>Value Added</b>	<b>28.217.402</b>	<b>26.869.244</b>	<b>1.348.158</b>
Cost of labour	13.643.545	12.506.869	1.136.676
<b>Gross Operating Margin</b>	<b>14.573.402</b>	<b>14.362.375</b>	<b>211.482</b>
Amortization, depreciation and other provisions	6.287.957	5.986.221	301.736
<b>Operating Income</b>	<b>8.285.900</b>	<b>8.376.154</b>	<b>-90.254</b>
Not characteristic income	1.094.008	559.070	534.938
Financial income and expenses	-603.564	-485.171	-118.393
<b>Ordinary result</b>	<b>8.776.344</b>	<b>8.450.053</b>	<b>326.291</b>
Revaluations and depreciations	-93.558		-93.558
<b>Result before taxes</b>	<b>8.682.786</b>	<b>8.450.053</b>	<b>232.733</b>
Income taxes	2.632.320	2.730.776	-98.456
<b>Net Result</b>	<b>6.050.466</b>	<b>5.719.277</b>	<b>331.189</b>

Figure 32: Reclassification of income statement (Documenti e informazioni di bilancio di La Sportiva S.p.A.)

On the synthetic indexes side, it is important to highlight the return on equity (ROE) which amounts to 9.8%, slightly down on the previous year and should not be considered as a negative figure as it was previously reported an increase in either profit and loss exercise either of the own capital.

Finally, the Return on Sales (ROS) shows a slight decrease of a tenth of a percentage point compared to 2018 and amounts to 9.2% as due to the greater investments in environmental sustainability, the share of depreciation has increased, reducing the profit ratio - Sales revenues.

<b>Main Financial Ratios</b>	<b>31/12/17</b>	<b>31/12/18</b>	<b>31/12/19</b>
ROE	10,5	10,2	9,8
ROA	10,9	7	7,3
Gross Operating Margin / Revenues	12,4	15,3	14,9
ROI (Cerved)	10,3	6,7	6,6
ROS	10,1	9,3	9,2

Figure 33: La Sportiva S.p.A's financial ratios (Documenti e informazioni di bilancio di La Sportiva S.p.A.)

The financial statement is now reported below:

<b>LA SPORTIVA S.P.A.</b>	<b>2019</b>	<b>2018</b>
Financial statement		
<b>A) cash flows deriving from operating activities (indirect method)</b>	<b>6.380.680</b>	<b>5.174.888</b>
Profit (loss) of the year	6.050.466	5.719.277
Taxes on earnings	2.632.320	2.730.776
Passive (active) interests	818.491	749.710
(Dividends)	-15.085	-16.484

Capital (gains) losses from sales of assets	-61.629	-5.429
<b>1) Profit (loss) of the year before taxes, interests, dividends and capital gains (losses)</b>	<b>9.424.563</b>	<b>9.177.850</b>
<i>Adjustments for non-monetary items that have no counterpart in the net working capital</i>	<i>8.111.220</i>	<i>7.144.940</i>
Provisions to funds	1.749.206	1.682.832
Assets depreciation	6.287.957	5.986.221
Write-downs for permanent losses in value	93.558	/
Value adjustments of financial assets and liabilities of derivative financial instruments that do not involve monetary movements	-19.501	-8.119
Other positive/negative adjustments	/	-515.994
<b>2) Cash flow before net working capital adjustments</b>	<b>17.535.783</b>	<b>16.332.790</b>
<i>Variations of net working capital</i>	<i>-1.086.001</i>	<i>-7.582.324</i>
Decrease(increase) of inventories	-2.980.195	-4.754.027
Decrease(increase) of receivables to customers	2.770.053	-4.097.368
Decrease(increase) of payables to suppliers	-461.894	700.219

Decrease(increase) of active accruals and deferred income	-138.652	78.288
Decrease(increase) of passive accruals and deferred income	-278.614	332.952
Other decrease(increase) of net working capital	3.301	157.612
<b>3) Cash flow after changes in net working capital</b>	<b>16.449.782</b>	<b>8.740.466</b>
<i>Total other adjustments</i>	<i>-10.069.102</i>	<i>-3.565.578</i>
Interest received (paid)	-811.229	-769.915
Income taxes paid	-8.082.464	-1.838.612
Use of funds	-1.294.290	-1.132.485
Other revenues(payments)	118.881	175.434
<i>B) Cash flows from investments</i>	<i>-2.594.513</i>	<i>-42.356.355</i>
Tangible assets	-2.053.757	-8.452.744
Intangible assets	-253.357	-33.900.512
Financial assets	-287.399	-3.099
<i>C) Cash flow from financing activities</i>	<i>-4.770.966</i>	<i>40.681.142</i>
Increase(decrease) of payables to banks	-5.080.214	5.000.294
New financing positions	4.850.000	40.599.900
(Reimbursement of loans)	-4.540.752	-2.919.052
(Dividends and advances on dividends paid)	/	-2.000.000

<b>Increase(decrease) of cash and cash equivalents (A +- B +- C)</b>	<b>-984.799</b>	<b>3.499.675</b>
Exchange effects on cash and cash equivalents	-199.482	-248.055
<i>Cash and cash equivalents and the beginning of the year</i>	<i>12.357.217</i>	<i>9.105.601</i>
Bank and postal deposit	12.329.300	9.011.988
Cash	27.917	93.613
<i>Cash and cash equivalents and the end of the year</i>	<i>11.172.937</i>	<i>12.357.217</i>
Bank and postal deposit	11.134.475	12.329.300
Cash	38.462	27.917

Figure 34: La Sportiva S.p.A's financial statement (Documenti e informazioni di bilancio di La Sportiva S.p.A.)

In conclusion, La Sportiva S.p.A. adopts a company policy in the area of cash management by maintaining large bank deposits which correspond to 9% of the assets and this amount does not participate in the formation of the return on investment (ROI) which is still around 6.5%.

No worrying financial situations are highlighted due to debts close to maturity and in any case the company maintains adequate cash flows to cover liabilities.

## 7. Comparison between the two businesses

INDEX	MASTER ITALIA	LA SPORTIVA
Emissions on turnover index	0,004KG/€ BILLED	0,008KG/€ BILLED
Energy on turnover index	0,05MJ/€ BILLED	0,09MJ/€ BILLED



<b>Eco-sustainability index of materials</b>	<b>56%</b>	<b>90%</b>
<b>Commitment to monitoring suppliers in a sustainable way</b>	<b>Yes</b>	<b>Yes</b>
<b>Turnover</b>	<b>16'956'698 euro</b>	<b>101'860'188 euro</b>
<b>EBIT/turnover</b>	<b>3.352.567/16.956.698=</b>	<b>8.285.000/101.860.188=</b>
<b>EBIT/turnover</b>	<b>19,77%</b>	<b>8,13%</b>
<b>ROE</b>	<b>53%</b>	<b>9,80%</b>
<b>ROI</b>	<b>35%</b>	<b>6,50%</b>

*Figure 35: Comparison between Master Italia S.p.A. and La Sportiva S.p.A.*

From the table in evidence, two significantly different business models, in which the comparison in terms of corporate sustainability takes on relevance, only taking into account the enormous dimensional differences, can be appreciated.

The reason for this comparison is to put the reader in the possibility of easily appreciating how difficult it is, despite the appropriate ratios per unit or turnover, to arrive at basically absolutistic conclusions that summarize which of these two companies performed better in eco-sustainable terms (Master Italia S.p.A., 2019).

While on the one hand it is permissible to think that by dividing emissions by turnover, for example, a comparison can be made in absolute terms, it is also true that equipping oneself with plants to support a higher production capacity involves a series of adjustments to the plants that achieve a greater impact. environmental.

Further comments are therefore left to the final reflections, capable of summarizing the complexity of the analysis as a whole.



## V - Conclusions

Having reached the end of this paper, the need for the whole economic and productive system to undertake an ecological transition path that allows to monitor every phase of the production process, from the revenue of the raw material to the sale of the product to the final consumer, in order to reduce the environmental impact as much as possible. There is no doubt that, until now, the various economic models applied by world production systems have not taken into account their impact on the environment and the planet. Both in the case of capitalist economies and in the case of systems more inclined to the forced redistribution of wealth, the final goal did not take into account the impact that the choices made would have on the community. Modern capitalist economies find their ultimate goal in profit; socialist or highly redistributed economies pursue wealth equality through State production. In neither of the two cases, however, there is the pursuit of balance and protection of the external environment, understood both in the material sense (air, seas and oceans, woods and forests, cities ...) and socially (protection of workers, quality of life ...). This wide and prolonged lack of interest has led to find ourselves faced with a situation in which the risk brought about by the choices made in the past is prefigured as close and tangible. This has aroused the ever growing awareness of the masses and public opinion that has resulted in the birth of a global and heterogeneous social movement that has begun to require the ruling class and industries to reverse course in order to regain control over the relationship between the human being and the Earth. The strength of this movement and the awareness it brought, from which the phenomena and models examined in this paper arise, is the heterogeneity of its components. The "environmental movement", if we want to call it that, does not have the classic ideological connotations of mass movements of a political nature; on the contrary, it is based on a concrete request whose sharing is transversal by age, gender, geographical location, occupation ...

Such a disruption of our habits and our way of working and producing the services and products that are used on a daily basis cannot be achieved solely through the efforts of private companies. For this reason, an intervention by the public decision-maker and international institutions has become necessary over the years. In recent times, the awareness of the international ruling class has gradually grown, paving the way for

multilateral agreements that would guarantee the commitment of world forces to combat climate change. An example is represented by the Paris Agreement of 2015, which is an agreement between the member states of the United Nations Framework Convention on Climate Change: the states involved are 196 and the commitments concern the reduction of greenhouse gas emissions starting from 2020. On the European front, agreements have been reached in the same direction, as in the European Green Deal with which member states have committed themselves to achieving climate neutrality by 2050. On the Italian side, on the other hand, in 2019 the PNIEC (Plan National Integrated Energy and Climate) which has set goals for 2030 in terms of energy de-carbonization.

The aforementioned movement of opinion has made more and more demands to the political class, which has led to the achievement of the objectives now highlighted both at world, European and Italian level.

This paradigm shift will have to involve, in the future, all the components of our societies: the Public Administration, associations, schools and universities, businesses, private citizens.

There is no doubt, however, that a substantial part of the objectives set will require the transformation of the industrial production model.

By analyzing the application of these objectives in the concrete life of companies, the need to develop tools that can accurately measure company performance in terms of sustainability and environmental impact has been identified in this discussion. Without these assessments, or without the tools through which they are conducted, it is not possible to identify the sectors or individual companies in which it is necessary to intervene as they are most harmful to the environment. Hence, the need to identify indicators capable of making clear the impact on the ecosystem of the various production processes.

Some of these indicators take into account: the cost of emissions on the level of air pollution; energy consumption; the use of recycled materials. It was appropriate, from the study of the various indicators used, to divide the various indicators into categories, combining each of them with the environmental element on which it has an influence, such as: climate change; the ozone hole; air pollution; waste; the health of the marine ecosystem... These parameters are fundamental to be able to grasp the lacking aspects

from a sustainable point of view and then develop solutions and interventions that fill this gap. This paper, in addition to providing the theoretical elements to understand the need for a rethinking of the production model, to then list and analyze the tools for measuring sustainability performance, also presented two case studies. These are two companies located in the north-east of the Peninsula that deal with the production of clothing.

The first, the Atlantis brand of Master Italia, produces sports and non-sports hats; the second, La Sportiva, produces climbing footwear and mountain boots. In the final two chapters, the two companies were analyzed on two fronts: the sustainability report and the relationship between the adoption of a sustainable model and economic performance.

Before illustrating the contents and results of the examination, it is necessary to specify the reasons behind the choice made. It is wanted, first of all, to examine the sustainability report of the two companies as it represents an official document provided by the company in which it exposes data regarding its environmental impact to stakeholders, both internal and external. This is a very important document, in view of the change mentioned above, as it represents the willingness of companies to be transparent about their impact on the environment; transparency is a central value if you want to embark on a sustainable path. Through the analysis of the sustainability report it was possible to observe the various fronts on which the two companies intervened to understand how a sustainable business model is applied in practice. Secondly, the relationship between environmental and economic performance was analyzed. It is believed that it should be noted that, within the movement of public opinion that requires a change in terms of environmental impact and the fight against climate change, there are different positions: some more radical, others more moderate. The writer ranks in the second category, believing that the sustainable approach to business should not sacrifice economic success and wealth creation.

A loss in terms of economic result is only acceptable as a transitional phenomenon, while it is not foreseeable in the long term.

With this we want to affirm that it is wanted to deepen the link between

sustainability and wealth creation because it is believed that investments in the former should not reduce the achievement of the latter, or rather of the ambition to increasingly improve general well-being.

With regard to La Sportiva, it was concluded, after an analysis of the documentation consulted, that the company decidedly embarked on a process of "lightening" production, trying to reduce its impact on the environment as much as possible. This was achieved by reducing the waste of the materials used and reducing the emissions of pollutants. The same commitment was found in Master Italia, which concentrated a lot of its attention on the procurement of sustainable raw materials, such as cotton. Both companies write, in their sustainability reports, that their commitment extends beyond the boundaries of the company, also requiring their suppliers to guarantee respect for the environment and human rights in sourcing production factors. Wanting to make a comparison, it was found that Master Italia has a lower environmental impact than La Sportiva. However, the two companies are both far from achieving environmental neutrality, or the achievement of a production model that does not cause any damage to the environment; there is, however, a consistent commitment both in making this change and in communicating data and information transparently to stakeholders. On the other hand, with regard to the relationship between economy and sustainability, the various financial statements of the two companies were examined, analyzing the various items in order to understand the contribution that the sustainable choices adopted have had on the economic side. It was deduced that, although in the short term it is not easy to detect the positive results of these choices, they have a positive impact. Rather, it is believed that these decisions will bear fruit in the medium to long term, positively influencing the brand image and thus increasing its interest in the eyes of consumers.

The challenges that climate change and air pollution pose to everybody are ambitious and difficult, however it is believed that people can ultimately hope that it will be possible to reverse this sickly trend, also in light of the positive examples of Master Italia and La Sportiva.

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