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Thesis

***The Sustainable Development Goals: an analysis of
Sustainability Reporting in the Italian Paper and Pulp Industry***



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To my grandmother Francesca, who has always dreamed of having an Engineer in our family.

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Abstract

In 2015 the United Nations Member States have adopted the 2030 Agenda for Sustainable Development, which contains 17 Sustainable Development Goals (SDGs): the purpose of these goals is to shape a prosperous future for people and the environment in both developing and developed countries and to encourage Countries to create a global partnership for achieving them.

The United Nations have highlighted that business organizations' impacts are crucial for improving and safeguarding our planet and our society; furthermore, various companies have implemented actions and plans that are socially and environmentally beneficial, usually adopting Corporate Social Responsibility practices.

Several organizations are used to disclose voluntarily their environmental, social and economic performances in Sustainability Reports, which are communicative documents that allow organizations to publish their performances to both their external and internal stakeholders. Recently, the European Commission has introduced the Directive 2014/95/EU that imposes big organizations to disclose non-financial information: this requirement has determined an important change for companies that are involved and it has highlighted the necessity of shifting towards a global and sustainable economy, where companies are required to combine long term profitability, social justice and environmental protection.

In this thesis it has been analysed the Paper and Pulp Industry and there have been especially considered the sustainability practices that have been adopted for safeguarding the environment, such as the utilization of certified raw material sources, the adoption of technologies that minimize water pollution and greenhouse gases emissions and the re-utilization of waste materials thanks to recycling processes. It has been found that, despite

this industry is an energy and capital-intensive industry, it is able to operate sustainably; furthermore, an important element that determines the sustainability of the industry is that paper is a sustainable material since it is natural, renewable and recyclable.

It has been specifically analysed the Paper and Pulp Industry in the Italian context, considering especially the Sustainability Reporting and the non-financial information that companies disclose, and the adoption of certifications, that allow to differentiate products and to guarantee that goods are produced with the adoption of sustainable practices.

This thesis highlights the importance of companies' communication of their environmental and social performances and provides a comprehensive overview of the Paper and Pulp Industry that is able to operate sustainably, despite being an energy and capital-intensive industry.

Introduction

The aim of this thesis is to analyse companies' behaviour in the light of the actualization of the Goals that have been established by the United Nations in the 2030 Agenda for Sustainable Development.

Indeed, over the last years, it has been noticed that World's natural resources are being exploited at rates that are not bearable anymore, for the environment and its biodiversity, and, last but not least, for our life on the Planet.

The United Nations have therefore decided to take action, developing the 2030 Agenda, whose goals and targets aim to preserve the Planet and to hopefully realize a deep turnabout in climate change and its related issues. The nowadays crisis, as commonly known, is the result of the Industrial Revolution's long-term effects, that have always been underestimated with inappropriate and insufficient policies, both at international levels, and at local ones.

The need for factories to start behaving more sustainably is not a choice anymore. It is essential that companies that use huge amounts of material and energy resources undertake new and adequate measures to minimize their pollution impacts.

In the light of the above, the first Chapter of this Thesis is dedicated to an overview of the environmental and social current situation, with a detailed description of the role of the United Nations in enacting and implementing the 2030 Agenda. A particular mention is given to the strong connection between the Sustainable Development Goals and business activities, which is deepened in the following Chapters.

Indeed, in the second Chapter it is introduced the concept of Corporate Social Responsibility and disclosure of Non-Financial Information, with a specific focus on Sustainability Report. In this direction, several related studies are being proposed and analysed.

With reference to the third Chapter, the Italian Paper and Pulp Industry is illustrated and are specifically described the sustainable practices enacted by this industry for managing the business more sustainably.

Finally, in the fourth Chapter it is performed an analysis of the Italian paper producers' companies, which focuses on the disclosure of sustainable information and the use of certifications. Surprisingly, it appears that in the Italian context those companies to do not tend to publish online Sustainable Reports, while they are used to communicate that they widely adopt environmental certifications.

1. The 2030 Agenda for Sustainable Development

It is commonly known that nowadays the entire planet Earth is hugely affected by pollution and that climate change impacts are causing destroying effects. Not only the environment is in danger, but also human beings are having several difficulties because of the disparities that are present in contemporary society.

The United Nations in the last two decades have been committed in developing several programs and objectives that involve different aspects of worldwide concerns, firstly implementing the Millennium Development Goals (MDGs). From 2015 these goals have been changed and further increased with the adoption of the Sustainable Development Goals (SDGs), that have created a framework that hopefully will allow to improve and to possibly solve those problems that are affecting the entire Planet with the implementation of an action plan of 15 years that will end in 2030.

The 2030 Agenda for Sustainable Development that contains the Sustainable Development Goals (SDGs) has been approved by every Member State of the United Nations (UN) in 2015 and aims to reach peace and prosperity in the entire planet Earth, for every human being living in it. It aims to build a prosper future, while at the same time, to improve the present.

The UN states that the 17 goals of the agenda have to be reached by every developing and developed country, thanks to the creation of a global partnership. It is recognized that in order to end poverty and to reach the other desired outcomes, it is important to align strategical actions that contemporaneously allow to advance health and education systems, to diminish inequalities and to gain economic progress. All these actions have at the same time to deal with climate change and with environmental safeguard.

1.1 Definition of Sustainable Development

In order to understand the 2030 Agenda and the goals that are described in it and that hopefully will be achieved in 2030, it is important provide a definition Sustainable Development.

In this section are reported the principal notions that are present a paper published by the UN and edited by Rachel Emas¹.

The first definition of sustainable development is provided in the report “Our Common Future”, published in 1987 by the Brundtland Commission, where it was recognized a connection between economic growth and environmental safety and prosperity in a long-term perspective. In the report 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” (United Nations General Assembly, 1987, p. 43).

The notions highlighted in this definition are the one of needs and the one of limits for the future. Needs are especially intended the ones that are indispensable and crucial for the poorest people living in our planet, to whom priorities should be addressed. The limitations that could compromise the needs of future generations are the ones that are related to technology implementations and society behaviours, that impact our past, our present and our future. (Francis et al., 2017)

As Rachel Emas states, the main important aspect that is present in the definition provided by the Brundtland Commission is that it is underlined how present generation have to preserve and safeguard the World in order to allow next generations to have the same possibilities that society has nowadays.

It is important to observe that in the definition of sustainable development, it is not written that nowadays the entire world has to stop doing every kind of activities that everyone is performing or that natural resources have not to be exploited. Indeed, it is important to

¹ “The Concept of Sustainable Development: Definition and Defining Principles”, written by Rachel Emas

understand that in order to achieve development in a sustainable way, society has to find the way to perform activities and to use natural resources in a sustainable way. In this way, future generations will have the possibility to perform their activities and to exploit resources in a sustainably as well.

In the paper it is recognized that the notion of resource preservation for the future is what distinguishes sustainable development policies between traditional environmental ones, that also aim to internalize externalities related to the environment, but in a more superficial and simplistic way. In fact, sustainable development aims to stabilize in a long-term perspective the economy and the environment thanks to plans of actions that contemporaneously involve the economy, the environment and society.

It is recognized that there are different typologies of assets that contribute to sustainable development, which are social, natural and man-made capital. In relation to the nature of the capital that is considered, sustainable development can be defined as weak or strong.

For weak sustainable development, human capital, that is considered the aggregation of man-made and manufactured capital, is considered as alternative, and therefore a substitute, to natural capital; whereas, for strong sustainability, the inimitable characteristics of natural resources and the capital that they provide, are not considered able to replace the human capital, therefore they are not considered as substitutes, but rather a complementary form of capital.

A research made in 2011 reveals that the majority of ecologist and of environmentalist support the definition according to strong sustainability (Stoddart, 2011). Therefore, scientist defend the assumption that human and natural resources are not interchangeable and for this reason, both nature and humans have to be managed in a sustainable way. Consequently, for sustainable development it is important to consider every resource on its own, without considering offsetting solutions as means to act in a sustainable way.

The principles that are recognized to be at the base of the concept of sustainable development are described in the following lines.

Firstly, intergenerational equity is the principle for which in the long run, requirements of future generations will be fulfilled (Dernbach, 1998; Stoddart, 2011). This principle is particularly important because not only next generations must have equal, or hopefully

improved possibilities and conditions that our society has nowadays. Furthermore, maintaining and improving social opportunities could consequently safeguard the entire planet, especially considering health and education improvements that would allow future society to interface with the planet and its issues with additional knowledge and reducing health diseases, that are related with the environment as well.

Another principle is the so-called “polluter pays principle”, introduced in 1998 from Dernbach, according to which “governments should require polluting entities to bear the costs of their pollution rather than impose those costs on others or on the environment”. For being consistent with this principle, policies would have to be shaped in a manner that allows to internalize environmental costs and thus, negative externalities would be abated.

With regard to this last principle that has been mentioned, on the UN Conference on the Human Environment in 1992 it has been proposed a precautionary principle, that is intended to give responsibility to the one that intends to take actions and to be accountable for providing evidences that the action that he wants to perform, or performs, do not cause substantial harm. Actually, during the conference it was stated that in case of activities that could possibly threat the environment, causing permanent and substantial damages, even if for such actions there are not scientific evidences of harmful consequences, this do not allow to postpone cost-effective measures that could avoid environmental issues.

1.2 The reasons why the United Nations has implemented the SDGs

The United Nations have decided to implement the 2030 Agenda for Sustainable Development basically for safeguarding the environment and for solving inequality issues that affect worldwide society.

It is widely known that during the last decades, despite several progresses which have been achieved, most of the times humans have not been able to, or even, have not paid attention to act in a sustainable way. Especially in the last century, after the second industrial revolution, humans have exploited at the maximum potential rate possible every kind of resources, not considering the consequences that this could cause for the environment, and for society as well.

In fact, several problems have arisen especially due to the human interaction with the environment, affecting the entire World and causing destroying effects such as high level of pollution and of greenhouse gasses emissions, thereby causing global warming and in general terms, climate change.

Nowadays society is used to consume several products and to create enormous amount of waste, not taking into consideration or forgetting that natural resources are limited and also that waste is not easily and quickly absorbed by the environment.

It is therefore important to take urgent actions in order to manage resources and the consequential environmental issues that are caused: in the 2030 Agenda several goals aim to solve those issues.

Furthermore, not only environmental concerns are one of the main aspects that the UN deals with, but also society issues are the focus consideration that the UN considers.

In the following paragraph will be presented the main aspects that led the United Nations to develop the 2030 Agenda and the Sustainable Development Goals.

1.2.1 Unequal distribution of resources

One of the main reasons that led the United Nations to implement the 2030 Agenda is also the concern about the unequal distribution of resources.

The United Nations in 2016 has published an article in its website that discuss about inequality. In the article it is mentioned a report published by the Oxfam confederation from where it results that the total wealth possessed by 62 rich people is equal to the wealth that is owned by the poorest half of worldwide population.

It is commonly known that salaries and richness are unequally distributed around the world and they are still present and continue to spread in nowadays world. In fact, Oxfam believes that in the 21st century income and wealth are considered to be the most evident inequalities that are usually considered in debates. Moreover, it has been recognized that in the entire world there are several gaps concerning education and health that not only are persisting, but in some cases are even worsening.

In the article it is also stated that in the last years it has become more evident that inequality does not concern only specific geographical areas or the development phase that a country is living. Nevertheless, it is rather a challenge that every country is facing, whether they are developed, developing or that averagely have higher or lower income. The UN believes that every country requires the intervention of policy actions and provisions for intervening in inequality issues.

The United Nations believes that because of the different effects that disparity cause in both economic, social and environmental aspects, for reducing inequalities it is important to implement strategic plans of actions, considering the perspectives of every sector of society.

In the 2030 Agenda it is evident that it has been established a strong commitment for defeating inequalities. Indeed, there is a specific goal that aims to reduce inequalities that are present both within and also among countries. Furthermore, it has been recognised by the UN that the commitment to fight against disparities is one of the guiding principles that is able to

allow the assurance and the guarantee for providing equivalent opportunities to everyone and, at the same time, to diminish the possibility of having uneven outcomes during the development process.

The UN looks at inequalities not only with the perspective of wealth, education and healthcare, but also as a moral concern because it is considered that economic differences, political misalignments and social exclusions are the greatest barriers that have to be abolished in order to achieve the 2030 Agenda vision which is “to leave no one behind”. In the expression of the vision of the UN it is clear that in order to have a future where no one is left behind, it is implicit that inequalities must disappear.

As ultimate consideration, it is important to report that the UN considers that inequality is strictly connected to peace and security issues. This concept has the following explanation: disproportions of resource availability could eventually incentive conflicts and also poverty conditions that consequently would strengthen weaknesses, especially of the ones that already are in riskiest situations. As further consequences, it could be possible that those situations could cause more uncertain situations and wars.

It is evident how important is that in our society inequalities are abolished, in order to live in a more prosperous and safer world.

1.2.1.1 NGOs and organization fighting against inequalities

As it has been mentioned in the previous paragraph, it is not only the United Nation that is concerned and that it is operating in order to improve society issues and to solve inequalities in the World.

In fact, Oxfam (Oxford Committee for Famine Relief) International, is a confederation that has been created in 1955 from different Non-Governmental Organization (NGO), aiming to provide improved impacts in order to reduce worldwide poverty and injustice.

Oxfam was actually created in 1942 in the United Kingdom to send food provisions to women and children in Greece, that was occupied by the adversary during the Second World War. When the War ended, Oxfam has prosecuted to provide assistance to poor people living in Europe until the situation was more stable and from that moment the association has focused most of its attention to the necessities of people that live in developing countries.

Nowadays, Oxfam operates with the support of several partners in more than 90 countries to provide assistance for several issues.

Oxfam defines its organization as a global movement of people that fight and challenge inequalities, which are the main cause that maintain people living in poor conditions, aiming to defeat poverty. The humanitarian supports that Oxfam provides are intended to change the world and to last forever.

Besides Oxfam, which is one of the most famous NGO that dedicates its activities towards inequality issues, there are several other Non-Governmental Organizations that mainly operate in the same field of action.

It is important to mention at this point that even the European Commission has dedicated attention to inequality issues and has created a network that promotes rights, social inclusion and gender equality. The first action that the EU Commission has developed is the “Funding NGO networks”, which has organized several meetings, during which debates concerning existing policy issues with NGOs are discussed.

Furthermore, for “Promoting social inclusion”, the European Commission provides funds with the “EU Programme for Employment and Social Innovation” to several European NGOs. Finally, the EU commission finances groups and organizations that aim “promoting gender equality and rights of persons with disabilities”.

It is important highlight that even the European Commission has given importance to several NGOs that are fighting against several typologies of inequality issues.

Furthermore, it is important to recognize that the United Nation and Oxfam are considered to be the main organizations that consider the issues of under-developed and developing countries. Instead, the OECD (Organization for Economic Co-operation and Development) is the organization that comprehends developed countries and therefore, has a narrower vision

of the social and humanitarian problems due to the different and most promising situation that exist in developed countries. It is important to say that anyway, even the OECD considers that inequalities problems have to be eradicated from society.

The Organization for Economic Co-operation and Development is an organization composed nowadays by 37 countries. Member countries and OECD experts collaborate using information and studies for recommending policy decisions and have a crucial role for countries reviews, that are useful to achieve higher performance levels in every country.

The OECD members work towards improving the main problems that affect nowadays society, that are social and welfare issues, in particular the areas where it focuses are benefit and wages, work future, measuring well-being and progress, pensions, youth, families and children, gender equality, violence against women, LGBTI inclusion, housing, inclusive growth and inequalities.

Regarding inequalities, the OECD Secretary General has provided its perspective, which is in line with the ideas of the UN regarding inequalities, especially thinking that progress and growth are possible only if inequalities disappear. Furthermore, it is important to notice that the OECD members strongly believe that an economic growth goes together with equal opportunities of our society members.

The data of the OECD members reveal the greatest inequalities that are present in our world with regard to income, with tax, with gender, between regions, with health and well-being, with education and innovation. Therefore, these are the main aspects that have to be managed in order to diminish inequalities issues.

1.2.2 Social issues

It is widely known that in the last decades, some inequalities gaps have been reduced, but our world is still far distant from having societies with the same rights and opportunities, as it has been described in the previous paragraph.

The main disparities that are still present nowadays are related to income inequalities and poverty levels, to gender inequalities, to the possibility of having access rights for health and education systems, to the availability of sufficient quantity of potable water and of food, the affordability of energy usage and the rights to have proper work conditions and safe infrastructures.

The United Nations have worked towards solving society issues from decades, especially with the goals that have been set in the Millennium Sustainable Goals and with the Sustainable Development Goals.

In fact, after several conferences and summits of the United Nations, in September 2000 world leaders adopted the United Nations Millennium Declaration. In this way, a global partnership was established in order to implement the Millennium Development Goals (MDGs) with an established deadline in 2015. At the end of this period of time, it was recognised that the targets were not appropriately concluded, and this is the main reason that led the UN to establish in 2015 the Sustainable Development Goals.

It is important to recognise that from the MDGs, society issues such as poverty, hunger, education, gender equality and healthcare were considered the focal issues that had to be solved in order to improve society well-being. These society issues have been reconsidered and amplified in the SDGs, in fact all the previous goals have been reported in the new goals, even if in a slightly different perspective. Furthermore, it has been implemented a goal that considers also the importance of decent work conditions.

In fact, in the 2030 Agenda for Sustainable Development established by the United Nations there are several goals that aim to support social issues related to sustainable development in an integrated way with economic and environmental dimensions.

The 2030 Agenda implementation requires also that the institutions that deal with society growth have to modify their actions in order to be aligned with the SDGs requirements. Furthermore, Member States have recognized the necessity of reinforcing the social dimension of sustainable development. It is considered therefore necessary to increase consistency among the social sector with the implementations of targets that are the purpose of the SDGs and with the integration of social policies with policy-making processes, thus combining also economic and environmental concerns inside social policymaking.

1.2.3 The Earth resources are limited: The Earth Overshoot Day

In order to assess the Earth resource availability and the amount of human exploitation of those, it has been created a method that enables to estimate whether the annual usage of natural resources exceeds the ones provided by our planet. This method is known as the Earth Overshoot Day and it is calculated by the international research organization Global Footprint Network, which defines this day as “the date when humanity’s demand for ecological resources and services in a given year exceeds what Earth can regenerate in that year”.

The organization states that it is important that decision-makers consider the Earth resource ecological limits in order to implement strategies and plans that allow society to act and live within these limits. According to the association, it is necessary that decision makers place ecological limits at the centre of strategies and implementation plans, discovering and accomplishing alternative and more sustainable behaviours for living within Earth’s limits. In order to accomplish those targets, it is necessary that policy makers and business activities facilitate the creation of new technologies and infrastructures that allow to better operate within constraints.

It has been observed over the years that the Overshoot Day date is progressively being anticipated every year. In fact, until late 1960s, humanity was not considered to be in ecological overshoot: it started in 1970 when the Overshoot Date has been on the last days of the year, in 2000 it has been calculated at the end of September and in 2019 it has been in July 29th. This means that natural resources budget provided yearly by Earth are exhausted in less time and, according to the Global Footprint Network, it has been calculated that nowadays humanity operates as if 1.75 Earths are available for resource usage and waste absorption. Therefore, the planet needs one year and eight months approximatively to generate what humanity uses and wastes in just one year. It is obvious that this way of operating is not sustainable in the long run.

The next figure reports the historical data calculated as the Earth Overshoot Day, where it is possible to notice the tendency of the yearly anticipation of the Earth Overshoot day in the last fifty years.

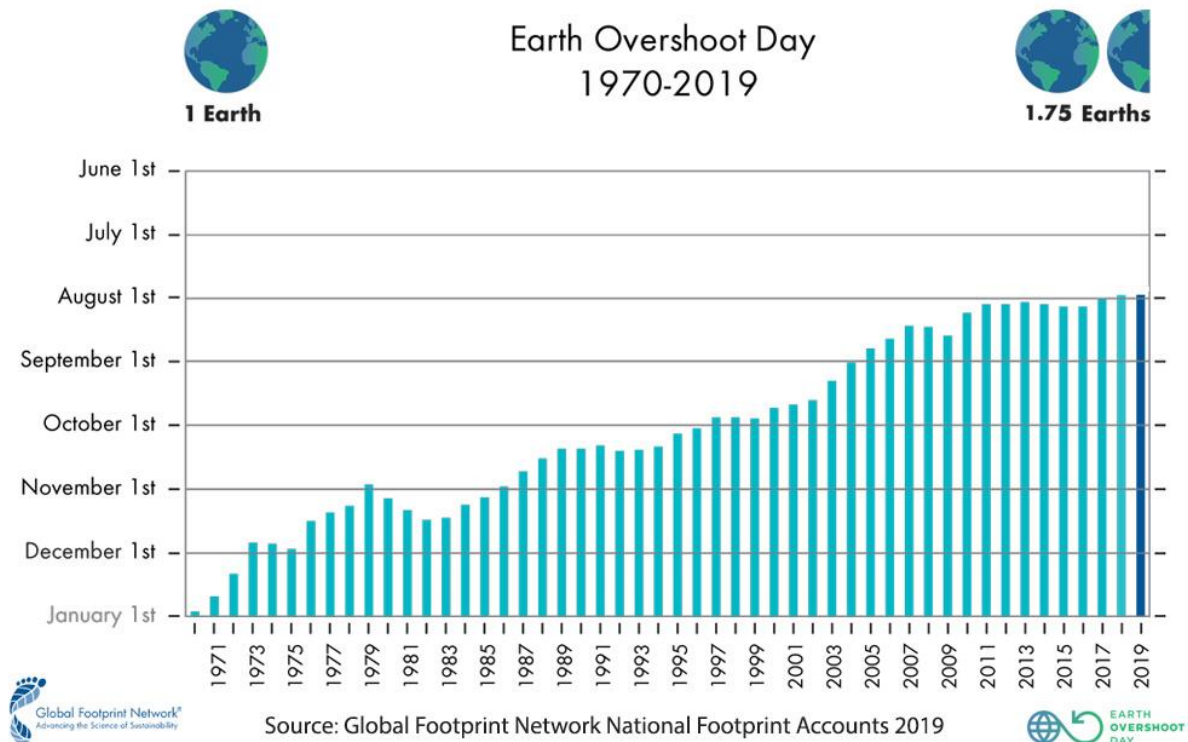


Figure 1 - Earth Overshoot day (Source: Global Footprint Network – National Footprint Accounts, 2019)

Despite the ecologic devastation and the high speed of extinction of animal species, it is considered that there is still an opportunity to save the planet: moving the date of the Overshoot Day of five days every years would allow to reach an equilibrium between Earth resources and human exploitation of those before 2050. In order to reach such an equilibrium, that is considered to be not only environmentally beneficial but also financially advantageous, several solutions are acknowledged by scientists. In order to reach this equilibrium, it would be necessary to put as primary targets energy, food, populations, cities and the planet itself.

It is important to know that the ecological debt that has been crated exploiting Earth resources without considering their limits is not just an ecological and environmental debt. In fact, it is considered that due to environmental devastation as soil erosion, high CO₂ emissions level in

the atmosphere and food shortages that are consequences of climate change, several costs are incurred yearly.

Paying attention at the graph of the Earth Overshoot Day previously reported, it is possible to notice a tendency of a quasi-linear increase, even if for some rare year there is a decrease. The most important trend that is possible to notice is that from 2010 onwards the curve is almost flat, which implies that the Earth Overshoot Day has not significantly changed and be anticipated during the last decade.

This effect could be probably due to the implementation of plans and actions that the United Nations have realised in order to diminish pollutions and to manage production in a more resource efficient way. In fact, even if the 2030 Agenda and the Sustainable Development Goals have been made effective from 2015, before this action plan other global environmental efforts have been made towards the preservation of the Earth.

Indeed, even in the Millennium Development Goals, that are the precursor of the Sustainable Development Goals, one of the goals was to “Ensure Environmental Sustainability”. This goal considered that during the period from 2000 to 2015, even if the deforestation process has decreased, there has been an increase in global greenhouse gas emission that kept affecting climate change. Despite that the MDGs have not been generally successful, it is important to notice that from the year 2000, the UN has created a goal that aimed to safeguard the environment. Furthermore, one of the main effects has been that forest exploitation and deforestation has decreased, and that even plans for “afforestation” have been implemented.

Additionally, the main reason that probably has not made the Earth Overshoot Day increase further is the implementation of the Kyoto Protocol, which is discussed in the next paragraph.

1.2.3.1 The Kyoto Protocol and the UNFCCC

The most important plan that has been implemented and that aims to control pollution and greenhouse gas emissions is the Kyoto Protocol, which has been adopted in 1997. After a long

ratification process, it became effective the 16th February 2005. Nowadays, there are 192 Nations that have ratified to the Protocol.

Under the Kyoto Protocol, industrialized countries are engaged and obliged to limit and reduce greenhouse gases emissions, with respect to the established targets that every nation has. Under the Protocol, only developed countries are bound since they are considered the main accountable ones for pollution and emissions. During the first commitment period, which goes from 2008 and 2012, the most industrialized countries had the target to reduce on average by 5% emissions in comparison to the levels of 1990. The emission targets were referred to the following gases: Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and finally, Sulphur hexafluoride (SF₆).

The Kyoto Protocol has therefore made effective the United Nation Framework Convention on Climate Change (UNFCCC), which entered into force from 1994 and 197 countries take part of it and are called the "Parties of the Convention".

The UNFCCC purpose is to prevent that human interference with the ecosystem could cause dangerous and risky effects that would consequently cause issues in the entire planet. In order to accomplish this target, the main goal of the Convention is to make greenhouse gas concentration stable in order to have them "at level that would prevent dangerous anthropogenic (human induced) interference with the climate system." The UNFCCC states that the aimed level of the emissions would be preferably reached with the appropriate time that is needed in order to permit the ecosystem to adapt to climate change effects in the most natural way possible. Furthermore, it would guarantee an adequate quantity of food provision and it would allow that even economic growth would be managed in a sustainable way.

In the UNFCCC it has been recognized that the OECD countries, which are the most industrialized ones and consequently, they are the most responsible ones for greenhouse gas emissions. Therefore, those countries are considered the ones that have to significantly lower their national emissions. The UNFCCC nowadays recognises that most of the OECD countries have implemented important actions in order to reduce greenhouse gas emissions and some of them have even succeed in reaching the desired targets.

These results concerning the most industrialized countries could explain the trend of the last decade of the Earth Overshoot Day since enormous efforts have been made in the years that

precede 2010 in order to reduce emissions levels that are considered one of the most affecting issues related to climate change.

Furthermore, from the year 2000, with the advent of the Millennium Development Goals, one of the goals specifically targeted the environmental issues in order to “Ensure environmental sustainability” and therefore particular attentions have been considered from several years for assuring environment safety and stability.

A relevant consideration is that the Earth Overshoot Day considers the resource that have been exploited during a specific year. One of the Sustainable Development Goals deals with Sustainable Consumption and Production. Therefore, especially from 2015, particular attentions have been made in order to better manage resource availability. It is probable that even before 2015 several attentions have been put to resource management and this can also be a reason for explaining the tendency of the last decade of the Earth Overshoot Day.

1.2.4 Climate Change

It is widely known that in the last years climate change is affecting entirely the World environment and therefore, entire ecosystems are devastated by it.

The effects of climate change have been observed by several scientists and, according to the Intergovernmental Panel on Climate Change (IPCC), temperature growth is expected to continuously rise because of human production of greenhouse gases, causing devastating effects in several World regions and causing increases in cost impacts that derive consequentially.

In its summaries for policy makers, IPCC states that “Taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time”. It is therefore necessary to take actions against climate change to mitigate the damages that have already been observed and to attempt to save the future of our planet.

The main effects, direct and indirect, that are considered to be due to climate change are:

- Temperatures rising;
- The melting of ices worldwide, in the Earth's poles and in mountain glaciers;
- Sea-level rising due to the ices melt;
- Several species are migrating to cooler places, while other are extinguishing and other ones are flourishing;
- Biodiversity losses;
- Averagely speaking, precipitations have increased, while in some areas severe drought are observed, causing increases wildfires jeopardies, crops shortages and lack of potable water. This implies that malnutrition and water crises are expected to further increase;
- Stronger events such as hurricanes, storms, flood and also droughts are expected to increase;
- Oceans acidification as a consequence of CO₂ increasing concentrations
- Pests and pathogens agents such as viruses are expected to become more frequent, causing several diseases and increasing health risks

From these effects, it is evident that climate change is not only causing damages to the environment, but it is affecting humanity health care and nutrition, and it is also increasing the risks related to safety. The consequences of those aspects are already causing economic crises and are predicted to further increase.

1.2.4.1 The Paris Agreement

In 12 December 2015 at the 21st Conference of the Parties that take part on the United Nations Framework Convention on Climate Change was approved The Paris Agreement, that is an agreement that aims to reduce greenhouse gas emission in order to diminish the effects of global warming. In its articles it has been agreed that States and regional economic integration

organizations that are Parties to the UNFCCC could sign their intention to adopt the agreement from 22 April 2016 until 21 April 2017.

Therefore, during 2016 the United Nations Framework Convention on Climate Change (UNFCCC) started to receive signatures for the Paris Agreement, which totalled 195 Nation signatures, but nowadays 189 Parties have done the ratification.

As it is stated in the Paris Agreement, the long-term goal established in this agreement is to maintain the growth of the global average temperature below 2 °C, limiting it to a maximum of 1.5 °C, since this temperature rise would considerably diminish climate change consequences. Furthermore, it is established that lowering greenhouse gas emissions and promoting climate resilience, it must be implemented a system that do not compromise food production. Moreover, in order to lower greenhouse gas emissions and to generate a resilient climate environment, it is necessary to provide and manage financial flows toward technologies that would be able to move towards these targets.

In the 3rd Article of the Paris Agreement, it is established that every country has to define its own plan and to produce a report presenting the contribution that it has assumed in order to mitigate global warming. Every country is supposed to contribute independently to reach the targeted goals of the Paris Agreement and national contributions are called nationally determined contributions (NDCs). Although contributions are set at national level, countries have the possibility to collaborate and to share their NDCs with other countries. In the third article of the deal it is specified that those contributions have to be ambitious, must make progresses over time and must aim at reaching the target of the agreement. Furthermore, following the principle of progression, every supplementary target should be more ambitious compared to the precedent one. In the fourth article is instead agreed that is necessary to report the contributions every five years and register them at the UNFCCC Secretariat.

According to Mark Kinver and Coral Davenport, the main problems that have been recognized related to the Paris Agreement is that there has not been set a mechanism to force countries to set their NDC targets within a specific time frame and there are no enforcements in case that NDC targets are not achieved.

In Europe the strategy that has been implemented involves energy and climate policies with the “20/20/20 targets”, which are the aim to reduce (from the levels of the ‘90s) of 20%

greenhouse gas emissions, to increase the market share to 20% of technologies that adopt renewable energies, and finally an increase of 20% for using energy in a more efficient way. It is important to notice that in this way, there is a creation of incentives for investing in green technologies, and an incentive to disinvest in fossil fuel usage.

The main problem that has been recognized by Bryan Druzin regarding the The Paris Agreement is that there are no penalties in case that target aimed are not reached and countries are able to exit the agreement whenever they want. In case of governmental withdrawals, this could cause the failure of the agreement.

1.2.4.2 Corona Virus: an effect of the Climate Change

Even nowadays, with the advent of the corona virus “Covid-19”, it is evident how much not only human healthcare is in danger, but also how all the economy is falling in a devastating crisis.

According to an article published by the BBC, Kristalina Georgieva, the managing director of the International Monetary Fund (IMF) considers the Coronavirus as the worst economic crises since the crisis of 1929 that caused the 1930s depression.

Furthermore, it is important to consider the possibility that the virus is probably due to climate change. In fact, according to an article published by “The Washington Post”, corona virus is connected to it. In the article written by Sarah Kaplan on April 15th 2020, it is reported that climate change is often seen as a threat that is able not only to exasperate current issues, but also to generate other ones and that every aspect of Earth life has been affected by it, viruses as well. Scientists state that since human have alerted the environment at a pace that has never be seen in any other history era, they have make easier the possibility of viruses’ evolution.

1.3 History and background of the 2030 Agenda and the Sustainable Development Goals

In the previous section it has been taken an overview of the general environment that surround the main problems of nowadays World. As it has already been mentioned, the United Nations have developed an agenda that is intended to organize, manage and monitor the World issues and to attempt to make several progresses towards a sustainable development for the year 2030.

In this section are described the goals that have been established in order to improve the worldwide devastation that is the result of human interaction with the World, especially from the third Industrial Revolutions.

1.3.1 The United Nations

The United Nations (UN) is an international organization that was officially founded on 24 October 1945, at the end of World War II, with the aim of preserving peace and security at international levels. Its Charter was initially signed by 50 state representatives, and nowadays the UN is composed by 193 Member States.

In the UN Charter are defined the UN purposes which are to discourage war, to sustain human rights and people dignity, to preserve international law respect, to encourage social progress and to improve standards of living.

In fact, the United Nations have several purposes that tend towards the creation of a more prosperous and peaceful World.

Firstly, the UN Security Council has is in charge of maintaining international peace and security. Therefore, the UN activities aim to attempt conflicts avoidance among states, and, in case of collisions, they aid controversial parties to make peace, creating peaceful conditions that can persist in time.

Secondly, the UN has always been committed to protect human rights, as it was written at the establishment of the UN Charter. The UN in 1948 has also published the Universal Declaration of Human Rights, which has been the first attempt in history to protect human rights with legal instruments at international law levels.

Furthermore, the United Nations aims to deliver humanitarian aid in the entire World. In fact, in its Charter it is stated that the organization aims to accomplish worldwide co-operation to settle international issues regarding economic, social, cultural, or humanitarian aspects. After the Second World War, the UN has assisted in the re-construction of Europe and has continued to provide assistance until nowadays. In fact, it manages the international community that provides humanitarian aid for both natural and human-created catastrophes.

Moreover, one of the main purposes that the UN has attempted to reach from the creation of the organization is to encourage sustainable development. In the UN Charter it is reported that the UN aims to “achieve international co-operation in solving international problems of an economic, social, cultural, or humanitarian character and in promoting and encouraging respect for human rights and for fundamental freedoms for all without distinction as to race, sex, language, or religion”. It is recognized that the meaning of development has changed during time and nowadays it is agreed that sustainable development can be defined as the “development that promotes prosperity and economic opportunity, greater social well-being, and protection of the environment”. Previously, it has been mentioned a different definition of sustainable development, that focused on the importance of the prosperity that our society has to assure to future generations. Anyway, it is important to notice that in this definition both the aspects of economy, society and environment are considered essential to reach sustainable development.

Finally, the last main purpose of the UN is to support international law. In fact, in the UN Charter it is written that one of the UN purposes is "to establish conditions under which justice and respect for the obligations arising from treaties and other sources of international law can

be maintained". From the beginning, the Organization has acted developing and respecting international laws through courts, tribunals, multilateral treaties and Security Council. The UN Charter is considered as an international treaty and provides enormous power to the Security Council in order to maintain peace and security; it is a binding international law device for the UN where foremost principles of international relations are codified.

The organization has developed several programs with the aim of supporting and to take actions in those fields that have just been mentioned and the importance of those programs is that they have a worldwide perspective and that every country gains attention and support.

One of the last achievements that has been established by the UN is the 2030 Agenda for Sustainable Development, where there are described the Sustainable Development Goals. The SDGs have been conceived on the 2012 UN Conference on Sustainable Development, that took place in Rio de Janeiro. The purpose of this conference was in fact to decide upon the establishment of an arrange of universal goals that are intended to urgently take actions for environmental, political and economic issues.

The Sustainable Development Goals have replaced the Millennium Development Goals that were the first set of worldwide goals that were conceived in order to eradicate poverty and hungry, to prevent diseases that cause death and to increase the possibility of education to every child.

1.3.2 The United Nations Millennium Declaration

The UN Millennium Declaration was adopted in September 2000, and it contains eight goals that engaged nations to join a global partnership with the main target of reducing extreme poverty in 2015. These goals are commonly known as the Millennium Development Goals (MDGs) and the United Nations Development Program (UNDP) has declared in the final Report of the MDGs that these 15 years of engagement have realized the most effective movement that aimed to diminish poverty in the World.

The eight Millennium Development Goals that were established are:

1. Eradicate extreme poverty and hunger;
2. Achieve universal primary education;
3. Promote gender equality and empower women;
4. Reduce child mortality;
5. Improve maternal health;
6. Combat HIV/AIDS, malaria and other diseases;
7. Ensure environmental sustainability;
8. Develop a global partnership for development.

The UNDP has recognized the importance of the 15 year of commitment with the MDGs, which have led to make substantial progress in the several fields of the goals. Furthermore, it is important to recognize that also thanks to the MDGs it has been possible to allow more and easily access to water and to improve sanitation conditions.

The UNDP has declared that the main achievements that have been reached thanks to the MDGs are:

- Since 1990, more than 1 billion people do not live anymore in extreme poverty conditions;
- Since 1990, children mortality has more than halved;
- Since 1990, there have been a substantial increase in children going to school, since they have more than doubled;
- Since 2000, there has been a decrease of almost 40% of HIV/AIDS infections.

Besides these important goals that have been reached, it has been recognized that the purpose of these goal has not finished and further improvements have to be made, which is the main reason that led to the creation of the SDGs, that are considered by the UNDP as “an urgent call to shift the world onto a more sustainable path”.

It has been reported that those goals have not been totally reached and this is one of the main reasons that has led the development of the SDGs, that have therefore replaced the SDGs.

1.3.3 The Post-2015 Development Agenda

From 2012 to 2015 a process called the Post-2015 Development Agenda was directed by the United Nations in order to supplant and to improve the Millennium Development Goals, thus allowing to decide upon the future global development framework, the 2030 Agenda for Sustainable Development.

The UN has stated that in order to achieve sustainable development, it was necessary to overcome the targets that were set in the MDGs since they had some limits. In fact, on its website, the UN reveals the several limitations that characterized the MDGs, stating that the crucial failure that has been considered is that “the MDGs fell short by not integrating the economic, social, and environmental aspects of sustainable development as envisaged in the Millennium Declaration, and by not addressing the need to promote sustainable patterns of consumption and production”.

The High-Level Panel of the Eminent Person on the Post-2015 Development agenda in 2013 issued the report “A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development”. The report was produced by the Panel looking at the current situation that was reached thanks to the MDGs and decided which changes would be needed in order to make improvements, listening to the opinions of people coming from different parts of the world, from different societies.

It was considered the World situation in the year 2000, compared to the present, and to the projections that were made for 2030. It was recognized that even with the improvements that have been made with the MDGs, inequality was still a significant issue: “The 1.2 billion poorest people account for only 1 per cent of world consumption while the billion richest consume 72 per cent”.

Inside the report are present some goals that aim to determine five transformation shifts:

- Leave No One Behind: from 2015 there should be the shift from decreasing to cease extreme poverty levels, therefore no one should be disclaimed from having basilar economic availabilities and human rights;
- Put Sustainable Development at the Core: it is necessary to integrate every aspect of sustainability, therefore the social, the economic and the environmental ones. It is necessary to take actions in order to decelerate the rhythm of climate change and environmental decay, since it is the main threat of humankind;
- Transform Economies for Jobs and Inclusive Growth: just a radical economic revolution would be able to finish extreme poverty conditions and provide better livelihoods thanks to innovative solutions, new technologies, and new business concepts. The creation of different types of economies, that would be able to provide equivalent opportunities for everyone, would lead to socially include every human being and to give new generations proper job opportunities. Furthermore, it would allow to have consumption and production performed in a sustainable way;
- Build Peace and Effective, Open and Accountable Institutions for All: it is fundamental not to have conflicts, to live in a peaceful world, and for human beings it is necessary to live a life without the presence of any kind of violence. Governments must act in an honest way, must be accountable for their actions, and must be responsive to citizen necessities. Therefore, it is necessary to recognize peace and a well governance structure are core element of welfare, they are not additional elements;
- Forge a New Global Partnership: with values such as solidarity, collaboration, and mutual responsibility innovative partnership should be found, and with fundamental ideals of humanity, reciprocal esteem and advantages. The main focus of partnership should be people, considering everyone in the world, incorporating especially those that usually have not been included in every action, such as indigenous people and the ones with disabilities. The ideally partnership that should be created would comprise civil society organizations, multilateral institutions, governments, the scientific and academic community, businesses, and private philanthropy.

1.3.4 The 2030 Agenda for Sustainable Development

The Sustainable Development Goals have been suggested by the Open Working Group (OWG), which is a group composed by 30 members of the General Assembly that has been expressly created as one of the outcomes of the UN Conference on Sustainable Development of 2012 (Rio+20). In Rio, Member States agreed to propose the Sustainable Development Goals. The OWG on SDGs was settled on 22 January 2013 and it followed the indications contained in the document “The Future We Want”, which is the outcome of the Rio+20 Conference. It states that the 30 members have to decide upon the working methodology, and to implement ways of including in the project every relevant stakeholder and expert from both civil society, scientific community and from the UN system. This would allow to have a variety of viewpoints and experiences that could be useful in order to not only define objectives, but also to accomplish them in a more integrated approach.

The SDGs have been introduced in the report published by the General Assembly “Transforming Our World: The 2030 Agenda for Sustainable Development”. These goals have been arranged through intergovernmental negotiation processes and the General Assembly has approved the final resolution on 25 September 2015, approving the outcome of the UN Summit of the Post-2015 Development Agenda.

The 2030 Agenda for Sustainable Development is defined as a “plan of action for people, planet and prosperity”, and it is a mean throughout which it is possible to reinforce and to reach peace in the entire World.

The UN identifies as one of the greatest challenges that our society has to face the ability of “eradicating poverty in all its forms and dimensions”, which is considered a crucial requirement for reaching sustainable development. Everyone is considered part of this plan, and only with the implementation of a collaborative partnership between countries and stakeholders it would be possible to reach successful outcomes. In the Agenda it is stated that the UN aims to achieve the established goals with the purpose of making a shift towards a

sustainable and resilient path. Furthermore, the intent is to involve everyone in this transformation, in fact the UN states that “we pledge that no one will be left behind”.

The Agenda comprehends the 17 goals and 169 targets that have their roots in the Millennium Development Goals but aim to realize what it has not been possible to accomplish with those previous goals.

The 17 goals are considered to be integrated and indivisible, in fact, looking at the goals and their description, it is evident how they are interrelated and that every goal depends upon other ones.

The UN efforts aim to consider and to solve economic, social and environmental issues, which are the three pillars of sustainable development. The UN General Assembly explicitly states that its actions and efforts will focus on the following points during the 15 years of the Agenda implementation.

With respect to People, the goals and targets aim to solve poverty and hunger problems and to guarantee that every human is able to live and to reach its life purposes with dignity and with equal possibilities in a safe and healthy environment.

With respect to the Planet, the UN states that it must be safeguarded from degradation, thanks to the adoption of sustainable consumption and production approaches, managing in a sustainable way natural resources and mitigating climate change. Only in this way, it would be possible that the World bears the necessities of both present and future generations.

In order to have Prosperity, the UN wishes to guarantee that every human life can be prosperous and that economic, social and economic growth are in harmony with nature.

One of the main purposes of the UN has always been to avoid conflicts and to create a peaceful environment. In the 2030 agenda as well, the UN has stated that it is important to shape a peaceful and inclusive society in order to reach a sustainable development: “There can be no sustainable development without peace and no peace without sustainable development”.

Finally, the UN aims to forge a Global Partnership for Sustainable Development in order to have the all the possible instrument to reach the goals of the Agenda. In this Partnership every country, every stakeholder and every person have to participate, and it is important to act with sympathy, especially with respect to the most vulnerable ones.

The UN recognises that the agenda contains huge ambitions, that have never been arranged and appointed before. Every country has accepted the Agenda and it is recognised that, because of different situations that are present in every part of the world, the efforts that have to be made in order to accomplish the 17 goals have to be implemented, taking in consideration national reality and capacity. Furthermore, it is necessary to consider the policies that are implemented in a nation, and it is important to consider different priorities that every country has.

In order to implement this Agenda and to foresee the future and desired planet, the UN has reported its vision. Several desired outcomes are mentioned, such as the one that foresee a world where in every country the economic growth is supported and sustainable, and where there are fair and proper working conditions. It is envisaged that consumption, production and the use of natural resources are managed in a sustainable way. It is desired a democratic world, where laws are respected, and governmental decisions are managed properly that would allow a sustainable development in terms of economic, social and environmental terms. In the vision of the UN it is written that technological development and use have to consider environmental resources and limits, and with regard of potential risk for biodiversity. In the envisaged world every species is protected and safeguarded by potential risks and lives without causing problems to other species: “humanity lives in harmony with nature and (..) wildlife and other living species are protected”.

In the 2030 Agenda it is also described the condition of the world in these years. It is recognized that during these years there are several threats that might compromise sustainable development, that go from climate change causes and consequences to every issue that human race has to face. Climate change is considered by the UN to be “one of the greatest challenges of our time and its adverse impacts undermine the ability of all countries to achieve sustainable development”.

However, the UN states that nowadays is also an historical moment where there are several opportunities to shape a better and more prosperous World. In fact, it is implicit that since it is necessary to fix nowadays issues, the actions that have to be implemented for this purpose, can provide even new business opportunities. In this way, not only new jobs can be created, but they can be shaped in order to continuously act in a sustainable way.

At this point of the discussion, it is necessary to see which are the goals that the UN has established in the 2030 Agenda. Therefore, the Sustainable Development Goals are:

1. End poverty in all its forms everywhere;
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture;
3. Ensure healthy lives and promote well-being for all at all ages;
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all;
5. Achieve gender equality and empower all women and girls;
6. Ensure availability and sustainable management of water and sanitation for all;
7. Ensure access to affordable, reliable, sustainable and modern energy for all;
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation;
10. Reduce inequality within and among countries;
11. Make cities and human settlements inclusive, safe, resilient and sustainable;
12. Ensure sustainable consumption and production patterns;
13. Take urgent action to combat climate change and its impacts²;
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development;
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss;
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels;

² NOTE: it is acknowledged that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the worldwide response to climate change.

17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

As it has already been mentioned, looking at these 17 goals it is easily understandable that they are interrelated and that every goal depends upon other ones, creating with them a sort of framework that is therefore integrated and indivisible.

These goals are effective from the 1st January 2016 and they define the targets that hopefully will be reached in 2030.

Every goal has several targets that have to be reached, counting a total of 169 targets. An important implementation that has been developed are the indicators related to the targets and the goals.

Thanks to these indicators it will be possible to measure the advancements that have been reached for every goal and target. For indicators it is important that data and information are shared in order to allow Governments to make follow-up and reviews, thus better monitoring the progresses and in case of necessity, to take further actions.

It is important to report that follow-up and reviews are intended to be done both at regional, national and worldwide levels. In this way, the UN believes that every citizen will also realize that everyone is accountable and responsible for its actions. In fact, it is important to recognize that every single action can have huge and important impacts in the entire world.

It has been recognized that the implementation of indicators has been recognized as an important improvement and achievement between the SDGs and the previous MDGs.

An important consideration is that it would be impossible to reach those goals only with the effort of governments, therefore every citizen and every stakeholder that is involved with a goal should contribute in order to reach the desired target. It is therefore easily understandable that the private sector is directly involved in the realization of the Agenda 2030, ranging from small and medium companies to the multinational ones, but also cooperatives, organizations of different types are involved, ending with the civil society and individual human beings.

1.4 The SDGs in the business world

Business organizations can create significant impacts in switching toward sustainable development, and therefore, the United Nations have implemented programs and supports to allow companies to act more sustainably.

1.4.1 The United Nations Global Compact (UNGC)

The United Nations Global Compact (UNGC) is a support for the United Nation goals made voluntarily from top managers belonging to different business realities to act in the business taking in consideration sustainability principles.

In fact, the UNGC mission statements declares that UNGC sustainability initiatives are willing to align business strategies and operations with universal principles such as human rights, labour, environment, anti-corruption and to take actions that advance societal goals.

The UNGC can be seen as the strategical plan that is implemented to guide business for considering in their business activities the SDGs.

The Italian Network of the Global Compact recognises that the business sector, being the main pillar of the economic progress, is one of the foremost instruments that is able to accomplish the aspired targets that are set in the SDGs. Every typology of company should contribute to support a sustainable development, implementing responsible business models, making investments to support innovations and to develop new technologies, collaborating with several and different stakeholders, trying to accomplish their needs with sustainable actions and implementations.

Furthermore, the UNGC states that product, process, technological and service innovations can be the solution that bring our world toward sustainable development.

The Executive Director of the UNGC, Lise Kingo, stated that “In order for business to contribute to sustainable development, corporate social responsibility has to consider respect for human rights as a fundamental element for achieving the SDGs. In addition, market incentives are solving the trade-off between competitiveness and sustainability”.

Business solution that operate towards sustainable development have therefore to be implemented considering the principles of corporate social responsibility, that concerns environmental, social and economic aspects.

In achieving the Sustainable Development Goals, also the private sector would gain several benefits. In fact, paying attention in the business environment, the SDGs would allow companies to identify new business opportunities, to reinforce stakeholders’ relations, to avoid market corruption acting in a transparent way and to recognise and manage in a more efficient way business risks.

According to Lise Kingo, it is necessary that a company possess three fundamental elements in order to implement effectively the SDGs.

Firstly, leadership is necessary for having top management commitment towards SDGs and to integrate SDGs in innovative business models. Moreover, collaborative approaches with stakeholders are essential since they would allow companies to share new investments, efforts and risks. Finally, transparency is fundamental for gaining stakeholders confidence.

It is evident that the alignment of strategical business opportunities and Sustainable Development Goals is able to reinforce one another, favouring a sustainable development and prosperity even in economic terms.

1.4.2 Studies of the involvement of the SDGs in the business world

Several researchers have wondered whether companies' involvement in sustainable development goals is effectively considered useful and especially, if there is a real commitment towards sustainability issues.

In the examined paper³ it has been analysed the involvement that corporations have provided to support the SDGs. The study shows that the involvement in the SDGs by companies is still limited and that it is mainly due to legitimacy and institutional reasons.

In the paper it is reported that for the SDGs implementation, the involvement of private business activities is essential for reaching the goals of the 2030 Agenda, since it is usual for companies to be creative and innovative in order to create value not only for the company itself, but also for society as well. Furthermore, it is recognized that the 2030 Agenda for Sustainable Development has a global governance structure that aims to generate the circumstances that would allow to reach an economic growth that is sustainable, inclusive and sustained, to reach a level of prosperity that is shared among society and to give the possibility for every human being to work in decent conditions (United Nations General Assembly, 2015, p.3).

In the paper it is reported that several companies that work with sustainable approaches are used to publish sustainability reports that describe how the company is able to perform and manage its activities in a sustainable way. In fact, a KPMG study that has been performed in 2018 found that the 40% of the 250 world biggest companies are considering the importance of the SDGs in their reports and from 2015, the year of the adoption of the 2030 Agenda, companies have demonstrate interests in the SDGs (Van Zantend and Van Tulder, 2018).

³ "Corporate Involvement in the Sustainable Development Goals: Exploring the Territory", edited by Johannes WH van der Waal and Thomas Thijssens, published in December 2019 in the "Journal of Cleaner Production".

It has been recognized that business involvement in the SDGs and the related actions that have been taken in order to “create value for the common good” (Dyllick & Muff, 2015, p. 14) seems to be the opposite of the principal goal of traditional companies, which usually is to create shareholder value. This is especially true for stock listed companies and generally, for the biggest business realities that operate worldwide. In the last years few social enterprises have been created in order to create value through business opportunities that mainly focus on the common good. These two reasons have made researchers wonder the reasons that bring different business typologies to get involved with the SDGs.

Furthermore, company interest in the sustainable development goals has essentially developed in these last years, therefore it is difficult to understand the reasons that bring companies to get involved with the SDGs and, at the same time, to pay attention to them.

In the paper it has been considered the relevant literature that deals with corporate responsibility, which has been mainly recognized in theories and themes that concerns Corporate Social Responsibility (e.g. Aguinis & Glavas, 2012; Waddock & Graves, 1997), Stakeholder Management (e.g. Donaldson & Preston, 1995; Hillman & Keim, 2001), Socially Responsible Investment (e.g. Friede, Busch & Bassen, 2015; Krüger, 2015) and in Creating Shared Value (Porter & Kramer, 2011). The studies related to these themes attempt to offer both theories and demonstrations to link business managed in sustainable way and financial evaluations.

Furthermore, it has been recognized that the main factors that drive a company to act in a sustainable way usually are “win-win” solutions for different aspects. For example, with sustainable actions, it is possible that a company can decrease its finances and labour costs (Eccles, Ioannou & Serafeim, 2014; Friede, Busch & Bassen, 2015; Krüger, 2015). Furthermore, it has been acknowledged that even business risks can diminish, while it is possible to increase the company competitive advantage and to widening market access, to increase product differentiation and to possibly create and improve a virtuous company reputation (Engert, Rauter & Baumgartner, 2016). Moreover, acting sustainably, could allow to better manage stakeholders (Donaldson & Preston, 1995), to keep or even intensify legitimacy (Ambec & Lanoie, 2008; Carroll & Shabana, 2010) or to produce shared value, or even to generate outcomes that are advantageously profitable (Porter & Kramer, 2011).

In the paper the researchers have wondered if these notions that have just been mentioned are actually able to provide support for the implementation of the SDGs. There are several debates upon this theme, but what is the most important aspect that Johannes WH Van Der Waal and Thomas Thijssens consider is that those concepts are not usually linked to the core business of companies, or in cases where relations are present, they are considered scarce.

For these reasons, Dyllick and Muff (2015, pp. 3–4) have stated that Sustainable Development is not directly connected to Corporate Responsibility since the first one is concerned about macro aspects that deal with universal issues that are the target of the SDGs, while the second one deals just with business activities that are more at micro level interest. Furthermore, they state that it is not much probable that stock-listed companies will make substantial changes in their business activities in order to implement a shift in creating value from shareholder to the common good. Therefore, it is possible that principles of corporate sustainability can initiate business towards more sustainable practices, but from the point of view of Dyllick and Muff it appears that corporate sustainability is not able to offer substantial contribution to the SDGs in companies' activities.

Despite the fact that corporations are not easily engaged with the SDGs through their sustainability actions, as it has been mentioned before, several companies are involved with the United Nations Global Compact that is effective from 2000.

Researchers have found several stimuli that drive companies to adhere to the UNGC such as dealing with pressures that come from several stakeholders and to better manage the company reputation (e.g. Berliner Prakash, 2015; Bernhagen & Mitchell, 2010; Janney, Dess & Forlani, 2009). Furthermore, being part of the UNGC provides the possibility of take part of a network that incentive learning from other realties (Perez-Batres, Miller & Pisani, 2011) and it demonstrate the firm's ethical principles (Orzes et al.,2017).

In the paper it is recognized that both the SDGs and the UNGC have the common scope of worldwide sustainability, but anyways they are substantially different. In fact, the Global Compact has been developed exclusively for business realties and it do not bound companies to some specific rules or has not implemented detailed outcomes, therefore, it only link sustainability topics that are significantly important to companies, their stakeholders and their business context. Whereas, the SDGs have a wider purpose and in order to support them it

has been created a framework that allows to measure and to control the overall situation thanks to the establishment of specific goals, targets and the relative indicators (Bansal & Song, 2017).

Therefore, in the paper it appears that the most important aspect that is considered to have substantial consideration for companies is their involvement with the Global Compact, even if it is seen more as a symbolic participation. Consequently, companies approach towards actions that support the SDGs is comparable to the one that is agreed in the Global Compact, that is a voluntary commitment that do not implies any binding implications.

The paper that has just been reported, as already said, is mainly focused on stock-listed and big corporations. Therefore, it is possible and especially desirable that different typologies of companies are more involved with sustainability issues and the SDGs, and this will be further examined in the next chapter.

1.4.3 SDGs: Decent work and economic growth, Responsible consumption and production and Life on land

In this thesis it will be analysed the Paper and Pulp Industry (PPI) and it is obvious that several SDGs are connected to this industry and with every company that work in this field.

In particular, it has been considered that the PPI is mainly connected to the goals number 8 “Decent work and economic growth”, the 12th, “Responsible consumption and production”, and the 15th, “Life on land”.

The first goal that has been mentioned is easily understandable for every business realty. In fact, the UN recognizes that in order to allow economic prosperity, it is important to “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”. Of course, this goal is linked with every company and with every business typology that are operating in the World.

It is important to mention it because it has not always been assured a good working environment, in fact several scandalous episodes have always been part of the working environment in history. Furthermore, in order to assure a sustainable economic growth, it is also important that lawful and respectful actions are at the base of working conditions.

With respect to the second goal mentioned, that aims to “ensure sustainable consumption and production patterns,” it has been considered that paper and pulp are commonly used in everyday life from every human being. Therefore, because of the huge amounts of these products that are utilized and wasted, it is very important to implement plans and actions that aim to manage these products in a sustainable way, both from the point of view of the producers and also from the point of view of the consumers.

In the chapter dedicated to the pulp and paper industry it will be analysed which are the methodologies and the actions that have been implemented in order to manage this industry in the most sustainable way possible.

Finally, the 15th goal aims to “Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss”. It is evident that the Paper and Pulp Industry is strictly related with forestry management. Therefore, it is important that the PPI, in order to work in a sustainable way, has to deal with suppliers that are able to manage forests in a sustainable and responsible way, that protect and respect the environment they work on, also to act considering the biodiversity that is present in forests, in order to safeguard it, too.

2. The Corporate Social Responsibility and the Sustainability Report

It has already been mentioned that the private sector has an important role in order to achieve the sustainable development goals. In fact, the private sector, and in particular different types of companies are able to deliver product and projects that are related to the SDGs, particularly thanks to actions that are defined and implemented by the Corporate Social Responsibility (CSR) policies that a firm adopts.

The CSR actions can therefore be considered the prevalent mean through which it is possible to bring inside a firm and to involve it with sustainability activities that are part of the purposes proposed in the SDGs.

In this section it will be explained what Corporate Social Responsibility is, what is the evolution of the CSR and what are the purpose of implementing the CSR in companies. Furthermore, it will be described how companies that perform their activities in a responsible way disclose their actions to their stakeholders.

First of all, it should be provided the notion of the Triple Bottom Line (TBL or 3BL) that have been coined in 1994 by John Elkington, which is strictly connected with the CSR concept.

2.1 The Triple Bottom Line

The concept of the Triple Bottom Line has been created since John Elkington supposed that companies should not only measure their performances with profits (or losses), which is the commonly known “bottom line”.

In fact, according to the author⁴, in the ‘90s from governments and citizens there was an increasing pressure concerning the methodologies that business entities used to evaluate and to manage their results and the consequences that derived from their operations.

Therefore, it has been coined the “Triple Bottom Line” method in order to measure the outcomes that were related both to the economic, the social and the environmental performances of a company. The TBL theory suggest companies to pay attention and to provide positive results not only economically, in terms of profits, but also to commit in assuring social and environmental issues. The theory was conceived because it was considered that a firm purpose is not only to create profits, but also to improve people life and the planet.

The TBL elements that have to be considered are therefore:

- Profits, which is the common measure of assessing corporate economic performances (the profit and loss accounts);
- People, which determines how socially responsible an organization has managed its activities;
- Planet, to assess how environmentally responsible a firm has acted.

These three elements are also the focal points of the Corporate Social Responsibility and it has been recognized that whether a company is able to have good performances in those fields, the TBL tool can be useful to assess the firm performances in achieving sustainability goals.

The three dimensions that are considered in the Triple Bottom Line to disclose economic, social and environmental matters are shown in the following figure, where it is possible to

⁴ in the paper “Accounting for the Triple Bottom Line”

notice that the intersection of these three dimensions provides sustainability approach in business practices.



Figure 2 - Triple Bottom Line 3P Formulation – (Source: The Corporate Sustainability Solution: Triple Bottom Line - Harun Kisacik, Mihriban Coşkun Arslan - 2017)

2.2 What is Corporate Social Responsibility?

In order to better understand the topic, it should be provided a definition of Corporate Social Responsibility (CSR).

It is recognized that the first attempt to define CSR has been provided by Bowen in 1953 as “the obligations of business to pursue those policies, to make those decisions or to follow those lines of action which are desirable in terms of the objectives and values of our society”. Therefore, from this point of view, it has been highlighted the importance of the social aspects of business practices.

Another attempt to discuss about the CSR notion in a firm environment was made in 1979 by Carroll, which claimed that corporations are not only obliged to respond to legal and economic duties, but they are also responsible in ethical and arbitrary fields.

Carroll recognised that there are four typologies of social responsibilities that constitute CSR, which are the economic, the legal, the ethical and finally, the philanthropic; these can be represented in a pyramidal form, placing them in order of importance that is considered for each of the responsibility typologies. The pyramid of CSR idealized by Carroll is reported in the following figure and it shows that at the base of the pyramid there is the economic responsibility that a firm has, since the first aim of making business is to create value and therefore, profits. On the next level there are the legal responsibilities since a company is bound to respect the law and therefore it must act lawfully. Furthermore, the other business responsibility is to perform activities in an ethical manner. Finally, there is the so-called philanthropic responsibility of a firm, which intends to direct business towards the creation of plans of action that aim to assist society financially and to improve life quality.

The Pyramid of Corporate Social Responsibility

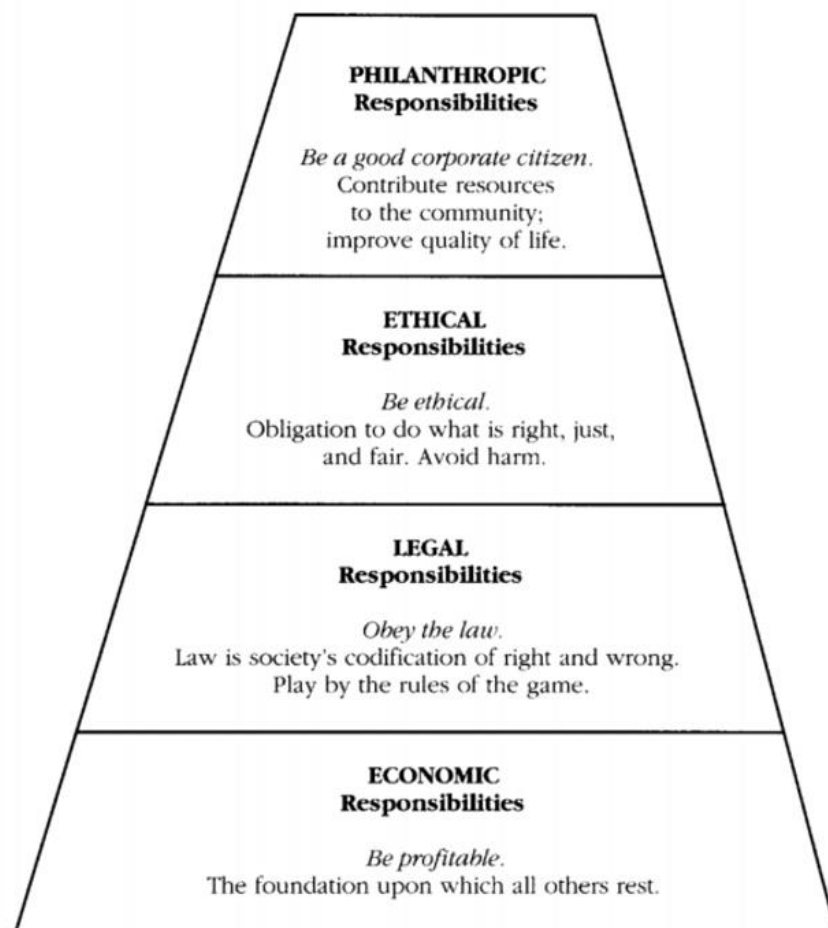


Figure 3 - The Pyramid of CSR (Source: Carroll - *The Pyramid of Corporate Social Responsibility: Toward the Moral Management*, 1992)

The concept of CSR has developed during these years and in fact different notions nowadays are considered, but the basic concept remains the one that has just been expressed.

According to Benedict Sheelby, CSR is nowadays defined as a self-regulated business practice, which goal is to support and take philanthropic actions in different ways, for example making charity, volunteering or through activist events for social purposes (Nancy Lee, Philip Kotler). Anyway, as it will be further discussed in another paragraph, it is important to distinguish charity actions from the ones that are implemented in CSR plans, even in some companies inside of CSR actions are involved charitable ones.

According to the research made by Alexander Dahlsrud⁵, there is a general confusion when it comes to provide a definition of CSR. In fact, according to Van Marrewijk (2003) there are several definitions of what is CSR that often create some partial and prejudiced ideas, that in some case can even cause that CSR actions are not implemented inside a company.

The main important aspect that Alexander Dahlsrud has found in its research is that, even if CSR is defined in different ways, there are always present five principal themes in its definition, which are:

- The environmental dimension;
- The social dimension;
- The economic dimension;
- The stakeholder dimension;
- The voluntariness dimension.

Therefore, since most of the CSR definition generally refer to each of these dimensions, it is not considered a huge problem the absence of a generally accepted definition of CSR.

In the report it has been conducted an analysis that aimed to understand the count occurrence of the CSR definition that was possible to find in Google, which is considered to be the biggest and mostly used internet search engine (Sullivan, 2006).

The analysis that has been performed has revealed that the mostly counted frequency found on Google is the one provided by the Commission of the European Communities provided in 2001, which defines CSR as: "A concept whereby companies integrate social and

⁵ in the paper "How Corporate Social Responsibility is Defined: an Analysis of 37 Definitions"

environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis”, which comprehends all the five dimensions that have been previously mentioned.

Remembering the definition of sustainable development that focuses on the implementation of sustainable practices for environmental, social and economic issues, it is easily understandable and possible to connect that CSR look towards the implementation of actions that aim to forge a sustainable development. Furthermore, since CSR actions are made by business entities, it is a highly valuable element that they are made on a voluntary base and it is significant that CSR actions attempt to consider every stakeholder that deals with the business activities.

Even the United Nations have provided their opinion regarding CSR, in particular with their agency called “United Nations Industrial Development Organization” (UNIDO), which is dedicated to encouraging worldwide industrial development in order to reduce poverty levels, to create a comprehensive globalization and to ensure environmental sustainability.

UNIDO defines CSR as a management tool that is used by companies to assimilate and incorporate social and environmental issues in their business operations and also to consider them for dealing with their stakeholders. UNIDO reports that CSR is commonly associated to the methodology through which companies realise an equilibrium between economic, environmental and social terms with the “Triple Bottom Line” (TBL) Approach and contemporaneously they can direct needs and requirements that come from both stakeholder and shareholders.

The agency highlights the fact that CSR actions, that can be seen also as strategically business methodologies, are totally different from the ones that involve charitable, philanthropic and sponsorship gestures and that CSR is able to deliver greater and more important results in comparison to those actions.

It has been highlighted that CSR can be adopted also in small and medium enterprises (SMEs), even if in those cases it is necessary to determine the best method that allow firms to suit their requirements and competences, without compromising the economic feasibility of such actions. In order to achieve this condition, UNIDO develops CSR programs with the TBL Approach, since it has been proved that it is the best way to achieve CSR actions in developing

countries. In particular, it has been recognized that for SMEs this approach allows to reach good level of social and environmental performances, not affecting their competitiveness.

Therefore, the TBL Approach is used as a tool to quantify and to communicate both corporate, economic, social and environmental outcomes and it has been recognized that with this approach it is possible to combine private companies with the targets that are set to reach a global sustainable development, therefore to establish goals that go further from the basic one of only making profits.

The point of view that the UNIDO believes that has to be assumed is that in order to create or to become a sustainable organization, it is necessary to have financial stability, to diminish at the minimum possible level or even abolish damaging environmental effects, and to behave respecting society ethics and beliefs.

UNIDO has recognized that in order to realize CSR practices appropriately, it is possible to gain several competitive advantages. For example, it could allow to further obtain capital and to improve market access, sales and profits, to save a greater percentage of operational costs, to obtain higher performances in terms of quality and productivity, to use more efficiently human resources, to have a better brand reputation and an improved company image, to gain increased customer loyalty, to take decisions in a more managed and defined way and to improve the managerial processes that overlook company risks.

As it has been reported by UNIDO, CSR actions can be seen also as a strategic management tool. In fact, according to Zachary Johnson CSR is mostly conceived as a strategical initiative that business and organizations adopt in order to increase their brand reputation; furthermore, it is considered as a communicative mean. Regarding these aspects, several researches have been performed, especially related to CSR disclosure and they will be discussed later.

2.3 Sustainability and Non-Financial Reporting

In this section it will be provide a description of what is sustainability reporting and it will be illustrate the usefulness of this reporting communicative tool. Furthermore, it is important to highlight that the considerations that have been made in this section are related to the sustainability reports that are made voluntarily by companies, with the exception of the ones that in the last years are mandatorily obliged by law to disclose non-financial information.

2.3.1 The Sustainability Report

Sustainability Reporting is the means through which it is possible for a company to explicitly disclose to external shareholders, to investors, and to its employees what the company does in order to implement sustainability actions.

According to the Global Initiative Reporting (GRI), the Sustainability Report is a report that provides information about the performances of a company with respect to its economic, environmental and social impacts. With this report there are also represented the organizational values and the governance model. It is essentially used to reveal the connections that are established inside the company between its strategy and its engagement with a sustainable global economy.

It can be useful for an organization to estimate, to recognise and to communicate its performances in relation to different aspects. Thanks to its implementation it is also possible to establish goals, to manage changes in a more effective way, since it establishes a dialogue with several stakeholders. Indeed, it is considered the main mean that enables to express sustainability performances and impacts in case those are positive or even negative.

Therefore, it is an instrument through which the firm is able to demonstrate the organization's commitment to act sustainably to both its internal and external stakeholders.

It is possible to refer to Sustainability Reporting in other ways like Non-financial Reporting, Triple Bottom Line Reporting and Corporate Social Responsibility (CSR) Reporting. These reports are also an essential component of Integrated Reporting, which is a recent implementation that links the analysis of financial and non-financial performances, and that considers the information regarding sustainability with the financials, thus providing overviews related to organizational risks.

It is interesting the fact that since the report is not addressed just to technical experts, but to every stakeholder (that go from employees, to citizens, journalists and public authorities); furthermore, when it is not mandatory to publish it in a structured report and therefore to provide it in a manuscript form (actually, for the Non-Financial Disclosure that have to be reported when they are obligatory required by law, have to follow some specific reporting guidelines), it can also be a video presentation or it can be expressed in other artistical presentation forms.

2.3.1.1 The relationship between Non-Financial Disclosure and Financial Statements

It is widely recognized that the limit of the Financial Statement is that it reports data very synthetically, therefore several companies have decided to disclose further information, especially the ones directed to their stakeholders, regarding also environmental and social aspects. It is useful to disclose non-financial information because it is possible to provide evidence of environmental performance indicators, the method through which added value is produced and several information that can both have a quantitative or qualitative nature, that are useful to better understand the company activities that take place both inside and outside of its business context.

The evolution of non-financial disclosures starts with the Financial Statement and ends with the Non-Financial Disclosure. In the middle there have been produced other four typologies of reports that provide at increasing levels, information that do not regard non-financial aspects.

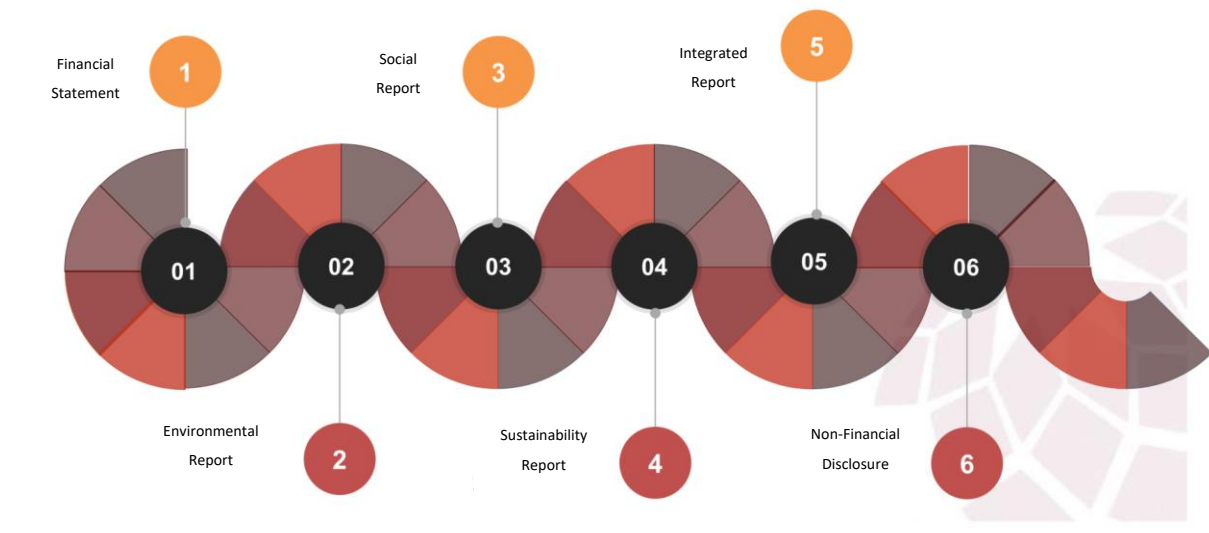


Figure 4 - The evolution of non-financial information (Source: Dal Bilancio Sociale Al Bilancio Di Sostenibilità - Evoluzione Delle Linee Guide Di Rendicontazione. Published by: Ordine dei Dottori Commercialisti e degli Esperti Contabili di Roma.)

The first document that disclose not only financial and economic information is the Environmental Report, which provides both qualitative and quantitative aspects. In this report it is very important to highlight the environmental policy that the company has adopted and the programs and targets that are on the company agenda. Furthermore, there are presented data and performance indicators that reveal the quantity amount that are used for both production and consumption activities and the impacts that those produce.

The second document that has been proposed is the Social Report, that usually requires information about the company identity with its purposes and its relation that it implements with its stakeholders. Furthermore, there are information about the production and the distribution of the added value that the company creates. Finally, the document reveals social relationships information that consider every stakeholder that is linked with the company:

employees, partners, investors, clients, users, suppliers, public administration and the community, which is intended to include both societal and environmental interests.

The third document is the Sustainability Report that will be further discussed in the following paragraph, but basically it is a communicative tool towards company stakeholders, it creates a sustainability management approach and strategy and it is an instrument that allows to plan and control services and activities with a perspective of economy efficiency, environmental and social safeguard that allow to disclose and to evaluate the intellectual capital.

A further step has been made with the Integrated Report, that has the purpose of creating a common standard that identifies the relationship between strategical, governance, performance and future perspectives of companies and their capabilities of creating value both in the short and in the long term. In the Integrated Report are basically considered six types of Capital: the financial, the productive, the intellectual, the human, the social and the natural.

The last document that has been identified is the Non-Financial Disclosure Report that has been introduced, as it will be further detailed in the following paragraph, with the European Directive 2014/95/EU. This report involves specific companies to disclose information of their business activities regarding the impacts provided to environmental, social, employee and diversity themes, and also with respect to the respect of human rights and to corruption avoidance.

2.3.2 What are the main purposes and the effects of CSR Reporting?

Explaining what the Sustainability Report is, it has been highlighted that the purpose of this document is to disclose to every stakeholder the activities that a company perform in order to act sustainably. Furthermore, it has been recognized that CSR and consequently the CSR report are useful in order to assess and to align the business strategies with sustainability

practices and that thanks to this reporting practice, it is possible to evaluate and compare different companies not only in economic terms, but also regarding social and environmental matters.

In fact, according to the article⁶ published in 2017 by Valentina Neri, it has been considered and affirmed that it is possible that two different companies reach the same economic results, but operating in different ways, thus providing different impacts on the environment and on society. Indeed, it has been recognized that sustainability reporting was created exactly for explaining those differences and to express those impacts to different stakeholders that are affected by or involved in the company actions.

It is widely known that financial statements are those documents that must be written every fiscal year and that every company is obliged to do it in order to be law compliant, and, thanks to these documents, it is possible to provide and to express the company's economic results and its financial and economic condition. Anyway, as it has been already mentioned, it has been recognized that for evaluating companies' results it is not only possible to look at economic results and indicators.

Indeed, a firm interacts with every of its stakeholders, and the one that are more linked to its business practices and that are influenced by firm policies are first of all the employees, and then the society on which they are involved. Moreover, a firm works inside the environment in which it is inserted in, providing therefore repercussions and implications in its territory where it is placed. The society and the territory where the company is located are therefore the most affected by the company actions and it is possible, actually most of the times it is obvious, that two different companies have totally different behaviours, even if they are located in the same area and deal with the same society.

Thanks to sustainability disclosure, it is therefore possible to understand and to measure the differences of companies' behaviours towards sustainability matters.

⁶ "Cos'è il bilancio di sostenibilità, a chi e a cosa serve" (translated in English: "What is the sustainability report, to whom and for it is for?")

There have been conducted several studies that investigate about the aims and the outcomes of sustainability reporting. The most important findings about Sustainability Reporting are that:

- it is an effective mean of communication;
- it allows to have an overview of sustainable performances and to align them with strategical choices;
- it provides means of cooperation and partnerships between entities belonging to different industries;
- it creates customer interest and loyalty;
- it allows to better manage risks and opportunities;
- it increases the company credibility;
- it is moderating factor in terms of financial performances;
- disclosures can reduce information asymmetries;
- it is possible to change the firm value perception and to gain more trust.

In the following paragraph are reported the main considerations that have been considered useful for this thesis related to Sustainability Reporting.

2.3.2.1 CSR reporting is a tool used fundamentally for communication purposes

First of all, since Sustainability Reporting (or CSR reporting) is an instrument used for disclosing sustainability actions that the company performs to every stakeholder, sustainability reporting is considered to be a vehicle for communicating CSR and sustainable actions.

It has been recognized⁷ that with definition of CSR provided by Bowen in 1953, there has been a shift in business orientation. Actually, before the CSR development idea, firms were mainly looking for short-term goals and to maximize profits, while with CSR implementation the attention has been shifted towards long-term purposes and in the perspective to optimize (and not to just maximize) profits, abandoning the traditional company intent of “profit only”.

In the article it is recognized that nowadays both big, medium and small enterprises disclose publicly reports that provide an overview of the policies that the company has adopted concerning environmental sustainability issues or even entire CSR reports. In fact, it has been recognized that public communication with such disclosures has evolved in reputational terms, for prestige purposes and to demonstrate how managerial matters have been efficiently accomplished (Franc, 2006).

It is considered advantageous for a firm to communicate CSR actions because first of all, in this way it is possible to have an increase in business transparency, since CSR actions that the company adopts increase awareness among stakeholders.

Furthermore, disclosing such information the company itself can better supervise its CSR actions and performances and it is also possible to recognize whether there are some weaknesses in the strategy that the company has adopted towards sustainability activities.

Additionally, since CSR reports are made considering every stakeholder that interacts with the company, stakeholders are further involved in the business decision, therefore their relationships with the company can also become stronger.

Finally, it is recognized that CSR disclosure can even promote cooperation and partnerships between cross-sector entities, especially between companies, governmental agencies and NGOs (Vexlerova, 2008). With respect to this last consideration, it is important to remember that between the SDGs, one of the goals is to create a Global Partnership that would allow to collaborate in order to shape a sustainable World, therefore, thanks to CSR reporting it would be possible to reach this at least in the business world.

⁷ In the article “CSR reporting as an important tool of CSR communication”, published in 2015 and written by Katarina Moravcikova, Ľubica Stefanikova and Martina Rypakova

Moreover, communication of sustainability actions is important also for reaching customers in order to make them aware about the security and the quality that is assured in the company creation of both products and services, to establish an everlasting customer satisfaction, to present investors and clients what the company performs other than the core-business operations and activities. In addition to these, it is possible that CSR disclosure that target the attention of customers, can provide them information about the quality assured in after-sale services, the application of fair prices and that the company is compliant with ethical methodologies of advertising and consumer rights.

According to a research made in 2013 by Kasparova, it has been recognized that with the CSR report it is possible to create a systematic methodology for managing responsible actions, for recognizing possible risks and even opportunities, while at the same time it can raise business competitiveness and ensure long-term business operativity. In this way, different stakeholders can make their own decision on the base of the information disclosed in the CSR report. Furthermore, it has been demonstrated that information that are present in this report are not only necessary for the company itself, but, as it has already been anticipated, several stakeholders have the opportunity to take decisions on the base of the sustainability disclosures.

According to Pavlik and Belcik (2010), it is necessary that a CSR report in order to be qualitatively relevant has to be credible, to be complete, to reveal significant information and to be edited in an appropriate form. Following these four criteria for editing the report, it should be possible to have effective and efficient communications with every stakeholder.

With respect to credibility, the report has to be sustained by the top management, it has to reveal the adoption of corporate policies and the responsibilities that are given to employees. Furthermore, credibility can be increased providing a description of how data are collected, showing eventual evidences of main stakeholders involvement for sustainability matters, and whether a third-party certification has been conducted.

Concerning completeness, it is necessary that the report contains every operation that the company performs in every workplace and that information concerning environmental and social impacts produced by the entity are disclosed.

Furthermore, it is remarkable that information that are significantly relevant are disclosed with the utilization of quantitative and qualitative indicators. Finally, the form in which the report is edited should be easily comprehensible and quiet long, in order to possibly disclose every relevant information.

In the research it has been found that there are different factors that can influence sustainability reporting, that range from the company size, to the property typology to the industry where the company operates. Referring to this last factor, a KPMG study has revealed that industries that are particularly involved in environmental issues such as Wood Working, Paper and Pulp Industry (PPI) and Mining Sector are the ones that tend to mostly disclose sustainability reports, in fact up to 84% of those companies do it. This is a very interesting and important finding, since in the next chapter it will be analysed the PPI in the Italian context and then it will be analysed sustainability reporting in the Italian companies that produce pulp and paper.

Furthermore, KPMG has even made a survey in order to understand the reasons why companies decide to disclose or not sustainability reports. As it has been already mentioned in other researches, the ones who do it, decide to disclose such information basically for fortifying their brand and goodwill status and for ethical matters.

It has been particularly interested instead to find the reasons that bring a company not to disclose sustainability reports, which basically are:

- Some companies ignore the question, especially because they do not have a fundamental understanding of CSR and they are not transparent in their multitude of standards that are present for national and international CSR issues;
- Some companies would have to disclose susceptible data, which could cause issues because of confidentiality matters;
- Some company believe that the implementation of new activities, such as CSR reporting, would increase their cost, especially regarding the monitoring arrangement that would have to be created (Kasparova, 2013).

Thanks to this article, it has therefore been possible to have researchers and professionals' opinion regarding sustainability disclosures with respect to communication purposes, which is one of the main reasons that make companies editing sustainability reports.

2.3.2.2 The relationship between innovation, environmental disclosure and performances

As it has been early mentioned, a KPMG study has discovered that most of the companies that works in industries that create huge impacts on the environment tend to report on their sustainability performances more if compared to other different industries.

It has been discovered⁸ that environmental disclosure is determined by both environmental performances and innovations.

It has been recognized that there is a growth in the interest of several stakeholders regarding environmental matters that aim to preserve the planet for both existing and next generations. From the company perspective, it has been found an increase in the amount of environmental information disclosure made voluntarily by companies, that comprehends both actions and innovative implementations that have been performed in order to safeguard the environment.

Despite this increase of companies' disclosure and interest in innovative solutions for safeguarding the environment, there is still an intensification of pollution emission levels and there are still occurring several incidents that create enormous damages for the environment. Therefore, researchers have investigated the accurateness and the faithfulness of the information that companies disclose related to environmental issues.

The results that have been observed among the connection of environmental disclosures and performances are ambiguous: some studies have revealed positive relations (Al-Tuwaijri et al.

⁸ In the article "Does Innovation Drive Environmental Disclosure? A New Insight into Sustainable Development" published in 2017 by Camélia Radu and Claude Francoeur

,2004; Clarkson et al. ,2008; Dawkins and Fraas, 2011), while some other negative ones (Hughes et al., 2001; Patten, 2002; Cho and Patten, 2007; Cormier et al., 2011) and other ones have not found any relevant relationship (Ingram and Frazier, 1980; Wiseman, 1982 Freedman and Wasley, 1990; Fekrat et al., 1996).

The researchers have demonstrated that environmental innovation is a key element in the connection that links environmental performance and its disclosure. It has been found out that companies that tend to foster innovative solutions are encouraged to disclose the innovations they have produced in the case they do not have good environmental performances, therefore they are inclined to disclose information of their innovative ideas and strategies that aim to provide increased environmental performances.

Furthermore, in cases of bad environmental performances, companies that tend to innovate in environmental aspects usually disclose more than the ones that do not innovate. Anyway, it has been found out that this gap decreases when environmental performances increase, and in certain situations this gap is even abolished: in this condition the disclosures start to concentrate on performances.

Furthermore, according to economic theories, it has been demonstrated that there is a positive relationship between environmental performances and their disclosures: when companies have good environmental performances, they tend to report more information regarding their performances.

Therefore, the conclusion that has been reported in the paper is that environmental performance and innovation are seen as substitutes with respect to environmental disclosure.

Furthermore, in another research⁹, it has been recognized that companies have used several approaches to monitor their environmental impacts and to integrate environmental management in their processes and working methodologies, including environmental reporting, environmental management systems and capital investment evaluations, that provide beneficial performances and positive impacts thanks to disclosures (Gray et al., 2014).

⁹ "Does Environmental Disclosure Relate to Environmental Performance? Reconciling Legitimacy Theory and Voluntary Disclosure Theory" published by Zeeshan Mahmood, Zubair Ahmad, Waris Ali and Aneela Ejaz in 2017

It has been considered that one of the main problems related to those reporting initiatives is that it is generally difficult to estimate whether there is consistency between environmental performances and the information that are disclosed by companies. The study has discovered that there is an association between environmental performances and information disclosed, that are in accordance with voluntary disclosure theory and legitimacy theory: disclosures motivations are different between good and bad environmental performers, but it has been recognized that the first ones tend to voluntarily provide information, trying to differentiate from competitors, while the second ones attempt to obtain legitimacy and to improve public opinions and perceptions; furthermore, the ones that do not substantially have good or bad environmental performances tend to avoid reporting such information.

2.3.2.3 The moderating effect of CSR reports: CSR and financial performances

It has been analysed¹⁰ the mediation effect that is provided by CSR actions and their results with respect to the CSR governance and the company financial performances.

In previous studies it has been found that in some cases CSR is positively related with financial performances (Reverte et al., 2016; Wang and Sarkis, 2013), while in some other cases there are irrelevant or confused results (Barnett and Salomon, 2012).

It has been recognized that companies tend to get involved with CSR action with one of the following strategies (Kim et al., 2012). With the first approach the company is seriously and meticulously engaged in order to perform CSR actions realising a proper CSR governance model, therefore in this case it is possible that several resources are used in order to reach such a well-implemented model and consequently producing good CSR results. (Clarkson et al., 2011). With the second one instead, the company engages in CSR actions only figuratively

¹⁰ In the article "Corporate social responsibility governance, outcomes, and financial performance" published in 2017 by Zhihong Wang and Joseph Sarkis

and opportunistically, just to make an attempt to improve the company and its brand image. It can also be the case where the company take actions for some emerging problems, without assigning enough resources that would be necessary to develop CSR actions effectively. In this case, it is considered that the company implements CSR actions just for attempting to improve its image or does it for “greenwashing” purposes (Christmann and Taylor, 2006).

In the paper it has been evaluated whether these two CSR attitudes are able to provide impacts on financial performances.

To better understand the question, it is first necessary to understand the notion of “legitimacy gap”. According to Sethi (1975), a legitimacy gap arises in cases of differences between the company proposed CSR activities and the expectation that society has relied on these; therefore, when a company is not able to deliver outcomes as it has promised, legitimacy gap occurs. It has been demonstrated that legitimacy gaps in the long run could cause inferior financial performances up to the point that a company risks failure (Leng Chu et al., 2012; Deegan et al., 2002; Deegan, 2009).

In the paper it has been analysed and demonstrated that CSR outcomes are able to completely mediate the relation that exists among CSR governance and the performances that a company can reach financially. Therefore, financial outcomes are influenced by the way the company decides to implement CSR governance. Better financial outcomes derive from CSR implemented in a substantial way, while poor financial results derive from CSR realised in a superficial way. Consequently, if a company wishes to take economic advantage from the implementation of CSR activities, it has to focus on accomplishing the desired CSR outcomes it had previously decided to be engaged with.

Results shows that CSR managed superficially could therefore cause harmful consequences in the business, such as losing investors and customers trust, incrementing the legitimacy gap that per-se causes financial damages.

Therefore, companies that decide to take CSR actions should seriously engage in those programs, that would allow to reach good CSR results and therefore, better financial returns. Indeed, it has also been demonstrated that CSR governance is positively related to economic results when companies are able to create good CSR actions.

2.3.2.4 The Sustainability reports are considered valuable evidences to assess firm value

It has been further analysed¹¹ the usefulness of sustainability reporting. According to Kanter, in the last decades CSR strategies that are managed proactively are seen as a “business imperative” and that socially responsible firms tend to have better financial performances (Kanter, 2011). Even from the ‘90s it has been recognized that CSR actions allow a company to have a good reputation, to be further esteemed and to have greater economic performances in a long-term perspective (Fombrun and Shanley, 1990).

It has been recognized that sustainability reporting can influence the firm value directly or even indirectly. In fact, as a direct impact example it has been found that disclosures can reduce the information asymmetries that are commonly present between the company and its investors and therefore, companies that disclose sustainability reports could further increase investors’ interest, obtaining a greater equity capital and secure more coverage by business analysts (Dhaliwal et al. ,2011). As an indirect effect instead, it has been recognized that with CSR reporting disclosure it is possible that investors’ perceptions on firm value is altered (Elliott, Jackson, Peecher, and White, 2014), or even that the company gains legitimacy trust, that it creates political contacts or that is able to mitigate negative effects in case of hostile information are disclosed regarding the company or the industry involved (Blacconiere & Patten, 1994; Matsumura, Prakash, & Vera-Muñoz, 2013; Marquis & Qian, 2014).

Considering worldwide reporting, it has been found that CSR performances are positively correlated with the national context that surrounds the company, especially with regard to the institutional arrangements that are established at political, educational and cultural levels. In addition, it has been found that there is a positive relationship to firm value when the CSR

¹¹ In the paper “Are CSR Disclosures Value Relevant? Cross-Country Evidence” published in 2015 edited by Steven F. Cahan, Charl de Villiers, Debra C. Jeter, Vic Naiker, Chris J. van Staden

reports are not expected to be disclosed, therefore in countries where there are no strong institutions that promote CSR disclosure.

Finally, despite the fact that in the last 30 years researchers have not been able to assess whether there are relationships between sustainability reporting and economic results of a company, it has been found that there is a greater economic advantage when CSR reports are disclosed in countries that do not have strong institutions.

2.4 Non-Financial Disclosures (NFD)

In the previous paragraph it has been considered the sustainability report, that sometimes is also called CSR report. It is important to consider that this report is made voluntary by companies, since until few years ago there were not regulations or laws that obliged companies to disclose such documents. Few years ago, in the UE it has been introduced a directive that impose specific companies to edit official document related to business matters that go beyond the financial aspects, that are therefore called Non-Financial Disclosures (NFD).

With this regulation, large companies have to publish annually the NFD report, explaining the policies they have adopted regarding the way they decided to safeguard the environment, how they perform activities for corporate social responsibility, which are the working conditions of their employees and how they respect human rights and how they manage and implement diversification on their board of directors (with respect to gender, age and qualifications). Furthermore, companies have to explain how they prevent corruption behaviors and bribery.

The NFD therefore a fundamental instrument that allows to shift towards a global and sustainable economy, combining long term profitability, social justice and environmental protection.

It has been recognized that non-financial information are a more integrated element regarding the strategical and financial information that are necessary to evaluate a company and to possibly understand the future possibilities of the company.

The European Commission has revealed that in a long-term perspective a strategical approach implemented towards corporate social responsibility actions is increasing importance in these years, not only for sustainability purposes, but also for competitiveness matters. Furthermore, the EU Commission analysis has exposed that European companies that publish information for both financial and non-financial outcomes, are able to adopt in their decision-making processes a more long term perspective, they have fewer financing costs and they have a tendency to further attract and keep talented employees, have generally better performances, have well implemented relations with every stakeholders, and finally, they have minor issues related to business continuity in comparison to the ones that do not engage in NFD.

2.4.1 The European Directive 2014/95/EU

Until 2017, it was not mandatory to report non-financial disclosures and therefore, all the companies that have done it, were not obliged to do so and did it in a voluntary way.

With the European Directive 2014/95/EU, also called the “Non-Financial Reporting Directive” (NFRD), are defined the obligations that specific companies have to report with regard to non-financial information. In Italy, this directive has been implemented with the approval of the Legislative Decree “D.Lgs.n. 254/2016”.

Companies are therefore obliged to include non-financial reports from 2018, including the disclosures that belongs to the fiscal year of 2017, starting therefore from the 1st January 2017.

Thereafter, stakeholders such as investors, consumers, policy makers and different other ones, are able to estimate not only the financial status, but also the results that are achieved by companies in terms of social and environmental terms. Actually nowadays investors have

become progressively demanding, and, for being able to properly analyze risks and upcoming business scenarios, it is necessary to look at the “big picture” in order to have an overview of the company, comprehending both environmental and social factors, the so-called ESG elements (environmental, social and governance).

Thanks to the legally binding Directive that implies mandatorily the documentation of non-financial disclosures, companies that have to provide this report are further encouraged to operate and manage their business in a responsible way since it is also necessary to explain in the report which are the impacts linked to the ESG matters and to evaluate their related risks.

The Directive only applies to large public-interest companies with more than 500 employees, that fundamentally include:

- banks
- listed companies
- insurance companies
- financial intermediaries
- other companies designated by national authorities as public-interest entities

Specifically, the Directive refers to companies that have:

- on average of the fiscal year in scope more than 500 employees, or
- at the closing date of the fiscal year:
 - the balance sheet that exceeds 20 million of Euros, or
 - revenues gained during the year are greater than 50 million of Euros.

Therefore, every company that has one of these features, is legally bounded to disclose non-financial information. In case of violation of the Directive, criminal penalties have to be applied and monetary sanctions are implemented, as follow:

- Filing omissions: from 20.000 to 100.000 €. In case of filing delays within 30 days from the expiration date, there is a reduction to one third of the pecuniary administrative sanction;
- Omitted confirmation of the auditor verification on the disclosure: from 20.000 to 100,000 Euros. In cases where a voluntary non-financial statement is already edited, this sanction is halved;

- Not compliant statements with regard to the Legislative Decree 254: from 20.000 to 100.000 Euros;
- False disclosures: from 50.000 to 150.000 Euros.

In order to be compliant with the Directive, the non-financial disclosure that have to be published by such companies deal with the several aspects that are described in the following lines.

First of all, the report must include the environmental effects that are due to the company operations and the description of the acts that are taken in order to protect it.

Secondly, also social issues have to be included in the report; specifically, it is important to mention the social engagement that the company is involved with, and how the entity deals with its employees, including the respect for human rights and the diversity that is present on the company boards (in terms of age, gender, educational and professional background).

Finally, it is mandatory to insert in the report the anti-corruption and bribery actions that have been implemented in the year in scope by the company.

The information disclosed have to be relevant according to the Directive and in order to assess relevance, two main principles have been appointed. The first one is the principle of materiality and the second one is the so-called principle of "comply or explain".

With respect to those two principles, information that have to be disclosed must be essential and must be the most significant in order to guarantee that the business activity, its performances, results and impacts can be properly understood in the report. It is important to disclose those significant information regarding business activities and company characteristics that can have material impacts to social and environmental issues.

Furthermore, for cases in which the company do not act or provide impacts to relevant matters, it is necessary to explain the reasons that support this. With this directive it has been also established that companies have to explain the sustainability policies that they have adopted, but in case they that they have not reported some relevant issue regarding ESG matters, they have to explain the reasons why they have not done it: this is the principle of "comply or explain".

Companies are allowed by the Directive 2014/95/EU to disclose information throughout a variety of methods and forms; thus, a range of flexibility is provided to entities, that are therefore able to edit the report in their most suitable way.

In fact, even if the European Commission has published in 2017 the first version of its own guidelines, these guidelines are not mandatory, and it is allowed to use different reporting schemes; actually the UE Commission suggests to use the principles proposed by the UN Global Compact, the OECD guidelines for multinational enterprises or the ISO 26000. According to the Directive, companies may use international, European, national or union standards and guidelines to produce their statements.

Therefore, it is possible to report also following standards such as the eco-management and audit system (EMAS), the Guiding Principles on Business and Human Rights, the framework “Protect, Respect and Remedy”, or the most used guidelines such as the ones provided by the Global Reporting Initiative (GRI), or other standards that are internationally recognized. Furthermore, in June 2019 the European Commission published guidelines on reporting climate-related information, which in practice consist of a new supplement to the existing guidelines on non-financial reporting, which remain applicable.

Several companies, among which also listed companies, were already used to disclose non-financial information voluntary, throughout their website or even with sustainability, social or integrated reports. In the D.Lgs 254/2016 it is not explicitly mentioned whether those reports are sufficient for the non-financial disclosure or have to be integrated. However, from the article 5 comma 2, it appears that the specific section of the report that aims to manage the NFD can also be placed in other reporting forms. Therefore, in the non-financial disclosing report it is allowed to link some part of the report in other different reports, thus avoiding the redundancy of information and documentation.

From companies perspective, it is useful to edit this report not only to be compliant with the new legislation, but also for attracting investors, for obtaining better credit and insurance conditions, to attract the best possible employees and co-workers that are present on the market, to create and establish a working environment that motivates and inspires employees, to enhance and valorise environmental certifications and corporate arrangements

such as the code of ethics or behaviour, and finally, to communicate externally the company mission, vision and its values and to translate them into recognizable behaviours.

These reasons that have been just explained, make understand the reasons why it would be useful to publish the sustainability report not only to those companies that are obliged to do it in order to be law compliant, but also to those profit and no-profit organizations, small and medium enterprises, social enterprises, cooperatives. This reporting methodology allow all these entities to establish a management system of sustainability and to communicate to every stakeholder their sustainability actions and programs.

2.4.1.1 Italian results of Non-Financial Disclosures after the Legislative Decree adoption: the results of the “Osservatorio DNF”

With the adoption of the Legislative Decree 254/2016 in the Italian Context, the “Commissione Nazionale per le Società e la Borsa” (CONSOB, which can be translated in English as the “National Commission for Firms and for the Stock Market”) has been engaged to supervise the companies compliance with the law that has been introduced regarding non-financial disclosure.

Furthermore, thanks to a partnership agreed between the “CSR Manager Network” and the “Dipartimento degli Studi Aziendali e Giuridici” (DISAG, which is the “Department of Firm and Law Studies”) and the Siena University it has been created the “Osservatorio delle Dichiarazioni Non Finanziarie e delle Pratiche Sostenibili” (also called “Osservatorio NDF”), that can be translated in English the “Observatory of Non-Financial Disclosure and of Sustainable Practices”.

The “Osservatorio NDF” is engaged to collect, to analyze and to broadcast the NFD information that are reported by Italian companies and to examine the state of the art and the dynamic evolution of the integrated reports and the ones that document non-financial information that are disclosed because of the mandatory law requirement.

The Osservatorio NDF examines qualitatively the non-financial information that are present in the website of every company that is providing those reports and that are in the CONSOB database and provides elaborations of data aggregations related to ESG performances.

The Osservatorio NDF reports yearly the overview of the Italian NFD. The main aspects that have been found in the report of 2019 (regarding therefore the 2018 fiscal year) are that most of the companies that have reported NFD reports are based in Lombardia (37%), Emilia (15%), Lazio (14%), Veneto (8%) and Piemonte (8%). There is a slight difference in comparison to the previous year, but there have not been significant changes. Furthermore, the business industry typologies that have disclosed non-financial information principally belongs to banks (18%), manufacturing (10%), financials services (9%), energy services (8%) and to public services (7%). Even in this case, there have not been found substantial differences with the previous year.

Analyzing the document structure, it has been found that in 2018 there have been 200 companies that have disclosed NFD report, while in 2017 they were 213 and on average; additionally, there has been an increase of 7 pages of disclosure for each report averagely, leading to an average number of pages in the report of 100 pages. It has been recognized that the theme that has mostly discussed in those documents is related to social matters (on average 24 pages), on the second position there are information about environmental impacts (on average 11 pages), then information about the economic performances (7 pages averagely) and finally the ones related to the governance aspects (4 pages).



Figure 5 – Overview of NFD disclosures in 2017 and 2018 (Source: Osservatorio DNF)

Between the companies that have disclosed NFD information, in 2019 the 97% was obliged by the legislative decree to report them, while only the 3% has done it voluntarily, with just a 1%

difference with respect to the previous year. Since in these two years just the 4% and then the 3% of the companies have provided voluntarily the NFD information, it is evident that most of the entities considers these disclosures as a cost (or, to the ones that are legally required to do it as a mere obligation), instead of an opportunity. Regarding this aspect it is important to remember that sustainable reports that are made voluntarily are instead usually edited because they are seen as an opportunity to better communicate with the company’s stakeholders. Therefore, there are different perspectives from the ones that are obliged to disclose non-financial information and the ones that do it voluntarily.

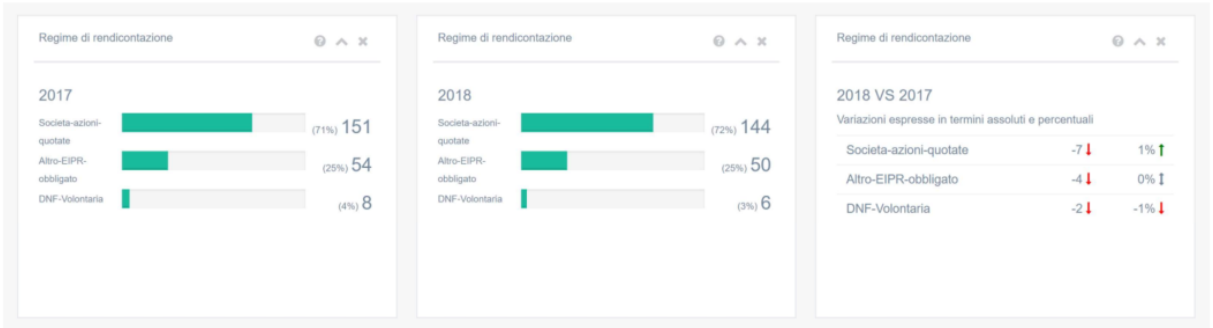


Figure 6 – Company typology that has disclosed NFD (Source: Osservatorio DNF)

Most of the companies (75%) have disclosed the report in a different document with respect to the one that is published regarding the managing aspects (“Relazione sulla Gestione”).

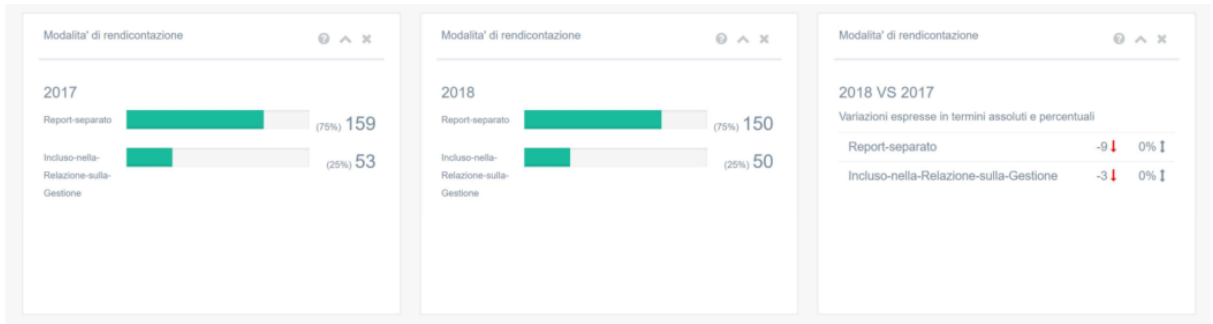


Figure 7 – Reporting method for NFD (Source: Osservatorio DNF)

Furthermore, most of the companies have named the report as “Non-Financial Disclosure” (62% in 2018, while in 2017 it was the 74%), other have called it “Sustainability Report” (34% in 2018, while in 2017 it was the 23%), few others with “Integrated Report” (4% in 2018 and 3% in 2017) and just the 1% in 2018 have called it “Impact Report”, while no one has ever called it “CSR Report”.



Figure 8 – Reporting name utilized (Source: Osservatorio DNF)

An important aspect that has been analyzed is the presence of a specific Sustainability Committee, that in 2017 was created for the 53% of the cases, while in 2018 just the 36% have implemented it. Even the definition of a Sustainability Plan has seen a significant decrease between the two years: from the 52% it has diminished to the 31%. The possible and plausible motivation of these evidence could be that in order to start to be law compliant with the new legislative decree and to create the sustainability framework that was necessary in order to reveal the non-financial information, at first companies have decided to act in order to be sure of achieving good levels of compliance, while the next year they already had a good experience from the previous year and therefore, they have not implemented anymore those committee and plans, but have integrated the sustainability matters in their traditional instruments and employee roles.



Figure 9 – Presence of sustainability committee (Source: Osservatorio DNF)



Figure 10 – Definition of sustainability plan (Source: Osservatorio DNF)

This tendency can be seen as a shift towards a greater importance in the business practices of sustainability matters, that have become more integrated with the core aspects of the company. Therefore, the business is managed in a more sustainable way since it has become usual that the board of directors gains sustainability competencies, thus eliminating the sustainability committee, and the sustainability plan has been further integrated in the industrial plan.

Another important thematic that has been analyzed is the representation methodology that has been adopted for reporting material aspects. With materiality analysis it is possible to reveal which are the substantial aspects that characterize how the company is managed. The Global Reporting Initiative (GRI), which is the worldwide most used reporting standard, has proposed to represent them with the so-called “materiality matrix”, which is a graphical illustration of the material and priority aspects for the company. It considers the impacts of the organizational activities on both the reference context and on the stakeholders’ expectations. The matrix is the most used tool to reveal these aspects (50% in 2018 and 52%

in 2017), while in alternative company choose to provide a list of business material aspects, but without referring to stakeholders’ impacts (27% in 2018 and 37% in 2017). In some reports, it has been provided both the materiality matrix and list (23% in 2018 and 14% in 2017).

The shift towards a further use of the materiality matrix instead of the materiality list can be seen as a learning effect that companies have gained for adopting as a business practice sustainability management.

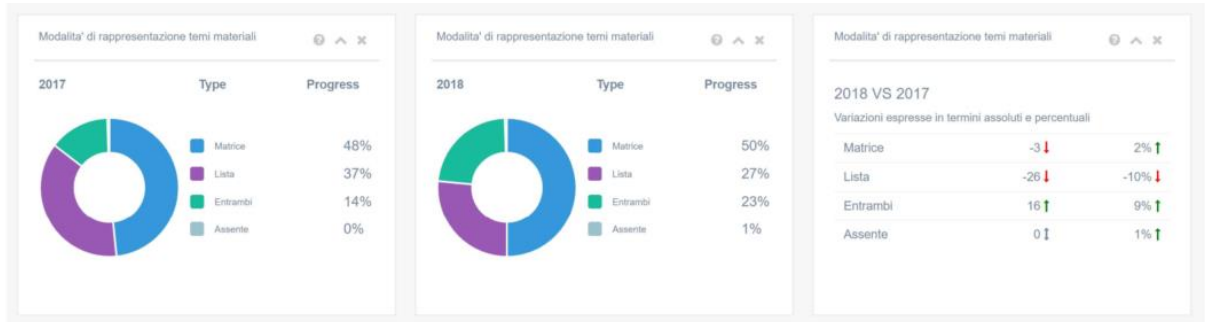


Figure 11 – Representation modality of material themes (Source: Osservatorio DNF)

A very interesting fact that has been observed is the mentioning and the references that have been made in the reports regarding the Sustainable Development Goals: in 2018 the 51% of the documents referred to it, while in 2017 it was only the 34%.

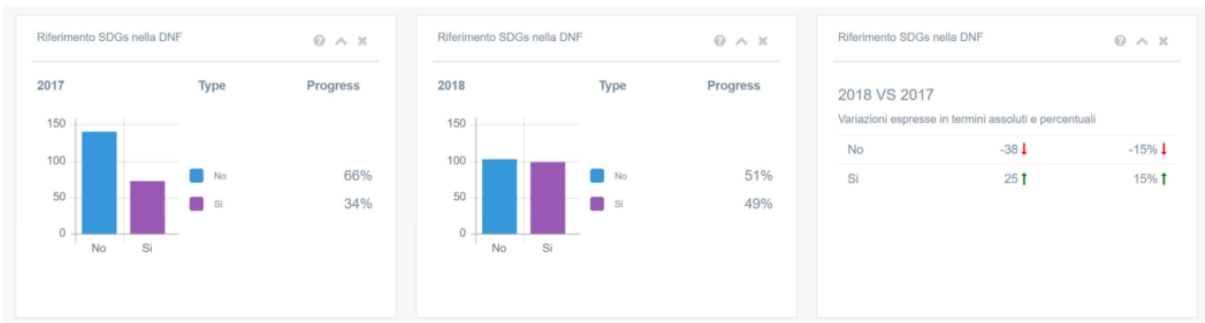


Figure 12 – SDGs mentioned in the NFD (Source: Osservatorio DNF)

As it has been already mentioned, the most used worldwide reporting standard is the one provided by GRI. Even in the Italian context it is the case, and actually, regarding the Non-

Financial Disclosures that have been analyzed by the “Osservatorio NDF” it has been found that the totality of the companies have adopted the framework of the “Global Reporting Initiative Sustainability Reporting Standards”, or the GRI Standards. There have been used two different version of these standards since between 2017 and 2018 there has been the new version, the “GRI-SD”, while the old one was the “GRI-G4”, and in some cases it has been used a mixture of these two versions.

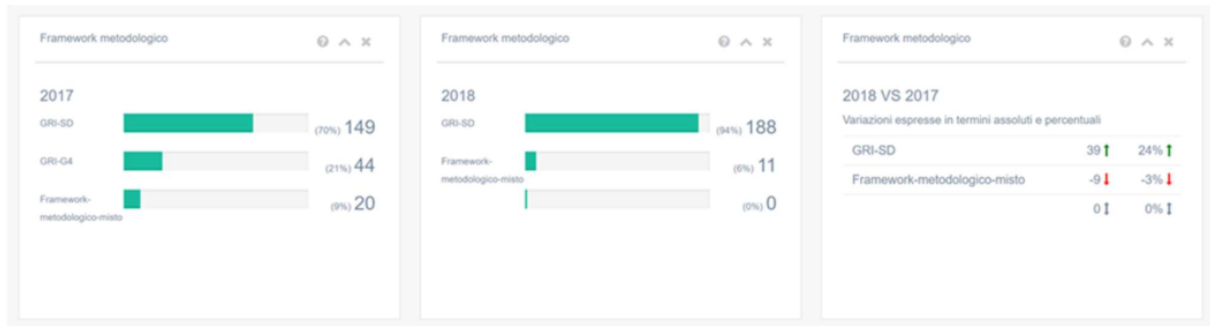


Figure 13 – Methodological framework adopted (Source: Osservatorio DNF)

Furthermore, it has been analyzed the GRI option that has been adopted. According to GRI standards it is possible to disclose the minimal non-financial information that are necessary to describe the company and the way it is managed, with material aspects and the impacts that the business creates to social, environmental and economic matters: this is the “core” option. Instead, to provide a greater level of details from the “core” option and therefore to use the “comprehensive” option, it is possible to disclose further information regarding business ethics, the governance business model that is adopted and to deeper describe the impacts that business activities have for the material aspects that have been identified. Another possible option that can be used according to these standards is the “GRI-referenced” option, that allows to choose just some of the standards.

In the analysis it has been found that most of the companies have adopted the “core” option (70% in 2018 and 60% in 2017), while few others the “referenced” (28% in 2018 and 37% in 2017) and lastly, the “comprehensive” option has been used in rare cases (3% in 2018 and 4% in 2017).

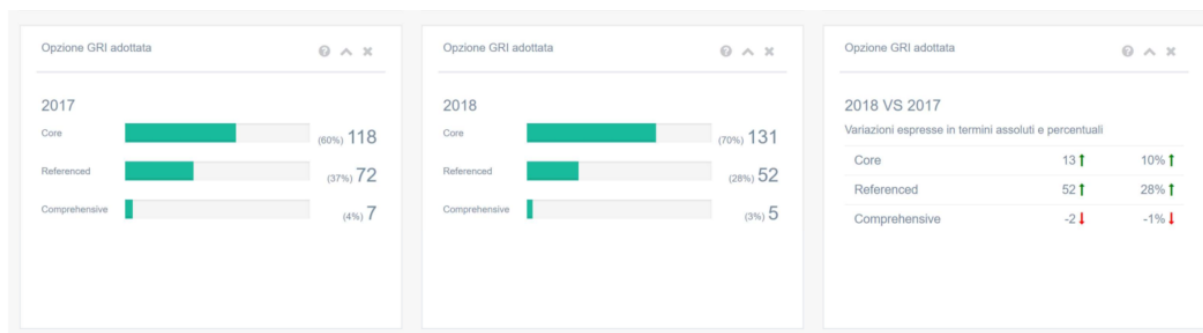


Figure 14 – GRI option adopted (Source: Osservatorio DNF)

Finally, since every Non-Financial Disclosure has to be verified and certified by auditors, some companies have assumed external audit professionals in order to edit the report (28% in 2018 and 26% in 2017). Only the 1% has used internal audit personnel, while the majority has adopted both internal and external audit expertise (71% in 2018 and 72% in 2017).

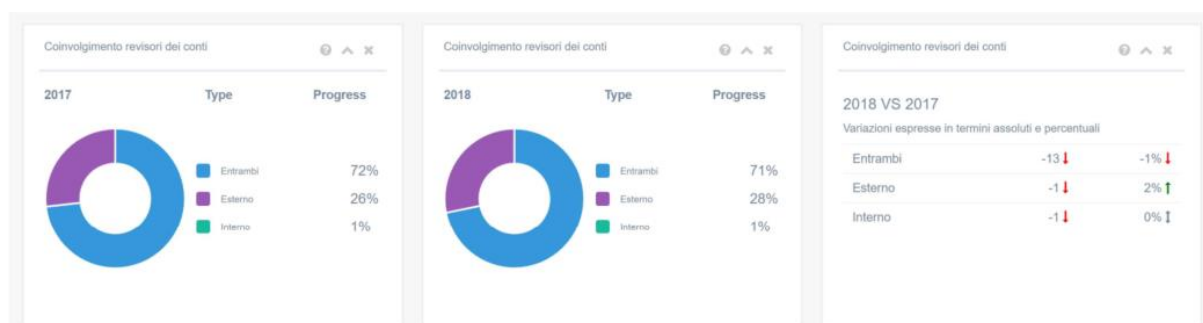


Figure 15 – Auditors involvement (Source: Osservatorio DNF)

As a final consideration that has been reported, it has been recognized that in the global system of the business management, sustainability practices have not been integrated in a substantial way. In fact, despite the improvements that have been verified in Sustainability Reporting, the “Osservatorio DNF” has reported that there has not been huge implementation of sustainable practices in business strategies for the majority of companies. Only few companies have been able to integrate and adopt sustainability actions in their strategical plan, operative programs and execution and finally in their management systems.

2.4.1.2 Reporting standards: The Global Reporting Initiative

There are several types of report standards that are possible to follow and the most common used one is provided by the already mentioned Global Reporting Initiative (GRI). GRI Standards are the most used standards for non-financial reporting, in fact most of the organizations that edit those reports uses GRI Standards and in the KPMG Survey of Corporate Responsibility Reporting of 2017 it has been estimated that 93% of the biggest companies in the World uses GRI Standards to report their sustainability actions and outcomes.

As it has been mentioned in the previous paragraph, 100% of the Non-Financial Disclosures that have been reported by Italian companies in 2018 and in 2017 follow the GRI standards. Even if some reporting practices have already be mentioned, in this section it will be further displayed the framework that GRI has implemented.

GRI is an independent international organization that started to work in the field of sustainability reporting from 1997 and it is considered to be the pioneer of this sector.

GRI allows companies, organizations and governments in the entire World to comprehend and to communicate the impacts and the effect that they are able to provide on sustainability topics that are mostly affected by business operations such as climate change, human rights, governance and social well-being. Companies and organizations actions in favour of sustainable issues allow to produce benefits in social, environmental and economic terms. The GRI Sustainability Reporting Standards have been established thanks to multi-stakeholder contributions and at the base of those standard, the public interest has been considered in every situation.

The organization thinks that revealing sustainability information encourages accountability, supports risks management and the possibility of identifying risks as soon as possible, and finally it allows organizations to catch new business opportunities. Public and private companies, from small to large dimensions, are supported by using those Standard to safeguard the environment, to allow society make improvements and in the meanwhile they

allow to prosper in economic terms, to make managerial governance improvement and strengthen stakeholder relations, intensifying good reputation and allowing trust.

Attempting to achieve the GRI mission, which is “to empower decisions that create social, environmental and economic benefits for everyone”, the organization has defined the points in which it wants to focus on.

First of all, the organization aims to create standards and a guide to establish sustainable development, driving companies in establishing a dialogue with their stakeholders regarding sustainability issues that emerge.

Furthermore, it wishes to create an harmonized sustainable environment where GRI can be an essential hub for non-financial reporting, allowing the creation of collaborations and partnership opportunities that aid GRI's vision and mission to be accomplished.

In the third place, GRI wishes to make non-financial reporting to be efficient and effective, and it helps to make quality improvements of the reported documents that are edited following GRI Standards.

Finally, GRI wishes that the reports edited with its standards results to be effective in using information that allow organizations to improve their performance, especially with regard to information that have to be sent to policy makers, stock exchanges, regulators and investors in order to be transparent and to allow effective reporting.

It is interesting to understand the point of view of GRI related to disclose non-financial information. According to GRI there are several benefits for reporting. The internal ones are:

- risks and opportunities are further identified;
- the connection between financial and non-financial performance is accentuated;
- it is possible to influence the management strategies and policies that are adopted in the long term, and also the business plan;
- to rationalize processes, diminish costs and improve efficiency
- to standardize and evaluate sustainability performances with laws, norms, codes, performance standards, and voluntary initiatives;
- to avoid being involved in disasters of environmental, social and governance nature;

- to make performance comparisons both internally, and between organizations and sectors.

Instead, the external ones are:

- to mitigate negative impacts in environmental, social and governance matters;
- to improve reputation and brand loyalty;
- to allow external stakeholders to understand the company values, and tangible and intangible assets;
- to prove how the organization influences, and is influenced by, expectations about sustainable development.

Since it has been recognized that nowadays the GRI standards in the Italian context have been mostly adopted, it is interesting to have an overview of these reporting guidelines that have to be adopted according to GRI.

The GRI Standards are universal best practices used in non-financial reporting, in both cases of voluntary and mandatory disclosures, that are used when an organization wishes or needs to report about the impacts it creates, and to explain in which way it operates aiming at collaborating towards sustainable development, or even to disclose negative impacts that have unfortunately been produced. Policy makers and regulators in the entire World allow sustainable reporting edited using GRI Standards, they foster and allow those reports in their jurisdictions.

The GRI Standards are the newest evolution of the GRI original sustainability reporting guidelines. The content of the G4 edition, the previous one, have been restructured into a set of modular and inter-related standards since with a modular structure it is possible to update standards in an independent way or to add new ones without the need to revise the entire set. Standards are therefore more responsive to new developments and this allows to update reports more easily and to provide more relevant information for reporters.

There are three universal standards that have to be used by every organization that edits a non-financial report (GRI 101, 102 and 103) and three series of topic-specific standards that are used to report economic, environmental and social impacts (GRI 200, 300 and 400).

Looking at the standards and following the methodology that has to be applied in order to respect GRI Standards, it is therefore possible to edit sustainability reports regarding economic, environmental, and social impacts that the company has in the World.

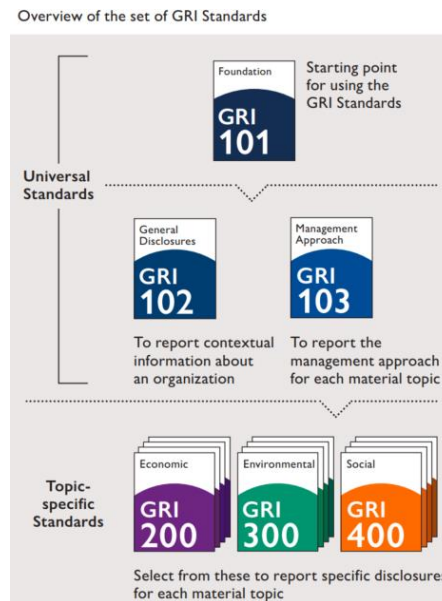


Figure 16 - Overview of the set of GRI Standards (Source: GRI)

To edit a report that follows the GRI Standards, every organization has to use the three Universal Standards and has to start with the *GRI 101: Foundation*, which is the first point that has to be followed. It introduces the 10 reporting principles that define the report content and explains how to disclose information being compliant with the standards and how to reference them.

The Reporting Principles that have to be considered for determining the report content are:

- Stakeholder Inclusiveness: the entity should identify its stakeholders and describe what has performed in order to reach their expectation and their interest;
- Sustainability Context: in the report it should be provided the performances that the organization has with respect to sustainability matters;
- Completeness: in the report it should be indicated how material topics have been included and their “Boundaries” (which basically are the description of the occurrence of impacts regarding material topics and the relative involvement of the entity in those

effects) in order to cover most of the aspects that are related to economic, environmental and social issues and to allow stakeholders to understand how the company has performed in the reporting period;

- Materiality: it should be reported the impacts that the organization has for economic, environmental and social issues; furthermore, it should be provided information regarding the effects that stakeholders have produced in relation to substantial sustainable issues. In this section it is also described how to create the visual representation of the “Materiality Matrix”: on the abscissa axis is should be quantified the significance of economic, environmental and social impacts, while on the ordinate axis it should be provided information regarding how stakeholders are influenced by assessments and decisions.

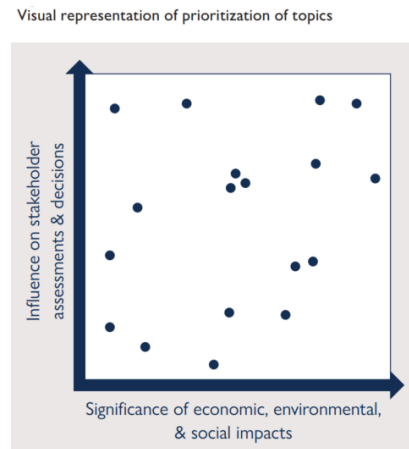


Figure 17 - Materiality Matrix (GRI)

Instead, the principles that are useful for providing a qualitative report according to GRI are:

- Accuracy: the information that are disclosed in the report should be precise and exhaustive;
- Balance: the overall performance should be provided disclosing information regarding both positive and negative impacts that the organization has produced;
- Clarity: the information that are available have to be provided making them understandable and accessible to stakeholders;
- Comparability: the organization should select, compile and report information in such a way that changes can be analysed and compared in different reporting period and with respect to different organizations;

- Reliability: it should be provided and recorded in the report information that are possible to be examined by third parties;
- Timeliness: the report should be disclosed respecting a systematic scheduling in order to allow stakeholder to make informed decisions on time.

Furthermore, it is explained how to recognize material aspects regarding economic, environment and society. The material topics that are identified in this section are useful for understanding which specific standards have to be adopted in the report.

Applying the materiality principle that is provided in this standard allows the company to identify those material topics that have the most significant impacts and influence on stakeholders. By defining them, the organization is therefore able to identify and select those topic specific standards that are more relevant for the organization itself.

When the section of GRI 101 standard has been finished, it is necessary to provide information that are in the section *GRI 102: General Disclosures*, which is a tool to report general information concerning the entity and its sustainability practices of disclosures. It is therefore necessary to provide information about the organization profile, the strategies that have been implemented, the business ethics and integrity principles that are applied, the governance model, how stakeholders are engaged, and how is performed the reporting process.

At the end of the Universal Standards there is the standard *GRI 103: Management Approach* that is useful to disclose information regarding the management approach that is used for dealing with material subjects that are reported in the entire report. It is recognized that implementing GRI 103 standard with every material topic is useful for providing an explanation of the reasons that make the topic material, where impacts happen, and the methodology that the organization uses to manage the impacts.

After disclosing the Universal Standards, companies can disclose the Topic-specific Standards that comprehend several standards that refer to economic, environmental and social themes that have to be disclosed when the company provides impacts in one or more of these topics.

Furthermore, it is possible to report information that are included in the Selected topic-specific Standards, or a fragment of them, even when it is not necessary to disclose a sustainability report.

2.4.1.3 The effects on Non-Financial Disclosure after the European Directive 2014/95/EU: Voluntary versus Mandatory NFD

In a research paper¹² it has been wondered whether the shift from voluntary towards mandatory Non-Financial Reporting could cause some qualitative differences in disclosures.

Initially, in the literature it has been believed that with the adoption of the regulation, mandatory reporting had provided some improvements regarding the quality of disclosures and also for making NFD results more comparable between companies. In fact, some researcher believes that voluntary reporting could be found in several occasion incomplete and it could have some deficiencies with respect to accurateness, neutrality, impartiality and comparability matters. This is considered the main reason that led European nations to adopt mandatory disclosures for ESG issues.

Some researchers have conducted comparison analysis in order to understand whether countries that have adopted mandatory reporting better perform in Non-Financial Disclosures in terms of quality: it has been found out that in these countries the quality of such reports is higher than in the ones that there are no regulations about this thematic.

Furthermore, it appears that thanks to the mandatory requirements made by governments that have set specific orders, instructions and guidelines, it is possible that in the short term it is verified a standardization of reporting methodologies and an increase in the quantity of companies that reports non-financial information, while at the same time, it is considered that best practices and benchmarking are further implemented.

Besides these considerations, it is also believed that whether there are higher quantities of ESG reports, this do not imply that their information quality improves as well. In fact, some authors consider that the implementation of uniform report and frameworks would create some penalizations for indicators that had been created for specific sectors. There have been

¹² “The Non-Financial Reporting Harmonization in Europe: Evolutionary Pathways Related to the Transposition of the Directive 95/2014/EU within the Italian Context”, published by Caputo, Pizzi, Leopizzi, and Milone in 2019.

conducted some studies regarding to this issue and it has been deduced that actually the regulation that imposes mandatory reporting do not always improve the quality of non-financial information that are disclosed in reports, or at least that the fact that imposing a mandatory requirement per-se do not increase the quality of disclosures.

The researchers that support the voluntary nature of this typology of reporting assign an important strategic usefulness to the CSR progress. The strategical value is recognized to be due to the principles that the company and its managers have and in cases where the non-financial reporting is positively linked with the company share value, that can be defined as the joint set of the policies and operative practices that make the competitiveness of the company increase, while they also allow to have better economic and social performances in the community where they operate. Consequently, implementing CSR programs and actions and consequently reporting them voluntarily can help to create investor trust and improve the company reputation.

Looking at the various CSR definitions, since they expressly state that CSR is a voluntary framework that the company can implement, and considering that several companies have disclosed CSR reports even when there were not any mandatory requirement to disclose them, it is possible to testify the effectiveness of the voluntary reporting. Anyway, the scientific debate regarding the voluntariness of NFD is still an open discussion. In fact, the advocates of mandatory disclosures are critical with respect to voluntary disclosure, since they believe that non mandatory disclosures are too casual since there are no regulations to standardise it.

In the paper it has been conducted an analysis that looked at the Italian situation regarding the qualitative level of voluntary NFD before the adoption of the Legislative decree 254/2016 and the quality level of disclosures made mandatorily after the decree adoption. The outcome of the analysis allows to confirm that there has been a qualitative improvement for the non-financial disclosures that have been edited with the mandatory obligation that has been adopted with the D.Lgs 254/2016.

In another research¹³ related to this thematic, it has been conducted an analysis that examined both quantitatively and qualitatively the non-financial information that have been disclosed voluntarily before the adoption of the directive, in order to assess the level of compliance. It has been found that previous knowledge and competences regarding the reporting methodology of those information have contribute positively for the disclosures that have been reported after the adoption of the directive, but it is also considered that to improve the quality of the NFD it is necessary to make further improvements.

With the EU Directive 95/2014 all European member states have arranged their laws in order to be compliant with the directive. It has been recognized that with this adoption there has been a growth in the number of companies that have decided to disclose stand-alone reports regarding CSR, sustainability, intellectual capital, value, ESG and integrated reporting (IR). Anyway, as it has been already stated, since there are no obligations regarding which framework or which standard to follow (EU Commission, 2017) it has been recognized that the critical issue for several entities was which reporting standard to adopt and where to place the non-financial disclosure in the corporate reporting. In fact, from the both points of view of the ones that had to prepare and create (Global Reporting Initiative - GRI, 2015) and to assure (KPMG, 2013) the framework and the report typology it has not been an easy task to accomplish.

During the last 20 years, several researches have emphasised the necessity of making improvements in the qualitative and quantitative information that are disclosed in non-financial reports (Unerman et al., 2014; Erkens et al., 2015) since they can have enormous impacts on both managerial and organizational sustainability approaches (Eccles et al., 2011; Comyns et al., 2013; Contrafatto and Burns, 2013; Passetti et al., 2018) and even for preparing and for assuring those reports (Michelon et al., 2015), especially for essentials parts as the materiality of information released (Eccles et al., 2012, 2015; Mio et al., 2015; Lai et al., 2017) and the way to publish the report as a stand-alone or in an integrated report (Eccles and Krzus, 2010).

¹³ that has been reported in the paper "Voluntary versus mandatory non-financial disclosure: EU Directive 95/2014 and sustainability reporting practices based on empirical evidence from Italy" published by Doni, Bianchi, Martini, Corvino, and Mazzoni in 2019

It has been recognized that the adoption of the EU Directive is an essential component of the European strategy to promote CSR. In this way, it has been used a “hard law” instrument that previously had never been adopted. It is important to mention that according to the ones that sustain the importance of the voluntariness reporting, the mandatory requirement can be an inconvenient imposition, since companies that are obliged to provide NFD can disclose those information, being therefore law compliant, but they could at the same time provide low quality reports.

Furthermore, some studies have demonstrated that the fact that the directive has not indicated specifically which guidelines or principles to follow could cause difficulties in comparing those reports between companies and between countries; furthermore, it could even lower the effectiveness of the directive (Van Hulle, 1993; Theunisse, 1994; Thorell and Whittington, 1994; Herrmann and Thomas, 1995).

It has been found that companies prefer to disclose non-financial information voluntarily (Fallan and Fallan, 2009; Maltby, 1997), while the perspective of the ones who have to read and use them is confused (de Villiers and van Staden, 2010; Stubbs and Higgins, 2018).

It has been recognized that the Italian situation regarding NFD has a corporate reporting gap (Costa and Agostini, 2016; Venturelli et al., 2017; Carini et al., 2018) and it is considered necessary the implementation of actions for sustainability policies, in particular for determining the risk assessment, for implementing key performance indicators for social and environmental matters. Since Italian companies do not have a lot of experience in reporting those documents (Mio and Venturelli, 2013), it could be more difficult to effectively implement the mandatory requirements in the Italian context.

Because of the voluntary approach of disclosing NFDs until few years ago, managers’ attitude has been mainly influenced (Mio et al., 2015) and since the Directive provides a large degree of flexibility for the implementation of those reports and does not provide a clear definition of which are the “non-financial” information to disclose (Haller et al., 2017; Stolyow and Paugam, 2018), the harmonization process is considered to be critical and difficult to reach.

2.4.2 The Limits of CSR and Non-Financial Disclosures

After analysing what is CSR and understanding the benefits that it is able to provide to society, it is important also to consider the limits that CSR approach has and to understand how it is possible to overcome them, being able to provide more sustainable solutions.

In this section is reported a part of the presentation that has been performed by Professor Chiara Mio, during the KPMG Christmas Convention ("Outing Area 3") that took place in Canazei (Trentino Alto Adige, Italy) on December 6th, 2019. Furthermore, there have been added some personal opinions and ideas.

First of all, it is important to highlight the different possible sustainability actions that a company can do. The most simplistic method to provide some societal and environmental help is to make charitable actions, making donations for organizations that help communities and are engaged with environmental safeguard. A more useful and sustainable approach is to engage with Corporate Social Responsibility actions, but as it has been already discussed, there are several limits to make CSR a real and total sustainable method of making business. The companies that are instead totally capable of managing sustainability business are the ones that make sustainability.

According to Chiara Mio, Professor at the Ca' Foscari University the criteria that at least must be contemporaneously present in order to establish whether a company works in a sustainable manner or not are:

1. The sustainability business model is win-win for several stakeholders: it does not produce profits for just the company itself, therefore the advantages gained are for satisfy several stakeholders.
2. Sustainability is not measured in a short-term period, but there are long-term plans that generate impacts inside and also outside of the company.

The Key Performance Indicators (KPIs) that have to be set to work sustainably are not indicators that cover short periods targets, but they have to be implemented in order to sustain a long-term strategy.

In fact, for reaching sustainability targets, outcomes have to be established, and not just outputs. Outputs are those results that look at short term periods (for examples they are yearly results such as revenues or EBITDA), whether outcomes are the achievements that can only be reached in the long-term, not just in few years. For instance, outcomes can be measured by eco-efficiency or sustainability indicators, that are set to comprehend both an economic term and an environmental or social one.

To have those outcomes it is usually not possible to reach the desired targets in just one year, unless a company decides to use offsetting solutions in order to implement some sustainable actions. The problem of using offsetting resolutions is that only simple CSR actions are implemented, therefore it is not implemented a shift to sustainability business model.

In this way, the production of the goods or of the services that are sold by the company are made in the same manner and generating the same pollution levels as before. To offset the environmental damages that have been created, the company can buy credits in other different ways, for example with emission rights, or getting white and green certificates.

Furthermore, the problem is that not only the company does not innovate its business model, but also customers do not change their habits and they are forced to use the same unsustainable products and services in case there are no other different and more sustainable solutions. Their other option would be in that case to not use those products or service at all, but most of the time it this is not possible or anyway, people would not accept to avoid using some services or products they are used to exploit.

In these terms it is important to remind that in fact that sustainable development is the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Therefore, to find sustainable solutions and to reach sustainable development, the answer is not that people have to get rid of their habits to allow future generations to exploit the remaining resources, but it is desirable to find resolutions that are able to provide nowadays and in the future enough resources to live in prosper and decent living conditions, including the provision of services and goods that people need.

An example of these offsetting solution that does not provide a shift towards sustainable plans and habits is represented by several travelling companies that give the possibility to customers to pay a small additional amount in order to give it to CSR actions (for example, planting trees in order to compensate the CO₂ emissions produced by the travel). This kind of CSR compensating actions of course provide some positive results, but the main problem persists since the business model has not changed and no sustainability business has been implemented.

Instead, creating a long-term sustainability strategy can provide several benefits. For example, in case that a company wants to implement a KPI that looks at the CO₂ emissions for the turnover, its attempt would be to lower the CO₂ emissions because it creates a competitive advantage both for the company and for the environment, therefore being a win-win for several stakeholders, and at the same time, it is a long term plan.

In order to implement sustainable plans and solutions, there must be a paradigm shift, a radical strategical change, and new technologies have to be developed. Therefore, it is not possible to implement all these variations rapidly since quite a lot of time is needed, and investments have to be done.

3. A technology platform is at the center of the sustainable business model: it has to be developed a new technology platform in order to foster innovation and to implement innovative and sustainable strategies/ideas.

There is no sustainability without an important technological platform, in fact, without technology it is very difficult to find sustainability solutions that allow to reach paradigm shifts in technologies. Changes and shifts of paradigm are difficult to be reached without technology and actually, where there is a new sustainable solution, it is likely to be a great technology leap.

4. Sustainability requires empowerment and community education.

It is necessary to educate communities and society in case novel sustainable goods and services are available since a sustainable business provides innovative products that no one knows how to use. Consequently, most of the times, at the creation of the innovative solutions there are no clients at all since there are no information about the new good. Therefore, in order to sell it and to widespread it, it is necessary to perform a lot of marketing and

advertisement, in order to make customers aware and to allow them to understand that they need the innovative product. Furthermore, it is also necessary to understand how clients interact with companies and their products, and finally, it is very important to comprehend which is the best method to allow customers to buy products.

It is important to work and to interact with local cultures and to educate the community: it is crucial for companies that do sustainability to understand the needs of the local communities, their habits and their life rhythms. It is important for local communities to be empowered by companies in order to be able to use innovative solutions.

For local and undeveloped communities there have always been done a lot of charitable campaigns, that of course provide some benefits in the short term, but unfortunately, these acts are not useful in a long-term perspective. Especially, mere charity actions are not enough to eradicate problems from the roots in order to provide valid solutions in the long run.

5. Sustainability must be scalable, not just replicable.

In order to create sustainable and innovative solution that can be useful for the entire world, it is necessary to find and provide simple, local and affordable technology solution. In this way it would therefore be possible to create a scalable business that can be widespread everywhere.

According to Chiara Mio, when these five elements are contemporaneously present it is possible to create a sustainable business, which is based on a business model innovation, that create disruptive innovation.

The next figure shows the three essential elements that are considered necessary by Professor Chiara Mio in order to implement a new concept of Business Sustainability: Business Model, Knowledge and Intellectual Capital, Natural and Social Capital.

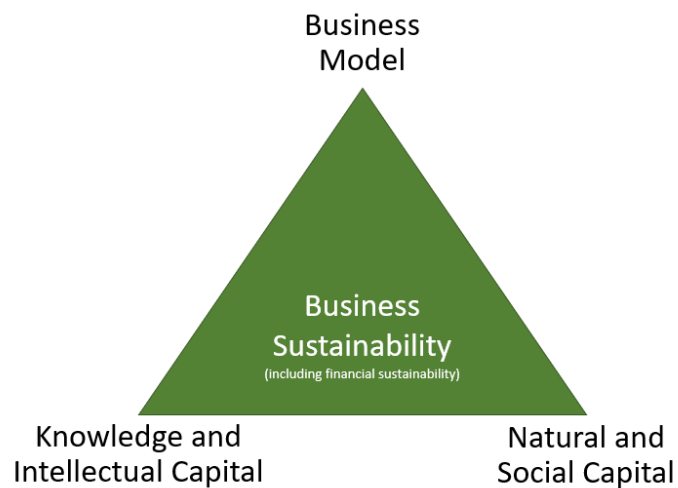


Figure 18 - Towards a new concept of Business Sustainability (Source: Chiara Mio - Ca' Foscari University)

To overcome the limits of CSR and to create a real sustainability business it is necessary to change the business model and to develop a sustainable one, thus creating an inimitable competitive advantage. In order to reach this, it is necessary to look at sustainability not just as an end of pipe act or task to achieve, but it is a new way of interpreting the entire business, which requires particular attention to the social capital, good financial performances, great investments in the company knowledge and a high level of intellectual capabilities of the employees. Therefore, it is necessary to have knowledge and intellectual capital: it is not enough to have good values, in fact competencies are necessary for allowing the shift towards sustainability.

Since new sustainability businesses usually need a technology platform and technological improvements, it is necessary to deeply think about new technology implementations and usages and to make links and “connecting the dots” between different application fields, looking for solutions that have been created for certain specific purposes that can also be used and adapted for other applications.

In order to be able to create a Sustainable Business Model, it is also necessary to have multiple visions, to have employees that are able to look at situations from different perspectives and that are able to communicate and discuss them all together. Different employee backgrounds and perspectives are therefore crucial for having the widest possible overview.

The importance of shifting towards new sustainability business is basically due to both environmental, social and economic reasons. In fact, it has been discussed in the first chapter, the world is finishing its resources and for this reason there are several consequences both at environmental and at social levels; furthermore, in a company perspective, thanks to innovative solutions it is possible to create competitive advantages, eliminating the logic and the strategy of price reduction in order to increase market shares, that do not always allow to establish a long term business perspective.

As it has been mentioned at the beginning of this paragraph, there are basically three methods for acting sustainably: making charitable actions, engaging with CSR and make Sustainable Business. Thanks to the elements that have been described, it is possible to make a paradigm shift towards sustainability.



Figure 19 - Towards a new paradigm (Source: Chiara Mio - Ca' Foscari University)

Entire companies, at every level, have to be helped in these transformations because sustainability is not only under the responsibility and the attention of just the sustainability department, but it involves the entire company personnel and every employee have to think in sustainable terms to allow this shift.

As it has already mentioned previously, there is not still a unique indicator that is able to measure every business aspect, even if already from 1994 John Elkington introduced the concept of the Triple Bottom Line, stating that in the income statement it is not possible just to look at the economic result, but also to the social and environmental ones. Unfortunately, nowadays it has not yet been defined a unique synthetic indicator for profit, social and environmental aspects.

This aspect can be a limit for non-financial disclosures, because having a proper and unique indicator could allow to better evaluate companies' performances in ESG themes, and it would provide a neutral perspective. Actually, in the papers that have been previously analysed and from the results that the Osservatorio DNF has provided, it is evident that there are several aspects to consider every time non-financial information have to be provided and therefore, it is not easily possible to compare different companies performances.

3. The Paper and Pulp Industry (PPI) in the Italian Context

In this chapter it is analysed the Italian Paper and Pulp Industry and it is reported how the Industry is able to manage production processes in a sustainable way; furthermore, it is also highlighted that thanks to the adopted production processes and to the natural features of wood derived products, paper is a sustainable material, despite that it is commonly not considered so.

3.1 Industry Overview

For having an overview of the Italian Pulp and Paper Industry (PPI), there have been considered the reports¹⁴ and the information disclosed in Assocarta website.

Assocarta is the National Association of paper, cardboard and pulp industrial workers and it represents the PPI in “Confindustria”. The association involves the paper producers that provide paper that can be used for graphic purposes, for packaging, for hygienic and sanitary uses and for special papers that have several possible applications, for example in the building and furniture sectors.

Assocarta was created in 1888 with the aim of safeguarding the industry and the Italian paper business; nowadays, its purpose is to coordinate and to promote the interests of paper and

¹⁴ “A year with Assocarta – Assocarta activities of 2018” (translated by the original title “Un Anno Con Assocarta – Le attività di Assocarta nel 2018”), and the “Environmental Report of 2016-2017” (translated by the original title “Rapporto Ambientale 2016-2017”)

pulp producers and to defend them at national and European levels through the Confederation of European Paper Industries (CEPI). Asscarta members represent more than the 90% of the Italian production of the PPI, which in 2018 counted 119 companies, that have 153 manufacturing plants in the Italian territory, and counting around 19.300 employees totally, while in 2017 there were 117 companies that had 150 manufacturing plants in the Italian territory, with a total of 19.300 employees.

Italian paper industry is considered one of the biggest paper producers in the entire World.

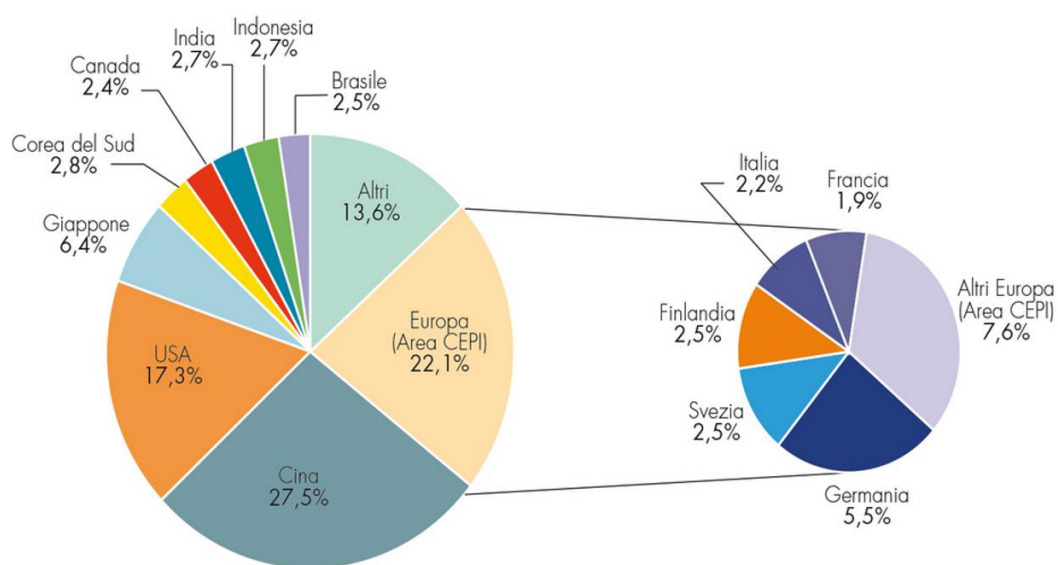


Figure 20 - World Production of paper and cardboard in 2017 (Source: CEPI elaboration of data provided by CEPI, RISI, AF&PA, JPA, PPPC, Bracelpa)

As it is shown in the previous graph, the Italian Pulp and Paper Industry at the European level is at the fourth position in terms of production quantities, after Germany, Sweden and Finland, counting in 2018 a total amount of tons produced of 9,1 million (most of which are paper produced, with a total amount of 9.071,1 ton), while a small part of it, is related to pulp production (338,3 ton); regarding revenues, in 2018 they have been around 7,7 billions of Euros, half of which is derived from export activities that basically are directed to other European countries.

In the next figure are represented the flows of imported and exported quantities of wood derived products (in millions of ton) that are exchanged between Italy and foreign Countries. It is evident that exports flows are greater than imports: this fact is explicable because Italy is

one of the biggest paper producers, even if, as it will be explained later, it does not have enough raw materials to produce paper and therefore, is highly dependent from imports. Anyway, exports are greater than imports because in the Italian context the paper recycling processes are well managed and implemented, allowing to produce big quantities of paper and cartons, even if pulp and virgin raw materials are scarce.

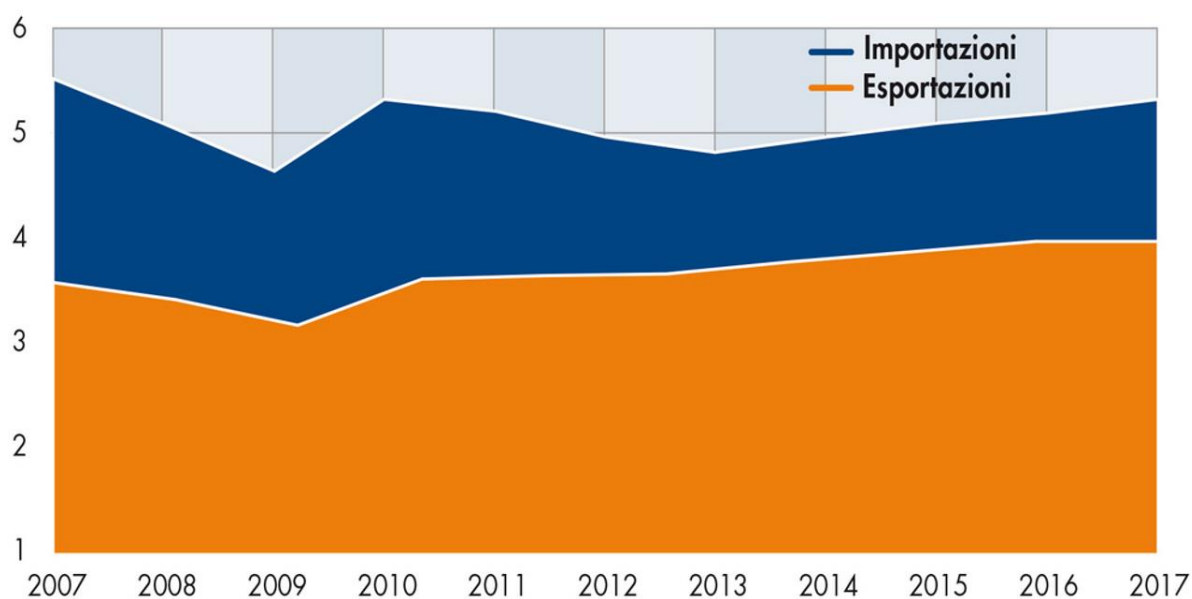


Figure 21 – Italian PPI Trade quantities (millions of ton) flows with foreign Countries (Source: Assocarta Elaboration on ISTAT data)

Furthermore, regarding production quantities, in Italy in 2017 there have been produced around 9 million of tons of paper and pulp, 4 million of these have been exported, while 5,2 million tons have been imported. Therefore, the apparent consume of the Italian PPI in 2017 is of 10,3 million tons¹⁵. It is possible to see the quantities of the apparent consumption and of the production from 2000 to 2017 in the next graph, where it is possible to notice that from 2000 to 2007 there has been an increase of both production and consumption, while from 2008, with the financial crisis, it has been registered a substantial decrease. From 2014 it has been registered a slight increase for both consumption and production.

¹⁵ the apparent consumption is calculated summing the total amount of the produced quantitative with the imported one and subtracting the exported amount of materials.

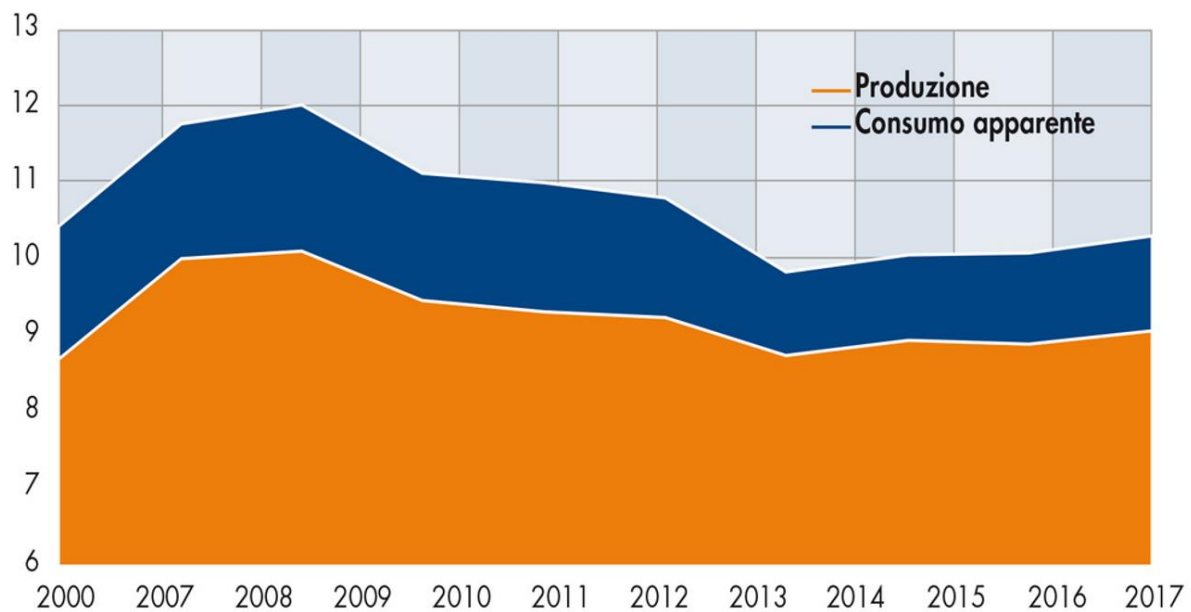


Figure 22 - Italian consumption and production (millions of ton) for paper and cardboard (2000-2017). (Source: Assocarta Elaboration on ISTAT data)

Regarding the profitability of the Italian PPI in 2017, according to Assocarta the industry has gained revenues for 7,4 billion Euros, and both the imports and exports revenues account for 3,8 billion of Euros.

In 2017 the most widely paper product that has been produced is packaging paper and cartoon (4.495,7 ton) and the other main paper typologies that have been produced and their relative amounts are graphic paper (2.586,6 ton), paper for hygienic use (1.549 ton), while other types of paper and carton are the least that have been generated (439,9 ton).

3.2 The adoption of environmental management systems and of certifications in the PPI

According to Assocarta, the industry adheres voluntarily from 1997 to the “Eco-management Project” to implement environmental management system since they are effective instruments to monitor impacts and can improve environmental performances.

At the end of 2018 there were 74 manufacturing plants that adopted ISO 14001 certificate¹⁶ and 14 of those have also obtained EMAS certificate¹⁷, covering the 75% of the paper produced yearly with those certifications. Those two certificates are considered relevant and useful instruments for companies that have to deal with Public Administration for providing information in a structured way. In the next graph it is possible to see the total number of companies that have adopted those certifications during the years and also the ones that have only adopted EMAS certificate. It is interesting to notice that from 2012 the total amount of certified companies is stable, while from 2016 there is a slight increase in companies that have adopted certifications.

¹⁶ ISO 14001 is the certification for Environmental Management Systems provided by the International Organization for Standardization, that develops International Standards for several business aspects.

¹⁷ EMAS certification is a management instrument created by the European Commission, called the Eco-Management and Audit Scheme, and it is useful for companies and organisations to estimate, report, and improve environmental performances

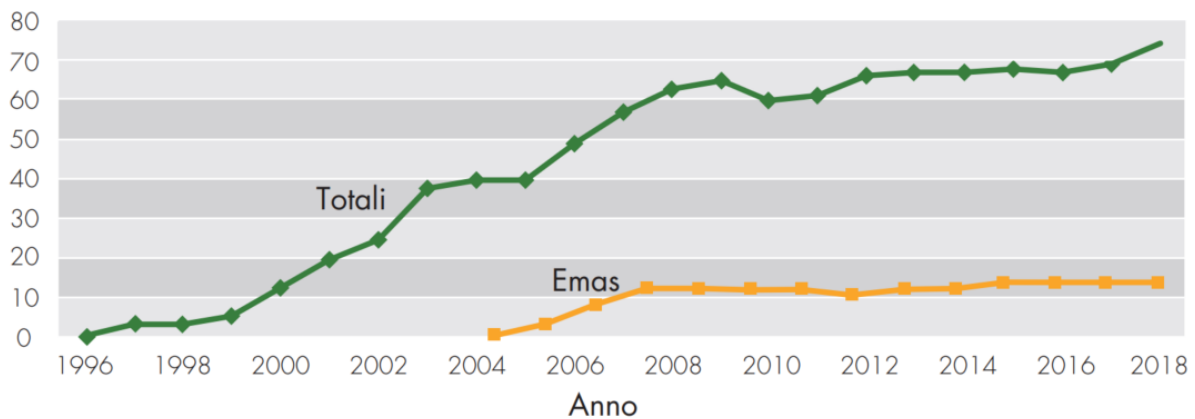


Figure 23 - Number of certification ISO 14001 and EMAS (Source: Assocarta elaboration)

Furthermore, the Italian PPI sustain supplier adoption of standards for forest management in order to guarantee environmental, social and economic sustainability. In fact, most of the wood (56%) and virgin pulp (79%) that are used in Italy come from certified managed forest. Most of the Italian wood and pulp suppliers come from Europe and North of America, that have the major percentage of certified forest, that worldwide account only for 11%.

It is important to say that these areas, thanks to the adoption of sustainability forest management, are increasing thanks to the policy adopted that expects that when a tree is cut, more than one (usually, 2 or 3) is therefore planted. Therefore, thanks to the use of certified paper products it is possible to state that their utilization leads to safeguard forest and to guarantee that they are properly managed and most importantly, to avoid that abandoned forest areas are used for other economic activities that would not be sustainably managed.

Furthermore, the European PPI is against illegal wood cut and has voluntarily adopted a Code of Conduct regarding wood procurement that was implemented even before the European Regulation 995/2010, according to which it is illegal to commercialize wood and its derivative products, including paper and cellulose, that have been illegally gathered and produced. According to this Regulation, from 2013, it is required for companies that work in the PPI to adopt risk mitigation procedures in case of buying illegally cut wood, but it has been recognized that in Italy, paper and pulp producers have not substantially changed supply policies and methodologies, since the Italian PPI was already used to buy wood products from sustainably managed forests.

3.2.1 The usefulness and the impacts of certifications for wood-base products

Paper is a sustainable material and there are several instruments that can prove the effective sustainability of the product itself, that principally derives from the forestry sources and suppliers that are adopted to produce paper products.

The most widely known certifications that are used in the forestry and paper industry for guaranteeing product sustainability are PEFC, FSC and for European Countries, the Eco-label.

The Programme for the Endorsement of Forest Certification (PEFC) was created in 1999 and it is a worldwide association that provides forest certification systems. It is an international non-profit and non-governmental organization, that is engaged with encouraging sustainable forest management through independent third-party certifications. Certified PEFC products are recognizable thanks to its label, which communicates to users that the wood-based materials that compose the certified good have been produced from PEFC-certified forest, which are managed according to specific environmental, social and economic factors. With the adoption of this certification, it is possible to track along the entire supply chain thanks to the “Chain of Custody” standard. Furthermore, beyond assuring that wood materials derive from certified forests, this certification guarantees that people that are involved in the wood-derived products production are safeguarded by proper workers’ rights.

The Forest Stewardship Council (FSC) is another certification, which ensures that wood and paper-based products are made by materials that come from sustainably managed forest that respect environmental, social and economic standards. FSC Forest Management Certification ensures that forests are managed according to preservation biodiversity principles, safeguards local communities and sustain economic profitability. Even FSC certifies the “Chain of Custody”, verifying that materials that have been certified by FSC have been properly recognized along the supply chain, excluding materials that can not be certified or that have not been properly controlled.

The Ecolabel trademark guarantees the European ecological quality and low environmental impacts in the entire lifecycle of certified products and it is a useful tool for consumers in order to adopt environmental-friendly products. This trademark has been introduced in most of European Countries from 1992 with the European Council Regulation 882/90 and it is not only applicable to wood derived products, but also to products that derive from other materials; it is a trademark that is voluntarily adopted, and every product that possess this label is verified by an independent organization. With the Ecolabel, it is assured that established criteria regarding environmental issues related to the entire product lifecycle are respected, specifically for energy, water, chemicals and waste; the trademark looks also at product functionalities and quality. Furthermore, both product users and workers that are involved in producing them are safeguarded: actually, with this label are considered the health and the safety of consumers, and also ethical and social concerns that are related to production processes.

3.2.1.1 The impacts of using forest certifications

In a research paper¹⁸, are discussed the impacts of forest certifications that have not always been considered by researchers as precise means for assuring social and environmental positive effects. Furthermore, since it is not always precisely expressed by law how to determine environmental consequences, several measurements are considered biased, considering also that most of the companies that adopt voluntarily environmental standards are usually the ones that operate in regulated markets. It is also important to consider that forest certification standards tend to change over time and therefore, it is more difficult to properly estimate environmental impacts and to compare them in different periods of time. Besides those considerations, researchers have studied temporal effects of forest

¹⁸ "Forest certification: the challenge of measuring impacts" published by Benjamin Cashore and Hamish van der Ven in June 2018

certifications and it has been found that adopting them, in several contexts are registered better living conditions for employees and also community empowerment is improved.

Furthermore, in the article it is recognized that depending on different situations, forest certification can be in some cases more and in some cases less effective with respects to governmental environment that surround companies, especially considering incentives and institutions. One of the most important aspects that have been introduced in the report is that forest certifications are able to create, for example, in the entire value chain of wood-based products opportunities of having “wider market access, price premiums for certified goods, preferential treatments by specific buyers, exposure to new clients, and non-economic incentives like enhanced ‘social license to operate’”, that are considered highly effective encouragements to certify products. Moreover, it is considered that incentives are crucial means for amplifying the request for certified products and that for having wide environmental and social positive results, certifications have to be adopted by every, or at least from companies majority.

Most of forest certifications that are worldwide implemented are FSC and PEFC. The substantial differences that have been found by researchers between those two certifications are that “PEFC tends to favour national sovereignty over global principles and criteria, business interests over social and environmental ones, procedural recommendations over substantive prescriptions, and responsible management and environmental sustainability over a broader focus on labour, indigenous rights, and wide-ranging environmental impacts”. Furthermore, it has been observed that forests that are certified according to PEFC and FSC are growing, even if, as it is possible to see in the next figure, there are still substantial differences among the areas that they cover: they are widely adopted in north Countries, especially in Europe and in the United States, while they are scarcely implemented in the tropics, especially in continents that have enormous industrial forestry impacts such as Africa and in Asia.

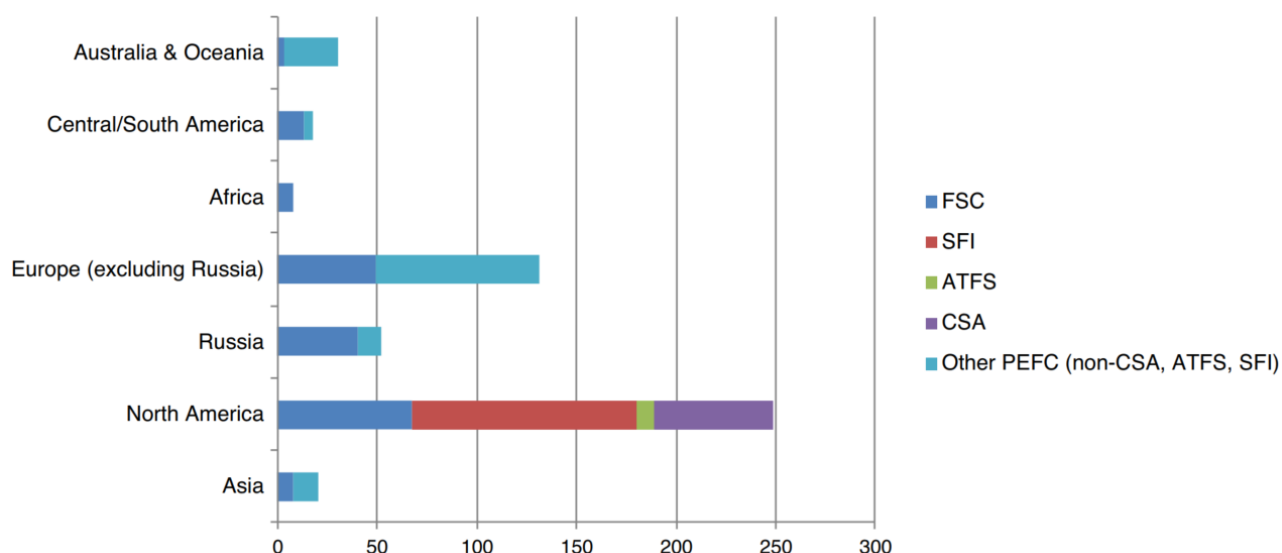


Figure 24 - Hectares of Forest certification by region in 2016 (Source: Forest certification: the challenge of measuring impacts - Van der Ven and Cashore)

It is important to highlight that these certifications assure, or at least, provide evidence of conformity to environmental-friendly and social safeguarded practices; furthermore, from a strategic perspective, they are able to generate product differentiation, that for several users can be highly valuable, especially since certified wood-base product have both environmental and social positive impacts.

3.3 The utilization of recycled paper

The main paper components are natural and renewable materials, moreover, paper products can be useful even after their utilization since they are recyclable, biodegradable and compostable.

Even if in Italy there are several forests, only few of them are used for cutting timber and therefore, Italy has always been dependent from importing wood. Therefore, in the Italian context there has always been a strong propension to recycle paper products at the end of their useful life and to consider them as the main source of wood fibre.

As production has continued to develop, both processes and technologies have improved in order to optimize the use of recycling fibres, even if, as the next graph shows, it appears that it has been reached a technological limit to the use of recycling paper since its percentage is almost constant during the last two decades, and it is between the 50 and 60% of the total paper used (virgin and recycled).

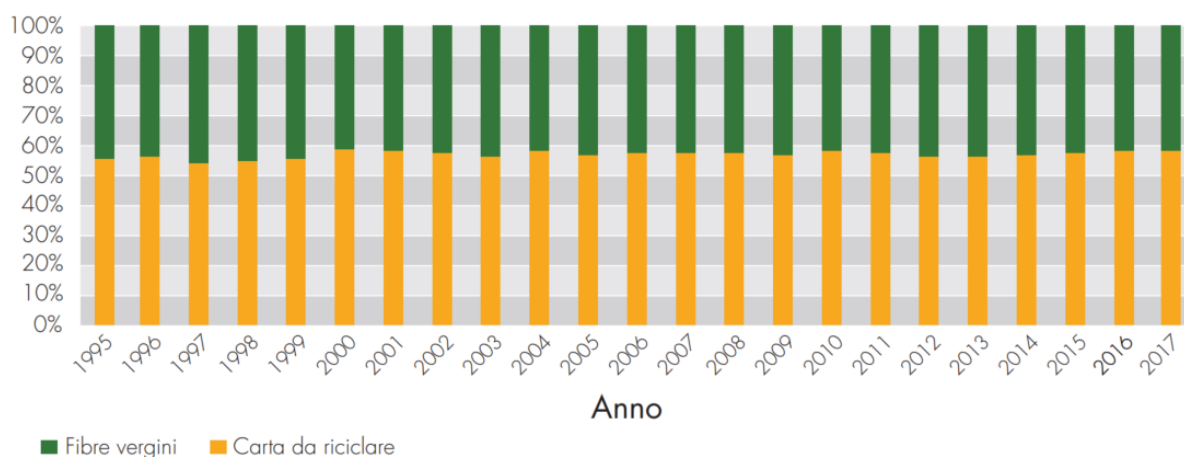


Figure 25 - Utilization rate of pulp for virgin and recycled paper (Source: Assocarta elaboration from ISTAT data)

It is important to say that both quantities and typologies of recycling paper that are useful for producing different paper types varies with respect to the use of the product. Furthermore, an increase of recycled quantities leads to a progressive loss of fibres quality and therefore recycled fibres are used for less sophisticated products.

There are paper typologies that can be produced only with virgin fibres and their use introduces new fibres into the paper system that when are recycled, are useful for providing new fibres to the ones that are no more possible to use. It has been estimated that it is possible to re-use paper fibres around seven times, therefore, after averagely 7 times that paper products have been used, it is necessary to dismiss them.

Even if the utilization of recycled paper is highly recommended and adopted in the Italian context, for having white paper it is necessary to use virgin cellulose and pulp that in Italy are nowadays produced without the utilization of chlorine since it is an element that pollutes wastewaters.

In the next figure it is shown the percentage used overall in paper that has been produced in 2017: the majority part has been used recycled paper (47%), while virgin fibres used has been used accounting for a third of the overall production. Furthermore, the other non-fibres material such as additives are the 20%.

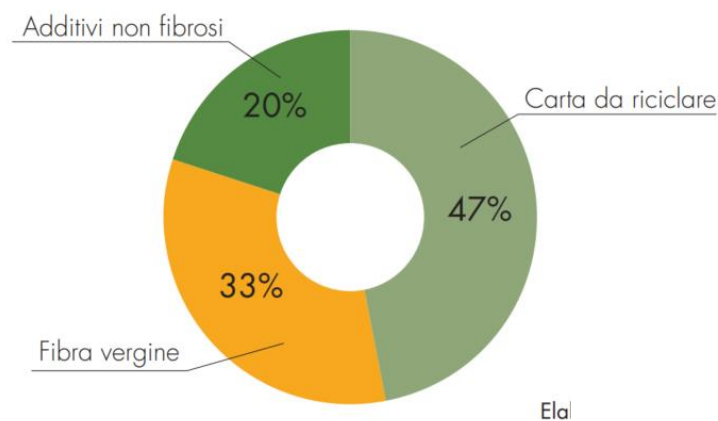


Figure 26 - Raw material composition for paper industry (Source: Assocarta elaboration from ISTAT data)

It is important to mention that when virgin fibres are necessary to be introduced, in the Italian context are only used cellulose and pulp, that are obtained entirely without the utilization of chlorine gas and most of them are imported, in fact, the national production of virgin pulp do not even cover the 10% of the necessary quantity.

3.4 The recycling process and waste generation in PPI

In order to understand how the Paper and Pulp Industry is able to operate sustainably, it is necessary to consider the production, the recycling and the waste management processes that are implemented in order to create, to re-use and to dismiss paper products.

3.4.1 The benefits of the paper recycling process

At the end of its lifecycle, recycling paper is considered a raw material that has an enormous value when it is collected and sent to the paper mill to be recycled, becoming therefore new paper. The secondary fibres that can be used for recycling paper come basically from two different channels: the first one is represented by production scraps, papers and packaging that are already present in paper mills, that therefore are already present in production plants and can directly be used for producing paper; while, the second one is derived from separate waste collection made by citizens and other consumers, that, after a selection process, can be re-introduced in the paper production cycle.

As it has been previously mentioned, Italy highly depends on wood imports and therefore, it is essential to recycle wood derived products, besides that it is a sustainable practice that matches with Circular Green Economy principles. During the last years, Italy is considered the fourth European nation that uses wastepaper, employing 5 million tons yearly of it to produce paper (Assocarta elaboration on ISTAT data, 2017).

It is possible to extend cellulose lifecycle thanks to the collection and the recycle of paper and cardboard: doing so, it is possible to optimize raw materials supply, to limit the necessity of importing materials and to reduce disposals. The recycling process is considered to create even greater value if it remains in the territory where it is placed, since it does not cause transportation costs and pollution, which is created by transferring products. Furthermore, according to the Confederation of European Paper Industries (CEPI), it has been found that using efficiently natural resources such as wood for paper, carton and pulp production instead of just burning it for producing heat and energy can increase not only added value to wood products, but also to increase workplaces. In fact, looking at the data that are relative to the entire bioenergy production chain derived from burning wood, added value that is created producing paper and pulp is increased until 9 times compared to wood combustion and it can also increase of 7 times workplaces, while looking just at paper production, these proportions are 9,5 times and 6 times respectively. Moreover, burning wood creates a lot of pollution because of combustion, and therefore, it is recommended to limit this processes for just activities that exclusively need combustion.

Paper and cardboard that are recycled are considered key elements of environmental, economic and society sustainability since not only they provides economic and environmental benefits, but also for the entire society, in fact it is considered that thanks to the recycling process it is possible to create value for everyone. Moreover, for wood-derivate goods adopting circular economy principles that allow to use end of life products as raw materials, it is possible to increase more than two times the economic value of wood, instead of burning it to produce energy.

As it is shown in the next graph, it has been recognized a progressive increase in the Italian collection rate of paper for recycling purposes during the last 20 years. This trend indicates not only that it has been paid more attention to the importance of recycling wood-derivative products, but also that it has been created and increased a network of infrastructures that allow to collect paper. This implementation has been possible principally thanks to Comieco, which is the national Consortium that aims to recover cellulose packaging, and thanks to the collaboration of paper mills and transformers. Increasing the rate for recovering wood-derived products has allowed to have more supply sources and to need less imported materials, that nowadays are basically due to only few qualities of wastepaper and pulp that are not enough present in Italy.

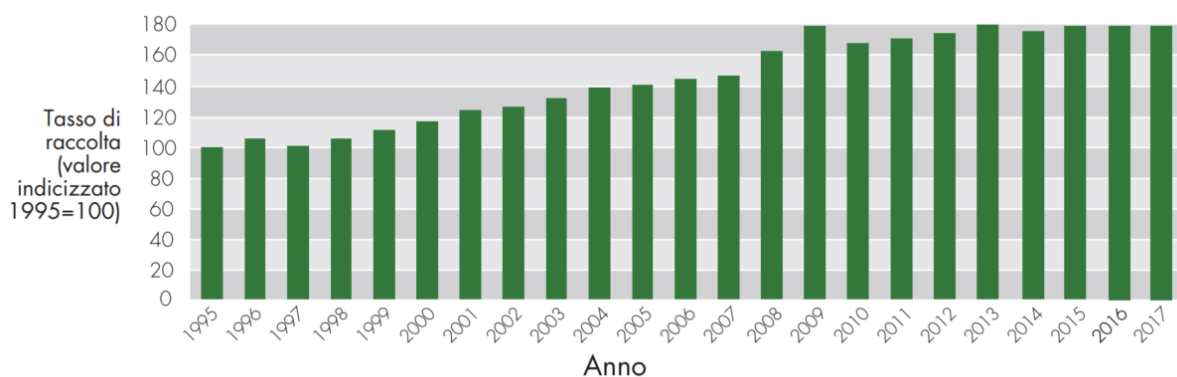


Figure 27 - Collection Rate of Recycling Paper (Source: Assocarta elaboration on ISTAT data, 2017)

3.4.2 The Proximity Principle

It has been estimated that in Europe a newspaper that is directed to the recycling process goes back to production processes in one week, while it takes two weeks to recycle a corrugated cardboard. These results of extremely low time that is needed to recycle and to re-produce paper products is due to the managing decisions and policies that have been adopted in the European and Italian paper and pulp industry and the production chain related to the transformation of wood products.

This is the European concept of the “Proximity Principle for Recycling”, according to which it is possible to gain advantages that are connected to Circular Economy, such as to reduce transportation emissions, to create job opportunities, to assure that recycling processes are performed considering and following European rules, to create wealth where this principle is applied and to guarantee more transparency to users. This principle has also been implemented in the Italian legislation with the Legislative Decree 152/2006 in the articles 181 and 199. In these two articles it has been introduced the concept of “proximity” of recovery plant, according to which waste products that are gathered with separate waste collection in urban areas should be then processed in the closest recovery plant and that regional policies for special waste have to be adopted in order to recycle and recuperate trash in recovery plants that are close to where they are produced.

Following the Proximity Principle can be beneficial both in terms of cost reduction and also for environmental safeguard: in fact, minimizing transportation decreases transportation costs and also allows to avoid creating further pollution.

3.4.3 The recycler: the recycling paper phases

A recycling process is able to recover a material, that after some required recovery processes, possesses the same features that it previously had in the original material.

For paper products the recycling process is identified with the creation and the dehydration of the paper sheets or products, and it begins with the pulper machine, where fibres are crushed and separated from impurities and therefore, they turn in their original status in order to produce new paper sheets.

The recycling process phases can be basically identified in the following steps:

- The consumer uses the paper product and when it finishes to use it, it put it in the differentiated trash can;
- The entity that is engaged in gathering trash, collect the material and bring it to recycling plants;
- In the recycling plants there is a selection platform that receives wastepaper and select the paper that is useful for recycling from impurities and undesired materials, that are thrown away. With the valuable components that have been found, it produces a secondary raw material (called “wastepaper”, which is the paper that will be lately recycled) according to qualitative features that are defined in the standard UNI EN 643;
- The paper mill therefore receives the wastepaper and put it in the pulper machine to recover fibres and to create a new paper sheet (which is called “recycled paper”);
- The printing and the transformer machines elaborate the pulp to create new paper products that can, at the end of the process, be used again by consumers.

3.4.4 Waste generation in PPI

Production waste that are created in paper mills at the end of paper and carton production are essentially biomass, which can be useful for recovering biomass material and to produce energy.

There are essentially three typologies of production waste in the paper and pulp industry:

- The waste that are created from the process of water purification are basically sludges;
- The residuals that derive from the paper recycling process are pulper scraps that derive from the separation of fibers from impurities;
- The last waste category is composed by de-inking sludges which are obtained when ink is separated from cellulose fibers.

Furthermore, there are other different wastes such as steel, wood and plastic that come from recycled packaging, exhausted oils and other residuals of various kind. Most of them are not dangerous, but in some remote cases it is possible that during the paper production process even dangerous wastes are created.

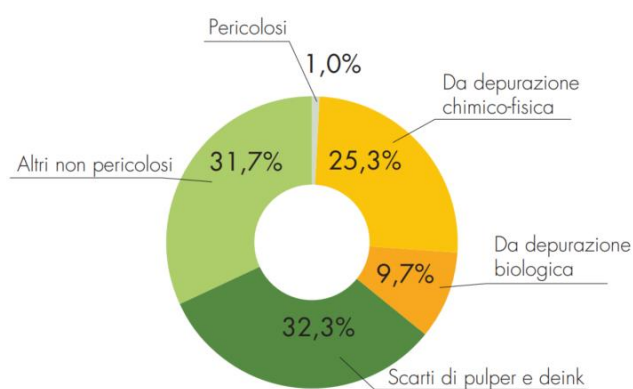


Figure 28 - Waste typologies (Source: Assocarta elaboration on a sample of 42 manufacturing plants)

It has been observed that during the years, there has been an increase of waste generated in the PPI. This trend is basically considered due to the better performances that plants have for depurating water, that therefore create greater quantities of waste, and because more

wastepaper are recycled thanks to the increased diffusion of separate waste collection. For these reasons greater quantities of impurities arrive at the recycling point and therefore, are generated greater quantities of paper that cannot be used again, which have to be dismissed.

In the next graph it is possible to see the trend of waste produced in the PPI during the last two decades. It is possible to notice that from 2014 the increasing trend has switched to a decrease, that can be attributed to a greater efficiency in recovering fibers and thanks to the adoption of innovative technologies that allow to further dehydrate sludges. Furthermore, it has been recognized an increase in the efforts that are made for recovering materials as waste and also as byproducts or sub-products.

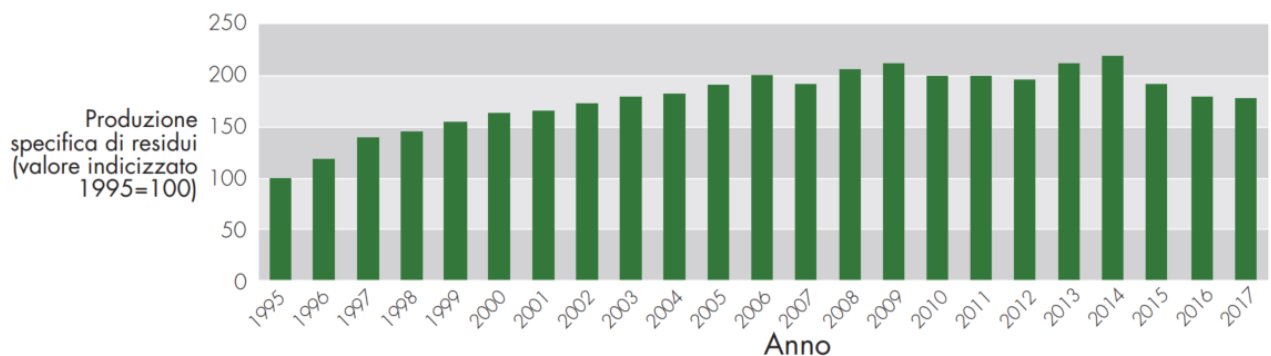


Figure 29 - Waste Production for unit of product (Source: Assocarta elaboration on a sample of 40 manufacturing plants)

3.5 The PPI and water consumption

Enormous quantities of water are necessary in order to produce paper products and because of the use of chemicals, at the end of the process the output water has generally been polluted. As it has previously mentioned in the first chapter of this Thesis, among the Sustainable Development Goals there is a goal that is explicitly addressed to safeguarding water, since it is recognized to be a scarce and essential resource. It is therefore considered highly important that in the Paper and Pulp Industry are implemented policies and methodologies that specifically aim to reduce water use and to limit the use of chemicals.

According to Assocarta, during the history of paper production, it has been paid an increasing attention to water and to avoid wasting this scarce resource, implementing ways of reducing and optimizing its use through continuous recycling water processes in the paper production plants.

The water that is used in the PPI at the end of its processes returns to the environment, and therefore particular attention is needed in order to avoid introducing in the environment polluting elements that would be harmful for the environment, for plants, for animals and for human beings as well.

Water is an essential element for producing paper products and because of its problems related to scarce availability, there have been implemented technologies solutions that allow to use most of the water that is involved in the recycling paper process in a close-loop cycle: therefore, nowadays it has been estimated that the 90% of the overall water used is recycled and only the 10% is fresh water that has to be changed in every paper production process.

It has been estimated that the optimization use of water resources has brought excellent results since in the last three decades, considering the same quantities of produced paper, water consumption that is needed to produce paper has been halved. Furthermore, with the same hypothesis, it has been observed that during the last years the water amount that has been used is constant: this demonstrates that it has been reached a technological limit to the minimum level of water needed to produce paper, and it is considered that it would be difficult to use less water without having negative and counterproductive effects.

Even if every year small progresses are recognized, it is not actually possible to diminish water usage because of both technical limits and of environmental contraindications that rise when there is not enough water in the process. Indeed, the decrease in the usage of fresh and new water that has not been recycled causes concentration increase of elements that are present in the water that are used during the production process and therefore, it can create problems to production machines, such as equipment corrosion and a decrease in products quality. Furthermore, it is important to consider that the 10% of the water used in production processes has to be new in every production cycle and therefore, after paper is produced, the output wastewater presents also an increase in concentration, that is not compatible with machineries, especially with receptor components.

In the next graph it is illustrated the trend over the period from 1995 to 2017 of the average values of water consumed per tons of paper products produced in a homogeneous sample of 43 manufacturing Italian plants, where data comprehend water used both for production and also for cooling processes. It must be considered that for every different paper and carton typology that have to be produced and for every raw material that is used are necessary different quantities of water in the production process. Anyway, it is evident that there has been a substantial decrease of water usage along the years, that appears to be constant and using the minimum average value that have been observed from 2005 to 2017.

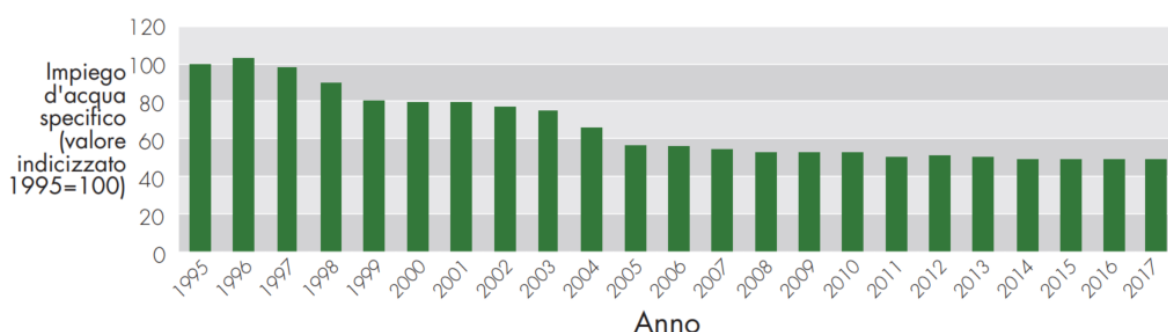


Figure 30 – Water usage for tons produced (Source: Assocarta elaboration on a sample of 43 manufacturing plants)

After the paper production processes, water that are used and recycled are at the end depurated with physical and chemical treatments and in case of necessity, even biological procedures are performed, depending on the wastewater features.

The presence of external polluting elements in wastewaters are usually natural components such as cellulose, amides and inert mineral charges. It is also possible to observe the graph of the Chemical Oxygen Demand (COD¹⁹) and of the suspended solids that are the international recognized parameters for evaluating wastewater.

The trend of both graphs shows a decrease in COD and suspended solids presence in wastewater and it is important to highlight that every level is respecting law requirements, being far underneath the allowed limits. Furthermore, especially for the suspended solid

¹⁹ COD indicates the amount of oxygen that is consumed during a complete oxidation of the material, that therefore represents the composition of organic elements in wastewater

emissions, it is possible to notice that the level of the last years that have been observed are quiet stabilized, indicating that another technological limit has been reached, therefore it would be difficult to have even lower levels of residual material in wastewater with the available technology.

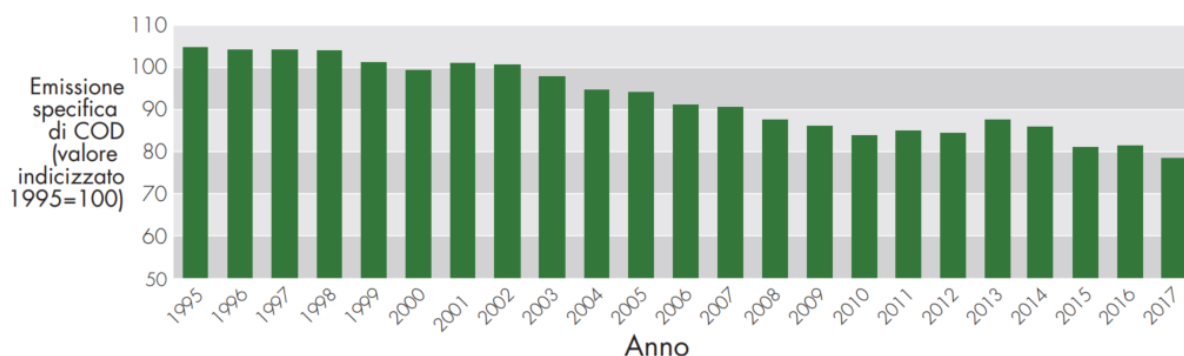


Figure 31 – COD Emissions for unit of products (Source: Assocarta elaboration on a sample of 42 manufacturing plants)

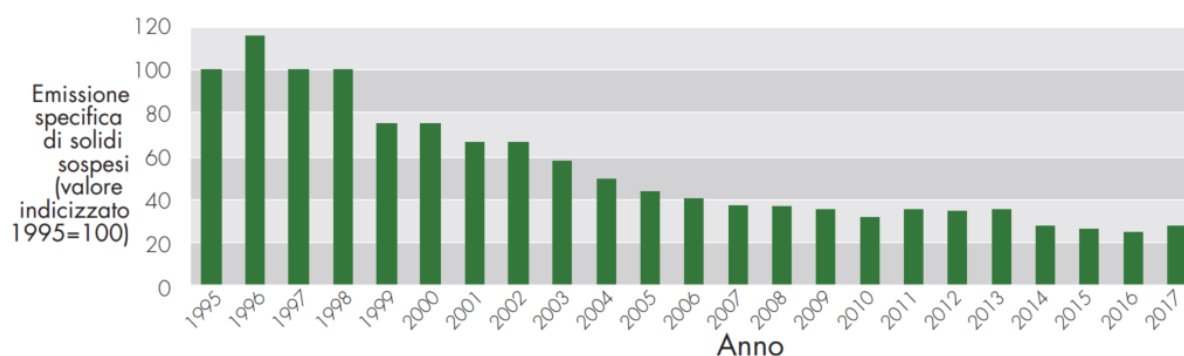


Figure 32 - Suspended Solid Emissions for unit of products (Source: Assocarta elaboration on a sample of 42 manufacturing plants)

Additionally, it is important to evidence that the presence of halogenated organic compounds (AOX) is insignificant since the industry has abandoned from several years the utilization of gas chlorine; furthermore, nitrogen and phosphorous emissions are slightly presence, but their levels are irrelevant.

Finally, it is relevant to mention that the data that have been shown do not consider that after the water cleaning processes that took place inside paper mills, water is further purified before being released to the environment and therefore, the real emissions that are environmentally impacting are far lower than the ones that have been reported.

These data are relevant since it appears that paper industry does not provoke harmful damages in water resources and that water is used according to recycling and depurating processes that avoid the excessive use of clean and fresh water for producing paper. These facts indicate that PPI operates safeguarding water and therefore, even for water utilization, sustainable approaches have been implemented in the industry.

3.6 The PPI and energy consumption

The Paper and Pulp Industry is considered one of the most energy intensive industries that operate worldwide and that needs huge quantities of raw materials, water and energy in order to operate.

The PPI utilizes a combination of electric and thermal energy and thanks to several investments that have been made for achieving greater efficiency, it has been reached a minimum level of energy consumption, that contributes to limit greenhouse gases emissions and their effects.

Because of the enormous quantities of heat and electric energies that are used in paper and pulp production processes, energy costs for Italian producers usually are the second cost item that are reported in the financial statements. Furthermore, since in Italy the energy costs are particularly high, the industry has always operated towards gaining energy efficiency and over the last two decades it has been possible to reduce almost the 30% the energy consumption, as is it shown in the next graph.

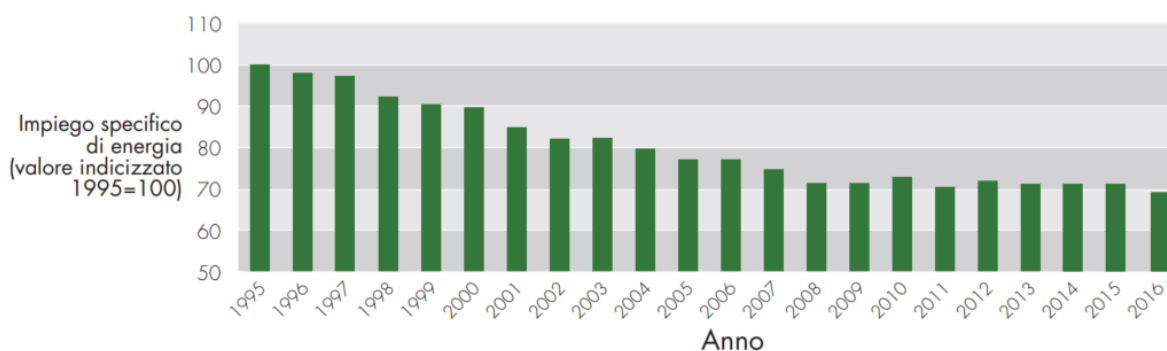


Figure 33 - Energy consumption for unit of product produces (Source: Assocarta elaboration on a sample of 44 manufacturing plants)

Since in this industry it is possible to use both electric and heat energies, it is therefore possible to use steam that is self-produced in the paper production process and to use co-generation systems that have beneficial effects on primary sources consumption, and to decrease the amount of energy that would be instead needed without using co-generation systems.

Nowadays, according to the last data provided by Assocarta in 2017, the paper industry is able to self-produce more than the 80% of the electric energy that requires to operate, using in efficient co-generating systems principally natural gas, which is the fossil fuel that have minor environmental impacts compared to other ones. It is relevant that fuel oil is instead rarely used: it is especially used for seasonal reasons, since natural gas is not always available during the year, or in rare cases of plants that have not already been integrated with co-generation systems. Finally, in the Italian context, it is still extremely low the use of biomass fuels such as the ones provided by sludges, even if the technology in other European countries is already widely adopted and mature, and it is completely innocuous in terms of environmental safety.

In the next graph are presented the trend over the last two decades of the electric energy that is bought and the one that is self-produced. It is important to notice that in 2008 the trend has completely inverted: before that year it was more the energy that was necessary to buy from external sources, while from 2009 it is necessary to buy smaller quantities of energy in comparison to the ones that are self-produced by paper mills thanks to co-generating systems. This trend indicates the potential and the effective usefulness of co-generation systems, that provides economic advantages since a company needs to buy lower levels of energy.

Furthermore, also with an environmental perspective, there are beneficial consequences, since it is not necessary to transport energy, creating more environmental pollution.

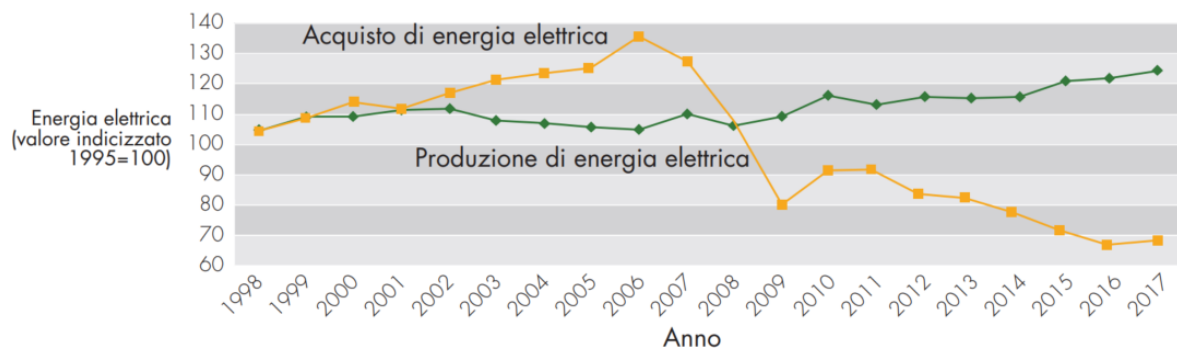


Figure 34 - Total Quantities of Electric Energy Produced and Bought (Source: Assocarta elaboration on a sample of 44 manufacturing plants)

3.6.1 The necessity of a business model transformation in PPI

In a research paper²⁰ it has been highlighted that in European paper and pulp industry it is recommended to adapt the business model focusing more on bio-based materials and circular economy principles, integrating biorefinery processes that can be easily developed thanks to the biomass availability that is already present in the industry.

Since the PPI industry is considered mature, it already possesses infrastructures and technical know-how for producing paper and pulp, but in the last periods there have been registered sales declines, and therefore, it is considered highly important to innovate the industry. Furthermore, it has been recognized that the PPI conventional business model has already accomplished its maximum achievements possible, and therefore it is suggested to make a

²⁰ "The biorefinery transition in the European pulp and paper industry – A three-phase Delphi study including a SWOT-AHP analysis" published by Magdalena Brunnhofer, Natasha Gabriella, Josef-Peter Schöggel, Tobias Sternc and Alfred Posch in 2019

business model shift, that aims to creating higher value-added products contemporaneously to the classical ones (OECD, 2009; Näyhä, 2012; Hansen and Coenen, 2017).

Switching towards biorefinery is considered the most suitable solution that can allow to exploit the advantageous current resources and to further increase profitability (Chambost et al., 2008; Huang et al., 2008; Pätäri, 2010), even if it will be necessary to transform the entire PPI bioeconomy (Antikainen and Valkokari, 2016; Priefer et al., 2017). The main problem that has been identified is that the PPI does not possess the competencies and the technical knowledge for developing biorefineries, which are considered the highest barriers in order to entry in this industry.

Generally, a biorefinery is considered similar to a petroleum refinery that uses sustainable biomass conversion processes and technologies for producing energy, fuel, or other different biobased products such as food, materials and chemicals. (Mohan et al., 2016). Professionals believe that the implementation of forest biorefineries in PPI can bring several benefits in the industry, especially regarding technological, environmental, economic, and social aspects. Technology improvements could generate optimization of value chains in order to create additional value (Näyhä et al., 2014; Giurca and Späth, 2017); environmentally speaking, it would be possible to completely exploit raw materials, thus reducing waste and to have greater material efficiency (Näyhä et al., 2014; Oliveira and Navia, 2017), and additionally, it would be possible to substitute fossil resources to produce energy (Brodin et al., 2017); the Economic benefit would be to increase profitability, having a more diversified product portfolio that would allow to increase customers base and therefore to have access to new markets (Janssen and Stuart, 2010; Höher et al., 2016; Hansen and Coenen, 2017); finally, with regard to social matters, there would be the opportunity to generate new occupations and to contribute to the regeneration of rural areas, where usually are located paper production mills (Priefer et al., 2017).

In the study it has been found that the shift of PPI to the implementation of biorefinery plants is generally slowly performed and it is believed that it is due to the high investments that are required and to the relative economic risk. Furthermore, risks are further increased because of fossil fuel price competition, since the traditional fuels that are traditionally used are cheaper and also it has to be considered that continuing to use them, would not require enormous investments for buying or adapting biorefineries plants.

3.6.2 Future implementations and sustainable practices in the PPI

On November 6th 2019 Assocarta has disclosed previous information from 2019 in the document “Audizione Assocarta – Memoria Audizione Assocarta c/o X Commissione Camera dei Deputati”. The Association believes that the “Integrated National Plan Proposal for Energy and Climate” (translated by “Proposta di Piano Nazionale Integrato per l’Energia e il Clima”, PNIEC) is a relevant strategic plan for Italy in order to integrate energy and climate policies with sustainably development industrial plans. The European goals that have been established force every European country towards decarbonization and to innovate energetic technologies for both production and consumption of energetic resources.

Firstly, it has been recognized that energy production made with renewable sources nowadays has reached lower investment costs compared to years ago and therefore more companies can invest in renewable energy production plants that lower CO₂ emissions while producing energy. Furthermore, in order to have constantly availability of the energy that is produced by renewable sources, it would be necessary to have the possibility of storing the energy and to have hybrid production sources, that can be a combination of both renewable sources and other technologies, such as co-generation systems.

Assocarta believes that even if the electric energy could be further implemented in paper and pulp industry, natural gas is and will probably be the main energetic source until only renewable energy will be used, since it is the fossil fuel that releases less CO₂ compared to other ones. Furthermore, in the Paper and Pulp Industry is always recommended the use of natural gas with co-generation systems.

In order to reduce emissions it is necessary to improve energy efficiency, which has good performances in co-generation systems since it is a technology that has minor transmission and distribution losses when different forms of energies are converted in order to be transferred from the source of energy to the production use.

It has been recognized that high efficient co-generation systems have a relevant role for accomplishing the 2030 Agenda for Sustainable Development since they provide energetic needs for heating systems that are not possibly provided otherwise, they avoid energetic losses in energetic distribution processes, they can be one of the hybrid solution for providing renewable sources, and thanks to these systems it is also possible to store energy produced in batteries and finally, they can create energy continuously.

Circular Economy is considered to be a crucial instrument to implement decarbonization in business processes and to reach different production and consumption patterns, where scraps become secondary raw materials that can be re-introduced in the production cycle.

Considering the Paper and Pulp Industry, it is possible to use non-dangerous scraps as fuel that can generate energy, thus contributing to the creation of Circular Economy and towards the goal of “zero waste” generation, since it would allow to avoid the disposal in landfills. It is widely known that most of the European countries are already operating in this perspective, while in Italy there are still several constraints to operate in this way.

Since the PPI belongs to the industries that use high quantities of energies and that, consequently, create several greenhouse gas emissions, from 2005 it has been subject to the European Directive 2003/87/CE, known as the “Emission Trading Scheme” (ETS). According to this directive, European companies that belong to energy intensive industries are allowed to exchange emission trades with a credit system and are forced to compensate their indirect costs that are incurred with less polluted production processes; this Directive has been implemented in order to avoid that non-European competitors, that are not bound by this Directive, are allowed to sell to European countries their products at lower costs while creating more pollution damages to the environment.

Since the industry must respect this Directive, it is already bounded to contain its CO₂ emissions: because of these limits that have been created by a hard law instrument, in Europe it is environmentally beneficial the effect of this Directive. The main problem results in the competitiveness of European paper producers that could lose competitiveness with respect to non-European ones.

3.7 An overview of forest and paper industries supply chains and circular economy: form raw material sourcing to waste recycling

Circular Economy is defined by the European Parliament as a production and consumption model that aims to extend products lifecycle by reusing, repairing, recycling materials and products in order to reduce waste and to create additional value to those resources, that otherwise would be lost. Circular Economy is completely different with respect to the traditional consumption and production pattern, that is instead a linear model, that does not consider recycling or other different forms of materials preservation.

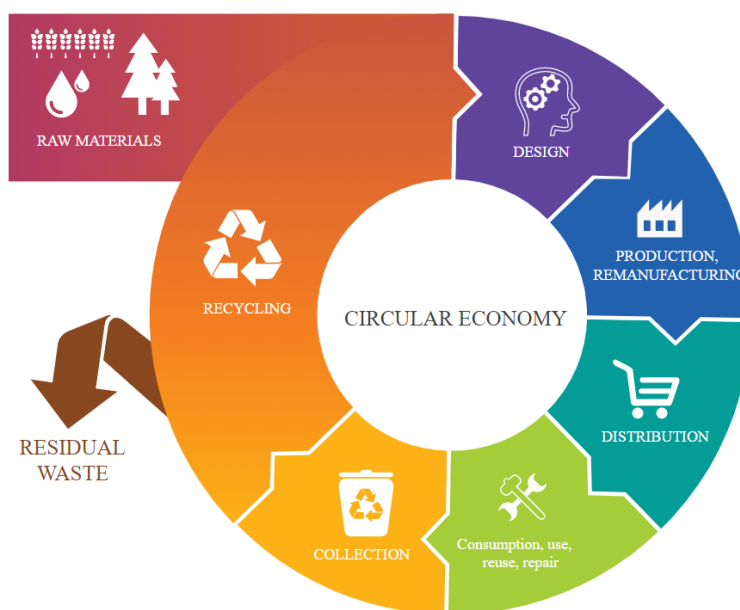


Figure 35 - Circular Economy cycle (Source: European Parliament)

The practices that have been adopted in Paper and Pulp Industry are therefore completely aligned with the principles of Circular Economy, that can be considered sustainable for both

environmental and economic perspectives. In circular economy it is therefore created a loop between consumed and re-produced products, since wastes are used in order to create secondary raw materials and consequently, also the traditional supply chain is modified: actually, thanks to recycling processes, wastes can be converted into secondary raw materials.

In order to evaluate how the Paper and Pulp Industry is sustainable, it is necessary to consider the entire supply chain, from suppliers, that are identified with the forest industry producers, to product users, that generate waste, that, according to Circular Economy principles, become secondary raw materials. Therefore, since PPI is highly involved with Circular Economy, it is necessary to consider also the recycling system.

The Italian “Fondazione per lo Sviluppo Sostenibile” (that can be translated into “The Sustainable Development Foundation”) with the support of 14 companies and business association, has created a project called “Circular Economy Network” in order to promote and support the implementation of Circular Economy in Italy. In the 2020 report “Rapporto nazionale sull’economia circolare in Italia” (National Report of Italian Circular Economy) it has been estimated that Italy is among the first five European Countries for circularity index, that is calculated looking at data relative to consumption, production, waste management, secondary market of raw materials, investments and workplaces.

In the report are described the various aspects that are related with bioeconomy, that include forest industry. Regarding forest management have been highlighted the main problems and the main opportunities that have been identified in this industry.

The principal concerns are:

- The activity of forest management is widely abandoned because of the decrease in the population living in the mountains, poor organization, scarce remuneration for managing forest and reduction of local, regional and national public investments;
- Dangerous climate change impacts and consequently damages created by droughts, fires, hurricanes and from landslides;
- Lack of public and private initiatives for implementing sustainable practices of managing forest, and for improving and enhancing the preservation of indigenous species;

- Scarce collaboration with national industry that transforms wood, which basically depends from imports;
- Lack of information and training initiatives for managers and operators that work on forestry companies.

Despite those several obstacles that have been observed in the Italian context, there have been recognized several potentials and opportunities in the Italian forest industry:

- Wide availability of several forest areas, that are expanding and are still not managed;
- Availability of several instructions for managing forests sustainably, of different certifications and implementations of life cycle analysis for assessing sustainable utilization of wood and its derived materials, for producing various products and to the possibility of generating power;
- Accessibility to innovative techniques that have been integrated with digital services;
- Availability of natural solutions such as organic and sustainable fertilizers and of bio-pesticides that allow to preserve biodiversity and to implement policies that enable to manage forest, producing small environmental impacts;
- Opportunity of integrating forest management with other forest products besides the ones traditionally involved with wood production.

It is evident that despite the presence of few concerns and issues, there are several opportunities for implementing, increasing and improving forest industry.

3.7.1 The Italian Consortium for managing separate waste collection

In the 2018 Sustainability Report disclosed by the Italian association Conai it is explained that for packaging producers and users, in the Italian context it has been recommended to implement a consortium, which has to be composed by different private entities that allow to guarantee the alignment of the Consortium with Public Administration, concerning separate

waste collection. Conai is the main association that deals with managing packaging waste collection and to assure to accomplish targets that have to be achieved in order be compliant with European Directives. Conai has therefore a general overview regarding the Italian recycling packaging materials and quantities that are produced yearly, and it has been observed that paper and wood products are the most packaging solutions that have been used in the Italian context over the last 20 years. Looking at the next graph, it is possible to see that the total quantities of paper and wood packaging waste in the consortium are the most recycled materials; furthermore, glass is in some years the most recycled material if paper and wood products are not considered together. Thanks to this observation it is possible to state that wood derived materials are the ones that are mostly recycled in the Italian context, and therefore they are the most used material that follow circular economy principles.

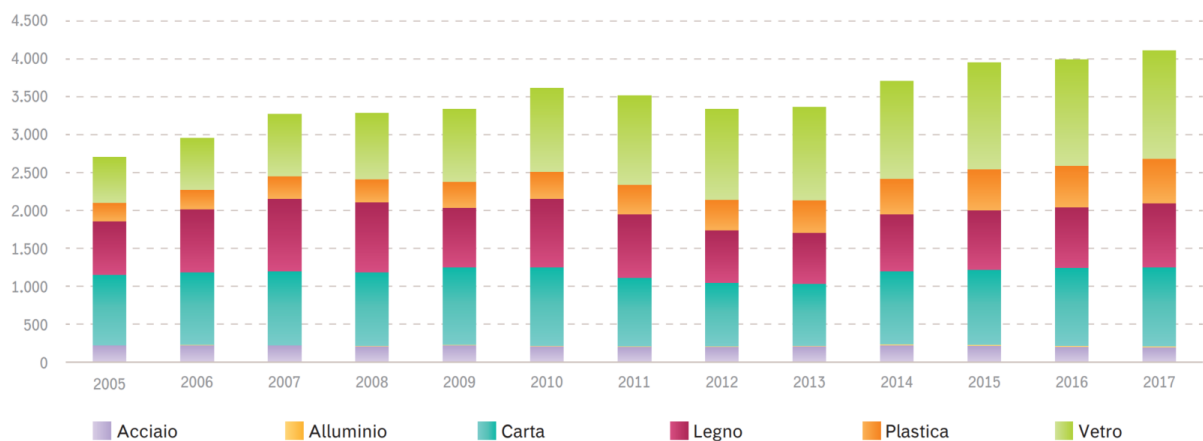


Figure 36 - Packaging Waste Materials Recycled in Conai, 2005-2017 (Source: Conai – Consortium of the Supply Chain)

3.8 The European context of PPI

CEPI is the Confederation of European Paper Industries and it is an Association that provides to European companies and citizens products and information regarding renewable and recyclable wood-based fibres “from packaging to textile, hygiene and tissue products, printing

and graphic papers as well as speciality papers, but also bio-chemicals for food and pharmaceuticals, bio-composites and bioenergy”. (CEPI, Sustainability Report, 2018).

CEPI has 18 Members in European Countries and Assocarta, the Italian Association of Paper Producers, is one of them, and therefore collaborates with it in order to disclose information regarding the industry. In the Sustainability Report disclosed in 2018 by CEPI it is provided an overview of the Paper and Pulp Industry at European level.

According to CEPI, in 2017 its Members provide the 22% of the global paper production and the 92% of the European paper production; there are 177.000 people employed in this industry, and the 63% of them work in rural areas. In Economic terms, CEPI Members provided a turnover ²¹ of 82 billion Euros in 2017. CEPI products are basically produced with “Made in Europe” raw materials, since 90% of the pulp that is used by CEPI Members has European Origins, while the 22% of the paper that is produced is exported outside European borders.

CEPI has estimated that from 2002 to 2004 there has been a decrease of 68% of accidents in workplaces, therefore there has been an important increase in work safety, which is fundamental in manufacturing sector; furthermore, it has been estimated that in the European PPI the investments that are averagely made account for double amounts if they are compared to other manufacturing industries.

Looking at environmental performances, it has been estimated that from 1990 there has been a decrease of 43% of CO₂ consumed per tons of products, while the 59% of the energy consumption and production is bio-based and the 93% of water that has been used for producing paper and wood-derived products is returned to the environment in proper conditions. Finally, regarding recycling aspects, in Europe on average every wood fibre is recycled 3,6 times and in 2017 it has been estimated that the 72% of paper has been recycled, while looking at worldwide data, only the 57,7% is averagely recycled.

CEPI has expressly highlighted the importance of the adoption of sustainability practices in the industry, in fact several investments have been performed for improving environmental performances. Furthermore, the 89% of CEPI members have adopted certified production management standards, such as ISO 14001 and EMAS. (CEPI Sustainability Report, 2018)

²¹ NOTE: it has to be considered as the turnover that is added to the European Economy and its GDP yearly

According to CEPI, both the European paper industry and also the European forest fibre industry are in a leading position regarding low-carbon bioeconomy since it is believed that renewable materials should substitute fossil fuels. CEPI has therefore created the so-called “2050 Outlook”, implementing investments plans that aim to decarbonize by the 80% the industry and to create further value in its products. The projections have been made are based on decisions regarding product innovations, market growths, improving productivity and increasing process efficiency. The investments that have been planned by CEPI for the 2050 decarbonization plan are basically applied to energy efficiency, fuel switch, demand side-flexibility and emerging technologies.

In particular, regarding energy efficiency it is believed that thanks to new production technologies and to the integration of Industry 4.0 technologies, it will be possible to further decarbonize industrial processes and outcomes, to improve productive efficiency, while at the same time, it will be possible to maintain competitiveness. Implementing a total switch of energy sources, from energy that produce enormous amounts of CO₂ to the ones that minimize it, has economic, environmental and political advantages and therefore it is highly recommended for this industry to adopt fuel switch solutions. Furthermore, for energetic uses, as it has been already highlighted in previous paragraphs, it is recommended to adapt plants for implementing co-generation systems: in this way, it would be possible to provide flexible benefits, reducing costs and providing more continuity to energy generation with the utilization of renewable energy plants. According to CEPI, in the next years the industry will also continue to innovate and to find disruptive solutions in order to find more sustainable, advanced and decarbonization solutions.

CEPI recognizes that PPI and forest industry have to integrate their activities and their products with other business, creating innovative products, services and business models in order to meet the needs especially of innovative packaging and hygienic products. For example, it would be suitable to implement new functions and services to the already existing products, such as internet connectivity of the product, anti-counterfeiting recognition and hydro-repellent materials in order to differentiate European products. Furthermore, it is believed that creating innovative solutions with bio-based products for creating food additives, bio-composites, biofuels and nanocellulose can create even greater and more sustainable opportunities in addition to a shift towards decarbonization.

It is widely known that the worldwide population is increasing, and it is estimated that in 2050 it will be around 10 billion of people. Our Planet is not able to sustain and to provide enough resource for all these people if it keeps to be managed as it is today: only if it will be developed a system that is based upon biological resources and to manage them sustainably, it will be possible to sustain the entire future population. It is estimated that European forest fibre and paper industry could be at the forefront for developing a sustainable and low-carbon bioeconomy.

It is widely recognized that besides the advent of digitalization, for reading and learning purposes, paper is still believed the favourite mean of communication. Contemporaneously, for different segments of paper-based products such as packaging, market demand is continuously increasing and several innovations are being developed for digitalized paper products, especially for e-commerce necessities that are arising during these years. Furthermore, it is expected a growth for hygiene paper since in the last years more attention is being paid to sanitary health.

CEPI has evidenced that in the last decade, the forest fibre and paper industry have more than doubled the investments in comparison to other manufacturing industries for being able to reach the 2050 targets: in order to reach them it is expected that more investments will be implemented during the next decades and some have already been realised during the last years.

It has been recognized that bioeconomy creates the base for developing new and innovative technologies such as intelligent and biodegradable packaging, nanocellulose that can be useful for 3D cell cultivation and also to create wood-based car components; until nowadays, most of the sustained investments aim to innovate towards these products and materials. Furthermore, it is recognized that it will not be necessary only to reduce CO₂ emissions, but also indirect emissions such as CH₄ and N₂O will have to decrease.

Finally, investments and improvements will have to be implemented for transportation systems in order to decrease pollution: therefore, it will be necessary to improve transport efficiency, and to adopt alternative and less pollutive fuel typologies also for transportation systems.

3.8.1 Industry Innovations: Nanocellulose

One of the most innovative materials that have been recently adopted in the industry is nanocellulose. This material was produced for the first time in the 80s, but it was not commercialized since, in order to produce it, it was required a lot of energy. Nowadays Sappi, a wood-fibres products supplier, has patented a process that significantly reduces the energy usage that was previously necessary to produce the material.

Nanocellulose is obtained by cutting and separating wood fibres into minute fibres components, and it is derived from cellulose, which is the component that is mostly present in plants. It is a material that has three different forms: Cellulose Micro Fibrils (CMF), Cellulose Nano Fibrils (CNF) and Cellulose Nano Crystals (CNC).

This innovative material provides several advantages, since it has strength properties even if it has a light mass, it is efficiently used by paper engines and it is useful for food and industrial uses. Nanocellulose has peculiar features: it has tensile strength that is eight times stronger than steel, it is lightweight and rigid, sustainable, renewable, biocompatible and biodegradable. (Sappi)

According to SAPPI, there are several potential uses for nanocellulose that can be useful in several application fields. Actually, it can be a substitute for metal materials, it can be used for medical applications, it can compose electronic displays, it can be used for sensors that are useful to monitor civil constructions to detect stresses, it is a hygienic solution for food packaging, it is useful for different industrial applications, as an aerogel it can clean oil spills, and as an additive it can be used to improve mechanical properties of different materials.

Furthermore, it is considered convenient to use nanocellulose because the chemicals that are adopted during the production process are easy to recycle and do not cause huge quantities of emissions and waste.

3.9 False myths related to paper and the Paper and Pulp Industry

After having an overview of the industry, it is important to understand the reasons that led to analyse in this Thesis the Pulp and Paper Industry: since the PPI is considered one of the most capital and energy intensive industries that operate in the entire planet and since its business activities are highly related to environmental matters for forest and also for water issues, it has therefore considered interesting to understand how the PPI has implemented strategies and actions to safeguard first of all the environment and the business sustainability also in economic and social terms.

Several aspects have already been discussed in the previous paragraphs, and in this section are revealed several false myths and opinions related to paper and to printing that have been recognized by business experts.

According to “Two Sites”, an organization that is engaged with sponsoring responsible production, consumption and recovery of paper and printing, wood derived materials are considered to be sustainable means through which it is possible to communicate, besides the fact that they are pragmatic and useful. Actually, thanks to certifications and to sustainable management approaches of forests resources, it is possible to produce paper sustainably, and to use it as a suitable and especially natural communication mean.

According to the Co-Founder of Two Sites (Jonathon Porritt, 2016) "There aren't many industries around that can aspire to becoming genuinely sustainable. The paper industry, however, is one of them; it is inherently sustainable".

It has been recognized that during the last years, the business community related to the paper industry has become increasingly aware of problems concerning corporate responsibility, and therefore it has taken responsible positions in order to be further accountable, implementing procedures to follow standards regarding ethical, social and environmental performances.

Even in the report “La Carta fra Luoghi Comuni e Realtà” (translated in “Paper between common beliefs and reality”) published by Assocarta are reported clichés and information regarding paper products and forests.

In the following section are reported all the information that are considered relevant to better understand the main concerns and issues that are related to the paper industry and to recognize which are the false myths that are usually related to it.

First of all, it has to be highlighted that paper is a natural product, renewable and recyclable and it also contribute to contain CO₂ emissions, therefore it is a product that is environmentally friendly. Furthermore, it is a commodity that is useful in everyday life for cultural and information divulgation, for hygienical uses and for protecting several goods and food products.

The first cliché that is commonly believed is that forests are destroyed to produce paper. The real cause that provokes deforestation is that it is principally due to the forest conversion in agricultural fields and to harvest timber that are used for other purposes, not for producing paper.

In fact, most of the wood that is used to produce paper derives from timber that is collected for thinning trees, which is necessary to preserve health condition of forests and from the residues that are produced by other industrial sectors (i.e.: from sawmills).

The European PPI uses wood that is generated from forests that are managed in sustainable ways and that assure that trees are planted in a continuous process and that the wood that is used for producing paper and pulp comes from forest plants that are created for industry purposes.

The forestry certifications that are used are the FSC and PEFC and are the means trough which it is possible to demonstrate to consumers that products that are used and imported in Europe come from sustainably managed forests.

The European PPI is engaged in fighting against illegal wood cut and has voluntarily adopted a Code of Conduct that guarantees that paper producer companies do not use timber that comes from wood that is cut violating local and national laws.

Regarding the ideas that European forests are being reduced, it has been clarified that they have grown of 44,000 km square in the decade between 2005 and 2015. Furthermore, according to Faostat data of 2015, only the 13% of the wood that is gathered from forests is used to produce paper products.

It is important to recognize that the preserved and safeguarded areas of European forests have been grown from 2000 to 2010 on average of 500,000 hectares yearly and that half of the protected areas are dedicated to preserve biodiversity. (EEA, The European Environment - State and Outlook, 2015).

Moreover, it has been documented that the area of forest that are managed according to certification standards has been continuously increased from 18 million of internationally verified certification in 2000 to 438 million in 2014 (FAO Global Forest Resources Assessment, 2015).

Another cliché that is commonly believed is that paper consumption should be reduced in order to save forests. In reality, the PPI is an effective way to renew and to extend forest areas, in fact, it stimulates the amplification of forest surface and contributes to improve the quality and the growth of forest, while at the same time, it safeguards local communities employment and the creation of added value.

In Europe forests are managed sustainably since, thanks to the efforts made by the paper industry, for every tree that is cut, other three are planted, therefore, nowadays there is a yearly increase of forest areas of 6.450 km square. Furthermore, European forests cover the 38% of the European territory and only the 20% of them cannot be used for wood cut because they are protected to preserve biodiversity by law (CEPI, FAO).

It is commonly believed that every paper typology should be produced with recycled paper. In reality, paper is the most recycled product in Europe: more than the half of the paper that is produced comes from recycled paper, however there is a limit to use recycled paper, that can be recycled on average maximum seven times. It is therefore necessary to use an amount of new fibres since in every recycling process their quality is deteriorated.

Another false myth that is commonly supposed is that paper is produced with a manufacturing process that pollutes the environment: in reality, the PPI is constantly engaged to safeguard the environment with technology researches and innovations for diminishing its impacts. In

fact, over the last decade the usage of water used for producing paper has decreased of 40%, while the energy needed has been diminished of 20%. The PPI is a great example of utilization of clean energies since paper production plants have been completely converted for producing cellulose, eliminating gas chlorine in the whitening process. Furthermore, 58% of paper and cardboard that are produced in Italy have environmental system certifications (ISO 14001 and/or EMAS certification), while the 60% of virgin fibres that are used for paper production are environmentally certified.

Furthermore, Italy is the leader of product certification with the European Ecolabel, that testifies the ecological excellence of produced goods (CEPI, Assocarta Environmental Report).

Another cliché that is commonly assumed is that paper has a huge environmental impact for CO₂ and greenhouse gas (GHG) emissions: actually, paper contributes to contain CO₂ emissions since it is a natural, renewable and recyclable product, principally composed by cellulose. Furthermore, trees are involved in a sustainable cycle that positively contributes to climate change since they remove CO₂ from the atmosphere with chlorophyll photosynthesis and carbon storage. Even if there is a limit of the amount of CO₂ that trees can store, it is relevant that even wood and paper products can keep carbon dioxide. Therefore, recycling paper and extending the life of wood-derivatives products allows to hold carbon from the atmosphere. Additionally, most of the energy that is used to produce paper derives from renewable sources and PPI is one of the industries that has extremely low GHG emissions, that account for only the 1% of worldwide emissions.

It is also usually supposed that for producing paper enormous amount of energies are consumed: in reality, the energy consumption that is needed to produce paper is completely low in comparison of using electrical products: it has been found that to produce 200kg of paper are needed 500kWh of electricity, which it is the quantity of energy needed to keep on a 60W lamp or in stand-by mode all the electronic devices that are usually present in a home for an entire year.

Among the several false considerations there is the idea that paper is a product that does not have technological features and therefore, it is not necessary for nowadays society: actually, paper production has always combined tradition with innovative products and processes. Several products have been introduced for different uses from packaging, to hygienic, special

graphic uses; the paper industry is actually a dynamic and creative environment that has always made enormous efforts to encounter clients' needs.

Another myth is that Planted Forests are bad for the environment, but actually if those forests are managed in a proper manner, they can reduce natural forests' stress and can even provide several other environmental benefits, such as contributing to the development in rural areas, providing more habitat for wildlife, to avoid soil deterioration and destruction and to offer new facilities for entertainment and outdoor activities. According to FAO, in 2015 planted forest occupy the 7% of the world forest territory and in Europe they are not substituting natural ones. Furthermore, it has been recognized that planted forest can be even more productive if compared to natural ones, and also, they can be certified.

Even the myth that paper is a wasteful product is completely false since it has been estimated that in Europe more than 70% of paper has been recycled (CEPI,2014). It is important to mention that the 75% is the estimated maximum recycling rate that is possible to reach since some paper products are not possible to be recovered and some others are destroyed or contaminated when they are used, therefore it is not possible to recycle them.

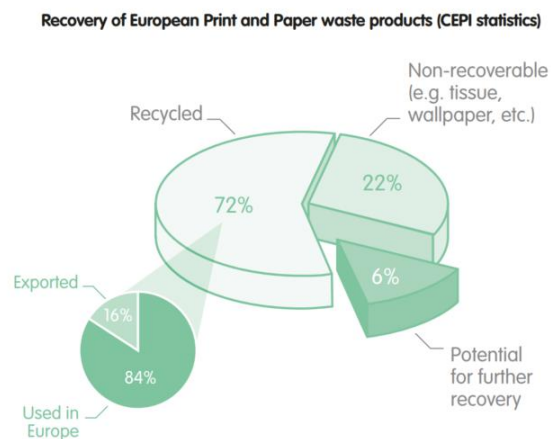


Figure 37 - Recovery of European Print and Paper waste products (Source: CEPI statistics)

There is also a common believe according to which electronic devices used to communicate are more environmentally friendly than paper: this is a completely false notion since not only electronic devices are not composed by natural, renewable and recyclable products as paper, but also, they create more GHG emissions compared to paper production.

Nevertheless, paper and carton packaging are the most sustainable packaging materials and they can contribute to avoid food waste, for example, they can be useful in case of restaurant leftovers that can be brought to home.

4. The study of the communication in the Italian Paper and Pulp Industry

After having discussed in the previous chapter the sustainable practices that are adopted in the Italian and European PPI and having provided a general overview of the industry, it has been considered valuable to analyse the information that are available online that are disclosed by Italian paper producers.

4.1 Methodology

It has been performed an investigation of the websites of the 67 Assocarta associated companies²². Searching online information on these companies, it has been created a dataset containing:

- The name of the company;
- The company website;
- The 2018 revenues of the company;
- The region and the city district of the headquarter of the company;
- The number of employees that work for the company;
- The presence in the company website of a section dedicated to sustainability;
- The disclosure of the Sustainability Report;
- The presence of general environmental information;

²² available at: <http://www.assocarta.it/it/aziende-associate.html>

- The company adoption of certifications.

The first step that has been performed was to upload the data in the application software (it has been used Excel and R); furthermore, it has been necessary to modify some data, since from the information that were found some of them were not available. In particular, it was not possible to find the revenues for 7 firms and for the number of the employee data were missing for 6 companies.

The number of the employees was usually found ordered in numerical classes, and consequently in the analysis this data has been considered as a qualitative variable. The five principal classes that have been found are:

- The first one contains from 0 to 50 employees, and corresponds to small companies;
- The second class contains from 51 to 250 employees, corresponding to medium-small companies;
- The third one involves from 251 to 500 employees, corresponding to medium size companies;
- The fourth one contains from 501 to 1000 employees, corresponding to medium-big companies;
- The fifth and last one contains more than 1000 employees, corresponding therefore to big companies.

For assigning the number of the employees to the companies that did not reported those information, it has been calculated the mode, which represents the more frequent data, that in this case corresponds to the class that comprehends from 251 to 500 employees.

The other data that have been modified and inputted in the application are the ones of the revenues, where the not available information have been exchanged with the median value found (51.010.000,00 €), considering the companies for which it was possible to find the 2018 revenues, that range from a minimum of 4,47 million of Euros to a maximum of 1,210 billion of Euros. It has been considered the median value since statistically, it is a value that is not sensible to outliers.

After modifying the data, it has been seen how the statistical software R has codified the data, noticing that the revenues have been correctly inserted and recognized, since they have been

seen as integers. The data that were not properly recognized were the ones related to the presence of sustainability, environmental and certification information since they were seen by the software as integer variables and therefore have been changed to qualitative and dichotomic variable. Performing the recodification it has been considered the presence of the information when the data was identified with the number “1”, which stands for the presence of the data, while in case the data were populated with “0”, it was considered the absence of the information.

It has therefore been considered interesting to understand the relationships that exists between the variables of interest and therefore it has been decided to implement and to estimate a linear model, which is the mostly diffused model for statistical analysis and it is used to estimate the relations that exists between dependent and independent variables.

A preliminary consideration that has to be highlighted is that it was not possible to find several data, and therefore the estimation that has been produced cannot be extended to the entire population of paper producers, however, it has been possible to estimate the general relations that occur between the considered data, for possibly amplifying the analysis in future studies.

In this study it has been established that the dependent variable is the 2018 revenue, which was the only quantitative data present in the dataset; while the independent and explicative variables that have been considered were the qualitative data containing information about the class of the number of employees, the region of the company headquarter, the disclosure of the Sustainability Report, the possession of FSC, ISO 14001 and PEFC certifications. With those data it has been finally performed a linearization model for determining the relationships between the dependent and the independent variables.

4.2 Analysis Results

Firstly, it has been analysed the presence in the company website of a section dedicated to sustainability, the disclosure of the Sustainability Report and the presence of general environmental information in the company website.

It has been found that only the 22% of the companies (15 out of the 67 that have been analysed) have edited and published the Sustainability Report, while the 42% (that correspond to 28 companies out of 67) of them in their website have a section dedicated to sustainability. It has been interestingly found that two companies have disclosed the Sustainability Report even if they do not have a sustainability section in their website. Furthermore, it has been considered that some companies have disclosed information regarding environmental matters or have disclosed Environmental Reports, counting a total of 33 companies, which accounts for the 49% of the sample size.

In the next figure it is reported the graphical representation of the data that have just been described. In the last column that is represented have been considered the number of companies that have published information or reports regarding sustainability or in general, environmental matters, counting a total of 41 companies, which is the 61% of the population.

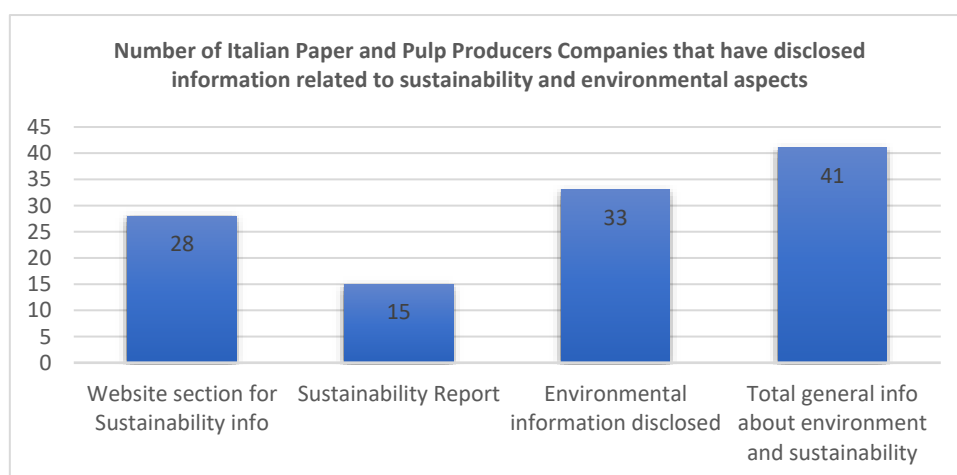


Figure 38 – Number of Italian Paper and Pulp Producers Companies that have disclosed information related to sustainability and environmental aspects

Another relevant aspect that has been analysed is the presence of information related to the adoption of certification, where it has been found that every company has adopted at least one certification.

The most widely used certification are the ones related to environmental aspects, that have already been described in the previous chapter. The FSC has been adopted by the 69% of the sample, while the ISO 14001 by the 51% of the sample, the PEFC by the 42%, the EMAS by the 15% and the Ecolabel just by the 12%.

The other certifications that have been mostly adopted by Italian paper producers are the ISO 9001, which is used to assure that in the company has been implemented a Quality Management Systems, that has been adopted by the 48% of the companies considered. The other certifications that have been used to assure safety management systems and employees health are the OHSAS 18001, adopted by the 33%, and the ISO 45001, implemented by the 18%. Finally, the last certification that has been statistically significantly adopted is the one related to energy management system, the ISO 50001, which accounts for the 22%.

In the next figure are reported the number of certifications that have been reported in the websites or in the reports disclosed by the considered companies. In the last column have been considered other different certifications that have been used by the observed companies, but that have been adopted by less than 6 times and therefore, have not be considered statistically significant.

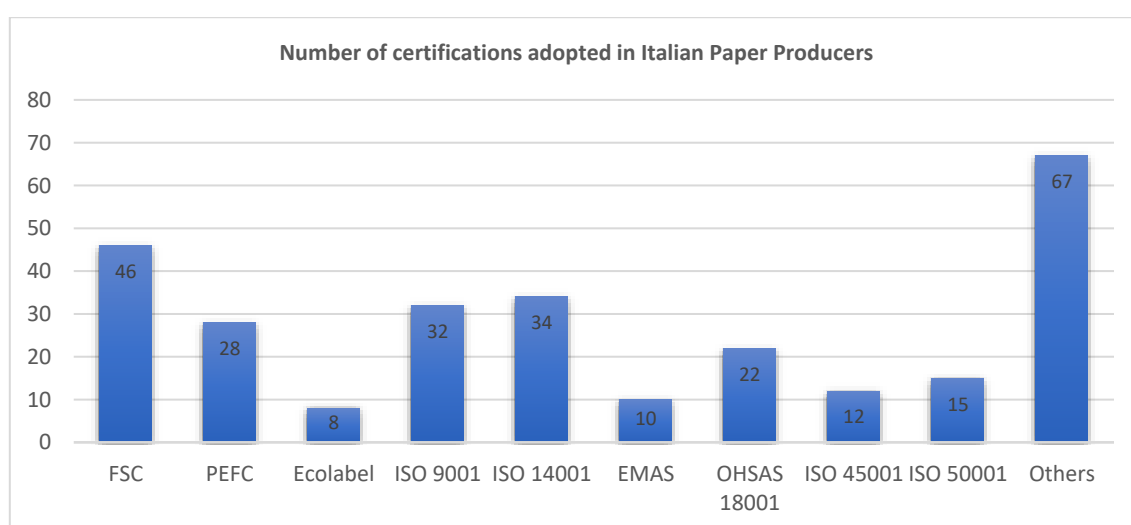


Figure 39 – Number of certifications adopted in Italian Paper Producers

Another aspect that has been analysed is the number of employees that work in the observed companies. In the following table it is possible to see the classes that have been found with respect to the number of companies that are involved: the most popular class is the one that has from 51 to 250 employees, while the second one contains less employees, from 0 to 50. Bigger companies that have more than 250 employees are instead few, and totally are 11 firms of the 67 considered. Looking instead at the graph that shows the revenues gained with respect to the class of employees, it has been found that companies with 51 to 250 employees are the ones with more revenues, while at the second position there are companies that have more than 1000 employees. Instead, smaller companies that have from 0 to 50 employees are in the fourth position looking at revenues gained.

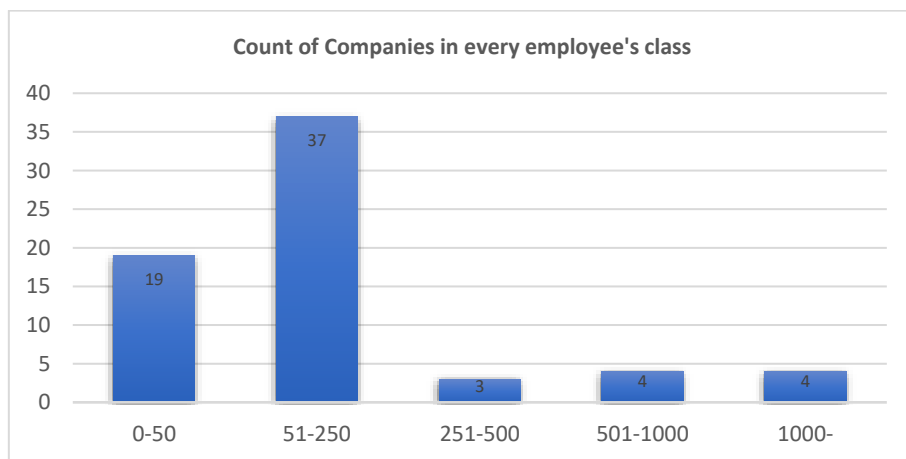


Figure 40 - Count of Companies in every employee's class

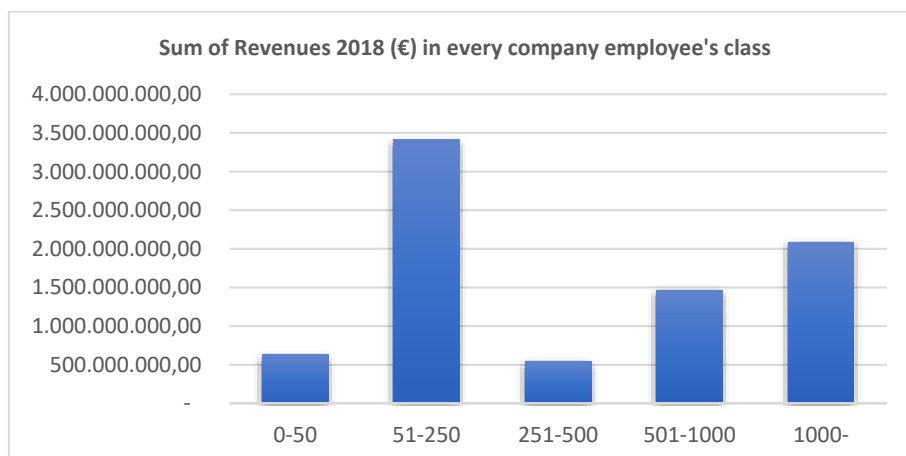


Figure 41 - Sum of Revenues 2018 (€) in every company employee's class

Another significant aspect that has been analysed is the region of the company headquarter. The most interesting finding is that Tuscany (Toscana) is the region that totally has gained most of the revenues, and it is also the region that has more companies that have disclosed Sustainability Reports; furthermore it is the third region for the number of companies that are present in its territory, after Lombardia and Veneto. In the following figures it is possible to have a graphical representation of those findings.

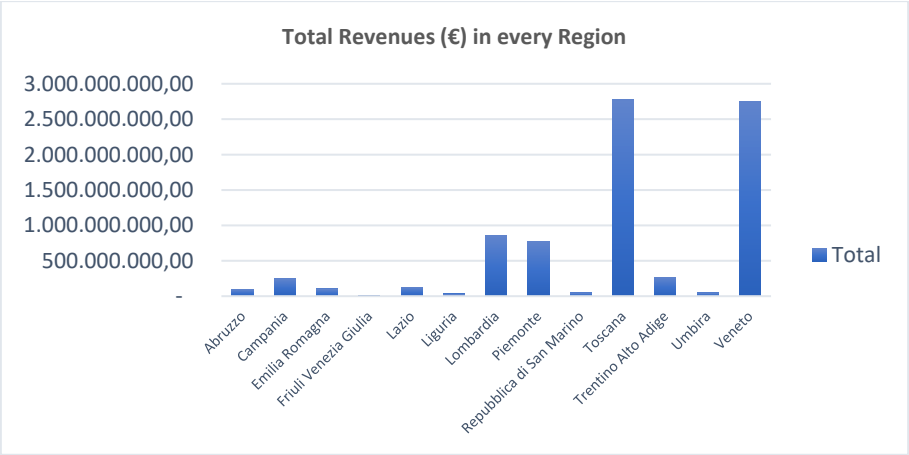


Figure 42 - Total Revenues (€) in every Region

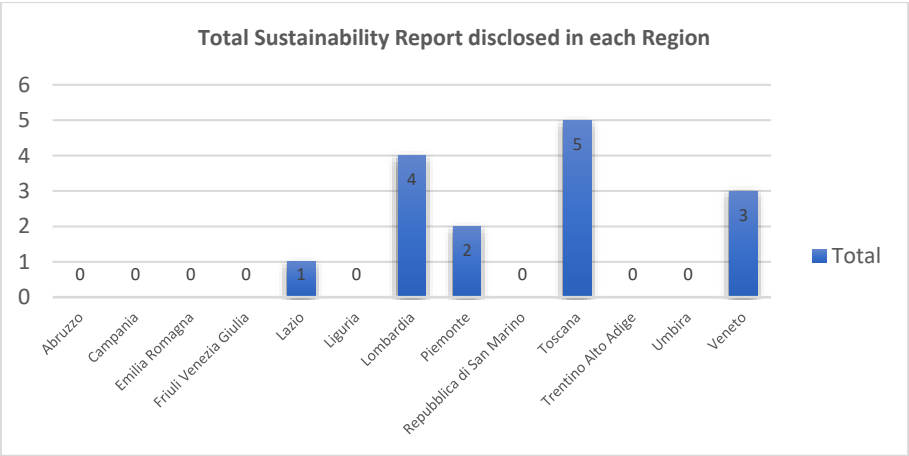


Figure 43 - Total Sustainability Report disclosed in each Region

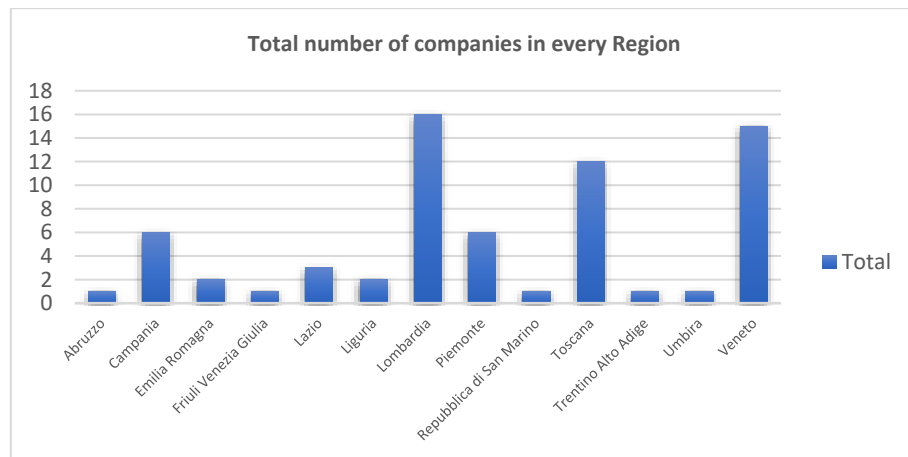


Figure 44 - Total number of companies in every Region

After having an overview of those data, it has been estimated the linear model and from the results, as expected, it has been found that the explicative variable of the number of the employees influences the size of the company and consequently, the revenues of the company.

In the next figure are reported the results of the linearization that has been performed.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	51418350	166718148	0.308	0.7592	
dati\$Employees1000-	474787308	96355610	4.927	1.12e-05	***
dati\$Employees251-500	141869624	97933728	1.449	0.1542	
dati\$Employees501-1000	208873104	118141576	1.768	0.0837	.
dati\$Employees51-250	19818510	50361033	0.394	0.6957	
dati\$Headquarter.regionCampania	-76071278	168435453	-0.452	0.6537	
dati\$Headquarter.regionEmilia Romagna	-48225000	181542905	-0.266	0.7917	
dati\$Headquarter.regionFriuli Venezia Giulia	-63356860	218424026	-0.290	0.7731	
dati\$Headquarter.regionLazio	-74165959	185426542	-0.400	0.6910	
dati\$Headquarter.regionLiguria	-76910147	196916401	-0.391	0.6979	
dati\$Headquarter.regionLombardia	-103017095	159492654	-0.646	0.5216	
dati\$Headquarter.regionPiemonte	-19779321	171301973	-0.115	0.9086	
dati\$Headquarter.regionRepubblica di San Marino	-21474458	216005634	-0.099	0.9212	
dati\$Headquarter.regionToscana	69135843	161128216	0.429	0.6699	
dati\$Headquarter.regionTrentino Alto Adige	-103270589	236506261	-0.437	0.6644	
dati\$Headquarter.regionUmbria	-48560000	209627690	-0.232	0.8178	
dati\$Headquarter.regionVeneto	-14132860	160726235	-0.088	0.9303	
dati\$Sustainability.Report1	-10561378	59590786	-0.177	0.8601	
dati\$FSC1	1247598	54742259	0.023	0.9819	
dati\$ISO.140011	27085542	52102449	0.520	0.6057	
dati\$PEFC1	82075995	51136120	1.605	0.1153	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Figure 45 - Results of the linearization

The most important relationships that have been found with respect to the regions is that Tuscany (Toscana), which is the region that has gained more revenues in 2018 is the one that has a positive coefficient with the dependent variable. Furthermore, regarding the disclosure of the Sustainability Report, since a limited number of companies have produced it, it is not a significant variable that therefore in this analysis do not influence significantly the revenues. Moreover, the other important finding is that the PEFC certifications has a p-value, that corresponds to the column " $\Pr(>|t|)$ ", closed to 0.1 and therefore, it is the certification that mostly influences the revenues in the performed analysis.

It has to be reminded that the sample size was small and therefore it is not possible to extend the results to the entire Italian Paper and Pulp Industry, but it has been possible to have an overview of the positive or negative relationships that are present between the variables.

For future study implementations, it would be interesting to furtherer analyse the industry, having a wider dataset and considering the entire Balance Sheet data and sustainability information of every paper producer company in Italy, being therefore able to have an overview of the overall PPI.

Conclusions

The UN 2030 Agenda is an ambitious project, which requires every player to make long-term, innovative and profound commitments.

As highlighted in this Work, a vital support should come from the Business World, despite years of inadequate policies and the lack of enforceable measures.

The failure of those policies appears to be more serious in the Italian context. As shown in 4th Chapter, only the 22% of the Italian Paper Producers discloses Sustainability Reports, unlike factories in the international framework, which are particularly involved in environmental issues, as demonstrated in the Paper and Pulp Industry case. Indeed, in the international context industries are more likely to publish several of Sustainability Reports and, on average, the 84% of those disclose them.

Therefore, an enormous gap between the international and the Italian context was found with reference to the disclosure of Sustainability Reports. One possible explanation of this trend is that Italian Paper Producers are usually members of the Italian Association of Paper and Pulp Industry, Assocarta, which yearly discloses an Environmental Report, where not only environmental issues are discussed, but also employees' working conditions.

Furthermore, most of the Italian paper producers are small and medium size companies, which normally do not have enough resources to be deployed for editing Sustainable Reports. On the other side, researchers suggest that even if editing Sustainability Report requires several efforts by companies' employees and consequently, further costs are obviously incurred, the importance of editing and disclosing those reports should be seen as a strategical tool, which can allow companies to further improve their own operations and to better communicate with their stakeholders.

Another important element to mention is that few Italian paper producers have more than 500 employees or gain revenues for more than 50 million of Euros: those companies are

therefore mandatorily bound to provide non-financial information according to the Legislative Decree 254/2016 in order to avoid penalties. Regarding this aspect, it is possible that the information found do not represent the total amount of Sustainable Reports and the non-financial information that those companies have provided to authorities.

It should be remembered that the aim of this study was to determine whether Italian paper producers are communicating through their website their attention towards sustainable issues and whether they use certifications efficiently. The main findings have revealed that most of the companies do not disclose Sustainability Reports, while opting for certifications, which are means for diversifying products and assuring that the production of these certified products is respectful of sustainable principles.

Furthermore, for assessing whether companies' economical performances are related with the number of employees, the disclosure of Sustainability Report and the utilization of certifications, a linear model has been implemented. The linearization has highlighted that the adoption of PEFC certification and the size of the company are positively related to its gained revenues, while reports should not be deemed as a relevant factor.

Finally, it is important to highlight that the sample size was not able to entirely represent the industry, therefore it was not possible to extend the results to the whole Italian Paper and Pulp Industry.

In this perspective, in the light of future study implementations, it would be interesting to further analyse this industry, having a wider dataset and having the chance of considering the entire data set out in Financial Statements and the sustainability information of every Italian paper producer company, being therefore able to have a full and wider overview of the Paper and Pulp Industry.

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