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**Market opportunities for deploying eco-  
innovation actions: from the analysis to the  
development of a business model.**

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## ABSTRACT

Companies began to be concerned about environment and tried to reduce their environmental impact decades ago when Governments started to regulate environmental protection through environmental legislation.

The way that companies deal with environment has changed dramatically since then. Nowadays, corporations cannot just accomplish regulations, they need to embrace sustainability. Customers are provided with more information and are more concerned about the environmental impact of the products and services they consume. These reasons are generating disruptive business models and business trends that have sustainability in their core business (e.g. circular economy).

This work has the objective to identify the environmental issues that companies are facing currently, how they are dealing with them and the analysis of the new business trends that are trying to solve the issues which are still pending.

For carrying out this work it has been necessary to perform a state of art about how corporations deal with environmental protection and how new companies and business processes can reduce environmental degradation.

Results show how these new disruptive business models and new business processes can lead to a further reduction of the environmental degradation through the integration of the sustainability into the existing companies and the interaction with new companies that have as a main objective improving the quality of the environment.

**Market opportunities for deploying eco-innovation actions: from the analysis to the development of a business model.**

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## 1- INTRODUCTION

Companies are dealing with environmental performance in a very different way than they used to do several years ago. Environmental regulation has become more and more stringent, but also, corporations now have to protect their images, they need to satisfy their stakeholders' concerns, from employees to investors and customers, develop business opportunities environmental respectful with the aim to remain competitive in their markets and even new markets.

Obviously, business decisions are taken depending on the market, but in the following diagram (Figure 1) readers can see the trends and powers that are driving companies for adopting more sustainable ways to make business:

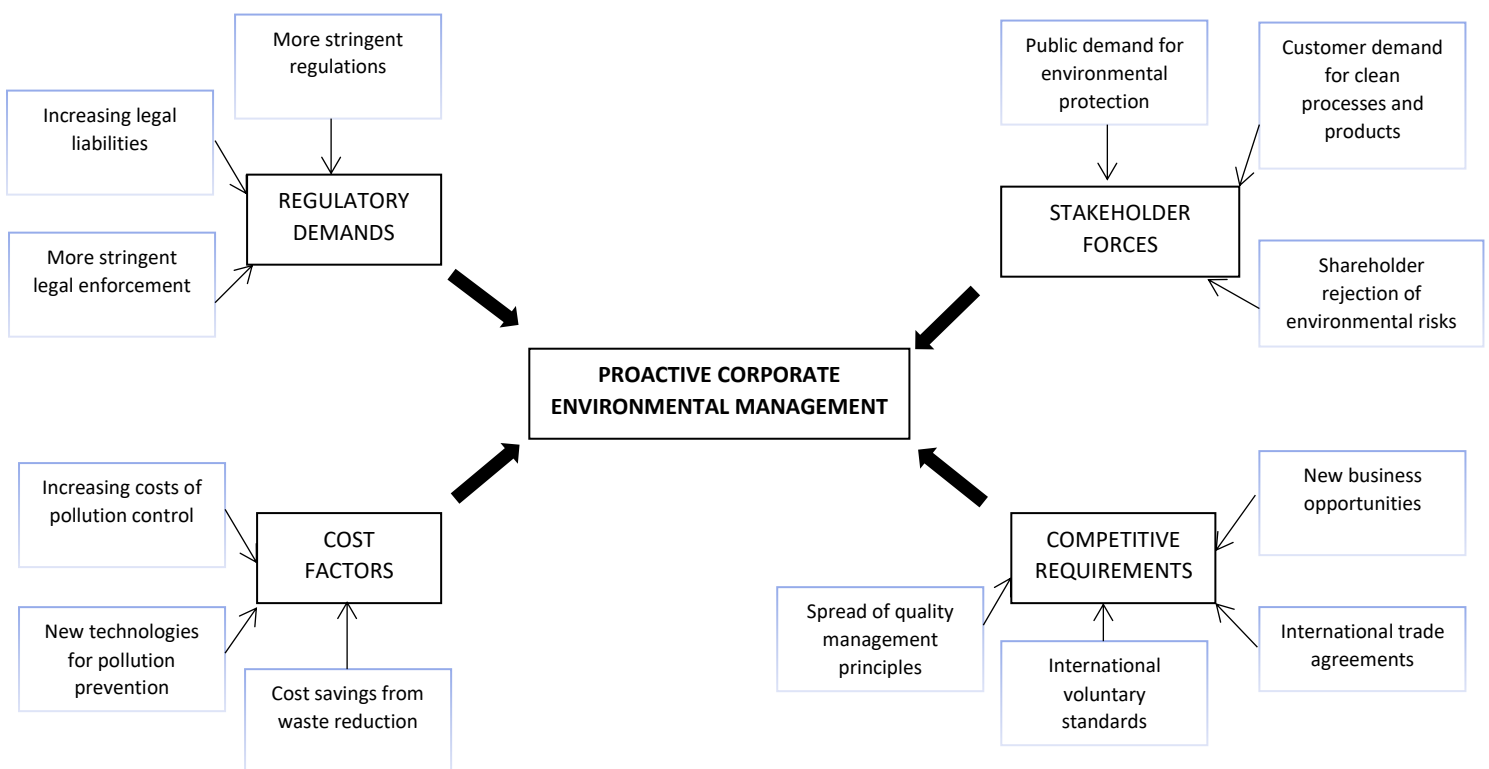


Figure 1. Trends and powers that are driving companies for adopting more sustainable ways to make business (Berry & Randinelli, 1998).

### 1.1 - Legislation and new trends

Currently, corporations that are looking to be competitive cannot avoid compliance with the regulations. Governments started to regulate environmental protection more than 30 years ago in industrialized countries, the environmental legal system of these countries has grown with the aim to reduce environmental impact produced by industries due to the pressure from the society (customers, NGO's, Public Administrations, etc.).

However, in most of these countries the environmental legislation has become a complex regulatory process. In some countries, there are different Administrations that can regulate the environmental protection which causes that businesses need to deal with numerous requirements, often repeated by two or more Administrations (Berry & Randinelli, 1998).

Some companies see that everything except regulation remains constant, but this point of view is incorrect. That kind of companies believe that environmental legislation raises the costs, but companies are present in dynamic markets where products, processes, customers, trends, fashion, needs change really often. Therefore, corporations need to look constantly for innovative solutions with the aim to overcome competitors, serve their customers, look for new customers and satisfy regulations.

Corporations that manage properly environmental requirements can boost innovation even can reduce the cost of a new product development. For instance, companies that deliver products with packages need to reduce the quantity and weight of the packaging. That have lead companies to be able to produce packages more sustainable and also cheaper. In addition, these innovations allow corporations to use more efficiently their products, from the raw materials to the energy consumption. Therefore, environmental regulation makes companies more competitive (Porter & Linde, 1995).

Porter and Linde (1995) performed a study with industrial sectors that are pressed by a complex environmental regulation: printing inks, refrigerators, electronics manufacturing, paint and coatings, dry cell batteries and pulp and paper.

The authors concluded that is possible to minimize the costs, even eliminate them, adopting environmental regulations through a well-managed innovation. Moreover, innovation will reduce or eliminate the environmental regulation costs and will bring competitive advantage to the company.

According to them, making environmental improvements will benefit resource productivity, and environmental legislation will force companies to perform more innovative processes, but managing properly this innovation can lead to improve the product quality, reduce its environmental impact and also, increase the sales.

In order to reinforce this data, there is a survey (Accenture, 2013) which interviewed 1000 CEOs in 103 countries from 27 different industries. The results showed that 80% of the CEOs think that sustainability could be a way for improving their competitive advantage.

Moreover, the 81% of CEOs view sustainability reputation as something important for their customers and their purchasing decisions.

Even these results look very optimistic and positive for environmental protection, the results also found that only 33% of the CEOs believe their companies are making efforts enough in order to overcome the challenges that sustainability is generating.

Currently, companies and customers are in a phase where all of them are learning how to manage and solve the environmental issues efficiently and creatively. Moreover, customers are becoming to be aware that it is necessary to pay for the inefficient way of resources management (cost of pollution).

But Porter and Kramer (2011) went one step beyond and they published a paper arguing that most companies just keep a 'social responsibility' point of view. This point of view has as characteristic that environmental problems are considered as something external to the company.

So, these authors offer as a solution what they call 'shared value'. Share value is the creation of economic value by companies but also creating value to society for solving needs. Businesses need to link their economic success with social welfare improvement. One of the key factors of shared value is that companies place in their core business and in their culture the will of social improvement, which includes sustainability, social responsibility, etc.

## 1.2 – Market imperfections.

According to Cohen and Winn (2007) most of the environmental issues that companies need to face come from four types of market externalities:

- Firms are not perfectly efficient.
- Externalities exist.
- Pricing mechanisms work imperfectly.
- Information is not perfectly distributed.

Nevertheless, those market externalities or market imperfections can lead to new business opportunities. So, externalities create entrepreneurial opportunities and existing companies, if they identify and exploit these opportunities can improve their market performance and launch product and services more sustainable which will be also more competitive.

Regarding to sustainable entrepreneurship, is defined as the examination of “how opportunities to bring into existence “future” goods and services are discovered, created, and exploited, by whom, and with what economic, psychological, social, and environmental consequences” (Venkataraman, 1997: 120; italics in original).

Therefore, these authors argue that market imperfections have led to significant opportunities for sustainable entrepreneurship.

Shown below there is an explanation of each market imperfection:

### Market imperfection 1: inefficient firms.

Companies and consumers are only meeting a portion of the potential that they can take from natural resources. For instance, for manufacturing just one unit of jeans it is necessary to consume between 2100 and 3000 liters of water (Chico et al., 2013).

This waste of resources has been happening because of a lack of customer concern and lack of companies' owners for reducing the inefficiency of their firms.

Hence, corporations have numerous opportunities for improving their environmental performance and as Porter and Linde stated (1995), they can do it in a profitable way.

In addition, entrepreneurs can identify potential opportunities within market imperfections that would reduce waste and also, get profits from that reduction.

### Market imperfection 2: externalities exist.

Externalities may be negative or positive. A positive externality occurs when a third-party benefit from the production or consumption of a good without incurring the full costs corresponding to the true value of the benefit received.

For example, if the City Council improves a public park that used to be in poor conditions, neighbours will get benefits because the area will improve its image and also the value of the surrounding houses.

On the other hand, negative externalities occur when a third party incurs the costs resulting from the production or consumption of products and services without receiving equivalent benefits.

The way to generate new business opportunities through this market imperfection is using technology and supply chain services for reducing or even eliminating these externalities.

Companies that identify opportunities for minimizing the negative externalities (e.g. waste water) can generate a triple bottom solution:

- Generation of social benefits (improvement of the quality of the surrounding water).
- Generation of environmental benefits (improvement of the ecosystem function).
- Generation of profitability (less environmental tax needed to be paid).

Additionally, entrepreneurs that create business opportunities for minimizing negative environmental externalities will drive market to sustainable way and will expand the portfolio of sustainable business opportunities.

### Market imperfection 3: flawed pricing mechanisms

Currently, most of the natural resources (e.g. air and water) are under-priced or even not priced. The market has not accounted properly for the value of not renewable resources (Hawken et al., 1999). So, a sustainable system should set an appropriate value to the natural resources.

Disruptive technologies can supply opportunities for existing companies or entrepreneurs to minimize this externality (Christensen, 1997).

Flawed price mechanism has led to unsustainable markets. As was the case with the first two market imperfections, entrepreneurs that analysing this market imperfection can find business opportunities through disruptive technology in order to help bottom of the pyramid can offer solutions using renewable energies.

### Market imperfection 4: imperfectly distributed information

There are no actors in the economy able to acquire perfect information regarding to markets and economy, that leads to not perform 'perfect' decisions (Simon, 1956; Williamson, 1985). The lack of information has caused this market imperfection but, as the three examples above, is a source of entrepreneurial opportunities (Kirzner, 1973; Sarasvathy et al., 2003; Venkataraman, 1997).

For instance, imperfect information can be found in our electricity bill from our homes. Many consumers do not know costs and benefits from different power companies. Regarding to



solar energy, consumers do not have perfect information about different types of installations, how long will take to recover the investment, etc.

This insufficiency of information creates market imperfections and customers not appropriate purchasing decisions that can lead to a cost of the environment. However, this imperfect information can generate business opportunities and entrepreneurs can take advantage of it (Kirzner, 2000). One of the most important business opportunity that has come out from this market opportunity are the companies that certify if the products and services are able to meet an environmental standard.

In summary, entrepreneurs have so many business opportunities for reducing information asymmetry regarding to the environmental damage.

Environmental externalities can be classified also depending on how they affect individuals and regions. Environmental pollution or degradation may be local in nature as in water pollution in lakes, land degradation and air pollutant like particulate matter. Local pollution becomes a local public bad when it has two characteristics namely non-rivalry and non-exclusion. Pollution of large rivers and degradation of mountain ecosystems may affect many states/regions. Greenhouse gas emission is a global public bad in the sense that regardless of where the pollutants are emitted, the aggregate emissions affect all persons in the earth and the ecosystem as a whole.

So, corporations play a fundamental role on the economy and the maximization or minimization of negative externalities. Essentially, companies are need to lead the way of sustainable development, without their collaboration it will not be possible to reduce the environmental degradation and achieve a society based on a sustainable economy system.

### 1.3 – Environmental entrepreneurship

According to Dean and McMullen (2007) entrepreneurship can help to resolve environmental problems through the exploitation of opportunities inherent in environmentally relevant market failures and thereby help move global economic systems toward sustainability. The growing desire of market actors for the cessation of environmentally degrading activities represents opportunity for entrepreneurial action and that exploitation of these opportunities by entrepreneurs can lead to the enhancement of ecological sustainability.

Environmental economics states that the environmental degradation comes from the market imperfections. Literature about entrepreneurship argues that business opportunities come from market imperfection. Therefore, it is logical to conclude that environmental externalities and market failures will bring opportunities for getting economic reward minimizing environmental degradation.

In brief, this means that market failures that are leading to environmental degradation will create entrepreneurial opportunities that well managed will generate profits and will improve the people's quality life. Taking in account that a market failure consists in a need pending to be solved that people will pay for solving (if there is a cost-effective solution), there are so many niches that entrepreneurs can get profits from. And, which is also important, reducing the environmental degradation entrepreneurs are collaborating for achieving a more sustainable and social society.

Therefore, environmental or sustainable entrepreneurship can get profit through the exploitation of market imperfections. Entrepreneurs can design and develop innovative business models for minimizing the environmental externalities, so they can help to improve our environment and make economy grow.

Environmental entrepreneurship and sustainable entrepreneurship have in common that both consists in the process of identifying, analysing and taking advantage of economic opportunities, but the difference lies on that environmental entrepreneurship takes advantage of opportunities present in environmentally relevant market failures, however, sustainable entrepreneurship takes advantage also in the market failures diminish from sustainability, including those ones environmentally relevant. Accordingly, environmental entrepreneurship is considered as a part of sustainable entrepreneurship.

## 2 - OBJECTIVES

Considering the concepts introduced below, this report aims to show how private companies have evolved the way they protect environment and embrace sustainability. The evolution begins when Governments started to regulate the environmental protection some decades ago to the present with the new sustainable business trends that are reshaping the society.

This report will bring some light to new paths that companies should follow in order to increase their sustainable commitment, with the specific objectives of this paper are being the following ones:

- Identification of the environmental issues that companies are facing currently.
- Detection environmental practices that companies are carrying out in order to solve the environmental issues.
- Analysis of the new business trends related with sustainability.
- Development of potential new business trends.

As discussed previously, this work has a wide scope; basically, is focused in the way companies deal with sustainability; and the reason for choosing these objectives is because now sustainability does not come from the laws and regulations exclusively. Users and customers are highly concerned about environmental protection, which has led to the companies to adapt the way they do business for satisfying their customers' needs.

Therefore, is necessary to know how has evolved the way companies protect environment during last years in order to know how companies are dealing with sustainability in the way they are doing currently and how could they will do it in the future.

### 3 - METHODOLOGY

Initially, for developing this work it has been performed a linear structure that intends to show to the reader what are the main reasons why companies need to embrace sustainability, how they are doing it, the new business opportunities that are coming out related with sustainability and the new business trends that can appear.

#### 3.1 – Information retrieving

For developing the linear model, it has been required to retrieve information from the scientific literature about the reasons that companies need to adapt their business processes in order to reduce the environmental impact, and how these reasons have led to the creation of new business models and the adaptation of existing business models for achieving an environmental impact reduction.

Nevertheless, one of the most important points that has been essential for companies to enhance a more sustainable way to make business has been the proliferation of environmental legislation. So, the sections that present the most important laws are sourced from reports written by governmental organizations and employers organizations that group the laws depending on the type of environmental protection they pursue.

Then, the information for presenting the way companies are adapting to new sustainable trends and which kind of practices they are carrying on has been taken from recent scientific literature.

However, as the information showed in the section that classifies the environmental issues that are still pending to be solved, the section that the new sustainable business models that are coming out as well as the section about the new sustainable business trends is very recent, it has been written using information from reports published by Foundations, consultancies and public organizations.

Finally, even that the discussion has been written by the author, part of the section has been written taking in account the opinion and papers published recently.

#### 3.2 – Extraction of results

This information has brought different types of data that crossing them can delight us with interesting results. So, combining the information about the environmental issues which are still pending to be solved with the new business models that are coming out, it is possible to extract which needs are solving these new companies and start-ups.

In addition, the analysis of the market niches and business trends as given as a result a possible future scenario for sustainable business models and processes.

#### 4 - ENVIRONMENTAL ISSUES THAT COMPANIES ARE FACING CURRENTLY

Companies, specially manufacturing companies because of their production processes, generate environmental damages. For instance, waste water, emissions, etc.

Pérez-Sánchez et al. (2003) have performed a study about the eco-efficiency measures undertaken by the SMEs (Small and Mediums Enterprises) from the UK in order to reduce the environmental damages. Moreover, this study shows the most common environmental issues that companies are facing currently:

- Recycling waste products.
- Energy efficiency management.
- Avoid the use of environmentally unfriendly products.
- Carbon emissions reduction.
- Performance of studies like carbon footprint, water footprint, etc.
- Environmental management policies (ISO 14001, EMAS, ISO 50001).
- Support of local networks.
- Responsible buying and selling (buying fair trade products).

According to the economic theory, these damages to the environment are considered as 'environmental externalities'.

Therefore, with the purpose of reducing the environmental damage produced by our economic system, Governments and Public Administrations have deployed, mainly in the developed countries, an exhaustive and consistent legal system focused on the environmental protection. This legal system is leaded and managed by several kinds of Administrations (Central Government, Regional Governments, etc.) and affects to all the society levels.

Corporate sustainability strategies are crucial for reducing the environmental damage. Companies have basically two ways for decreasing their environmental impacts that can be classified in environmental issues regulated and concerns and strengths.

One area includes environmental issues that are already regulated and are required to be reported by the Public Administrations (e.g., the emission of toxic chemicals and hazardous waste). This area can be classified as 'environmental legislations'.

The other area includes environmental strengths and concerns in topics that are not yet regulated by Governments but where there is a possibility of future regulation. Emissions of greenhouse gases and the carbon footprint of a firm fall into this category (Chava, 2014). This are can be classified as 'environmental strength measures'.

##### 4.1. Environmental obligations

The environmental legal system has developed for preventing and reducing the negative environmental externalities numerous laws and regulations which are focused on specific environmental topics (in advance 'environmental vectors').

As this work has been written by a Spanish University, the legislation presented has been developed by the Central Spanish Government. The environmental laws and regulations are classified in the following vectors according to the “Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente”:

- Industrial activity.
- Water.
- Atmospheric pollution.
- Energy efficiency.
- Packaging.
- Environmental impact.
- Environmental taxes.
- Environmental incentives (corporation tax) and prizes.
- Hazardous waste.
- Noise pollution.
- Polluted soils.
- Environmental responsibility.
- Environmental management (ISO 14001 and EMAS).

Because there are numerous environmental requirements that must be accomplished by companies, especially big industrial companies like companies that belong to the chemical or pharmaceutical sectors, they need to hire environmental specialists and also collaborate with environmental consultancies in order to get help to reach the environmental protection and damage reduction objectives.

Therefore, with the aim to accomplish all the requirements, companies should carry on several actions for each environmental vector. In the following table (Table 1), there is a brief explanation of each environmental vector, the way that companies are accomplishing their obligations and the reference from the main law that regulates that vector:

ENVIRONMENTAL VECTOR	DESCRIPTION	MEASURES	LEGISLATION
Industrial activity	Companies need to get a license before starting to run the business. Depending on the type of company and facility it is necessary to deliver a detailed project with the characteristics of the business process and installations.	In the case of industrial companies (e.g. chemical or pharmaceutical companies) it is necessary to hire the services from an engineering company.	Ley 16/2002, de 1 de julio, de prevención y control integrado de la contaminación.
Waste water	The substances discharged in the waste water (e.g. Zinc, Copper, etc.) have to be under some limits.	For reducing the concentration of these particles companies need to build some water treatment systems.	Real Decreto Legislativo 1/2001, de 20 de julio, por el que se aprueba el Texto Refundido de la Ley de Aguas.
Atmospheric pollution	The substances emitted through pipes (e.g. CO <sub>2</sub> , SO <sub>2</sub> , etc.) have to be under some limits.	For reducing the concentration of these atmospheric particles companies need to build some treatment systems or air filters.	Ley 34/2007 15 noviembre, de calidad de aire y protección de la atmósfera.
Packaging	Companies that introduce packages into the market have to reduce every year the quantity of packages and also the quantity of material used in each package. In addition, they have the responsibility that these packages will be recycled in the future.	Companies invest in R&D for reducing the quantity of material from each package and they pay a canon for ensuring the payment of the recycle cost.	Ley 11/1997, de 24 de abril, de envases y residuos de envases.
Environmental impact	It is necessary to study the potential damage that new constructions or modifications from existing buildings can produce.	The environmental impact consists on an intensive and extent report which needs to be done by a specialized company.	Real Decreto Legislativo 1302/1986, de 28 de junio, de Evaluación de Impacto Ambiental
Hazardous waste	Companies have to monitor the generation and storage of the hazardous waste. In addition, companies have to reduce the hazardous waste generation and deliver	Companies have to build installations for storing properly the hazardous waste; pay taxes for the hazardous waste generate and	Ley 22/2011, de 28 de julio, de residuos y suelos contaminados.

	hazardous waste to revalorise instead of sending them to the landfill.	pay for the services from waste management companies.	
Noise pollution	All the activities have noise limits that they cannot exceed on their surrounding area.	Companies have to invest in more efficient machinery or improve the characteristics of their buildings and factories.	Ley 37/2003, de 17 de noviembre, del Ruido.
Polluted soils	Industrial activities have to monitor the ground where their facilities are placed in order to identify the presence of pollutants. In case of the ground is polluted they have to remediate the ground.	It is necessary to hire specialists for analysing the ground. In case of polluted ground, they will pay for the cost of the remediation process.	Real Decreto 9/2005, de 14 de enero, por el que se establece la relación de actividades potencialmente contaminantes del suelo y los criterios y estándares para la declaración de suelos contaminados.
Environmental liability	On the same way than civil liability insurance, companies that can potentially damage the environment because of its business process, have to deploy an environmental risk analysis.	Some companies have to take out environmental liability insurance; the amount of money required will vary depending on the environmental risk analysis.	Ley 26/2007, de 23 de octubre, de Responsabilidad Medioambiental.
Energy efficiency	Companies need to reduce the energy waste, so they have to pass several machinery inspections and invest in more efficient systems, e.g. air-conditioned systems.	The inspections are chargeable and depending on the existent machinery, they have to invest in more efficient systems.	Real Decreto 1027/2007, de 20 de julio, por el que se aprueba el Reglamento de Instalaciones Térmicas en los Edificios.
Environmental taxes	There are taxes on pollution, e.g. waste water, emissions, or hazardous waste.	According to the quantity of pollutants produced by the company the amount of money to be paid will vary.	There are several laws, some of them from Regional Governments.
Environmental incentives and prizes	Companies have reduction on the Corporation tax if they do environmental investments. Moreover, there are several prizes that reward companies concerned about the environment.		Ley 27/2014, de 27 de noviembre, del Impuesto sobre Sociedades.



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Environmental management	There are voluntary certifications (ISO 14001 and EMAS) which demand efforts in order to improve the internal environmental management.	For achieving the certification is necessary to develop a strategy (usually from an environmental consultancy) and then pay for the audits and certificate.	
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Table 1: Classification of environmental vectors according to the “Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente”.

## 4.2 - Environmental strength measures

Most of the vectors shown in the previous box are obligations; however, there are also incentives, awards and voluntary environmental management systems.

The most popular management system is the ISO 14001 with more than 300.000 companies certified in 187 countries (ISO survey, 2013). In Europe, there is a more restrictive legislation called EMAS (Environmental Management and Audit Scheme), with more than 4.000 companies certified (Sistema Comunitario de Ecogestión y Ecoauditoría: EMAS). The main differences are that ISO 14001 is globally recognized and EMAS is restricted to Europe.

Essentially, these certifications consist of the implantation of a management system into the company that intends to perform the business processes in a more sustainable way (e.g. recycling paper from offices, reducing waste water from industrial processes, etc.) and creates new ones for reducing and preventing the environmental impact.

Recently, have appeared new certifications like the ISO 50001. This standard establishes the requirements that must have an Energy Management System in order to make continuous and systematic improvements in the energy performance of organizations.

The certification of an Energy Management System ensures the control and systematic monitoring of electric energy and continuous improvement of energy performance. This contributes to a more efficient and more sustainable use of power (ISO 50001:2011).

Therefore, companies are not obligated to get certified, but once they have voluntarily joined the certification they have to accomplish the objectives established every year in order to renew the certification.

However, even these certifications help companies to be more sustainable, there are more strategies for a better integration of the environmental concern in their business models, processes, actions and so on.

## 4.3 – Business case for sustainability

Some authors developed a study about how companies can achieve a well-managed sustainability performance through business cases for sustainability (Schaltegger, 2012).

Business case for sustainability has as target the integration of economic sustainability and environmental sustainability (Parnell, 2008).

So, business case for sustainability aims to show corporate sustainability strategies describing a situation that has been performed combining economic success with environmental and social improvement.

There is a group of authors that defend that just generating business cases of sustainability will be enough for achieving corporate sustainability and sustainable development (Dyllick & Hockerts, 2002). However, there is another trend of researches holding that environmental and social activities are just a direct effect from the market performance and economic rationality (Eden, 1994). See the following example: Corporate sustainability “is promoted if profitable, for example, because of an improved reputation in various markets” (van Marrewijk, (2003), p.102).

Corporations willing to create a business case for sustainability need to be able to look for combining social and environmental performance with business success. However, achieving business case for sustainability cannot be done just developing business activities that look for market sustainability (Parnell, 2008; Stead & Stead, 2008). Corporations need to integrate sustainability into their strategies even into their business model (Elkington, 1998; Norman & MacDonald, 2004).

Scientific literature classifies the drivers for business cases of sustainability depending on the influence of economics. Drivers can be classified in the following way:

- Cost reduction (Christmann, 2000; Epstein & Roy, 1996): Usually this driver is related to energy savings, reduction of raw-material consumption, less pollutant production (Jasch, 2008).
- Risks reduction: Companies that manage properly sustainability are able to reduce the technical, political and market risks (Schaltegger & Wagner, 2006). For instance, corporations that adopt measures more restraining than environmental legislation requirements will not be as affected as other companies when new regulations come out.
- Sales and profit margins: According to Porter and Linde (1995a, 1995b) companies that adopt environmental legislation can trigger innovation which will reduce the cost of launching new products to the market and also increase sales.
- Reputation and brand value (Jones and Rubin, 1999; van Marrewijk, 2003): Green companies are better considered than not green companies, which improves their entry in new markets and product development (Porter & Linde, 1995b).
- Attractiveness as an employer (Ehnert, 2009; Revell et al., 2010): Even this driver is not directly related with economic success, some authors (Hansen, 2010) states that sustainable companies receive more applications for their job positions and are able to retain longer their employees.
- Innovative capabilities (Cohen and Winn, 2007; Pujari, 2006; Schaltegger and Wagner, 2011): Companies that have embraced sustainability have more visions integrated and can get information from other stakeholders which allow them to create more innovative products for being launched.

It is necessary to take in account that corporations willing to develop a strategic management based on sustainability need to change their business model (directly or indirectly). Conversely, business model limits and determines the evolution and strategy of the business case for sustainability. So, in order to develop a successful business case for sustainability is necessary to expand the company's vision and its business model. For instance, a company willing to release a sustainable product to the market probably will need to invest in the manufacturing process, contact with different stakeholders and even change the revenue streams, key partners or value proposition.

Mainly, the parts of a business model that need to be changed in order to develop a successful business case for sustainability are:

- Value proposition: is the product or service offered by the company and are addressed to a customer segment. A business case for sustainability can be based on offering sustainable products and services.

- Customer relationship: Consists of the way that company keeps and maintains the relationship between their customers in order to get revenues.
- Key partners: Corporations have a stakeholder's network which is necessary to keep their activity on. For achieving a well-managed sustainable strategy perhaps will be necessary to look for other stakeholders or change the relationship that corporations have with them.
- Financial topics: This aspect can be found in the three previous components because is inherent to the business, but adopting a sustainable management will change financial aspects of the corporation, e.g. source of revenues, credit management, etc.

The business model parts shown above are just a regular description, when company's managers are looking to orient the business toward a sustainable way it is necessary to link those business parts with the business case drivers. Each part can be affected differently depending on the business case driver. So, the sustainability strategy chosen will determine the degree of change and innovation of the existing business model in order to carry out the business case for sustainability successfully (Ballon, 2007).

The table 2 shows the parts that composes a business model and how they can be affected by the business case drivers.

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<b>Core drivers of business cases for sustainability</b>	<b>Value proposition (VP)</b>	<b>Customer relationships (CR)</b>	<b>Key partners (KP)</b>	<b>Financial topics (FT)</b>
<b>Costs reduction</b>	Offering to customers products and services which have used less energy during their production and their maintenance is cheaper than competitors.	Relationships become more cost-effective and services become more efficient.	Partnerships with other sustainable companies can reduce the cost of products and services.	Reducing or redistributing costs for customers and internal costs of the new product and services will increase profitability.
<b>Risks reduction</b>	Reduction of societal and environmental risks that can benefit some customers.	Companies offering reduction of sustainability risks have higher loyalty from their customers.	Partnerships and relationships with stakeholders are established with the aim to reduce risks.	Lowering sustainability risk will improve the credit rating.
<b>Sales and profit margin</b>	Frequently, sustainable products and services require initial investments that can turn into profits in the future.	Sustainable companies have a higher customer retention.	Launching new products and services through new kinds of partnerships can eliminate market barriers and even discover new market niches.	New products and services can reach new customers that allow companies to diversify the incomings.
<b>Reputation and brand value</b>	Sustainable companies use to have a better reputation and their brand values are higher.	Sustainability is considered as a strong marketing tool for increasing the customer loyalty.	Partnerships with other companies positioned as leaders in sustainability management improves the reputation and brand value.	Companies with a well-managed sustainability can achieve good rating in sustainability indices and funds.
<b>Attractiveness as a employer</b>	Sustainable companies receive more job applications and retain longer their talented employees.	As employees from sustainability-oriented companies are more motivated, they offer a better customer service.	Collaborating with companies considered as attractiveness employer use to increase the quality of the partnerships.	Companies considered attractiveness as an employer can reduce HR costs because people work in the company longer than workers from other competitors.
<b>Innovative capabilities</b>	Embracing sustainability means developing innovative capabilities that can improve the value proposition.	Sustainable products and service which come from innovative processes achieve a higher customer retention.	Strategic partnerships with other sustainability-oriented companies can unleash innovation.	Leading sustainable innovations can create more profitable expectations that can rise the shareholder value.

Table 2. Parts of a business model and how they can be affected by the business case drivers.

In addition, Pérez-Sanchez et al. (2003) argue that some of the most influential factors for SMEs embracing sustainability and environmental practices are the managers' attitudes and values. SMEs owners and managers from all around the world have strong environmental awareness. Even 80-90% of owner-managers consider environmental issues as important issues. Though, there is a gap between this environmental awareness and the action they perform in their companies. This means that owners-managers have positive attitudes toward environmental protection however they do not translate this attitude to the company actions.

## 5 – ECO-INNOVATIVE PRACTICES AND THE INTEGRATION OF SUSTAINABILITY INTO THE BUSINESS MODELS

There are numerous papers that have studied different kinds of eco-innovations and have tried to classify it.

First of all, the basic classification was elaborated with regard to the environmental dimension (Klewitz & Hansen, 2014):

- Process innovations relate to the production of goods and services, often with the aim of increasing eco-efficiency or metabolic consistency, sometimes referred to as eco-effectiveness (Huber, 2008). They are further differentiated into end-of-pipe solutions and cleaner production technologies (Rennings et al., 2006). SMEs engaging in cleaner production, for example, can alter their way of using resources, manage nonproduct outputs through schemes of closed loop production or industrial symbiosis, and improve the overall eco-efficiency of business operations (Altham, 2007).
- Organizational innovations entail the reorganization of routines and structures within the firm and new forms of management. This also includes more formalized management systems such as environmental management systems (Rennings et al., 2006).
- Product innovations are improvements or entirely new developments of products and services. For instance, eco-design may improve products through more eco-benign materials (e.g. organic, recycled materials), high durability, low energy consumption while the development of environmental or sustainable technologies (e.g. renewable energy technologies) represent entirely new products (Hart & Milstein, 2003; van Hemel & Cramer, 2002).

Scientific literature (Cheng et al., 2014) divides eco-innovation in external and internal eco-innovation. External eco-innovation includes the external sustainable activities of the organization (suppliers, regulators, etc). Internal eco-innovation considers all the practices and processes that are carried out within the corporation for managing eco-innovation processes in an effective and efficient way (management, production process and new product development).

Eco-innovation has been addressed by researchers from different perspectives, like government policy, stakeholders, corporate strategy, leadership, company's culture.

Eco-innovation is classified in three types:

- Eco-process.
- Eco-product.

Market opportunities for deploying eco-innovation actions: from the analysis to the development of a business model.

- Eco-organizational innovations.

Then, eco-innovation has been categorized in three main groups (most of these practices involves the use of ICT):

- Cleaning up the landscape.
- Connecting life and work.
- Boosting the efficiency of processes.

#### Cleaning up the landscape

In sum, the practice of cleaning the landscape involves the integration of new products, services, routines, information, and other resources to reduce and harmonize resource use.

#### Connecting life and work

The practice of “Connecting life and work” involves envisioning new (virtual) environments for actors’ life and work. The most crucial tool that is used in this practice is solutions (seen as resources) that enable actors in project networks to work simply, intuitively, securely, and reliably while on the move.

#### Boosting the efficiency of inbound and outbound processes.

The practice of boosting the efficiency of inbound and outbound processes takes into account how to integrate resources and use solutions to foster sustainable actions across the internal and external boundaries of firms

#### Environmental new product development (ENPD)

On the other hand, there are several practices related with the product made by companies. These practices are under the name of environmental new product development (ENPD).

New activities such as design for environment/life cycle analysis and supplier involvement for environmental responsiveness are identified in the ENPD process (Pujari, 2004).

#### Upfront proficiency:

In recent years, there has been an increasing emphasis on the concept of ‘win-win’ environmental strategies, whereby environmental product benefits go hand-in-hand with technical and economic cost-effectiveness.



### Cross-functional coordination:

This kind of coordination and integration makes able to expand the knowledge about the market and about customers within all the staff and members of the team. And another point is this does not happen just during the development, the knowledge diffusion can be found at later phases of the product or service commercialization.

### Supplier involvement:

Suppliers are one of the most important stakeholders for all companies, and the materials bought from them have a key role in the result of final product. Among some of the factors that can determine are the quality, design, lead times and even development risks of the products (Hult & Swan, 2003).

### Design for environment/life cycle assessment:

Product design for environment (DFE) consists in a process that treats environmental attributes from a product as a design product instead of constrains. Some of the environmental attributes considered by this process are the recyclability, reusability, etc. (Ashley, 1993).

Life Cycle Assessment (LCA) is a systematic set of procedures for compiling and examining the inputs and outputs of materials and energy and the associated environmental impacts directly attributable to the functioning of a product or service system throughout its life cycle (US Environmental Protection Agency, 2010).

Thanks to design for environment processes, designers and product managers can analyse the environmental impact from a product during its whole life span, so this process allows them to carry on modifications in different product development stages for minimizing its impact (Billatos & Basaly, 1997; De Mendonca & Baxter, 2001).

Currently, these eco-innovative practices, energy efficiency and corporate social responsibility (CSR) are the leading trends being carried out by companies that are looking for improving their sustainable management. But those practices, managed as just parts or fractions, within the whole company are insufficient in order to achieve a long-term sustainability (Bocken et al., 2014).

Therefore, the only way to achieve a long-term sustainable society and economy is creating new sustainable business models and integrating sustainability into the business models of existing companies. Sustainable business models incorporate a triple bottom line approach which considers financial results but also environmental and social benefits. For this reason, sustainable business model will take in account actors that used to be external for the company as NGO's or providers that have embraced sustainability.

So, these authors propose a categorisation of “sustainable business model archetypes” to unify these disparate contributions that deliver sustainability from the literature and practice under a common theme.

The eight archetypes developed are:

Market opportunities for deploying eco-innovation actions: from the analysis to the development of a business model.

1. Maximise material and energy efficiency
2. Create value from 'waste'
3. Substitute with renewables and natural processes
4. Deliver functionality, rather than ownership
5. Adopt a stewardship role
6. Encourage sufficiency
7. Re-purpose the business for society/environment
8. Develop scale-up solutions

The following image deploys the eight archetypes grouped according to their business model innovation and shows some examples (Figure 1):

Groupings	Technological			Social			Organisational	
	Maximise material and energy efficiency	Create value from waste	Substitute with renewables and natural processes	Deliver functionality rather than ownership	Adopt a stewardship role	Encourage sufficiency	Repurpose for society/environment	Develop scale up solutions
Examples	Low carbon manufacturing/ solutions	Circular economy, closed loop	Move from non-renewable to renewable energy sources	Product-oriented PSS - maintenance, extended warranty	Biodiversity protection	Consumer Education (models); communication and awareness	Not for profit	Collaborative approaches (sourcing, production, lobbying)
	Lean manufacturing	Cradle-2-Cradle	Solar and wind-power based energy innovations	Use oriented PSS- Rental, lease, shared	Consumer care - promote consumer health and well-being	Demand management (including cap & trade)	Hybrid businesses, Social enterprise (for profit)	Incubators and Entrepreneur support models
Additive manufacturing	Industrial symbiosis	Zero emissions initiative	Result-oriented PSS- Pay per use	Ethical trade (fair trade)	Slow fashion	Alternative ownership: cooperative, mutual, (farmers) collectives	Licensing, Franchising	
De-materialisation (of products/ packaging)	Reuse, recycle, re-manufacture	Blue Economy	Private Finance Initiative (PFI)	Choice editing by retailers	Product longevity	Social and biodiversity regeneration initiatives ('net positive')	Open innovation (platforms)	
Increased functionality (to reduce total number of products required)	Take back management	Biomimicry	Design, Build, Finance, Operate (DBFO)	Radical transparency about environmental/ societal impacts	Premium branding/ limited availability	Base of pyramid solutions	Crowd sourcing/ funding	
	Use excess capacity	The Natural Step	Chemical Management Services (CMS)	Resource stewardship	Frugal business	Localisation	"Patient / slow capital" collaborations	
	Sharing assets (shared ownership and collaborative consumption)	Slow manufacturing			Responsible product distribution/ promotion	Home based, flexible working		
	Extended producer responsibility	Green chemistry						

Figure 1. The sustainable business model archetypes (Bocken et al., 2014).

With the purpose of offer a brief summary of the eco-innovation practices shown in this article, the Table 3 has been performed:

Market opportunities for deploying eco-innovation actions: from the analysis to the development of a business model.

Klewitz & Hansen, 2014	Cheng, et al, 2014	Russo-Spena, 2015
Innovations related to the production of goods and services	Eco-process	Cleaning up the landscape
Organizational innovations	Eco-product	Connectic life and work
Product innovations	Eco-organizational innovations	Boosting the efficiency of processes
<b>EXAMPLES</b>	<b>EXAMPLES</b>	<b>EXAMPLES</b>
End-of-pipe solutions and cleaner technologies	Greener process and less energy consumption	Promoting outsourcing and reducing operating resources.
Reorganization of routines and structures	Light packages	Virtualizing the working
Eco-design and low energy consumption	Environmental relationships between stakeholders	Implementing green processes and monitoring resources consumption

Pujari, 2004 (Environmental new product development (ENPD))	Bocken et al., 2014 (Sustainable Business Models archetypes)	
<b>EXAMPLES</b>	<b>Technological</b>	<b>EXAMPLES</b>
Upfront proficiency	Maximise material and energy efficiency	<b>Technological</b>
Cross-functional coordination	Create value from waste	Lean manufacturing and low carbon solutions
Supplier involvement	Substitute with renewables and natural processes	Renewable energy sources and zero emissions initiatives
Design for environment/life cycle analysis	<b>Social</b>	<b>Social</b>
	Deliver functionality rather than ownership	Product longevity and frugal business
	Adopt a stewardship role	<b>Organisational</b>
	Encourage sufficiency	Licensing, franchising and crowdsourcing
	<b>Organisational</b>	
	Repurpose for society/environment	
	Develop scale up solutions	

Table 3. Summary of the eco-innovation practices studied in this article.

## 6 - FINDINGS OF ENVIRONMENTAL MATTERS PENDING TO BE SOLVED OR IMPROVED

Currently, due to the more restrictive environmental legislation and the customer awareness, there are some trends that are generating new kinds of business models which has the sustainability integrated into their core business.

As this is a recent field of study, it is hard to find scientific literature about this topic. So, the most reliable sources for retrieving this data are reports and papers published by consultancy companies and private Foundations.

There are numerous environmental issues still pending to be solved (Figure 2).

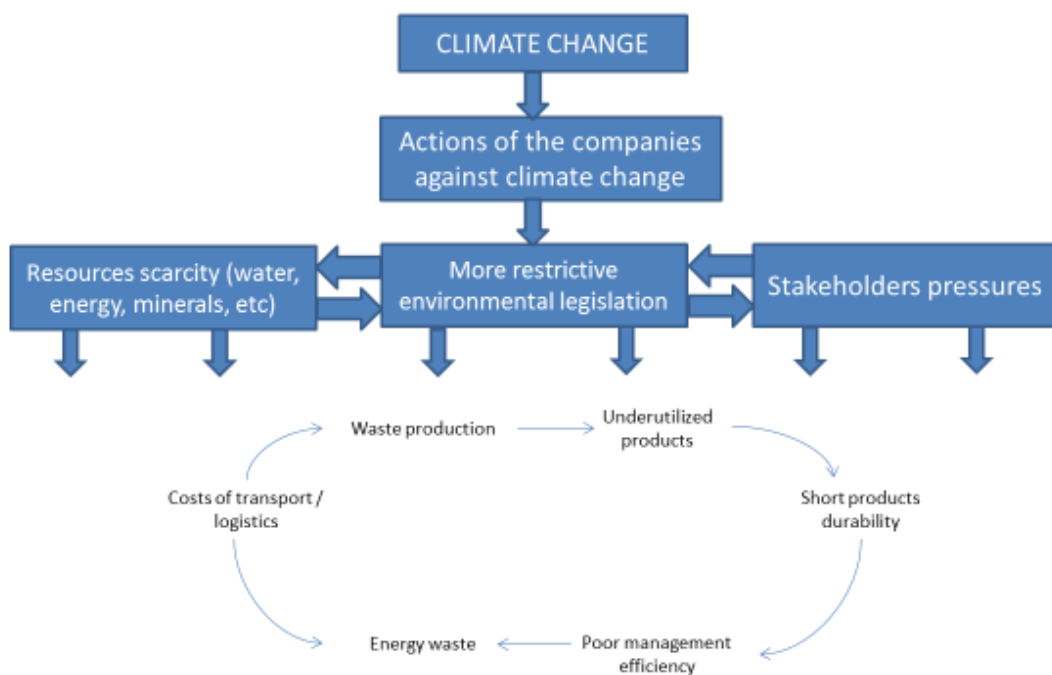


Figure 2: Drawing that highlights the most common environmental issues that companies are facing.

Intensive industrial economy is based on consuming natural resources for producing consumer goods, that is causing environmental damage as pollutant emissions, resources scarcity which leads to climate change. Therefore, companies need to tackle climate change mainly for two reasons:

- Adapting their business processes to the environmental legislation.
- Satisfying the stakeholders pressures. For instance, consumers are more aware about sustainable production and consumption, Public Administrations can require to be provided by companies that carry on sustainable practices, etc.

The following figure shows the most important environmental matters that companies are still trying to solve or improve obtained from a study performed by McKinsey & Company (2011) (Figure 3):

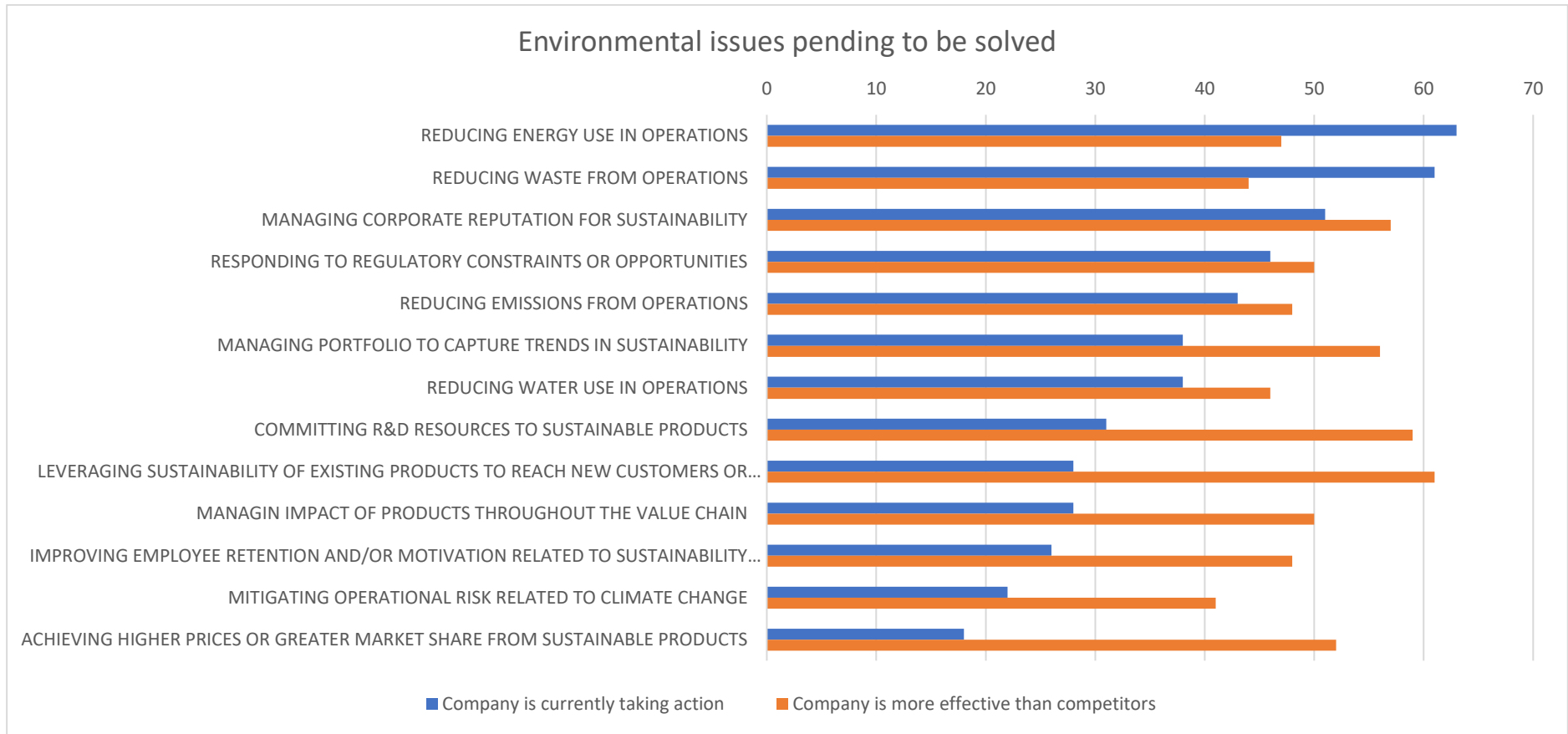


Figure 3: Results from a poll about the environmental issues pending to be solved (McKinsey & Company, 2011).

\* % of respondents, 1n = 2.956 (respondents who answered 'don't know' or 'none of the above' are not shown).

Regarding to these results, the areas where most executives say their companies are taking action are reducing energy usage and reducing waste in operations, ahead of reputation management. Fewer respondents report that their companies are leveraging the sustainability of existing products to find new growth or committing R&D resources to bring sustainable products to market. Yet both of these are important ways sustainability can drive growth: organizations that act in these areas are the likeliest to say they are more effective than their competitors at managing any other sustainability initiatives. These results suggest that companies may be better able to find a competitive advantage when pursuing growth activities than operational activities.

Companies are also integrating sustainability across many processes, according to respondents: 57 percent say their companies have integrated sustainability into strategic planning (Figure 4). The most integrated area is mission and values, followed by external communications, while the least integrated areas are supply chain management and budgeting. That said, sustainability has stayed at about the same place on CEOs' agendas, and about the same share of respondents say they have formal programs to address it.

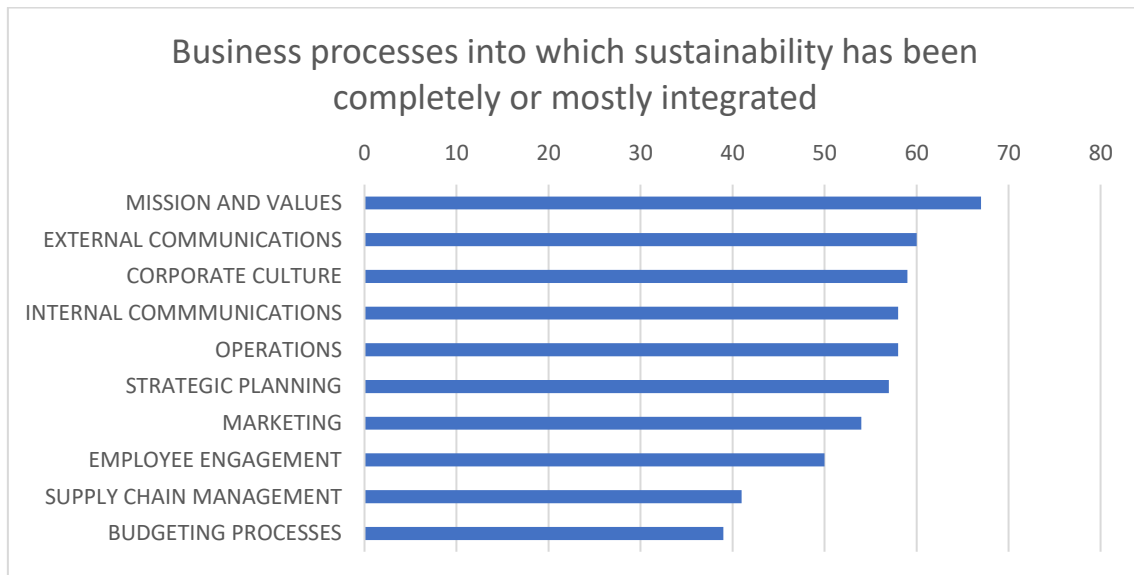


Figure 4: Results from a poll about the integration of the sustainability into the strategic planning (McKinsey & Company, 2011).

Overall, the relationship between sustainability and quantifiable value is still somewhat unclear, executives indicate: about one-third of respondents say they don't know how much sustainability initiatives add to shareholder value at their companies.

Companies are not doing as much to integrate sustainability into internal communications or employee engagement as they are into other areas of business, such as strategic planning. With 53 percent of respondents saying company performance on sustainability is at least somewhat important to attracting and retaining employees, companies that take action are more likely to gain an advantage in employee retention. The leaders are better at engaging employees on this issue (and at keeping employees at all levels more informed), suggesting that it's possible to make the most of this opportunity in sustainability.

Coupled with the shift in reasons for pursuing sustainability, from reputation management to operational improvements and new growth opportunities, the overall high degree of integration seems to indicate that companies have become more business like about their sustainability agenda. Most companies, however, are still struggling to factor sustainability into the “hard” areas of their business, such as supply chain and the budget, so there is still a lot of potential to drive further integration and increased value creation.

## 7- BUSINESS OPPORTUNITIES FOR SOLVING THE ENVIRONMENTAL ISSUES

Currently, due to the more restrictive environmental legislation and the customer awareness, there are some trends that are generating new kinds of business models which has the sustainability integrated into their core business.

McKinsey estimates that the clean-tech product market, for example, will reach \$1.6 trillion by 2020, up from \$670 billion in 2010 (McKinsey & Company, 2011).

### 7.1 – Business model and sustainable business model definition

A business model is a conceptual tool to help understand how a firm does business and can be used for analysis, comparison and performance assessment, management, communication, and innovation. Business models are concerned with how the firm defines its competitive strategy through the design of the product or service it offers to its market, how it charges for it, what it costs to produce, how it differentiates itself from other firms by the value proposition, and how the firm integrates its own value chain with those of other firms in a value network (Osterwalder & Pigneur, 2005).

A business model is defined by three main elements (Bocken et al, 2014): the value proposition, value creation and delivery and value capture (Figure 5). Value creation is at the heart of any business model; businesses typically capture value by seizing new business opportunities, new markets and new revenue streams. While the value proposition is typically concerned with the product and service offering to generate economic return, in a sustainable business, the value proposition would provide measurable ecological and/or social value in concert with economic value. Value capture is about considering how to earn revenues (i.e. capture value) from the provision of good, services or information to users and customers.

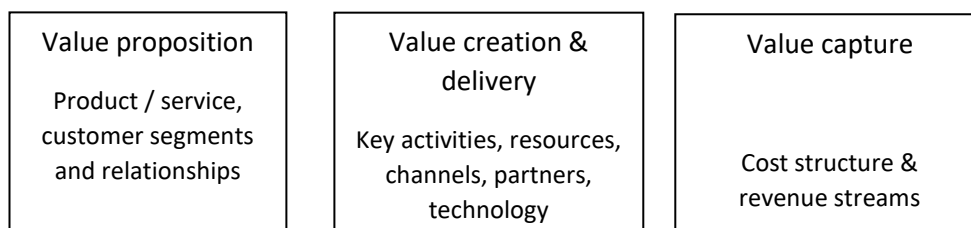


Figure 5: Conceptual business model framework (Bocken et al, 2014).

The business model encourages the entrepreneur to

- Conceptualize the venture as an interrelated set of strategic choices.
- Seek complementary relationships among elements through unique combinations.
- Develop activity sets around a logical framework.
- Ensure consistency between elements of strategy, architecture, economics, growth, and exit intentions.

Strategic choices that characterize a venture are made both intentionally and by default.



## 7.2 – Sustainable business model

Lüdeke-Freund (2010: p. 23) describes a sustainable business model as ‘a business model that creates competitive advantage through superior customer value and contributes to a sustainable development of the company and society’. Business models preserve the environment, while continuing to improve the quality of human life. Stubbs and Cocklin (2008) assert that sustainable business models use both a systems and firm-level perspective, build on the triple bottom line approach to define the firm’s purpose and measure performance, include a wide range of stakeholders, and consider the environment and society as stakeholders. Extending this, a sustainable business model aligns interests of all stakeholder groups, and explicitly considers the environment and society as key stakeholders.

## 7.3 – New sustainable business models

Recent studies (Secretaría Técnica del Laboratorio de Ecoinnovación, 2016) says that there are mainly four business trends which are leading this new wave of sustainable business trends (Figure 6), we can divide them in two lines:

- New sustainable businesses based on technological innovation.
- New sustainable businesses based on social innovation.

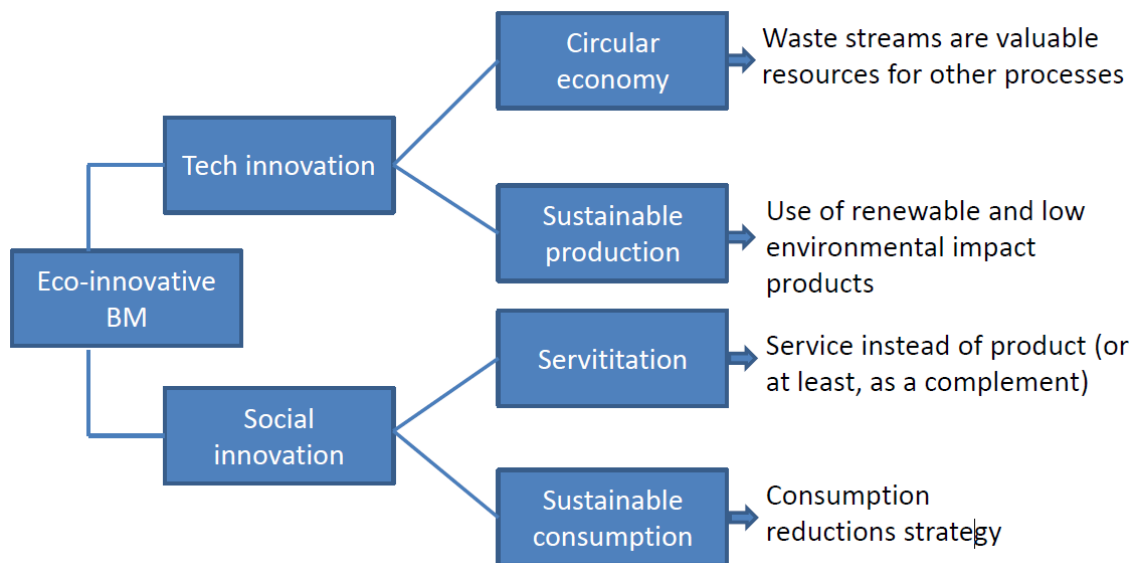


Figure 6: Diagram that shows the new trends on sustainable businesses.

In the following sections, there is a brief explanation of each of those business models, the environmental issues that have been presented previously that they are solving and examples of real business.

#### 7.4 – Circular economy

The concept of 'waste' is eliminated by turning waste streams into useful and valuable input to other production and making better use of under-utilised capacity. Figure 7 shows the 'create value from waste' archetype (Bocken et al, 2014).

It seeks to identify and create new value from what is currently perceived as waste. This approach has similarities with the natural world, where the concept of waste does not really exist because all 'waste' products become food stock for another natural kingdom (Boons & Lambert, 2002).

This trend seeks to reduce environmental impact of industry by reducing the continuous demand for resources, by closing material loops and using waste streams as useful inputs to other products and processes, so reducing demand for primary extraction and resource depletion, and reducing waste to landfill and emissions.

In doing so, it contributes towards improved resource efficiency. However, to achieve greater system-level impact, the speed of new product introductions needs to be reduced.

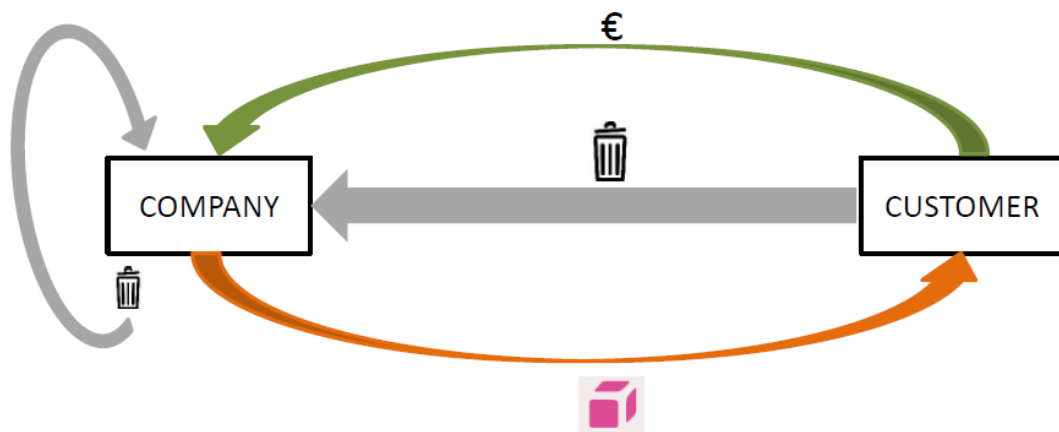


Figure 7. Diagram of a business model based on circular economy.

According to new Accenture research (Accenture, 2015) the circular economy could generate \$4.5 trillion of additional economic output by 2030.

#### PROBLEMS SOLVED:

- Reducing waste from operations.
- Responding to regulatory constraints or opportunities (laws that push the waste reduction).
- Managing impact of products throughout the value chain (as some products will be reused, the environmental impact is lower).

#### 7.4.1 – Examples of businesses based on circular economy

ANYPLAST: Anyplast is a marketplace which connects companies that produce plastic wastes with companies that can use these wastes as a resource of their processes.



Figure 8: Logo of Anyplast.

#### 7.5 – Sustainable production

Sustainable production aims to reduce environmental impacts and increase business resilience by addressing resource constraints 'limits to growth' associated with non-renewable resources and current production systems.

It seeks to reduce environmental impact of industry by substitution with renewable resources and natural processes to create significantly more environmentally benign industrial processes. It contributes to the wider need of reducing, the use of the planet's finite resource supply and reducing unwanted waste and pollution.

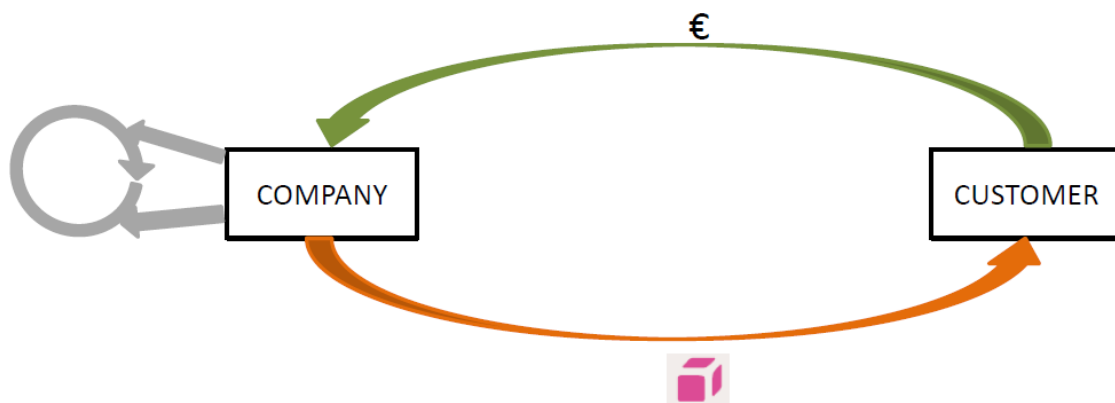


Figure 9. Diagram of a business model based on sustainable production.

#### PROBLEMS SOLVED:

- Reducing energy use in operations / Reducing emissions from operations / Reducing water use in operations.
- Committing R&D resources to sustainable products.
- Leveraging sustainability of existing products to reach new customers or markets.
- Managing impact of products throughout the value chain.
- Mitigating operational risk related to climate change.
- Achieving higher prices or greater market share from sustainable products.

### 7.5.1 – Examples of businesses based on sustainable production

CHIPOTLE: Chipotle is a restaurant chain that serves sustainable Mexican food. The food served in the restaurants comes from local farms, which reduces the transport environmental impact, animals are fed in a sustainable way, avoiding intensive practices.



Figure 10: Logo of Chipotle.

### 7.6 – Servitization

Servitization provides services that satisfy users' needs without having to own physical products.

This kind of business trend is based on the way that companies shift the business model from offering a manufactured product to offering a combination of products and services. The product is still important, but customer experience is fundamental to the offering or value proposition. Product service systems span a continuum from mainly product through to mainly service content (Tukker, 2004).

This is about shifting substantially towards the pure service model that is, delivering functionality on a pay-per-use basis, rather than selling ownership of a product. In doing so, this may fundamentally change the material throughput requirements of the industrial system. The literature suggests the following potential benefits of such an approach, which result from better alignment of the customer's (and societies) needs with that of the manufacturer:

- Breaks the link between profit and production volume (but probably not usage volume).
- Can reduce resource consumption.
- Motivation and opportunity to deal with through-life and end-of-life issues as the manufacturer retains ownership of assets.
- Enhanced efficiency in use.
- Enhanced product longevity/durability.
- Reuse of materials.

This trend has the potential to change consumption patterns, in particular by reducing the need for product ownership. In addition, it may incentivise manufacturers to develop products that last longer and design for upgradability and reparability, potentially reducing resource use. However, literature and practice indicate that servitized systems and models are not inherently more eco-efficient (Mont & Tukker, 2006) and consumers are unsure whether they will live up to their expectations (Catulli, 2012). Careful attention to detail is required to realise the benefits,

such business model innovation generally needs to be married with efficiency and value in waste innovations. In addition, to achieve greater system-level impact, product and service usage volume would also need to be mitigated.

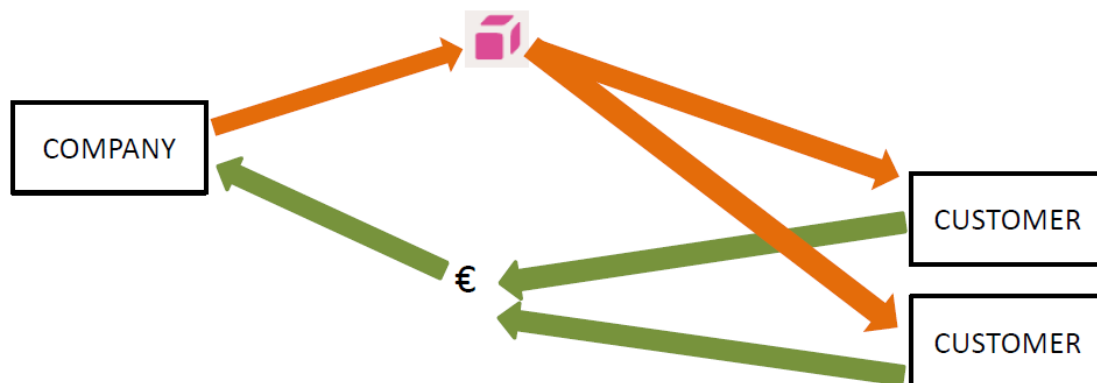


Figure 11: Diagram of a business model based on servitization.

#### PROBLEMS SOLVED:

- Leveraging sustainability of existing products to reach new customers or markets.
- Achieving higher prices or greater market share from sustainable products.

#### 7.6.1 – Examples of businesses based on servitization

AXIOMA: Clothes used by surgeons when they are operating (called pyjamas) are a single-use product.

Axioma offers pyjamas that can be washed and reused several times instead of traditional one single-use clothes. The company is on charge of delivering, collecting and washing the clothes.

So, the company is substituting a disposable product for a new one that can be used numerous times.



Figure 12: Logo of Axioma.

#### 7.7 - Sustainable consumption

Businesses models based on sustainable consumption are solutions that actively seek to reduce consumption and production and they aim to address this, by tackling sustainability from the perspective of sustainable consumption.

These businesses have a particular relevance in developing the sufficiency-based business model is the reframing of the value proposition to better address the broader range of stakeholders in a firm. Furthermore, the sufficiency approach should inform the appropriate use of advertising, sales and growth targets. On a systems level, this could reduce over consumption, and hence material and energy throughputs.

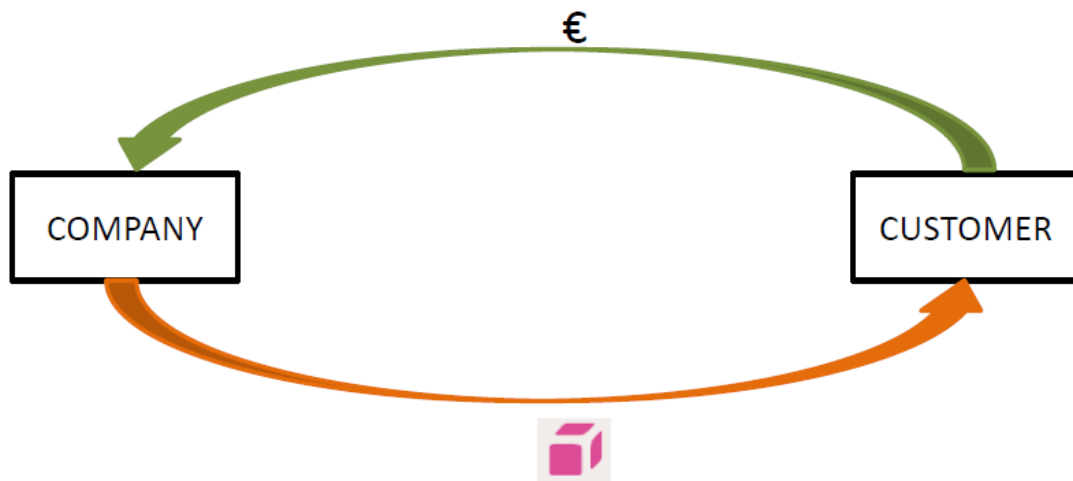


Figure 13: Diagram of a business model based on sustainable consumption.

#### PROBLEMS SOLVED:

- Committing R&D resources to sustainable products.
- Leveraging sustainability of existing products to reach new customers or markets.
- Achieving higher prices or greater market share from sustainable products.

#### 7.7.1 – Examples of businesses based on sustainable consumption

**PATAGONIA:** Patagonia is a clothing company that has developed a web platform offering advice about repairing damaged clothes, some tips in order to customer's clothes lasts longer and even a marketplace where customers can buy second hand Patagonia clothes.



Figure 14: Logo of Patagonia.

## 8- DISCUSSION

This section will present a guiding thread that will show how companies have changed their vision and actions related to the environmental protection, how they will lead with it in the future and also how the new business trends can reshape the way we do business.

Therefore, as it has been presented previously, companies have gone through a long way related with the sustainability (Figure 15).

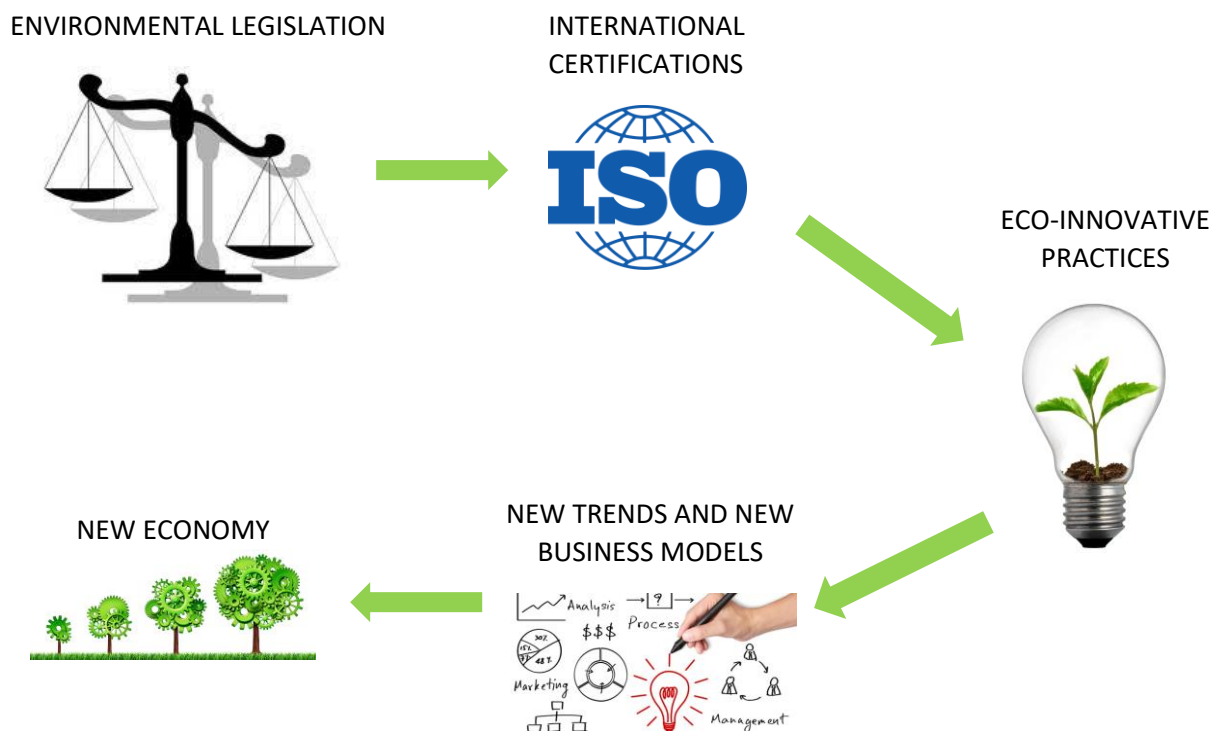


Figure 15. Diagram that shows how environmental protection has evolved last years.

Decades ago, companies began to be concerned about environmental protection when Governments and Public Administrations decided to regulate it.

Then, some years later the most aware companies adopted some international certifications, e.g. ISO 14001, EMAS, etc.

As the society's sensitivity towards sustainability has been increasing, some companies have enhanced projects in order to go beyond the mere certifications and integrate the sustainability into their business processes. For that reason, they have been developing different kinds of eco-innovative processes.

However, companies are still facing several environmental issues. There are some issues that are still present and companies have been dealing with them for a long time, e.g. recycling, water

treatment, etc. And there are new issues like managing the reputation for sustainability or leveraging sustainability of existing products which managers are handling recently.

Therefore, those issues are being perceived as market niches so there are new business trends coming out for solving from the most common issues (e.g. waste treatment) to the most recent issues (leveraging sustainability of existing products).

As it has been presented previously, there are new start-ups trying to solve these problems, but also existing companies are solving these problems changing or creating new business processes. For instance, circular economy can solve problems related with the waste generation and servitization can solve problems of sustainable consumption.

Therefore, the interaction of existing companies with start-ups can lead to the generation of more businesses, more opportunities and more possibilities that can improve our environment.

There is an interesting ecosystem of start-ups and existing companies innovating through their products, supply chains, etc. in order to become more sustainable.

Nowadays, companies are still working quite isolated, but there are more and more companies looking for the collaboration of other companies and also consultants because they want to implement sustainable strategies within their business processes.

### 8.1 – Reshaping economy and society

Mostly, these new trends are changing the way that we consume products and use services. The four trends presented previously are extremely correlated. Due to the circular economy, we will reuse products that traditionally used to become waste, this is intimately connected with the sustainable production, because normally products that need to be transformed into a new one after its life span, it is necessary to manufacture in the most sustainable way.

This trend will grow exponentially not just because people are more concerned about environment, also because Public Administrations, Governments, European Union, etc. are promoting this economy deeply. For instance, European Commission (2015) published an ambitious Circular Economy Package to boost competitiveness, create jobs and generate sustainable growth.

Then, another trend that is already reshaping the way we consume products and services is the servitization. This trend is being powered by the way the new young people consume products and services. Currently, young people prefers having less properties (cars, houses, etc.) in order to rent what they need or share with other people. As a result of this there are some new companies like Bla Bla Car (González et al, 2015).



Figure 16: Company's logo of Bla Bla Car.



Fundamentally, what those companies do is turning a product into a service. Those companies don't have any stock of cars, but they are offering a product (a car) as a service (transport from one point to another).

So, this kind of businesses will reduce the product consumption (there will be less people buying cars) and it will increase the usage rate of existing products, which also reduces the emissions (drivers can occupy spaces in their cars when they are travelling) (Figure 17).



Se estima que, sólo en el último año, se han ahorrado más de 1.000.000 de toneladas de emisiones de CO<sub>2</sub>

Figure 17: Statement published in the website of Bla Bla Car ([www. https://www.blablacar.es/conoce-blablacar/que-es-blablacar](https://www.blablacar.es/conoce-blablacar/que-es-blablacar)).

Translation: "It is estimated that only in the last year, more than 1,000,000 tons of CO<sub>2</sub> emissions have been saved"

Currently, these trends are changing dramatically the economy. Keeping the track of the example of Bla Bla Car, this company is changing the way we go from one city to another, and that is causing several complaints and strikes. For instance, the association that defends the Bus companies (CONFEBUS) took Bla Bla Car to the court arguing that they were making unfair competition. However, finally the court dismissed the claim (Aznar, 2017).

As stated before, part of the success of these business models is thanks to the new way of consuming of the young people, however, the economy will be strongly reshaped when big companies realize that and embrace it.

## 8.2 - New potential trends for sustainable businesses and possible new business models

Additionally, taking in account the paper written by Kahn (2017), the SEC's (U.S. Securities and Exchange Commission) proposed rules require firms to go through a process of "self-discovery" to learn about what new risks they face. For firms that have already gone through this process privately, the regulation will not lead to new information for the firms themselves, but by having to disclose the information, shareholders and potential investors will be better informed.

This will create more market accountability and will incentivize such firms to hire environmental and logistics consultants to offer solutions that reduce the firm's risk exposure. Such consultants might suggest strategies such as having contingent backup supply chains — for example, what steps can be taken to guarantee that Starbucks does not run out of coffee beans for a month? Geographic locations could be ranked by their climate resilience so that a company like Google does not keep its servers in a place that is at risk of extreme disasters.

Different companies will learn about different risks. Some may learn that their current headquarters faces a flood risk, while others may learn about their exposure to much higher electricity bills due to dynamic pricing or power blackout risk at factories in the developing world. Some may learn about transport logistics risks such as not being able to send big ships down the Mississippi River because of drought.

The net effect of these disclosures will be that firms increasingly invest in resilience in order to claim that they are making progress in limiting their risk exposure. As these firms demand new solutions to their challenges, new entrepreneurs will appear to supply them. In this sense, the SEC disclosure rules will help to accelerate adaptation so that fewer sectors will be vulnerable to extreme weather events.

After the information presented in this report it is not an overstatement to say that sustainability and its integration into the businesses, Administrations and other organizations like NGO's is still taking off. In this work have been presented interesting business practices and also, those practices can be boosted and improved due the innovation policies carried on by Public Administrations and Governments. For instance, European Union has prepared numerous laws and subsidies in order to boost circular economy.

Once analysed the sustainable business trends which are currently defining businesses, it is interesting to outline how will look like the sustainable business trends in the future.

According to Whelan and Fink (2016), companies are investing in improving their sustainability in the following topics, where there is still a long path to go through:

- Improving risk management.
- Fostering innovation.
- Financial performance.

### 8.3 – Improving risk management

Supply chains today extend around the world, and are vulnerable to natural disasters and civil conflict. Climate change, water scarcity, and poor labour conditions in much of the world increase the risk. McKinsey reports (Sheila & Swartz, 2014) that the value at stake from sustainability concerns can be as high as 70% of earnings before interest, taxes, depreciation, and amortization.

In the agriculture, food, and beverage sector, the impacts of climate change have the potential to alter growing conditions and seasons, increase pests and disease, and decrease crop yields.

Disruptions in the supply chain may affect production processes that depend on unpriced natural capital assets such as biodiversity, groundwater, clean air, and climate. These unpriced natural capital costs are generally internalized until events like floods or droughts cause disruption to production processes or commodity price fluctuation.

### 8.2 - Fostering innovation

Investing in sustainability is not only a risk management tool; it can also drive innovation. Redesigning products to meet environmental standards or social needs offers new business opportunities.

### 8.3 - Financial performance

In addition to the financial benefits that accrue from increased competitive advantage and innovation as discussed earlier, companies are realizing significant cost savings through environmental sustainability-related operational efficiencies. Moreover, investors are now able to track the high performers on ESG (environmental, social and governance factors) and are correlating better financial performance with better ESG performance.

Mounting evidence shows that sustainable companies deliver significant positive financial performance, and investors are beginning to value them more highly. Arabesque and University of Oxford reviewed the academic literature on sustainability and corporate performance and found that 90% of 200 studies analysed conclude that good ESG standards lower the cost of capital; 88% show that good ESG practices result in better operational performance; and 80% show that stock price performance is positively correlated with good sustainability practices (Clark et al., 2015).

One study found that morale was 55% better in companies with strong sustainability programs, compared to those with poor ones, and employee loyalty was 38% better. Better morale and motivation translate into reduced absenteeism and improved productivity. Firms that adopted environmental standards have seen a 16% increase in productivity over firms that did not adopt sustainability practices.

The preponderance of evidence shows that sustainability is going mainstream. Executives can no longer afford to approach sustainability as a “nice to have” or as solid function separated from the “real” business. Those companies that proactively make sustainability core to business strategy will drive innovation and engender enthusiasm and loyalty from employees, customers, suppliers, communities and investors.

## 9 – CONCLUSIONS

Embedding sustainability into business not only helps secure a sustainable future but it also benefits companies, enabling them to prepare for future risks, act on opportunities and creates more value for the business and its stakeholders.

As it has been presented in this work, the way companies have been dealing with sustainability has changed dramatically last years.

Decades ago companies faced the environmental protection established by the legislation created by Governments, but years later some companies saw the environmental protection as an opportunity and decided to adopt certifications like the ISO or EMAS.

However, as the society is getting more concerned about the environmental impact of the products and services they consume, there are companies that are embracing sustainability further than the certifications and are improving their business processes through eco-innovative practices.

Even some companies have been working hard for improving their sustainable performance; there are still several environmental issues that cannot be eliminated. The most common environmental issues are recycling, product improvement for reducing its environmental impact or energy efficiency management.

As each problem can lead to a business opportunity, there are entrepreneurs that have identified potential niches from the needs that are under-satisfied and have created new sustainable business models.

Those new sustainable business models are classified on the following business trends:

- Circular Economy
- Sustainable Production
- Servitization
- Sustainable Consumption

**Circular economy** aims to turn waste into valuable materials for other processes or users. *E.g. Some apparel companies are taking back used clothes from customers in order to recover the fabrics to use them in new clothes.*

**Sustainable production** consists in the use of renewable and low environmental impact products. *E.g. Supermarkets that only offer ecologic products produced through sustainable processes.*

**Servitization** tries to turn products into services. *E.g. Companies based on sharing, like car sharing. Users offer their cars (product) for taking people from one point to another (service).*

**Sustainable consumption** has as the purpose of reduce the consumption of products and services. *E.g. Clothes companies that show tips to their customers for expanding the life-span of their products.*

Moreover, these trends are not only coming from new companies, existing companies are also integrating this way of doing business into their business processes.

So, due to these kinds of business trends, economy is going from an industrial and manufacturing more based to services. This means a reduction of the number of products that need to be manufactured.

However, the real payoff will come only when multiple players across the business and research communities, supported by policy makers and investors, come together to reconceive the most critical and key industrial processes and flows of materials and products. This will affect dramatically to manufacturing companies and logistics.

Presently, multiple stakeholders are mobilizing and being concerned about the sustainability and the huge benefit they can contribute to the society, there are several Foundations and organizations, even consultancy companies (e.g. Ellen McArthur Foundation, IDEO, Laboratorio de Ecoinnovación) promoting sustainability in different ways (e.g. promoting the circular economy or sustainable consumption) through numerous stakeholders.

Society and economy is changing, companies and users are concerned about sustainability and there are numerous entrepreneurs, company's owners and customers that will place sustainability as one of the most important points in order to use or buy a product. So, there is still a long path to go through which will generate new kind of business models, ways of consume and even interact between companies and customers.

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