Market Research and Business Plan for a Forestry Start-Up based Carbon Compensation Services

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Thesis to obtain the Master of Science Degree in

Energy Engineering and Management

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November 2019

Abstract

The purpose of this document is to analyse the current markets and frameworks affecting Corporate Social Responsibility (CSR) and the forestry sector in Spain, with the analysis of this information we then chose a business model plan for a start-up idea willing to promote carbon compensation projects sponsored by private companies as part of their CSR strategy, in privately owned forests in Spain. The window of opportunity lies on the synergies found between the increasing interest of the private sector to look for different ways to positively impact the environment and reduce the carbon footprint associated with business activities and the increase in terms of abandoned forestall area privately owned and with limited access to economic resources. First, a literature review has been conducted including CSR trends in Spain and current legal and natural frameworks of the Spanish forests. This was followed by a market research which included surveys to different companies in the private sector and private forestall landlords, interviews with experts and a competitor's analysis. Finally, the business plan was defined and outlined, determining the main value proposition as a service providing a network of stakeholders, being able to overcome the complex technical, legal and administrative framework where the development of these forest carbon compensation projects builds upon.

Keywords

Sustainable Forest Management, Carbon compensation, Carbon offset, Corporate Sustainable Responsibility, Business Model Plan

Resumo

O objetivo deste documento é analisar os mercados e estruturas atuais que afetam a Responsabilidade Social Corporativa (RSE) e o setor florestal em Espanha. Com a análise dessas informações, escolhemos um plano de modelo de negócios para uma ideia de start-up disposta a promover o carbono em projetos de compensação patrocinados por empresas privadas como parte de sua estratégia de RSE, em florestas de propriedade privada em Espanha. A janela de oportunidade está nas sinergias encontradas entre o crescente interesse do setor privado em procurar maneiras diferentes de impactar positivamente o meio ambiente e reduzir a pegada de carbono associada às atividades de negócios e o aumento em termos de área florestal abandonada de propriedade privada e com limites limitados. acesso a recursos econômicos. Primeiro, foi realizada uma revisão da literatura, incluindo tendências de RSE na Espanha e estruturas legais e naturais atuais das florestas espanholas. Isso foi seguido por uma pesquisa de mercado que incluiu pesquisas para diferentes empresas do setor privado e proprietários florestais privados, entrevistas com especialistas e uma análise da concorrência. Por fim, o plano de negócios foi definido e delineado, determinando a principal proposta de valor como serviço que fornece uma rede de partes interessadas, sendo capaz de superar a complexa estrutura técnica, jurídica e administrativa em que o desenvolvimento desses projetos de compensação de carbono florestal se baseia.

Palavras Chave

Gestão Sustentada da Floresta, Compensação do carbono, Responsabilidade corporativa sustentada, Plano de Negócio

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1 Introduction

The importance of forest acting as vital contributors to society, biodiversity and climate change resilience cannot be denied. Forests and other wooded lands worldwide protect soils, provide clean air and water, are home of three-quarters of the terrestrial flora and fauna species, and serve as a source of medicine, food and energy for population established in rural areas. Moreover, forests across the earth surface play a key role in the mitigation, resilience and adaptation to climate change, absorbing an equivalent of approximately 2 billion tonnes of carbon dioxide per year (FAO, 2018). Sustainable forest management is comprised in the UN 2030 Agenda, under the 15th Sustainable Development Goal (SDG), and has been included by several countries within their National Determined Contributions (NDCs) by reducing deforestation, forest degradation, afforestation and enhancement of forestall carbon stock.

Spain is a highly vulnerable country with respect to climate change impacts due to its social-economics and geographical characteristics. Desertification, decreasing water resources, changes in rainfall patterns and increasing temperatures are some threatens Iberian forests will face in the near future. Consequently, the physiology of the Iberian forest species will change, with a loss of biodiversity. Although the Iberian forests are currently acting as carbon sinks, with climate change predictions, fire, draughts and plagues risks threaten to convert these carbon sinks in carbon net emitters (Rodriguez, 2005). Deepening into this matter, a further disadvantage in Spain with regards to improve forest management towards climate change threats is the nature of its ownership, since 70% of the forestall area is owned by private landlords with limited resources or drive to ensure an adequate and sustainable forest management within their lands.

In this scenario, engagement of both public and private sector is crucial for the integration of sustainable forest development in Spain. Through the European Union 2014/95/EU directive, large entities are compelled to disclose non-financial information regarding their sustainable practices in terms of social and environmental development. In addition, the Spanish government through the royal decree-law 163/2014, created the Voluntary Registry of Carbon Footprint, following an assessment of all the registered companies and their efforts towards the reduction of Green House Gases (GHG) emissions ascribable to their economic activities. This legal framework and administrative policies encourage the development of Corporate Social Responsibility (CSR) strategy within the private sector.

The Spanish Business Council for Sustainable Development is Forética, an association promoting the integration of social, environmental and good governance management within business organizations. Forética encourages private sector companies through different programs, guidelines, sustainability indexes and researches measuring the financial performance indicators behind sustainability strategy and the potential with regards to international trend and brand image behind these policies.

1.1 The business idea presented

In the context presented above, we developed “Gestión de Activos Ambientales” (GAA as per its acronym in Spanish which can be translated to Environmental Asset Management), this is start-up idea initiated in 2017 after detecting a connecting link in the shortage of the resources of the primary sector in Spain, mainly in forestalls lands, and the newly created needs of the secondary sector or enterprises with regards to their environmental and social responsibilities. The newly created company based in Madrid, aims to close this gap finding symbiosis between these two very different entities in benefit of both parties and society as a whole. Consequently, the main objective of the presented document and the market research include in it, is to assess and analyse the feasibility of GAA start-up idea in the current market and find the best suitable business model to implement it.

The term “natural capital” defines the world’s stocks of natural assets including renewable and non-renewable assets. It is due to this natural capital that society is able to derive a range of benefits and services, which can be measurable. The valuation of the natural capital in agro-forestall lands can be measured as direct, indirect, present and future services provided to society from these ecosystems.

Understanding the key role of natural assets in providing environmental unique services and being able to quantify them, lead us to natural assets valuation techniques. Valuing natural resources services enables us to give these services an economic value, integrating them as another business activity.

Although we believe that developed countries luckily own a high quality and valuable natural assets, in GAA we believe these assets are being undervalued by society and business entities. Given the fact that natural assets can be hard to define in terms of ownership, quantity or management, these assets are hard to value and easily given for granted.

To properly define GAA business proposal, the first party to define is the agro-forestall sector. In developed countries such as Spain and Portugal, the exploitation of the economic activities related with this sector is not competitive enough due to higher production cost in comparison with other markets and substitutive products based in developing countries. The lack of competitiveness in the sector translates in an alarming reduction of forestall activities and the abandonment of agricultural and silvicultural lands across the Iberian Peninsula. With this situation, GAA would like to emphasize the need of this sector to come up with new business ideas and models to remain competitive and highlight the importance of this sector as part of natural capital, for example providing services in the preservation of water and soils or acting as carbon sinks.

On the other hand, the second party to define are medium and large enterprises and the relatively newly created need to invest in sustainability and environmental programs. This need is not only due to directives and public perception. Now a days, larger companies are more willing to include environmental initiatives within their core strategy in the shape of Corporate Social Responsibility and Environmental Management programs. These initiatives are created following standard procedures to

report them such as the Global Reporting Initiative or the environmental index proposed by the Spanish association Forética.

The fundamental value proposition of GAA is based on the synergies found between these two parties. These can be defined in three different propositions:

1. GAA aims to provide a database or portfolio listing a valorisation of several private and public forests and other wooded lands. In this portfolio a valuation of each property is listed with an evaluation of the potential services and goods that might be provided in benefit of the landowner and private Corporate Social Responsibility (CSR) programs. CSR can be defined as an strategy that helps companies to be socially and environmentally accountable. An example of this can be the development of a natural recreational area or a CO2 capturing field.
2. GAA aims to offer consulting services to large corporations implementing feasible sustainability policies and advising on Natural Capital investments. In addition, GAA is willing to offer forestry consulting services to private and public forestall landowners.
3. GAA aims to create a certified Natural Capital market to implement property and services right agreements and perform ongoing monitoring activities on the projects developed, ensuring all parties fulfil their commitments.

1.2 Research paradigm and Research Questions

An authors' ontological (the nature of our beliefs about reality) and epistemological (the nature and forms of knowledge) way of conceiving the world, shape and mark the path on how we formulate and solve our research questions. The awareness of these philosophical assumptions helps us define the methodology and methods to be followed to discover and/or interpret the research findings.

Thomas Kuhn popularized in 1962 his definition of research paradigm, a term described by himself as a set of common beliefs and agreements shared or agreed by scientists about how problems are to be addressed and understood. In addition, this same author set the tradition that once a researcher chooses a paradigm; it is advisable for the researcher to remain with it.

As a simplified approach, we can discuss three main research paradigms:

- Positivists believe there is a single reality, measurable with hypothesis empirically tested. This approach is likely to use quantitative methods and prefer the empirical nature of studying facts. It is the preferred method for pure sciences and believes in the governance of objectivism, measurability, predictability, probability and controllability of human behaviour.
- Constructivists or interpretive believe there is no single truth and reality needs to be interpreted to discover underlying meanings. Social sciences usually use a constructivist approach to human-behaviour with the use of qualitative research

- Pragmatics are in between these research paradigms as they portrait an ever-changing reality that must be constantly debated and interpreted. It combines both qualitative and quantitative research methods.

The nature of the research questions proposed below, which involve the interpretation of reality from different stakeholders, affected by a changing environment both in political, social and natural terms, lead us to use a more constructivists research paradigm approach.

With regards to the importance of all the parties involved in the successful development of this business proposal idea, the main objectives of the market research exposed in this document are as follows:

a. To gain insights and understanding of the market for forestall and environmental services for corporations willing to invest on CSR in Spain.
b. To understand and gain perspective on the contextual framework, in legal and environmental terms, for forestall landowners, their needs and their willingness to collaborate with third parties in Spain.
c. To develop a strategic business plan capable to accommodate the synergies found in the needs of all parties.

To reach this aims or objectives, the following research questions are formulated:

- *What are the current trends for CSR development in Spain and which kind of environmental related projects are these companies willing to support?*
- *What are the current needs for the Spanish forestall landowners to be able to sustainably manage their properties?*
- *Which kind of forestall projects can be developed in behalf of CSR programs that could bring social and environmental benefits in such a way that could provide an economic valuation?*

Thus, the methodological approach of the thesis will be based on a constructivism approach, it is needed to mention that we will rely on the study and analysis of existing literature, to ensure a suitable dialog with all parties during the interviews and surveys phase.

1.3 Structure and Theoretical Framework

The structure of this thesis is constructed in three main phases that are recycled and cyclically revisited, the review of literature, the market research, the description of the chosen business model and as final conclusions.

The literature review starts with research on how the positive environmental impact of the project will be linked to the SDGs at a global and local level Spain. Secondly, we will review the CSR activities and inclinations in large Spanish corporations and current CSR program trends. Lastly, the review on the

literature will follow in terms of current forestalls needs, legal and natural framework of the forestry sector in Spain and the typology of projects and methodologies that GAA could potentially follow.

So as to obtain deeper understanding of the problem and gain further comprehension on stakeholders and their needs, several qualitative market research activities have been taken, including interviews with experts, surveys and competitor's analysis. The results arising from this market research helped us construct a business plan closely related to what we interpret the market segment and market needs are.

With the data collected during the literature review and the market research phase, we could discuss and interpret the feasibility and scalability of a new business model idea which aims to connect CSR programs of large corporations and medium enterprises with the forestall needs of rural areas of the Iberian Peninsula.

The results will be used to understand stakeholder involvement in the presented business plan, and which business strategy is the one we believe is most suitable to the market needs given the research finding interpretation. In addition, the business plan is presented in this document, as the literature review and the market research findings aim to serve as a substantial guide for the development of GAA in the eventual scenario where a business proposal is presented to external funds such as Venture Capitals, funds or start-up accelerators.

1.3.1 Theoretical framework

The purpose of the theoretical framework presented is to review the definition and methodologies followed for the development of a successful business plans for start-up projects. To be able to develop this particular definition, several books and papers on business management fields have been studied gaining knowledge of both empirical experience of authors and concept-based definition by literature.

In addition, there is a description of the business plan development methodology followed during this start-up process, where there is an emphasis on the importance of progressive research and the ability of a business plan in a "lean start-up methodology" to continuously interpret the data collected so as to pivot, and fine tune each aspect of the business design.

1.3.1.1 Business plan definition

A business plan is a document that describes and analyses your business idea to be able to commercialize it towards potential investors and stakeholders (Schwetje, 2007). An adequately written business plan should also cover the financial aspects of starting and developing the business (Bruno, 2005). In addition, it should lie out the milestones for investors and give a portrait of realistic scenarios, detailing its problems, risks and obstacles together with proposed solutions. This last feature is key to build credibility around this document (Swanson, 2017).

Externally it serves the purpose of main financial tool for a newly created company, as most investors require a written business plan in order to consider your proposal. It helps a company communicate the underlying opportunity, the context in where the company operates and portrait the expectations about the nature of an uncertain future. Furthermore, it helps third parties understand your business and how it is financially sustainable (Swanson, 2017).

Internally, a business plan serves its purpose by defining the mission, vision and strategy of a novel company. It should be an ever evolving and regularly updated "live" document. Furthermore, this document helps decision makers gain insights of the company structure, understand strengths and weaknesses, improve business concepts and see where and how to pivot or fine-tune the business design (Bruno, 2005).

For young companies in an early stage, such as this one, the length of the business plan falls into somewhere between 10 and 25 pages. The document should enclose all relevant information, as its final goal is to convince potential investors of your deep understanding of entrepreneurial business and the market you are operating in. Embedded in this information, for higher required capital companies, it shall contain a thorough market research and analysis, together with a 5 years period financial plan (Schwetje, 2007).

1.3.1.2 Innovative & Sustainable Business Models Categories

Depending on different authors business models can be classified in a wide vary of manners. Traditional classifications usually address four key characteristics of business models: identification of clients, consumer's engagement, raise of values and income (Ludmiła Walaszczyk, 2018). Traditional authors tend to focus on individual models while others started producing different classifications defining different archetypes. Johnson (2010) or Osterwalder and Pigneur (2010) developed classifications through business analogies including some well-known examples like the "razor-blade" model from Gillete or the "freemium" model from Spotify. On the other hand, authors like Michael Rappa (2001) and Weill and Vitale (2001) chose to develop archetypes based on the understanding of different e-business models such as the atomic e-business models (Fielt, 2013).

Given the sustainable and environmental approach we would like to follow for this start-up idea, we have chosen to follow a classification based on sustainable business models' archetypes developed by Lindsay Clinton & Ryan Whisnant for SustainAbility in 2014. The classification includes 20 business models' archetypes grouped in five categories. These categories are: environmental impact, social impact, financial innovation, base of the pyramid and diverse impact. Below described, some of the business models defined by Lindsay Clinton & Ryan Whisnant that we have found applicable to GAA value proposition and main operating activity (Majeski & Sylvan, 2014).

Financial Innovation

- **Freemium** – Offer a property product or service for free, invoicing a premium fee for advance features or functionality. Business model commonly utilized to extend product lifecycles and create brand engagement. As an example, since 2013, SolarCity, a company that designs, installs and finances solar systems offers a free energy exploring app to enable customers pinpointing inefficiencies.
- **Pay for Success** – Performance based contracting between social services providers and governments. The model increases efficiencies in government funds use and encourages better performance by service providers.
- **Subscription Model:** customers pay recurring monthly or annual fees to gain temporary access to a product or service. Model used to lower barriers to entry green innovations. A good example is the company BetterPlace. Although the car battery switching company was not a successful company, they created an innovative model based on subscriptions from miles.

Diverse Impact

- **Alternative Marketplace** – A company avoids using traditional transaction methods inventing a new type of transaction. They provide an environment to match unused supply and unmet demand.
- **Behaviour Change** – companies aiming to stimulate behavioural changes of costumers in terms of acquiring deeper knowledge on consumption habits and other patterns. The main strength of this model is based on brand trust and engagement. As an example of Behaviour Change business model, Opower is a software company partnering with energy utilities to promote energy efficiency among energy users, offers dashboards for consumer engagement and education on energy savings.
- **Shared Resource** – model based on sharing economy principles where owners share their goods to costumer for a given period of time. Increases efficiencies and productive use of the resources. This model is dependent on the participation and engagement of owners and users to operate successfully. The best-known example of this model is Airbnb, which provides a platform for owners to rent an unused living space for a short-term period.

The business model archetype we have found most aligned with this start-up idea is the shared resource model. We aim to provide a platform for public or private forestall owners with unexploited or unused land could benefit from private sector CSR funded forestall projects in their property by renting, improving or selling natural assets during the project lifecycle. The value for the companies would be a “Forest Renting” model over a period of time to offset carbon footprint and GHG emissions or promote other sustainable policies within their CSR. In this sense, GAA also includes somehow an alternative marketplace approach, creating an environmental project portfolio where landowners could apply for funding and companies could invest in some proposed projects.

With regards to financial innovation models, we see a window of opportunity both in the pay for success and subscription model. For SMEs not willing to invest large quantities, a subscription model could apply to a “share of a sustainable forest management program” for a fixed time span. On the other hand, as an approach to public administration, performance-based contracting is align with our on-going certification methodology, where all our projects are continuously monitored until the end of their lifecycle.

Finally, and as part of the future company development, other business models could be adopted, including freemium apps to calculate carbon footprint offset investment or behavioural change activities. Behaviour change models are extremely interesting for us since GAA is a locally based company, therefore we could benefit from fostering sustainability related employee team-building activities or environmental awareness campaigns for clients at locally restored recreational areas.

1.3.1.3 Business Plan Development Methodology

Regarding the business plan development process, after carefully considering several options, we will follow that one suggested by Lee A. Swanson in the book “Business plan development Guide”. We have chosen this methodology as it follows an interpretative approach of all the data collected and immediately analysed to construct changing and evolving business models through the research process.

The process is based in six different stages with a progressive research framework, which allows a progression of feedback loops, moving back a forward between the different stages. Due to the early stage of the business proposal idea of GAA, the document will focus on the development of the first three phases: Essential Initial Research, Business Model and Initial Business Plan Draft. The six stages can be shown in the figure 1 and described below:

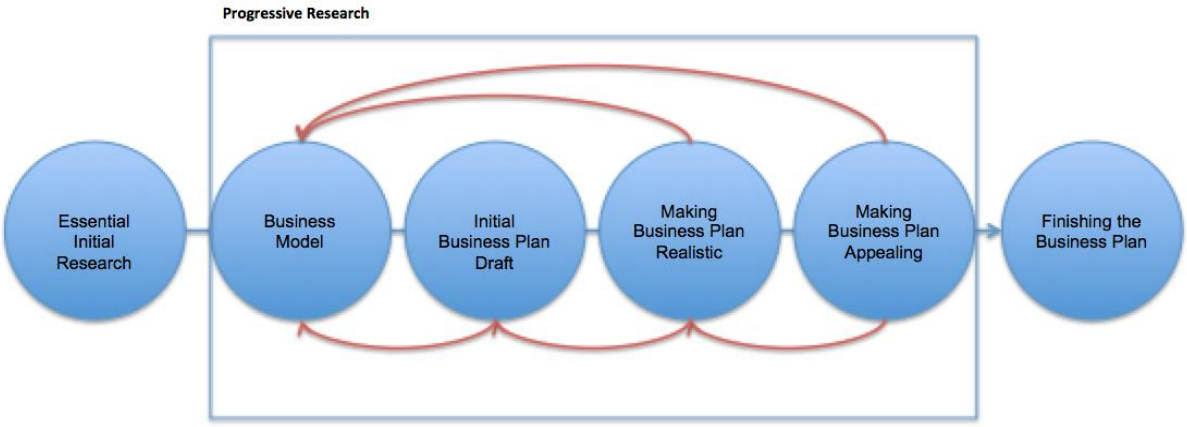


Figure 1 Progressive Research Framework, Source: Lee A. Swanson

- The Essential Initial Research or literature review is the first stage, where there is a need to analyse the environment where the company is to operate at different levels, in this case social, industrial and market analysis. This helps to better understand market trends and the political framework.
- The Business Model stage is a description of the model chosen by the entrepreneur and it might include elements of detail such as a business canvas with value proposition, revenue streams, cost structure, customer segment, key activities, key partners and resources. This stage is where the “lean start-up” approach takes place with a mind-set based on continually pivoting and fine-tuning the business design.
- The Initial Business Plan Draft aims to organize the knowledge and ideas shown in the last two stages into a business plan formal. This includes a description of the vision, mission and set of goals of the business plan. This stage includes both a preliminary financial and marketing plan.
- Making Business Plan Realistic makes sure the operating part of the business plan tells the exact same story as the financial part. Including all the necessary re-adjustments for the plan to be as realistic as possible.
- Making a business plan appealing to stakeholder and desirable to the entrepreneurs is the last stage including all the progressive research and readjustments undertaken to make the plan as appealing and profitable as possible.
- The last stage is finishing the business plan by creating a final version to present to potential investors and stakeholders, making sure that the financial part are accurate and adjusted to reality of the business.

2 Review of Literature

The essential initial research stage or review of literature is an analysis of the entrepreneurial environment and administrative framework status influencing our business plan. This will help us back the information given with the interpretations arose from the analysis of with valid

The review of the literature or initial research also helps us understand the broad movements of economy that vary with the changes of taste, trends and technology. The broader the knowledge on the proposed business fields, the more likely an entrepreneur is to predict whether the product or service will accommodate to future change in clients taste, predict future trends and adapt to new items or technological advances and its capabilities to adopt them, i.e. large-scale new technology require vast amounts of funding probably beyond small enterprises reach (Bruno, 2005).

For this stage, we will focus on the analysis of the relevant Sustainable Development Goals and the approach of the European Union towards them to have a better understanding of the social and political framework we will work in. Then we will analyse Corporate Social Responsibilities trends particularly in Spanish companies and institutions, as these will be our main clients, and what are the current services or programs they are implementing. We will analyse the current legal situation and environmental needs of Spanish forestall landowners to address how our innovative business model can improve their current and future situation. Finally, we will address what is the best methodology to calculate the positive environmental impact of the services to be developed by GAA.

2.1 Sustainable Development Goals (SDGs)

The sustainable development agenda for 2030 adopted by all the United Nations Member States in September 2015, provides the guidelines to ensure a prosper future through 17 Sustainable Development Goals (SDGs). The SDGs are the catalyst for the changes we need to address in a varied spectrum, from poverty ending to spur economic growth while fighting against climate change and preserve our natural resources (United Nations , s.f.).

The significant overlaps between one another, emphasizes the need to achieve the 17th as a whole rather than individually. Given the nature of these goals, the aim of the SDGs is not only to create a sustainable and just world, but also to promote different market opportunities, drive growth, lead in innovation and create new business models. Some of the business opportunities arising from the engagement with SGS for private corporations are brand enhancement and a source of competitive advantage. The actions taken on social and environmental responsibilities and/or obligations promoted by SGs are likely to derive in an improved customer experience and engagement. For small enterprises such as GAA, there are direct market opportunities created by addressing the SDGs, with new business models and technologies focused on sustainable outcomes (Starace, 2017).

Taking in consideration the drive for SDGs to foster new business opportunities, we have found valuable to analyse the 17th SDGs and SDGs specific targets to understand those more relevant to our core business proposal idea. As GAA works both with forestall landowners based in rural areas and companies willing to improve their approach towards a sustainable strategy, we have found valuable mentioning the following SDGs and relevant targets for our business:

SDG 11: Sustainable Cities and Communities

> 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage
>
> 11.A Support positive economic, social and environmental links between urban, per-urban and rural areas by strengthening national and regional development planning

SDG 12: Responsible consumption and production

> 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle
>
> 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

SDG 15: Life on Land

> 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
>
> 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
>
> 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development
>
> 15.A Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems

Through GAA, there is a clear objective of helping bigger enterprises to promote and develop some key actions to reach the above-mentioned targets.

Anticipating ourselves to a plausible investor question, we shall ask how likely European companies are to include SDGs targets within their business strategy. In April 2017, Globescan developed a survey for

the European business network CSR Europe, according to this source 79% of the 160 business leader answering this survey stated that the engagement with SDGs is in line with their corporate & sustainability strategy and 46% believed this incorporation can improve multi-stakeholder partnership. (Starace, 2017) Although this survey can be subject to discussion and needs deeper consideration in our local focus, the initial research shows a positive trend from European business leaders to partner and collaborate to address different SDGs within their corporations.

None the less, the integration of SDGs into large corporate business plans is still at a very early stage and encounters a number of obstacles. According to the survey presented by Globescan, 51% of European business leaders find low social awareness on SDGs as the main difficulty to include SDGs within corporate business plan. To backup this data, only 13% of the companies stated that SDGs are well known by employees at all levels, and 47% of the surveyed companies say that their top managers are not aware of the relevance of SDGs. Some other obstacles include lack of government commitment (36%) or approaches for implementing SDGs not clear (37%) (Starace, 2017).

Globescan document, presents a scenario where European business leaders are aware of the importance of integrating the SDGs within their business, but they need greater collaboration from governments, including local governments and multilateral institutions, to develop and circulate more tools and resources. As a result, the majority of these business leaders are willing to collaborate with business partners (63%) on SDGs development. Emphasizing again of the importance of not assuming the data above as absolute facts, the surveys allows us to believe there is an open door for proactively engaged institutions to become relevant by providing additional tools, solutions and information to help companies incorporate SDGs into their corporate strategy (Starace, 2017).

2.2 Corporate Social Responsibility

The European Commission defines Corporate Social Responsibility (CSR) as *"the responsibility of enterprises for their impact on society".* By offering different products and services companies have positive and negative impacts on society and environment. Companies engage in CSR when mitigate or prevent any negative impact by integrating social or environmental concerns into their business strategy (European Commission , 2019).

Regulatory bodies such as the United Nations, the European Union and local governments play a key role in the implementation of CSR programs within different sectors and company sizes, through guidelines and voluntary or mandatory policies. Despite the importance of the political drive in the implementation of this programs, it can be subject to discussion on whether this is the main driver for enterprises to integrate CSR within their core strategy. Other drivers for enterprises to implement these policies are the business opportunities enclosed in this implementation as it brings important benefits in terms of customer relationships, access to capital, innovative and efficiency of processes, risk management and cost savings.

At a Spanish level, the key data in terms of CSR is enclosed in the Multisectoral Study on CSR for Large Enterprises in Spain, a report developed since the year 2007 by the Ministry of Labor, Migrations and Social Security. This document analyses CSR trends in 112 of the biggest operating companies in Spain, out of which 24 participate in the IBEX35. The study differentiates six different aspects within CSR: CSR Management, CSR policies communication to clients and suppliers, ethics & governmental compliance, environmental dimension, external social dimension and internal social dimension. The data shown in this study has been used to interpret the current CSR trends in large Spanish companies. This being said, these findings are subject to discussion since the study does not include specific sector studies or companies of medium size and CSR trends are constantly evolving at a global and local level (Multisectorial, 2017).

In the year 2017, the latest version of the Multisectoral Study on CSR for Large Enterprises in Spain was released. According to the 2017 version, the results released show 98% of the companies surveyed implement integrate CSR in their core strategies (85% in 2015) out of this percentage, 94% of these companies implement environmental related policies. With regards to environmental matters, 76% of these companies have a defined GHG offset strategy[1] and 70% of these, publicly announces the given measures. It also increases the number of companies affiliated in the National Register of Carbon Footprint, from 27% to 37%. Finally, 44% of the respondents cause environmental harm in natural preserved areas and 40% of this promote restoration and compensation activities (Multisectorial, 2017). The data shown in this study highlights the increasing importance of CSR in large Spanish enterprises and provides positive feedback on the increasing trend of the actions held in the environmental dimension both by the GHG offset data and by the engagement in environmental restoration activities followed by the entities participating in the survey.

Spain is one of the leading countries in terms of the inclusion and quality of large companies CSR reporting as stated by the annual report on corporate responsibility reporting released yearly by KPMG (KPMG, 2017), with Spanish companies scoring above global (34%) and European (11%) averages in terms of social & sustainability reporting. Although the study provides useful information on CSR trends, the results must be taken with careful consideration, as in Spain only 0,1% of the companies are large enterprises, whereas 99,9% are SMEs. In terms of SMEs, only 4% of them integrate CSR policies leaving quite a large room for improvement. Given the great difference between the CSR engagement trends between SMEs and large enterprises, we can interpret that there is a window of opportunity to explore how to increase the CSR engagement in smaller entities (Silos; Ruiz; Granada, 2014)

2.3 Spanish forestall needs

Natural ecosystems, forests, and other forestall lands are linked to our own human-well being. Although many times neglected, the essential services of these ecosystems are key for human health ensuring better water and air quality, micro-climate regulation, carbon sequestration, providing natural recreation

[1] Offset GHG measures according to the relevant company emission results, sector and following the International GHG Protocol (Club de Excelencia en Sostenibilidad, 2017).

areas and preserving biodiversity. Today's society is failing when trying to appropriately determine the value of these ecosystems' degradation of natural assets and loss of biodiversity. It can be understood that for urban society the most attractive service of this ecosystems is the provision of natural recreational areas; whereas for rural societies, tangible economic resources such as hunting activities or timber production is their main key driver for the forestall ecosystem preservation. Finally, it should be underlined that for society, forestall lands play a key role in climate change mitigation and adaptation. These lead us to believe that finding the right balance in between urban and rural needs is key to achieve sustainably managed forests.

With 27.7 million hectares of forest area or 55.6 % of the national territory, Spain is the second EU-27 country, only after Sweden in terms of total forest area. This being said, it is extremely difficult to describe or categorized the forestall typology of the Iberian Peninsula. It is a territory with an extremely varied morphology, extended plateaus, fluvial plains and elevated mountain ranges exceeding 3000 meters height; a varied range of climates such as Atlantic, Continental and Mediterranean; and dependent on location and geography different soil and terrain characteristics. Therefore, it is advice that the forestall data taken into account must be seen as an indicator of the overall estimation of Spanish forest areas (Costa, Morla, & Sainz, 1998).

2.3.1 Natural Framework

The current status of forest areas in Spain is closely related to two main factors: climate and human interaction with the natural environment. These two main influencing features characterize and differentiate Iberian forests, presenting a wide varied of forests showing different typologies and characteristics.

The Iberian Peninsula has been inhabited for thousands of years, this presence derived to an extensive anthropisation of the land. The condition of Iberian forests is closely tied to the socio-economic development of the civilizations established in the peninsula. Alongside with human progress, the anthropogenic footprint interfered and shaped forest ecosystems. As many other regions, since the introduction of agriculture, Spain and Portugal inhabitants actively impacted and took advantage of a wide variety of services provided by forests, with periods of extensive deforestation and shorter periods of forest regrowth, mainly due to the plague during the 1300s. Only after the late 1700s, with the threat of timber shorting, European countries began to implement policies to protect and preserve forestall resources. The new forestall policies brought afforestation and reforestation programmes, introducing exotic species on abandoned agricultural land and replacing broadleaved forest with large coniferous reforestations (European Environmental Agency, 2006).

The geographical location of the Iberian Peninsula provides a unique territory in terms of climate diversity and therefore, this geographical area enjoys great biodiversity and landscape variety. In terms of orography, the Pyrenees, the Sistema Central, the Macizo Galaico and the Cordillera Betica among

other mountain ranges, provide further variety of environments and ecosystems. Being one of the 25-biodiversity hotspots in the world, unsurprisingly the Iberian Peninsula is considered one of the most biodiverse regions in Europe. The effect of climate and physical environment on living organisms is studied by the field of bioclimatology. According to Rivas-Martinez, Spain can be divided in three bio-geographical regions: Euro-Siberian region, Mediterranean Region and Macaronesian Region in the Canary Islands. This very uncommon variety of bio-geographical regions for a European country, make the Iberian Peninsula an extremely heterogeneous territory in environmental and natural terms. This heterogeneous variety leads to a need of tailoring sustainable forest management plans for each region, finding different needs depending on each region characteristics. (Rivas-Martínez, 1987).

Focusing on the two main regions, the Euro-Siberian region is characterized by a humid climate with cold winters and mild summers. Influenced by the Atlantic Ocean cost it comprises the Pyrenees, the Basque Country, Cantabria, Asturias, the Galician mountains and northern Portugal. Most productive forest in this region are eucalyptus (*Eucalyptus globulus),* pines (*Pinus pinaster* and *Pinus radiata*), deciduous oak forests (*Quercus robus* and *Quercus patreaea*), and at a mountain level beech (*Fagus sylvatica*) and silver fir (*Albies alba*). The Mediterranean region is predominant in the rest of the Iberian Peninsula and the Balearic Islands. The region is characterized by high to mild temperatures, lengthy summer droughts, moderate rainfall and some areas with extremely low temperatures during the winter. The Mediterranean forest is generally composed of evergreen trees such as Pyrenean oaks (*Quercus Pyrenaica*), Holm oaks (*Quercus ilex*), cork oaks (*Quercus suber*), Spanish junipers *(Juniperus thurifera)* and pine forests (*Pinus uncinata and Pinus sylvestris*) among other species (Costa, Morla, & Sainz, 1998).

The forest area represents that area covered by forests and other wooded land. Combining the Euro-Siberian, Mediterranean and Macaronesian regions, forests in Spain cover 18.3 million hectares and other wooded land area occupies a total of 9,4 million hectares. In terms of vegetation, forest typology is divided in broadleaf, coniferous and mixed mass. Broadleaf trees belong to the botanical group of angiosperms (cased seed) with flat leaves and seeds being produce inside fruits. Coniferous trees are those belonging to the botanical group of gymnosperms (naked seed) with needle-like leaves and wood cones. In order to consider a coniferous or broadleaved forests, the occupation of the land needs to be greater or equal to 70%. According the Spanish Ministry of Agriculture and Environment, 47% of the forest is broadleaved, 35% is coniferous and 18 % is mixed mass. The forest area annual growth rate in Spain is 2,19%, well above the European mean.

The estimation of growing stocks volumes serves as an indicator for sustainable management in forest areas, it considers the balance between net annual increment and annual felling. In addition, this indicator provides information on the quantity of biomass stocks available in forests and an estimation of the carbon accumulated in these ecosystems. Growing stocks are measured through “volume of wood over bark” (VoB). Currently Spanish forest account more than 928 million m^3 VoB with a distribution of 57% coniferous and 43% broadleaved. Although this indicator has almost doubled in the last 35 years, Spanish is one of the European countries with lowest growing stock density.

The forestall biomass expressed in terms of dry weight of live biomass is another basic indicator of the productivity and sustainability analysis of forestall ecosystems. It also helps us understand the forest energy potential and the carbon fixation service provided. In these terms, the quantification of the forest functions in terms of carbon sinks and GHG offset is one of the most relevant measures for adequate forest investment. In Spain, the aboveground live carbon biomass reached in 2012 a total of 422 million tonnes, equivalent to 1547 million tonnes of CO^2 (Agresta & Inca, 2012).

Forest area in Spain serves multiple purposes in terms of preservation of hydrological cycles, biodiversity, air purification and climate change mitigation, fixing 24% of national GHG emissions. Although Iberian forests are undergoing a period of expansion, this can be considered an evolution based on the natural regeneration of forest on abandoned agricultural land, as a large percentage of the forestall territory in Spain is currently abandoned. The lack of the promotion of forestall economic activities and the low investment in sustainable forestall management programs is causing these forests to accumulate combustible biomass, increasing forestall fire risk. On the other hand, the productive capabilities of Spanish forest are not to be overlooked, with an improvable 45 million m^3 of timber production, and a current national timber consumption of 33 million m^3, Spain is still importing half of the timber used nationally due to a lack of suppliers and producers. We believe current forestall policies, forestall market structures and financial and legal instruments of the forestall sectors are obsolete given the actual scenario. This lack of engagement from the public administration partially contributes to this lack of competitiveness in the forestall sector. In GAA we believe there is a need for an economic push coming from the private or public sector that could promote activities to achieve an Iberian forest area sustainably and adequately managed (Herrero, Mayor, Pascual, & Rodriguez, 2013).

2.3.2 Spanish forestry health and vitality

Unsurprisingly, forestall areas are subject to different alterations, mainly due to climate and extreme meteorological events. Fires, droughts, landslides, plagues, invasive species, disease outbreaks, windstorms and hailstorms are some of the phenomena influencing forestall structure and composition. Climate change correspondingly affects the forest vulnerability to these hazards. Some of the effects of climate change in forest ecosystems are causing a growth in the amount of wood fuel or biomass stock, longer forestall fire seasons, an increasing frequency of extreme meteorological events, and the modification of insect's patterns and native forestall pathogens. In the described scenario, there is a costly investment needed for the development of plant-protection measures, biomass clearings and ongoing forestall monitoring.

One of the main European indicators to analyse the state of health of forests is defoliation, a measurement that monitors foliage of trees. Measurements are taken by numerical estimation of the state of defoliation from sampling points within Level I and Level II of the European Monitoring Network. In Spain, there are 620 sampling points belonging to Level I, and 30 sampling points belonging to Level II (established in larger plots). The results of these studies show a share of coniferous trees in a slightly better health than broadleaved trees. Spanish forests present only 3% of trees with severe (over 60%)

defoliation or dead, 13% with defoliation between 26 and 60% and 84% of the trees presenting less than 35% of defoliation. This information my lead to an interpretation that Iberian forests are in good health in comparison with the European average, with 77% of the trees with defoliation below 25%. Yet when comparing the data with historical data, studies show that Spanish forest health has been steadily decaying over the past decades, with healthy state trees percentage falling from 95% to 84%.

In most forestall studies research forestall damage is separated between forest fires and other forest damage caused by biotic, abiotic and human origin agents. The main forestall damages affecting Iberian forests will be described.

2.3.2.1 Forest Fire Damage

Forestall fires are one of the most relevant ecosystem alteration factors, playing a critical role in the process of regeneration, adaptation and evolution of natural ecosystems. Despite this, uncontrolled fires can cause extremely negative consequences such as biodiversity loss, soil and water erosion, human and economic losses.

Mediterranean countries have registered the largest number of forestall fires and affected area in the European Union in the past years. The highest values were registered in the Iberian Peninsula. Although, fire has been traditionally used in the Iberian Peninsula as a forestall management tool, rural abandonment has significantly changed the typology of the registered fires. The characteristics of the agro-forestall areas in the past decades have been progressively changing. Forestall areas now contain a larger amount of fine-grassed vegetation, which was previously used for live cattle and energetic purposes, it now present higher spatial continuity in terms of forestall fuel.

Between 1990 and 2010[2] the annual average number of forestall fires[3] registered in Spain was 17.864, with an annual average FOWL of 139.775 hectares affected annually. Forestall fires are categorize in low, medium or major forest fires. Major forest fires affect at least 500 ha and are the most relevant ones due to the duration and magnitude of the consequences caused. The annual average FOWL affected by major forest fires represents 39% of the total area affected.

With regards to the causes of forest fires they are categorized by:

1. Lighting
2. Recklessness or accidental causes
3. Intentional[4]
4. Unknown causes
5. Previous fire reproduction

[2] Last decade available data taken from the Spanish Ministry of Agriculture and Environment
[3] Forest fires are consider those fires affecting more than one hectare of FOWL
[4] Intentional causes mainly due to agricultural or cattle farming activities

Considerings recklessness and accidental causes and intentional causes, 78% of the fires have an anthropogenic cause and affect 82,6% of burned FOWL.

In terms of economic losses, the Spanish Ministry of Agriculture and Environment only considers as economic losses the loss of products or services and fire extinction costs, leaving aside social and environmental damage. Between the year 2008 and 2010, the average cost per hectare of forest fires was estimated in 616 euros / ha. In terms of product and services loss an annual estimated cost of 49.1 million euros and in terms of fire extinction a net cost of 5,4 million euros.

Although the number of forest fires registered in the past decades is declining, the FOWL area affected by fires, and the severity of these fires is increasing, with an increasing number of major forest fires registered. In addition, the lack of economic valuation of the social and environmental services FOWL areas provide, is leading to uncompleted evaluations of forest fires economic impact.

2.3.2.2 Other forest damage

Climate change is expected to affect forest vulnerability facing biotic, abiotic and human agents alterations. Although biotic and abiotic agents are natural components of the forest ecosystem development, and uncontrolled variation of these agents can lead to severe forestall damage.

The uncontrolled development of plagues and diseases might be caused by two main factors. The first one is the first one is the favourable climate conditions for the establishment and reproduction of insects and fungi and their adaptation to extreme weather conditions. The second one is the stress hosting trees are submitted to due increasing droughts periods or growing seasons, increasing its vulnerability against biotic agents.

At a global scale, the data and knowledge acquired regarding damaging insects and diseases affecting forest ecosystems is scarce. With only 32% of the global forestall area analysed and only 58 countries actively monitoring forestall resources. At a European level, forest damaged is analysed and identified by the sampling points of the European Monitoring Network and in accordance with standards set by ICP-Forests, using defoliation as its main indicator. At a European level, plagues and diseases damage an annual average of 1,3% of the European forestall areas.

In Spain, forest damage caused by abiotic agents is estimated to represent 31,5% and insects represent 24,8%of total damage. These parameters were determined with the data taken from the 620 points sampling points belonging to level I of the European Monitoring Network in 2011, therefore it should be taken as guides and site-specific studies are needed to gain deeper knowledge on each relevant region.

The table below shows all the categorize causes of forest damage[5] and the relevant percentages, see Table 1:

[5] Forest damage categorization based on agents causing more than 25% defoliation

Table 1 Causes of forest damage in Spain. Source: MAGRAMA

Cause of damage	Percentage of forest damage
Abiotic agents	31,5
Human behaviour	9,1
Hunting & grazing	0,3
Fungi	9,5
Fire	3,7
Insects	24,8
Unidentified	8,3
Others	12,8

As shown in the table above, insects are one of the most damaging biotic agents. *Thaumatopea pitycampa*[6], a defoliating insect, is considered the most common plague affecting Spanish forest ecosystems, followed by *Ips sexdentatus, Ips acuminatus* and perforators such as *Coroebus florentinus.*

Regarding fungi, *Phytophthora Cinnamomi* is causing holm oak (*Quercus Ilex*) decline disease and can affect other species such as cork, chestnuts and oak trees. This pathogenic agent causes root rots preventing water and nutrients absorption. The disease is causing severe damage to meadowlands, with high economic losses in regions like Extremadura, Andalucía and Castilla-La-Mancha.

The changes in the structure and management of natural ecosystems caused by biotic agents, together with the negative effects of abiotic agents such as floods, extreme temperatures or extreme meteorological events is affecting the production capacity of forestall ecosystems, therefore affecting development of rural economies.

2.3.3 Carbon Sinks

The ability of forest to act as carbon sinks is key in the context of mitigating climate change. In Spain, during the year 2014, it is estimated that forest areas absorbed 10% of the GHG emissions. The ability of forest to act as carbon sinks can diminish and some studies start to show signs of first stages in terms of forest saturation. In Mediterranean regions, this might be due to two main factors: lower increasing volume rates in trees and natural disasters. The first factor can be mitigated through the appropriate forestall management, regulating competition of the resources among trees. The second factor can be mitigated with the introduction of forest mass less vulnerable to forest fires, windstorms or hailstorms.

The main strategies related to the mitigation of climate change in carbon sinks are linked with sustainable forest management. The strategies are designed to maintain or increase the ability of forest acting as carbon sink, which includes reducing deforestation and forest degradation emissions, and substitute those products preventing sustainable forest management.

The ability to accurately evaluate carbon fixation and the comparison of carbon sink potential of sustainably managed forest against non-managed forests is key for the tangible valuation of the benefits

[6]Control measurements using pheromones as an effective test control. Pheromones results 13404/19906 control trees reported *Thaumatopea pitycampa*

provided by these strategies. Currently, there is not a common methodology for carbon fixation, as it is difficult to define a time span, disruptions and uncertain scenarios presented in different regions.

In this document, we would like to describe the methodology developed by the Intergovernmental Panel for Climate Change (IPCC) provided in 2006 in the Guidelines for National Greenhouse Gas Inventories, a document last updated recently in 2019. In this document, under volume 4 (Agriculture, Forestry and Other land use), chapter 3 (Forest lands) there is a detailed methodology for the estimation of GHG emissions and on FOWL. We believe this methodology is extremely valuable for us as it enables GAA to provide a valuation instrument in terms of impact of the service provided.

According to the IPCC directives, there are three tiers depending on the levels of detail for the measurements on carbon balance depending on the accuracy of the data used.

- Tier 1: estimated data, and factors provided by the IPCC guidelines
- Tier 2: country level data if available
- Tier 3: regional inventory database if available

Three main deposits determine the carbon balance of these ecosystems, see Figure 2.

1. Above-ground and below-ground biomass growth:
    a. Inputs: total biomass growth
    b. Outputs: round wood removal/harvest, fuel wood removal and losses from fires, biotic agents and other disturbances
2. Dead organic matter (not used in tier 1)
    a. Inputs: coarse wood debris, dead roots, standing dead trees
    b. Outputs: dead organic matter break down in carbon emissions
3. Soil carbon

a. This Measurement is elaborated on estimation procedures and good practices for estimating change in forest soil carbon stocks in each region

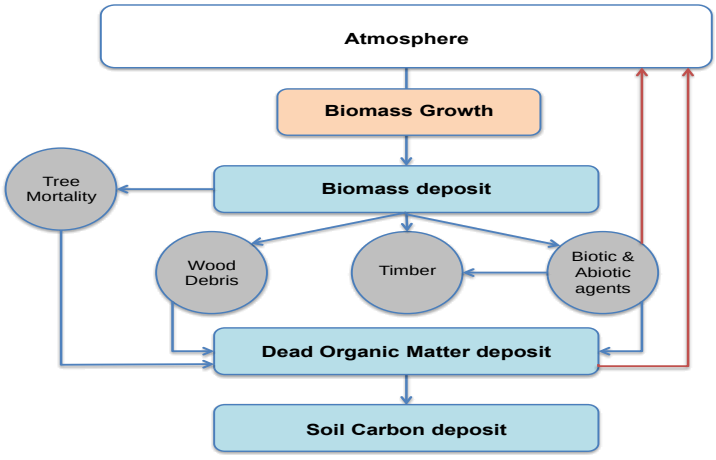


Figure 2 Carbon balance in forest ecosystems

Additionally, the IPCC Guideline provides two sub categories for the valuation of carbon sinks in forest lands: Forest Land Remaining Forest Land and Land Converted to Forest Land. Since unmanaged forests brought under management and artificial or natural plantations are considered Land Converted to Forest Land. It is only 20 years prior to an inventory year when lands converted to Forest Land are transferred to forest land remaining forest land. Therefore, we will describe the methodology used for an annual estimation of emissions and removals of GHG for the second sub category. Finally, we would focus on calculation methods for tier 1, since the data is obtained from national statistics, forestry agencies and the tables provided in the IPCC guide (Harald, 2006).

The calculation steps for Tier 1 change in carbon stocks in biomass are the following:

1. Estimate the area converted to forest land (*A*)
2. Separate the area according to intensively managed forest (plantation forestry) and extensively managed forest (natural regeneration)
3. Calculate the initial biomass loss due to land conversion ($\Delta C_{conversion}$).

$$\Delta C_{conversion} = \sum_{i} \left\{ \left(B_{AFTER_i} - B_{BEFORE_i} \right) * \Delta A_{TO\ OTHERS_i} \right\} * CF$$

Source: (Harald, 2006)

Where:

$\Delta C_{conversion}$= initial change in biomass carbon stocks on land convert to other land category (tonnes C yr $^{-1}$)

B_{AFTER_i}= biomass stocks on land type i immediately after conversion (tonnes dry matter ha $^{-1}$)

B_{BEFORE_i}= biomass stocks on land type i before the conversion (tonnes dry matter ha $^{-1}$)

$\Delta A_{TO\ OTHERS_i}$= area of land use i converted to another land-use in a certain year (ha yr $^{-1}$)

CF = carbon fraction of dry matter (tonnes C tonnes d.m $^{-1}$)

i = type of land use converted to another land-use category

4. Estimate the annual increase in cargo stocks in biomass on intensively managed forest (ΔC_G) and extensively managed forests (ΔC_G)

$$\Delta C_G = \sum_{i,j} \left(A_{i,j} * G_{TOTAL_{i,j}} * CF_{i,j} \right)$$

Source: (Harald, 2006)

Where:

ΔC_G= annual increase in biomass carbon stocks due to biomass growth by vegetation type and climatic zone (tonnes C yr $^{-1}$)

A = area of land (ha)

i = ecological zone

j = climate domain

G_{TOTAL} = mean annual biomass growth, is the total biomass growth expanded from the above-ground biomass growth (G_w) to include belowground biomass growth (tonnes d.m. ha $^{-1}$ yr $^{-1}$), R is the ratio of below-ground biomass to above-ground biomass for a specific vegetation type

$$G_{TOTAL} = \sum \{G_w * (1 + R)\}$$

Source: (Harald, 2006)

5. Estimate the annual carbon loss in biomass due to commercial fallings (tonnes C yr $^{-1}$)

$$L_{wood-removals} = \{H * BCEF_R * (1 + R) * CF\}$$

Source: (Harald, 2006)

Where:

H= annual wood removals, roundwood m^3 yr $^{-1}$

$BCEF_R$= biomass conversion and expansion factor for conversion of removals in merchantable volume to biomass removals (tonnes biomass removals / m^3)

6. Estimate the annual carbon loss in biomass due to fuelwood removal (tonnes C yr $^{-1}$)

$$L_{fuelwood} = \left[\{FG_{trees} * BCEF_R * (1 + R)\} + FG_{part} * D\right] * CF$$

Source: (Harald, 2006)

Where:

FG_{trees}= annual volume of fuelwood removal of whole trees (m^3 yr $^{-1}$)

FG_{part} = annual volume of fuelwood removal as tree parts (m^3 yr $^{-1}$)

R = ratio of below-ground biomass to above-ground biomass in tonne d.m.

D = basic wood density (tonnes d.m. m^3)

7. Estimate the annual carbon loss in biomass due to disturbances (tonnes C yr $^{-1}$)

$$L_{disturbance} = A_{disturbance} * B_w * (1 + R) * CF * fd$$

Source: (Harald, 2006)

Where:

$A_{disturbance}$ = area affected by disturbances (ha yr $^{-1}$)

B_w= average above-ground biomass of land area affected by disturbances (tonnes d.m. ha^{-1})

df= fraction of biomass lost in disturbance (a stand replacing disturbance will kill all biomass, fd=1, while an insect disturbance may only remove a portion, fd=0.3)

8. Estimate the total annual loss of biomass carbon stocks due to biomass losses (tonnes C yr $^{-1}$)

$$\Delta C_L = L_{wood-removals} + L_{fuelwood} + L_{disturbances}$$

Source: (Harald, 2006)

9. Estimate the annual change in carbon stock biomass

$$\Delta C_B = \Delta C_G + \Delta C_{CONVERSION} - \Delta C_L$$

Source: (Harald, 2006)

With regards to dead organic matter, for tier 1 is assumed that the conversion of unmanaged to managed forests lands is that dead organic matter carbon stocks are similar from one another and no carbon changes need to be reported.

For soil carbon stocks, these are estimated for mineral soils in tier 1 using the following equation:

$$\Delta C_{Mineral} = \frac{(SOC_0 - SOC_{0-T})}{D}$$

Source: (Harald, 2006)

Where:

SOC_0= soil organic carbon stock in the last year of an inventory period (tonnes C)

SOC_{0-T} = soil organic carbon stock at the beginning of the inventory time period (tonnes C)

D = Time dependence of stock change factors (commonly 20 years)

2.3.3.1 Carbon Sink Example

The location of the terrain is a municipality located in Cuenca, Castilla la Mancha, a region located in southeaster region of the Iberian Peninsula. The municipality is relatively close to the Mediterranean coast and enjoys a mild continental climate. As part of an initiative driven by the forestall landowner association of this region, sustainable forest management plan was developed for a region occupying a total forestall area of 7,93 Ha. As part of the sustainable forest management the property is assessed under a socioeconomic point of view as well as a environmental point of view an its potential acting as a protective land and carbon sink.

The project developed is to be registered under the National Registry of Carbon Compensation Projects as it includes reforestation of the area as core activity to be developed. To initiate activities the first step is to develop an initial forestall management plan, which includes determining the plot areas where reforestation will be developed. The plot where the reforestation project will be developed is located in the northern area of the municipality, about 1,3 km away from the urban area and it will occupy a total of 5,2 Ha. The chosen species to be planted are those most adapted to the terrain providing a high capacity of absorption and climate conditions. The chosen species are *Celtis Australis* and oak trees

Ulmus Sp, with a 30 year plantation period the estimated tonnes of CO2 absorbed per tree according to the guidelines provided by the Ministry of Ecological transition are 1,006 t CO2 per *Celtis Australis* and 0,27 t CO2 per *Ulmus Sp*. The plot size will be divided in a 7m by 7m grid with a total of 204 strains per hectare and 1050 trees in total. With this numbers and considering the 30-year period we obtain the following values

Table 2 Absorption example. Source: Own elaboration

	Year of Plantation	Strains	tCO2 per Strain	Total tCO2
Celtis Autralis	2020	525	1	528.15
Ulmus Sp	2020	525	0.27	141.75
			Total	**669.9**

The total value for forecasted absorbed tonnes of CO2 is equal to 669,9 tonnes for the 5,2 hectares plot. The value to be registered considered as "valuable" absorption is 20% of this number, 134 tonnes of CO2

2.3.4 Spanish Legal Framework for Forest Areas

In these documents, the typology of the forestall lands property is as follows:

1. Public FOWL: those lands belonging to the Spanish state, autonomous communities, local authorities or other public bodies. Public FOWL occupies approximately 9 million hectares of the forest area. Included in public FOWL, are the so called protected FOWL, lands that are essential to soil and erosion preservation, water supply in water or river basins, prevent rock falls, are key to biodiversity conservation, etc. Art 15 of the governing law states that authorizations for public FOWL economic activities can be granted by the local or regional administration.
2. Private FOWL: those lands belonging to a natural or legal person, as individual owners or under a co-ownership regime. Private FOWL occupies approximately 19 million hectares, out of which 2 million hectares fall under co-ownership regimes. Art 24. of the governing law states that any FOWL providing an essential environmental service as those provided by public protected FOWL, will be managed according to a specific legislation and any economic activity in this territory must be preciously approved by the forestall administration of the autonomous community.

From this data it can inferred that almost 70% of Spanish forest areas currently belongs to private owners. We believe this data renders the task to develop policies promoting sustainable forest management plans in private FOWL across the national territory (Ministerio de Agricultura, Pesca y Medio Ambiente, 2019).

The main policies used for forestry management are described under the FOWL 43/2003 law and are articulated at three different levels: the Spanish Forestry Strategy, the Spanish Forestall Plan and at a

local level the Forestall Resources Management Plans or PORF (“Planes de Ordenación de los Recursos Forestales”). PORFs are defined as a forestry management tool constituting the main guideline to manage and regulate forestall land in Spain as stated under the FOWL 43/2003 law.

The Spanish Forestry Strategy was developed according to the directives established by the European Union following the commitments established during the Intergovernmental Panel of Forests in 1997. The formulation of this strategy was established to meet international demands yet ensuring the adaptation of the strategy to the unique and varied features of Iberian forests. Therefore, this strategy was designed to distribute the competencies on forestall policies between the national administration and the autonomous communities. The objectives of the strategy generally speaking are to integrate and promote legal, economic and commercial frameworks in order to revitalise the forestall sector while ensuring a balanced management of the uses of forestall land and their diverse uses with ecological, social and economic purposes.

The Spanish forestall plan is the main tool to develop the Spanish Forestry Strategy, articulating the structure and required actions of forestall policies. It sets the objectives for 30 years, from 2000 to 2030, distributed in three main axes. Territorial management, including forestall areas and biodiversity preservation, sustainable forest management and reforestation programs. Socioeconomic objectives, including industrial development, recreational forestall activities and forest research programs. Finally, the administrative axis, main purpose is to include international coordination and forestall policies. This plan was updated in 2010 to include the development of forestall biomass sector for energy usage.

PORF represents the focal tool for FOWL sustainable management plans, providing the main working framework. These plans are elaborated and approved by autonomous communities and they represent the governing forestall management tool to be established within the relevant regional limits or jurisdiction of the plan. There are several PORF according to the different needs of forestall areas across the Spanish territory, meaning there can be more than one PORF per autonomous community. All in all, these plans provide the principal guidelines for forestall management projects and ensure the adequate alignment between the regional and national forestry strategies (Ministerio de Agricultura, Pesca y Medio Ambiente, 2019).

The minimum content required to develop a PROF Project includes:

1. Delimitation and characterization of the territory to be managed
2. Description and analysis of the natural environment, ecosystems and resources.
3. Legal framework according to property type, autonomous community and specific legislation for protected land if applicable
4. Socio-economic characteristics of the location
5. Usage zoning and economic valorisation of the terrain
6. Objectives and plan for the activities to be performed including detailed plans and forecasts in the reforestation species, hydrological restoration, fire prevention, recreational activities and economic usage

7. Required agreements and arrangements within landowners, national or regional administrative bodies and third parties
8. Directives for land-use development and forestall management ensuring the preservation of the natural habitat and productive or regenerative capacities of the forestall area
9. Control criteria, monitoring and evaluating methods and planning timeline

As an additional step, FOWL owners may apply voluntarily for a sustainable forest certification. In this procedure, an independent organization ensures or acknowledges through a written statement the management of the relevant area has been managed according to certain standards or minimum requirements. Sustainable forest certifications are especially valuable when products or services coming from the forestry sector are produced. In Spain and internationally, the most common certifications are the Forest Stewardship Council certification and the Programme for the Endorsement of Forest Certification Schemes.

On top of this structure, natural protected spaces, publicly or privately owned, are regulated by the Natural Resources Management Plans as according to the Spanish law of natural heritage and biodiversity 42/2007, considering both the environmental and socioeconomic challenges and providing a prevailing framework for figures of natural protection. Within the national territory, 210 000 km^2 of FOWL is included under the Natura 2000 network, the European network of core breeding and resting site for rare and threatened species. In Spain, this network is divided into 1467 special areas of conservation. The natural protected spaces belonging to Natura 2000 must be managed as according to the European directive 92/43 of habitats and 2009/147 of bird fauna (Bernad, 2014).

As exposed in this document, the legal framework for FOWL in Spain is quite extensive and complex, varying between autonomous communities, territory ownership and the unique natural resource present in each specific land. We believe we have provided a comprehensive summary of the legal structure and the main instruments and guidelines provided by the administration to develop forestall management projects. The development of a sustainable forest management plan must be based on the above documentation and guidelines, therefore understanding the main tools and frameworks is key for the successful implementation of GAA key activities.

2.3.5 Forest Sector Economic Context

Public expenditure and revenue collection from forest sector activities are commonly used as relevant indicators to assess the financial scenario of the forest sector. Forest revenue collection includes all taxes, fees, duties and rights collected from the domestic production and commerce of forest products. On the other hand, public expenditure comprises the state and the autonomous regions investment on forest management activities. Public expenditure can be considered as an indicator of the governmental influence of the public administration of forest activities by using four tools: legislation, forest policies, direct action and social behaviour improvement activities.

The main industrial activities of the forest sector in Spain are silviculture and forestry exploitation, paper industry and timber and cork industry. This industry employs more than 200.000 people and 1,13% of the active population in Spain. Only the industrial activities derived from this sector are accounted for the nation's GDP. The Spanish forestry sector represents only 0,9 of the GDP, below the European average of 1,04%.

In terms of public expenditure, the evolution of the investment has been steadily increasing until reaching 1574 million euros in 2009 and experimenting a drop-down to 970 million euros in the following years until 2016 (ASEMFO, 2017).

We believe a summary of the public expenditure is relevant to understand where the regional and national administration in Spain tends to allocate the resources.

The summary of the investment for 2016 is as follows:

- State public administration investment: 144,88 million euros
- Autonomous communities' public investment: 735,91 million euros
- Public investment per forest area: 30,75 euros/ha

The percentages based on the implementation schemes are as follows:

- Administrative: 12,22%
- Direct award to public entities: 44,8%
- Direct award to private entities: 5,38%
- Public tenders: 27,08%
- Subsidies: 10,37 %
- Non-Specified: 0,16%

Finally, by type of action the investment is depicted below:

- Prevention and extinction of forest fires: 47,6%
- Hydrological forest protection: 12,1%
- Subsidies (different ends): 9,0%
- Forestry treatments: 8,9%
- Forestation and restoration of vegetal cover: 5,3%
- Protection of wild flora and fauna: 4,4%
- Protection of natural spaces of special interest: 3,0%
- Creation and maintaining of forest roads: 2,8%
- Other investment in the forestry sector: 2,5%
- Public use for recreation and environmental education: 1,6%
- Development and planning of forest resources: 1,1%
- Forest pests and diseases: 0,7%

- Forest research: 0,5%
- Improvement of pastures: 0,3%
- Social participation and economic development 0,2%

As seen above, regional administrations are those in charge of allocating the largest share in terms of economic resources. In addition, it grabs the attention the fact that despite only 30% of the FOWL are publicly owned, 44,8% of the resources are awarded to public entities. Regarding, type of action, unsurprisingly, fire prevention and extinction activities are those with a largest share, followed by forestry treatments and hydrological forest protection.

Regarding the private sector, forestall commerce can be divided in timber forest products and non-timber forest products (NTFPs). The extraction of timber and firewood in Spain has increased at a slower rate compared to the demand; therefore, imported timber good have been progressively grown over the past decades. In these lines, in 2010, the extraction of timber and firewood from Spanish forest represented an annual value of 67,1 million euros, in comparison to the imported product annual value of 91.5 million euros. NTFPs include products and services such as hunting and fishing permits and services, mycological products, cork, resin, chestnuts and production of natural pastures. The economic value associated to NTFPs in Spain in 2010 was close to 312 million euros.

3 Market Research

The main objective of the market research conducted for this project is to understand and analyse the ecosystem where the business proposal idea of GAA will be developed. Taking in consideration the research questions formulated in chapter 1, we can differentiate three groups of study: private sector companies investing in CSR and environmental management; forestall landowners and/or forestry experts and competitors providing CSR, environmental services and carbon compensation projects.

Considering these three groups, and the difficulties found to reach each player, we have performed different market research activities. These include surveys to private sector companies and private or public forestall landowners, interviews with CSR experts in the private sector and experts in the forestry sectors and a competitor's analysis research.

3.1 Market Research Surveys

Two different surveys have been performed depending on the target study group, one for the private sector companies and one for the forest and other woodland owners. Despite the findings of these surveys are far to be considered as proven facts, these are useful tools to gain insight on the market where GAA aims to be deployed.

The two surveys where created using Google Forms and distributed using the link provided. Both surveys included a set of open and closed questions, so as to engage respondent to provide their own vision and thoughts.

3.1.1 Survey targeting private sector companies

The first survey, targeting private sector companies has been sent to over 500 medium size enterprises. The set comprised medium and large companies with over 300 employees, located in Spain and 50 international enterprises with headquarters based in Spain. The total number of companies replying to the survey has been 21. All the questions and answers obtained from this survey can be found under Annex I.

This first survey was divided in two parts. The first part of the survey was aimed to gain knowledge on the CSR department structure within the companies and the typology of the project's companies work with including budget and temporal length. The second part of the survey was aimed to gain knowledge on private sector interest on investment in forest related projects and whether the location of the projects would be important for them or not. Additionally, two open questions where included in both parts addressing other fields of CSR which respondents found relevant given the scope of the market research.

The findings of this first survey are summarized below:

- 81% of the participating companies stated that they include CSR as part of their corporate strategy, although 47% of these companies declare that they would like to improve their current CSR strategy and related policies, showing the increasing importance of the development of CSR in Spanish based companies.
- 85,7% of the participating companies count on an internal CSR department. Most respondents mentioned the usage of an external service provider for the development of specific projects.
- More than half of the companies answering the survey mention they conduct different kind of CSR related projects including social, environmental and internal projects. As an additional comment, some of them stated that they frequently develop these projects through collaborations with other entities.
- Two of the companies (9,5%) stated they do not have any clearly defined CSR related projects or strategy.
- The average annual budget assigned to the development of CSR related projects in the companies participating in this survey is close to 15,000 euros per year. Over 35% of the companies provide a budget of over 20,000 euros per year for these projects.
- Regarding the time-spam of CSR related projects; approximately 60% of the companies surveyed invest mainly in annual projects, 20% in projects with a 3-year duration and 15% in projects with duration of 5 or more years. Some companies develop different durations showing flexibility depending on the project needs.
- Large corporations responding the survey mentioned show CSR development strategic plans following larger timelines, investing in projects with a timeline ranging from 3 to 5 years.
- Most companies responding the survey are certified by ISO 14001:2015 Environmental Management Certification, or are currently seeking this certification.
- 75% of the respondents would consider the possibility to financially sponsor reforestation and forest sustainable management projects as part of their CSR strategy.
- In addition, 20% of the respondents reply positively towards the financial collaboration in forest sustainable management.
- Regarding the location for reforestation and forest sustainable management projects, 45% of the respondents would prefer these domains to be owned by public entities rather than forest lands owned by private individuals.
- Some CSR projects mentioned by the respondents of the survey are the following:
    - Supply chain analysis and product traceability
    - Waste management segregation policies and educational workshops
    - Waste water treatment and rainfall water collection for fire protection protocols
    - Environmental awareness campaigns
    - Energy efficiency improvement with initiatives such as the replacement of lighting systems with LED technologies

    - Transportation emissions analysis, including requirements to collaborate with third parties to reduce the environmental impact and measure carbon footprint of transportation activities.
    - Sustainable mobility with initiatives such as free parking space and electric vehicles charging points
    - GHG and carbon emissions measurement, reduction and compensation projects.
- Some of the biodiversity related projects mentioned by the respondents of the survey are the following:
    - Collaboration agreement with fauna protection such as seabird's protection foundations, marine iguanas and sea turtles foundations
    - Collaboration agreements with natural environment preservation foundations such as the Water Sports Plastic Free Foundation and the Global Nature Foundation
    - Forestall projects including reforestation, forest selective thinning and forest cleaning
    - Mangrove and native flora reforestation campaigns

Out of these findings, we can interpret that including CSR strategies and policies is gaining increasing importance in companies with similar profiles as the ones responding this survey. Respondents tend to develop CSR policies internally, although it is quite common to include external agents to carry out different projects using the expertise and knowledge of specialized companies. The annual budget to develop CSR related activities of the respondents is larger than expected with an average annual budget of 15,000 euros. Most companies participating in the survey base environmental management policies on reduction of energy consumption, water and waste and include carbon footprint measurement as part of this management. Additionally, several respondents collaborate in some way with foundations working to preserve biodiversity. Regarding reforestation projects, almost 30% of the companies participating in the survey collaborate with foundations and other external agents in reforestation or sustainable forest management projects. Despite this, they rarely take the advantage to count them as carbon footprint compensation projects. Finally, we obtained a positive reply towards the willingness of respondents to invest in reforestation and sustainable forest management projects based in the Iberian Peninsula. Nonetheless, GAA proposal might encounter certain problems with the fact that most companies responding the survey would rather invest in forestland owned by public entities.

3.1.2 Survey targeting forest and other woodland owners

The second survey target private and public forest and other woodland owners. Given the difficulties found to reach respondents, the survey was sent to the following forestall owners associations and aggrupation for its distribution: Asociación Forestal de Galicia, Asociación de Propietarios Forestales de Asturias, Asociación Forestal de Cantabria, Asociación Forestal de Bizkaia (Basoa), Asociación Forestal de Navarra, Plataforma Forestal de Valencia, Federación de Asociaciones Forestales de Castilla y León, Federación de Asociaciones Forestales de Castilla La Mancha, Asociacionde

Propietarios de Montes de Alcornocales de Extremadura, Federación de Bosques de Cataluña and Asociación Forestal de La Rioja.

As mentioned by several individuals representing these associations, reaching private forest owners is extremely difficult since most of them are elderly individuals with limited access or knowledge to use Internet connection, emailing services, etc. This fact would explain the low participation rate observed in the survey with only 15 answers despites the distributions efforts. Notwithstanding, the number of respondents of the survey is considerably high when compared to similar surveys analysed to construct this document and performed by governmental bodies in Spain, with an average of 6 respondents.

All the questions and answers obtained from this survey can be found under Annex I.

The survey included multiple-choice questions to understand the type of owner and main activities developed in the forest plots, the financial resources used to maintain these lands and the level of regional aids. In addition, we included two open questions to understand current needs of forestland owners and how we can address them.

The findings of the second survey are summarized below:

- Only one of the respondents (6,7%) is a public entity, 13 respondents (86,7%) were private owners and 1 respondent answered this survey on behalf of a local common owner's association.
- The activities developed in these properties are extremely varied as one property can serve multiple purposes. Timber production use is the most relevant activity, with 60% of the properties serving this purpose. Recreational usage is the second most spread use, with over 50% of the forest lands being used as recreational environments. Non-timber production usage including mycology, agriculture and livestock farming, is developed in 40% of these properties. All properties provide, one way or another, other ecosystem services including supporting, cultural, provisioning or regulating services.
- The average annual budget invested by forestland owners responding this survey in forest management task such as selective thinning, fire protection measures or small civil works is 745 euros per hectare. The mean value for this budget is 450 euros per hectare.
- One every four forestland owners participating in the survey receive some sort of financial aid from regional administrations to conduct sustainable forest management duties or fire prevention campaigns.
- Over 70% of the forest landowners responding this survey would accept financial aid from the private sector to develop sustainable forest management plans
- All of the participants agree that forest users are committed to preserve these ecosystems, but only 50% of the respondents agree with the fact that that these users are aware of the real problems and need of the relevant ecosystems. As per the replies obtained, there is general feeling in terms of a lack of forestry education from the users of recreational forest areas.

- The most common needs address by forest land owners responding this survey are the following:
    - Aid for forest selective thinning, forest cleaning activities and forest plagues control
    - Aid to conduct forestall fire prevention plans, especially relevant in the Iberian Peninsula
    - Aid to develop civil works in rural paths and water points
    - Aid to successfully achieve forest regeneration projects specially those constitute of holm, oaks and chestnut
    - Administrative assistance in an excessively bureaucratic legal and administrative framework (i.e. permitting and licencing of motorized forestall works)
    - Prevention of forestalls abandonment encouraging forest management plans and promoting private communal associations to reunify particularly small plots

As already mentioned, this survey had quite a low participation rate given the difficulties to reach private and public forestland owners. Therefore, all conclusions arising from these findings are prone to different interpretations. Despite this, we can infer that most forestland private owners participating would be willing to reach an agreement with the private sector to ensure a sustainable management of the forest. The sense of willingness is supported by the fact that the average cost for the respondents of maintaining a forest hectare appropriately is close to 450 euros. Additionally, respondents highlighted that they rarely receive regional aids or earn enough economic resources from forestry activities to overcome these costs.

With regards to the needs and challenges addressed by the respondent forestland owners, we would like to highlight the administrative difficulties found to obtain licenses and permits. As mentioned in the literature review of this document, an excessively bureaucratic administrative and legal framework is one of the major challenges found by forestland owners. It was stressed by respondents; this scenario is preventing the evolution of forest sector activities. In addition, current frameworks are acting in detriment of those forestland owners with less-educated profiles or elderly individuals with a lack of knowledge in administrative fields leading to forestall abandonment. Initiatives like GAA could benefit the forestland owner profile mentioned, acting as an administrative consultant.

Other needs and challenges addressed by the respondents of the survey are those related with forest regeneration, forest selective thinning and biomass cleaning and forest fire prevention projects. We believe there is a window of opportunity were these activities developed under sustainable forest management projects, could be included as part of carbon footprint compensation projects included under the National Voluntary Registry of Carbon Footprint, Compensation and CO2 Absorption Projects of the Ministry for the Ecological Transition (MITECO) or under the project LifeforestCO2, part of the European Union LIFE Programme.

3.2 Interviews with experts

The information acquired from surveys provides sample information and insights on CSR trends and the needs of forest owners. Yet, the knowledge acquired from them can be discussed due to the limitation of the respondent's number, the nature and beliefs of each individual and the veracity of the replies.

To gain deeper knowledge, in an attempt to better understand both CSR at Spanish companies and forestry ownership fields, we have had the opportunity to hold several interviews with experts. We would like to express again, our sincere gratitude to all the professionals who kindly shared their time with us, sharing their opinion and knowledge on their expertise field.

3.2.1 Interviews with private sector CSR managers

As a complementary activity to gain knowledge on CSR trends and environmental programs followed by companies based in Spain, we have performed a series of interviews with experts working as Corporate Social Responsibility managers or Environmental Department Managers. To conduct these interviews, we have carefully read each company non-financial annual reports and sustainability related information found in their corporate website. Therefore, the questions asked during the interviews slightly differ depending on the information found in this report. The scripts of the interviews can be found under Annex II.

We had the chance to interview four experts working in large and mid-size companies. These companies develop activities in different sectors and the scope and strategy to follow reduce direct and indirect GHG emissions differ from one another. First, we were invited to talk to the second biggest Spanish bank, BBVA, not only relevant for the company size but also as it is a key stakeholder driving environmental policies for large companies and/or SMEs seeking financial funding for projects. In addition, we were able to interview the CSR managers of two large corporations in the travel and transportation industry, a major hotel and resorts company and an airport management and operation company. Finally, we interviewed the environmental department manager of a mid-size industrial company based in La Rioja, undergoing structural changes following the company rapid growth.

All the interviews tackled the following topics:

- Current environmental and sustainability policies followed by each company
- Current process in terms of direct GHG emission measurement, reduction and compensation (Scope 1 and 2)
- Current collaborations with biodiversity and climate change related projects
- Current and future strategies to reduce Scope 3 (indirect) GHG emissions

3.2.1.1 Interview with the Corporate Social Responsibility Manager of BBVA

Being the second largest financial institution in Spain and operating in both IBEX35 and Dow Jones Euro Stoxx 50, the relevance of this interview strives not only of the role of BBVA as one of Spanish largest companies, but also as a key stakeholder for all other institutions seeking financial aid.

Gerardo Echeva has been working as a manager of the CSR department in BBVA for more than 5 years, promoting different environmental and social programs throughout the group. He kindly explains us that when analysing the role of CSR in the banking and financial sector, it involves two dimensions. On the one hand, the first dimension shows the importance of implementing environmental and social policies internally. On the other hand, the second dimensions show the importance of banks as stakeholders in financial markets and activities, integrating social and environmental requirements in their credit and investment policies.

As part of the first dimension, BBVA developed in 2008 the first Global Eco-efficiency Plan aimed to reduce the direct global environmental footprint due to the economic activity developed by the bank in all their offices. The current Global Eco-efficiency plan 2016-2020 includes as part of the Pledge 2025, the target to obtain 70% of the total energy consumption used by the group from renewable energies by 2025 and 100% by 2030 (PPA agreements signed in Mexico with Enel Green Power), IoT sensors monitoring and minimizing energy consumption in BBVA City buildings and waste reduction strategies. In addition to emission reduction policies, through the BBVA foundation, the bank collaborates with local ecology and biology research groups and volunteering reforestation activities in the Iberian Peninsula (BBVA, 2019).

The second dimension analyses the responsibility of banks and financial entities with respect to which kind of projects do they finance, and the environmental impact associated to them. In this working line, we found ethical investment funds, green bonds and those financial products aimed to fund projects with a positive social and/or environmental impact and the development of low-carbon economies. With regards to this dimension, BBVA is committed to mobilize 100,000 million euros aimed to fund positive social and environmental impact projects within the years 2018 and 2025. Large companies in the energy, mining, infrastructure and agribusiness sectors use the clear majority of these funds. The financial investment is approved if these companies follow self-imposed sector norms preventing entities to finance those clients with high environmental impact. Currently BBVA is implementing the use of the Task Force on Climate-related Financial Disclosure (TCFD) recommendations, a decision-making tool with climate-related financial disclosures of several companies and sectors, and guidelines for companies and financial institutions on climate-related issues and their link with corporate governance and strategy. Ultimately, these means that those companies providing relevant, specific and complete information on climate-related risks and opportunities are more likely to obtain financial investment from large financial corporations such as BBVA

3.2.1.2 Interview with Head of Soil Quality and Atmospheric Contamination of Aena

Aena is the Spanish state-owned company operating and managing 42 national airports in Spain and 17 airports abroad such as London Luton (in a 50% share) and Cali Airport in Colombia. In terms of annual passengers, Aena is the worldwide leader with over 743 million passengers using Aena's airports annually.

As an airport operator, the relationship with the environment in Aena focuses on three main pillars: acoustic impact, energy and climate change and other environmental aspects including water management, waste management, air quality and biodiversity. During this interview we focused on the actions taken by Aena to combat climate change and lower the CO2 emissions derived from airport operation activities.

Aena currently measures scope 1 and scope 2 emissions from the Spanish airport network and works together with other agents such as airlines, passengers and handling agents to minimise Scope 3 emissions. Regarding scope 1 emissions, those emissions associated with the consumption of fossil fuels in sources under operational control, Aena avoided a total of 289 tonnes of CO2 in 2018 with the implementation of a cogeneration plant in Bilbao, thermal solar collectors in Barcelona and the usage of geothermal energy in Gerona. Regarding scope 2 emissions, those associated with the generation of electricity consumed, Aena avoided a total of 773 tonnes of CO2 in 2018 through the development of several solar PV projects in 8 airports and a wind turbine located in Mallorca. Considering the fact that scope 1 emissions in the Spanish network for 2018 where 24,079 tonnes equivalent CO2 and scope 2 emissions in the Spanish network for 2018 where 244,111 tonnes equivalent CO2, there is room for improvement (AENA, 2018).

Given the international environment where Aena operates, the company is currently implementing the Airport Carbon Accreditation in eight of national airports. The Airport Carbon Accreditation (ACA) is a certification programme implemented by the Airports Council International (ACI) European members with the ultimate goal of becoming a carbon neutral airport network. The programme provides a common framework for the measurement and reduction of CO2 emissions. It is divided in four levels:

- Level 1: mapping and calculating scope 1 and 2 carbon footprints
- Level 2: reduction of scope 1 and 2 emissions through a Carbon Management Plan
- Level 3: optimisation and incorporation of Scope 3 emissions by engaging and cooperating with external agents and third parties
- Level 3+: achieving carbon neutrality for direct emissions through compensation projects

Currently the airports of Madrid-Barajas Adolfo Suarez, Barcelona-El Prat, Palma de Mallorca and Lanzarote achieved the level 2 ACA certification and the airports of Malaga, Menorca, Alicante-Elche and Santiago achieved the level1 ACA certification. This accreditation needs to be renewed every year and measurements need to be externally certified. Looking at the future, Aena is committed to achieve Level3+ certification for the airports of Madrid and Barcelona by 2030. In addition, Aena has committed

together with other European Airports operators to accomplish net-zero carbon emissions through the European Climate Foundation NetZero 2050 initiative.

We had the chance to interview Alejandra Plass, head of soil and air quality in Aena, and the person in charge of the achievement of Level3+ in Aenas' Airport. Alejandra explained us it would be done through carbon compensation projects following the ACA requirements. Although the development of these projects is still at a very early stage, and the company is open to explore compensation projects based abroad, Aena is likely to invest in those projects in the Iberian Peninsula. These projects do not need to be certified by agents such as the Gold Standard, as compensation projects promoted by the ACA are those which cannot be double counted, are verifiable and are related to reforestation and forestall management projects in areas located near airport lands.

3.2.1.3 Interview with the Global Technical Services Manager of Meliá Hotels International

Being one of the world's largest resort and hotel chains, Melia Hotels International runs over 370 hotels in 43 countries around the globe. As one of the largest Spanish companies, and one of the largest companies in the world publicly trading, the company achieved in 2019 the Silver Class recognition awarded by RobecoSam for its Corporate Sustainability Assessment and is included in the Dow Jones Sustainability Index.

The group has been actively promoting sustainable and environmental related activities since the year 2005, with the implementation of an in-house efficiency project called SAVE in 2008. Currently, the company annually analyses climate change related risks and opportunities, being aware that the tourism sector and the location of the group's assets are significantly vulnerable to climate-change hazards. The global technical service office manages and coordinates all activities related to climate-change risks. This department works in three different lines: climate change risk analysis on the geographical location of assets, measurement of natural resources consumption under the project SAVE and measurement and reduction of GHG emissions.

Ingrid de la Fuente has led the team of Global Technical Services in Melia, in charge of promoting CSR and environmental projects. We had the opportunity to interview her about Melia projects on carbon footprint. The group measures scope 1,2 and 3 emissions within their Spanish asset extrapolating the values to their international assets with a total of 259,011 tonnes of CO2 emissions in 2018 with an average emission reduction of 8,4% within the years 2012 and 2018. These reductions where achieved thanks to the efforts made on measuring and detecting emitting points and root causes, replacing low efficiency equipment, installing renewable energy assets and promoting simple maintenance tasks including the replacement of failing lighting or plumbing devices. In addition, the company significantly increased the energy supply from renewable sources through several green electricity purchase agreements.

On top of the efforts made by the group in terms of GHG emission measurement and reduction, Melia Hotels International collaborates with numerous interest groups in the protection and preservation of biodiversity and natural areas and develops carbon compensation projects.

With regards to carbon offset projects, in the year 2016 they developed together with Repsol a local reforestation project based in the island of Mallorca covering a total of two hectares and 1,4 tonnes of CO2 annual compensation. Ingrid shared with us her personal opinion on the development of this project, as they did it through a reforestation consulting company. She stated that the service provided by the chosen company was purely administrative and rate charged was excessive taking over 30% of the project budget and the project being developed by a public entity, the IBANAT (Balearic Institute of Nature). When asked if they will keep on investing in this kind of projects, Ingrid answer positively as they are currently investing in other reforestation projects aimed to compensate GHG emissions, although now they are developing them internally or analysis the purchase of Verified Emission Reduction projects.

3.2.1.4 Interview with the Quality and Environment Manager at Arneplant

As part of the research phase, we considered important not only to include large enterprises playing mayor roles, but also to understand the position regarding CSR development in Spanish SMEs. With this premise, we had the opportunity to talk with Ana Palacios, manager of the quality and environment department in Arneplant.

Arneplant is a mid-size company based in La Rioja (Spain) and manufactures breathable insoles, foams and microfibers. Counting with over 250 employees, the company started as a family run business and was recently bought by an external investment group. At the time, Arneplant is undergoing a rapid growth and international expansion.

With this growth and expansion, the company had the need to create new departments and roles oriented to improve the management of quality and environmental impact issues. Arneplant is currently working to obtain the quality management systems ISO 9001:2015 and the environmental management system ISO 14001:2015 before the end of the year 2019. Recent interest of the company to address better quality and environmental impact assessment is mainly due to the pressure coming from clients and stakeholders, requiring compliance with certain environmental and quality standards. In addition, complying with these standards is beneficial for the company as it enables them to review procedures, increase safety measures, reduce hazardous and non-hazardous waste and increase efficiencies.

Regarding GHG emissions, the company is working with an external consulting service to evaluate and measure all the emitting points. Given the nature of the products manufactured in Arneplant's factory this measurement includes a large number of chemical compounds used and the team is currently working to categorize and analyse the output flows of each chimney located in the factory. Even though they are at an early stage in terms of the evaluation of environmental impact, the company is working

with tight timelines and is showing great commitment in the development of environmental policies and the development of a solid CSR strategy.

Ana Palacios is an environmental expert with a long working experience in international groups such as Saint-Gobain, currently she oversees environmental related projects in the Arneplant. She shared her opinion with us stating that small and medium size companies are encountering some difficulties in the development environmental policies as environmental focused professional profiles are not usually found in this kind of companies. She mentions that the growing importance on environmental compliance, is leading to an increasing workload in these newly created departments found in SMEs. Therefore, these companies willing to improve their environmental positioning are likely to require external assistance to develop substantial and concise environmental strategies.

3.2.2 Interviews with forestry sector experts

The obstacles found when trying to reach forest landowners across the Spanish geography lead us to develop these series of interviews to forestry experts working for agro-forestry consulting or forestry services companies in different locations in Spain. The scripts of the interviews can be found under Annex II.

Given the particularities of the legal and administrative framework for each autonomous community and the differences in the characteristics of the terrain, climate and bio-geographical features, we have interviewed forestry experts from four different autonomous communities: Galicia, Aragón, Andalucía and Valencia. The interviewees shared their opinion on four main fields regarding the forestry sector in each particular region of Spain:

- Main drivers and advantages for forest owners to develop sustainable forest management plans
- Public funds grant and subsidies
- Needs and urgent actions to ensure a sustainable management for privately owned forest and other woodlands
- Role of privately-owned forest acting as carbon sinks and potential of sustainable forest management as carbon compensation service

3.2.2.1 Interview with Ignacio Cáliz Vázquez forestry expert in Andalucía

Working as head director of the forestry and environment consulting company Gestiberian, Ignacio Caliz is an experience consultant assisting forestall owners with hunting licenses and permits, cartographic projects, forest certification and sustainable forest management plans development in Andalucía. Mainly working for private property owners provides integral management in forestlands mainly used for agroforestry and hunting activities.

For Ignacio, the success of the implementation of sustainable forest management plans is based on the implication of public administration in terms of subsidies and grants, as the administrative paperwork to apply for grants requires these kinds of documents. The regional administration of Andalucía ceased grants in the year 2012. The high cost involved for the development of these plans against the economic benefits they provide, with a cost between 5000 to 10,000 euros for 500 ha properties, make forest owners reluctant to invest in them. This fact, in his opinion is leading to forest abandonment in the region.

Only those properties developing forestry activities invest in sustainable forest management plans, as they are required to obtain permits such as mechanized pruning and trimming, corking or livestock farming. In addition, plans cover forest fire protection activities and are used by owners as legal protection instruments in the event of fire.

As urgent needs for sustainable forest management, Ignacio points out the need to perform clearing activities as the increasing amount of biomass fuel left in abandon forests increases fire risk hazards. In these terms, Ignacio points out the need for regional authorities to simplify the administrative and regulatory environment of activities, as there are administrative constraints found in almost every activity developed in the forestry service with authorizations needed for pruning, selective thinning and civil works (i.e. water points).

Ignacio highlighted the importance of forest acting as carbon sinks and climate change mitigation, but also shared his concerns on carbon compensation pricing in Spain when compare to the price of these activities in developing countries.

"Currently, the cost of sustainably maintain a forest in Andalucía falls entirely under the property owner, the regional administration is not valuing the positive externalities provided to society and the environment including carbon sinks, biodiversity protection and water regulation."

With regards to the development of private sector and private forest owner's agreement, Ignacio can see a window opportunity, stressing the difficulties he finds when negotiating with private owners and administrative permitting.

3.2.2.2 Interview with Ricardo Forcadell forestry expert in Aragón

Ricardo Forcadell is a forestry engineer, with over 15 years of working experience, currently working for the forestry and environment consulting company Qilex, based in Aragon. In this company he develops sustainable forest management plans, hunting and fishing permitting and licensing and provide a specialized service in truffle and mycology farming. Working for both public and private owners he emphasizes the need to develop sustainable forest management plans ensuring the optimization of economic activities for a self-finance forestry development.

The region of Aragon has a high potential in terms of timber and non-timber production, and in the recent years an increasing interest for forestry economic activities has emerged in forest landowners. Therefore, as Ricardo shared with us, the main factor driving property owners to invest in sustainable

forest management is to develop activities able to bear the cost of preserving natural resources and reverting the benefits on these lands, investing in activities such as intermediate pruning and selective thinning. In addition, there is an emotional factor, since owners can see the effects of rural abandonment in non-managed forests.

When ask for urgent activities and needs of forest landowners in Aragon, Ricardo again mentions regional administration complexity and difficulties found to obtain permits to carry out extremely needed duties such as mechanized pruning and clearing, discouraging owners to actively manage their lands. The second obstacle in Aragon is the size of forest territories with ridiculously small irregular plots due division of heritage.

Regarding the role of private forests acting and carbon sinks, Ricardo comments that he is currently working on a project with the Centre of Investigation and Technology of the Agroforestry sector in Aragon, where they aim to measure the economic and environmental value of externalities coming form abandoned forests in the region.

"Externalities are a service rarely paid to forest owners. It is important to develop a self-sustained model to manage forests, but it is also important to inform society of the value of our forests. The forestry sector failed in the communication of the value provided."

Since the year 2009, the regional government of Aragon is not providing any kind of subsidies or grants for forest management activities. Consequently, the plans developed aim to foster economic activities for an integral management of forests, capable of minimizing fire hazards and ensure economic viability. The scenario created is three side relationships between landowners, timber and non-timber product agents and forest management agents.

An innovative service, such as carbon compensation projects, provided by forestlands needs to involve a third party as an intermediate channel between the private sector and landowners, as the second party is unlikely to trust private sector agents.

3.2.2.3 Interview with Fernando Exposito forestry expert in Galicia

Working for a forestry consulting company based in La Coruña, Galicia, Fernando is a forestry engineering experienced in the development of sustainable forest management plan development, environmental assessment and assistance in the administrative phase of regional forestry subsidies.

In the region of Galicia, the client profile of forestry management service is private communal forest and other woodland owners. Mainly due to the fragmentation of properties in smaller plots in heritage processes, these associations are common in this area of Spain. The use given to these lands are based on timber production, livestock farming and property rentals for onshore wind turbines. This being said, Fernando highlights that although in some forestlands of Galicia we can find some sort of economic activities, most of the forests are abandoned or forestry activities are limited due to restriction of Natura Network 2000.

As the main driver for property owners to invest in sustainable forest management plans is the administrative compliance for the application of regional subsidies and grants. The regional administration provides economic aids to cover costs of activities cartographic management, clearing and pruning tasks, as part of regional fire prevention plans. Despite the support given from the regional administration, Fernando mentions that Galician forests are currently suffering high rates of abandonment since the profile of forest owners in this region is a small property owner, lacking administrative skills.

With regards to the development of innovative ideas, such as carbon compensation projects, Fernando comments that rural exodus and administrative constraints to promote forestry sector activities in terms of permitting and licensing holds back the development of other land-usage in Galician Forests. On the other hand, the relationship with private sector and forest landowners is well established and these owners tend to be open to discuss new kinds of partnerships.

3.2.2.4 Interview with Pablo Talens forestry expert in Valencia

In the region of Valencia, we contacted Pablo Talens, technical forestry engineering working for the forestry-consulting firm Valfor. Pablo has developed several roles, including working experience in education and the regional administration. In Valfor, he develops sustainable forest management plans, forestry machinery services and treatments and works with forestall biomass recovery. Working both with public and privately-owned properties, although 65% of their clients are private owners.

Due to low quality timber production and potential, Pablo indicates that most economic activities are based on the recovery of biomass fuel obtained from forest clearing and pruning activities.

The autonomous community of Valencia is currently providing grants for the development of sustainable forest management plans and forestry activities including selective thinning, pruning and forest clearing as part of fire prevention plans. Thanks to the grants and the expansion of the plans, administrative processes are starting to be more agile for private owners. Additionally, the plans avoid the need of authorisation for foreseen activities and enables forestry managers to forecast the volume of biomass produced. The biggest obstacle biggest obstacles for sustainable forest management, Pablo mentions the size of privately-owned plots in the region, with large areas of over 800 ha divided in 2,5 ha plots.

With regards to the window of opportunity for the development of carbon compensation projects in privately owned forest, Pablo is somehow reluctant. He is not aware of any similar project developed in the autonomous community of Valencia and is hesitant towards private forest landowner’s reaction to corporate private sector stepping in forestry management.

3.2.3 Findings acquired form the interviews

The findings and interpretations we have construct from the interviews performed to private sector CSR experts are summarized below:

- Financial institutions such as BBVA have the potential to act as positive environmental and social impact engagement stakeholders, implementing environmental and climate change risk assessments as part of their financial-decision tools.
- Enterprises working for the sensitive industries such as the energy, mining, infrastructure and agribusiness sectors, which do not present or report relevant, concise information with regards to their climate-change mitigation and adaption strategies might encounter difficulties when obtaining financial funds from banking institutions such as BBVA.
- As stated by the respondents, those companies where high GHG emitting points are found under scope 3, indirect emissions, are likely to include environmental requirements within clients and third-party contracts.
- According to Aena, large GHG emitting points, airports seeking Level 3+ Airport Carbon Accreditation offers a window of opportunity to those compensation projects based on reforestation and forest management projects locally developed in the Iberian Peninsula.
- If we look at large corporations such as BBVA or Melia Hotels he timeframe provided by those companies willing to become carbon neutral organizations show targets being set for the next 5 to 10 years and more ambitious projects being set for the year 2050.
- As stated by Melia, the tourism sector is greatly affected by climate change related risks and is undergoing rising sustainability awareness, implementing environmental and sustainable policies as part of their core business strategies. In addition, environmental responsibility is key to avoid reputation loss towards ecologically conscious clients in the tourism sector.
- One of experts shared their concern when providing carbon reforestation compensation services locally, the process and service provided should be clearly defined to avoid negative experiences.
- According to the experts interviewed those companies willing to implement carbon compensation projects are more likely to invest in locally based projects, although are open to analyse compensation projects based abroad supported by voluntary carbon credit standards.
- SMEs working in sectors with high environmental impact such as manufacturing industries in the case of Arneplant, are being influenced by clients and stakeholders to comply with increasingly demanding environmental standards.
- Regarding the experience of the environmental manager in Arneplant, the growing importance of environmental compliance in SMEs is leading to an increasing workload in non-existing or newly created environmentally focus departments.
- Those SMEs, similar to Arneplant, willing to measure reduce or compensate GHG emissions are likely to externalize these services, as they usually lack the knowhow, or the internal resources needed to develop this kind of projects.

- All experts agree in the following: carbon compensation projects are generally developed once the company has reached a certain level of expertise in carbon footprint measurement and reduction policies.

The findings and interpretations we have construct from the interviews performed to forestry sector experts are summarized below:

- All forestry experts agree that complex regional administrative framework discourages forest owners to develop activities needed for an appropriate forest management.
- In many autonomous communities, such as Aragon, the size of the plots is a relevant issue, since the large number of extremely small plots is limiting the capacity to sustainably maintain bast areas of forestlands.
- In a large number of autonomous communities, forest and other woodland owners' profile is an elderly individual lacking administrative skills yet committed to the preservation of the natural resources found in their lands.
- In regions with high timber production potential, sustainable forest management plans are developed so as to ensure the economic benefit provided by the natural resources of the forest can be reverted in the appropriate maintenance of these lands.
- According to the experts interviewed, the average cost to construct sustainable forest management plans in Spain is around 20 euros per hectare, with higher costs in northern regions. This cost is decreasing thanks to the usage of new technologies such as LIDAR and aerial photography.
- Some interviewees mentioned there is a high potential to obtain economic benefit from forestall biomass obtained from clearings and thinning activities but current the current legal framework.
- All the experts interviewed agree in the importance of third-party agents. These local connections are commonly used to reach agreements between private sector companies and forest and other woodlands landowners.

3.3 Competitors Analysis

The Business idea analysed by GAA is quite new in terms of the ecosystem it creates bringing together private forestall owners with varied profiles and companies willing to enlarge their environmental activities regarding CSR and/or to compensate their carbon footprint through reforestation projects. Despite this, the development of services aimed to provide externalised CSR projects for enterprises or

develop reforestation projects it is not new at all. Therefore, we found there is a need to conduct a competitor's analysis.

With this premises and given the fact that the geographical area where the business will be established is the Iberian Peninsula, 17 Spanish companies providing similar services have been studied. All this companies provide services like the one provided by GAA or services that can replace those suggested by GAA. Through this analysis we are expecting to gain knowledge on how these companies operate, the internal structure, their strengths and weaknesses and where we might find opportunity windows.

The companies analysed have diverse profiles, providing environmental and sustainability consulting services, CSR strategy and activities, carbon offset and GHG compensation projects or carbon footprint compensation platforms.

The analysis presented is based on the study of 17 companies based in Spain, although some of them operating not only in Spain but also in other countries. Details on each company analysis can be found under Annex III of this document. The information hereby provided has been found on each company website, LinkedIn profile or information posted by the Spanish Government and/or information shared by companies working with these services during the interview phase of the market research.

3.3.1 Basic parameters

As part of the market research, we used LinkedIn data and information found in the business directory of the Spanish economic and financial journal "Expansión". By this means, we tried to identify competitor's size and company structure. These basic parameters chosen deal with size and structure information are the following:

- Company foundation year
- Number of employees
- Company type:
    - Start-up
    - Small Enterprise
    - Non-profit Organizations

In this case we have defined start-ups using the description provided by Steve Blank, defining start-ups as "temporary organization designed to search for a repeatable and scalable business model". A small enterprise is defined as a "small business independently owned and operated, organized for profit and non-dominant on its field".

The data obtained for the competitors studied is shown in the graphs below.

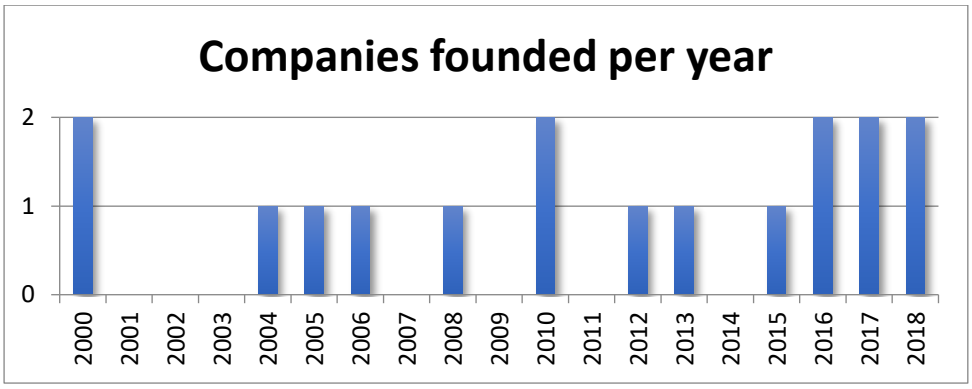


Figure 3 Distribution of analysed companies per foundation year

Regarding the year of foundation, as seen in figure 3 most companies analysed were found in the last 10 years, coherently with the environmental push and development of CSR policies and strategies in Spanish companies in the last decade. For the past three years, there has been a steady increase in the number of companies providing environmental, CSR and carbon compensation services.

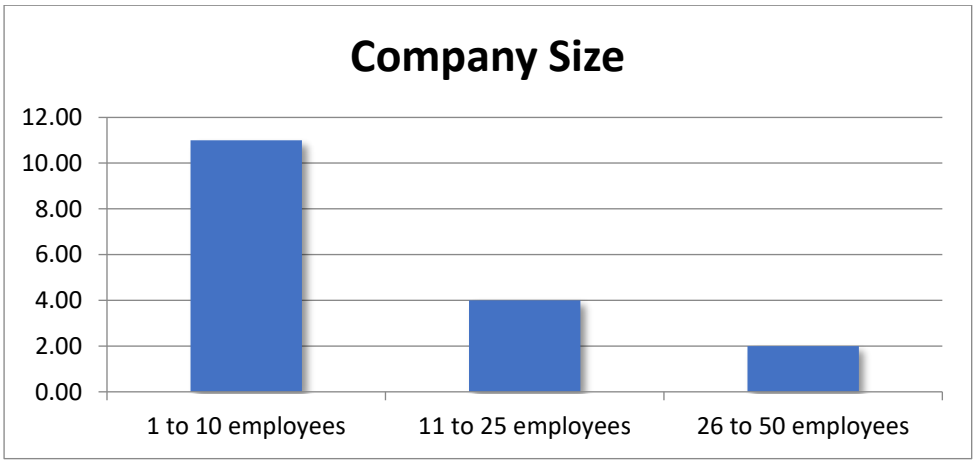


Figure 4 Competitors analysed company size in terms of number of employees

Regarding company size, as seen in figure 4, 65% of the competitors analysed count with less than 10 employees as staff members, showing a small company profile. Only 2 companies count with more than 25 employees, providing additional consulting services such as water management services, waste management consulting services, and environmental impact studies for civil construction.

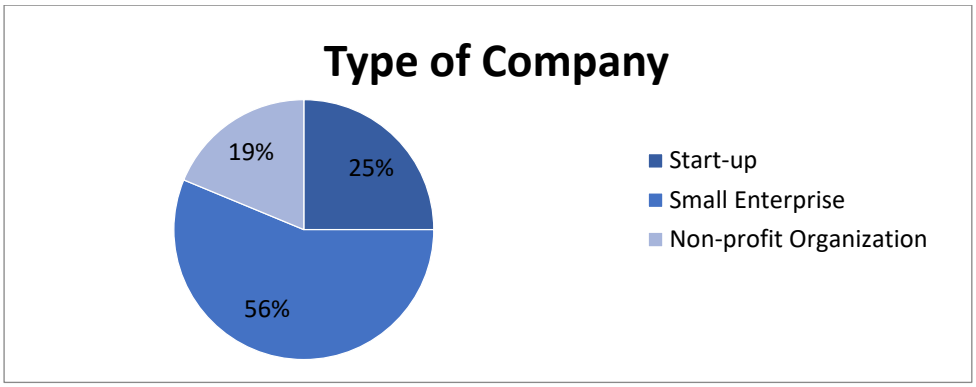


Figure 5 Competitors analysed categorized by type of company

Finally, we tried to classify competitors based on type of companies. Bear in mind there were some difficulties found in this categorization since some of the companies analysed where part of larger non-profit organizations and others where companies with a fairly small number of employees, but which cannot be considered start-ups anymore. As shown in figure 5, the most common profile of GAA competitors analysed is a small enterprise founded over 4 years ago.

Summary of market findings and interpretations driven based on the presented basic parameters:

- Most of our local competitors started their business activities in the last 10 years. This enable us to interpret that we will be working on a newly developed market.
- The rate of company creation in the past three years for the competitors analysed has been considerably higher when compared with other three-year periods. Perhaps indicating an increasingly growing market.
- The size of the local competitors analysed is considerably small, with most companies employing less than 10 members. Furthermore, 55% of the companies analysed with less than 10 employees count only with 3 team members.
- Most of the companies analysed can be categorized as small enterprises. In addition, we have analysed four new start-ups which have been founded in the past three years.
- As part of the competitors analysed we find non-profit organizations, which can be considered a peculiarity of the market of CSR and carbon footprint compensation services

3.3.2 Competitors analysis parameters

In order to be able to analyse and compare our competitors, we have chosen a set of parameters based on the nature of their services and carbon compensation projects.

The first parameter is based on the core service provided, whether they provide environmental and CSR consulting services, development of reforestation and carbon offset projects, forest sustainability management projects, tree adoption platforms or international carbon emission trading assistance/consultancy in voluntary carbon offset markets.

The second parameter is based on the nature of the carbon compensation projects conducted by these competitors and whether the company operates locally or globally. We found this parameter particularly important since certain environmental activities and reforestation projects based in Spain are not competitive economically with those based in developing countries.

For companies with compensation projects based abroad, mainly in developing countries, an additional parameter has been added to address whether the projects are registered under voluntary carbon offset markets as Verified Emissions Reductions (VERs) certified by WWF's Gold Standard, American Carbon Registry or Verra's Verified Carbon Standard (VCS).

For companies with compensation projects based in Spain, the supplementary parameter added is meant to determine whether the compensation projects are registered under the Register of Carbon Compensation Projects of the Spanish Ministry of Ecologic Transition (MITECO, previously named Ministry of Agriculture, Fishery and Environment (MAPAMA)) or the Carbon Fund for a Sustainable Economy (FES-CO2) as VERs.

The second parameter is whether the company analysed works with public or private landowners to develop their carbon compensation projects. An example can be projects based in regional administration forest and other woodland properties against privately owned properties falling under the Nature Network 2000 and other ecosystem protection schemes.

The third parameter chosen is the range of additional services provided by each company analysed for the competitor's analysis. These include:

- Educational workshops in sustainability and positive environmental impact
- Motorisation and on-going maintenance of forest based carbon compensation projects
- Online carbon footprint calculation software/app
- Communication and branding services on CSR related activities and carbon compensation projects

3.3.3 Competitors Analysis Results

The data obtained for each competitor analysed has been located allocated into each relevant chart to be able to interpret it and drive certain conclusions as an analysis result. For certain companies it has been difficult to established whether they comply with certain positive/negative answer parameters due to a lack of information. When information was not available the relevant parameter value is described as "not specified" in the compelling chart.

3.3.3.1 Core Service Provided

Despite most of the analysed companies provide a varied range of service, each company can be identified with a particular core service or expert field. The core services of these companies can be classified in tree types: adoption platforms, CSR consulting based sustainable forest management services and CSR consulting based on VER emission trading markets.

Companies offering tree-planting services through online platforms seem to be capable of reaching a larger market segment, offering the possibility to plant a tree and compensate GHG emissions at a domestic, corporate or governmental level. The scope of the services provided in this type of platform, as described by competitors, can be somehow limited. The tree plantation platforms analysed usually offer an online footprint calculation software/app, the capability to choose the location where your tree will be located and some sort of certificate as part of the client's contribution. Less than 25% of the competitors analysed provide tree-planting services through online platforms. Three of these platforms are start-up companies with elaborated, well designed and user-friendly website platforms, showing strong social-media engagement and younger customer profiles. The third tree-plantation platform analysed has been developed by a non-profit organization, the platform is less intuitive than those belonging to start-ups and the online software provided is designed to calculate individual's carbon footprints.

Those companies analysed offering environmental and CSR consulting services, are mainly small enterprises focused on the development of sustainable and environmental policies in larger corporations. The majority of the companies analysed focused their services on CSR consulting offering the possibility to provide an end-to-end service through the development of corporate sustainable strategies, measurement of GHG emissions, environmental and social impacts, assessment of areas of improvement and mitigation of these impacts, carbon offset projects and auditing of CSR related activities. Since 76% of the companies analysed provide these services at some level, we could identify two different working lines, those companies working closely with the local forestry sector and those companies working closely with carbon emission trading schemes and VERs.

Companies providing CSR consulting and working closely with the forestry sector through sustainable forestall management and agro-forestall consulting services seem to be highly engaged with local communities. We believe this is due mainly to the triple bottom effect, since the investment on reforestation and carbon compensation projects in local communities brings economic, social and environmental benefits to rural areas. This being said, it does not mean that these companies only develop carbon compensation projects based in Spain, as many of them provide additional consulting services to purchase VERs carbon units as compensation projects.

On the other hand, companies analysed providing CSR consulting and working closely with carbon emission trading schemes seem to be more likely to be closer to the industrial sector, for example developing environmental impact studies in civil infrastructures. These companies tend to have an international profile, with a larger portfolio of clients. Carbon compensation services provided by these

competitors, are likely to be based in carbon credits (or VERs) bought in the voluntary carbon market. As shown in figure 6, the percentage of the competitors analysed trading with carbon emission schemes is slightly higher than those competitors focused on sustainable forest management services.

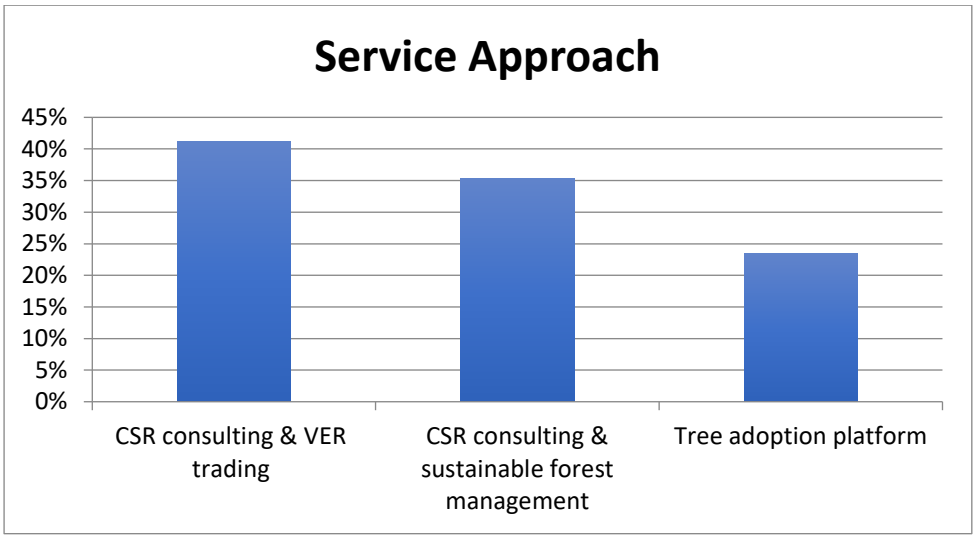


Figure 6 Service approach of the competitors analysed

3.3.3.2 Location of environmental activities and compensation projects

The majority of the carbon offsets sold at the voluntary carbon offset markets come from projects based in developing countries. Furthermore, the bast majority of offset transactions coming from European enterprises in 2015 come from projects located outside the European Union, mainly in India and China. This trend is foreseeable since the carbon price is extremely variable and differs based on project location, project type and certification standard. The price of voluntary carbon offset sold by European organizations reported an average price of 3,2€/tCO_2e for carbon offsets from projects based worldwide, and a price of 15,6€/tCO_2e for carbon offsets from forestry projects based in Europe. At a national level, Spain reported an average price of 15,6€/tCO_2e for carbon offsets from forestry projects (Hamrick & Gallant, 2017).

Although the goal of all carbon offset and GHG compensation projects is to provide a positive environmental and social impact, there is a pricing and local repercussion difference when deciding whether to invest in a nationally based carbon offset or not. Some companies might invest in carbon-offset projects to be certified as carbon neutral, attracted by the investment in that carbon offsets sold at lower prices. On the other end, there might be some other organizations engaged in local carbon projects generating unverified offsets, which do not seek carbon neutral accreditation, but seek local marketing and visibility campaigns.

GAA main goal is to provide a positive environmental impact in nationally based forests and natural resources, therefore we found important to classify the competitors analysed between those providing

carbon offset units based in Spain and those providing these services on projects based abroad, mainly in developing countries.

Out of the 17 competitors analysed, 53% of them based their offset and compensation projects in Spain. Although the value is extremely similar to those competitors investing and developing projects located in developing countries, the co-existence of both type of projects, those located in Spain and Abroad, leads us to think that there is a non-negligible level of local engagement from those companies analysed investing in CSR and carbon compensation and neutralization projects.

As an additional parameter for those companies developing reforestation and forest recovery projects based in Spain, we try to identify if the forest and other woodlands where projects are conducted are privately or publicly owned. Three of the competitors analyse make use of public land exclusively, while the six remaining make use of public and privately owned land to develop carbon compensation and reforestation projects indifferently. Regarding on-going maintenance and monitoring activities, almost all competitors developing carbon these projects based in Spain provide this kind of additional services or guarantees.

For those companies analysed which provide compensation and carbon offset projects based in developing countries through VERs, we analysed the information disclosed in their website about which certification standards are used to verify the impact of these carbon units. Only two of the competitors analysed providing the service (25%) did not specified the certification standard behind their projects or carbon offset units.

Voluntary carbon markets are those carbon units not comprised by existing regulatory markets of compliance obligation, regulated by governmental entities such as the European Union Emission trading scheme (EU ETS). In contrast the voluntary carbon market is regulated by competing standard organizations. Through these third-party verifications, project developers can certify their offsets and once the offsets are issued, market the offsets. Besides location, offset projects can differ in the nature or typology of this. The type of carbon offset projects verified by most voluntary competing standard organization are: REDD+ (Reducing Emissions form forest Degradation and Reforestation) planned or unplanned, afforestation or reforestation, clean cook stoves, wind, energy efficiency, fuel switching, landfill methane and run-of-river hydro projects. Most of the competitors analysed are currently offering carbon offsets conducted or developed in different types of projects, not only on those focused on the forestry sector. This is an important finding, as afforestation and reforestation projects present a high average price when based worldwide of 7,4 €/tCO_2e compared to other typologies such as clean cook stoves with an average price of 4,3 €/tCO_2e. Furthermore, regarding the typology of offset projects analysed based in Europe, the bast majority are afforestation, reforestation and improved forest management projects, creating a larger gap between average pricing in different regions.

3.3.3.3 Additional services provided

Finally, we tried to study certain additional services offered by the companies analysed that could provide added value to carbon footprint compensation projects. The first service included is the on-going motorization of projects, something it can be understood as an added value in terms of long-term verification of the carbon units reported. The second service included is educational workshops and activities focussed on clients, employees and/or volunteers. The third variable is whether or the competitors analysed provide an online carbon footprint calculation software or app. Finally, we included communication services and branding campaigns. The results are shown in the table 2.

Table 3 Additional services provided by competitors

Company Name	Projects are Monitored	Educational Activities	CF Software / App	Communication services
Bosques Sostenibles	Yes	Yes	No	Yes
CleanCO2	Yes	No	Yes	Yes
FactorCO2	Yes	No	Yes	No
Bosquia	Yes	No	No	Yes
Kaia	Not specified	Yes	No	Yes
Reforestum	Yes	No	Yes	No
CO2Revolution	Yes	No	No	No
HuellaCero	Yes	No	No	No
Abaleo	Not specified	Yes	No	No
Cavala	Not specified	Yes	Yes	No
Retree	Not specified	Yes	Yes	Yes
SDL Ambiente	Yes	Yes	Yes	No
Agua de Coco	Not specified	Yes	Yes	No
Green Summun	Not specified	No	No	Yes
CeroCO2	Yes	Yes	Yes	Yes
Sylvestris	Yes	Yes	No	No
InclamCO2	Not specified	Yes	No	No

Connecting the information gathered regarding additional services and the other parameters analysed, we can extract some findings and drive some conclusions. Needless to say, these are subject to discussion given the reduced scope of the competitors analysed. Tree adoption platforms seem to be likely to invest in free online carbon-footprint calculation software or apps, showing a more user-friendly interphase and simple sophisticated designs. Companies analysed trading carbon offsets in voluntary carbon markets are less likely to provide communication and branding campaigns services or provide information on the long-term motorisation of projects. Regarding companies analysed focused on sustainable forest management development are less likely to provide online carbon-footprint calculation tools but seem to be more willing to provide information in monitoring activities and on-going maintenance of the compensation projects.

3.3.4 Competitors Analysis Conclusions

As a summary of the information obtained from the competitor's analysis, below some interpretations or conclusions driven from this final part of the market research:

- Competitors analysed at a national level are mainly small and young companies established in the last 10 years. The size is fairly small with teams of less than 10 employees and the largest company analysed having a team close to 50 employees.
- Tree adoption platforms are the youngest competitors analysed, approaching the largest market segment, providing an easy and fast service that can be used to compensate GHG emissions by individuals and companies. Although customization is limited in these kinds of platforms, they are more engaged with their community through social media and provide a flexible service with an easy-to-use and nicely designed footprint calculation tools.
- Competitors analysed offering CSR and environmental management consulting services seem to grow in a competitive market offering a diverse number of additional services focused on corporate clients or forestall owners.
- Competitors analysed offering consulting services tend to have a more out-dated webpage offering what can be perceived as an unfriendly user experience. Furthermore, with regards to communication channels, there is a lack of social media iteration with very little activity on pages like LinkedIn. CO2revolution is an exception to these companies as it uploads content regularly to LinkedIn and YouTube.
- Those companies analysed providing carbon offset compensation projects in developing countries tend to back up the veracity of the carbon credits sold by displaying the voluntary carbon market standards logos used, mainly Gold Standard, Verified Carbon Standard, Plan Vivo Standard and the Clean Development Mechanism.
- Those companies analysed providing carbon offset compensation projects develop in Spain are less likely to display voluntary carbon market standards. Instead they choose to display certifications and carbon registers governed by the Spanish Ministry of Ecological Transition (MITECO, previously MAPAMA). Mainly the Register of Carbon Footprint, compensation and CO2 absorption projects, the seal/certificate “Calculo, Reduzco,Compenso CO2” (CO2 Mapping, Reduction and Offset), and Clima projects included on the Carbon Fund for a Sustainable Economy initiative (Fondo de Carbono para una Economía Sostenible, FES-CO2) based on projects not acting as carbon sinks.
- For those competitors analysed focusing on projects based in Spain, there is a lack of information with regards to the connection and relationship with forest and other woodland property owners, regional administration relationships, the local community or other partners aiding in the development of compensation projects.
- Most of the companies analysed developing projects based in Spain included as carbon compensation projects, those based in sustainable forest management and forest recovery in addition to plantation and reforestation projects.
- Information dealing with monitoring processes of carbon compensation projects is something not specified specially in those competitors analysed which core business is to invest in compensation projects based in developing countries.
- Most of the companies analysed developing compensation projects based in Spain provide communication campaigns and branding services. On the contrary, competitors analysed

offering carbon offsets are less likely to provide communication services or tailored campaigns. Most companies in this research which are currently offering carbon offsets provide compensation certificates issued by the pertinent standard.

- Educational services including workshops based on sustainability and environmental protection and volunteering plantation and reforestation activities are provided by most of the competitors analysed. It seems to be a popular service used by CSR investing companies to promote their compensation projects and environmental awareness in employees. In addition, plantation and reforestation sessions are an added value promoting team working and net working skills.

- Only one of the competitors analysed displayed information based on innovation, research and development activities. We believe the innovative project developed by CO2Revolution with primed seeds and drones is highly valuable. Specially as one of the main problems for the development of reforestation and plantation projects in the Iberian Peninsula is the plantation cost, especially when compare with those costs in other regions of the world.

3.4 Redefinition of the business proposal

After the extended market research conducted to understand the environment where the business idea proposed by GAA will be deployed, there is a need to redefine certain characteristics of the initial characteristics of the business proposal made at the beginning of the research.

The role of GAA was described at the beginning as an end to end developer for private companies to improve their CSR strategy and compensate carbon footprint through the development of sustainable forest management and reforestation projects in the Iberian Peninsula. Now, we would like to pivot towards an agreement facilitator role, where GAA's main purpose is to focus on the connections rather than at the development phase, a process that we believe can be externalised using locally based forestry companies. The connections to facilitate are those between forestland owners, companies interested in compensating their carbon footprint, forestry service companies, regional administrations, the Ministry of Ecological transition and the European Programme Life Forest CO2.

The connections between the different parties and GAA service are the following:

1. GAA facilitates an agreement between a forest and other woodland owner and a company willing to compensate GHG emissions.
2. GAA deals on behalf of the plot owner with the regional administration to obtain the necessary permits and licences to develop forest activities such as forest selective thinning, biomass cleaning, and reforestation and regeneration tasks included in the sustainable forest management plan developed by the forestry service company.
3. GAA works together with the forestry service company to complete sustainable forest management plans for each property and the necessary reforestation or forestry activities to successfully accomplish the given plan.

4. If the compensation project is based on reforestation of agricultural abandoned land or forestland devastated by a forest fire, GAA facilitates the required documentation to the Spanish Ministry of Ecological Transition (MITECO) to include the projects as part of the National Voluntary Registry of Carbon Footprint, Compensation and CO2 Absorption Projects, section B.
5. GAA assist the company to enrol the carbon footprint measurement under the National Voluntary Registry of Carbon Footprint, Compensation and CO2 Absorption Projects, Section A. And will present the inscription of the compensation project chosen by the company to offset carbon emissions.
6. If the project is based on sustainable forest management, GAA facilitates the required documentation to the Life Forest CO2 compensation programme promoted by the European Union and part of the Climate Action Program. This will allow the forestall project and the sponsoring company to obtain the Life Forest CO2 certifications.

Additionally, the market research analysis conducted allowed us to narrow down our client profile. GAA will be willing to base the niche market in industries outside the European Union Emission Trading Schemes. Therefore, we will try to focus the service on the voluntary carbon markets for diffuse sectors. We consider there is a window of opportunity in medium to large size enterprises, operating in the transportation, residential tourism and the industrial sector. We have chosen these sectors as we believe they are subject to a greater impact of external environmental stakeholder pressure, as these companies' clients and financial investors seem to be establishing ever-increasing environmental requirements.

4 Presentation of the Business Plan

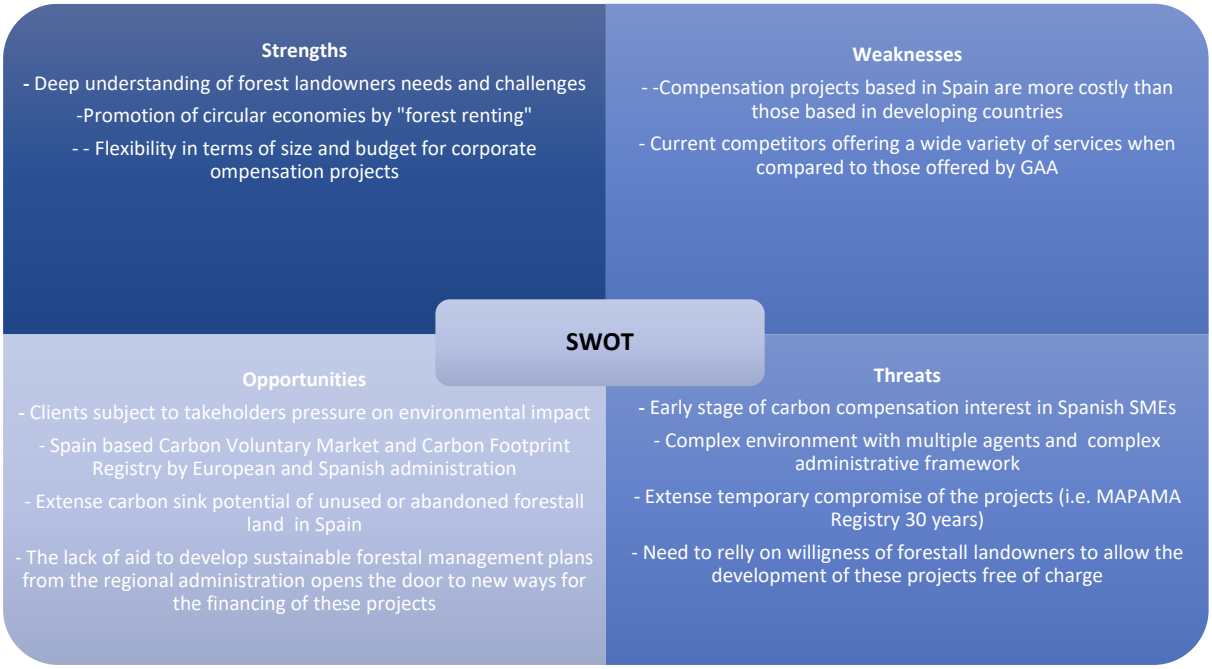
In the first draft of the business model idea presented by GAA aimed to follow a business plan structure like that provided by Airbnb, a share resource business model. Although an online platform would provide us with an extremely useful communication channel with both corporate clients and forestall owners, the core value proposition has shifted towards a facilitator role of GAA in the implementation of carbon offset compensation projects in an excessively bureaucratic scenario, both for companies willing to invest in this type of projects and forestall landowners.

4.1 Strategic positioning

The strategic positioning followed by GAA to achieve competitive advantage is studied considering the interpretations arise from the market research analysis. As part of the strategic positioning, we aim to identify the resources and capabilities of GAA and found the best path to highlight the competitive differences and added value provided by the newly created company.

From a corporate client profile perspective, we would like to address medium and large corporations of the transportation and tourism companies already measuring and reducing their carbon footprint and willing to compensate their GHG emissions. On the other hand, from a forestall landowner profile perspective we would like to focus on the creation of agreements to conduct projects in forestall properties belonging to individuals generally lacking administrative skills. Therefore, we believe this scenario requires the accomplishment of flexible and accountable consulting services on both ends, in addition to the smooth development of the promoted projects.

To identify the internal and external resources and threats, we built a SWOT analysis.The analysis is performed with internal purposes to provide a clear view of the environment were GAA aims to develop.



Ultimately, the mission of GAA is to impel forest sustainable management in the abandoned forestland of the Iberian Peninsula through carbon compensation projects financed by companies willing to compensate their carbon footprint. We believe there is an opportunity in the distinctive competitiveness of GAA, as the core value is based on the relationship established between the different agents aiming for the smooth and hassle-free development of compensation projects.

On the other end, we believe there is a considerably high risk of substitution and high barrier entries in terms of competition. Taking in consideration the likelihood of most of our competitors being capable of providing services at lower costs and tend to target broad market profiles, the strategic positioning chosen is to move further away from the low-cost models based on broader markets and move towards niche markets.

Following this model and considering the importance to adapt to corporate clients needs and budget, the strategy also highlights the importance of understanding the challenges forest owners are facing, GAA embraces a differentiation strategy based on small or niche markets emphasizing the importance of the service quality, flexibility and accountability.

4.2 Go to market Strategy

To define the best suitable go to market strategy for GAA, we first need to answer the following questions:

1. What problem does our service solves?
2. Who is our target audience and how does our strategy align with their needs?
3. How will we reach our target audience?

Answering in a simple manner the first question, the problem GAA services aim to solve for our corporate clients is to reduce the administrative and technical hassle found when investing in the compensation of the carbon footprint. Of course, we are aware there are many competitors or substitutive products solving the same problem, accentuating the need for a differentiation strategy

Answering the second question, as stated before the target audience are medium to large companies based in Spain in the industrial transportation, passenger transportation and hotel sectors. This decision was taken on the understanding that these sectors tend to be highly emitting sectors considering GHG emissions and greatly influenced by clients and stakeholders with environmental awareness profiles.

To support this decision, we found information provided by the MITECO reporting that the transportation sector in Spain represents 25% of the total GHG emissions in the country an almost 40% of the emissions attributed to the diffuse sectors. The tourism sector in Spain is accounted together with the residential, commercial and institutional sector, representing 8% of the national GHG emissions and 14% if considering the emissions attributed to the diffuse sector. (Ministerio para la Transición Ecológica, 2019)

We believe it is important to understand if the target market size is sufficient to implement a new service. An estimation of the market size and the number of GAA potential clients has been built using information provided by the Spanish Ministry of Employment and Social Security. This information provides an approximate number of companies belonging to each industry sector tackled. Depending on the company's financial turnover they are categorized as medium (500,000€ to 3,000,000€), large (3,000,000€ to 30,000,000€) or corporate size (over 30,000,000€ of financial turnover) in the table 3:

Table 4 GAA estimate of potential clients by sector and size. Data obtained from Instituto Nacional de Estadística

Industry	Medium Size	Large Size	Corporate	Total
Hotel	2165	1166	87	3418
Passenger Air transportation	14	9	17	40
Passenger Maritime Transport	42	8	5	55
Passenger land Transportation	434	142	14	590
Passenger Rail Transportation	2	6	3	11
Goods Air Transportation	13	14	2	29
Goods Maritime Transportation	40	54	10	104
Goods land Transportation	4783	1473	82	6338
Goods Rail Transportation	3	14	4	21

This data provides us with an approximate idea of the market potential for the year 2019. We understand a total of 10,606 companies are eligible to be considering as potential clients for the service. Out of this number, 4114 companies can be considered as part of tourism companies involving transportation and accommodation and 6492 companies can be consider as part of good's transportation companies. This number is interpreted as the maximum number of potential clients for the chosen niche market.

The economic valuation of the market size is a difficult value to obtain, as it should consider different parameters and it is casuistic dependent. If using the data obtained from the market research survey performed in the previous chapter, taking as a valid approximation, the average budget of companies for CSR projects is 15,000 euros, and assuming that GAA is capable of obtaining 30% of this budget per client, with an extremely low penetration rate of 1% we can size the market for the year 2019 in a low scenario close to 500,000 euros per year. If we consider a more favourable penetration rate of 3%, we can size the market for the year 2019 in a high scenario close to 1,400,000 euros.

In addition, it is important to highlight the size of the company, the budget and the environmental compromise of the firm, as the money invested per client can vary heavily. Taking this in consideration, together with the assumption that we will be working in a niche markets, we base the strategy in a sales intensive strategy to reach potential clients. By using this strategy, we believe w we can focus on larger clients, with higher budget and specific requirements in exchange of a smaller size in terms of number of clients targeted and engaged. The defined strategy aims to be aligned with the client needs in terms of flexibility and customization of each carbon compensation project.

The third question tackles the communication channels to be used during the marketing and sales process. GAA needs several communication methods to reach target clients and forestall landowners. Forestall landowners will be reached using outbound strategies with information sessions and the collaboration with local partners. Key partners being mainly forestall consulting firms and forestall owner associations. Potential clients are targeted using strong outbound methods during the launching period and we are hoping to move towards inbound strategies once the company starts running. Outbound strategies rely on the usage of email and phone database and cold-calling methodologies. Inbound strategies rely on word-to-mouth, referrals and relevant content on social media and the webpage.

To successfully penetrate the niche market chosen, we define a certain number of short-term objectives. These objectives will encourage GAA to increase productivity, efficiency and set milestones for the future and apply corrective measures if needed.

The following short-term objectives are defined for the first 12 months of GAA as a company

- Establish connections with forestall landowners and administrations from the regions of Galicia, Cuenca and Madrid
- Establish connections with CSR managers and environmental experts working in the tourism and transportation industries
- Capture at least one corporate client
- Capture at least 15 large size clients
- Capture at least 3 clients through referrals of satisfied clients

The following long-term objectives are defined for a 5-year period:

- Position GAA as a leading compensation project development company within the Iberian Peninsula
- Establish long-term relationships with at least 10 corporate clients from the initial niche market
- Expand compensation project location throughout Spain and Portugal
- Establish monitoring systems for project success ratio and client referrals
- Develop a successful inbound strategy where most clients arrive autonomously to our landing page

If we set a starting penetration rate of 0,5% for corporate and large size companies, a penetration rate of 0,25% for medium size companies, an annual growth rate of 70% for corporate size companies, 50% for large size companies and 20% for medium size companies we obtain the following forecast in terms of number of clients for the first 5-year period, see table 4:

Table 5 GAA client engagement forecast for 2020-2025

Type of Client	2020	2021	2022	2023	2024
Corporate	1	2	3	6	9
Large	14	22	32	49	73
Medium	19	22	27	32	39
Number of Clients	**34**	**46**	**63**	**87**	**121**

4.3 Service description

Once GAA strategy has been defined and there has been an analysis of the environment and market where the company will conduct business, we can clearly define the service provided by the company:

1. Outsourcing services for the development carbon compensation projects enclosed under the Spanish Ministry for Ecological Transition (MITECO), these projects will be based on reforestation projects in Spain
2. Outsourcing services for the development of carbon compensation projects enclosed under “Life forest CO2”, these projects will be based on the development of sustainable forest management plans based in Spain or France

The service provided to the client is, in essence, the same in both options, a carbon offsetting service to improve client’s carbon footprint. The carbon offset certificate provider varies depending on the typology of the project; therefore, it is needed to differentiate both services. The service includes an ongoing monitoring activity for the duration of the projects, which is limited to 30 years to fulfil the requirements of the Spanish Ministry for Ecological Transition.

In addition, it is worthwhile mentioning that those projects enclosed under “Life forest CO2” certification open a window of opportunity for potential clients based outside Spain, as it is an offset certificate recognized across the European Union.

The initial idea in which GAA evolved, was based on a platform solution. Although we believe it would be extremely valuable to create an online platform to be able to reach a larger number of clients, forestall landowners and create a showcase for the projects, the platform is now considered a communication channel rather than as a product by itself.

The procedure to successfully conduct the service for the development of carbon compensation projects on behalf of GAA clients is as follows:

1. Complete an assessment of the client’s carbon footprint of and define the scope of the project to be developed as well as the characteristics of the carbon emission reduction scheme to be followed to successfully match it with a suitable forestall property in need for this kind of project.
2. Complete an assessment of the forestall property and the viability for the development of a reforestation or sustainable forest management plan matching the requirements of the client.
3. Calculate an estimation of carbon offsetting potential in the given area. The measurement of the carbon offset potential is done through the methodology defined by the IPCC guidelines for carbon balance in forest ecosystems described under the section 2.3.5 Carbon Sinks of this document.
4. Present a sustainable forest management plan to the relevant regional administration with a schedule of the required forestall activities to be done, as well as short- and long-term objectives of the plan. The document varies slightly depending on specific requirements of different regional administrations. As mentioned in the literature review, the guidelines of the document are based on regional PORF, which vary from region to region. These documents require at least the following elements:
    a. Legal framework: land and property owner identification data, administrative framework (i.e. if the property is included in Natura2000), surface as registered in the land register, situation of joint dominance if any and plot ownership if divided, existence of transit easement if any and any other legal conditionings
    b. Natural framework: geographical location, climate, lithology, geomorphology and erosion characteristics, flora and fauna description, biotic and abiotic agents present
    c. Forestall status: classification of surface depending of forestall usage (forest, non-forestall, agricultural, other wooded land), land subdivision depending on predominant species or forestall aging, tree inventory using LIDAR technologies and description of the units defined based on the previous forest measuring studies
    d. Socioeconomic framework: including road infrastructure, fire prevention infrastructure, economic investment in the last decade and forestall resources obtained from the previous decade

5. Preparation and submittal of the documentation required to register the project in the National Voluntary Registry of Carbon Footprint (submittal and approval provided by MITECO) or as a "LifeforestCO2" project.
6. Regarding forestry activities, we will rely on local forestry workforce. The first set of activities in each plan is generally comprised on the following activities:
    a. For reforestation projects these activities include but are not limited to: land clearing and preparation, plantation tasks and intensive follow-up task during the first 2 years
    b. For sustainable forest management the activities performed will be aligned with international standards to obtain additional certificates such as the Forest Stewardship Council (FSC) or the Spanish Association for Forestall Certification (PEFC) under the UNE 162002:2013 Spanish Norm
7. Once the project is registered and approved, the project is verified by an external agent to ensure the acquisition of the carbon offset certificate on behalf of our client.
8. Ensure periodic maintenance and follow-up of all the activities required to ensure the successful development of the sustainable forest management plan. These activities include yearly pruning, clearing and phytosanitary treatments, commercial clearings or periodic regeneration felling for selected plots

4.3.1 Service pricing

Determining the service price of the service it is an extremely difficult task. Price can be dependent on several parameters such as the budget or scope of the project, the fixed carbon offset price per tonne of CO2, the forestall land chosen to develop the project, and any particularities the client or the forestall landowner would be pruning to add.

Although pricing should be based in all the above-mentioned parameters and is subject to include ad-hoc additional priced items, we wanted to provide an example of a service pricing. For this purpose, we will analyse the cost of a carbon compensation project based on sustainable forest management registered under Life Forest CO2 database.

As previously mentioned in this document, the price of voluntary carbon offset sold by European organizations varies heavily depending on the location of the project, with prices ranging between 3€/tCO_2e and 20€/tCO_2e. For this purpose, we will assume the price for voluntary carbon offset reported in Spain, fixed at a price of 15,6€/tCO_2e.

We take as a project sample for pricing purposes, one of Life Forest CO2 projects p in their publicly available in their webpage. The project is based in the municipality of Villasandino (Burgos), north east of Spain, the size of the terrain is 5 hectares and is a carbon offset of 237,65 tCO2, equal to 47,53 tCO2/ha.

At the fixed priced set for our potential clients, these projects would enable GAA to provide an adequate budget for a medium enterprise willing to invest in CSR of 3,707.34€ for a year length period. If we focus on the hotel industry, the number provided by Melia of the average carbon footprint for their hotels located in Mallorca per stay is approximately 12 kg/CO_2 per stay. The example project used could potential provide a carbon offset for over 19,000 stays.

To analyse the cost implied to develop the project, we will use the mean costs provided by forestall land owners during the survey phase of 450€ per hectare and the cost provided by the Forest Stewardship Council in Spain for Small and Low Intensity Managed Forest (SLIMF) to obtain a Sustainable Forest Management plan and certification. The data obtained is for the year 2012 (Estévez Malvar. M., 2016).

The annual costs are provided in table 5:

Table 6 Estimate of Annual Cost for Sustainable Forest Management Plans per ha

Concept	Average Annual Cost (€/ha)
Initial cost associated to the management plan and certification process, including costs associated with the development of the plan for year one	46,03
Annual cost associated to follow-up and maintenance tasks for upcoming years	24,77
Annual cost associated with all forestry activities included in the forestall management plan	450,00

With an estimated cost of 496,03 €/ha for the development of the sustainable forest management compensation project in year one and 474,77€/ha for the upcoming years (at least until year 5), the potential product margin in this sample service for the first year is equal to 33,1%, and 35,9% for upcoming years.

4.4 Legal Structure

The legal structure chosen for the newly created business of GAA is defined as a limited liability company. This is mainly due to the following aspects:

- The number of founders is limited to two individuals, both working in the company. The Spanish legal form for the creation of this type of companies requires at least one founder to create the company as a limited liability company

- The share capital required to fund the company would be based in friends, fools and family. Therefore, the initial fund will be limited to the minimum share capital required now for constitution, 3000€. The capital is divided in two individual and cumulative shares
- The asset liability of the company is limited to the funding capital; therefore, founders are not liable to respond with personal assets in the event of debt
- Corporate tax for Spanish limited liability companies is equal to 25% withheld on the net profit

The corporate bodies needed to establish a limited liability company as per required by the Spanish law are the following:

- Stakeholder's Board: organism in charge of taking decision such allocation of resources or the approval of annual accounts
- Administrative Body: organism in charge of daily management of the social, legal and corporate aspects of the company and the relationship with third parties. To be part of the administrative body, it is required to be part of the stakeholder's board

The steps needed to legally constitute a limited liability company in Spain are as follow:

- Application for a negative company name certificate in the Spanish Central Mercantile Register. The document secures that no other company develops their business under the same name
- Create a bank account under the company name transferring the share capital
- Apply for a tax identification number for individuals and legal entities in Spain under the tax administration state agency (AEAT).
- Notary Public sign of the Instrument of Incorporation of the Company. The document must include the name of the company, name of founders, address of the registered office, share capital and description of the main activity to be developed by the company
- Payment of the tax on capital transfers and documented legal acts. To be paid within a month after the signature of the Instrument of Incorporation of the Company at the relevant regional treasure administration office where the registered office is based
- Presentation of the Instrument of Incorporation of the Company in the Spanish Central Mercantile Register (application within 60 days after the signature)

Other administrative and recommended procedures to launch the company:

- Apply for the electronic certificate and/or electronic signature
- Apply for a business activity licence in the relevant city council where the company is established. For this purposed, Madrid City Council does not require a business activity license for environmental consulting services unless the registered office is open to the general public
- In the event of hiring employees, it is needed to be registered under the Spanish Social Security fund and apply for a contribution account code. In addition, employees must comply with the affiliation of workers in the regional administration and to be registered under the General Scheme of Social Security

4.5 Business Model Canvas

The main goal of this project was to develop the research phase and interpretation of CSR trends in Spain and how to successfully adjust a business idea to promote the development of sustainable forest management plans with the economic aid of private companies willing to invest in sustainability.

Taking in consideration the information disclosed in this document, a business model canvas has been built to complete GAA business proposal.

4.5.1 Value Proposition

The success of shared resources business models is based on the value proposition offered for both sides. In this case, these parties are the forest property owner where the compensation project will be based and the corporate client providing the funding for the project.

Corporate Clients

- Purchase of certified carbon compensation projects based in the Iberian Peninsula and certified by MITECO or Life Forest CO2
- Availability to adapt compensation projects to corporate client budget and time scale
- Avoid administrative hassle with the registration process and the reporting of on-going monitoring tasks

Forestall Landowners

- Development and approval from regional and national administration of the property sustainable management forest plan, a document entitling permits for future mechanical activities and which has the potential of increasing the property value
- Local third-party participation to promote trust, local engagement and ensure a smooth negotiation and design phase for each compensation project
- Preservation of the natural resources within their forestall property

4.5.2 Customer Segment

As previously mentioned, GAA aims to implement a shared resource model, therefore there a need to identify the customer segments from the supply side, forestall landowners, and from the demand side, corporate clients willing to invest in carbon compensation projects.

Corporate Clients

The service provided by GAA targets two niche customer segments, these are companies included in the transportation and the tourism industries.

We have decided to target these two segments, as both industries share certain similarities as GAA clients. Both segments can be considered highly polluting and heavily affected by shareholders and clients. On the one hand, tourism companies are influence by their client's awareness on sustainability and environmental issues. Similarly, shareholders influence transportation companies, as an increasing number of transportation contracts now include environmental clauses.

In addition, both segments require a high degree of flexibility in terms of project scope. As an example, a hotel chain might be willing to invest in the compensation of carbon footprint for small size hotels located in natural reserves or a given transportation company only willing to invest in the compensation of carbon footprint of selected contracts.

Forestall Landowners

GAA will focus its efforts in private forestall landowners with unused or abandoned forestland. Ideally these individuals will belong to regional forestry associations. This decision is taken since those forestall landowners already developing economical activities related to the forestry sector within their property might encounter conflicts of interests.

In addition, the aim of GAA is to assist those areas where there is a high rate of forest territory abandoned or unmanaged, where natural capital is threatened. Furthermore, this profile of forestall landowners is chosen since the development of sustainable forest management plans within their property is unlikely to happen any other way due to the lack of economic resources or administrative knowledge.

4.5.3 Customer Relationships

Although communication with potential customers and forestall landowners is mostly done through digital channels, mainly email and the platform interphase, GAA aims to establish a tailor relationship with each corporate client and landowner.

Corporate Clients

Regarding customer relationships, given the degree of flexibility per project provided by GAA, it is key to establish a personal relationship with those members in charge of CSR project development within each company. We are aware this will translate into the allocation of a higher number of resources to be able to successfully develop this close relationships.

Forestall Landowners

Regarding forestall landowners, as seen during the market research phase of this document, there is a need to establish a good degree of relationship and gain their trust to be able to develop compensation projects based in their lands. Therefore, there is a need to allocate resources in the establishment of long lasting and strong relationships.

4.5.4 Channels

In an initial phase, consumer acquisition is done through different communication channels:

- Online platform enables both forestall landowners and corporate clients to visit the webpage and log into the platform
- Investment on digital campaigns and sharing content marketing campaigns through corporate social media (LinkedIn)
- Participation in CSR innovation contests
- Outbound activities targeting personas involved in CSR and environmental departments
- Participation and promotion of events in regional forestall landowners' associations
- Word of mouth and referral programs once the first compensation projects are carried-out

4.5.5 Key Activities

The key activities that we believe can be identified as vital for the development of GAA, these are listed below:

- Creation of a scalable, secure and reliable network between the different stakeholders participating in the services provided by GAA and that will enable the adequate development of carbon compensation projects. The implementation of an online platform will assist us in the creation of this network, but we shall not rely only in this channel. Therefore, commercial activities must be developed to ensure participation and engagement of all parties. Figure 7 shows a scheme of the network activity developed by GAA.
- Provide accountability in all the stages of the development of the project. From the client carbon footprint analysis to the forestall property analysis and carbon compensation potential, the registration of the sustainable management plan to the relevant authorities, development of forestry activities, certification of carbon offsets and registration under client name.

Figure 7 GAA Stakeholder Network

4.5.6 Key Partners

As mentioned above, one of the key activities in GAA's business canvas is based on the creation of stakeholders, therefore there are several partners to be considered in this model, see figure . The key partners identified are:

- Forestall landowners are key to supply the access to the forestall land, accept the on-field activities to be conducted in their domains and aid when needed with regards to the request of the administration
- Forestry maintenance and vivarium companies will be the partners conducting on-field tasks and on-going maintenance, following the procedures indicated by each relevant sustainable forest management plan. They will also play a key role at a local level enable GAA to be visible in local communities.
- National Voluntary Registry of Carbon Footprint (MITECO) and Life Forest CO2 will be the providers of the carbon offset certificates, key for the fulfilment of the expectations of GAA clients.

Additionally, depending on the location of each client and/or forestall property, non-key partners will vary slightly. Some examples of this partners are local forestry associations, county administrative bodies and townhalls.

4.5.7 Key Resources

The key resources of needed for the success of GAA are mainly based on the positive network effect created by GAA stakeholders' network and GAA human resources. The multidisciplinary team of engineers founding GAA is the most valuable resource as it will enable the creation of the network, the analysis of potential properties for the development of carbon compensation projects and the expertise on the forestry industry to implement sustainable forest management plans.

Other valuable resources to take in consideration are:

- Geographic Information System (GIS) software
- Food and Agriculture Organization of the UN (FAO) Toolbox for Sustainable Forest Management
- Marketing campaign services, providing access to client's databases and/or other marketing outsourcing products

4.5.8 Cost Structure

Regarding the cost associated to develop the key activities and deliver the value proposition to customers are different if considered the first or the following years after the creation of the company.

The initial investment cost to start GAA are depicted below:

- Initial office rental agreement of a coworking space for three people implies an upfront cost of 3000€ in terms of deposit and last month rent
- Office equipment implies a total upfront cost of 4000€, with a budget of 3000€ to purchase 3 laptops and 1000€ to purchase 3 cellphones
- Creation and Design of online platform. The web marketplace with a structure including site visitors' interface, forestall landowner interface and customer interface; and following consultation the price is approximately to 20,000€
- Initial marketing campaign and initial forestall landowner training campaign: to be able to reach both potential clients and forestall landowners willing to implement GAA forestall projects in their projects a budget of 5000€ has been allocated

Fixed cost forecast for the 5 first years is depicted below:

- Office Rental in the coworking space chosen in Madrid cost is 1500€ per month, adding a total of 18,000€ per year. Utilities and bills such as WIFI, telephone line or cleaning services are included in this price
- Software: to successfully develop GAA activity, we will need to purchase an GIS System license (starting at 1500$ per year), IPCC Inventory Software for the calculation of corporate carbon footprint (free license) and the reference toolbox for sustainable forest management from FAO

- Insurance costs are estimated as 4,200€ per year. This cost includes insurance in terms of accidents and civil liability insurance
- Salaries are determined based on average salaries for Junior engineers in Madrid, with a net salary of 25,0000€ per employee and an additional cost in terms of social security for the company of an additional 33%. The total cost defined for the company for two engineers based in Madrid per year is 66,700€
- A monthly average travel cost of 1000€ per month for one employee (assuming 100€ per stay and an average of 250€ for commuting costs)
- Communication, social media and marketing campaign outsourcing services estimated as 2000€, price estimation according to industry expers. If required, free-lancer services can be contracted as a part-time or full-time service.

4.5.9 Revenue Stream

The revenue stream is based on a service fee per transaction applied to the company willing to offset their carbon footprint through the proposed carbon compensation projects. Depending on the particularities and the profit margin of each project, the service fee can vary from 15 to 35% of the total budget allocated by the client.

Unlike other shared resources models, for the time being we do not consider viable to charge a fee to forestall properties for the benefit of obtaining a registered sustainable forest management plan under the guidelines provided by the relevant regional PORF document. This might change in the future depending on the engagement and likelihood of owners to participate in these projects.

Additional revenue streams that might be considered in the future, once projects lifetime provides an appropriate length is based on commissions to sell timber and biomass produced during forest clearings or forest remapping.

4.5.10 Business Model Canvas Evolution

In the next two pages we finally present the evolution from the first draft of GAA business canvas elaborated in early April and shown in page 71 of this document, to the final model of the business model canvas shown in page 70. Comparing the two, we can see items that have been added and removed as the business idea evolved towards a facilitator service rather than a platform based service.

Business Model Canvas	Designed for:	Date:	Version:
	GAA	30.08.2019	2

Key Partners

- Forestal Landowners
- Forestry and Vivarium Companies
- National Voluntary Registry of Carbon Footprint & Life Forest CO2

Non Key partners
- Marketing companies
- Local Forestry Associations
- Local townhalls
- Local and Regional Administration

Motivation for partnership:
Adaptation of circular economy business model to forestal industries

Key Activities

-Create a network of stakeholders enabeling the participation of private sector in carbon compensation projects based in privately owned forestall properties based in the Iberian Peninsula
-Advise landwoners about required improvements & forest valorisation
-External audits for companies willing to invest in CSR
- Certify CO2 offsets and real transaction between industries and landowners

Key Resources

- Human Resources: Forestal engineers and Engineering management team
- GIS Licenses & IT equipment
- Marketing Campaigns
- Car / transportation means to visit and qualify land.

Value Propositions

The main value proposition is a facilitator role between the different parties involved to develop carbon compensation projects, specially minimizing the hassles found with the administrative activities

Value delivered to costumer:
- Landowners: administrative aid and funding of the actions needed to improve forestal lands, rural needs awareness & development
- Companies: auditing the needs willing to be covered by the entity, certified compensation of pollutant emissions, enhace CSR projects within their local community.

Bundle of services offered:
- Landowners: forest valorisation, consultancy and financing means to carry out the proposed solutions
-Companies: Certified CSR projects, enhacement of the visibility of their CSR projects in local communities & reduction of corporate pollutants print

Customer Relationships

Relationship
- Landowner: personal relationship with periodic tracing of project progress
- Companies: accountability relationship to ensure total development of assigned projects. Assisting with marketing campagns, employee voluntering days, etc.

Cost:
- Both are costly relationships since envolve HR resources to maintain the desired relationship

Channels

-Landowners: “door-to door” & “mouth to mouth” channels
- Companies: Internet & Social media. A personal network development is required to enter CSR bidding offers.
- Development of online platform to ease access for both owners and private clients

Customer Segments

GAA aims to create value for society as a whole, with the development and improvement of forestal land usually located in rural areas.

- Landowners belonign to local forestry association and whose property is in a an unused or abandoned state.

- Companies from highly polluting industries would be a niche market for GAA, initially our aim is to target those companies in the tourism and transporation industries as both are considered highly polluting and highly affected by stakeholders and public opinion.

Cost Structure

Most important cost
- Forestal land data base development
- Project development and periodic tracing of the project
- Project certification

Other costs
- Internet & Social Media development
- IT infrastructure costs
- On-going costs: HR costs, office rental & vehicle maintenance

Revenue Structure

- Landowners in need of financial resources to meet forestal needs would not be paying for the valorisation and audition of their land. This might change in later stage (Usage free model)
- Companies in need of CSR projects will fund the forestal activities needed to develop the project. Thanks to a portfolio of forestal land, projects can be adjusted to companies CSR budgets (Volume dependent market)
- GAA will ask for a service fee that can vary from 15 to 30% depending on particularities of each project

Business Model Canvas

Designed for: GAA | Date: 15.04.2019 | Version: 1

Key Partners

- Specialised companies in carrying out afforestation projects
- Vivarium Companies
- Investors & VC
- Forestar land Owners

Non Key partners
- Vivarium Companies
- Marketing Company

Motivation for partnership:
Adaptation of circular economy business model to forestal industries

Key Activities

-Advise landwoners about required improvements & forest valorisation
-External audits for companies willing to invest in CSR
-Create a mini environmental market where forest owners and companies can gather and pair up in common projects to achieve a symbiosis.
- Create awareness of the potential of CSR projects within national territory
- Certify CO2 offsets and real transaction between industries and landowners

Key Resources

- Human Resources: Forestal engineers and management team
- GIS Licenses & IT equipment
- Car / transportation means to visit and qualify land.

Value Propositions

Value delivered to costumer:
- Landowners: funding of the actions needed to improve forestal lands, rural needs awareness & development
- Companies: auditing the needs willing to be covered by the entity, certified compensation of pollutant emissions, enhace CSR projects within their local community.

Bundle of services offered:
- Landowners: forest valorisation, consultancy and financing means to carry out the proposed solutions
-Companies: Certified CSR projects, enhacement of the visibility of their CSR projects in local communities & reduction of corporate pollutants print

Customer Relationships

Relationship
- Landowner: personal relationship with periodic tracing of project progress
- Companies: accountability relationship to ensure total development of assigned projects. Assisting with marketing campagns, employee voluntering days, etc.

Cost:
- Both are costly relationships since envolve HR resources to maintain the desired relationship

Channels

-Landowners: “door-to door” & “mouth to mouth” channels
- Companies: Internet & Social media based approach. For bigger entities, a personal network development is required to enter CSR bidding offers

Customer Segments

For whom are we creating value? Who are our most important customers? Is our customer base a Mass Market, Niche Market, Segmented, Diversified, Multi-sided Platform

GAA aims to create value for society as a whole, with the development and improvement of forestal land usually located in rural areas.

- Landowners with forestal needs are part of our customer segments as we need their approval to promote these projects.
- Companies from highly polluting industries would be a niche market for GAA, yet we are would aim to target those companies more willing to invest in their CSR program development

Cost Structure

Most important cost
- Forestal land data base development
- Project development and periodic tracing of the project
- Project certification

Other costs
- Internet & Social Media development
- IT infrastructure costs
- On-going costs: HR costs, office rental & vehicle maintenance

Revenue Structure

- Landowners in need of financial resources to meet forestal needs would be paying for the valorisation and audition of their land. (Usage free model)
- Companies in need of CSR projects will fund the forestal activities needed to develop the project. Thanks to a portfolio of forestal land, projects can be adjusted to companies CSR budgets (Volume dependent market)

5 Final Remarks

The main objective of this thesis was to analyse the scenario where GAA, as a carbon compensation-based start-up, aims to be deployed. To gain better knowledge and understanding of this situation a thorough analysis of the macroenvironment affecting CSR and forestall land has been performed in addition to a market research analysis on current trends. The work performed enabled us to provide a different approach to the business model proposition of the start-up.

Recapitulating the research questions introduced at the beginning of this document, it is key to address the main interpretations driven from the presented work.

1. CSR strategies and policies development in Spain is well stablished in large corporations. Despite this, looking at SMEs, with an extremely low percentage reporting environmental or social aspects, there is room for improvement. In this context, new market opportunities can arise for those companies focused on facilitating the development of CSR policies in this market segment.
2. Spanish forestall landowners' current needs evolve around the difficulties found in an extremely complex framework at a legal and administrative level, preventing the development of a sustainable economic ecosystem focused on the potential benefits brought by these lands.
3. The synergies found between enterprise carbon offsets and local carbon compensation offsets based in reforestation and sustainable forest development are tangible, with an outstanding impact in local communities.

From these three key interpretations, the development of a business canvas model based on shared resources, shifted the key value proposition, currently emphasizing the importance of the facilitator figure of GAA in the development of forestry based carbon compensation projects.

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Annex I – Market Research Surveys

Questionnaire document presented to Companies – Translated to Spanish

Questionnaire for Companies

GAA is a newly created project, which aims to foster new ways for promoting Corporate Social Responsibility programs in companies seeking for a trustful and long-term comprise with environmental and social development projects in Spain.

The key activity for this start-up is to enhance the development of forestall improvement projects within the national territory. As stated by the United Nations through the Sustainable Development Goal 15th, there is a need to protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (United Nations , s.f.). Taking this into account, the maintenance, utilization and preservation of forestall land and rural areas is key to the UN and European Union goals and a unique showcase for those enterprises truly compromised with local communities' development and the environment.

The below document serves the purpose to gain knowledge on CSR engagement of different enterprises we believe fit with GAA project, values and the service we will be willing to provide developing a tailored product to meet their needs.

As a start-up, GAA is still in a very early stage, where we are willing to know the real concerns of those companies fostering CSR programs. We understand, the need for innovative ways of bringing CSR projects to local communities to create awareness of each company compromise with social and environmental aspects as key aspects of future strategic development for these enterprises.

All responses to the below questions will be kept confidential. Therefore, we kindly ask you to answer this questionnaire as seriously and accurately as possible. Finally, we would like to express our sincere gratitude for taking the time to help us in this ambitious project.

- Is CSR development part of the corporate strategy within your company?
    - Yes, CSR is a core to our corporate strategy
    - Yes, yet we would like to improve our approach
    - No, but it is something we will be willing to implement
    - No, for the time being is not a priority
- Which department is currently in charge of the development of CSR projects?
    - Internal Department, please provide the number of employees
    - Externalized service
    - Other:

- Which kind of CSR projects is the company currently promoting?
    - Internal corporate projects
    - Social development projects
    - Environmental projects
    - Other
- What is the current CSR yearly budget?
    - Less than 5.000 euros
    - Between 5.000 and 20.000 euros
    - More than 20.000 euros. Please, determine an approximate budget
- What is the time-span for these kinds of projects?
    - Yearly projects
    - Three years duration
    - Five years duration
    - More than five years duration
- What kind of CSR projects are being currently develop or you would like to develop soon?
- Would you be willing to invest in forestry related projects as part of your CSR investment strategy?
    - Yes
    - No
    - Other (Please comment):
- Would it be relevant to your company whether these projects are developed in publicly or privately owner forestall lands?
    - Yes
    - No
    - Other (Please, comment):
- Please let us know your thoughts on CSR and environmental impact matters related to your business. We are particularly focused on carbon compensation, forestry clearings, forestry fire aids, and biodiversity projects.

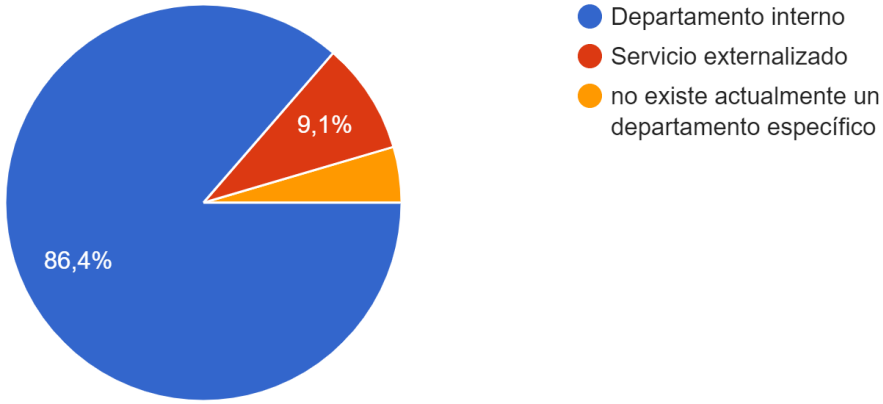
Contact

Do you have any questions about the information asked in this questionnaire? If so, please do not hesitate to contact us**.** Is the content of this questionnaire relevant to you or your company? If you are willing to know more and help us further in this start-up project, please leave us your contact details and we will kindly contact you

Results for the Questionnaire

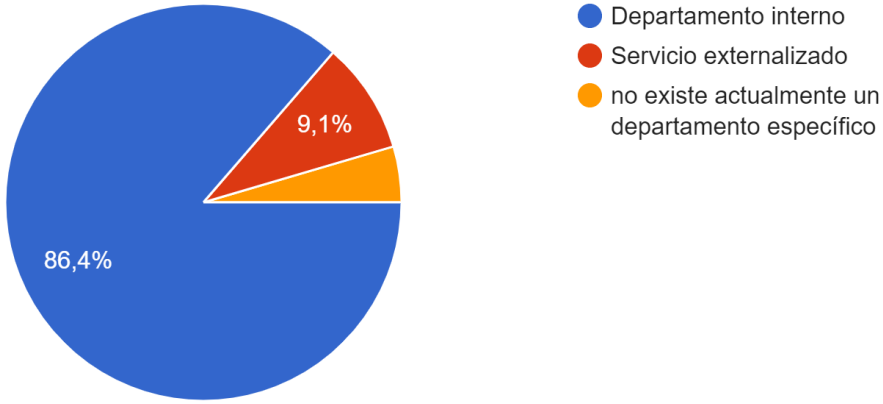
¿Cómo se estructura el departamento encargado del desarrollo de los proyectos RSC?

22 respuestas



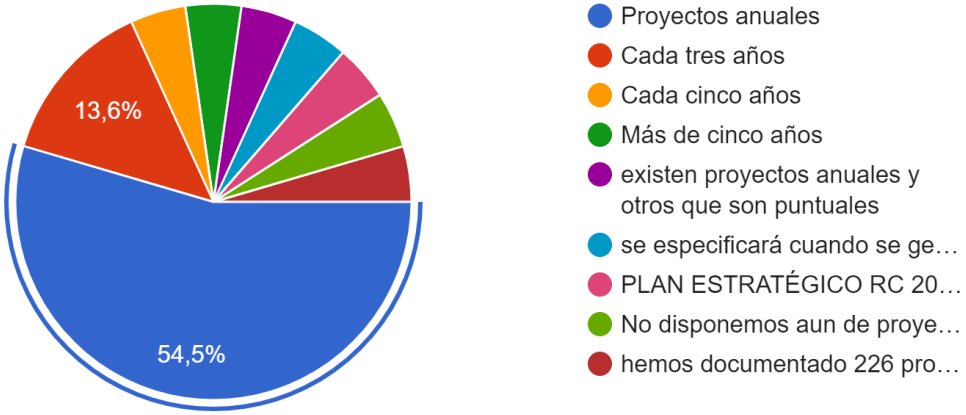
¿Cómo se estructura el departamento encargado del desarrollo de los proyectos RSC?

22 respuestas



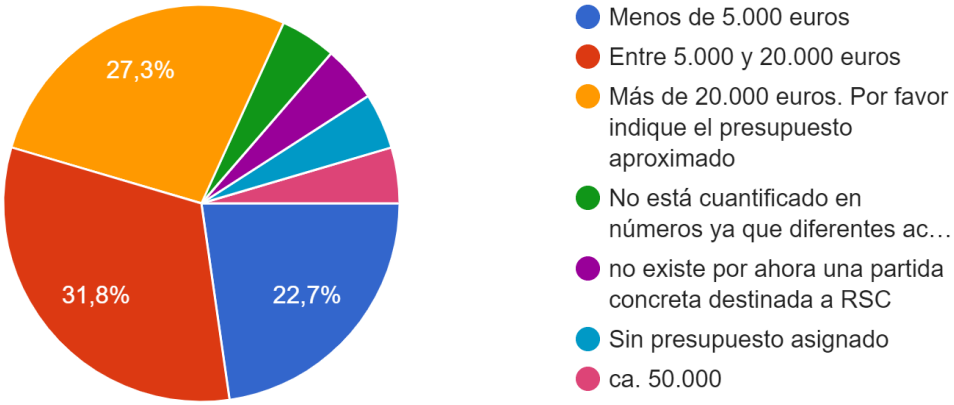
¿Cuál es el compromiso temporal de estos proyectos?

22 respuestas



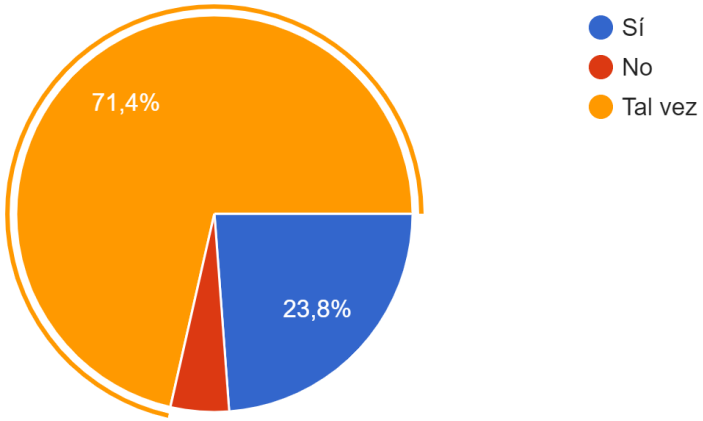
¿Qué presupuesto estimado se invierte en RSC anualmente?

22 respuestas



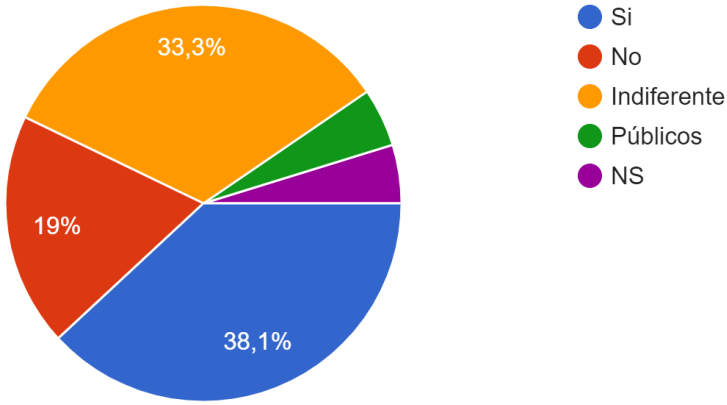
¿Estaría de acuerdo con proporcionar ayudas para proyectos forestales como RSC de su empresa?

21 respuestas



¿Tiene relevancia que los terrenos donde se realizan estos proyectos sean de propietarios...restales públicos o privados?

21 respuestas



Questionnaire document presented to Forestall Landowners – Translated to Spanish

Questionnaire for Forestall Landowners

GAA is a newly created project, which aims to foster new ways to finance forest sustainable management plans, maintenance and forestry resources to ensure the adequate preservation of the environment and the natural capital.

With this in mind, we believe it is fundamental for us to gain knowledge on the different needs of forestall landowners across the Iberian Peninsula, their worries and limitations found so as to ensure the deployment of a useful service according to these needs.

GAA is still in a very early stage, where we are willing to know the real concerns of those forestall landowners which own and manage public or private forests and other wooded lands. We understand, the need to foster innovation in the forestry sector, in benefit to local communities.

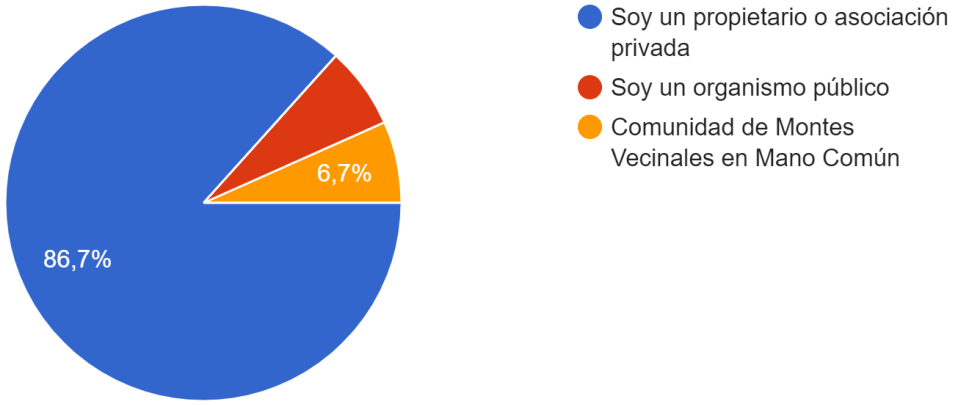
All responses to the below questions will be kept confidential. Therefore, we kindly ask you to answer this questionnaire as seriously and accurately as possible. Finally, we would like to express our sincere gratitude for taking the time to help us in this ambitious project.

- Are you a public entity or a private forestall landowner?
    - Public
    - Private
    - Other (i.e. forestry association)
- What kind of forestry activities are being develop in your property?
    - Recreational use
    - Timber production use
    - Non-timber production use
    - Hunting and fishing use
    - Carbon fixation
    - Others
- What is the annual cost you are currently incurring in the development of forest management plans? These includes firefighting, clearing, infrastructure maintenance…
- Do you currently receive regional or national aids from the administration?
    - Yes
    - No
- Please describe your needs and limitations in terms of sustainable forest management development. Do not hesitate in providing details in terms of urgency, third party events or administrative issues
- Would you be willing to receive financing from the private sector to develop forestry and carbon fixation projects in your property? Please provide any additional comments on this matter.

Results for the Questionnaire

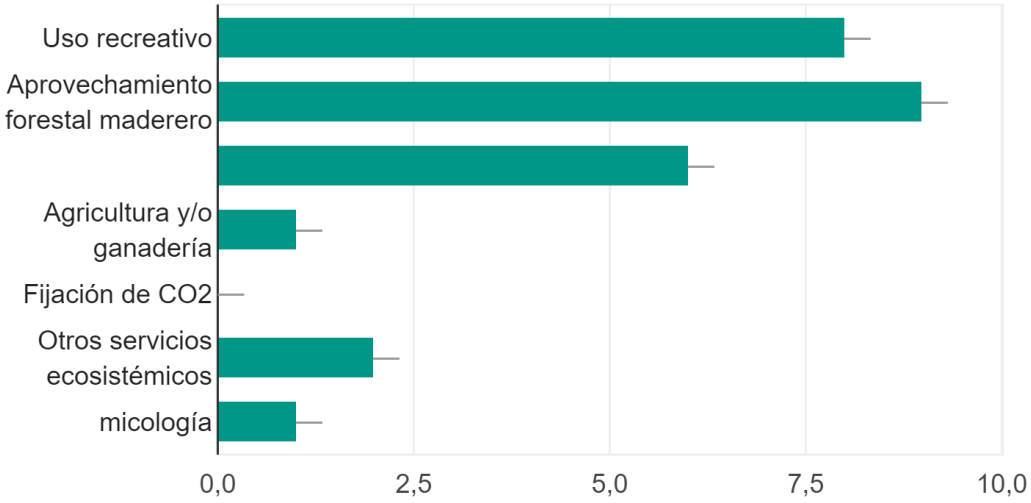
¿Qué tipo de propietario forestal es usted?

15 respuestas



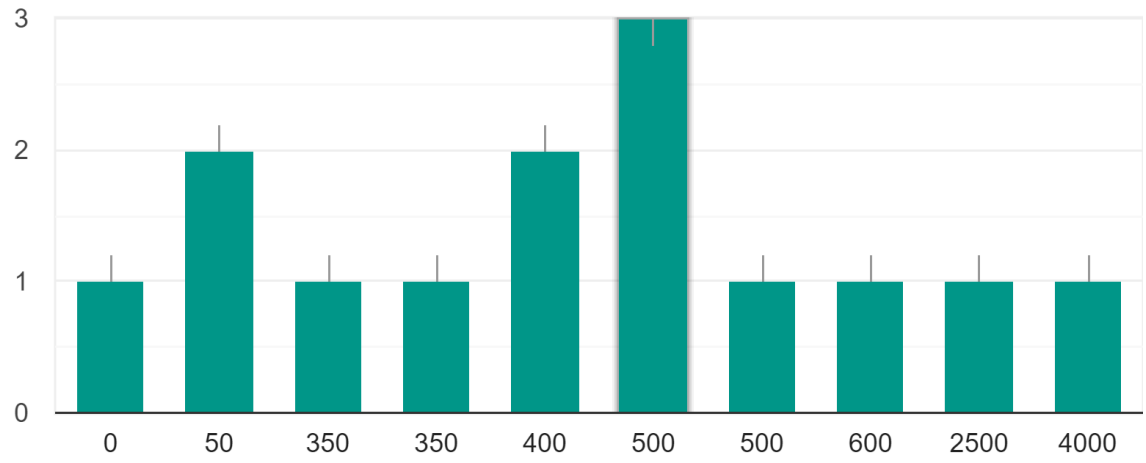
¿Qué actividades se desarrollan principalmente en sus montes? Por favor, marque to...orrespondan (multirespuesta)

15 respuestas



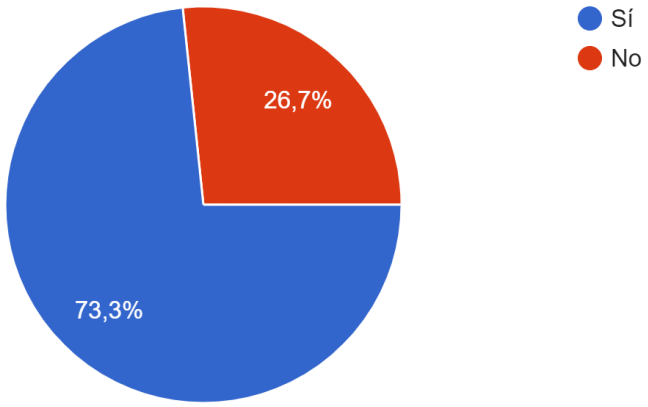
¿Cuál es el presupuesto estimado que dedica a proyectos forestales (euros/ha año)? (tra...imiento de infraestructuras...)

14 respuestas



¿Estaría dispuesto a recibir financiación privada para el desarrollo de proyectos forestales en su propiedad?

15 respuestas



Annex II – Experts Interview Scripts

Interviews with Private Sector CSR Experts

Interview with Corporate Social Responsibility Manager – BBVA

About BBVA: Banco Bilbao Vizcaya Argentaria (BBVA) is the second largest Spanish bank after Banco Santander. Based in Bilbao and Madrid, it part of IBEX 35 and Dow Jones Euro Stoxx 50. It is the 42nd largest bank in terms of assets, employs over 100,000 workers and is present in over 30 countries.

BBVA Corporate Social Responsibility Policies

Society and Environment policy based in three pillars:

- To support the development of the societies where the Bank is present through financial activity, as well as to social programmes focused on education, financial literacy, entrepreneurship and knowledge.
- To define and implement a strategy of climate change and sustainable development for achieving the United Nations Sustainable Development Goals, and aligned with the Paris Climate Agreement.
- To participate in initiatives and collaborate with regulators and other organisations in order to promote and disseminate responsible practices.
- To define and apply a Commitment to the Environment in accordance with the progressive implementation of the recommendations from the Task Force on Climate related Financial Disclosures (TCFD), which includes, among others, risk management in this area, the progressive integration of environmental variables in developing products, collaboration with other actors and promoting eco-efficiency along with managing direct impacts

Annual Non- Financial Report BBVA 2018

Sustainable Finance Pillars:

- Finance: BBVA is committed to mobilize 100,000 million euros between 2018 and 2025 in transition to low carbon economy, sustainable infrastructure and agribusiness and financial inclusion and entrepreneurship.
- Social and environmental impact management. With a target of 70% renewable energy usage and 68% CO2 emissions reduction, transparency in carbon related exposure and compliance of new sector norms.
- BBVA is involved in global initiatives and engagement with stakeholders. Implementing the Task Force on Climate-related Financial Disclosure (TFCD) recommendations before 2020.

Interview

Q: Regarding sustainable corporate funds, are CSR related projects included in this category?

A: We committed to mobilize 100,000 million euros aimed to fund environmental and social projects. The bast majority of these projects are environmental projects developed by big EPC constructors.

For the time being, the bulk of the fund is being used by large enterprises. Green loans need to be externally certified, and provide documentation so as to ensure by the European legislation the project serves a purpose in the mitigation of climate change

This being said, there is a line of action for SMEs, in order to finance projects targeting environmental impact such as energy efficiency projects, but these projects are not consider green loans. At an SME level, we have personalized loans. Some examples of energy efficiency loans is those to promote the implementation of Solar PV rooftop installations, with a clearly stated, verifiable goal and low interest rates.

Q: Regarding social and environmental risk management associated to the activity of the bank, how do you currently minimize the potential direct and indirect negative impact?

Direct risks are fairly easy to manage, as a bank our carbon footprint is relatively low and we work to minimize emissions in terms of paper usage reduction, water and energy efficiency in our offices and corporate travel. All these activities are managed through our “Global Ecoefficiency Plan”.

Indirect risks are those related to our client’s activities and are the most important for as, as they represent the largest share. As an example, if we finance a project based on a coal power plant we should reflect those emissions in Scope 3, and will be obliged to ask our client to limit these emissions as much as possible. There are self-imposed sector norms that prevent BBVA to finance highly contaminant clients. We are currently developing pilot measurement methodologies for scope 3 emissions.

The implementation of TCDF’s recommendations is helping us managing these types of risks. With large clients, we develop a risk and opportunity working line. These lines are focused on companies working for the energy, automotive, mining and transportation sectors. We evaluate each risk analysing the potential opportunities to generate more efficient working cycles. With the suggestions driven from these analyses, we put pressure on clients to improve their environmental impact. In addition, regulatory bodies can limit the funds provided to certain clients, preventing us to finance those clients with high environmental impact.

Q: How are you currently engaging other stakeholders to promote environmental and sustainable development projects?

A: This working line is promoted by BBVA foundation and although it promotes the same kind of projects we do not consider it within our CSR. Through this foundation we help different projects such as scientific ecology and biology research teams. In 2018 we worked together with “Extinciones Invisibles” (Invisible Extinctions), a project fighting against biodiversity losses caused by desertification in the Iberian Peninsula. The foundation is provided with a budget, which can be flexibly allocated within different projects. In addition, the human resources team promotes volunteering programs carrying environmentally related activities such a reforestation days in Seville, Valencia and Madrid.

Interview with the Director of Soil Quality and Atmospheric Contamination – AENA

We had the opportunity to talk with the main director addressing climate change and mitigation projects within Aena. She kindly shared her view regarding current and future trends in the environmental management of their airports.

About AENA: Aena is a Spanish state-owned company, managing national airports and heliports and 17 airports abroad. With over 743 million passengers annually, is the world-leading airport operating company.

Airport Carbon Accreditation

For several years, local and international airports have improved individual reputation by implementing environmental policies and pursuing carbon reduction in terms of emissions. As part of the resolution on Climate Change adopted by the Airports Council International (ACI) Europe's member airports in June 2008, these individual efforts are now empowered through the Airport Carbon Accreditation (ACA) programme. This program provides collective assistance and guidelines in the management, reduction and carbon neutral plans for airports carbon footprint.

Airports are a complex web of transportation movements including aircrafts and fleet vehicles, technical operations and surface access transportation. Therefore, airports have the capability to address GHG emissions through different manners. Some of these activities include better insulation and energy efficiency policies, green energy sources contracts, hybrid or electric vehicles usage, air traffic management and third-party engagement.

Airport Carbon Accreditation has 4 levels of certification.

- Mapping: footprint Measurement - Determine emissions sources within the operational boundary of the airport company. Calculate the annual carbon emissions. Compile a carbon footprint report. Engage an independent third-party to verify the carbon footprint report.
- Reduction: Carbon Management towards a reduced carbon footprint. Provide evidence of effective carbon management procedures. Show reduction targets achieved.
- Optimisation: Third party engagement in CF reduction
- Neutralizing: Carbon neutrality for direct emissions by offsetting

Interview

Q: Can you briefly explain us how is Aena committed with Climate Change mitigation and GHG reduction in the airports managed by the company?

A: Aena is fully committed to promote projects to fight and mitigate Climate Change. We have settle ambitious targets in terms of GHG emission reduction and we endeavour the NetZero ACI Europe 2050, a project aimed to obtain neutral emissions without the need of compensation projects. In addition, in 2030, we target to manage carbon neutral airports in Madrid and Barcelona.

Q: What is the current strategy in terms of GHG emission reduction and compensation?

We currently follow a measuring and reduction strategy, demonstrating carbon footprint reductions annually in 8 out of our 42 airports. This number might seem small, but it represents 80% of our GHG emissions.

In terms of compensation projects, we aimed to obtain Level 3 Plus certification (carbon neutral) in Madrid and Barcelona before 2030. So as to obtain the certification, we will need to invest in compensation projects, but not all projects with a Gold Standard certificate (for example) are accepted, they have to follow certain rules set by the Airport Carbon Accreditation. The rules aimed to avoid double counting projects or projects based on renewable energy. Reforestation and forestall management projects are those promoted by the ACA. We are at an early stage, and we are analysing those projects feasible for us in the long and mid-term. We would like to develop these projects within airport lands or in nearby areas, but we are open to explore those compensation projects located abroad.

The main challenge for us, as I see it, is the implementation of carbon neutral airport management without the use of compensation projects, since we would have to invest on privately owned reforestation projects to count as negative emissions, but these would be on the long-run.

Q: As an airport management operating company, the GHG emissions under Scope 3 are key for Aena, how is Aena currently engaging third-parties to reduce their scope 3 emissions?

A: We currently externalized services such as airport handling (passenger busses and other vehicles), therefore we include an emission reduction scheme as part of the contract documentation. Regarding airplanes, we provide 400 Hz connections to reduced parked aircrafts emissions; it is a requisite to use this connection while landed. For take-off and landing, real-time data analysis in the control tower to reduces waiting times. For passengers we are currently working on the implementation of charging stations for passengers EVs, with 150 points at the moment and 2000 planed for 2020.

Q: Are there any additional environmentally related projects AENA currently supports?

A: Yes, additionally there are some volunteering activities for Aena employees and collaborations with environment and biodiversity prevention foundations.

Annex III - Competitors description & competitor's analysis data

Bosques Sostenibles

Part of a larger group, Grupo La Encina, the company was established in 2010 in Cantabria, north of Spain. Bosques Sostenibles develops reforestation and plantation in forest areas affected by fire and other natural disasters. All their projects are based in Spain, mainly in land owned by public entities. They provide assistance with the development of CO2 offset calculation, take care of the administrative documentation needed to register the project under the Carbon Footprint register of the Spanish Ministry of Agriculture and Environment (MAPAMA).

In addition, they offer the development of the reforestation projects through corporative events where employees can volunteer on plantation activities and educational workshops.

With a small team of below 10 employees, we can assume they are highly dependent on third parties in order to develop their projects such as technical forestry services and tree nurseries.

Services provided:

- CO2 compensation projects through reforestation and plantation activities based in Spain.
- Educational workshops for volunteers working in reforestation projects and maintenance tasks.
- Administrative paperwork and authorisations, working closely with public entities and registering the project under the MAPAMA carbon footprint register.
- Branding and Communication services. Ensuring press releases and adapting to client marketing strategy such as developing plantation projects with company logo, etc.
- Reforestation projects with on-going monitoring, especially during the first two years with high death rates for newly planted trees.

Note: One of the companies interviewed worked with Bosques Sostenibles for a reforestation projects. The project was successfully developed although relationship between Bosques Sostenibles and the client ended in bad terms, as the client described the service provided as "a simple administrative paperwork service with the administration we could have done ourselves, and Bosques Sostenibles obtaining 40% of the project budget. The only project we have done and will do using their services."

CleanCO2

Established in 2010, this company based in Catalonia and part of Lavola, company specialized in sustainable transformation. CleanCO2 provides carbon management and GHG offset services with projects based in developing countries. These projects include reforestation, renewable energies development and methane captivation. They based their service on the purchase of credits aimed to reduce emissions with voluntary carbon market verification methodologies and standards.

Carbon credits based service (one carbon credit is equal to one GHG ton avoided) verified by the Voluntary Carbon Market standards, which include the Gold Standards, Verified Carbon Standard, and Social Carbon. The main benefit of this service is that carbon offset has been performed when the client buys these credits. The credits are verified and available at the Global Market Environmental Registry. The second advantage of these credits is the socio-economic benefits brought to these communities through these credits.

The company counts with a large portfolio of clients and have offset 191.205 tCO2. With a team close to 10 employees, the working methodology through carbon credits makes this company less dependent on third parties, yet the on-going operation of the projects is harder to follow.

Services provided:

- Calculation of Carbon Footprint through scopes 1, 2 and 3 (direct and indirect) for organizations. This service is provided by consulting service using GHG protocol methodology ISO 14064 or by purchasing calculation software.
- Calculation and offset of GHG emissions from corporative events.
- CO2 compensation projects through reforestation and renewable energy projects based in developing countries.
- Branding and Communication services through a communication plan and a Carbon Neutral “Clean CO2” certificate.
- Access to a personalized app with client information on carbon footprint and offsetting emissions.

Some of their projects:

- Reforestation and Sustainable Forest Management in Procuenca, Colombia. With a total of 4,540 hectares the projects mitigates a total of 36,000 tonnes of CO2 per year.
- Reforestation project in Kibale National Park, Uganda. With 3,500 hectares restored, and 74,181 carbon credits issued per year.
- Teobaldo Ceramic devices change from fossil fuels to biomass fuels in Paudalho, Brazil. Project based on GHG emission reduction and 5,503 carbon credits issued per year.

FactorCO2

Funded in 2004 in Bilbao, north of Spain, this company provides sustainable and environmental consulting services aimed to help companies to mitigate and adapt to climate change. Being one of our largest competitors and part of Factor Group, the company employs over 40 professional in six offices located around the globe.

Factor CO2 works with a large portfolio of international clients, governments and international organizations. Their core business is to assess in the calculation and mitigation entities footprint and other negative environment impacts. In addition, they develop consulting services in terms of climate change risk assessment and adaptation strategies. Finally, in terms of carbon offset, the company provides technical consulting services in carbon markets. A case study for this company would be the service provided to Gamesa in order to achieve carbon neutrality in all their operations.

Services:

- Software tools to calculate carbon footprint and climate change risks for large corporations.
- Calculation and mitigation of carbon footprint and other negative environmental impacts
- Monitoring, Reporting and Verification of National Appropriate Mitigation Actions for governmental bodies.

Some of their projects:

- Cost of climate change, change strategy and adaptation in San Salvador, Bahamas.
- Atlantic LNG calculation on GHG emissions in Trinidad and Tobago, developing a software tool to calculate and update the facility emissions in the future.
- Monitoring, Reporting and Verification systems, through GIS (German Cooperation), for the development of bioclimatic housing units in Peru.

Note: Operating at a higher level than GAA aims to operate, the example of FactorCO2 is relevant due to the exponential growth of the company, from an environmental local consulting firm to an international climate change consulting firm and carbon market player.

Bosquia

Bosquia is a newly created start-up funded in 2018 by three young entrepreneurs in Gijon, northern Spain. Supported by the organization Youth Business International, the core service of the start-up is the development of company sponsored reforestation projects. In addition, the start-up offers trees as gifts, a program where customers can “plant and adopt” a tree for 19,99 euros.

The compensation strategy followed by Bosquia is a tree-by-tree reforestation methodology. With the relationship given by the Spanish Ministry of Industry, Tourism and Commerce, where the plantation of 4 trees can be equivalent to 10,000 km driven by a car with 120g CO2 emissions per km, they offer a flexible alternative to compensate carbon emissions.

As a start-up project, the webpage offers little information on whether they register the reforestation projects under the MAPAMA Carbon Footprint Register or the type of property where they develop plantations.

The main costumer of Bosquia so far is Worten, since they have partner up for their program “efficient exchange” where they donate one tree per A++ (or higher) efficient household appliance sold and recycled household appliance. The campaign running from the 5th to the 26th of June, planted over 400 trees in a 5,000 hectares devastated forest area in Southern Spain.

Kaia Forestal

Established in 2017 by three young forestry engineers in the city of Madrid, this forest management-consulting firm develops carbon compensation projects through sustainable forest management and reforestation in Spanish forestlands. Through the development of forestall engineering services they are able to acquire a public and private forestall owner network and assessment in the implementation of projects with the potential to met carbon market requirements. In terms of RSC services to companies they carry out two main services: Planta RSC a modality where the reforestation project is carried out through Kaia Forestal and volunteers of the organizing company and Restaura CO2 aimed to assist sustainable forest management projects sponsored by private organizations.

The business model implemented by Kaia is one of the closest in terms of what GAA is willing to implement and would be a potential competitor to closely follow and analyse.

Services:

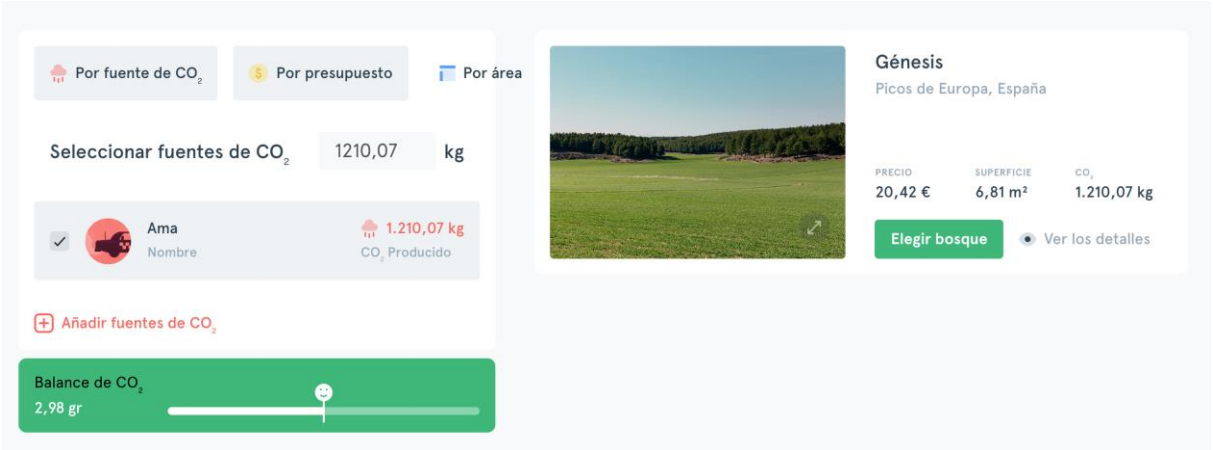
- Forestall Engineering services
- Environment and forestry consulting services
- Carbon footprint measurement for enterprises
- Reforestation and compensation projects for enterprises
- Assistance with the requirements and documentation to met ISO, VSC and Gold Standard carbon units.
- Social carbon cost services, which ensure neutralization of all GHG emissions of events or organizations.
- Branding and Communication services for compensation and carbon footprint reduction projects.
- Environmental related RSC activities including educational workshops for employees.

Reforestum

Reforestum is a reforestation and forest recovery platform based in Valladolid. Established in 2017, the platform owns and operates forests in Spain and abroad offering “forest shares”, a one-time fee so as to offset the carbon footprint of certain activity. Their customer segment targets both individual and organizations, offering and app and online footprint calculation tools with daily activities such as flights, daily commuting to work, food consumption and other activities.

Currently they offer to compensate 1 ton of CO2 in Picos de Europa in Asturias, north of Spain at a starting price of 18 euros. Their online tool allows users to choose the compensation methodology by carbon footprint measurement, budget or area to be reforested or recovered. The platform compromise is to maintain the forest for 30 years on behalf of the forest share and allows shareholders to visit the forest.

The webpage does not mention if the carbon units are accounted in the Carbon Footprint Register of the Spanish Ministry of Environment or other international carbon markets. Despite this, the platform is very well design and provides a great communication and marketing channel for this purpose.



CO2Revolution

Founded in 2016 in Navarra, this company develops reforestation projects in Spain and in developing countries through innovative technologies. They do register all their reforestation projects under the Carbon Footprint offset Register of the Spanish Ministry of Environment. The core technology of this company is a plantation methodology using big data, drones and encapsulated sprouted seeds of autochthonous species. Through this new methodology they are able to perform plantation task in 1/10 of average plantation time. In addition they carry maintenance and monitoring task for the optimal growth of the forestall ecosystem.

With several innovation and smart green technology development prizes, CO2Revolution works closely with public entities of the regional government of Navarra and already develops projects for large enterprises based in Spain.

Although CO2Revolution can be seen as a competitor, it might also be a key partner. It would be interesting to analyse the cost saving potential their methodologies claim and the success ratio of their plantations.

Services:

- Environmental consulting services
- Carbon footprint calculation and compensation projects
- Reforestation projects developed using “iseed” (pre-sprouted seeds) and drones

Data Base

Contiene todas las variables que intervienen en la creación del nuevo ecosistema y selecciona mediante algoritmos las más adecuadas.

i Seed

Están compuestas por una cápsula biodegrable que contiene la semilla pregerminada junto con todos los elementos que necesita para su crecimiento.

Drones

Llevan adosados depósitos y sistemas de lanzamiento de hasta 10.000 de nuestras iseeds. Mediante un avanzado software y sistema de navegación selecciona de forma autónoma el patrón de plantación más adecuado.

Huella Cero

HuellaCero is a combined initiative from the non-profit foundation Ceseor and the forestry-consulting firm Agresta. Established in Castilla y León in the year 2006, it develops reforestation and sustainable forest management projects in Spain for enterprises and events organizers.

They currently have two reforestation projects in the province of Soria, one sustainable forest management project in Soria and one more in the Pyrenees. All the four projects have been registered under the carbon footprint compensation register of the Spanish MAPAMA.

With quite a small portfolio of projects and clients, and some collaboration with public entities like Tenerife town-hall in the Canary-Islands, the activity of the initiative seems be descending in the past years.

Services:

- Services for the calculation of carbon footprint
- Consulting services to reduce carbon footprint and increase efficiency
- Carbon footprint compensation projects.

Abaleo

Established in 2015 in Madrid, Abaleo is described as an environment and sustainability-consulting firm, providing services in Spain and other European and African countries. As part of their sustainable development and Climate Change branch, the consulting firm offers a range of services aimed to help companies developing CSR policies and achieving standard in environmental management systems ISO 14001.

Through this branch the consulting firm, counting with the professional experience of over 15 consultants, provides carbon footprint measurement services, environmental impact assessments and sector tailored services such as sustainable tourism consulting services.

With a large portfolio of clients in Spain, they have developed the CSR report for the entities of Carrefour (Spain) and Grupo Correos.

Although they do not develop themselves reforestation or sustainable forest management projects for carbon offset, they do play a key role in the development of CSR policies for their clients and provide an advisory service for CO2 voluntary emissions initiatives and compensation initiatives for enterprises and event organizers.

Services:

- Legal advice in environmental issues and policies
- LCA analysis
- Environmental impact studies and assessments
- Environmental recovery of large civil infrastructures such as water damns, mines, roads, etc.
- Sustainable development and Climate Change mitigation and adaptation consulting services
- Sustainable forest management plan development
- Water footprint and development of sustainable allocation of water plans
- Waste and waste water management services
- Training and educational workshops in environment and sustainability good practices
- Environmental activities communication campaigns

Cavala

Founded in 2012 in Madrid as a quality and environment auditing and consulting firm, Cavala employees more than 20 professionals in the field. The company provides a wide range of services including assistance for companies to achieve ISO standards in heath and safety, quality, management, food industry and environmental fields.

In terms of forestall services and carbon footprint, Cavala offers services to measure, analyse and reduce GHG emissions for companies, products (LCAs) and events and provides assistance to register in the Carbon Footprint Register of MAPAMA. In addition, they provide a portfolio of carbon compensation projects. Cavala does not provide information on the location of this portfolio of project or if the firm assists to carbon markets.

Services:

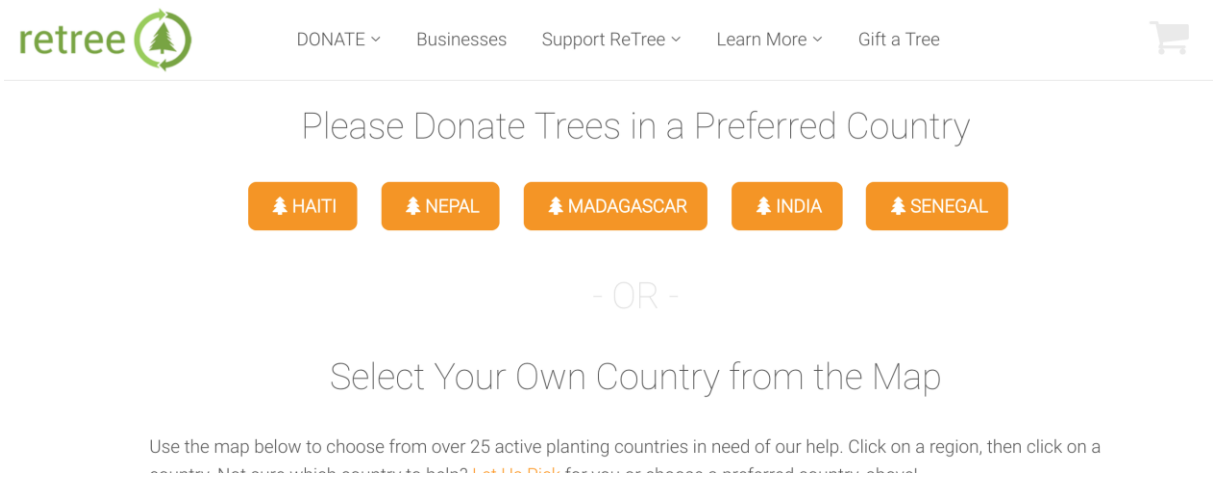
- Quality standards guidance and auditing services (ISO 9001)
- CSR services including the development and auditing of CSR report through GRI guidelines, ISO 26000 guidance on social responsibility, design of commitments, strategies and actions for the United Nations Sustainable Development Goals and more.
- Prevention of occupational risks and industry health and safety measurement services, ISO 45001 and OSHAS 18001
- Environmental consulting services including carbon footprint evaluation and mitigation, environmental due diligence, ISO 14001, sustainable forest certificates by the Forest Stewardship Council and Programme of Endorsement of Forest Certifications.
- Educational workshops, training and formative courses on different fields

Retree

Established in 2018 in Madrid, this young start-up develops reforestation projects in various locations around the world such as North and South America, Africa, Middle East, South Asia and Europe, including Spain. In order to develop this compensation projects, they have partnered up with three organizations: Eden Reforestation Projects (working in Haiti, Madagascar, Nepal and Ethiopia), Trees for the Future and Plant-it 2020 foundation.

Their platform, with a clear international approach, allows individual, events and enterprise to purchase tree donations at 1 US dollar per tree. In addition, the start-up is very active in their social media profiles, such as Facebook and Instagram, reaching quite a large community.

At a B2B level, their LinkedIn profile shows some business cases where they have helped local SMEs based in Madrid to develop CSR initiatives and report, calculate their carbon footprint, establish a reduction strategy and implement CO2 compensation projects.



Services:

- Online tree purchase
- Carbon footprint measurement, reduction and compensation services for enterprises
- Energy efficiency consulting services
- Educational and training workshops on sustainability and environment good practices
- Customized business environmental campaigns
- Purchase branding apparel

SDL Ambiente

SDL is an environmental consulting firm and scientific outreach-broadcasting firm. The company was created in the year 2000 in Madrid and currently counts with over 25 employees. Offering a large variety of services, they provide CSR reporting and auditing services. They help their clients through data measurement, analysis and development of strategies aimed to compensate negative environmental impact. Regarding carbon footprint offset, they develop reforestation activities and volunteering days.

In addition, SDL Ambiente also provides services for Spanish public and private forestland owners such as sustainable forest management plans forestall resources studies, valuation of carbon footprint and offset services and phytosanitary studies.

Through this services they are capable of getting valuable information from both key players of GAA business models, forestall owners and enterprises. Although their core business is focused on educational courses and scientific outreach publications, this is one of the competitors we consider should be followed closely.

Services:

- Organized trekking and hiking routes
- Environmental publication editing services
- Educational courses on sustainability, environmental impact assessments, sustainable forest management and sustainable management of urban forests and gardens, agro-forestall health, and more.
- Environmental education workshops for enterprises
- Environmental impact study and assessment
- Sustainable forest management plan development
- CSR reporting, auditing, and carbon footprint services

Fundación Agua de Coco

The non-profit organization Agua de Coco, was founded in the city of Granada (Spain) in 1994 with the main goal of covering basic human needs in Camboya. In the year 2000, the organization opened new working lines with new educational projects in Brasil, Madagascar and Camboya. Later on, they started working in environmental projects in these communities as well.

Agua de Coco works in partnership with other non-profit organizations such as Asociaçao dDos Moradores Joanes Leste in Brazil and Bel Avenir in Madagascar.

The environmental line of the organization deals with climate change education and mitigation in the countries where they have established social and educational projects. One of their donation platforms includes a CO2 compensation software tool, where individuals and organizations can donate trees at a price of 3 euros and get a plantation and compensation certificate for a project based in Madagascar. The portal does not include information on the validity of the certification in terms of Gold Standard, Verified Carbon Unit or Verified Emission Reduction.

Green Summun

Founded in 2016 in the province of Almería, Andalucía (Spain), Green Summun is a sustainability strategy and consulting firm. With an international approach, the company base sustainability strategies in the commercialization of certified carbon credits. Green Summun is the main partner in the Iberian Peninsula for South Pole Group, owner of the world's larger portfolio of carbon projects delivering emissions reductions.

Implementing a niche strategy, Green Summun specialized their services in the logistics and transport industry, as it is one of the largest emitting sectors. The company developed the program Eco-logistics, where they carry out audits for clients, calculation of carbon footprint and compensation plans. These compensation plans can be design based on destination of a certain transport, customer compensation by offsetting all the services provided to a client, or offsetting an annual percentage of the total emissions of over a determined period of time (i.e.80% of GHG emissions over 2 years). In addition, they provide their clients with an Eco-Logistics certificate and logo.

The carbon compensation projects where the firm invest are not exclusively related to reforestation or sustainable project management project, but also include renewable energy development projects or replacement of fuel sources with biomass fuel.

Services:

- Sustainability reporting services
- Development of CSR strategies, with the evaluation of current company policies and practices regarding sustainability, social and environmental impact (carbon footprint, energy efficiency, stakeholders relationship, etc.)
- Branding and Communication services for sustainability and positive environmental impact campaigns
- CO2 emission offset projects through de adoption and purchase of carbon units certified by Gold Standard or Verified Carbon Standard

CeroCO2

Established in 2005 in Madrid, CeroCO2 is a climate change initiative from ECODES, a Spanish foundation for ecology and sustainable development. This non-profit organization counts on 5 environmental experts, which develop carbon compensation projects for individuals, enterprises, public entities and events.

The compensation projects can be based in Spain or based in developing countries, although the largest part of their portfolio is based on the last ones. The projects are verified in the Voluntary Carbon Markets by standards such as the Gold Standard, Verified Carbon Standard or Plan Vivo. Projects include emission reduction and emission absorption projects including projects based on renewable energies, energy efficiency, waste management, reforestation, preservation and restoration of biodiversity and sustainable management of forest and agricultural lands.

Services:

- Carbon footprint calculation free online software
- GHG emission measurement and calculation services for larger entities
- Footprint reduction and compensation projects
- Carbon footprint verification
- Educational activities and workshops on footprint, sustainability, and climate change
- Branding and Communication services based on certification seals and certification badges using CeroCO2 logos

Grupo Sylvestris

Based in Madrid, Sylvestris was founded in 2013, as a natural engineering firm. With eight experts on the fields, the core service of Sylvestris is the development of compensation and reforestation projects based in Spain. As an added value, for the plantation phase the company employs people at disadvantage or social risk of exclusion.

As per Sylvestris forest reforestation and recovery portfolio, the company was worked with large clients in Spain such as Leroy Merlin, Mercadona or Caixabank. In terms of the nature of the projects they include reforestation, forest recovery plans and sustainable forest management in the provinces of Valladolid, Teruel, Zamora and Barcelona.

Regarding their environmental and forestall consulting and educational services, Sylvestris have developed several projects internationally in countries like Colombia, Honduras, Lebanon and Morocco.

Services:

- Development of carbon footprint compensation projects through reforestation and restoration of fire-affected forest areas.
- Administrational paperwork to obtain the certification “Compenso CO2” for compensation projects in the Spanish Ministry of Agriculture and Environment.
- Urban green areas design and maintenance including vertical gardens, green roofs and urban kitchen gardens
- Training and knowledge dissemination on forest sustainable management, reforestation plans, sustainability, and climate change
- Organization and development of corporate volunteering days

Inclam CO2

Founded in 2008 in Madrid, Inclam CO2 is a climate change consulting and engineering company part of a larger EPC and engineering firm, Grupo Inclam, operating in internationally in Latin America, Easter Europe, Sub-Saharan Africa and Asia.

Inclam CO2 provides climate change related services to companies and public entities at a national and international level. The main services are adaptation and mitigation, risk management and natural resources sustainable management.

At an international level, Inclam CO2 is an active player in emission trading markets through Emission Reductions Purchase Agreements (ERPAs), Certified Emissions Reductions Sales and Purchase Agreements (CERSPA), Voluntary Emission Reductions Sales Agreements (VERSA) and International Emission Trading Association (IETA). In addition, the company also finances and develops their own Clean Development Mechanism (CDM) projects.

At a national level, in Spain, they develop specific projects aimed to reduce companies, events, services and public entities carbon footprint. They take care of the administrational paperwork for the register of carbon footprint and offset projects in the Spanish Ministry of Ecological Transition, develop offset forest projects based in Spain. Additionally, the company provides assistance in the approval of non-forestall projects under CLIMA (Ministry of Ecological Transition).

Services:

- Educational activities and workshops on footprint, sustainability, and climate change
- Carbon footprint measurement, reduction and compensation services
- Adaptation and Mitigation services including climate change and hydro-climate change assessments, climate change impacts on water resources, agriculture and food safety, national and regional monitoring services, risk and vulnerability analysis
- GHG emission trading advising and consulting services

Competitors Analysis Data

General Information

Company Name	Foundation Year	Number of Employees	Type of Company	Location of Projects	Approach
Bosques Sostenibles	2010	3	Small Enterprise	Spain	Consulting & Sustainable forest management
CleanCO2	2010	7	Small Enterprise	Abroad	Consulting & International VERs
FactorCO2	2004	40	Small/Medium Enterprise	Abroad	Consulting & International VERs
Bosquia	2018	3	Start-up	Spain	Tree adoption platform
Kaia	2017	3	Start-up	Spain	Consulting & Sustainable forest management
Reforestum	2017	3	Start-up	Spain	Tree adoption platform
CO2Revolution	2016	6	Small Enterprise	Spain	Consulting & Sustainable forest management
HuellaCero	2006	10	Non-profit Organization	Spain	Consulting & Sustainable forest management
Abaleo	2015	20	Small/Medium Enterprise	Abroad	Consulting & International VERs
Cavala	2012	25	Small/Medium Enterprise	Abroad	Consulting & International VERs
Retree	2018	3	Start-up	Abroad	Tree adoption platform
SDL Ambiente	2000	50	Small/Medium Enterprise	Spain	Consulting & Sustainable forest management
Agua de Coco	2000	12	Non-profit Organization	Abroad	Tree adoption platform
Green Summun	2016	3	Small Enterprise	Abroad	Consulting & International VERs
CeroCO2	2005	5	Non-profit Organization	Abroad	Consulting & International VERs
Sylvestris	2013	8	Small Enterprise	Spain	Consulting & Sustainable forest management
InclamCO2	2008	16	Small/Medium Enterprise	Spain	Consulting & International VERs

Company Size	Number of Companies	Size Percentage
1 to 10 employees	11,00	65%
11 to 25 employees	4,00	24%
26 to 50 employees	2,00	12%

Type of Company	Percentage
Start-up	24%
Small Enterprise	24%
Small Enterprise(above 10 employees)	29%
Non-profit Organization	18%

Project Location	Percentage
Spain	53%
Rest of the World	47%

Spain - Type of Propert	Percentage
Public	33%
Private	11%
Both	56%

Services Provided by Type of Company

Approach	Projects are Monitored	Educational Activities	CF App/ Software	Communication services	Company Name
Consulting & VERs	Yes	No	Yes	Yes	CleanCO2
Consulting & VERs	Yes	No	Yes	No	FactorCO2
Consulting & VERs	Not specified	Yes	No	No	Abaleo
Consulting & VERs	Not specified	Yes	Yes	No	Cavala
Consulting & VERs	Not specified	No	No	Yes	Green Summun
Consulting & VERs	Yes	Yes	Yes	Yes	CeroCO2
Consulting & VERs	Not specified	Yes	No	No	InclamCO2
Consulting & SFM	Yes	Yes	No	Yes	Bosques Sostenibles
Consulting & SFM	Not specified	Yes	No	Yes	Kaia
Consulting & SFM	Yes	No	No	No	CO2Revolution
Consulting & SFM	Yes	No	No	No	HuellaCero
Consulting & SFM	Yes	Yes	Yes	No	SDL Ambiente
Consulting & SFM	Yes	Yes	No	No	Sylvestris
Tree adoption platform	Yes	No	No	Yes	Bosquia
Tree adoption platform	Yes	No	Yes	No	Reforestum
Tree adoption platform	Not specified	Yes	Yes	Yes	Retree
Tree adoption platform	Not specified	Yes	Yes	No	Agua de Coco