



Lisbon School  
of Economics  
& Management  
Universidade de Lisboa

U LISBOA

UNIVERSIDADE  
DE LISBOA

Master in corporate Sciences – ISEG

Master's Dissertation

Business Plan – “Bolina” a Marketplace for  
Carbon Offset

Hugo José de Sousa Ferreira

OCTOBER - 2023



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**Supervision:** Professor PhD Pedro José Marto Neves

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## Abstract

Solving global warming requires adopting new technologies and processes that reduce human greenhouse gases emissions to a minimum whilst offsetting the remaining emissions. Thus, surges the idea for Bolina, a marketplace platform that connects high-quality nature-based verified carbon offset projects with individual contributors in a simple, transparent, and trustworthy engagement.

This business plan follows Harvard model and describes the creation and implementation of Bolina, covering market analysis, competitive positioning, marketing strategy, operations structure, financial projections, technical specifications and business description.

It was conducted a market survey for customer insights resulting in 62 responses. Bolina's target market are young parents that want to assure their children's future and we will differentiate ourselves by offer them high-quality projects in a seamless and engaging user-experience, demystifying the voluntary carbon market with transparency and simplicity.

The financial revenue is based on the profit margin from direct project representation increasing as the platform scales up, resulting in 25 626 € of Net present value and an Internal rate of return of 54%, hence demonstrating the financial viability of the project.

Overall, this project shows immense potential in creating a sustainable carbon offset marketplace adding value in the transition to a low-carbon economy.

**Keywords:** Business Plan, Carbon Offset, Voluntary Carbon Market, Marketplace

## Acknowledgements

Any given problem can be solved by splitting it up into smaller chunks and solving them one by one, as one wise man once said, “More was missing when we started.”.

Finishing this work took time, dedication but most important a lot of support.

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For my inbound child!

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### **Abbreviations List**

VMC – Voluntary Carbon Market

Co2e – Carbon Dioxide equivalent

GHG – Green House Gases

VCS – Verified Carbon Standard

GG4GG – GoldStandard for Global Goals

CER – Certified Emission Reduction

VER – Voluntary Emission Reduction

AFOLU – Agriculture, forestry, and other land use

ARR – Afforestation, Reforestation, Revegetation

IFM – Improved Forest Management

REDD+ – Reducing Emissions from Deforestation and forest Degradation +

RRP – Resilience and Recover Plan

GDP – Gross Domestic Product

ESG – Environmental, Social, and Corporate Governance

NPV – Net Present Value

IRR – Internal Rate of Return

# 1. Introduction

The present document is a master's dissertation with the objective to create a business plan for a carbon credit marketplace in the voluntary carbon market named "Bolina".

Envisioned as a pioneering initiative within the Portuguese context, this project aims at the commercialization of high-quality nature-based carbon credits. A carbon credit involves the acquisition of a greenhouse gas reduction certificate from a project that removes or avoids greenhouse gases emissions from the atmosphere.

This idea derives from a conversation between the promoter and his father-in-law, and venturing into this new project, requires developing a structured decision support plan expressed in the following Business Plan, that will facilitate the strategic approach, provide a concise and structured representation of Bolina's vision, and, at the same time, determine its own feasibility.

The motivations to undertake this project stems from an ambition to create a novel project with added economic and environmental value, to achieve labour and financial independence, contribute to the socio-economic development of the region and take part in the action against climate change.

This work will start with a brief literature review and used methodology, followed by the Business Plan, and finishing with the final conclusions. Bibliography references and support annexes complete the document at the end.

## 2. Literature Review

The literature review is divided in three sections. The first section will explore the Entrepreneurship, Business strategy and the link between both. The second section will explore the Business Plan concept and relevance exploiting its strengths and weaknesses. The third and last section will explore the Voluntary Carbon Market (VCM) concept.

### ***2.1. Entrepreneurship and Business Strategy***

According with Kuratko, Entrepreneurship is the dynamic process of recognizing an opportunity that allows the creation and implementation of new ideas and solutions whilst accepting the inherent risks of this process (Kuratko et al., 2007).

Defined and redefined throughout the years by various authors, to name a few Richard Cantillon, Jean Baptiste Say, Ronstadt, Schumpeter or Kuratko, the concept of Entrepreneurship has been in constant mutation throughout the years, however they all share and agree on a common characteristic: the objective of Entrepreneurship is to create wealth and that the Entrepreneur assumes the risk that is associated in creating this wealth (Kuratko et al., 2007). Keeping this cornerstone trait together with a move towards a “greener” economy a new breed of entrepreneurs emerged, the ecopreneur. Ecopreneurs realized there’s a potential market opportunity for environmental and sustainable products and services. Driven by their strong green values, these green entrepreneurs create new businesses that generate economic gains whilst being social and environmental responsible (Kirkwood & Walton, 2010). These new trend of ecopreneurship seems to spread also onto already existent businesses by adopting new sustainable and environmental approaches (Kirkwood & Walton, 2010).

The entrepreneur embodies the fundamental key piece in the success or unsuccess of a new company (Sevilla-Bernardo et al., 2022). According to Macmillan, for investors it is the entrepreneur’s personality and experience the most important criteria when investing (Macmillan et al., 1985).

The digital entrepreneurship emerged as a new phenomenon, that facilitates the creation of digital value. The digital entrepreneur leverages new technologies as a mean

to process and distribute digital information with the purpose of generating wealth from digital value (Sahut et al., 2021).

We're currently in the information era, where markets are constantly changing and evolving and the way for a company to achieve above average profits and competitive advantage it is with comprehensively analysis and taking informed actions based on the analysis results (Kuratko & Audretsch, 2009). Once again, the entrepreneur assumes a central role in the success on the enterprise, by having the "correct" strategic thinking. The "correct strategic thinking" means having a not so structured general vision of the objectives to achieve (Mintzberg, 1993). To succeed it is important to define a strategy and a plan to achieve the objectives, and at the same time having a certain level of flexibility that allows for deviations to the pre-established plan should the necessity arises (Kuratko & Audretsch, 2009).

From a strategic perspective, a solid business plan denotes the entrepreneur with a powerful tool towards the success of a new company (Kuratko et al., 2007).

## ***2.2. Business Plan and its significance***

A solid and well-structured business plan allows the entrepreneur to translate his vision into "paper", a company script for success (Kuratko, 2015). It should clearly describe the company and its business, set achievable goals, and describe how they will be achieved and extrapolate the results (Deloitte & Touche, 2003). Since a main objective of a business plan is to captivate interest and investment, the document should be formal and concise whilst convincing and exciting (Kuratko, 2015).

According with Kuratko, the Business Plan aims to achieve 5 targets: business description, marketing plan, financial needs, barriers, and solutions to captivate investment (Kuratko, 2015). To achieve these targets the entrepreneur should define attainable realistic objectives, correctly analyse the surrounding environment, impose discipline and dedication to the project, acquire technical knowledge and experience and define the target market (Kuratko et al., 2007).

Arguing against the business plan from a merely intuitive perspective might seem counter-productive, however the lack of empirical studies raised a debate in academia about the real advantages of the business plan as a success factor when creating a new

company. Authors such as Castrogiovanni started the discussion to determine if there's a positive link between planning and the success of a start-up (Castrogiovanni, 1996). Ever since, a few authors have argued that there's little robust scientific data that sustains the business plan as a key success factor in a new start-up and that there's no positive correlation in creating a business plan before a new enterprise (Delmar & Shane, 2003; Karlsson & Honig, 2009), render it as a waste of time (Bhidé, 2014). More experienced entrepreneurs resort less times to formal planning than less experienced entrepreneurs, viewing business planning as a waste of time and of valuable resources (Brinckmann et al., 2019). Wilfrid per instance argues to redesign the planning using different methods and approaches instead of a business plan, which is currently institutionalized predominantly in universities (Wilfrid, 2004).

On the other hand, several other authors such as Kuratko, defend that the Business Plan is fundamental in the success of a new star-up (Kuratko et al., 2007). That it has a positive relation with the performance and the success of a company (Brinckmann et al., 2010), it helps deciding on a market entry opportunity (Chwolka & Raith, 2012), offers the flexibility and the framework to adjust before internal and external uncertainties (Kuratko, 2015).

As any tool, the business plan has its advantages and disadvantages. As advantages it allows to structure a new start-up, design strategies, set objectives and estimate results. As disadvantages it takes a lot a time and dedication, might result in losing focus on the essential and loss of essential resources that would be otherwise allocated to other activities.

In the end, it is up to the entrepreneur to decide if taking advantage of this tool will benefit or not the new enterprise.

### ***2.3. The Voluntary carbon market concept***

Temperature has been rising on a global level ever since the industrial revolution resulting in an increase of 1.1°C from the decade of 1890-1900 to the decade of 2011-2020. This global warming is caused mainly by greenhouse gas (GHG) emissions related with human activities, from burning fossil fuels into the atmosphere (IPCC, 2023). GHG emissions, typically stated as Co2 (carbon dioxide) or carbon emissions for simplicity,

comprises a wide range of gases that are essential to retain heat and life on earth. However, an increase in concentration of these gases in the atmosphere increases the greenhouse effect causing the temperature to rise to dangerous levels.

Avoiding further loss of biodiversity, prevent millions from poverty and life-threatening heatwaves and maintain a balance in the environment ecosystem led scientists to set a 1.5°C temperature increase threshold (IPCC, 2023). Ever since a wide range of initiatives and developments to counter global warming were set in motion.

One of these initiatives is the Voluntary Carbon Market (VMC), a concept originally introduced in the Kyoto protocol of 1990, sharpened in the Paris agreement of 2015 and fine-tuned in the United Nations Climate Change Conference COP26 of Glasgow. The VMC is a voluntary market-based approach to decarbonize the global economy by offsetting carbon emissions whilst transitioning to a decarbonization (net-zero) of supply chains and moving towards the adoption of renewal energy sources. In this self-regulated market companies, governments or even individual contributors invest and trade a new commodity, the carbon credit (Spilker & Nugent, 2022).

A carbon credit represents one metric ton of carbon equivalent Co<sub>2</sub>e, encompassing all GHGs emissions, that are either sequestered or avoided from the atmosphere related to a carbon offset project. A carbon credit arises to quantify and measure at scale the carbon offset of a project. The idea behind a carbon offset is to remove or avoid emissions that were added by another entity. As example if a company generates one ton of Co<sub>2</sub>e it can purchase a carbon credit or invest in carbon offsets to balance their emissions and remain neutral. Ideally entities should reduce as much as possible offsetting the rest, hence becoming carbon neutral (Dhanda & Hartman, 2011).

- **The benefits of VMCs:** Carbon offsets play a fundamental role supporting a transition into a low carbon global landscape (Spilker & Nugent, 2022). A tool of immense power that enables a market-based transmission of financial capital to countries with developing economies that wouldn't occur any otherwise. Investing on green offset projects using a market approach tends to be the most efficient way of cutting emissions and achieve sustainability (Dhanda & Hartman, 2011). From a practical perspective one might argue that putting money in the correct place will result in something beneficial.

- **The pitfalls of VMCs:** As any new bold concept the VMC faces several challenges and critics. It is difficult to value an offset, as it is an intangible commodity. It is extremely difficult to measure the actual offset outcomes and certify it, as currently there are no standard widely accepted and considered as the industry benchmark (Dhanda & Hartman, 2011). Verra with their Verified Carbon Standards (VCS), currently leading the way to become the industry standard, suffered a backlash earlier in 2023 with the release of a study suggesting that up to 90% of Verra’s rainforest carbon credits didn’t result in real reductions (Greenfield P., 2023). Another issue is the concept of “additionally” where there is a challenge on proving to the buyer that an offset project wouldn’t occur without their contribution and that the reductions are permanent (Dhanda & Hartman, 2011). Another common pitfall is the possibility of leakage from pollutant activities towards the project neighbouring zones.

Significant steps must be taken as VMCs market matures to assure transparency, integrity, and standardization (Spilker & Nugent, 2022).

It is fair to say that offsetting emissions are highly valuable only as a complement to cutting GHG emission and shouldn’t be used as a form of substitution or a free pass to pollute.

### 3. Methodology

A business plan may follow different structures, however largely used pre-existent models typically follow a similar methodology that includes an executive summary, business description, market analysis together with marketing, operational and financial plans (Kuratko et al., 2007). It is abridged in Table I the structure methodologies that are generally used from Harvard, Kuratko, EY, IAPMEI and Deloitte. The Harvard model was used with a few structural changes for simplicity, mainly because this model, which is largely used, represents the most complete model from the five presented.

Table I - BP methodologies comparative

Harvard	Kuratko	EY	IAPMEI	Deloitte
Executive Summary	Executive Summary	Executive Summary	Executive Summary	Executive Summary
Business Description	Business Description	Concept	History of the company and/or its promoters	Background and history
Business environment analysis	Marketing	Market overview	Adjacent Market	Product
Industry background	Operations	Business strategy	New idea and market positioning	Management and personnel
Competitive analysis	Management	Operational strategy	Project/ Product/ Idea	Markets and marketing
Market analysis	Financial	Management and organization	Commercial strategy	Manufacturing process
Marketing Plan	Critical risks	Financial summary	Management and business control	Financial information
Operations plan	Harvest strategy	Prospects	Investment needs	Risk factors and rewards
Management Summary	Milestone Schedule	Funding requirements	Financial projections and financial model	Timescales and benchmarks
Financial plan	Appendix	Appendix		Appendix
Annexes and milestones				

Sources: (Harvard, 2007; Kuratko et al., 2007; Ernst & Young LLP, 2001; Miranda & Fernandes, 2016; Deloitte & Touche, 2003)

This project was executed resorting to primary and secondary data. An online survey expressed in Annex II and the respective results in Annex III, was used as primary data for potential clients in order to understand customer behaviour and adjust the company's offer to better suit customer needs.

The secondary data sources were mostly the sixth IPCC assessment report from the Intergovernmental Panel on Climate Change (IPCC, 2023), the Special Eurobarometer 538 from the European Union commission (Kantar network, 2023), the CO<sub>2</sub> and Greenhouse Gas Emissions from Our World in data (Ritchie et al., 2020) and the 2023 Economic Boletim from the Bank of Portugal (Banco de Portugal, 2023a).

The financial projections and ratios were derived mainly using the IAPMEI tool for financial estimation at 5 years version 2023, available online.

## **4. Business Plan**

### ***4.1. Executive Summary***

Bolina is a one-of-a-kind marketplace that connects individuals with carbon offset projects. It focusses on creating and generating financial value for high quality projects by offering the customers a way to contribute and offset their own carbon footprint in a transparent, simple, and trustworthy experience.

Bolina was founded in 2023, by two passionate entrepreneurs on a mission to take action and give their contribution in the fight against global warming. The team at Bolina will be composed by two other members, a software developer, and an environmental specialist, constituting a diverse team from different backgrounds sharing the same passion and values.

We will have two options for our customers, a Bolina subscription and/or Bolina Eco community pool. After a quick individualized carbon footprint calculation, we'll offer a Bolina subscriptions based on the calculator results and the opportunity to contribute into a community pool of curated projects.

It is directed to young parents concerned with their children's future with a moderate environmental mentality. We intended to build a strong recognized brand that give a great customer experience, expecting to create buzz around the brand and turn our customers into Bolina's ambassadors.

The price per each Bolina and Bolina Eco commodities, both representing one carbon credit, will be a premium price of 25€, because of the high-quality projects represented and the expected pricing increase on the market.

To develop this project our cost structure, assuring a gross margin of 30% on sold goods, will be mainly towards the human resources and the platform development, maintenance, and the cloud hosting infrastructure. This project expects to generate a NVP of 25 626,33 € with a payback shortly after the four year and 10 months of operations, resulting in an eco-friendly business with a positive financial outlook.

Bolina's strongest features lies in being the first of its kind in Portugal, the positive look at environmental initiatives by the public and Bolina's core values. In contrast, the ephemeral nature of the commodity and uncertainty of the market, the lack of experience of the promoters and the low entry barriers for new companies.

#### ***4.2. Business Background***

The idea for the creation of a carbon offset platform emerges from a conversation in November 2022 between the founder and promoter Hugo Ferreira and his father-in-law José Restrepo. José Restrepo is an entrepreneur by nature and a businessman by call with several consolidated enterprises. He explains in this conversation a carbon offset project in development at his home country of Colombia. This project located in Vichada has a total area of 1200 hectares, from which around 240 hectares will be to reforest degraded land by planting native trees and regenerate the native biodiversity once present in this area.

It is this conversation that ignites a spark in the promoter's mind that after a few months of research and reflection results in the creation of Bolina Eco LDA. Enterprise, a carbon offset e-commerce platform for the individual contributor.

Bolina was founded and will be managed by two promoters. The first, Hugo Ferreira launched the challenge to his wife, Manuela Restrepo, that of a same entrepreneurship mindset immediately accepted it.

Hugo Ferreira, graduated from electrical and computer engineer with a master's in telecommunications and 7 years of work experience in the technology sector, will oversee the administration, finance, and technological development sections at Bolina. Manuela Restrepo, graduated from architecture and product design with a master's in architecture and BIM management and 3 years of work experience in the design and construction sector, will oversee the marketing and sales as well with in charge of designing and creative components of the platform and publicity (Annex I).

It's the promoter's strong belief that the current climatic emergency can only be tackled by a strong investment of resources, knowledge, scientific progress, technology and most importantly money.

### ***4.3. Business Description***

Bolina is an online e-commerce marketplace platform that connects carbon offset projects with individual contributors, providing a seamless and engaging experience to the end user.

Users will be able to unlock the voluntary carbon offset market in a convenient manner accessing the platform via a web browser or a mobile application and select from an array of projects following their own personal taste, needs and preferences.

Customers will be able to invest in a specific project or in a community pool where several people contribute. The offer will be available online by in-app/browser direct purchase but also the customers will have the chance to purchase physical cards in one of our retail partnerships contributing to the community pool.

The community pool concept will aggregate the individual investments into a fund that will collectively invest in a selected array of projects.

Our focus will be to commercialize solely project that fall under the nature-based category such types included and listed under Table II, also denoted as Agriculture, forestry, and other land use (AFOLU).

Carbon emissions due to deforestation relates to up to 20% of the current global emissions (Dhanda & Hartman, 2011). Hence, we chose to direct our efforts towards nature-based projects as these show the greatest potential for real impact and the higher market demand (Spilker & Nugent, 2022).

Table II - Description of Nature-based Projects

<b>Nature-based Project Types</b>	
<b>REDD+</b>	REDD+ is a framework developed by United Nations with the focus to preserve and avoid forest degradation in development countries, whilst socially benefiting the local communities of a given project. A project under the REDD+ framework is expected to reduce and avoid emissions by preserving carbon sinks in exchange for technical, financial support and social development.
<b>Afforestation, Reforestation, Revegetation (ARR)</b>	ARR projects refers to a project that implement activities, such tree planting, that will recover degraded lands and create long-lasting forest with new or recovered rich biodiversity.
<b>Improved Forest Management (IFM)</b>	IFM project's objective is to develop more sustainable practices into commercially used forests.
<b>Blue Carbon</b>	The Oceans potential to store Co2 is considerable higher by comparing with trees. Blue Carbon projects aim to take advantage of this potential.
<b>Regenerative Agriculture</b>	Implementing more sustainability in the agriculture processes allows to improve harvests whilst retaining carbon in the earth.

Source: (IPCC, 2023)

By allocating financial resources and valuing nature-based projects we pretend to deter other pollutant exploration activities from these lands. This move combined with a superior curated project selection will allow us to position ourselves as a differentiated brand adopting a focused differentiated strategy.

Our strategy will be to offer a premium product to an underserved market segment, individual contributors who are young parents, grounded in our strong brand concept and core values.

#### **4.3.1. Brand, Mission, and Vision**

##### **Core values:**

*Transparency, Commitment and Boldness.*

##### **Vision**

*“Become the reference platform in the Voluntary Carbon Market.”*

##### **Mission**

*“We connect carbon offset projects and consumers with transparency and simplicity, enabling each and every one to become a fighting force against climate change.”*

Bolina’s brand with a sober, serious, and straightforward looks, embodied by our logo displayed in *Figure 1*, intends to become the reference marketplace platform in Portugal by demystifying and simplifying the VMC concept, making it accessible to everyone.



Figure 1 - Bolina’s Logo

### **4.3.2. Building a Trustworthy Brand**

Building on Bolina's core values we intend to contribute to the scaling and expansion of the VMCs whilst consolidating confidence, transparency, and credibility.

#### **Project Selection Criteria:**

**Certification:** All projects traded must be certified by a recognized 3<sup>rd</sup> party standard-body in the industry. They also must fulfil rigorous requirements that assure: Additionality, Permanence, Underestimation, Uniqueness, and non-leakage.

- **Additionality:** Every project must prove that it improves carbon removal/avoidance in relation to business as usual.
- **Permanence:** Every project must have in place safeguards against GHG reversals.
- **Underestimation:** Carbon credits issued for project must reflect a conservative calculation of the expected Co2e removals.
- **Uniqueness:** Assure that the carbon credits from a project are unique, not claimed neither issued twice.
- **Non-leakage:** Every project must prove that there's no leakage to surrounding areas neither constitutes an environmental or social harm to local communities.

These set of principles typically are also verified and account for by the methodology used by the standard body, especially when referring to high standards such as Verra's VCS or GoldStandard's GS4GGs.

**Monitoring:** Making sure we use the best 3<sup>rd</sup> party entities resorting to up-to-date scientific methods to track and assure real impact.

**Retirement:** Assuring that credits are retired and non-reusable resorting to Ethereum opensource Blockchain methodology, allowing us to trace and improving security and boosting transparency amongst customers.

**Shoutout program:** The "shoutout program" is an initiative implemented in our platform that represents a continuous and bidirectional open watchdog channel where we will

report and address any deviation encountered, whilst allowing our customers to address any issue they might encounter or feel unsure.

#### **4.4. Business Environment Analysis**

Mankind faces what can be the biggest collective challenge yet to date. A challenge to counter the nefarious effects of global warming and avoid a climate catastrophe that will cause severe impact in the world's ecosystem.

Fighting heads on this challenge means shifting the current status quo by adopting a range of scientific and technological sustainable solutions, foster green political initiatives and shifting economic resources towards a collective, global, and common goal.

##### **4.4.1. Macro Analysis**

In 2020, in line with the Paris agreement, the European Union outlaid the strategy to limit the rise in global temperature in 1.5°C via reducing their greenhouse emissions in 55% until 2030 and becoming carbon neutral in 2050. Achieving this ambitious goal might ignite a spark that leads and steers the rest of the world to follow. It will require a joint effort across all members and sectors of the alliance mixed with an allocation of approximately 28 trillion € in the next 30 years (D'Aprile et al., 2020).

In the aftermath of the Russian invasion of Ukraine in 2022, with inflation peaking at 7,4% cascading from the high dependency on Russian gas, governments quickly realized the need for energy independence, transitioning from externally provided fossil fuels to the fast adoption of internal renewable energy sources, such as wind, solar, and hydrogen that supply the power needs. The war of Ukraine might constitute the trigger for the European Union to accelerate the energy transition implementing plans such as REPowerEU with the aim to reach 45% of energy needs powered by renewables in the year of 2030 (European Commission, 2022).

The climate change crisis has been of an increasing concern for citizens all over the world, particularly in Europe where according to the 538<sup>th</sup> Eurobarometer report, it is considered the most serious issue that the world is facing for 46% of Europeans and 76% considering it a very serious problem. Europeans take personal actions to fight climate

change agreeing at a rate of 88% that offsetting greenhouse emissions, such as increasing forested areas, is fundamental to fight climate change. The percentage of people that think we should offset non-reducible emissions in Portugal is even higher with 95% rate of agreement (Kantar network, 2023).

There is not a “*one size fits all*” solution to achieve climate neutrality goals and counter the global warming effects, since such a complex and intricate problem requires a wide array of solutions. It is established that reducing greenhouse emissions, such as Co<sub>2</sub>, will counterbalance the rise in global temperature, however, how exactly can it be done remains an unsolved puzzle. At first sight the equation seems simple, global warming is caused by mankind due to their greenhouse emissions. Greenhouse emissions are mainly generated by the burning of fossil fuels, such as gas and petroleum, hence the solution will be to stop burning fossil fuels. However, setting aside simplification and radicalisms, the solution becomes a highly ramified and complex set of variations for which even the brightest minds can't solve. Once we realize that simple products such as a diaper or a denim pants are dependent on petroleum, we can grasp the multitude of the problem at hands and how the solution is reliant on several factors, such as political alignment, economical resources, social agreements, technological advances, etc. In a higher level of abstraction, it is by economical shift and growth into green initiatives and technological advances that the climate crisis dilemma will be solved (D'Aprile et al., 2020). The adoption and implementation of new technologies plays a fundamental role in decarbonizing and achieving carbon-zero “green” economy.

Governments tend to nurture an entrepreneurial mindset in their population and stimulate the creation of new startups as an instrument to generate wealth, employment, and economic growth (Kuratko & Audretsch, 2009). Europe positions itself as the second most favourable ecosystem for the development of startups and new business initiatives (Martins et al., 2021). In our specific context, Portugal portrays a highly attractive destination for the establishment and development of new entrepreneurial ventures, according to the 2019 Small Business Act (European Commission, 2019). These results and subsequent success of new business are largely correlated with reduced corporate tax policies for new startups, implemented by previous governments (Venâncio et al., 2022), as well as an array of political measures.

One example of particular relevance is the Portugal2030 investment mechanism, within the scope of the RRP for a non-refundable investment voucher with a value of 30 000€ given to new digital startups that contribute for the climatic transition.

On the other hand, companies in Portugal tend to remain micro-business with only 4,6% having more than 10 employees in comparison with the European Union average of 7% (European Commission, 2019).

After the COVID-19 crisis and the invasion of Ukraine it was observed a period of deflation and economic crisis with a rise in inflation, 7,8% in 2022 in Portugal, with a consequent increase on reference interest rates at 3,4% to counter inflation effects. Recent economic indicators projections indicate a landscape of recovery for the upcoming years with Portuguese GDP raising 2,7% and an inflation decrease to 2,7% in 2023 (Banco de Portugal, 2023a).

#### ***4.4.2. Surrounding Environment***

The Carbon offsetting market is divided into two categories, a regulatory market where certain high pollutant companies are mandated by regulations to offset their emissions by buying carbon credits from Certified Emission Reductions (CER) projects, and a voluntary carbon offset market where organizations and individual contributors will buy carbon credits from Voluntary Emission Reduction (VER) projects, due a wide range of reasons that can go from the marketing strategy of a company to the environmental concern from an individual contributor.

#### ***The Market of carbon offsetting, a Sector Breakdown***

An increase of demand for voluntarily offsetting greenhouse-gas emissions is gaining momentum within companies, setting more and more ambitious ESG goals. Goals such as achieving net-zero emissions, which means that a company will balance out the emitted greenhouse gases of their operations into the atmosphere with removed or sequestered GHG, are currently trending in the corporate world. McKinsey estimates an increase from 95MtCO<sub>2</sub> in 2020 to 1.5 to 2.0 GtCO<sub>2</sub>e of carbon credits by 2050, valuing the market to a magnitude of 50 billion dollars (Blaufelder C. et al., 2021). To refer just that in 2021 we emitted 41,06 billion tons of Co<sub>2</sub> from fuels and land use, resulting a 4,8

tons per person globally. On average in Portugal a person emits 4 tons of Co<sub>2</sub> (Ritchie et al., 2020).

The value of a carbon credit traded in the voluntary markets, even though all representing one Co<sub>2</sub>e ton “taken” from the atmosphere, it’s highly depending on its characteristics, such as providence, certification, vintage, project type, credit category, between others.

As a form of example, typically a high quality sequester type credit from a reforestation project will have a higher price whilst an avoidance credit from a renewal energy project will have a lower price.

A carbon credit, Co<sub>2</sub>e, represents GHG that are sequestered or avoided originated from different types of offset projects, such as forestry, technology, waste management, between others. A few examples of projects describe as following:

- Nature-based reforestation project where a developer reforests a wide area of terrain creating a new carbon sink.
- Nature loss avoidance project focusing on preserving already existing green areas that would otherwise be converted into commercial use.
- Technology-based project that focus on adoption of renewable energies in determent of fossil fuels, such as solar panel farms.
- Energy efficiency project that changes old cookstoves to new efficient cookstoves in under-developed regions.

As shown in *Figure 2*, the voluntary carbon offset market ecosystem follows a path from credit issuances until its retirement. A developer creates and maintains a project that will issue carbon offsets. Investors and end-buyers depending on the carbon offset quality will contribute and own the commodity. A registry will keep track of this ownership and retire the credit once it reached the end-of-life. In between this process, standard bodies, such as the ones detailed in Annex V, will certify and verify the credits whilst 3<sup>rd</sup> party consultants monitor the project throughout its lifecycle.

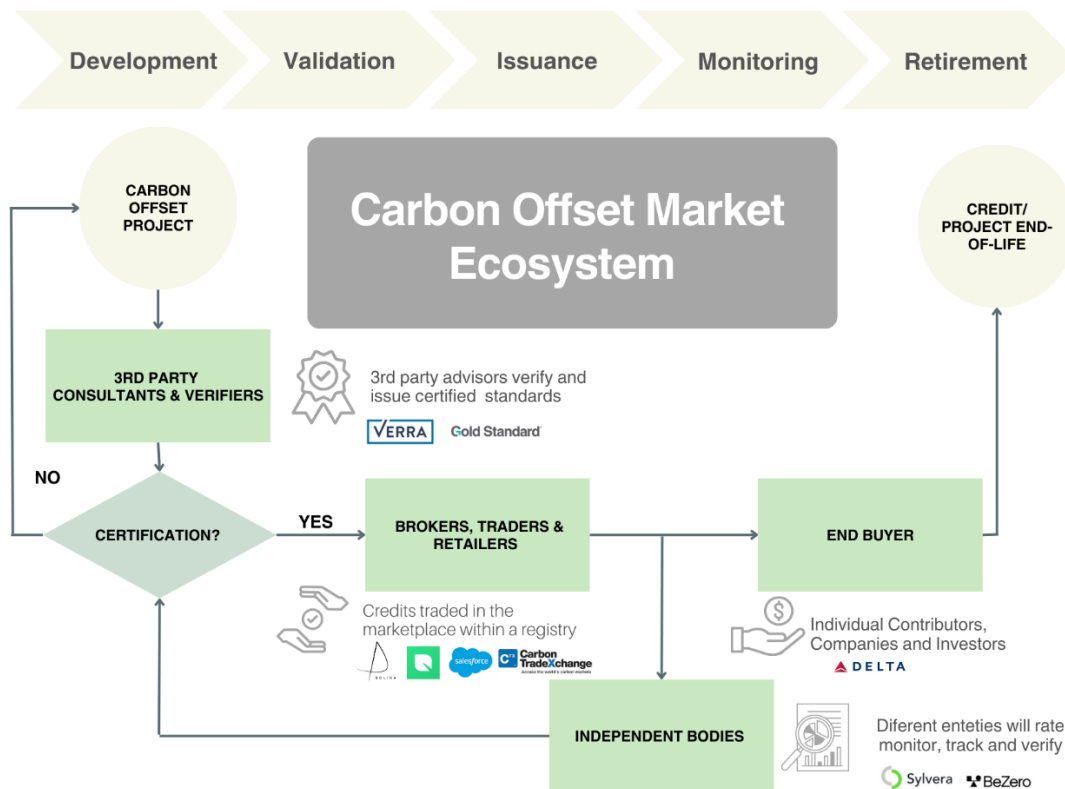


Figure 2 - Voluntary Carbon Offset Market Ecosystem. Own Creation.

Referred resources: <https://verra.org>; <https://www.goldstandard.org>; <https://klima.com>; <https://netzero.salesforce.com/s/>; <https://ctxglobal.com>; <https://www.delta.com>; <https://www.sylvera.com>; <https://www.sylvera.com>;

Portugal has in place mechanisms under the compliance carbon market umbrella to meet international goals, such as “Programa Nacional para as Alterações Climáticas” or “Fundo Português de Carbono”. As the VCM umbrella is concerned Portugal is still in an embryonic stage. On May 11<sup>th</sup> 2023 the President of the Portuguese parliament passed a resolution, previously open for public consultation and discussion, recommending the creation of a voluntary carbon market in national territory with the main purpose to define the juridic extent for this implementation, the different sectors, a register system and the validation methodologies within the international guideline and cooperation framework (Resolução da Assembleia da República no 46/2023), hence it is expected that regulations towards the VMC will be in place soon.

***Doing business digitally***

Technologies are an ever presence in day-to-day life of people. We use technology as our source of information, to work, to communicate, to shop online, in an endless list of possibilities.

Companies take advantage of the immense possibilities present in the technological and digital world by digitalizing some or all their functions. In Portugal 62% of companies have some form of online presence and 16% have an electronic commerce channel for customer purchases. E-commerce represents in Portugal 7 130 million of Euros following a clear rising trajectory aiming to reach a volume of 9 300 million of Euros in 2025 (Sampaio et al., 2023).

The fast growing and appearance of new digital business models and digital transformation of older ones is highly linked to the rise of software-powered engineering. The distributed, free, and open-source nature inside the software development ecosystem makes it accessible for anyone to develop their own business proposal in a matter of days. Open-source software is a powerful driver for innovation and digital transformation. According to Red Hat State of enterprise open-source report, up to 90% of IT leaders employ some form of open-source software in their business (Illuminas, 2021).

#### ***4.5. Competitive Position***

This section will describe the competitive dynamics of the sector whilst assessing their respective forces using the Five Forces Model from Porter.

This tool was developed by Michael E. Porter in 1979, and ever since had become a standard for understanding the competitive dynamics within a specific industry. By studying the 5 forces that compose the model, Bargaining Power of Suppliers and Customer, threat of new entrants, Threat of substitute products or services and the Jockeying for position, companies are better equipped to assess the potential of an industry and define their strategic position in the industry (Porter, 1979).

##### ***Competitors and jockeying for Position***

In the most recent years, several companies started to emerge in the voluntary carbon offset market. Enumerating a few factors that seem to be contributing to this rise, such as:

- Improved techniques and technologies for carbon credits certification, avoiding greenwashing and improving public trust.

- Paris agreement carbon neutrality by 2050 date rapidly approaching.
- Companies pledging carbon neutrality strategies.
- Increasing environmental mindset from the population.
- The rise of globalization and sharing platforms.

From European roots, with a B2C proposition and online purchase availability we establish Klima, Gold Standard and Single Earth as our closest direct competition.

**Klima**, a German company launched in 2019 presents the closest business proposition in relation with Bolina. Klima offers their users a customized offset subscription plan based on the results from the carbon footprint calculator with a lower price set at 10€ per 1 CO<sub>2</sub>e ton. They also present a community impact tracking concept in which the platform determines the global offset impact derived from friend's referral. Having different types of projects, their users can not choose directly which project to invest.

**Gold Standard** is a non-profit known mainly as a respected and acknowledged standard body out of Switzerland operating since 2003. Besides operating as a standard entity, they also offer an e-commerce marketplace with verified projects available for purchase by individual contributors or companies. The prices per Co<sub>2</sub>e metric ton range from 9,33€ to 48,53€ in a wide set of projects.

**Single Earth** is highly technological concept operating since September 2022 from Estonia. Single Earth creates a digital model out of a landowner project assigning a digital currency "MERIT" to represent the preserved Co<sub>2</sub>e from that project. Each digital token costs 3€ placing the metric Co<sub>2</sub>e at 30€.

These and other relevant competitors are presented in Annex IV with a brief description, standards used by each, project types, pricing, and relevant impact data.

We can infer there's a few competitors already operating in the market, however considering the growth phase united with the fact that currently the offer for individual contributors (B2C) in the voluntary carbon offsetting market is very scarce and mostly uncharted territory we place this force at a medium competitive intensity.

### ***Suppliers and their Bargaining Power***

Currently project developers have low bargaining power, mainly because the projects implementation are quite reliant on funding from the open market. This force might increase as demand starts reaching the market supply potential.

A few selected projects, following our selection criteria, are found in Annex VI. We will engage in contact with the project developers seeking direct representation in our marketplace by signing a binding contract.

### ***Bargaining Power of Buyers***

Consumers retain a very high bargaining power rooted in the fact that buyers will only invest in projects voluntarily, joining the fact that the market suffers from low transparency, limited framework and plentiful cases of greenwashing contributing for buyers to walk away from purchasing credits. On the other hand, buyers are also driven to the market because of increasing environmental concerns.

### ***Threat of New Entrants***

The barrier for new companies to enter the market are medium due to the ephemeral and complex nature of the product.

### ***Threat of Substitute Products or Services***

Reducing GHG emissions by improving on existent processes and operations is the cornerstone to achieve carbon neutrality. Considering carbon credits and offset projects results mainly from the impossibility to further improve, hence the thread of substitute services is very low since, expected to increase over time with the development of improved techniques and technologies.

### 4.6. Marketing Plan

#### 4.6.1. SWOT & TOWS Matrix

In Table III it is shown the SWOT & TWOS analysis matrix.

Table III - SWOT & TOWS matrix

		INTERNAL	
		Strengths	Weakness
EXTERNAL	Opportunities	<ul style="list-style-type: none"> <li>- Unexplored new concept.</li> <li>- Offline card concept.</li> <li>- Trending market.</li> <li>- Community pool.</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of experience.</li> <li>- Low Finances.</li> <li>- Low Head count.</li> <li>- Only B2C.</li> </ul>
	Threats	<ul style="list-style-type: none"> <li>- Offering individual contributors, the opportunity to take part and real action, enticing the feeling of personal fluffiness.</li> </ul>	<ul style="list-style-type: none"> <li>- Regular 3rd party consulting with industry experts.</li> <li>- Apply for Invest2030 governmental program startup voucher <a href="https://www.invest2030.pt/incentivo/MTAy">https://www.invest2030.pt/incentivo/MTAy</a>.</li> </ul>
		<ul style="list-style-type: none"> <li>- Public predisposition for green initiatives.</li> <li>- Emerging market reaching maturity and increase in demand.</li> <li>- Long lifecycle of offsets.</li> <li>- Some GHG are impossible to cut.</li> </ul>	<ul style="list-style-type: none"> <li>- Making transparency a cornerstone value within the company, following our strict methods of project selection and monitoring.</li> <li>- Immediately retire any carbon credit after sold to avoid double selling.</li> </ul>
	<ul style="list-style-type: none"> <li>- Global economy cutting GHG emissions.</li> <li>- Market regulations.</li> <li>- Lack of transparency and conclusive results.</li> <li>- Greenwashing.</li> <li>- Natural Catastrophes and technology malfunction.</li> </ul>	<ul style="list-style-type: none"> <li>- Hiring experienced human resources, such as a Web developer to maintain the platform and a project manager.</li> <li>- Continuous adoption of the latest monitoring and project verification methods to counter greenwash and lack of results.</li> <li>- Consider amplifying the offer into the B2B world.</li> <li>- Implementing on site verification by sending envoys to the projects and register and share with the customers.</li> </ul>	

#### 4.6.2. Segmentation, Target Market and Positioning

Segmenting the heterogeneous market allow us to divide our potential market into smaller and more homogenous groups that share common traits between them, hence facilitating the task to define our targets and how to better serve them.

We segmented our market using a combination of demographic and psychographic segments. Hence, our target market will be towards tech-savvy young parents from middle to high income class with 35-49 years of age that share a concern for the environment and agree on offsetting non-reducible emissions (Kantar network, 2023).

By targeting this niche, young parents raised with a certain amount of technology and non-radical environmental mindset, will allows us to implement our focused differentiation strategy, while avoiding the pitfalls of disbelief amongst millennials and their lower purchase power and the lower technology aptitude of baby boomers. Diverging from the typical B2B offer from our competitors, we pretend to distinguish ourselves on B2C, creating a trend for a new commodity that typically it is not in the orbit of the average individual.

Considering our closest competitors, that provide a B2C offer, we consider our distinctive approach to focus only on nature-based projects that adhere to the highest standards, hence we position ourselves as showed in *Figure 3*.

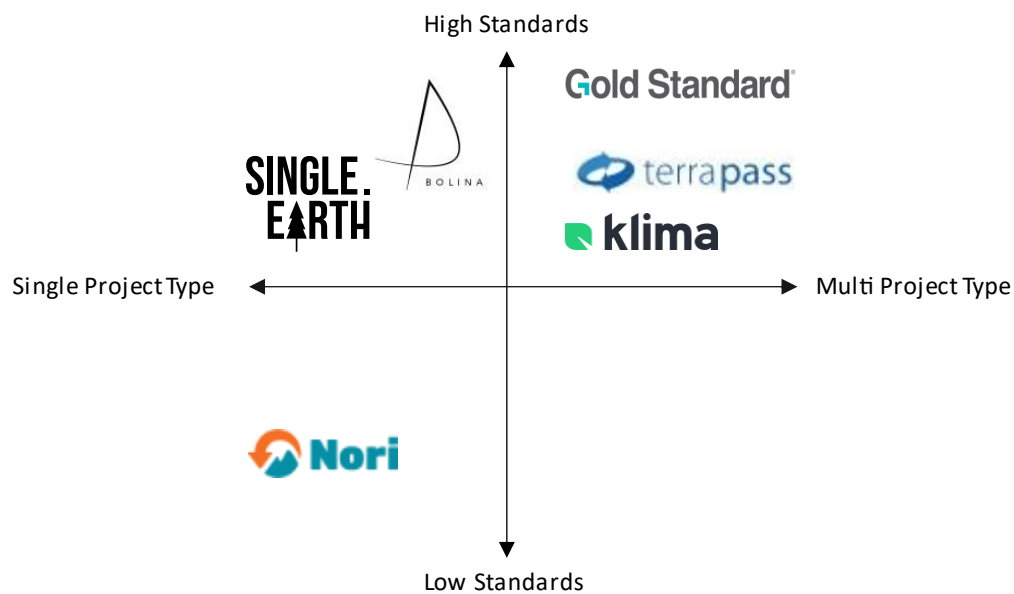


Figure 3 - Bolina's Positioning

Our position stance is reflected in the following sentence: “To young parents who need to ensure their younglings future, Bolina is a carbon offset marketplace that allows them to invest in high quality green projects and take action with verifiable environment impact.”

### 4.6.3. Marketing Mix

#### Product:

- Two main offsetting options will be available to our customers:
  - o Bolina – A Bolina represents the equivalent to one carbon credit from the projects in the platform.
  - o Bolina-Eco – Bolina Eco is a product concept that agglomerates a sense of community. Purchasing one Bolina Eco means buying a carbon credit equivalent whilst be part of a larger group of individuals all contributing to the same pool of a curated set of projects.

This product will also be available “offline” in the form of a gift card that a person can buy for himself or making it an ideal gift for another person. The card will contain an exclusive code that can be redeem on Bolina’s website for a carbon credit equivalent. As a symbolic display, it will also bring inside a few tree seeds for people to plant in their own backyards. A design concept can be found in

Annex VII.

- Online e-commerce platform accessible through any common browser and/or mobile application. A mobile mockup is displayed in Annex VIII.
- Free carbon footprint calculator upon registration.
- Personalized subscription suggestions based on footprint calculator results.
- Suggestions and tips for on how to reduce emissions, based on the footprint calculator results.
- Premium High quality reforestation projects with verifiable result and differentiating with offer to individual contributors.
- Our goal is to create and add an intrinsic value to our “green” projects at the same time incentivising people to reduce their own carbon footprint with just a few small habit changes.

#### Promotion:

- Implementing a marketing pull strategy to generate brand excitement and “pull” new costumers for a commodity for which the need did not previously exist.

**Online Reach:**

- Create a strong social network presence. Publishing regular up-to-date information in a simple and concise manner in Instagram, Youtube, Facebook, LinkedIn and directly via the website.
- Focus on “Take action now to assure your kids future” and “Demystify the voluntary Carbon Market” promotional stances.
- Increase the social media reach by using credible and reliable influencers. Regular Instagram influencer posts and create video contents in partnership with Youtubers.
- Keep customer engagement with regular email notifications, resorting to online free tools such mailchimp (<https://mailchimp.com/pt-br/>)

**Offline Reach:**

- Promotion campaigns through our partner retailers.
- Create a valuable and sought out gift card for people to offer friends and family.
- Participate in environment and technology conferences and event, such as WebSummit.

**Bolina Community:**

- Engage with communities and companies with initiatives, such as “clean the forest day” or “take your bike to work week”.
- Give customers a sense of community and persuade them to “advertise” their actions, hence turning our customers into our best publicists and the brand ambassadors.
- Become B-Corp certified and use this certification as Marketing lure. Being B-Corp certification means we adhere to a high standard of social and environmental performance, transparency, and accountability, highly associated with environmental business models.

**Price:**

- Premium price of 25€ per carbon credit equivalent from high quality “green” carbon credits.

- Future price re-adjustments based on Market fluctuations, project developers demands and closest competitors.
- Assure 30% gross margin on credits costs.

**Place:**

- Online e-commerce platform available worldwide with a focus on Portugal and the European Union. A platform map of the website is shown in Annex IX.
- Offline/Gift card available in partner retailers using only recycled materials to produce the physical cards assuring the manufacturing lowest carbon footprint. Inside the cards costumers will also find tree seeds to plant at home.
- Costumer support through email and direct messaging.
- Shoutout Program, a bidirectional channel to report project deviations.

**People:**

- Kind, optimistic, and passionate people willing to take personal action towards collective goals.
- Continuous investment in training and adherence to the newest scientific developments.
- Open environment for the development of new ideas and methodologies.
- Our team should embody best our core values: “Transparency, Commitment and Boldness.”
- Fair recruitment and remuneration.

**Process:**

- Customer engagement from login -> Calculator -> Personalized Offer -> Carbon Offset with simplicity, transparency, sobriety, and non-technical jargons. User Interface purchase flow chart displayed in Annex X.
- After the purchase, customer will be able to retrieve a Bolina purchase certificate from the profile with a suggestion to share in social platforms. An email notification with the certificate will be sent as well. Certificate example illustrated in Annex XI.
- Easy to use platform with an attractive, well-structured design using a specific pallet of non-alarming colours (blue, green, white) to soothe the customer.

**Physical Evidence:**

- Online experience to create a sense of action and belonging. We intend to allure our customers with a positive stance against climate change. Providing concise information without falling into activism and radicalism.
- Top priority to the design and user experience with retroactive feedback from our users.

**4.7. Operations & Management Plan**

**4.7.1. Business Model & Chain Value**

As a way to condense and better structure our business model and the way we intended to deliver and conduct our business we took usage of the business model canvas, visually represented in *Figure 4* (Osterwalder, 2010).

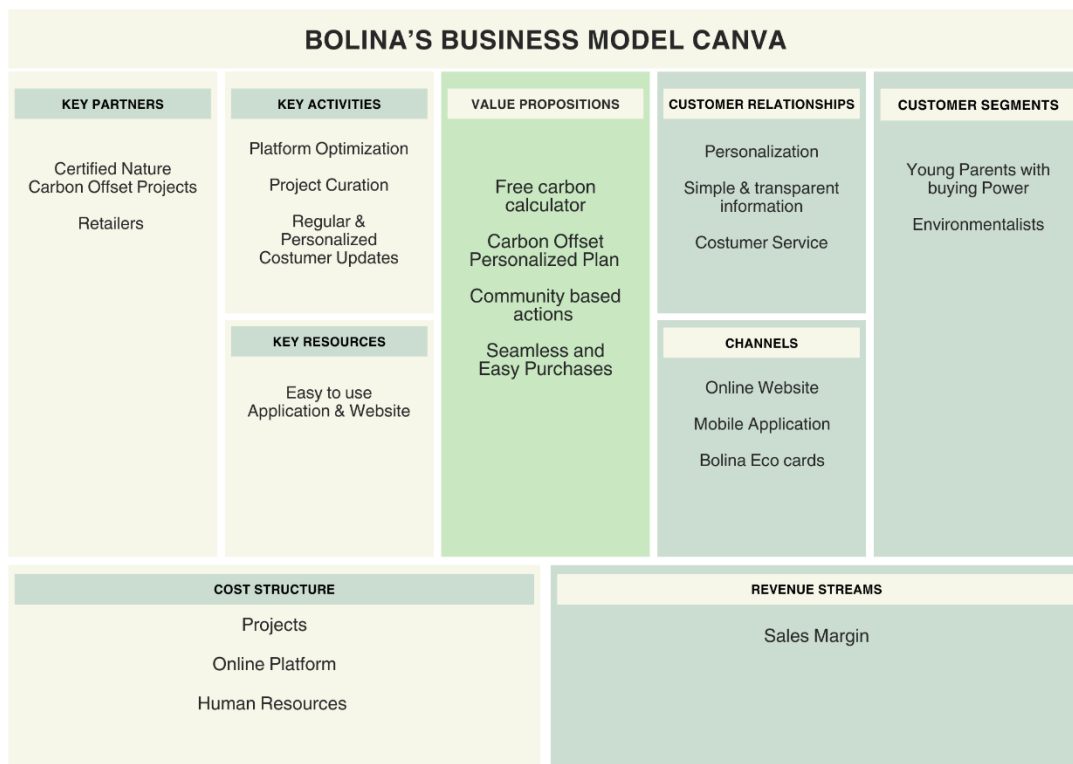


Figure 4 - Bolina's Business Model Canvas

**4.7.2. Legal Structure**

The legal constitution of the company took place on the 20th of July 2023 under the name Bolina Eco, Lda with a legal form towards the Portuguese government of “Sociedade por Quotas”, equivalent to a limited liability company. The registry was done

online under the e-Portugal website with a cost of 220€ where the registered capital was divided by 60% to Hugo Ferreira and 40% to Manuela Restrepo totalling a 20 000€ of registered capital.

Brand and logo were also registered on Instituto Nacional de Propriedade Industrial (INPI) with a cost of 280€.

#### 4.7.3. Human Resources & hierarchical chart

Initially, the two founding partners will take over the functions described in the organizational chart in *Figure 5*.

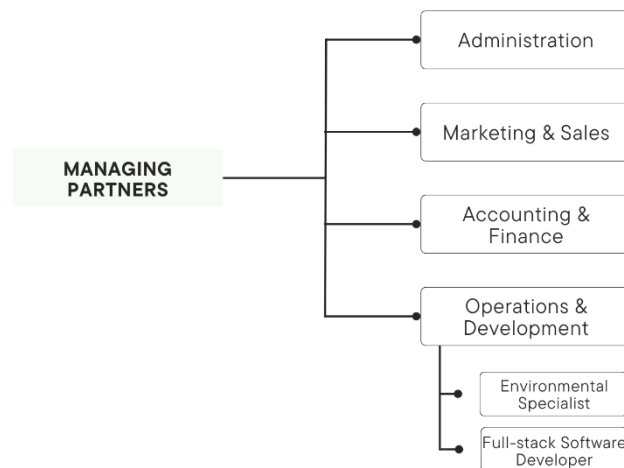


Figure 5 – Organizational chart

In the embryonic phase of the project both promoters will guarantee all the working tasks of the project out-side of their current working hours. Hugo Ferreira will be in charge of administration, finance, and technological development, whilst Manuela Restrepo will be in charge of marketing, sales and platform design. Both will start working full time when the moment arises that we estimate to be after the first year of operations.

With the expected increase in demand, we expect to hire and fill the positions for Full-stack software Developer and Environmental Specialist. Initially both positions will be handled in a part-time scheme with a full-time inclusion after the first year of operations.

Environmental Specialist key tasks:

- Project Investigation and Selection

- Handling Technical contacts with Project Developers.
- Handling all tasks towards standard bodies and monitoring 3<sup>rd</sup> parties.
- Keep up with state-of-the-art science related with the business.

Full-stack Software Developer key tasks:

- Administration and maintenance of cloud PaaS service.
- Assist with software process design.
- Participate in developing and maintaining the platform (Website and Mobile)
- Develop and execute SW testing.
- Customer Technical support.

## ***4.8. Financial Plan and risk assessment***

### ***4.8.1. Sales Forecast***

Estimating the sales Forecast is not only the most important complement of a financial plan, since it directly affects the remaining projections, but it is also the most difficult to correctly assess once it involves a thorough market research, market size assessment and project sales.

To correctly estimate our sales, we opted to use a conservative approach combining our strategic objectives, the survey results shown in Annex III, and the figures from our closest and most similar competitor, Klima, as a baseline.

As detailed in Table IV, we estimate 1 000 registered individual subscribers offsetting on average the Portuguese annual carbon footprint per/capita of 4 Co<sub>2e</sub> ton, resulting in a total of 4 000 *Bolina* purchases. For our community pool product, *Bolina Eco*, we estimate 1 000 purchases in the first year of operations. This estimation falls in line with our goals and a parallel with our competitor Klima which follows a similar business model and serves a similar market such as *Bolina's* one, located in Germany, hence constituting an ideal point of comparison. As a baseline Klima sold 44 659 carbon credits in 2021 and 96 104 tons in the year after, second year of operations.

In line with the results from the survey we determine that each subscriber will invest 100€ per year in 4 *Bolina's*.

To calculate the increase in sales we define an initial boom of 80% and slowly declining throughout the following years to an increase of 50% in 2026, 40% in 2027 and 20% in 2028, the year we reach cruising speed.

Table IV - Bolina's Sales Forecast

Business Volume Forecast						
Product		2024	2025	2026	2027	2028
Users	Bolina	1 000	1 800	2 700	3 780	4 536
	Bolina Eco	1 000	1 800	2 700	3 780	4 536
Subscription	Bolina	4 000	7 200	10 800	15 120	18 144
	Bolina Eco	1 000	1 800	2 700	3 780	4 536
<b>Estimated Sales</b>		125 000,00 €	225 000,00 €	337 500,00 €	472 500,00 €	567 000,00 €
<b>Resulting Co2e offset impact</b>		5 000 Co2e	9 000 Co2e	13 500 Co2e	18 900 Co2e	22 600 Co2e

#### 4.8.2. Costs of Sold Goods

We plan to operate mainly in a direct marketplace with exclusivity contracts directly with project developers, resorting only sporadically to credit resale.

We establish a 30% margin for the costs on both our products which results in the costs of sold goods as shown in Table V.

As a trimestral advancement for the Bolina Eco commodity under the community pool, we will curate the projects in which to invest, hence expecting a higher impact whilst remaining under the mandatory financial margins.

Table V - Cost of sold goods

Cost of Goods (CMVM)					
Product	2024	2025	2026	2027	2028
<b>Bolina</b>	87 500,00 €	157 500,00 €	236 250,00 €	330 750,00 €	396 900,00 €
<b>Bolina Eco</b>	20 125,00 €	36 225,00 €	54 337,50 €	76 072,50 €	91 287,00 €
<b>Total</b>	87 500,00 €	157 500,00 €	236 250,00 €	330 750,00 €	396 900,00 €

#### 4.8.3. Supplies and External Services

The costs with supplies and External Services will have an ascending trajectory as revenue increases. The first year 2024 will be of expense contention to keep financial balance totalling 8 506 € in SES costs. This value will increase to 19 837 € in 2025 and

subsequently raise 10% year until 22 975 € in 2028. Detail costs of SES are shown in Annex XII.

The expenses with marketing and publicity take up the larger slice in the costs structure of the supplies and external services (SES) component, reaching 11 741,00 € annually at the end of 2028. Secondly, there is the costs with the hosting infrastructure of the platform and software tools for the development and maintenance of the platform. In the first years we plan to utilize a low-code web development kit to reduce time to market and costs. With the addition of a new full time SW developer, we plan to develop our own in-house platform in parallel to be fully operational and in production by the end of 2024. We will use a cloud hosting infrastructure built in Amazon Platform as a service PaaS solution, saving costs by choosing mainly opensource tools for the remaining development of the platform.

#### **4.8.4. Human Resources**

Being the highest chunk in our structure of costs, human resources require extra precaution and financial manoeuvring in order to keep financial stability in Bolina.

To achieve financial balance in 2024 the employees will be hired in a partial time or freelancing regime. In 2025 both employees will be included at full time with a monthly wage of 1 200 € for the environmental specialist position and 1 500 € for the full-stack software developers.

Regarding management and the founding partners, Manuela will start working full-time at Bolina from 2025 onwards with Hugo Ferreira joining full-time wage from 2027.

Displayed in Table VI the Human Resources total costs for Bolina per year and respective wage details.

Table VI - Human Resources

Human Resources						
Year		2024	2025	2026	2027	2028
Management - Manuela		600,00 €	1 200,00 €	1 200,00 €	1 200,00 €	1 200,00 €
Management - Hugo	Monthly Wages	500,00 €	500,00 €	500,00 €	1 200,00 €	1 200,00 €
Environmental Specialist		600,00 €	1 200,00 €	1 200,00 €	1 200,00 €	1 200,00 €
Full-Stack Software Developer		975,00 €	1 500,00 €	1 500,00 €	1 500,00 €	1 500,00 €
Yearly Wages		45 878,09 €	76 892,20 €	76 892,20 €	89 125,05 €	89 125,05 €
Social Security tax	23,75%	8 063,13 €	14 630,00 €	14 630,00 €	16 957,50 €	16 957,50 €
Insurance	1%	364,96 €	662,20 €	662,20 €	767,55 €	767,55 €
Annual Meal Allowance		2 596,13 €	4 830,00 €	4 620,00 €	4 620,00 €	4 620,00 €
Training		258,00 €	480,00 €	480,00 €	480,00 €	480,00 €
Total costs p/Year		48 732,21 €	82 202,20 €	81 992,20 €	94 225,05 €	94 225,05 €

#### 4.8.5. Investment

First year's funding requirements will be assured partially by own capital investment of 20 000€ and the *New Green and Digital Products* voucher for startups under the RRP program with a value of 30 000 €. Due to the digital nature of the business, the physical assets will be only the tools needed for the human resources. We will acquire two working sets composed of a laptop, a monitor, a smartphone, a headset, a mouse, and a keyboard for both employees in a total of 2 770,00 €. The founding partners will work with current personal set already residually valued.

#### 4.8.6. Results Forecast

To evaluate the project from a financial point of view a few pre-assumptions were taken into consideration, besides the previous item estimations. An equity risk premium of 7,89%, an unravelled beta of 104% for the environmental industry (Damodaran A., 2023) and a 12-month average of 3,08% in risk-free Portuguese treasury bonds (Banco de Portugal, 2023b). For a project duration of 5 years, we can estimate a favourable Net Present Value (NPV) of 25 626 €, an Internal Rate of return (IRR) on capital vested of 54% with a payback on capital after 4 years and 10 months, estimating a positive cash flow by 2027 as detailed on Table VII.

Table VII - Income Statement and Financial Evaluation

Income Statement						
Item	2023	2024	2025	2026	2027	2028
Revenue	-	125 000,00 €	225 000,00 €	337 500,00 €	472 500,00 €	567 000,00 €
Cost of goods	-	-87 500,00 €	-157 500,00 €	-236 250,00 €	-330 750,00 €	-396 900,00 €
SES	-848,12 €	-8 505,52 €	-19 836,56 €	-20 831,66 €	-21 876,84 €	-22 974,64 €
HR	-	-45 232,21 €	-82 202,20 €	-81 992,20 €	-94 225,05 €	-94 225,05 €
Other Revenue	-	15 000,00 €	15 000,00 €	0,00 €	0,00 €	0,00 €
<b>EBITDA</b>	-848,12 €	-1 237,73 €	-19 538,76 €	-1 573,86 €	25 648,11 €	52 900,31 €
Amortization	-	-692,50 €	-692,50 €	-692,50 €	-692,50 €	-
<b>EBIT</b>	-848,12 €	-1 930,23 €	-20 231,26 €	-2 266,36 €	24 955,61 €	52 900,31 €
<b>EBT</b>	-848,12 €	-1 930,23 €	-20 231,26 €	-2 266,36 €	24 955,61 €	52 900,31 €
Taxes	-	-	-	-	-1 684,50 €	-10 145,99 €
<b>Net Result</b>	-848,12 €	-1 930,23 €	-20 231,26 €	-2 266,36 €	23 271,11 €	42 754,33 €
Financial Evaluation						
Accumulated CF	18 956,81 €	33 289,37 €	998,76 €	110,95 €	25 637,32 €	68 776,17 €
OP Cash flow	-1 043,19 €	-353,40 €	-16 720,82 €	-318,00 €	26 186,82 €	43 799,30 €
NPV	25 626,33 €					
IRR	54,37 %					
Payback	4,83 years					

#### 4.8.7. Risk Analysis

We conducted a price and demand sensitivity analysis resorting to the NPV and IRR indicator results, widely used as methods for financial evaluation of a given project.

As a result of a negative and positive variation in both price and demand components from the financial plan, we can infer that the project is slightly more susceptible to demand deviations than price variations. Both NPV and IRR starts being negative when dropping 10% from the baseline.

Table VIII - Sensitivity Analysis: Price and Demand

NPV	Price Variation						
	-15%	-10%	-5%	0%	5%	10%	15%
-15%	-75 484,87 €	-59 127,58 €	-42 770,28 €	-26 595,65 €	-10 536,34 €	5 274,66 €	18 581,52 €
-10%	-59 127,58 €	-41 808,08 €	-24 706,32 €	-7 702,34 €	8 405,69 €	22 495,30 €	36 544,24 €
-5%	-42 770,28 €	-24 706,32 €	-6 757,68 €	9 971,20 €	24 843,57 €	39 633,56 €	54 277,90 €
0%	-26 595,65 €	-7 702,34 €	9 971,20 €	25 626,33 €	41 178,21 €	56 582,71 €	71 948,10 €
5%	-10 536,34 €	8 405,69 €	24 843,57 €	41 178,21 €	57 350,98 €	73 484,64 €	89 526,41 €
10%	5 274,66 €	22 495,30 €	39 633,56 €	56 582,71 €	73 484,64 €	90 290,07 €	107 090,58 €
15%	18 581,52 €	36 544,24 €	54 277,90 €	71 948,10 €	89 526,41 €	107 090,58 €	124 632,60 €

The risk factor is an ever-present component for any given project, however the positive results presented in Table VIII and Annex XIII are encouraging towards the project conception while giving some room for manoeuvre.

#### 4.9. Milestones

Table IX shows our milestones and objectives for the first year of operations.

Table IX - Milestones & Objectives

Milestones	
<b>November 2023 – March 2024</b>	<ul style="list-style-type: none"> <li>- Pilot phase with a Platform Demo as a proof of concept.</li> <li>- First project in the platform and first subscriber transaction.</li> <li>- Apply for Invest2030 voucher.</li> <li>- Recruitment of human resources.</li> <li>- Receive B-Corp certification.</li> </ul>
<b>August 2024</b>	<ul style="list-style-type: none"> <li>- First Retailer contract for our Offline Strategy and first community pool purchase by launching of Bolina Eco.</li> </ul>
<b>December 2024</b>	<ul style="list-style-type: none"> <li>- Reaching 1000 Bolina subscribers and 1000 community pool subscribers offsetting 5000 tons of Co2e.</li> <li>- First year balance and next year's planning adjustments.</li> </ul>

## 5. Final Conclusions

This Business Plan exposes an idea for a carbon offset marketplace, called Bolina, and its implementation potential. It details a new concept into generating financial value towards green initiatives via carbon credits transactions, describes the key components of the Voluntary Carbon Market and its surroundings, proposes a way to generate public interest in such commodity and the marketing strategy behind it, and finalizes with estimating the financial figures upon project implementation and development.

There's an ever-growing public interest in environmental enterprises. In today's delicate context every company needs to consider ecological goals into their business. Bolina's vision and mission to *"Become the reference platform in the Voluntary Carbon Market"* by connecting carbon offset projects with consumers in simple and transparent way embodies an appealing value proposition to our customers. This project becomes attractive when combining our strategy with a positive financial prospect from positive

NPV of 71 895,00 €, hence constituting Bolina as source for continuous growth in the upcoming years.

We believe there's also a potential to expand, if the opportunity arises, for other areas of the VMC ecosystem reaching a full end-to-end solution by developing projects, certifying, and monitoring them and selling to the end-user.

As a personal note on the sensitive subject that global warming is, we leave you with a story memory. A couple of years ago we discover that HCFCs molecules was creating a hole in the ozone layer in the atmosphere. It took some time and discussion, but in 1987 the Montreal Protocol was signed and universally rectified. Resulted in several industries adjustment, innovation, and spirit of entrepreneurship. The ozone hole shrunk and is now almost gone. This achievement is truly a testament to human tenacity, entrepreneurship and what we can achieve working together.

Thank you for your time and consideration!

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# 7. Annexes

## Annex I - Promoters Curriculum Vitae



### Hugo Ferreira

Electrical and Computer Engineer  
MSc. Telecommunications

#### ABOUT ME

I am a practical and effective Telecommunications Engineer, with experience in various aspects of analysis and problem solving as well as product deployment and integration. My experience has helped me to develop a high focus on the client and crisis management, which allows me to read a situation properly. I am attracted by new challenges and new knowledge, always based on a personal development in order to obtaining better results.

#### SKILLS

- Operating systems: Windows e Linux;
- Programming languages: C/C++, Matlab, Python;
- Technical: Openstack, Kubernetes, Docker, VMware, Wireshark, MML, Opnet, Multisim, Labview, Ladder, Simulink, JavaScript, HTML5, CSS3.

#### LANGUAGES

- Portuguese C2
- English C2
- Spanish C1
- German A1

#### PROJECTS

LePanis company  
Co-creator

UC Spring II Project  
Vodafone Germany.

VoLTE Spring II Project  
Vodafone Germany.

Master Thesis "System for Automatic Assessment of Reading Ability of Children"  
Telecommunications Institute - University of Coimbra.

#### PROFESSIONAL

Technical Consulting Engineer - Cisco Systems  
01/2022 – Present

Cloud Costumer Product Support CVIM, NSO, ESC  
Member of the Cx SP Cloud Team at TAC

Technical Lead VoLTE - Nokia S.A.  
01/2022 – 01/2023

Technical and support leadership with focus on costumer  
Vodafone Germany.

CS Care Engineer - Nokia S.A.  
01/2017 – 01/2022

Costumer Product Support: NTAS, oMGW, oMSS, BGW.  
Member of VoLTE End to End support team.  
Troubleshooting, configuration, implementation and  
Emergency support.

Implementation Engineer - Nokia S.A (UC Spring II)  
06/2021 - 09/2021

Implementation and Integration of NTAS Ultracard.

Test lead engineer - Nokia S.A (VoLTE Spring II)  
01/2018 – 08/2018 - On site Dusseldorf, Germany.

Network test, fix and log collection and analysis for  
VoLTE/VoWiFi solution deploy of Vodafone Germany.

#### EDUCATION

Master in Corporate Sciences  
(Msc candidate - Anticipated completion September 2023)  
Lisbon School of Economics and Management of  
University of Lisbon / ISEG.

Integrated Masters in Electrical and Computer  
Engineering - Telecommunications  
Faculty of Sciences and Technology - University of  
Coimbra.

Mobility Studies  
Erasmus+ Czech Technical University.



### MANUELA RESTREPO JIMÉNEZ

Architect and Product Designer - Master in BIM Management

#### PERSONAL DATA

Name:  
Manuela Restrepo Jiménez

Nationality:  
Colombian

#### PORTFOLIO

[issuu.com/manuelarestrepo/docs/portafolio\\_manuela\\_restrepo\\_j](https://issuu.com/manuelarestrepo/docs/portafolio_manuela_restrepo_j)

#### LABORAL EXPERIENCE

05/2019 - 08/2019  
Arpro - Intern in construction in  
phase of foundations, follow up  
as construction resident.

12/2019 - 10/2020  
Inversiones inmobiliarias SAS -  
Project architect - development  
and follow up of projects of  
remodelation in several phases of  
development and construction  
until final delivery

07/2021 - 03/2022  
Construtora Grupo Dialogo Certo  
/ highplan Arquitectos- Junior  
project architect in charge of  
specification of materials and  
estimates of budgets and quantity  
maps of architecture and  
finishings, follow up of projects in  
development

04/2022 - Actual  
Bim Manager and Technical  
office leader for Hotel Melia  
Construction Project - Acciona  
SA

#### ACADEMIC WORK

Academic Monograph  
Secondary school - "El conector  
de la Orinoquia" 2014-2015

III Workshop of Public Space,  
event of "Bienal de Espacio  
Público de Roma" in Bogotá

Degree project  
Universidad de Los Andes.  
"Trenzando el verde con la  
ciudad" - Thesis of Architecture  
bachelor

Degree project  
Universidad de Los Andes.  
"Habitarte" - Thesis of  
Architecture bachelor

#### ACADEMIC FORMATION

2003 - 2015  
Primary school and Secondary school  
Colegio San Mateo Apóstol

2015 - 2019  
Bachelor in Architecture / Universidad de  
los Andes

2016 - 2020  
Bachelor in Design with emphasis in  
Product Design / Universidad de los  
Andes

2018  
Academic exchange  
Architecture - Bachelor / Instituto Superior  
Técnico - Lisbon

2021  
Integrated master of architecture - Title  
recognition - Faculdade de Arquitetura  
Ulisboa

2022-2023  
Master degree in BIM Management  
Eadic / Universitat e-Campus / UCAM  
Universidad Católica de Murcia

#### PROFESSIONAL FORMATION

2019 (30h)  
Course of modelation in revit of a  
architecture project / Javeriana University  
Bogotá

#### ABILITIES

- Autocad ●●●●●
- Adobe Illustrator ●●●●●
- Adobe Photoshop ●●●●○
- Adobe In-Design ●●●●○
- Adobe Premiere ●●●●○
- Rhinoceros ●●●●○
- Revit ●●●●○
- Grasshopper ●●●●○
- Archicad ●●●●○
- 3D Max ●●●●○
- Lumion ●●●●○

#### LANGUAGES

- Spanish (Lingua Materna) ●●●●●
- English (Purata Toal 104/120) ●●●●●
- Portuguese (Purata Ceibe Brás Intermediario Superior) ●●●●○

## Annex II - Survey about a carbon offset platform



### Questionário para uma plataforma de compensação de carbono

O presente questionário foi elaborado no âmbito do Trabalho Final de Mestrado em Ciências Empresariais do Instituto Superior de Economia e Gestão (ISEG) - Universidade de Lisboa, por Hugo José de Sousa Ferreira.

O presente estudo sobre a criação e desenvolvimento de uma plataforma de offset de carbono pretende entender qual a atitude dos consumidores face à compensação de carbono, quais as suas preferências na escolha de um projeto e como melhorar os serviços da plataforma de compensação de carbono.

O questionário, terá uma duração aproximada de 5 minutos. As respostas serão confidenciais e apenas utilizadas para o estudo de cariz académico e o potencial desenvolvimento do projeto.

Por favor leia atentamente cada pergunta e selecione a opção que melhor se adequa a sua opinião!

Muito obrigado pela sua colaboração!

#### Plataforma de offset de carbono

Talvez nunca tenha ouvido falar, mas uma plataforma de compensação de carbono é uma empresa que conecta indivíduos e/ou entidades que pretendam compensar as suas emissões de gases de efeito de estufa mediante o investimento em projetos de compensação de carbono adquirindo créditos de carbono.

Estes créditos de carbono são criados a partir de projetos e/ou entidades que através da sua atividade reduzam ou removam as emissões de gases de efeito de estufa, como, por exemplo, projetos de energias renováveis, de reflorestação, entre outros.

Ao financiar estes projetos estará a compensar as suas emissões e a contribuir para um futuro mais amigo do ambiente.

1. Aceita de livre vontade participar neste questionário? \*

Sim

Não

#### A compensação de carbono

2. Já tinha ouvido falar em compensação e créditos de carbono? \*

Sim

Não

3. Pensa que a compensação de carbono possa ajudar no combate às alterações climáticas? \*

Sim

Não

Talvez

4. Tem noção das suas emissões de gases de efeito de estufa? \*

Sim

Não

Uma ideia

5. Quanto estima ser a emissão anual por habitante de gases de efeito de estufa na União Europeia? \*

Menos de 500kg de Co2 /ano

Entre 500kg e 3 toneladas de Co2 /ano

Entre 3 e 5 toneladas de Co2 /ano

Entre 5 e 7 toneladas de Co2 /ano

Mais de 7 toneladas de Co2 /ano

6. Gostaria de investir em projetos de compensação de carbono e com isto compensar as suas emissões? \*

Sim

Não Avançar para a pergunta 16

Talvez

**A Plataforma de compensação de carbono**

7. Em que tipo de projetos estaria disponível para investir? \*

Manutenção do meio ambiente

Reflorestação de florestas

Criação e manutenção da Biodiversidade

Projetos de energias renováveis

Adoção de métodos mais sustentáveis

Outros

8. Qual a sua preferência de investimento? \*

Esporádica

Investimento recorrente

Subscrição Mensal

Subscrição Anual

9. Qual o grau de importância que atribui aos diferentes fatores na escolha do \* projeto?

	Irrelevante	Pouco importante	Importante	Muito importante	Fundamental
<b>Acreditação por entidades competentes</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Localização</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>O tipo de projecto</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Feedback regular</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Conteúdo simples e detalhado</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Fotos e videos dos projectos</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Preço</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Transparência e impacto real</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Quais os fatores que mais valoriza neste serviço? (Escolha no máximo 2 opções) \*

Marcar tudo o que for aplicável.

- Interface "User-Friendly"
- Design Apelativo
- Conteúdo simples, claro e actualizado
- Funcionalidades uteis e uma Experiência Personalizada
- Atendimento ao cliente
- Segurança e Privacidade

11. Qual o valor que estaria disposto a investir em projetos de offset de carbono anualmente para compensar as suas emissões? \*

- Menos de 50 €
- Entre 50 € e 100 €
- Entre 101 € e 150 €
- Mais de 150 €

12. Gostaria que a plataforma estime as suas emissões e lhe ofereça um plano personalizado? \*

- Sim
- Não

13. Gostaria de receber atualizações regulares sobre os projetos que investiu? \*

- Sim
- Não
- Depende do projeto

14. Além de compensar as suas emissões, gostaria de receber dicas personalizada de como reduzir a sua pegada? \*

- Sim
- Não

15. Recomendaria este tipo de serviço aos seus familiares e amigos? \*

- Sim
- Não
- Talvez

Sobre si

16. Sexo: \*

Masculino

Feminino

Prefiro não dizer

17. Idade: \*

Até 14 anos

15-20 anos

21-34 anos

35-49 anos

50-64 anos

Mais de 65 anos

18. Quais as suas habilitações académicas? \*

Ensino básico

Ensino secundário ou equivalente

Licenciatura

Mestrado

Doutoramento

19. Qual a sua situação profissional? \*

Desempregado

Estudante

Trabalhador por conta de outrem

Trabalhador por conta própria

Trabalhador-estudante

Reformado

20. Quais os seus rendimentos líquidos mensais? \*

Menos de 800€

801 € - 1000 €

1001 € - 1500 €

- 1501 € - 2000 €
- 2001 € - 2500 €
- Mais de 2500 €

21. Qual a sua área de residência? \*

- Área Metropolitana de Lisboa *Avançar para a secção 6 (Muito Obrigado pela sua participação!)*
- Área Metropolitana do Porto *Avançar para a secção 6 (Muito Obrigado pela sua participação!)*
- Região Norte *Avançar para a secção 6 (Muito Obrigado pela sua participação!)*
- Região Centro *Avançar para a secção 6 (Muito Obrigado pela sua participação!)*
- Região Sul *Avançar para a secção 6 (Muito Obrigado pela sua participação!)*
- Ilhas *Avançar para a secção 6 (Muito Obrigado pela sua participação!)*
- Outro país que não Portugal *Avançar para a pergunta 22*

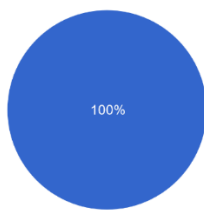
22. Qual é o seu país de residência? \*

Muito Obrigado pela sua participação!

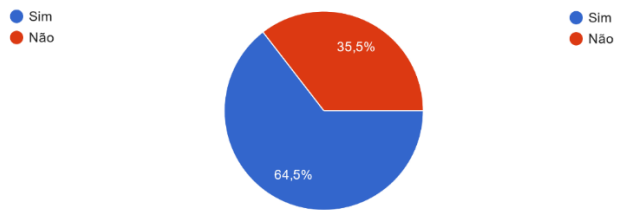
## Annex III - Survey Results

### Graphics I – User knowledge and interest in carbon offsets

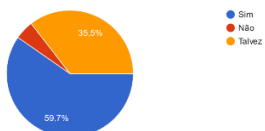
1. Aceita de livre vontade participar neste questionário?  
62 respostas



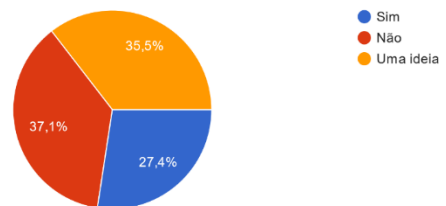
2. Já tinha ouvido falar em compensação e créditos de carbono?  
62 respostas



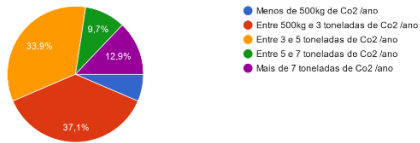
3. Pensa que a compensação de carbono possa ajudar no combate às alterações climáticas?  
62 respostas



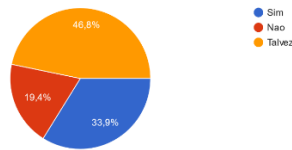
4. Tem noção das suas emissões de gases de efeito de estufa?  
62 respostas



5. Quanto estima ser a emissão anual por habitante de gases de efeito de estufa na União Europeia?  
62 respostas

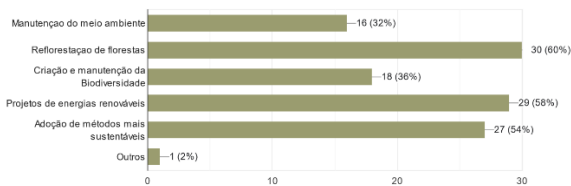


6. Gostaria de investir em projetos de compensação de carbono e com isto compensar as suas emissões?  
62 respostas

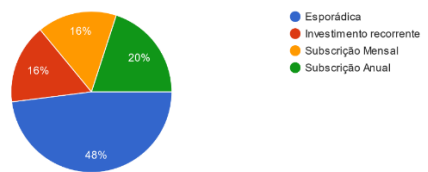


Graphic II – User behaviour towards the carbon offset platform

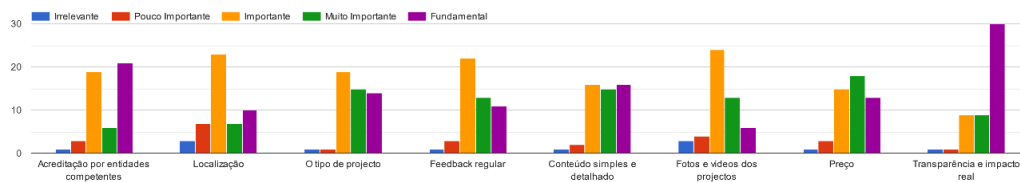
7. Em que tipo de projetos estaria disponível para investir?  
50 respostas



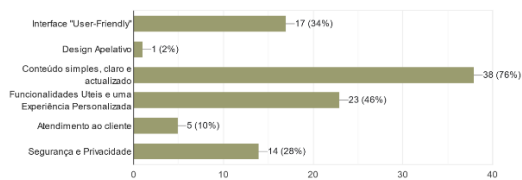
8. Qual a sua preferência de investimento?  
50 respostas



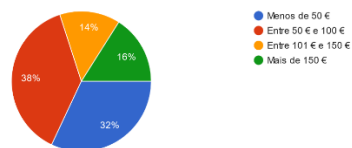
9. Qual o grau de importância que atribuí aos diferentes fatores na escolha do projeto?



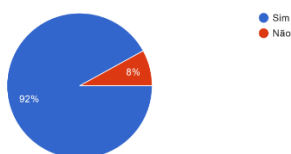
10. Quais os fatores que mais valoriza neste serviço? (Escolha no máximo 2 opções)  
50 respostas



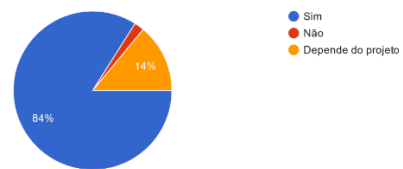
11. Qual o valor que estaria disposto a investir em projetos de offset de carbono anualmente para compensar as suas emissões?  
50 respostas



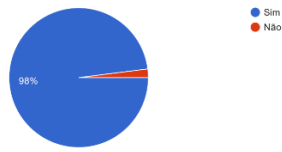
12. Gostaria que a plataforma estime as suas emissões e lhe ofereça um plano personalizado?  
50 respostas



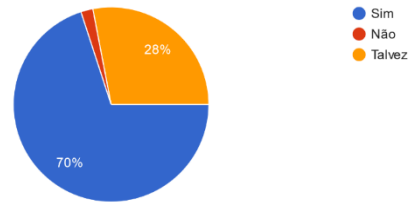
13. Gostaria de receber atualizações regulares sobre os projetos que investiu?  
50 respostas



14. Além de compensar as suas emissões, gostaria de receber dicas personalizada de como reduzir a sua pegada?  
50 respostas

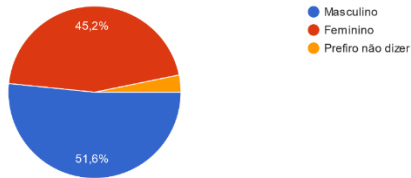


15. Recomendaria este tipo de serviço aos seus familiares e amigos?  
50 respostas

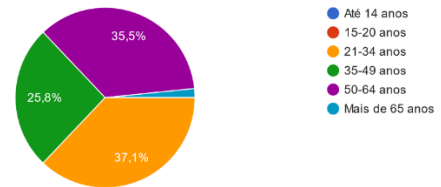


Graphics III – User Characterization

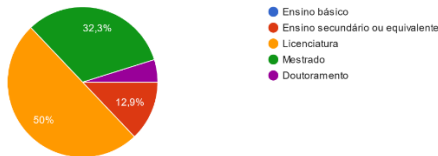
16. Sexo:  
62 respostas



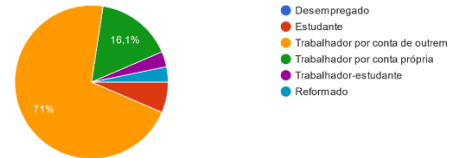
17. Idade:  
62 respostas



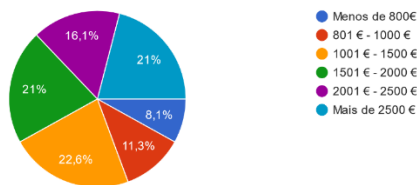
18. Quais as suas habilitações académicas?  
62 respostas



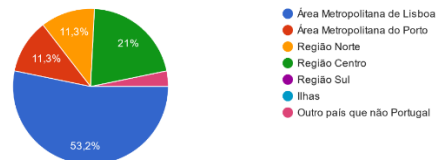
19. Qual a sua situação profissional?  
62 respostas



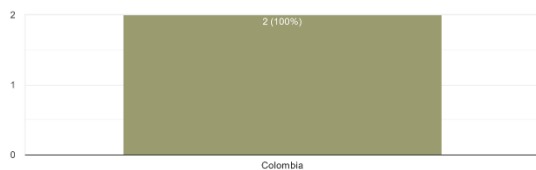
20. Quais os seus rendimentos líquidos mensais?  
62 respostas



21. Qual a sua área de residência?  
62 respostas



22. Qual é o seu país de residência?  
2 respostas



## Annex IV - Competitors Comparison

Direct Competition						
Company	Description	Standard	Projects	Pricing Strategy	Figures	URL/sources
<b>Klima</b>	<ul style="list-style-type: none"> <li>- Berlin based company, available worldwide</li> <li>- Purchases through mobile app for IOS or Android.</li> <li>- B2C offer only.</li> </ul>	Verra VCS, Gold Standard, Project Drawdown	Nature, technology and social	Monthly/Annually plans customizable with a single price of 10€ per 1 carbon credit of offset	100 000+ Co2 offset with reported 100 000 contributions via in-app purchase. In 2021 Klima had 446 608 € in offset purchases and 983 067€ in 2022, representing a 120% increase.	<a href="https://klima.com/">https://klima.com/</a>
<b>Nori</b>	<ul style="list-style-type: none"> <li>- US based company, available worldwide.</li> <li>- Purchases available through online browser.</li> <li>- Works as standard body and retailer</li> </ul>	Own standard named Nori Carbon Removal Tonnes (NRTs)	Agriculture soil carbon retention	23€ per each NRT credit in which 4.66€ is the marketplace fee	Since 2017 Nori sold 128 403 NRTs funding 20 projects with over 2 Million Dollars.	<a href="https://nori.com/">https://nori.com/</a>
<b>Terrapass</b>	<ul style="list-style-type: none"> <li>- US based company, available worldwide</li> <li>- Purchases available through online browser with B2C offer.</li> </ul>	Verra VCS, Gold Standard, Climate Action Reserve, American Carbon Registry	Forestry, technology, waste management, agriculture	Tailored and personalized plan based on activities with option for One time, Monthly or Annually subscription. Prices ranging from 15.08€ to 16,80€ per carbon credit	No updated information.	<a href="https://terrapass.co.uk">https://terrapass.co.uk</a>
<b>Gold Standard</b>	<ul style="list-style-type: none"> <li>- Swiss based NGO available worldwide.</li> <li>- Recognized as one of the leading standard body in the VMCs, it also offers a marketplace accessible through online browser with B2C offer.</li> </ul>	Own Standard, Gold Standard for the Global Goals GS4GG issuing carbon credits labelled GS-VER	Forestry, technology, waste management and social	Marketplace featuring some GS projects for single purchase with prices ranging from 9,33€ to 48,53€	Founded in 2007, GS reported in 2021 a revenue of 9,618 Million \$ and 3,879 Million \$ in expenses	<a href="https://marketplace.goldstandard.org/collections/projects">https://marketplace.goldstandard.org/collections/projects</a>
<b>Single.Earth</b>	<ul style="list-style-type: none"> <li>- Estonia based company, available in Europe</li> <li>- Purchases available through online browser.</li> <li>- Works as standard and monitoring entity and retailer.</li> <li>- Purchases available through online browser with B2C offer.</li> </ul>	Own standard translated into MERIT tokens and monitorization via own methodology "Digital Twins"	Forestry	Sold under own cryptocurrency named MERIT coin which costs 3€ per 100 kg of Co2 tonnes, pricing the tonne of Co2 in 30€	Founded in 2019, in a early development phase, with buying option available since September 2022. Claims to sequester 130M tons of Co2 per year.	<a href="https://www.single.earth/about-us">https://www.single.earth/about-us</a>
Indirect Competition						
<b>Frontier</b>	<ul style="list-style-type: none"> <li>- US based company, available worldwide.</li> <li>- Backed by Alphabet and Meta is an Advanced Market compromise to fund carbon removal technologies.</li> <li>- Available through online browser with B2C contributions.</li> </ul>	-	R&D of carbon removal Technology	The individual contributor determines the contribution value and frequency	61.52 Million € raised in funding since fall of 2022, representing 131 091 tons of Co2.	<a href="https://frontierclimate.com/">https://frontierclimate.com/</a>
<b>Net Zero Marketplace</b>	<ul style="list-style-type: none"> <li>- US based company available for purchase in the USA only.</li> <li>- Purchases available through online browser with B2B offer.</li> </ul>	Verra, Gold Standard, Puro.Earth, Climate Action Reserve, CDM, AmericaCarbon Registry	Forestry, technology, waste management, Social, Processes	Open Marketplace with prices ranging from 5,83€ to 200,97€ per Co2 tonnes	Not Available. Purchases available since October 2022.	<a href="https://netzero.salesforce.com/s/about">https://netzero.salesforce.com/s/about</a>
<b>Co2Offset</b>	<ul style="list-style-type: none"> <li>- Portugal based company in initial phase of launch aiming for a B2B offer.</li> <li>- Available through online browser.</li> </ul>	Own standardization and monitorization through proprietary software	Forestry	Not Available	Not Available	<a href="https://co2offset.ai/about/">https://co2offset.ai/about/</a>

## Annex V - Standard VERRA and GoldStandard comparison

Standard	Description	Figures	Pricing fees	URL/sources
<b>VERRA</b>	Founded in 2007 VERRA is a NGO leading worldwide the voluntary carbon credit standard body with its Verified Carbon Standard program VCS. Under the VCS program VERRA projects are issue Verified Carbon Units (VCUs) that represent a reduction or removal of 1 Co2 ton. For project approval VERRA uses several approved methodologies that assure real, permanent, and measurable GHG reductions/removals, that their unique and independently audited, transparent, conservative and assuring additionality	More than 835 million of credit issuances from 1775 project at the end of 2021. In 2021 Verra had a total Revenue of 40 505 459 \$ and 17 589 764 \$ in expenses	Verra Registry Account Fee: 500 \$ - 466.46€ Project registration/issuance fee per VCU expected/issued: 0.023€ - 0.13€ Annual validation/verification fee: 2332 €	<a href="https://verra.org/about/overview/">https://verra.org/about/overview/</a> <a href="https://verra.org/wp-content/uploads/2023/02/2021-Verra-Annual-Report.pdf">https://verra.org/wp-content/uploads/2023/02/2021-Verra-Annual-Report.pdf</a> <a href="https://verra.org/programs/verified-carbon-standard/vcs-program-details/#projects-and-programs">https://verra.org/programs/verified-carbon-standard/vcs-program-details/#projects-and-programs</a>
<b>Gold Standard</b>	Gold standard is an NGO founded in 2004 by WWF and other NGOs with the purpose that carbon projects would adhere to the highest standards whilst contributing to sustainable development. Gold Standard for the Global Goals (GS4GG) encompasses a set of safeguards, requirements and methodologies that certified a project with a quantity of carbon credits represented by the Verified Emissions Reduction (GS-VER) and a set of contributions towards the sustainable development goals framework from UN.	266 million tons of Co2 reduced from 2996 projects. In 2021 GoldStandard reported a total Revenue of 9,618 million \$ and 3,879 Million \$ in expenses	Annual Registry Account fee: 1000\$ - 933.84€ Project registration/issuance fee per VCU expected/issued: 0.093€ - 0.28€ Annual validation/verification fee: Initial 4669,22 € and annually 2332 €	<a href="https://www.goldstandard.org/about-us/vision-and-mission">https://www.goldstandard.org/about-us/vision-and-mission</a> <a href="https://www.goldstandard.org/project-developers/standard-documents">https://www.goldstandard.org/project-developers/standard-documents</a> <a href="https://www.goldstandard.org/sites/default/files/documents/annualreport2021.pdf">https://www.goldstandard.org/sites/default/files/documents/annualreport2021.pdf</a>

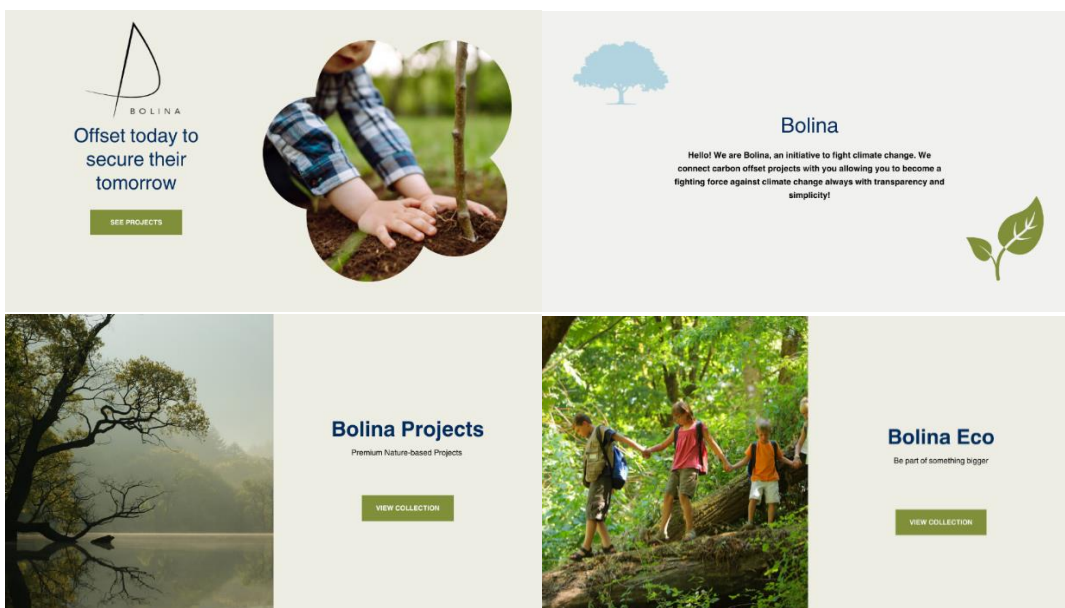
## Annex VI - Project candidates' description

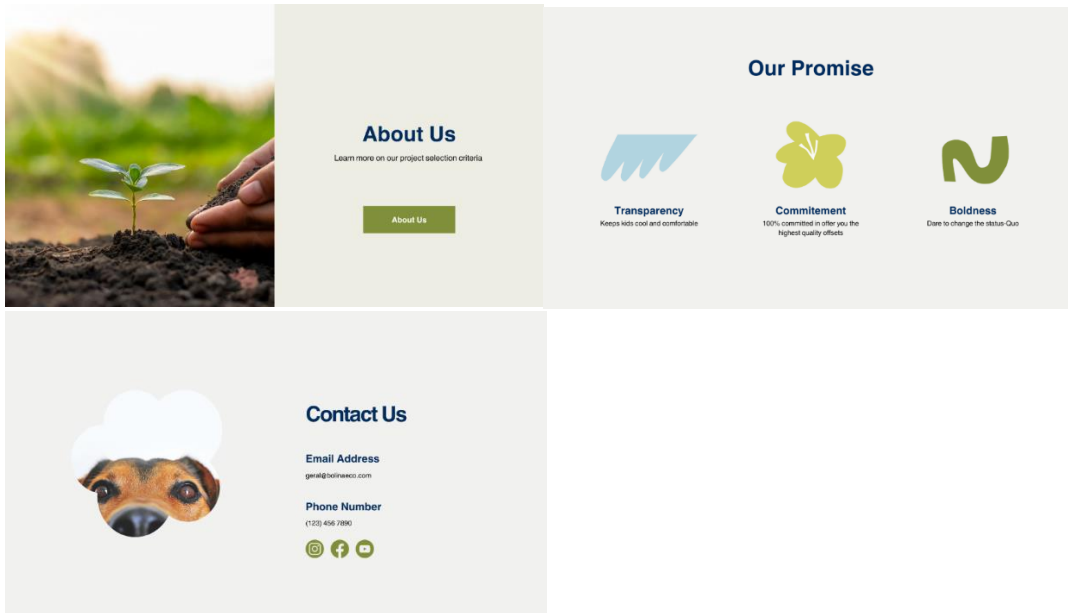
Project	Description	Standard	Type	Figures	URL/sources
<b>Rimba Raya Biodiversity Reserve Project</b>	One of the largest project in VCS registry (ID 674) with 64 000 hectares of tropical forest protection in Indonesia. It was developed by InfiniteEarth and the first to achieve the validation from REDD+ framework and triple-gold validation under the Climate Community and Biodiversity Alliance Standard (CCBA). Rimba Raya project goes beyond forest and biodiversity preservation with other initiatives meeting all the 17 UN sustainable development goals at the highest level, making this one of the project with the highest value carbon credit.	VERRA VCS & REDD+	REDD	Estimated for 3 527 171 CO2e tons of reductions per year from 01/07/2009 until 30/06/2039. Pricing around 19€ per credit	<a href="https://rimbaraya.com/our-initiatives/">https://rimbaraya.com/our-initiatives/</a> <a href="https://registry.verra.org/app/projectDetail/VCS/674">https://registry.verra.org/app/projectDetail/VCS/674</a> <a href="https://infinite-earth.com/project-areas/rimba-raya-biodiversity-reserve/">https://infinite-earth.com/project-areas/rimba-raya-biodiversity-reserve/</a> <a href="https://standfortrees.org/protect-a-forest/rimba-raya/">https://standfortrees.org/protect-a-forest/rimba-raya/</a>
<b>AFFORESTATION OF DEGRADED GRASSLANDS IN VICHADA, COLOMBIA</b>	Project in the VCS registry ID 2512 with the objective to promote timber forest plantations in degraded low-fertility grassland of 134 732 hectares, hence restoring natural biodiversity and support commercial and economical activities. Developed by soutpole with support from local experts and workers.	VERRA VCS	ARR	Estimated for 139 489 CO2e tons of reductions per year from 15/09/2016 until 14/09/2046. Pricing around 30€ per credit	<a href="https://market.southpole.com/home/offsets-emissions/project-details/74">https://market.southpole.com/home/offsets-emissions/project-details/74</a> <a href="https://registry.verra.org/app/projectDetail/VCS/2512">https://registry.verra.org/app/projectDetail/VCS/2512</a>
<b>Rotunda Forest Carbon Project</b>	One of the few VCS nature-based projects located in Europe (Romania) with 1 556 hectares of forest. The project objective is to stop commercial harvesting and preserve the forest with improved management solutions.	VERRA VCS	IFM	Estimated for 5 662 CO2e tons of reductions per year from 01/01/2018 until 31/12/2047. No pricing information	<a href="https://registry.verra.org/app/projectDetail/VCS/2386">https://registry.verra.org/app/projectDetail/VCS/2386</a> <a href="https://www.rotundasr.com/">https://www.rotundasr.com/</a>
<b>JOil Jatropha plantation in Ghana</b>	Project in the GS registry ID 11154 with 3 944 hectares for Jatropha plantations in degraded lands.	GS4GG	ARR	Estimated for 55 072 CO2e tons of reductions per year from 07/07/2018 until 07/07/2047. No pricing information	<a href="https://registry.goldstandard.org/projects/details/3109">https://registry.goldstandard.org/projects/details/3109</a>
<b>Australian Yarra Yarra Biodiversity Project</b>	Project in the GS registry ID 3039 with 21 000 hectares in the Southwest Australia planning to recover and restore biodiversity in a semi-arid and degraded agricultural land. The project is ongoing since 2008 with 30 million mixed native species of trees already planted estimating to sequester 1.5 million tons of CO2e throughout its lifetime.	GS4GG	ARR	Estimated for 25 151 CO2e tons of reductions per year from 11/06/2015 until 11/06/2058. Pricing around 21€ per credit	<a href="https://carbonneutral.com.au/reforestation-and-habitat-restoration/#GS-ANRC-info">https://carbonneutral.com.au/reforestation-and-habitat-restoration/#GS-ANRC-info</a> <a href="https://registry.goldstandard.org/projects/details/524">https://registry.goldstandard.org/projects/details/524</a>
<b>EVERGREEN REDD+ PROJECT</b>	Under the VCS registry ID 2539 with 130 554 hectares of tropical forest protection in the Amazons. It is located in a zone with 10th highest deforestation rate in Brazil. Validated with REDD+ framework. The project intends to avoid owners plans to deforest 20% of the property for economic activities and increase surveillance to prevent ongoing illegal deforestation.	VERRA VCS & REDD+	REDD	Pricing around 19€ per credit	<a href="https://registry.verra.org/app/projectDetail/VCS/2539">https://registry.verra.org/app/projectDetail/VCS/2539</a> file:///C:/Users/Bolina/Downloads/VCS-Project-Description-%20Evergreen%20REDD+_12.04.22.pdf <a href="https://www.carbonext.com.br/en-US/projects/evergreen">https://www.carbonext.com.br/en-US/projects/evergreen</a>

### Annex VII – Design concept of Bolina Eco gift card

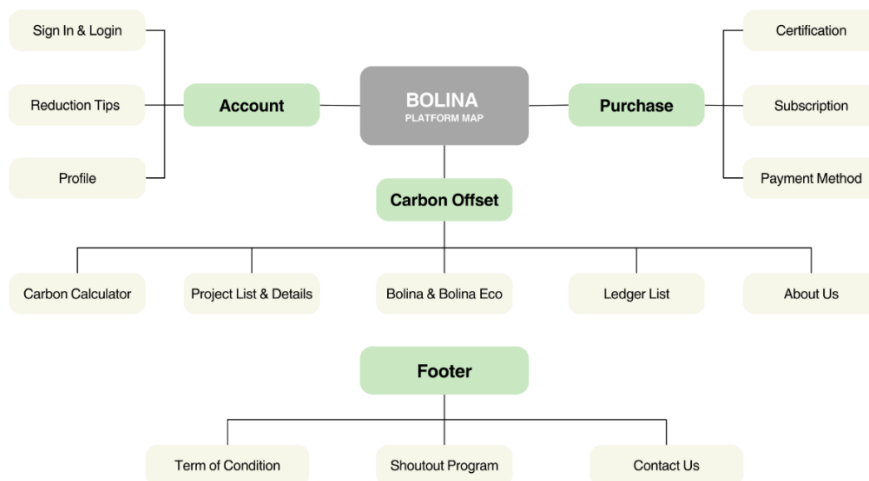


### Annex VIII - Bolina Mobile Mockup and Online Concept



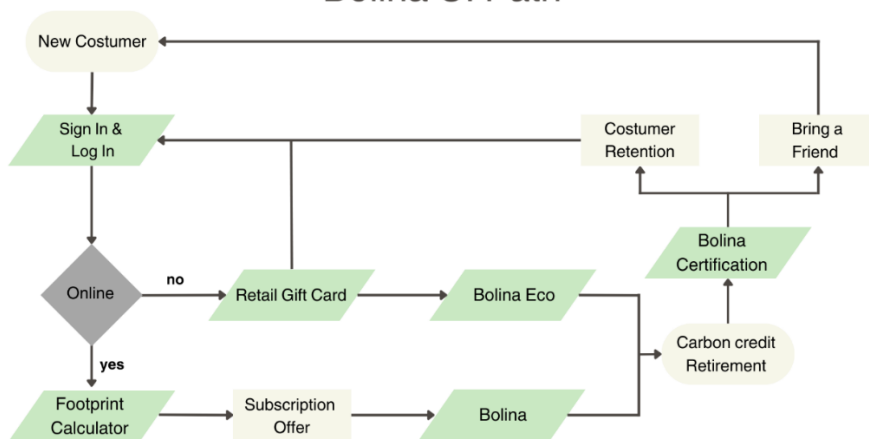


Annex IX - Website Platform Map (First Iteration)



Annex X - User Interface Purchase Design Path (First Iteration)

Bolina UI Path



Annex XI - Example certificate of Bolina Purchase



Annex XII - Supplies and External Services

Supplies and External Services				
2023 - 2024				
Item	Quantity per year	Price per Unity	Total	
			2023	2024 - 2025
<b>Services</b>				
Co-working office	12	30,75 €		369,00 €
Solicitor	1	68,12 €	68,12 €	
Brand Registry	1	280,00 €	280,00 €	
e-Portugal	1	250,00 €	250,00 €	
Communications	12	71,99 €		863,88 €
<b>Insurances</b>				
Liability	1	65,00 €		65,00 €
<b>Online tools</b>				
Web hosting and development	12	112,00 €		1 344,00 €
Domain rights	1	5,68 €		5,68 €
Accounting Software	12	4,99 €		59,88 €
Standard Account fee (Verra + GS)	1	1 400 €		1 400 €
Productivity Software (Microsoft 365)	12	6,89 €		82,68 €
<b>Publicity &amp; Marketing</b>				
Instagram Bolina promotions	365	1,00 €		365,00 €
Facebook promotions	365	2,00 €		730,00 €
Youtube creators	4	300,00 €		1 200,00 €
Influencers Instagram (Nano)	4	95,00 €		380,00 €
B-Corp fee	1	1 250 €	250 €	1 250 €
Retail Cards	1	390,00 €		390,00 €
<b>Total</b>			<b>848,12 €</b>	<b>8 505,52 €</b>

Supplies and External Services			
2025 – 2028 (5%-year increase)			
Item	Quantity per year	Price per Unity	Total
<b>Services</b>			
Office facilities	12	300 €	3 600,00 €
Communications	12	157,96 €	1 895,52 €
<b>Insurances</b>			
Liability	1	65 €	65,00 €
<b>Online tools</b>			
AWS EC2 cloud server	12	187,89 €	2 254,68 €
Domain rights	1	5,68 €	5,68 €
Accounting Software	12	4,99 €	59,88 €
Standard Account fee (Verra + GS)	1	1 400,00 €	1 400,00 €
Productivity Software (Microsoft 365)	12	34,45 €	413,40 €
<b>Publicity &amp; Marketing</b>			
Instagram Bolina promotions	365	5,00 €	1 825,00 €
Facebook promotions	365	10,00 €	3 650,00 €
Youtube creators (Power)	6	740,00 €	4 440,00 €
Influencers Instagram (Nano)	24	160,00 €	3 840,00 €
B-Corp fee	1	1 250,00 €	1 250,00 €
Retail Cards	1	910,00 €	910,00 €
Total	Year 2026		19 836,16 €
	Year 2028		22 974,64 €

## Annex XIII - Sensitivity Analysis IRR: Price &amp; Demand

IRR	Price Variation						
	-15%	-10%	-5%	0%	5%	10%	15%
Demand Variation	-15%	-	-48,03%	-26,70%	-6,15%	15,70%	38,83%
	-10%	-	-46,68%	-24,30%	-2,42%	20,58%	47,10%
	-5%	-48,03%	-24,30%	-1,16%	23,14%	52,49%	97,01%
	0%	-26,70%	-2,42%	23,14%	54,37%	103,16%	192,71%
	5%	-6,15%	20,58%	52,49%	103,16%	198,85%	366,57%
	10%	15,70%	47,10%	97,01%	192,71%	366,57%	564,31%
	15%	38,83%	85,84%	175,47%	348,50%	555,43%	755,09%