

Blue Project

State of the Art













TINTEX



Chapter 1 Project Overview



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Introduction

The Blue Project set out to develop a strategic line of action based on promoting the consumption of local fisheries, guaranteeing catch quotas, promoting the use of surpluses from the Portuguese coast and reducing food waste.

This was the starting point for a project on sarrajão (Sarda sarda), a species that needs to be better known in order to be more widely consumed.

This species, found in the North Atlantic, has a similar taste to tuna and is more economically accessible.

Through close collaboration between the research and development (R&D) partners, this project aimed to achieve two specific objectives: to provide schools with a tasty, healthy product with high nutritional value, thereby promoting the consumption of fish fillets by pupils; and to maximise the use of all fish waste after filleting surplus fish.

The Blue Project will be able to promote a change in attitudes and behavior in the face of current global problems, educating consumers for a conscious, informed and sustainable choice. By valuing the local fishing activity, it is intended to involve the scientific community, industry and society in a daring and highly necessary project.

In this sense, it is expected to contribute to the advancement of the following areas and activities: circular economy, filleting, conservation methods, food literacy, research, and industrial transformation.







Blue Project goals



Take advantage of the Marine Resources available on the North Atlantic Coast of Portugal



Create a fresh fish processing unit for the commercialization of the 'Sarrajão' fillets in school canteens



Use fish leftovers to create textile materials (from the skin) and other food products



Help municipalities to implement ocean literacy strategies

Milestones

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• In the municipality of Esposende, the project allowed the increase of the consumption of sarrajão fish in the municipality's schools.

• With Matis' visit to Esposende schools, the children had the opportunity to carry out activities with the aim of being involved in the project, in order to involve the solar community in this dynamic.

• Through the University of Minho and IPVC, there was a collaboration of scientific work that allowed the design of innovative solution.

• Great collaboration between Guimarpeixe and Tintex, allowing the number of jobs in the respective companies to be boosted, due to the project.

SDGs Aligment

The 17 SDGs, unanimously approved by 193 UN member states, meeting in General Assembly, aim to address the needs of people in both developed and developing countries, emphasizing that no one should be left behind. The 2030 Agenda for Sustainable Development is a broad and ambitious agenda that addresses several dimensions of sustainable development (social, economic, environmental) and promotes peace, justice, and strong institutions.

The Blue Project responds to 6 of these objectives.







The Blue Project is aligned with this goal due to its aim of promoting the consumption of a species of fish unknown to the general public, which allows the diversification of the consumption of fish species through Atlantic Bonito- an economically viable, accessible and extremely nutritious fish species.

By guaranteeing access to safe and nutritious food, the project embraces food security and promotes sustainable agricultural practices through conscious fishing that maintains healthy marine ecosystems, reducing pressure on them.



In terms of health, the Blue Project contributes to the promotion of healthy eating practices through the sustainable consumption of Atlantic Bonito fish. By fostering the health of marine ecosystems, the project not only creates a vital link between human and environmental health, but also stimulates the overall well-being of the ecosystem.

This species of fish has high nutritional benefits and awares consumers to the possibility of consuming fish species other than the conventional ones.



The Blue Project plays a crucial role in quality education by connecting the community of the municipality of Esposende to sustainable practices.

By raising awareness about sustainable fishing, circular economy, healthy and diverse food, the project focuses on communicate to the future generations, in an educational way, the importance of their food quality choices. As this project is aimed at the younger generations, our goal is to motivate them to learn and take an interest in sustainability.

10 REDUCED INEQUALITIES The Blue Project aims to reduce inequalities by providing equitable opportunities in the fishing sector. This sector tends to lack interest from communities and is losing importance. As it is an economic activity in which fishermen are small and in a family context, it is necessary to promote better conditions for the sector.

By fostering social and economic inclusion in the community involved, the project promotes benefits and their fair distribution, in line with the vision of equality proposed by Goal 10. By promoting and making known a species of fish that is less known to the general public, it allows fishermen to explore the marketing of yet another species, resulting in the marketing of a new product.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION The project has led to a reduction in food waste, working from a circular economy and proximity perspective. By transforming surpluses into by-products, the Blue Project has paved the way for more responsible production and more conscious consumption.

This project highlights the importance of integrating sustainability not just as an isolated objective, but as a fundamental guideline principle at all stages of the food chain and product development. In this way, the Blue Project sets a benchmark in terms of the use of resources.

14 LIFE BELOW WATER

The Blue Project takes an active role in the conservation and sustainable use of marine resources. Guimarpeixe and Tintex comply with meticulous criteria at their factories, showing their focus on responsible production, in line with the principles of Goal 14.

The project adopts and promotes fishing practices that respect the limits of marine ecosystems, avoiding overfishing and ensuring the preservation of fish populations.

This project emerges as an inspiring example of how local actions can have a global impact on the preservation of marine resources.

Chapter 1 Project Overview

Project Overview

In this first chapter, it is summarized the work produced by each of the project's Work Packages.

The purpose is to provide a comprehensive overview of the Blue Project's performance, achievements, challenges and opportunities in the past year. The chapter also outlines the goals and strategies for the next year, as well as some of the themes that have guided these projects, namely the website, launch sessions, meetings, a newsletter, news and the monitoring of implementation.



WP1 - Project Management

Various coordination, monitoring and control tasks were carried out in this activity. A record was kept of the knowledge and innovation produced, as well as quality management of the deliverables. The preparation and work of this main WP is the responsibility of Guimarpeixe.

T1.1 - Contract documentation analysis and formalization

T1.2 - Project activity coordination and progress monitoring towards plan

T1.3 - Periodic risk assessment and contingency plan

T1.4 - Group meetings coordination

T1.5 - Tracking and registering knowledge and innovation produced, to assure IP rights

T1.6 - Quality control of deliverables

T1.7 - Periodic reporting (technical and financial)



Consortium meetings



Meeting 1 - 09/09/2022



Meeting 2 – 07/10/2022



Meeting 3 - 06/12/2022



Meeting 4 - 11/01/2023



Meeting 5 - 03/02/2023



WP2 - Fish collection

Source and transportation of raw material to the promoter for transformation and removal of leftovers for R&D activities. This WP also included the processes of preservation, packaging and storage of the 'Atlantic Bonito' fillets and transportation of fillets to the school canteens.

T2.1. Source and transportation of the raw material

T2.2. Reception, disaggregation, discarding and washing of the 'Sarrajão' fish

T2.3. Skin removing

T2.4. Transportation of the fish waste to the Universidade do Minho, IPVC and Tintex

T2.5. Filleting of the fish

T2.6. Preservation, packaging and storage of the 'sarrajão' fillets

T2.7. Transportation of fillets to the school canteens





WP3 - Raw material characterization

This WP aimed to provide new information regarding Atlantic Bonito characteristic specifications, deliver a physicochemical, microbiological, textural and sensory characterization of the fresh Atlantic Bonito and obtain a list of potential compounds to be used to each product formulation according to its requirements (e.g., sensory, nutritional and legislative).

Three reports were developed under this WP.



1st Report: WP2 - M3.1

Report specifying all the information about Sarrajão status of stocks, capture limits, fishing tendencies.

Report with all the opportunities for "Sarrajão" based products innovation.



2nd Report: WP3 - M3.2

Report specifying the results of the physicochemichal, microbiological, textural, and sensorial characterization of the fresh Sarrajão.



3rd Report: WP3 - M3.3

Report highlighting requirements, formulation, and technological process for each of the products to be developed.

Report with products, solutions and market tendencies focused in targeted groups of consumers and typology of product, with emphasis on products resourced from the sea.



WP4 - Development and optimization of new Sarrajão products

Firstly, a review of the state of the art in tanning processes and techniques was carried out and several contacts were made with suppliers to obtain the reagents and products required for the tanning process.

Since there is no specific procedure for this fish specimen, the compilation and design of novel adapted tanning procedures was required. The experimental procedure started with the cleaning of the fish skin, which was thoroughly rinsed with water, alternating with decontamination with a mixture of NaCl and acetic acid. The remaining unwanted parts of the fish (fins, tails, etc.) were also removed at this stage. At this point, the dimensions of the samples, as well as a certain degree of contamination acquired in previous steps (transport, fleshing, fishing, etc.), had to be dealt with before the tanning process. The degree of decontamination is assessed by analysing a sample taken by swabbing. The samples are then salted to remove the water.

After this stage, the samples were taken to the next steps as previously described in the work plan. The preparation and work of this main WP is the responsibility of Universidade do Minho.



WP4 - Development and optimization of new Sarrajão products

T4.1 - Components to be used in the Sarrajão products development

T4.2 - Formulation of new Sarrajão products

T4.3 - Characterization of the developed Sarrajão products

T4.4 - Processing/Preservation Techniques for the developed fish products

T4.5 - Quality control of products developed over their shelf life considering different storage conditions

T4.6 - Processing and Stabilization Techniques for the developed fish skin leather products

T4.7 - Characterization of the developed Skin Fish Leather and composites

T4.8 - IP assessment and patent filing





Project monitoring

Work of University of Minho



WP5 - Consumer Testing

This WP aimed at getting to know the consumer behaviors and their diet habits. This was crucial to get a feedback on the Atlantic Bonito product's quality and consumers perceptions. Instituto Politécnico de Viana do Castelo was the partner responsible for it.





Project monitoring

Work of IPVC





WP6 - Communication and Dissemination

This WP describes the basis of the project's communication plan and includes the definition of the communication and dissemination strategy, identification of target audiences, definition of the dissemination tools and channels that support the objective of effective message transmission and the elements needed to evaluate and measure the results of the communication strategy.

AEP, with the active collaboration of the other partners involved in this Work Package, presented the final version of the Communication and Dissemination Plan.



WP6 - Communication and Dissemination

- T6.1 Communication and dissemination plan
- T6.2 Local, national and international agenda of networking (attract

stakeholders)

- T6.3 Web page development
- T6.4 Half-yearly newsletter
- T6.5 Publication of the main results (books, papers in international scientific journals, ...)
- T6.6 Two international conferences (beginning and end)
- T6.7 Four International thematic workshops
- T6.8 Writing of a success story
- T6.9 2 booklets (at a first stage for presentation of the project and at a
- later stage, for the state-of-the-art)
- T6.10 Production of video about the project
- T6.11 Fit for purpose food education and engagement tools for the youth

of today



Website

The Blue Project website is an institutional website with the goal of publicizing the project. It has 4 sections: Website opening page (Homepage), Partners, Activities, Publications.

A framework is also made for the project, the processes that aims to work on, the expected results and the consortium that will work together to achieve them. In addition to these aspects, there is a presentation video, the Newsletter, and the financing entities.



Kick-off Session

The launch of the Blue Project took place in Esposende on January 18, 2023, showcasing an innovative project. During the launch session, the vice president of the city council Alexandra Roeger emphasized the importance of the project by highlighting the municipality's commitment to food sustainability. Guimarpeixe, as promoter of the project, targeted the business opportunity and potential strategic impact. The round table brought together key representatives, including academia, industry and associations, to discuss the more sustainable future proposed by the Blue Project.





News

The project achieved a remarkable media reach at its launch. With a presence in 7 different media outlets, most notably the Público newspaper - the newspaper that developed more content for the news. The presence in the media contributed to building notoriety around the project and the Sarrajão fish (Atlantic Bonito).



Newsletter

In February 2023, the month following the launch of the Blue Project (January 18), the first newsletter was published to raise awareness of the project's purpose and intentions, the launch session, the partners, the presentation video and the website.



Uma resposta necessária à urgência da sustentabilidade

João Ribeiro, Guimarpeixe

A Guimarpeixe nasceu no seio da cultura industrial vimaranense, alicerçada em bases fortes e dedicada à indústria e comercialização de produtos ultracongelados, entre os quais se destacam as mais variadas espécies de pescado. Acompanha as mais altas exigências do mercado, quer em instalações, quer em equipamentos, contando neste campo com as melhores unidades industriais do país. Ler mais

Multimédia



Próximas atividades



Promovendo uma cultura de disseminação do conhecimento para a sociedade, a próxima atividade será marcada pelo lançamento do vebsite deste projeto. Esta plataforma será a ferramenta central de comunicação, e agregará informação sobre todos as iniciativas e resultados do Blue Project.

WP7 - Socioeconomic impact evaluation

This WP is dedicated to the mapping of social, economic and political interest groups and the mapping of decision--makers. It includes the production of content for an e-book and a study on associated social issues, as well as the contribution of the project's results.

This is a Work Package whose milestones are at a more advanced stage of the Blue Project, although the collection of information for its implementation is being carried out continuously throughout the project.



WP8 - Project evaluation

This WP is dedicated to analysing and evaluating the project. should be carried out annually, including production of an annual report (this document), a SWOT analysis (annually) and an Annual Cost-Benefit Analysis Report.

This is a Work Package whose milestones are at a more advanced stage of the Blue Project, although the collection of information for its implementation is being carried out continuously throughout the project.



News of the project

• The Blue Project achieved very positive results by creating a fresh fish processing unit for the sale of sarrajão fillets.

• Furthermore, it also collaborated with R&D entities, which used fish waste, transforming it into textiles and other food products.

• In addition to promoting a blue economy, the project allowed the creation of ocean literacy strategies, promoting fish consumption and reducing food waste.



Chapter 2 SWOT Analysis

The Blue Project intends to build a strategic line of action, which has as its starting point the promotion of the consumption of local fish, guaranteeing catch quotas, promoting the reuse of excess of the Portuguese coast and reduce food waste.



Strengths

• Innovation and sustainability that allowed collaboration, complementarity and synergies.

• High capacity in terms of infrastructure, resources and human capital.

• Scientific research expertise and knowledge of the consortium's universities.

• Offering a less common and more sustainable alternative.

• Exploration of maritime resources in Portugal's Exclusive Economic Zone and a species with high nutritional benefits.

• Creating consumption habits among new generations of consumers: children; as well as the practice of healthy and sustainable eating.

• Alignment with the UN's SDGs.

• Good dissemination of the project information and results.

• Promotion of the municipality of Esposende in terms of sustainability and external image.

- Adoption of sarrajão fillets by Esposende hotels and catering establishments.
- Involvement of schools and students in project activities.
- Increase in the number of schools serving sarrajão meals.

• Maximisation of waste management associated with the industry.

Sarrajão skin used industrially.

• Scientific results achieved by the project.



Weaknesses

• Challenges related to bureaucratic complexity, especially in licensing and regulatory processes.

• Complexity logistical in managing and transporting perishable products, as well in the fish fillet production and textile material development.

• Challenges associated with manual filleting of Atlantic Bonito.

Sarrajão skin is sometimes difficult to work with

Opportunities

- Promote sustainable consumption literacy among Portuguese consumers.
- Establishing partnerships to raise awareness of sarrajão (school canteens, hotel chains, restaurants, chefs, sushi restaurants).
- Development of sub-products derived from Atlantic Bonito.
- Developing projects with the Portuguese canning industry.
- Develop waste reduction strategies for other fish species and food sector product.
- Results of the scientific research for this project to be used in other fields.
- Being a reference project for the implementation of blue economy practices in the fishing community.
- Implementing local consumption and a local economy.
- Collaborations and partnerships with international institutions and companies to share knowledge and resources.

- Innovation for textile product design
- Integrating Sarrajão fish into the promotion of sustainable tourism, attracting consumers concerned with ethical practices.
- Positioning sarrajão products and by-products in sustainable product markets.
- Increasing concern about environmental issues and sustainability.
- Favorable environment for initiatives like the Blue Project, which promote responsible practices. The possibility of replicating the Blue Project model in other regions of Portugal or countries opens opportunities to broaden the project's impact and visibility.
- Growing research and development, strengthening the project's knowledge base.



Threats

- Seasonal availability and migratory movements of the fish.
- · Consumers' lack of knowledge of Sarrajão fish.
- Low exploitation and lack of knowledge of commercial practices for Sarrajão fish.
- There are few recipes and cooking practices using this product.
- Difficulty in implementing sustainable exploitation of sarrajão in the long term.
- Challenges relating to long-term economic viability.
- Not being an attractive product for consumers now.
- Lack of large-scale preservation techniques that do not jeopardize the quality of the product (texture, color, acidity (ph), nutritional values, smell).
- Difficulties in entering a competitive market which could jeopardize the commercial viability of the product.

- Other competitors entering the market or other initiatives that can pose a challenge to the differentiation and sustainability of the Project in the market.
- Competition from other sustainable protein sources, such as vegetarian alternatives and lab-grown meat.
- Impact of climate change and pollution on the migration routes of the sarrajão fish.
- Risk of environmental accidents, such as spills from cargo ships, directly affecting marine resources.
- Fluctuations and economic cycles can affect the availability of resources and investments necessary for the continuity of the Blue Project.
- Amendments to environmental or food safety legislation can impact the project's operations.
- Threat of competitive commercialization of sarrajão.



Chapter 3 Blue Project Impact

Impact

Blue Project is not limited to the implementation of sustainable fishing practices, but also takes part in the global aspirations to promote a circular economy and a more sustainable lifestyle.

The Blue Project will be able to promote a change in attitudes and behavior in the face of current global problems, educating consumers to make conscious, informed and sustainable choices. By promoting local fishing, it aims to involve the scientific community, industry and society in a bold and much-needed project.

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Social impact

• Introducing consumers to an alternative species of fish - Atlantic Bonito.

• Promotion of healthy and sustainable food consumption practices and habits among a new generation of consumers.

• Improving health and well-being of the local communities.

• Access to nutritious food and sustainable practices can enhance the quality of life for local residents.

• Encouraging competitiveness and innovation among stakeholders.

• Creation of employment opportunities in the fishing, processing, and distribution sectors.

• Commitment with the Sustainable Development Goals of 2030 Agenda of the United Nations: 2 - Zero Hunger, 3 - Ensure Healthy Lives and Promote Well-being for All at All Stages, 4 - Quality Education, 10 - Reduced Inequalities, 12-Responsible Consumption and Production, and 14 - Life Below Water.

• Growth of Investment (hours and amounts) in internal training of employees to participate in the project.

• Scientific publications inherent to the project.

• Feasibility of applying the scientific results obtained in future research or related projects.

• Very important research work to achieve goals and develop innovative solutions.

· Impact of participation in the project on municipal policies.

• Image and reputation in the area of sustainability of the municipality.

• Improving the quality of life of citizens.

• Involvement of schools in the municipality where children had the opportunity to participate in the project

• The Blue Project implemented food literacy strategies, with the aim of promoting fish consumption and reducing food waste.

• Students from primary schools in Esposende and Forjães had the opportunity to evaluate some dishes in which the main product was sarrajão fish.

• This innitiative in schools intend to be continued, in order to promote good nutrition in children.

Economic impact

Adoption of blue and circular economy practices.

• Increase the fishing communities income and the fishing sector's contribution to the national economy.

• Strengthening the local economy by explore and innovate through a local natural resource.

• Economic exploitation of surpluses, transforming waste into sub-products.

• By utilizing leftovers from sarrajão fish and creating new products, the project can generate additional income streams for stakeholders.

• Supporting local businesses and promoting sustainable practices can enhance economic resilience in the region.

• Strengthening the value chain can lead to greater competitiveness, market access, and economic growth.

• Growth of Guimarpeixe's investment in the Innovation area due to participation in the project.

• Positioning of developed products on the market Adoption of blue and circular economy practices.



Environmental impact

- Reducing ocean waste
- Reducing food waste
- Promote sustainability and the circular economy
- Promotion of food literacy
- Development of new products from food by-products to reduce waste.
- Implementation of awareness-raising and education actions for food sustainability.
- Conscientious management of local fishing activity to ensure environmental sustainability.

Chapter 4 Cost-Benefit Analysis

Cost-Benefit Analysis

This report is a document that evaluates the costs and benefits of a project, policy, or program over a one-year period. It compares the expected outcomes of the intervention with the resources required to implement it. The report helps decision-makers to assess the feasibility, efficiency, and effectiveness of the intervention and to identify potential trade-offs or alternatives.

Economical	Environmental
 Increase the fishing community's income. 	Sustainable exploitation of Atlantic Bonito.
Increase the fishing sector's contribution to	Diversification of fish species consump-
the national economy.	tion.
 Encouraging competitiveness and innova- 	 Non-polluting practices by the industries
tion among consortium companies.	participating in this project (processes; waste management; materials).
 Strengthening the local economy by explo- 	
re and innovate through a local natural resource.	 New uses for surplus fish, avoiding waste.
	Smaller ecological footprint in terms of
 Economic exploitation of surpluses, transforming waste into sub-products. 	distribution, by addressing a local and proximity economy.
 Adoption of blue and circular economy practices. 	
	 Economical Increase the fishing community's income. Increase the fishing sector's contribution to the national economy. Encouraging competitiveness and innovation among consortium companies. Strengthening the local economy by explore and innovate through a local natural resource. Economic exploitation of surpluses, transforming waste into sub-products. Adoption of blue and circular economy practices.

Assessment of costs and benefits

• The initial project costs can be significant, but the long-term benefits, such as health promotion, innovation and sustainability, can outweigh these costs.

• Intangible benefits, such as environmental awareness and nutritional education, must also be considered in the analysis.

• The assessment of return on investment must take into account not only financial aspects, but also social and environmental impacts.

Performance indicators

 Indicators such as schools' adherence to the program, consumer acceptance of products and the impact on reducing food waste can be used to evaluate project performance.

• Cost-benefit analysis can therefore help determine the efficiency of the project in achieving its objectives.

• In short, based on these considerations, the project's cost-benefit analysis demonstrates significant potential to generate social, economic and environmental benefits, despite the initial costs involved. Ongoing evaluation is recommended throughout project implementation to monitor and adjust costs and benefits as necessary.

Conclusion

• The Annual Cost-Benefit Analysis highlights a compelling cost--benefit scenario for stakeholders.

• The project demonstrates a strong alignment with sustainability goals, including promoting healthy consumption habits, increasing income for fishing communities, and fostering innovation in the fishing sector.

• The report emphasizes the economic benefits of the project, such as boosting the local economy and encouraging competitiveness and innovation among participating companies.

• Furthermore, the project's environmental benefits, such as sustainable exploitation of fish species and non-polluting practices, underscore its commitment to environmental stewardship.

• Overall, the project presents a robust case for investment, offering a favorable balance of costs and benefits across social, economic, and environmental dimensions.





