

# EcoBiesel



## Who are we?

We are the 11º B class from Alcanena High School, Portugal.

We study Sciences and we want to build a new Environmental Future!

## Alcanena, a beautiful town!

We live and study in Alcanena!

It is a town that belongs to Santarém district.

Alcanena has some leisure spaces such as: Alviela River Beach, Aire and Candeeiros Mountain, gardens and beautiful landscapes.



*1 - Alviela River Beach*



*2 - Aire and Candeeiros Mountain*



*3 - Town Hall of Alcanena*

## **But ... there is a problem!**

In Portugal, Alcanena is considered the Leather Capital. But it has a problem...

There's a lot of pollution due to tannery industry. It affects both water and air. We want to solve the problem, so we prepared a demonstration.



*4 - Pollution effects on our homes and school*



*5 - Pollution effects on water*

## **The beginning of our action - a Demonstration**

To raise awareness among the local population and the entire school community, we promoted a students demonstration close to the municipality. We intended to alert the mayor to the problem. We don't want to close the tanneries. We want more sustainable alternatives, friendly to the environment and our health!



<https://sway.office.com/IEbJBx2s2lk3hml#content=rOHwKL4liEZoGq>

6 - Students demonstration from the school to the Town Hall



7 - Students demonstration against the pollution





8 - Two of our classmates, Joana Capaz and Mariana Gameiro, talking to national TVs

## Our concerns had also reached the Media (nacional TVs and newspapers)



9 - One of our classmates, Mariana Gameiro, was interviewed by a national television channel, SICTV



10 - One of our classmates, Rodrigo Ramos, was interviewed by a national television channel, TVITV



11 - One of our classmates, Joana Capaz, was interviewed by a national television channel, CMTV

## We are trying to find a solution

There was a lot of research and collaborative work.



*12 - We want to be part of the solution!*

*We started discussing about how we see BioEconomy with our Biology Teacher, José Fradique.*



*13 - With this learning scenario, we understood the concept of BioEconomy.*

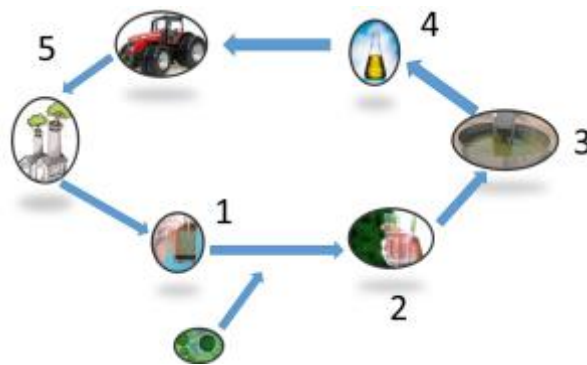
*We had some activities as a preparation task to understand some ideas about BioEconomy concept.*



## Our Solution...

In our project, we are using algae (Chlorella) and making them grow from the waste of the tannery factory. In this way we will produce more and more biomass. With this large amount of biomass we will create a biodiesel to find another way to reduce the use of fossil fuels.

This is BioEconomy! A new way of Circular Economy!



14 - Summarizing our project



15 - Chlorella

## Presenting our ideas to the Economics class





We presented our ideas to the Economics class so they could study the economic viability of the project. We prepared a Powtoon, explaining what BioEconomy is all about.

[Powtoon](#)



*16 - Sciences class students explained the BioEconomy concept.*



*17 - There were some brainstorming ideas about BioEconomy.*



18 - All students shared their ideas.

## Scientific validation 1 - our first stakeholder

We presented our idea to CTIC (Technological Centre of Leather Industry). They helped us with some doubts we had.



19 - Some of our classmates went to CTIC (Technological Centre of Leather Industry), a local Research Centre.



20 - CTIC Director, technicians and researchers carried out the technical and scientific validation of our project. They approved our idea!

## Scientific validation 2 - Contact with an university scientist

This videoconference with scientists of the Coimbra University (another stakeholder) has allowed us to understand how scientists work, how to do research, to learn how to think as researchers, to interpret and to make a critical evaluation of the results, how to construct and generate an investigation. We also clarified some questions, for example, the experimental procedure and some information about the algae we are going to use and obtain and how we will count their cells.



*21 - We prepared and we did a videoconference with a Biologist (Botanist), Dra. Mariana Assunção, from Coimbra University.*

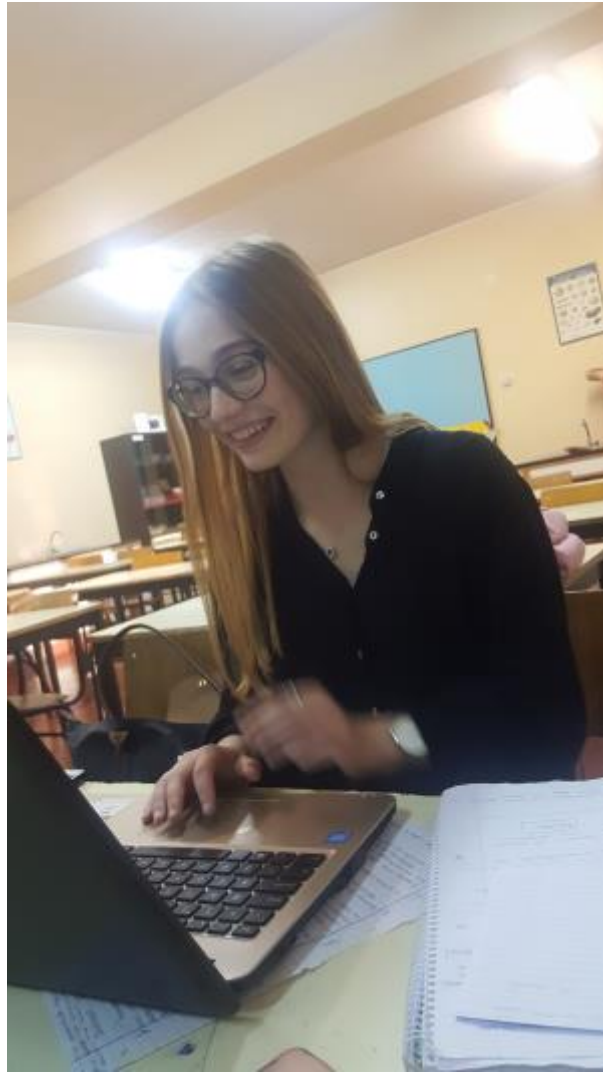


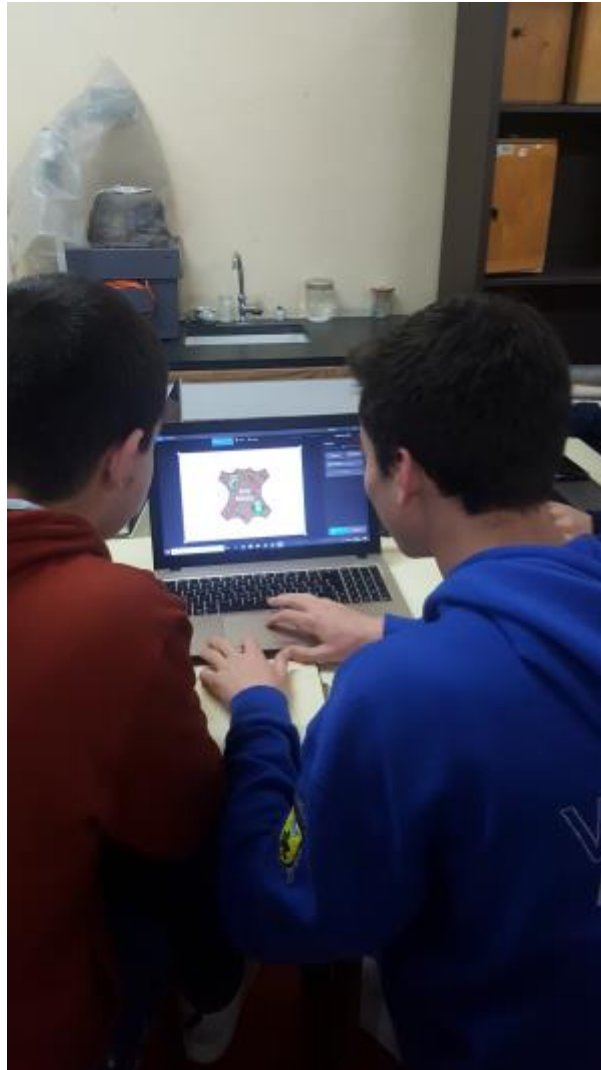
*22 - Clarification of some questions and doubts that we had regarding our project*

## Creating our logo









## The official logo

We used a leather symbol in our logo because this project is directly related to tannery industry.

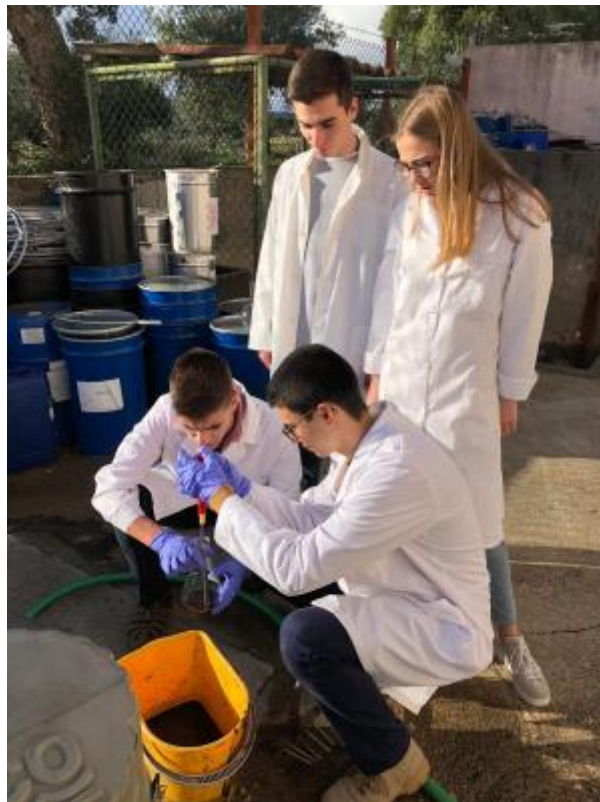


Our project is called EcoBiesel because we are the 11<sup>º</sup> B class and we thought that it would make sense if we used the letter **B** in the name.

## First Experimental Studies and Trials

### Collecting polluted water at a tannery factory

Our aim was to find water polluted by the tannery industry. So we collected them from a tannery factory.



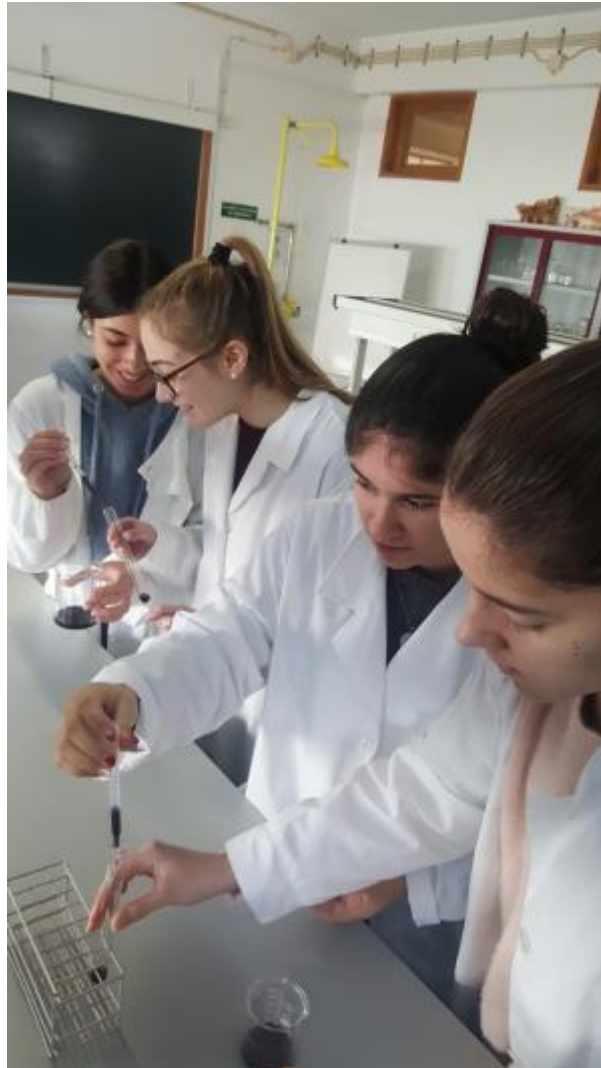
*23 - Water polluted collection.*



*24 - The students who collected the water the tannery factory.*

## Analyzing the chemical composition of the collected water

We analyzed the chemical composition of the tannery water collected.









## Working on laboratorial algae reproduction from polluted water

We put the algae in different types of water that came from the tannery industry to investigate where the algae develops better. We observed and recorded the growth rate of the algae in each of the experimental tests. We have manipulated independent and control variables in order to achieve valid and reliable results. We will extract the biomass from the algae which will be used to produce the biofuel.





## Benchmark for Environmental Education and Sustainability- poll for the school's best projects

We participated in the construction and implementation of a benchmark for environmental education and sustainability (with projects designed by all classes in the school group and voted by all students). This framework was created to raise awareness about environmental sustainability and to support those behaviours that will allow students to reach a greater and shared well-being on the long-run.

The best ideas were chosen by vote. We were the most voted project!



25 - All the students listened to the main ideas of each project.





28 - We presented EcoBiesel to the whole school community at the Anthropocene Festival.



29 - We made a poster. This is the result.



30 - A student presenting the EcoBiesel project to the headteacher and members of chamber.

## Presenting our project at a STEM Fair

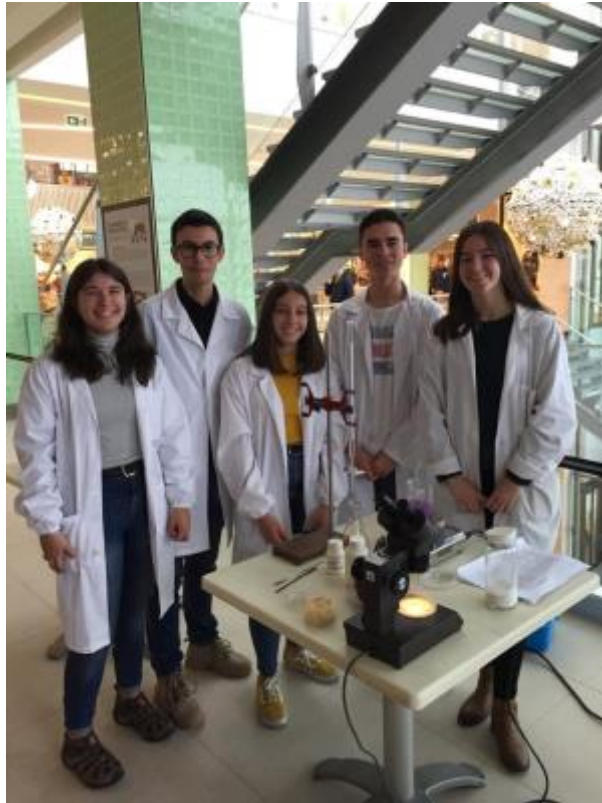
We were invited to present our project at a national STEM Fair.



31 - Explaining our project, EcoBiesel.



32 - Explaining our project, EcoBiesel.



33 - Our classmates at the STEM fair.



34 - Students and parents at the STEM fair.



35 - It was a national STEM fair.



Coming soon...

With the algae obtained in the laboratory, from polluted water, we will produce our biofuel.

We are already looking for a new stakeholder to help us.

