The Blue Mirror
Project : Treat and Feed

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I. Problem Statement

We are using more plastic than ever. According to scientists, the amount of plastic in the ocean is set to increase by 2020. The reasons of plastic overuse are that it is convenient, cheap to produce, malleable and durable. Yet, plastic pollution is harming the planet. It threatens the environment, the wildlife and our health. It is estimated that approximately eight million tons of plastic find their way into seas and oceans every year. We can find five massive garbage patches of plastic in the oceans. These collections of marine debris are not biodegradable. They break into tinier and tinier pieces because of the sun and become microplastics.

Plastics pollution in the marine world is causing direct harm to the wildlife. Marine mammals and birds are especially at risk. Turtles often mistake plastic bags for jellies and so by eating them, they suffocate. Birds die because of starvation or ruptured organs as they confuse fish eggs with plastic pellets. Marine animals like seals often get caught in abandoned plastic fishing nets and get strangled. Moreover, microplastics are disturbing marine food webs. By stagnating near the surface of the ocean, microplastics and marine debris block the sunlight from reaching plankton and algae. These organisms are crucial sources of food to many marine animals such as fish, turtles, whales. Threatening them is a threat to the entire food web and food chain. Plastic is a poison to the ecosystem.

As said above, plastic is a useful material. It has a low cost of product, it is versatile, resistant etc. However, the dominance and overuse of plastic have proved to be a threat to the environment. According to the Great Britain's Royal Statistical Society, only 9% of the plastic ever made has been recycled. That is why limiting or eliminating our use of disposable plastics and increasing our use of biodegradable resources is the best way to reduce plastic pollution.

40 percent of plastic produced is for packaging. It is used once and then discarded. The packaging that is used today is thus not eco friendly at all and even less animal-friendly. To work on the Sustainable Development Goal 14.1 which aims to “prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution” by 2025, we developed the concept of the Blue Mirror.

II. Proposed concept

The Blue Mirror team is honored to present the Treat and Feed Project. The concept is to create a sustainable cosmetic packaging made of brown algae that can be thrown in the sea and can be eaten by sea turtles while being beneficial for them at the same time, because of the nutriments we will add to it. The brown algae has two main strengths : the eco-friendliness and the animal friendliness aspects. We chose the cosmetic sector and we are planning to make partnerships with cosmetic brands because it is one of the most polluting sector in terms of plastic waste. Moreover, many cosmetic brands are more and more aware of that and are trying to take measures to reduce their plastic use. For example, Le Petit Marseillais launched its “ecorecharge” product that represents 84% less plastic use than a normal bottle of 250ml liquid soap. (Annex 1). L’Oréal also tried to follow the trend by

lightning the weight of their bottle by 3% which corresponds to a reduce of 1g of plastic by bottle.

At first, this idea is not brand new in the Market. There are other methods to reduce plastic waste in cosmetic packaging by reducing their weight, their size, or with packaging made of recycled materials. There are other projects to create packagings made out of algae as the Algopack (French) and Evoware (Indonesian) projects. However the first option is not directly beneficial for animals and the second is not completely satisfying. In fact, the packagings proposed are not very resistant, they have a very simple design and are not aesthetically pleasant which is an obstacle for the use of such packagings by cosmetic brands.
Treat and Feed offers an innovative solution. It is not only an eco-friendly packaging but it is also useful for many reasons and many people at every step of the process of creation, utilisation and destruction.

- The process of creation does not require pesticides or a huge quantity of water or even oil. The algae absorbs carbon dioxide and turns it into sugar for its growth and rejects oxygen.
- During its use as a cosmetic, users stay coherents with their values and do not harm neither themselves nor the planet or the animals.
- Finally, during the decomposition, it can be thrown in the sea with no risk as it aims actually to feed the sea turtles.

It is faisable and original as, even though the concept of algae packaging already exists, our project is to make it more useful, more aesthetique and make it evolve from a draft to a sustainable, long term project to protect the sea turtles and feed them.
We have analysed the market for each part of our project to test its potential legitimity and growth.

- The choice of the plastic waste problematique. The French plastic industry was worth 32 billions euros in 2018. The packaging sector is the first consumer of plastic. (Annex 2)
- The choice of the cosmetic sector is due to the fact that this sector is second for the use of plastic packaging in France in 2016. However, there is a hope in the fact that it is one of the most important sector that harvest and transform algae in 2016. (Annex 3-4)
- The choice of the turtle as animal to save. Because of the millions of tons of plastic floating on surface of the ocean, hundreds of species are threatened and the rate of extinction is rising. Sea Turtles are one of them. Studies from 2013 show that 50% of sea turtles are ingesting plastic at an unprecedented rate and are dying. Moreover, other studies of the Loggerhead species found that 15% of young turtles examined had ingested such enormous quantities of plastic that their digestive system was obstructed.
- The choice of algae. We use brown algae because first of all it is the most common algae in Bretania, it is naturally abundant. It has properties that are close to plastic which make it more malleable and easy to use. Moreover the system of production/transformation is a growing industry in France that can still be more exploited. (Annex 5-6). In the process, we will add nutrients as calcium, one of the most important nutrient needed by sea turtles.

III. Expected positive impact

Positive impact by growth	Positive impact by decline

A recovery of the market share of L'Oréal packaging and other brands that try to be eco friendly and thus conquer the cosmetics market. As recycled packaging is a growing sector, approximately an 8% growth per year, we are planning on controlling at least 50% of the cosmetic packaging sector by 2025.	A decline in ocean's pollution because of plastic waste. We are planning on reducing the plastic pollution of the oceans by 30% by 2022 and 50% by 2025.
A growth of the number of partnerships with brands and French NGOs - Expeditions MED - WWF France - L'agence française pour la biodiversité - Le centre d'étude et de valorisation des algues - L'association française d'halieutique - Bloom	
A better quality of life and evolution of sea turtles in their natural habitat, to reduce the speed of their extinction by half at least within 4 years, and to stop the extinction totally within 8 years which will allow them to reproduce.	A decline in the use of plastic and oil for the packagings (linked to a growth in the use of algae packaging). By 2022, we would like to have 60% of recycled plastic packaging in the cosmetics sector, and 100% by 2025.
A strong agreement between the State and our organization for a special waste collection regime for our packagings.	

IV. Major risks and actions to reduce them

It is important for a project, especially if it aims to be sustainable and environmental-friendly, to pay attention to the potential negative externalities it could generate. In our case, we have to make sure that the algae we use is from an organic and responsible aquaculture. The industrial process to transform the algae into biodegradable plastic needs to be the less polluting possible. Also, our product should be nationally made in order to limit the greenhouse gas emissions. Thus, every step of the process should create the less negative externalities possible in order to create a truly sustainable product and to make this latter meaningful.

As our innovation is based on an uncommon practice of algae transformation, scientific rigor is essential in order to run the project properly and safely. Indeed, not every type of algae has the same property, and some of them can even be dangerous for certain animals and humans. The challenge will be to pick the relevant algae, to make it into harmless packaging including for when it would be decomposed in the nature, and add natural nutriments in the algae on the purpose of feeding sea turtles. We have then to collaborate with experts from

NGOs, scientists and industrialists who will be able to guide us in our project and give us the necessary technicality. Thanks to collective intelligence that stems from the cooperation of different backgrounds' actors, insightful solutions can be enabled.

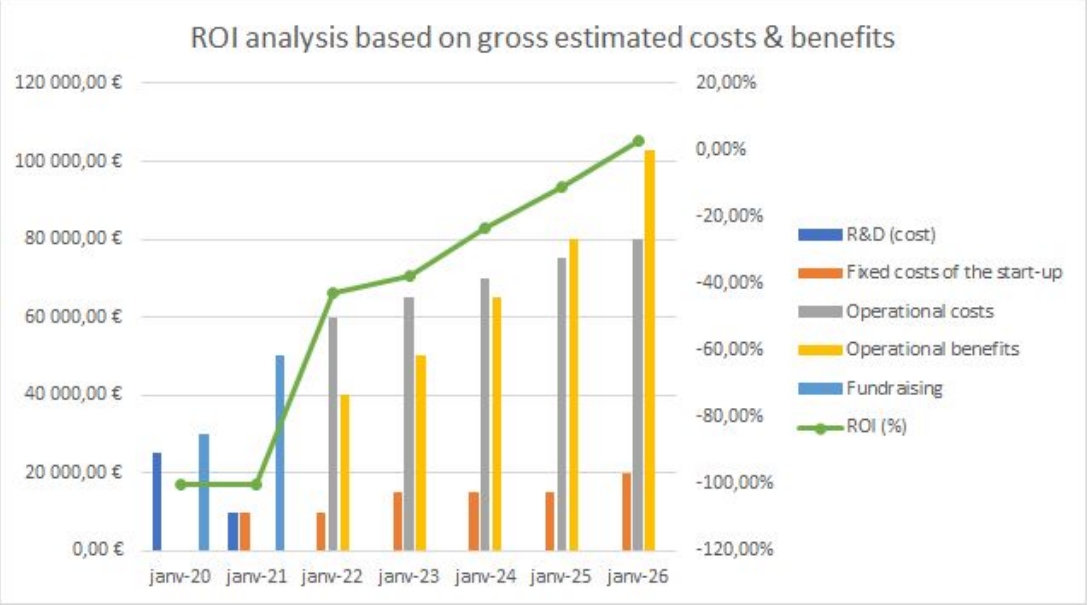
The Treat & Feed project is built within the framework of a circular economy, it implies the implementation of a specific waste collection and recycling system which can become a cumbersome process. To address this problem, we have first to collaborate with private companies like supermarkets to see if they can store a recycling bin for the used algae packaging. In the long term, we can work with city halls and governments, so they can help making algae packaging recycling bins more accessible, by including it in their traditional recycling system. The goal is to encourage people to recycle those packaging, perhaps by adopting a rewarding system, so we can transform most of it into nutritive granules for sea animals.

V. Deployment strategy and major milestones

	Jan-Dec 2020	*Jan-June 2021*	*July-Aug 2021*	*Sept-Dec 2021*	*Jan 2022*	*Feb-June 2022*
Fundraising						
R&D						
Prototype, Test, Improvement						
Creation of the Start-up						
Key Partners (Packaging Producers & Recycling Bins Premises)						
Product Launch						
Users Feedback: - **Feedback from the packaging users** - **Feedback thanks to qualitative and**						

quantitative analysis of the sea						

VI. Return on investment analysis



We compute ROI with the formula : ROI = profit / investment (only operational benefit matters, not benefit from fundraisings).

During 2020 and 2021, R&D will be the major cost which will generate a strictly negative ROI at 100% (we do not have any benefit at this time). Only ROI (in green) depends on the secondary vertical scale (percentage), and then, major costs from 2022 to 2026 will be the operational costs due to the product launch (in grey) and fixed costs (in red) of the startup's growth (including growing teams, growing wages, growing buildings, …). In parallel, we can observe a shy growth of operational benefits (in yellow). Eventually, we forecast **to be profitable in 2026** with a 3% ROI, due to a significant turnover of our product 4 years after its launch and its promotion.

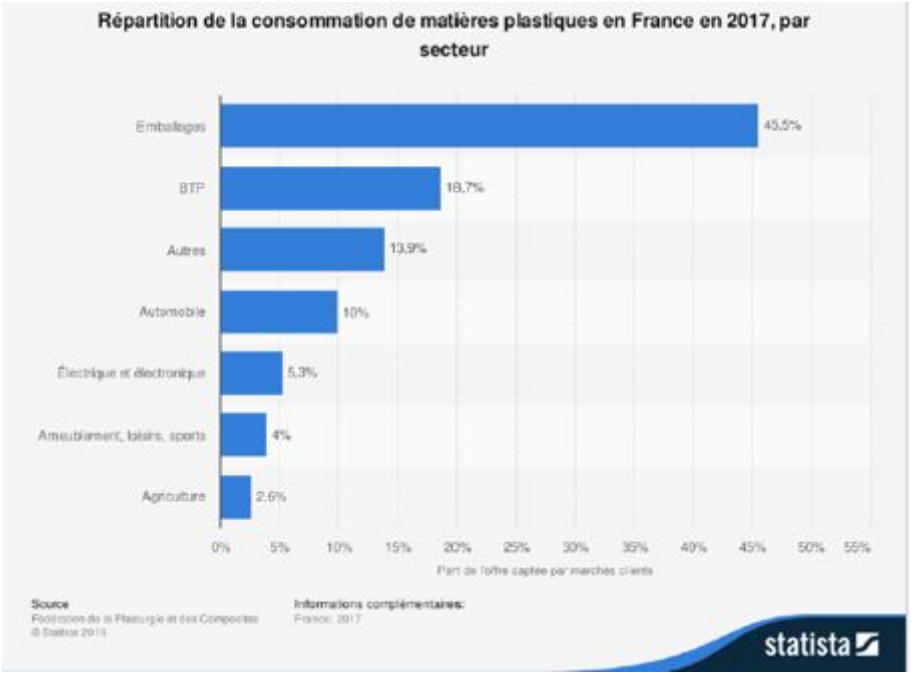
VII. Organization

In order to succeed, we have to rely on several partners at different level. First, we have to collaborate with global experts during the R&D sequence, such as WWF France and Fondation Tara Oceans/Expeditions. These two committed NGOs work to revolutionize the traditional packaging, which led to the French national agreement on plastic packagings alongside several global companies (L'Oreal, Carrefour, Auchan, etc.). Then, for the product launch, we want to focus on few actors of the beauty sector who share our vision and our commitment. Therefore, our first and main partner would be L'Oreal who tends to integrate environmental issues in all of their products: package eco-design, sustainable transport, waste management, etc. Then, we will be able to widen our partner portfolio with other global leaders such as LVMH and Unilever, already aware of green issues.

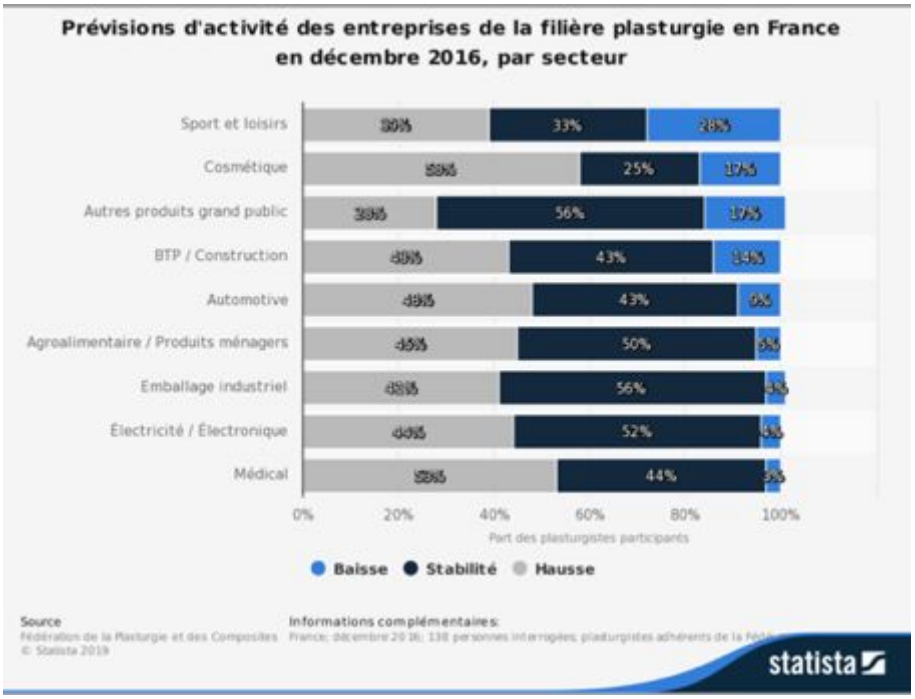
Annex:


LE PETIT MARSEILLAIS
LAIT D'AMANDE DOUCE
Hydrate et adoucit
Gel Mousse Extra Doux

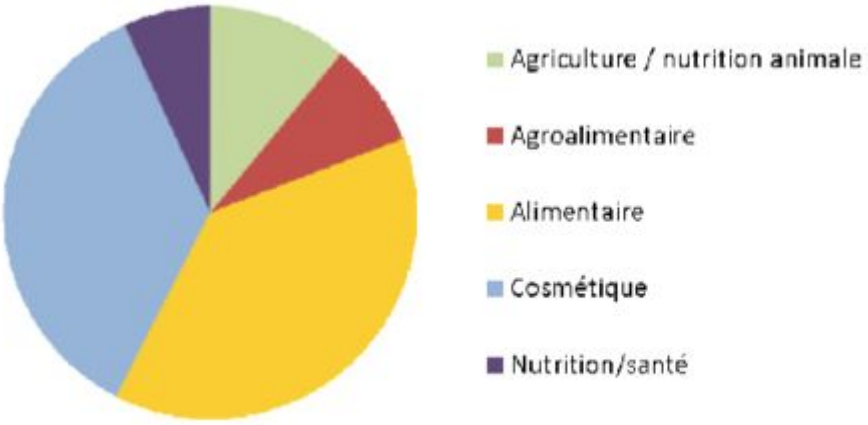
(1)


Répartition de la consommation de matières plastiques en France en 2017, par secteur
Emballages
45,5%
BTP
18,7%
Autres
13,9%
Automobile
10%
Électrique et électronique
5,3%
Ameublement, loisirs, sports
4%
Agriculture
2,6%
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
55%
Part de l'offre captée par marchés clients
Source
Fédération de la Plasturgie et des Composites
© Statista 2019
Informations complémentaires:
France; 2017
statista

(2)

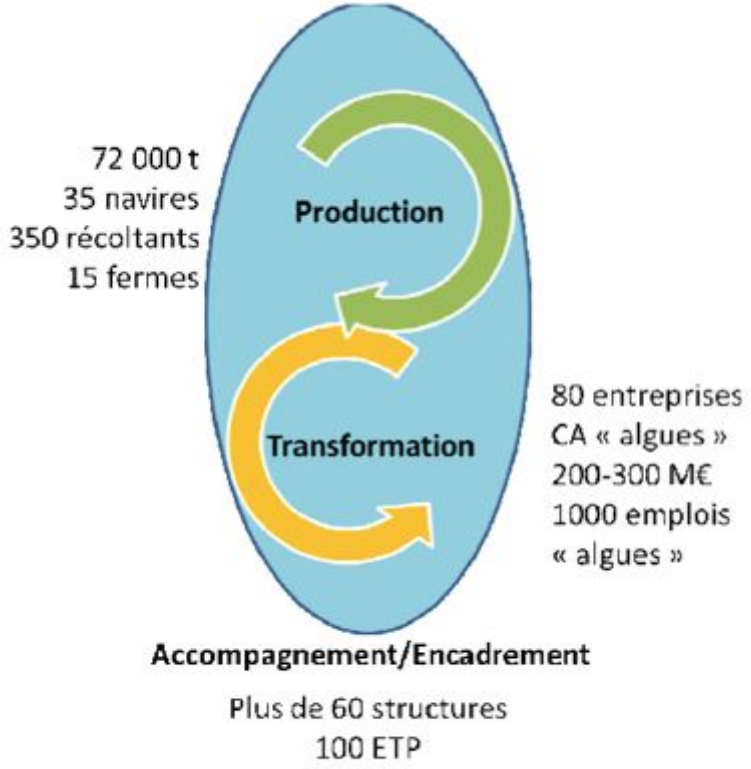

Prévisions d'activité des entreprises de la filière plasturgie en France en décembre 2016, par secteur
Sport et loisirs
33%
28%
Cosmétique
25%
17%
Autres produits grand public
56%
17%
BTP / Construction
43%
14%
Automotive
43%
9%
Agroalimentaire / Produits ménagers
50%
6%
Emballage industriel
56%
4%
Électricité / Électronique
52%
6%
Médical
44%
0%
20%
40%
60%
80%
100%
Part des plasturgistes participants
Baisse
Stabilité
Hausse
Source
Fédération de la Plasturgie et des Composites
© Statista 2019
Informations complémentaires:
statista

(3)



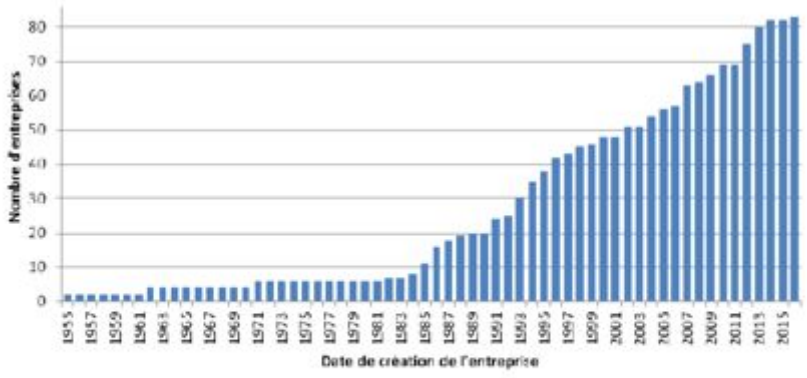
Répartition des entreprises en fonction de leur activité dominante

(4)



Chiffres clés de la filière des macroalgues en France - 2016

(5)



Evolution du nombre d'entreprises transformant des macro-algues

(6)

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