

# BioGlow

## Introduction:

BioGlow is a solution of team Healthy Innovators. This project is based upon this problem of No Water, No Life, No Blue, No Green, using passive yet effective ways to clean the ocean of excess microplastics, crude oil and excess minerals. I got this idea when I saw a video on how cargo is shipped using boats.

What I liked from this video is how effectively the boat can quickly spread the cargo across regions. Furthermore, I learnt about plants playing different roles to filter the ocean of different harmful but small materials. Inspired by this, I made BioGlow, to tackle the tremendous problem of water pollution slowly.

## What?

Introduce BioGlow: floating, self-contained chambers with bioluminescent microalgae, plantain leaf powder, water hyacinth, water lily, and duckweed to filter the ocean from excess magnesium, potassium, crude oil and some microplastics and create an eco friendly habitat due to reproduction, ever-clearing the ocean.

BioGlow has three main parts:

- The loader  
The loader involves using a ferris-wheel mechanism to load the pods autonomously into the boat utilising sensors.
- The boat  
The boat uses a segregating mechanism to segregate the pods into singles and doubles to preserve pods for later use. The boat will autonomously go towards the affected area and drop them off in the affected area using government based databases to find out affected areas
- The pods  
The pods have different layers, starting with bioluminescent algae, to clear oceans of specific minerals, oil and microplastics. The layers include:
  - Bioluminescent algae:  
Detects change in the ocean and reports to our control center how the ocean is doing.

- Plantain leaf powder:  
Filters crude oil from the ocean by breaking them down
- Water hyacinth, Water lily and Duckweed:  
These plants filter the ocean from excess magnesium, potassium and microplastics in the ocean
- Seeds:  
The seeds will assist in reproduction at the ocean base.
- Biodegradable layer:  
After a period of time, the layer will degrade to allow the seeds to reproduce

## **Why?**

Coastal water pollution, caused by nutrient runoff, pH shifts, and chemical contamination, often goes undetected until visible algal blooms or ecological damage occurs. Early detection is difficult, and traditional monitoring systems are expensive, energy-intensive, or require constant human oversight. This leads to delayed response, worsening marine ecosystem degradation, and risks to biodiversity.

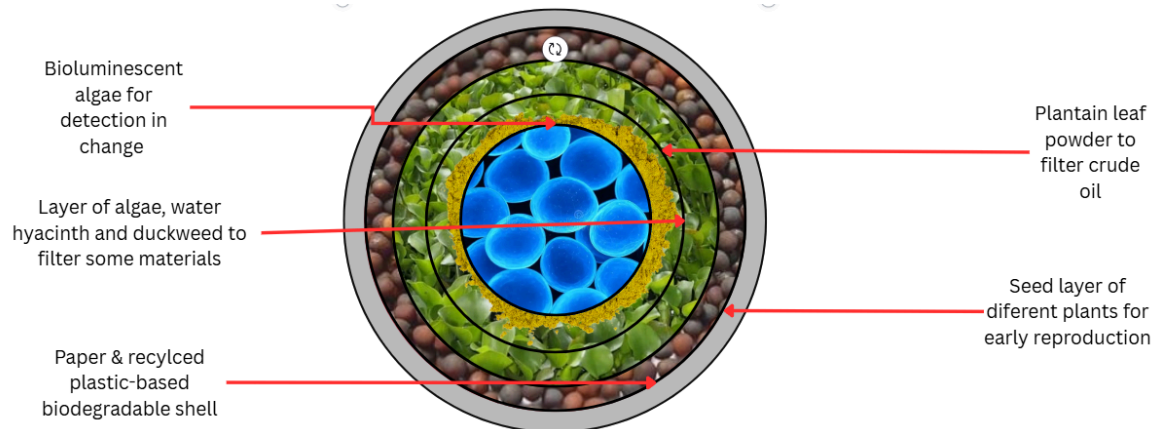
## **How?**

1. The loader will load the pods into the boat
2. The boat will move to the affected area and drop the pods
3. The boat will return back
4. The pods in the ocean will filter the ocean
5. The shell will degrade
6. The plants will reproduce and spread
7. The ocean will be purified

## **Advantages:**

- Eco-friendly: No electricity or toxic chemicals required for detection.
- Cost-effective: Low-budget, easily reproducible for classroom or small-scale implementation.
- Visual & intuitive: Glow changes make water health immediately observable.
- Scalable concept: Can be extended to networks of buoys for broader monitoring.
- Integrated action: Combines detection with immediate remediation.

## Structure:



## Conclusion:

Using technology isn't always the best solution, but combining nature with technology is the true solution. Over here, we can make a difference using my project. Tackling many problems will only make our world better to live in. And this can be done using BioGlow