Marinwanda

GROUP CODE : T62

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PROBLEM STATEMENT (200 words)

We are solving the problem on a bigger issue by helping in cleaning of water in the ponds. We will implement it on a smaller scale for our project by using it for aquariums as it will do the same thing for ponds. Our machine will also be able to take pH value of water and depending upon its acidity and basicity, it will make the water more acidic/basic that is required by the aquatic animals. It will also take turbidity and temperature into its account . It will give food to the fishes automatically and filter the water. If someone is leaving their house for a long period of time then they wouldn't have to worry about the fishes at home. It will also check the water level inside the aquarium and an action will be taken (or will inform to take the action) if it is below the standard level.

PROOF OF SIGNIFICANCE OF THIS PROBLEM (500 WORDS MAX)

Already two -thirds of aquatic life is considered to be an endangered species because of improperly disposed chemicals and other waste. However, businesses do not have to dump chemicals into water sources for the effects to be seen. Anytime you release chemical waste, it will have an effect. As it rains, these chemicals are washed into rivers, which feeds the waterfalls and then goes into the ocean. When a toxic waste harms one organism, it can end up destroying an entire food chain of aquatic life. Improperly disposed chemicals pollute marine life and kills sea mammals, corals, and fish. At the same time, sea birds are affected because they eat the fish. As a matter of fact, any organism that digests affected marine life can have adverse effects.

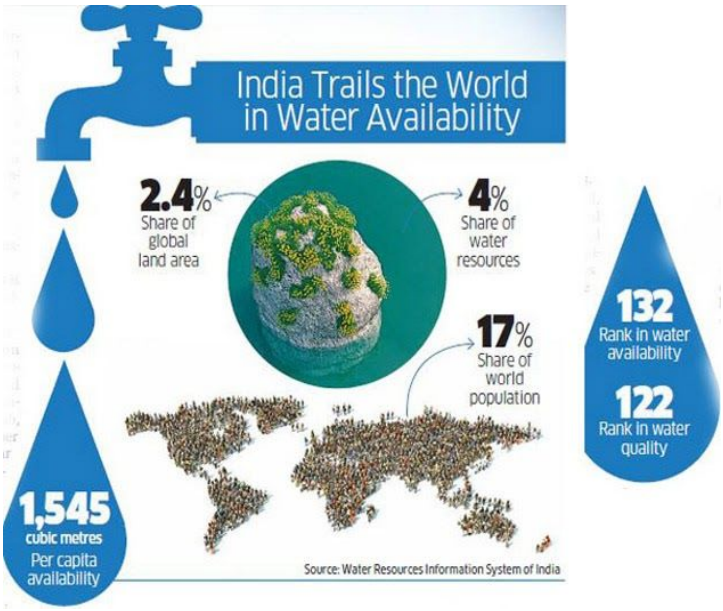
There are quite a few technologies which are already introduced to improve the conditions of water bodies and save our aquatic life.these are listed below:

The SeaBin Project

Ocean cleanup system

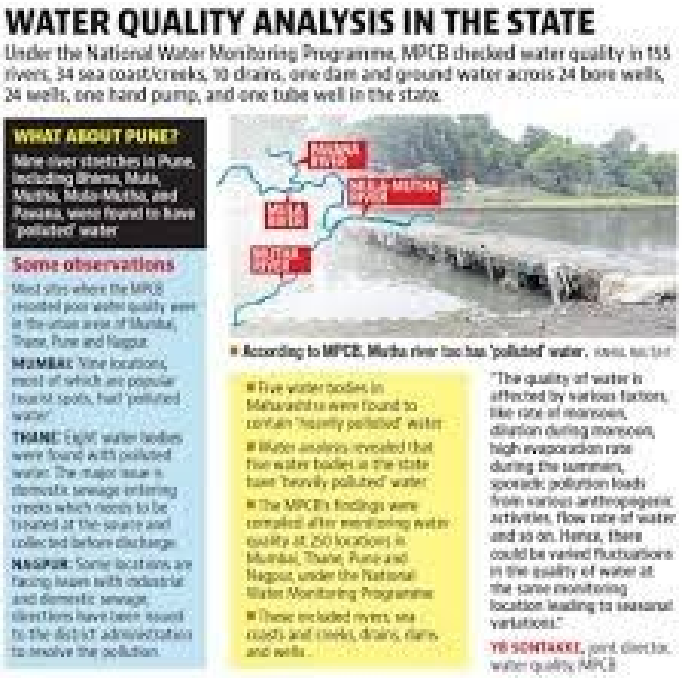
Eco Six-Pack system

And a few more…




DURANGO HERALD

Fish killed in Animas River test



<u>The very condition of one of the holy rivers of india</u> **-"YAMUNA"** :
https://youtu.be/eHCaIvPN2rY

<u>This video may help us to realise us what it feels being trapped in polythene and plastic wastes:</u>
https://youtu.be/yaDx-WJAsaE

PROOF OF NOVELTY OF THE PROBLEM OR PROPOSED SOLUTION (500 WORDS MAX)
Marine life is a vast resource for medicine, research, recreation, tourism, raw materials, food etc. which contributes significantly to the oxygen cycle, Earth's climate and ecosystem including us. Therefore there is an urgent need to protect and manage the resource from pollution, global warming and most importantly human activities.In our project we are helping the ecosystem by solving some of the problems which are faced by aquatic life.

Many problems faced through countries are as follows (information gathered through internet):

- <u>Deriving freshwater quality criteria for 2,4-dichlorophenol for protection of aquatic life in China</u>
  Industrial water waste increasing toxicity of water bodies making survival of domestic species difficult. Research data of different chemicals is provided in the link below. (https://www.sciencedirect.com/science/article/pii/S0269749102002920)

- <u>U.N. Makes a Bold Move to Protect Marine Life on the High Seas</u>

Due to various human activities species population is declining and many are becoming endangered and are on the verge of extinction and also are being hunted. Hence arises a demand for protecting them. The information about treaty is given below. (https://www.scientificamerican.com/article/u-n-makes-a-bold-move-to-protect-marine-life-on-the-high-seas/)

- Deep sea life faces dark future due to warming and food shortage
  Climate change and food scarcity are the biggest problem and it severely affects the marine life. The article is provided below (https://www.theguardian.com/environment/2017/feb/23/deep-ocean-life-dark-future-warming-food-shortages-study)

- Case study: protecting marine life
  A UNA-UK publication providing analysis and recommendations on achieving the Sustainable Development Goals (https://www.sustainablegoals.org.uk/case-study-protecting-marine-life/)

And many more difficulties but above one's are most important. So to solve the problems we would like to present the smaller scale solution inside aquarium which can later be implemented on a large scale. Our system controls pH, manages temperature , provides food in time, checks water level, proper lighting system etc. Existing product on the similar idea is 'Seneye' whose features can be seen through the link https://www.seneye.com/ .

TENTATIVE TECHNICAL IMPLEMENTATION DETAILS
Softwares:

- Arduino IDE
- Processing /MIT App Inventor/ Microsoft Azure / Microsoft VS Code/ Cinder
- Tinkercad/ Fusion 360

Hardwares:

- DHT22 Temperature Sensor
- SparkFun LilyPad Rainbow LED (strip of 7 colors)
- Water level sensor
- Water Quality Sensors
- Turbidity Sensor
- pH Sensor

TIMELINE

https://docs.google.com/spreadsheets/d/1e7CgVkegkAN2zHW-oX0oznkBGqkrV-y41HnaBgKIX2M/edit?usp=drivesdk

REFERENCE LIST

1. two-thirds of aquatic life is considered to be an endangered species
2. https://youtu.be/eHCaIvPN2rY
3. https://www.sciencedirect.com/science/article/pii/S0269749102002920
4. https://www.scientificamerican.com/article/u-n-makes-a-bold-move-to-protect-marine-life-on-the-high-seas/
5. https://www.theguardian.com/environment/2017/feb/23/deep-ocean-life-dark-future-warming-food-shortages-study
6. https://www.sustainablegoals.org.uk/case-study-protecting-marine-life/
7. https://www.seneye.com/
8. https://youtu.be/eHCaIvPN2rY
9. https://youtu.be/yaDx-WJAsaE