

IMPACT OF POLLUTION ON AQUATIC

**ANIL VERMA
HARISH KHAJURIA
KRISHANKANT RAINA
SARTHAK ANIL
MUNGUSKAR**

**CS6-202401100015
CS6-20240100013
CS6-202401100016
CS6-202401100118
CS6-202401100129**

Primary research



Q1.What type of pollutant do you think most commonly affect aquatic life?

- Plastic chemicals
- Industrial

Q2.How significance do you believe the impact of water pollution is on fish pollution?

- very significant
- major
- minor

Q3.what aquatic life species do you believe are most vulnerable to pollution?

- Fish
- marine mammals
- coral reefs
- all species

Q4.what effect do you think pollution has on the reproductive health of Aquatic organisms?

- Strongly negative effect
- mild negative effect
- no effect
- positive effect

Q5.Do you think plastic pollution is a more significant than chemical pollution in rivers and oceans?

- yes
- no
- both are equally harmful

Q6.How aware do you think people are about the effects of pollution in rivers and oceans?

- very aware
- slightly aware
- somewhat aware
- unaware

Q7.What role do you think people are about the effects of pollution on aquatic life?

- major role
- minor role
- no role
- not sure

Q8. In your opinion what is the biggest consequence of polluted water bodies for aquatic life?

- Habitat destruction
- Reduced food supply
- health problems
- Death and extinction

Q9. How important is to implement stricter regulations on Pollutants that affect water bodies?

- Extremely important
- Moderately important
- Not important
- Tmportant

Q10. What actions do you believe will most effectively reduce pollution impact on aquatic life?

- Banning single use plastic
- increasing awareness campaign
- Implementing stricter regualtions
- All of the above

Analysis of Primary Research

The questionnaire focuses on public perceptions of water pollution and its impact on aquatic life. It addresses key topics such as major pollutants (plastic, chemicals, industrial waste), consequences on species (habitat loss, health issues, extinction), and public awareness levels. It also explores the role of climate change and the importance of stricter regulations. The multiple-choice format allows for insights into priorities, such as banning plastics or awareness campaigns. This survey aims to identify the most pressing issues and effective solutions for mitigating water pollution, providing a foundation for action plans and awareness strategies to protect aquatic ecosystems.

Secondary Research



Scope of problem statement

1. Types of Pollutants:

Plastics, industrial waste, chemicals, and agricultural runoff are major contributors.

2. Affected Aquatic Species:

Fish, marine mammals, coral reefs, and other organisms are highly vulnerable.

3. Consequences of Pollution

Habitat destruction, health problems, reduced reproductive ability, and extinction risks

4. Public Awareness:

Limited awareness hinders effective mitigation effect.

5. Broader Impacts:

Disrupts biodiversity, aquatic food chains, and ecological balance.

6. Solutions:

Stricter regulations on pollutants.

Banning single-use plastics.

Large-scale awareness campaigns.

7. Importance of Action:

Essential for preserving aquatic ecosystems and ensuring long-term environmental health.

Motivation

Aquatic ecosystems are essential for biodiversity, food security, and ecological balance, but pollution poses a significant threat. Industrial waste, agricultural runoff, plastics, and other pollutants lead to habitat destruction, species loss, and disruptions in aquatic ecosystems. Issues such as eutrophication, microplastic contamination, and ocean acidification severely affect marine life and the health of freshwater systems.

This problem directly impacts humans. Millions rely on aquatic resources for food, but pollution threatens food safety, with contaminants like mercury and plastics entering the food chain. Economic activities such as fisheries, aquaculture, and tourism also face declines due to degraded water quality.

Protecting aquatic ecosystems is not just a necessity but an ethical responsibility for future generations. Addressing pollution aligns with global sustainability goals, like SDG 14, focused on conserving marine resources. With advancements in technology and effective policies, immediate action is feasible to ensure the health of aquatic life and humanity.

AEIOU Framework

Group ID:

Sheet No: 1

Activity Sheet

Group Name: TEAR SQUAD

Project Title: IMPACT OF POLLUTION ON AQUATIC LIFE

THINGS HAPPENING AROUND PRODUCT CONCEPT:

1. PEOPLE WASH THEIR CLOTHES IN THE RIVER.
2. PLASTIC AND NON BIO DEGRADABLE DUMPED IN THE RIVER.
3. AGRICULTURAL RUNOFF CONTAINING FERTILIZERS AND PESTICIDES
4. DOMESTIC SEWAGE AND UNTREATED WASTE RELEASED IN THE RIVER

SKETCH /PHOTO - SUMMARY OF ACTIVITIES



EFFECT OF ACTIVITY ON PRODUCT SPECIAL NOTES

1. HARMFUL SURF WATER IS RELEASED IN WATER
2. AQUATIC ANIMALS GET TRAPPED AND HARMED BY THE PLASTIC MATERIAL
3. EXCESS NUTRITION IN WATER CAUSES EUTROPHICATION
4. RIVER BECOMES POISONOUS AND DANGEROUS



A EIOU Framework	Group ID:	Sheet No: 2
Environment Sheet	Group Name: TEAR SQUAD	Project Title: IMPACT OF POLLUTION ON AQUATIC LIFE
<p>Season, Time, Personal, Location For Product</p> <p>SEASON EFFECT:</p> <ol style="list-style-type: none"> 1. RAINY EFFECT: INCREASED RUNOFF AND POLLUTION 2. SUMMER EFFECT: INCREASED WATER TEMPERATURE 3. WINTER EFFECT DECREASED METABOLISM OF AQUATIC SPECIES <p>TIME EFFECT :</p> <ol style="list-style-type: none"> 1. MORNING EFFECT INCREASED AMMONIA TOXICITY 2. AFTERNOON EFFECT MOST POLLUTION OCCURANCE TIME 3. LATE NIGHT EFFECT OXYGEN DEFICIENCY IN THE WATER 	<p>SCENES / PHOTOS OF ENVIRONMENT RELATED TO CONCEPT</p>   	

Interaction Sheet

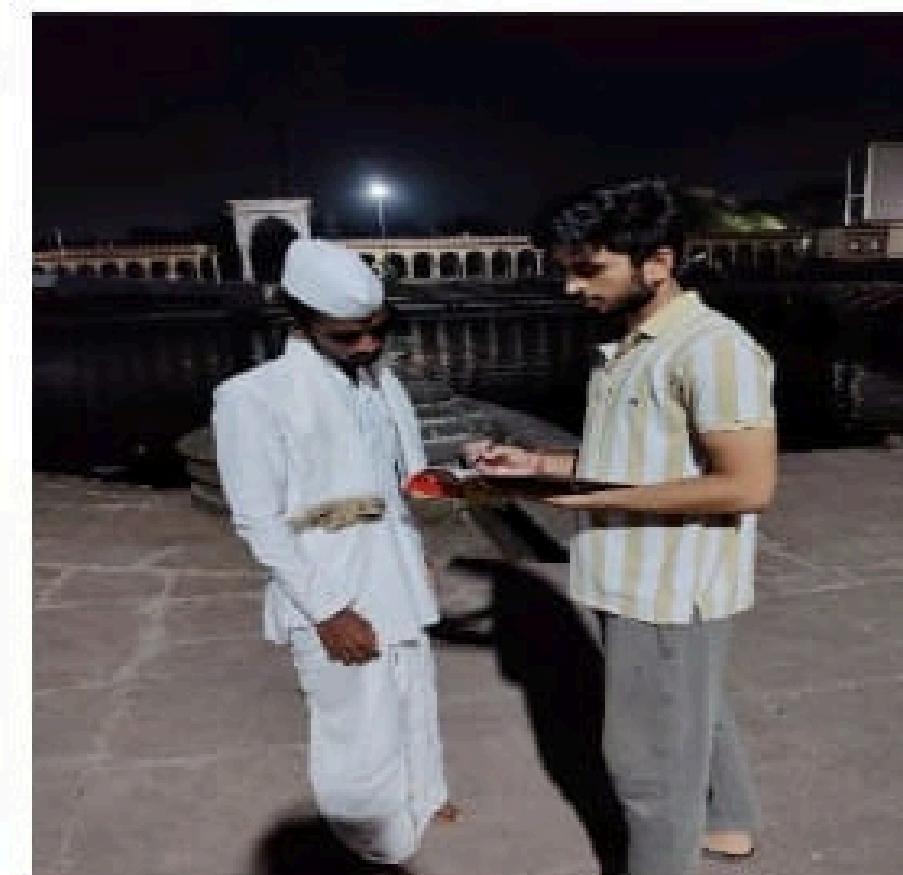
Users Expectation About Product :

1. DIFFERENT CONTAINERS FOR OFFERINGS AND GARLANDS
2. BANNED FISHING
3. ODOURLESS WATER

Group Name: TEAR SQUAD

Project Title: IMPACT OF POLLUTION ON AQUATIC LIFE

Photos of Market Survey Interaction



Summary of Interaction:

People want a solution to stop fish from dying and make the river cleaner and smell-free. They also want to keep their traditions, like bathing in the holy river and offering prayers, unchanged.

Object Sheet

List of Components:

- Aquatic Life** (e.g., fish, amphibians, aquatic plants, plankton)
- Pollutants** (e.g., chemicals like pesticides, heavy metals, plastics)
- Water Bodies** (e.g., rivers, lakes, oceans)
- Environmental Factors** (e.g., water temperature, oxygen levels, pH)
- Monitoring Tools** (e.g., water testing kits, sensors, drones for monitoring)

Diagram Showing Interaction Between Objects Pollutants entering the water.

Fish ingesting contaminated food or absorbing toxins.

Water temperature and oxygen levels decreasing due to pollution.

Ecosystem imbalance: Loss of species, decline in biodiversity



Group Name: Tears Squad

Project Title: Impact of pollution on aquatic life

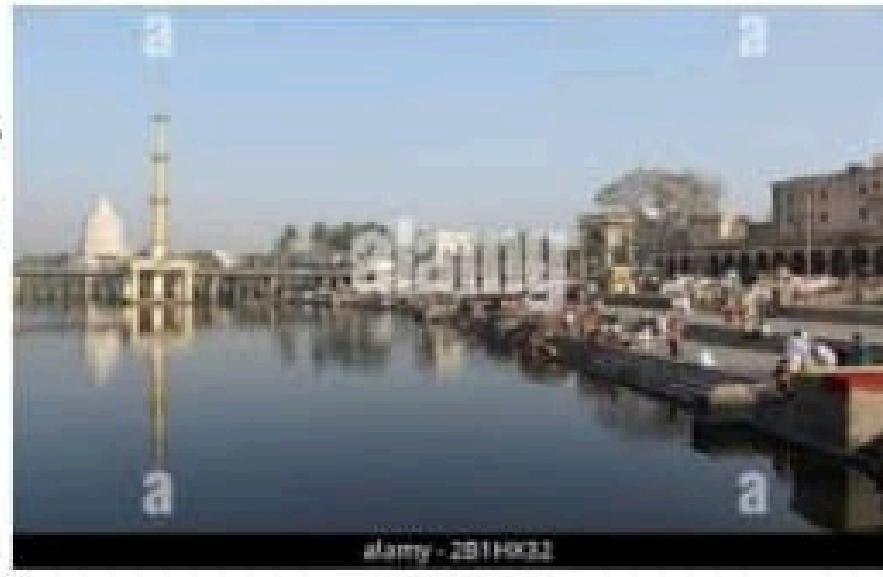
List of Inventory with Photos

Each of these components should have corresponding photos for visual identification. The photos should represent the actual or ideal forms of these elements in a typical aquatic ecosystem, and possibly images showing how pollution affects them.

Example Inventory List:

- Fish Species:** Photos of fish like salmon, trout, or tilapia.
- Plastic Waste:** Photos of plastic bottles, bags, and microplastics.
- Water Samples:** Photos showing clear versus polluted water samples.
- Monitoring Equipment:** Photos of water quality sensors, drones for monitoring pollution.



AEIOU Framework	Group ID:	Sheet No: 5
User Sheet	Group Name: TEAR SQUAD	Project Title: IMPACT OF POLLUTION ON AQUATIC LIFE
IDENTIFIED POTENTIAL USERS OF PRODUCT : <ul style="list-style-type: none"> 1. CONSERVATION ORGANIZATIONS 2. ENVIRONMENTAL SCIENTISTS AND RESEARCHERS 3. EDUCATORS AND STUDENTS 4. AQUATIC BIOLOGIST ECOLOGIST 	Existing User Photographs / Special Notes  <p>A photograph of a riverbank with several small boats tied to the shore. In the background, there are buildings and a tall minaret-like structure. The water appears calm but reflects the surrounding urban environment.</p>	
Special Modification For Users/ Method of Use : <ul style="list-style-type: none"> 1. TOOLKITS FOR EVENTS 2. AWARENESS CAMPAIGNS 3. DATA COLLECTION TOOL 4. COLLABORATIVE PLATFORMS 5. MONITORING KITS 6. DATA ANALYSIS SOFTWARE 	 <p>A nighttime photograph of a person standing on a dark, possibly rocky or muddy bank of a river. They are holding a bright light source, which illuminates some green aquatic plants in the water. In the background, a bridge with lights is visible across the river.</p>	

Group Name: TEAR SQUAD		Project Title: IMPACT OF POLLUTION ON AQUATIC LIFE
<p style="text-align: center;">Hear</p> <ul style="list-style-type: none"> Constant noise pollution from boats, shipping traffic, and industrial activities. Disrupted communication among species (e.g., dolphins, whales) due to underwater noise. Sounds of fishing nets being deployed and dragged. Distant human activities like construction, drilling, or explosions. 	<p style="text-align: center;">Users</p> <ul style="list-style-type: none"> Marine species: Fish, mammals, crustaceans, and coral ecosystems directly impacted by pollution. Humans: Communities dependent on fishing, tourism, and clean water resources. Environmental organizations: Monitoring pollution and advocating for regulations. <p>Industries: Both contributors (e.g., plastic producers, fisheries) and stakeholders needing sustainable practices.</p> 	
<p style="text-align: center;">Think & Do</p> <ul style="list-style-type: none"> Confusion: Migratory species may be unsure of their routes due to environmental changes. Survival: Species struggle to find clean food sources or habitats. Instinctual decisions: Many are unable to "think" in human terms but respond instinctively to challenges like toxic conditions or resource scarcity. Change behavior: Altered mating, feeding, and 	<p style="text-align: center;">See & Feel</p> <ul style="list-style-type: none"> Cloudy or toxic water caused by industrial waste, oil spills, or algal blooms. Debris like plastic bags, fishing lines, and other pollutants in their habitats. Deteriorating ecosystems: Coral bleaching, loss of vegetation, and habitat destruction. Pain: From ingesting toxins or being entangled in nets and debris. Suffocation: Due to oxygen depletion in 	

migratory patterns due to pollution.

- Ingestion: Consuming microplastics or toxins unknowingly, leading to health issues.
- Fight for survival: Compete for dwindling clean resources.
- Stress: Struggle to adapt to rapid environmental changes and habitat loss.

Sad Story: In a pristine lagoon, dolphins and turtles once thrived. However, over time, the water became choked with plastic waste and oil spills from passing ships. Dolphins were found entangled in nets, and turtles consumed plastic bags, mistaking them for jellyfish. Eventually, the lagoon became silent, devoid of life, leaving the local community grieving over the loss of its once-lively ecosystem.

Happy Story: A blue whale stranded on a beach, weakened by ingesting plastic, sparked an international campaign to address ocean pollution. After weeks of treatment, the whale was safely released back into clean waters. This event motivated global governments to enact stricter regulations against ocean dumping, resulting in cleaner seas for all marine creature.

Ideation Techniques

1. Brainstorming

Strict ban on single-use plastics.

Public awareness campaigns.

Bio-remediation using algae or bacteria.

2. SCAMPER

Substitute: Replace plastics with biodegradable materials.

Combine: Use solar-powered water purifiers.

Eliminate: Ban microbeads in cosmetics.

3. Research Existing Solutions

Study technologies like The Ocean Cleanup.

Evaluate habitat restoration projects (e.g., coral reefs, mangroves).

4. Public Awareness Campaigns

Educate communities on waste management.

Organize cleanup events.

5. Narrowing Down Ideas

Focus on feasible, impactful, and scalable solutions.

Prioritize biodegradable plastics and education initiatives.

Ideation Canvas

GROUP ID: 05

Sheet No: 7

Group Name: TEAR SQUAD

PROJECT TITLE:- IMPACT OF POLLUTION ON AQUATIC LIFE

- Aquatic organisms (fish, corals, amphibians, etc.).
- Fishermen and communities dependent on aquatic resources.
- Environmental Biodiversity
- People near water bodies.



People



Activities

- Discharge of industrial waste into rivers and oceans.
- Usage of plastic and its improper disposal.
- Overfishing and destruction of aquatic habitats.
- Awareness campaigns on reducing pollution.



Situation/Context/Location

Situations:

- In coastal and industrial regions where pollutants are dumped.
- During oil spills, heavy rains causing runoff, and sewage disposal.
- In urban areas with high population density near water bodies.

Locations:

- 1.River in Urban Areas.
- 2.Lakes
- 3.Beaches



Props/Possible Solutions

- Implementing strict regulations for waste management.
- Promoting biodegradable products and reducing plastic usage.
- Restoring aquatic ecosystems through clean-up drives.
- Developing technology for water purification and monitoring pollution levels.

PUGH MATRIX

Criteria	Weight	Plastic waste	Chemical run off	Thermal pollution	Noise pollution	Oil spills
Magnitude of impact	3	+1	+2	+3	+1	+3
DURATION of the impact	+2	+2	+1	-1	0	+3
Reversibility	+2	-1	0	+1	0	-2
Extent of affected area	+3	+2	+3	+1	+1	+2
Likelihood of occurrence	+1	+3	+3	+2	+2	+1
TOTAL	+11	+7	+9	+6	+4	+7

Group Name: TEAR SQUAD

Project Title: IMPACT OF POLLUTION ON AQUATIC LIFE

 Purpose

- To understand and communicate the effects of various types of pollution on aquatic life and ecosystems.
- Raise awareness about pollution's detrimental impact on aquatic environments.
- Educate communities about the importance of preserving aquatic life.
- Encourage proactive measures and sustainable practices to reduce pollution.

 Components

- Collecting data and case studies on pollution and its impact on aquatic life.
- Developing educational materials, articles, and infographics.
- Creating an interactive and informative videos to disseminate information.
- Hosting workshops, webinars, and social media campaigns to engage the community.
- Collaborating with environmental organizations, schools, and government agencies.

 Customer Revalidation

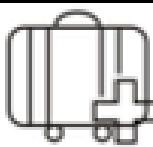
Surveys: Conducting surveys to understand public awareness and attitudes towards aquatic pollution.

Feedback: Gathering feedback from workshops and events to refine the educational content.

Pilot Testing: Implementing pilot programs in select communities to test the effectiveness of materials and strategies.

 People

Volunteers: Engaging volunteers for community clean-up events and awareness campaigns.

 Product Features

- A user-friendly [Social media Handle](#) with comprehensive information about aquatic pollution.
- Types of pollution, impact on aquatic life, solutions, and resource links.
- Quizzes, infographics, and videos.
- Brochures, posters, and lesson plans for schools.
- Engaging sessions to educate the public and promote sustainable practices.
- Regular posts, challenges, and educational content to reach a wider audience.



Reject, Redesign, Retain

Methods that do not resonate with the target audience or fail to produce measurable impact.

Information that is too technical or not easily understandable by the general public.

Adding more [interactive videos](#) to attract public attention towards this problem.

Modifying social media campaigns based on analytics and audience response.

Example: Regular community clean-up events with high volunteer turnout.



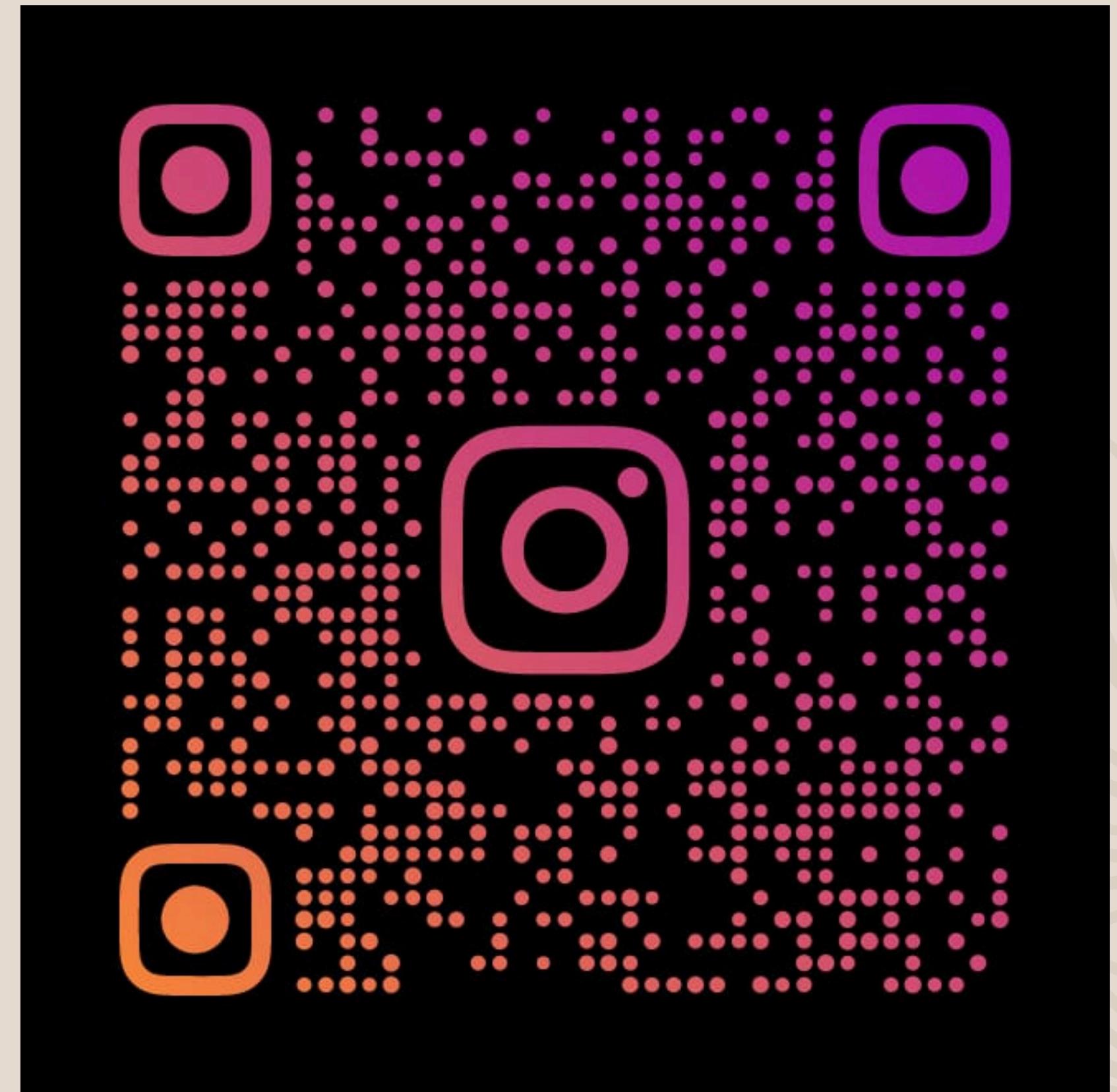
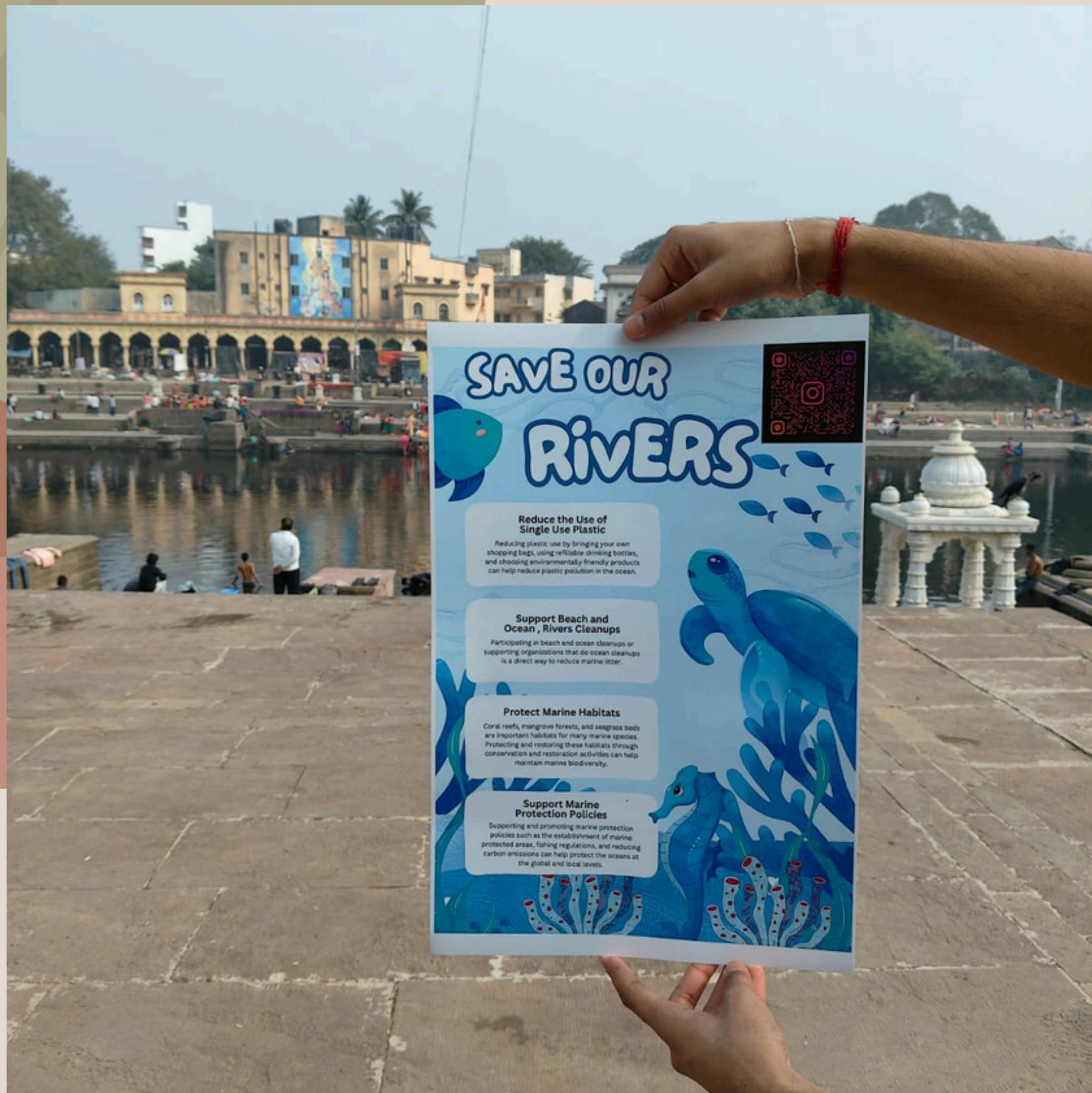
Product Experience

- Positive:** Users find the Social Media handle informative, easy to navigate, and visually appealing.



Areas of Improvement: Users suggest more interactive content and real-time updates on pollution levels.

Collaborations with organizations that provide valuable resources.
Elements of the project that consistently receive positive feedback from participants.



Short summary of Ideation process group had carried

Focus: Addressing the impact of pollution on aquatic life, particularly from plastics, chemicals, and agricultural runoff.

Research: Explored solutions like pollution prevention, clean-up technologies, habitat restoration, and policy regulations.

Ideation: Used brainstorming and SCAMPER techniques to generate innovative solutions.

Proposed Solution:

1. Instagram Campaigns: Raise awareness through posts, reels, and interactive features.
2. On-Ground Initiatives: Organize workshops, cleanup drives, and community outreach programs.

Benefits: Combines digital and physical efforts for widespread awareness, community engagement, cost-effectiveness, and long-term impact.

Challenges Addressed: Strategies to improve engagement, reach remote areas, sustain momentum, and secure funding.

Contribution:

CS6-ANIL VERMA

Ideation , Ideation canvas, Emathy mapping, helps in making PPT.

CS6-HARISH KHAJURIA

Product development Canvas,Secondary research,user sheet,object sheet,Developing the solution.

CS6-KRISHANKANT RAINA

Activity sheet,Environment,Interaction sheet,Helps in online Campaigning.

CS6-YEOLE TEJAS

Primary research,helps in campaigning.

CS6-SARTHAK ANIL MUNGUSKAR

Lately join the Group,Helps in Campaigning.helps in making product development canvas

The background features abstract, organic shapes in muted colors. On the left, there's a cluster of elongated, light brown or beige shapes resembling stylized leaves or petals. On the right, there's a large, thin, white curved line that loops from the top right towards the center. The bottom left corner is filled with a solid, reddish-brown color.

THANK YOU !!