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Innovating Against Microplastic Harm

Design Thinking Project

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Submitted To

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Declaration

We hereby declare that this following project is a joint initiative, and a qualitative outcome of our perseverance, application of design thinking skills, and team spirit. This work was not published elsewhere and does not bear traces of plagiarism.

Signatures of the Project Team

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Signature of the Guide

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Signature of the External Examiner

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THE INVISIBLE THREATS

Harnessing Design Thinking to Innovate Against Microplastic Harm

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Chapter One - Introduction

Introduction

Plastics of all sizes have become the most dominant form of marine litter and it has been estimated that at least 5.25 trillion plastic particles weighing above 268,000 tons have been discarded into the Oceans. According to a comprehensive review of scientific evidence published by the European Union's Scientific Advice Mechanism in 2019, microplastics are now present in every part of the environment. While there is no evidence of widespread ecological risk from microplastic pollution yet, risks are likely to become widespread within a century if pollution continues at its current rate.

Microplastics can become embedded in animal tissue through ingestion or respiration. In 2023, plasticosis, a new disease caused solely by plastics, was discovered in seabirds. The birds identified as having the disease have scarred digestive tracts from ingesting plastic waste. "When birds ingest small pieces of plastic, they found, it inflames the digestive tract. Over time, the persistent inflammation causes tissues to become scarred and disfigured, affecting digestion, growth and survival.

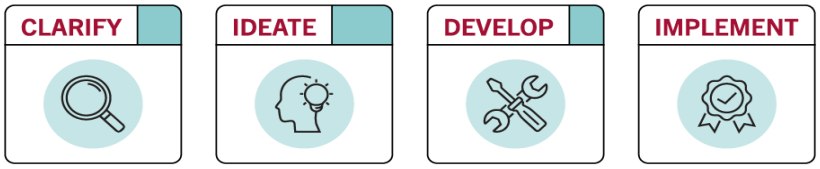
The scope of this research is to find a way to reduce the usage of plastics which generates harmful microplastics and also create a solution that helps in conquering the negative effects caused by microplastics.

Design Thinking

Design thinking is a mindset and approach to problem-solving and innovation anchored around human-centered design. Design thinking is different from other innovation and ideation processes in that it’s solution-based and user-centric rather than problem-based. This means it focuses on the solution to a problem instead of the problem itself.

Rather than accepting the problem as it is, designers explore the given problem and its context and reinterpret or redefine the problem to reach a particular framing of the problem that suggests a route to the solution.

Design Thinking Stages



Thesis statement - “How can we effectively reduce the use of plastics that contribute to microplastic pollution, and what solutions can be implemented to mitigate the harmful effects of microplastics on marine life and ecosystems?”

Chapter Two - Empathize

Target Group

A target group is a specific group of people who are the intended audience. The target group is split into ten different categories to make the interaction easier. Splitting the target group into different categories also allows us to ask different questions to different people depending on their role and helps better understand the problem from different perspectives. Ten different categories of the target group were identified for this project which is given below.

1. Environmental Scientists and Researchers: These experts can provide in-depth knowledge about the sources, distribution, and effects of microplastics on ecosystems and human health.

2. Policy Makers and Regulators: They are crucial for creating and implementing policies and regulations that address microplastic pollution. Their involvement ensures that solutions are feasible and align with legal frameworks.

3. Industry Stakeholders: Companies involved in the production, use, and disposal of plastics
(e.g., packaging, textiles, and consumer goods) can contribute to finding innovative ways to reduce microplastic emissions and improve product design.

4. Manufacturers and Designers: These professionals can explore alternatives to conventional materials and develop products that minimize the generation of microplastics.

5. Environmental NGOs and Activists: Organizations and individuals working on environmental conservation can provide grassroots perspectives and mobilize public awareness and action.

6. Consumers: Individuals who use products that may contribute to microplastic pollution can offer insights into behavior change and the effectiveness of educational campaigns.

7. Educators and Academia: Teachers and researchers can help disseminate knowledge about microplastics and develop educational programs to raise awareness and drive behavioural change.

8. Waste Management and Recycling Professionals: These experts can provide insights into current waste management practices and identify opportunities for improving recycling processes to handle microplastics more effectively.

9. Media and Communication Experts: They can help craft messages that raise awareness, influence public opinion, and drive community engagement on the issue of microplastics.

10. Local Communities and Indigenous Groups: Communities directly affected by microplastic pollution can offer valuable perspectives on local impacts and traditional knowledge on environmental stewardship.

Open-ended questions

The open-ended questions will help us better understand the target audience. Three open-ended questions for each of the above-mentioned ten categories of the target group are given below.

Environmental Scientists and Researchers

1. How are microplastics affecting our environment, and how can we get rid of them?
2. What are the effects of plastics on endangered species?
3. What are the ecological impacts of microplastics on society?

Policy Makers and Regulators

1. What challenges do you face when developing and implementing policies to combat microplastic pollution?
2. How do you engage the public to reduce their use of plastic appliances in daily life?
3. What policies have you implemented to reduce the use of microplastics?

Industry Stakeholders

1. What are the primary challenges in assessing the environmental impact of new eco-friendly materials compared to traditional plastics?
2. What methodologies do you follow to ensure the quality of plastic products?
3. What are some other remedies to get rid of plastic?

Manufacturers and designers

1. What are some measures that you take to ensure that your products are eco-friendly?
2. How do you think we can reduce the usage of plastics?
3. What challenges do you face when shifting towards eco-friendly alternatives?

Environmental NGOs and activists

1. Who are the main users of plastics and what causes micro-plastic pollution?
2. What are the negative effects of microplastics on the environment and society?
3. Who is most affected by microplastic pollution?

Consumers

1. What are you planning to do to reduce plastic usage?
2. How do you dispose the plastic waste?
3. How do you think people will react to eco-friendly alternatives instead of plastic?

Educators and Academia

1. How can educational institutions integrate knowledge about microplastics into their curriculums to foster long-term environmental responsibility?
2. In what ways can academic research contribute to innovative solutions for reducing microplastic pollution?
3. How can teachers engage students in hands-on activities or community projects to raise awareness about the impact of microplastics?

Waste Management and Recycling Professionals

1. What challenges do you currently face in improving recycling processes to better handle microplastics?
2. How can existing waste management systems be adapted to reduce the generation of microplastics?
3. In what ways can collaboration between waste management professionals and local governments lead to more effective solutions for microplastic pollution?

Media and Communication Experts

1. How can media campaigns be designed to influence public behavior and encourage reduced plastic usage?
2. What role do social media platforms play in spreading awareness about the environmental and health risks of microplastics?
3. How can storytelling and community engagement strategies be used to amplify the voices of those affected by microplastic pollution?

Local Communities and Indigenous Groups

1. How do microplastics impact the daily lives and traditional practices of local communities and indigenous groups?
2. In what ways can traditional knowledge and environmental stewardship practices contribute to addressing the microplastic issue?
3. How can collaboration with local communities and indigenous groups enhance broader efforts to reduce microplastic pollution?

Close Ended Questions

Close-ended questions help us to validate assumptions, and prioritize features and they can be used when we need quantifiable data to narrow down options. Here are the close-ended questions to get quantifiable insights from the target groups.

Environmental Scientists and Researchers

1. Did you see an increase in the usage of plastics over the decades? (Yes?No)
2. Are there specific endangered species that are more affected by plastic pollution than others? (Yes/No)
3. Do microplastics significantly contribute to soil pollution? (Yes/No)
4. Have you conducted studies on the effectiveness of current methods to remove microplastics from water sources? (Yes/No)
5. Do you believe that current ecological models accurately reflect the impact of microplastics on ecosystems? (Yes/No)

Policy Makers and Regulators

1. Are there laws in your area specifically targeting microplastic pollution? (Yes/No)
2. Have industries opposed your regulations to reduce plastic usage? (Yes/No)
3. Do you think public awareness campaigns about plastic pollution are effective?(Yes/No)

4. Have you started any programs to encourage the use of alternatives to plastics? (Yes/No)
5. Is there a budget for research and development to combat microplastic pollution? (Yes/No)

Industry StakeHolders

1. Is alternative plastic suitable to our ecosystem instead of traditional plastics?
2. *Did you replace any plastic products with eco-friendly alternatives?* (Yes/No)
3. Did you take any steps to recycle plastic? (Yes/No)
4. Are you currently investing in research to develop biodegradable plastics? (Yes/No)
5. Are there specific safety certifications that your plastic products have to meet before being released to the market? (Yes/No)

Manufacturers and Designers

1. Are you currently exploring alternatives to conventional materials that reduce microplastic generation?
2. Do you believe that using sustainable materials will increase consumer demand for your products?
3. Have you implemented any processes to track the environmental impact of your products regarding microplastics?
4. Do you consider the potential release of microplastics when designing new products?

Environmental NGOs and Activists

1. Does your organization run campaigns specifically addressing microplastic pollution?
2. Have you noticed an increase in public awareness about microplastics through your campaigns?
3. Do you believe that government policies related to microplastics are sufficient for environmental protection?
4. Has your organization worked with local communities to address microplastic pollution in their areas?
5. Have you seen measurable changes in microplastic pollution reduction as a result of your activism?

Consumers

1. Do you consciously avoid products that you believe contribute to microplastic pollution?

2. Have you changed your purchasing habits due to learning about microplastics?
3. Do you believe that educational campaigns about microplastic pollution have influenced your behavior?
4. Are you aware of any recycling initiatives in your area specifically addressing microplastic waste?
5. Do you think it is easy to identify products that may contribute to microplastic pollution?

Educators and Academia

1. Do you offer specific courses or modules that focus on microplastic pollution?
2. Have you conducted research specifically on the environmental impact of microplastics?
3. Do you believe that awareness about microplastics among students has increased in recent years?
4. Are you collaborating with other institutions or organizations to raise awareness about microplastics?
5. Do you think that your educational efforts have led to behavioral changes in students regarding microplastic pollution?

Waste Management and Recycling Professionals

1. Does your facility have specialized processes to manage microplastics in the waste stream?
2. Are you satisfied with current recycling technologies' ability to capture and recycle microplastics?
3. Have you identified gaps in your waste management system that contribute to microplastic pollution?
4. Do you believe that improved sorting technologies could significantly reduce microplastic contamination?
5. Have you received training or guidelines specific to handling microplastic waste?

Media and Communication Experts

1. Have you produced content that specifically raises awareness about microplastic pollution?
2. Do you believe that media campaigns on microplastics have successfully changed public perceptions?
3. Are you using social media platforms to drive engagement on the issue of microplastics?

4. Have you partnered with environmental organizations to promote awareness of microplastic pollution?
5. Do you think public engagement on the topic of microplastics has increased in recent years due to media efforts?

Local Communities and Indigenous Groups

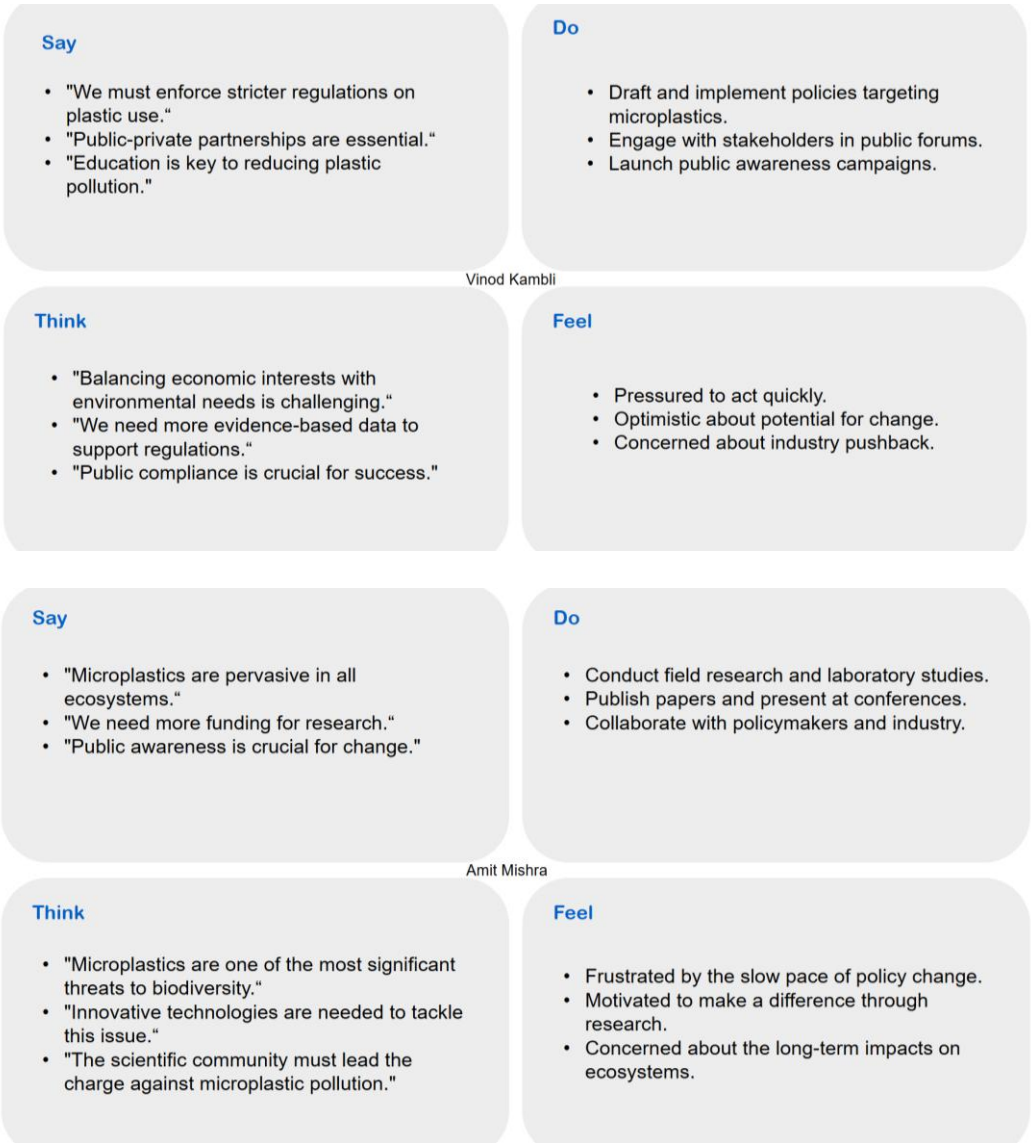
1. Have you observed visible impacts of microplastic pollution in your local environment?
2. Do local practices or traditions address environmental stewardship, including the prevention of microplastic pollution?
3. Do you feel that the local government is taking sufficient action to tackle microplastic pollution?
4. Have you been involved in any initiatives to reduce microplastic pollution in your community?
5. Are there local businesses or industries that you believe contribute significantly to microplastic pollution in your area?

Chapter Three - Define

Insight Capture Grids

Insight capture grids are prepared from the responses received from the target group. Fifty insight capture grids were prepared after interacting with the target group, based on their responses to the above-mentioned open-ended and closed-ended questions. A few insight capture grids are given below and the rest can be viewed using the following link.

Insight capture grids: https://shorturl.at/AS2eJ



Personas

Based on the above insight capture grids, we have created five personas to better understand the needs of our stakeholders. The personas are given below.

Arjun

Attribute	Details
Name	Dr. Arjun
Age	35
Occupation	Marine Biologist
Location	Chennai
Family	Married, 1 child
Interests	Ocean conservation, scuba diving
Key Values	Preserving marine life for future generations
Technology Attitude	Embraces new research tools, prefers fieldwork
Happy Moments	Discovering new marine species
Pain Points	Lack of funding for research
Opportunities	Lead a global initiative to reduce ocean plastics pollution

Priya

Attribute	Details
Name	Priya
Age	28
Occupation	Environmental Policy Analyst
Location	Trichy
Family	Single

Interests	Politics, public policy debates
Key Values	Advocates for stricter plastics regulation
Technology Attitude	Tech-savvy, uses data analytics
Happy Moments	Policy recommendations adopted by the government
Pain Points	Corporate pushback against environmental regulation
Opportunities	Collaborate internationally on sustainability policies

Alia Ahmed

Attribute	Details
Name	Alia Ahmed
Age	32
Occupation	Sustainability Influencer
Location	Chennai
Family	Single
Interests	Fashion, eco-friendly lifestyle
Key Values	Consumer power drives environmental change
Technology Attitude	Social media savvy
Pain Points	Difficulty convincing people to prioritize sustainability
Opportunities	Launch her own eco-friendly fashion line

Neha

Attribute	Details
Name	Neha
Age	45

Occupation	Recycling facility manager
Location	Chennai
Family	Married, 3 children
Interests	Waste management, community work
Key Values	Improving recycling infrastructure
Technology Attitude	Open to tech, but faces resource constraints
Happy Moments	Implementing new waste sorting technology
Pain Points	Public misconceptions about recycling
Opportunities	Educate communities on proper recycling practice

Sanjay

Attribute	Details
Name	Sanjay
Age	33
Occupation	Entrepreneur, Fashion Brand
Location	Villupuram
Family	Single
Interests	Fashion,Sustainability
Key Values	Sustainability can redefine fashion
Technology Attitude	Uses social media for promotion
Happy Moments	Launching his first sustainable fashion collection
Pain Points	Balancing sustainable practices with cost-effective production
Opportunities	Expand brand to international markets

POV Statements

Based on the above personas, the following Point Of View (POV) statements are written. The POV statements give a better understanding of the needs of the stakeholders.

Dr. Arjun (Marine Biologist)

1. As a marine biologist dedicated to ocean conservation, Dr. Arjun needs increased funding for research to continue preserving marine life for future generations.
2. As someone passionate about fieldwork and discovering new marine species, Dr. Arjun seeks advanced research tools to enhance his studies and support his hands-on approach.
3. As a committed advocate for ocean conservation, Dr. Arjun sees an opportunity to lead global efforts in reducing ocean plastic pollution to protect marine ecosystems.

Priya (Environmental Policy Analyst)

1. Passionate about advocating for stricter plastic regulations, yet I face constant pushback from corporate interests that hinder meaningful progress.
2. Seeing my policy recommendations adopted by the government is incredibly fulfilling, but collaboration on international sustainability policies presents both opportunities and challenges.
3. With my tech-savvy background, I use data analytics to drive impactful policy changes, but the journey toward achieving widespread environmental reform is often slow.

Sanjay (Entrepreneur, Fashion Brand)

1. Sustainability is not just a responsibility but a business advantage, and launching eco-friendly products is a source of pride, despite the high R&D costs.

2. Eager to adopt new production technologies that reduce environmental impact, though expanding into sustainable markets requires significant investment.
3. Balancing profitability with environmental stewardship is essential to my business, as I seek to lead the industry in sustainable packaging solutions.

Alia Ahmed (Sustainability Influencer)

1. Believes that consumer power can drive environmental change, but convincing people to prioritize sustainability over convenience is a persistent struggle.
2. Partnering with eco-conscious brands for sustainable campaigns brings me joy, and I'm excited by the opportunity to launch my own eco-friendly fashion line.
3. As a social media influencer, I understand the power of visibility, but transforming online engagement into real-world environmental impact is challenging.

Neha (Recycling Facility Manager)

1. Improving recycling infrastructure is a priority for me, yet public misconceptions about recycling create barriers to progress.
2. Implementing new waste sorting technology at our facility is a significant achievement, but ongoing resource constraints limit further innovation.
3. Sees an opportunity to educate communities about proper recycling practices, though shifting attitudes toward waste management requires consistent effort.

Chapter Four - Ideate

How might we questions

From the point of view statements, the following ‘how might we’ questions were framed to think from different perspectives and give a better solution for the problem.

Dr. Arjun (Marine Biologist)

- How might we secure sustainable funding sources for Dr. Arjun's long-term research projects?
- How might we showcase the critical importance of Dr. Arjun's work to attract more financial support from donors and governments?
- How might we build partnerships with corporations and non-profits to fund marine life preservation efforts?
- How might we use storytelling to make Dr. Arjun's research more compelling to potential funders?
- How might we create a platform that connects ocean conservation researchers with global investors and sponsors?
- How might we provide Dr. Arjun with cutting-edge research tools to improve marine species discovery?
- How might we design affordable and accessible technology that enables better fieldwork in marine environments?
- How might we integrate AI and data analytics into Dr. Arjun’s fieldwork to help identify new species more efficiently?
- How might we create a global network where marine biologists can share resources and tools for better field research?
- How might we develop mobile or lightweight research devices that can support Dr. Arjun's hands-on approach in remote ocean locations?
- How might we inspire global communities to reduce plastic usage and protect ocean ecosystems?
- How might we leverage Dr. Arjun’s expertise to create innovative solutions for reducing ocean plastic pollution?

- How might we foster collaborations between governments, NGOs, and corporations to tackle ocean plastic pollution together?
- How might we encourage consumer behavior changes to reduce plastic waste and support ocean conservation?

Priya (Environmental Policy Analyst)

- How might we build stronger alliances with corporate leaders to support stricter plastic regulations?
- How might we demonstrate the long-term financial and environmental benefits of stricter plastic regulations to gain corporate buy-in?
- How might we create a transparent platform that tracks corporate plastic use and encourages accountability?
- How might we leverage public pressure to counteract corporate pushback and build momentum for stricter regulations?
- How might we use negotiation strategies to align corporate interests with environmental goals?
- How might we foster more efficient international collaboration to create cohesive sustainability policies?
- How might we streamline communication between governments to ensure faster adoption of environmental policies?
- How might we navigate the political and cultural differences that challenge international environmental policy collaboration?
- How might we create a global platform where policy analysts like Priya can share insights and best practices for sustainability policy development?
- How might we highlight the success of national policies to influence global sustainability initiatives?
- How might we use data analytics to accelerate the impact of environmental policy reforms?
- How might we improve the accessibility and transparency of environmental data to drive faster policy adoption?
- How might we engage policymakers with real-time data visualizations that show the immediate effects of environmental policies?

- How might we create predictive models using data analytics to inform more proactive environmental policies?
- How might we make environmental data analytics more collaborative, involving multiple stakeholders to speed up reform?

Rakesh Sharma (CEO, Eco-pack Industries)

- How might we reduce the R&D costs of launching eco-friendly products without compromising innovation?
- How might we leverage eco-friendly product launches to differentiate Eco-pack Industries in the competitive market?
- How might we create partnerships to share R&D costs and accelerate the development of sustainable packaging solutions?
- How might we highlight the long-term profitability of eco-friendly products to justify high initial R&D investments?
- How might we create a brand narrative that resonates with customers, turning eco-friendly product launches into a competitive edge?
- How might we identify cost-effective production technologies that reduce environmental impact and support sustainable growth?
- How might we attract investors who are committed to sustainability and willing to support Eco-pack Industries' market expansion?
- How might we streamline the adoption of new technologies to minimize the initial investment required for sustainable production?
- How might we position Eco-pack Industries as a leader in sustainable packaging to secure funding for expansion into new markets?
- How might we leverage government incentives and grants to offset the costs of adopting eco-friendly production technologies?
- How might we create a sustainable business model that ensures profitability while prioritizing environmental stewardship?
- How might we communicate the long-term financial benefits of sustainability to stakeholders to maintain a balance between profit and impact?
- How might we optimize production processes to reduce costs while maintaining a commitment to sustainability?

- How might we lead industry-wide collaborations to set new standards for profitability in sustainable packaging solutions?
- How might we innovate packaging designs that are both cost-efficient and environmentally friendly, improving profitability?

Alia Ahmed (Sustainability Influencer)

- How might we make sustainable choices more convenient and accessible to consumers?
- How might we use relatable stories to show the tangible benefits of prioritizing sustainability over convenience?
- How might we create challenges or incentives that encourage consumers to adopt sustainable habits more easily?
- How might we highlight the hidden costs of convenience-based choices to shift consumer behavior toward sustainability?
- How might we leverage social proof or community action to encourage people to prioritize sustainability?
- How might we create a fashion line that is both sustainable and attractive to eco-conscious and mainstream consumers?
- How might we use collaborations with other influencers and eco-conscious brands to amplify the reach of Alia’s fashion line?
- How might we leverage Alia’s influence to showcase the value of eco-friendly fashion to a broader audience?
- How might we design a marketing campaign that makes sustainable fashion feel accessible and trendy?
- How might we integrate sustainable materials and ethical production practices into the fashion line while keeping costs reasonable?
- How might we create interactive experiences or events that turn Alia's online influence into offline environmental action?
- How might we encourage followers to commit to small, achievable sustainability goals that lead to real-world impact?
- How might we use data to track and share the real-world environmental impact of Alia’s online campaigns?

- How might we build a platform or community where followers can share their sustainability journeys and inspire others?
- How might we use social media campaigns to encourage followers to take part in local environmental initiatives?

Neha (Recycling Facility Manager)

- How might we dispel common misconceptions about recycling to encourage better public participation?
- How might we create easy-to-understand resources that educate the public on what can and cannot be recycled?
- How might we leverage social media or community programs to address recycling myths and promote accurate practices?
- How might we collaborate with local governments and schools to provide education on the importance of proper recycling?
- How might we engage influencers or community leaders to spread awareness and correct misinformation about recycling?
- How might we secure funding or partnerships to support continued innovation in recycling technologies?
- How might we optimize existing resources to extend the impact of current recycling technologies without overextending costs?
- How might we collaborate with other recycling facilities or organizations to share resources and drive collective innovation?
- How might we demonstrate the value of advanced waste sorting technologies to attract investment for further upgrades?
- How might we develop community-led programs to promote proper recycling and waste management practices?
- How might we create engaging campaigns that make recycling education fun and accessible for people of all ages?
- How might we use local events or initiatives to foster a culture of recycling and responsible waste management?
- How might we build partnerships with local businesses and organizations to champion recycling education within the community?
- How might we create incentives or rewards for communities that actively improve their recycling habits over time?

Ideas

The above mentioned ‘how might we’ questions were answered and the ideas are listed below.

Dr. Arjun (Marine Biologist)

- Build partnerships with environmental NGOs, governments, and use crowdfunding platforms like Kickstarter.
- Create data-driven reports and impactful storytelling through documentaries highlighting his research's significance.
- Collaborate with eco-conscious companies to meet their CSR goals through joint conservation initiatives.
- Develop engaging narratives that illustrate the real-world impact of his research on marine ecosystems.
- Establish an online network that showcases research projects and matches them with interested investors.

Priya (Environmental Policy Analyst)

- Host roundtable discussions highlighting the business benefits of sustainable practices to engage corporate leaders.
- Present case studies showing the cost savings and positive environmental impacts from companies that adopt sustainable practices.
- Develop an online dashboard for companies to report and monitor their plastic usage publicly.
- Launch public awareness campaigns that highlight the negative effects of plastic pollution on communities.
- Employ win-win negotiation tactics that link sustainability initiatives to financial incentives for corporations.

Rakesh Sharma (CEO, Eco-pack Industries)

- Collaborate with universities and research institutions to share R&D resources and expertise.
- Market eco-friendly products as premium offerings that appeal to environmentally conscious consumers.
- Form alliances with other companies and research entities focused on sustainable materials and technologies.
- Use market research to illustrate growing consumer demand for sustainable products and their profit potential.
- Craft compelling marketing stories that connect consumers emotionally to the sustainability mission of the brand.

Alia Ahmed (Sustainability Influencer)

- Partner with brands to offer bundled eco-friendly products that simplify shopping for consumers.
- Share personal experiences and success stories of individuals who have adopted sustainable practices.
- Launch social media challenges that reward participants for making sustainable choices.
- Create infographics that clearly outline the long-term environmental and financial impacts of convenience items.
- Showcase testimonials and collective actions of community members committed to sustainable living.

Pradeep (Recycling Facility Manager)

- Launch educational campaigns that clearly explain what can and cannot be recycled.
- Develop concise pamphlets and online resources with visual guides for recycling best practices.
- Use engaging social media content and local workshops to correct misinformation about recycling.
- Initiate partnerships with schools to integrate recycling education into their curriculum.
- Enlist local influencers to advocate for proper recycling practices through their platforms.

Shortlisted Ideas

From the above answers, the best ideas were shortlisted based on feasibility and the goal of this project and a prototype was built, which includes the shortlisted ideas. Create a software application that offers the following features:

- Shows data-driven reports and impactful storytelling through documentaries highlighting his research's significance.
- Establish an online network that showcases research projects and matches them with interested investors.
- An online dashboard for companies to report and monitor their plastic usage publicly.
- Shows infographics that clearly outline the long-term environmental and financial impacts of convenience items.

Chapter Five - Prototype

Application Feature Overview

Our solution to the problem is an app which has the following features:

Data-Driven Reports and Storytelling:

- Integrate documentary-style storytelling that uses data visualizations to highlight the significance of scientific research.
- Provide engaging multimedia content (videos, infographics, charts) that connects users to real-world environmental issues.
- Show how research outcomes contribute to global sustainability, specifically focusing on environmental and plastic-related concerns.

Research-Project Network:

- Create a platform that allows researchers to upload and showcase their sustainability-related projects.
- Investors, NGOs, and businesses can browse these projects and find ones that align with their sustainability or investment goals.
- Provide tools for communication and engagement between researchers and investors.

Plastic Usage Dashboard for Companies:

- Companies can register and track their plastic usage publicly via a customizable dashboard.
- Public access allows users to monitor which companies are committed to reducing their plastic waste.
- Data visualization tools will show plastic reduction trends, sustainability goals, and the company's achievements.

Infographics on Convenience Items:

- Visual representation of the long-term environmental and financial impact of plastic and other convenience items.
- Interactive infographics, allowing users to click and explore data on specific items like plastic bottles, straws, and single-use bags.
- Allow users to compare different convenience items and view more sustainable alternatives.

Prototype

Our Android and iOS app prototype is detailed below, along with designs that were shared with key stakeholders for testing. Their feedback is included in the document after the screenshots.

The app's user interface is designed to help users combat plastic pollution through collaboration, education, and actionable steps. Researchers can connect with potential investors on a dedicated page, while companies benefit from a dashboard that tracks plastic usage, sets reduction goals, and provides resources for sustainable practices.

An interactive education hub engages users with stories, visuals, and quizzes about the impact of plastic waste, fostering awareness and understanding. Personalized action plans offer practical steps for making sustainable choices in daily life, encouraging users to take meaningful actions.

The community page allows users to connect, share ideas, and discover local events, creating a sense of belonging and collective purpose. Finally, real-time feedback options and updates on relevant news keep users informed, empowering them to make impactful decisions in reducing plastic waste. Overall, the app aims to create a supportive environment for users committed to tackling this critical issue.

Welcome Back!

Today is a new day. Let us join together to save earth from micro-plastics.

Email

example@email.com

Password

At least 8 characters

Forgot Password?

Sign in

Or sign in with

Google

Microsoft

Don't you have an account? Sign up

Top Projects

Infographics

Research Network

Plastic Dashboard

Explore

Saved

Updates

Research Network

Search for research articles

A

Circular Eco for Plastic Waste

$600,000

Circular Economy | Urban Waste Management

Partnering with local businesses for pilot testing.

Recycling 50% of plastic waste in participating cities

Read more

Submit Draft

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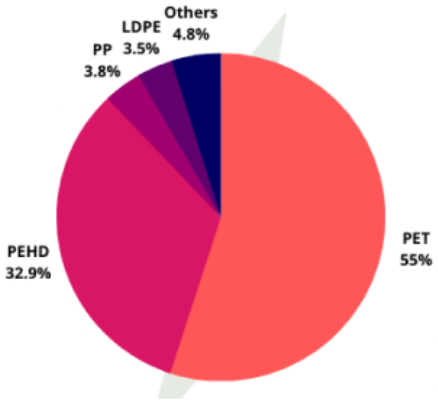
Waste-to-Energy

$700,000

Plastic Dashboard



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Plastic usage

Plastic reduction achieved

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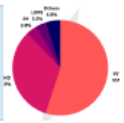
Usage trends

Quaterly plastic wastage



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Environmental impact

Impact on ocean life

A

Sustainability goals

Plastic reduction target

A

Public engagement

Share the progress

Feedback

1. UX Designer Feedback:

"The layout is nice and clean, but the headings on the cards could be made bigger or bolder so they stand out more. Also, the icons could be more related to the topic, like a recycling icon for ‘Plastic Usage.’ The pie chart is good, but the labels could be a bit larger and clearer to read."

2. Visual Designer Feedback:

"The design is good, but it could use a more consistent color scheme. Try using the same color for buttons and headings so everything feels connected. Also, on the login page, add a light shadow or border around the input boxes and buttons so they stand out better. The Google and Microsoft login buttons are fine, but a line between them and the email/password section would help make things more organized."

Refined Prototype

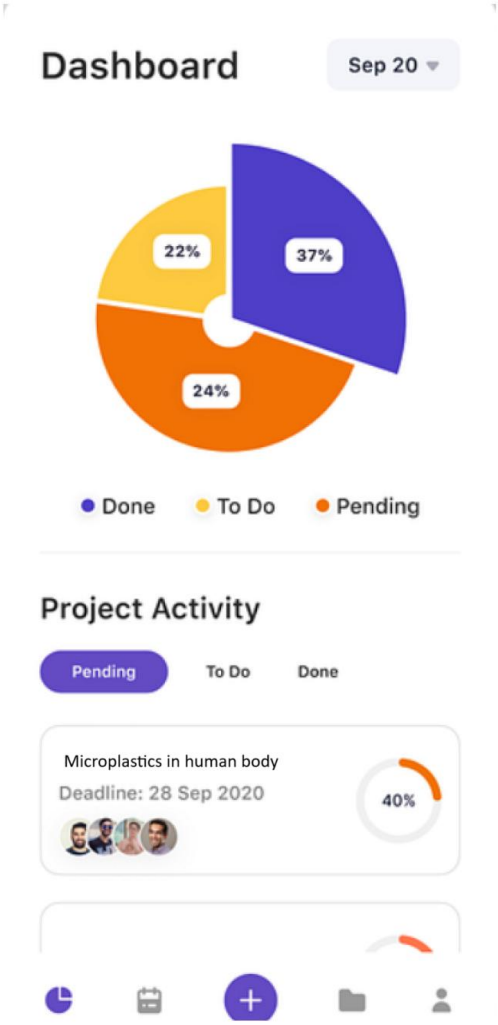
The prototype was improved based on feedback from the UX designer and visual designer, focusing mainly on the homepage.

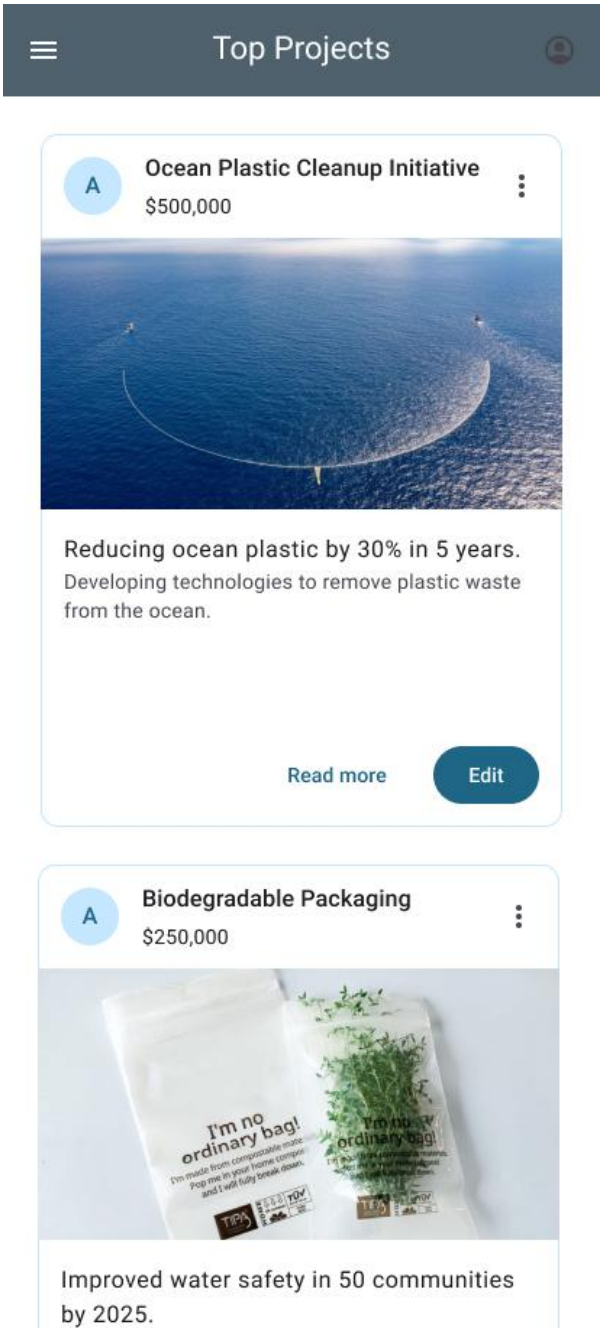
One key update is the addition of a new page that shows the top projects in the research area. This page will display important information about each project, including the amount of funding received, which will be shown on the card next to the project title.

The dashboard has also been updated to make it more accessible for all users. This means it’s easier for everyone to navigate and use, with better color contrast, keyboard navigation, and support for screen readers.

Additionally, we’ve added a progress bar to all projects. This feature helps users keep track of how much progress each project has made, making it easier for them to manage their work and improve efficiency.

Overall, these changes enhance the user experience and make the platform more engaging and effective for research.


Dashboard
Sep 20
22%
37%
24%
Done
To Do
Pending
Project Activity
Pending
To Do
Done
Microplastics in human body
Deadline: 28 Sep 2020
40%


Top Projects
A
Ocean Plastic Cleanup Initiative
$500,000
Reducing ocean plastic by 30% in 5 years.
Developing technologies to remove plastic waste from the ocean.
Read more
Edit
A
Biodegradable Packaging
$250,000
I'm no ordinary bag!
Improved water safety in 50 communities by 2025.

Chapter Six - Testing

The feedback was collected from the user and some of them are given below. The feedback will be considered and the prototype will be refined further in the future. The refinements will be done and the application will be launched for production use on a large scale.

1. Manager at an NGO:

"The features seem to work well, especially the dashboard showing important information at a glance. However, in the project cards, it would be nice to show a funding progress bar so users can quickly see how close the project is to its goal. The 'Submit Draft' button is good but could be more eye-catching with a brighter color or by giving it more space."

2. From the accessibility perspective:

"The design is mostly easy to use, but some areas might be hard for people with vision issues. The 'Sign in' button on the login page could be made darker for better readability. Also, the pie chart on the dashboard needs clearer colors and bigger labels for people with colorblindness. Make sure the icons have text labels so screen readers can describe them."

3. Investor/User Perspective Feedback:

"The design is simple and easy to understand. As someone who might invest in these projects, I'd like to see more information right away. A progress bar showing how much funding each project has raised would be helpful. Also, the search bar on the research page could stand out more—maybe add a border or shadow to make it easier to spot."

4. Researcher/User Feedback:

"The layout is intuitive and user-friendly, which is great for navigating through projects. However, I'd appreciate a filter option on the project page that allows users to sort projects by funding amount, progress, or research area. This would make it easier to find relevant projects quickly. Additionally, providing a brief summary of each project's objectives directly on the project card would help users get a better understanding without having to click through each one."

Conclusion

The microplastics project aimed to tackle the issue of plastic pollution through a practical and people-centered approach, recognizing the critical need for collective action to address this global crisis. By collaborating with scientists, policymakers, industry leaders, and other stakeholders, we developed a user-friendly mobile app designed to raise awareness and encourage meaningful action on plastic pollution. The app serves as a versatile platform that not only educates users through interactive stories and visually engaging content about the harmful impact of plastic waste but also empowers them to participate in reducing it.

One of the app's key features is its ability to connect researchers with investors, providing a crucial link for funding innovative solutions and driving scientific progress. Additionally, it includes tools for companies to monitor and reduce their plastic usage, supporting them in achieving sustainability goals and maintaining transparency with their consumers. Feedback from early testing informed the design, helping us refine the interface to enhance usability and accessibility, ensuring the app caters to a diverse audience.

Looking forward, our goal is to expand the platform’s reach and impact by building partnerships with environmental organizations, governmental bodies, and businesses worldwide. These collaborations will enable us to share resources, amplify advocacy, and develop industry-specific tools to support larger-scale reduction initiatives. Our vision is to foster a global community committed to reducing plastic waste, supporting vital research, and promoting environmental education. Ultimately, we hope this project will contribute to protecting our oceans, preserving ecosystems, and securing a healthier, more sustainable planet for future generations.

References

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