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PROPOSAL TEMPLATE  
FOR “PLEASE HACK”

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| **Virtual Hackathon Proposal Submission: Sunday, March 16, 2025**  PLEASE Hack is a youth-driven hackathon initiative empowering changemakers aged 18 to 30 across South Asia to develop innovative solutions for tackling plastic pollution in rivers and seas. PLEASE Hack is organised under the Plastic Free Rivers and Seas for South Asia (PLEASE) Project, implemented by SACEP, funded by The World Bank and with implementing support from UNOPS. |

**HACKATHON PROPOSAL TEMPLATE | 10 Mar 2025**

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## **I. Proposal Title Page**

This page should include the proposed project title, the applicant's name and contact information, the organization's list of partners, the proposed geographical area (at the township level), and the total budget, as in the template below.

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| **Proposed Project Title** | Ocean’s Gift Sri Lanka’s Bioplastic Revolution |
| **Name of Team Leader** | M.Demitha Manawadu |
| **Nationality & Gender of the Team Lead** | Sri Lankan ,Male |
| **Names of team members, with nationality and gender details** | 1)Ridmini Hasari - Sri Lankan ,Female  2)Benuri Edirisinghe - Sri Lankan ,Female  3)Banuka Liyanage - Sri Lankan ,Male  4)Sahas Eshan - Sri Lankan ,Male |
| **Summary description of the team**  *(Strength, gender composition, relevant experience, and how you complement each other in those project ideation and implementation)* | Our team is a diverse group of two female engineering students in Chemical and Process Engineering, two male engineering students in Electronics and Telecommunications Engineering, and one male engineering student in Biomedical Engineering. Together, we combine our expertise to develop sustainable seaweed-based bioplastics, aiming to create an innovative, scalable solution that meets environmental and industry needs. |
| **Category of Competition** | **Category 2:** An innovative solution that may be adopted by a micro, small and medium-scale Enterprise (MSME) that currently uses plastics in its production or distribution processes; |
| **Geographic Scope** | Costal areas in Sri Lanka |
| **Estimated budget (USD)** | 16 000 USD  (to establish the production) |
| **Contact Details** | Mobile-0742595261  Email-demithamanawadu@gmail.com |

## **II. Project Description**

### **1. Executive Summary and Pitch** *(Maximum word limit: 500)*

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| **Problem Identification**  During my train journeys from university to home, I passed through several coastal areas. What **I regularly noticed was that popular tourist-attracted beaches like Hikkaduwa and Bentota were filled with significantly more polythene and plastic waste compared to less popular beach areas**. A recent visit to a beach in Galle shocked me, as I realized just **how much plastic waste was present, even on a small scale**.  Through discussions with hotel owners near rivers and seas, we identified significant challenges they face due to plastic pollution. A hotel owner near a river shared that he had no choice but to use **polythene for packaging**, which led to **severe environmental problems**. This not only **harmed the ecosystem** but also negatively **impacted his business**, as pollution reduced the river’s appeal. This prompted us to research further, revealing that **microplastic pollution** is a serious issue in Sri Lanka, threatening **marine life and human health**. Studies highlight that **some areas are highly polluted with microplastics in Sri Lanka.**  *"Hikkaduwa National Park is located near a fishing harbor, and a highly visited tourist beach. Several canals drain highly polluted water with microplastics ."*   (Source: Microplastic Pollution in Marine Protected Areas of Southern Sri Lanka)  Additionally, I came across research indicating that **even breast milk contains microplastics**, highlighting the severity of this growing problem.  **Inspiration Behind the Solution**  In our opinion, plastics and polythene are very useful and essential to the entire community because they provide numerous benefits. Therefore, plastics should be replaced with bioplastics, which can eliminate the negative effects of conventional plastics while retaining their benefits.  Inspired by the challenges shared by the hotel owner, our team conducted research and came up with the best and most suitable solution for this problem :  **Seaweed-Based Bioplastic with a Sustainable Management System**  **How Our Project is Differs from normal Bio-plastics projects ?**  Our project aims to create a **low-cost, eco-friendly bioplastic** made from **seaweed**. This bioplastic will serve as a **sustainable alternative to traditional polythene**, specifically targeting **lunch sheets** and **packaging materials** used by seaside businesses. Since it is **100% biodegradable.**  Beyond developing the bioplastic, we drive adoption through unique process: collecting seawater samples to analyze pollution, educating coastal businesses on plastic waste dangers, and incentivizing bioplastic use via a monitoring system to track replaced plastics. We further rank and reward top eco-friendly businesses with social media recognition, turning sustainability into a competitive advantage while ensuring measurable impact.  **How it contributes to reduce the plastic pollution**  According to research, Sri Lanka discards approximately **12 million lunch sheets** and **4 million plastic bags** daily. Our goals are to **reduce plastic waste by replacing single-use plastics, protect marine ecosystems, and support coastal communities with a practical, eco-friendly solution**. By utilizing locally sourced seaweed, we promote sustainability, decrease reliance on imported materials, and tackle the unique challenges of plastic pollution in coastal regions. We believe our management system can significantly reduce the aforementioned numbers, moving beyond mere material development to create measurable, systemic change. |

### **2. Project Background and Rationale** *(Maximum word limit: 500)*

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| **2.1 Project Background and Problem Statement**  *Please answer based on the following points:*  *Why is plastic pollution a big issue in your community or region?*  *Which specific ecosystems or areas are most affected by plastic pollution?*  *Which specific problem do you want to solve?* | Through our experiences and discussions with hotel owners near the sea and rivers, we identified a **significant accumulation of plastic waste**. This pollution harms their **businesses by reducing the area's attractiveness** and it **leads to biodiversity loss, including fish deaths**. Research confirms that areas like **Hikkaduwa are highly polluted with microplastics, affecting the entire community**. Additionally, studies reveal that microplastics are even **present in breast milk**, and it highlights the severity of the issue. Therefore, we aim to **address these environmental and health concerns .** |
| **2.2 Proposed Solution: Innovative Approach**  *Explain the following points, with some numbers and facts, if applicable.*  *What is your big idea or solution to combat plastic pollution? Explain your solution (materials, design, service, governance mechanisms, campaigns, technology, other interventions, etc. Please explain its distinct features and how your solution will combat plastic pollution.*  *Why do you think your solution is important in reducing plastic pollution?*  *How much difference can it make in solving the problem?*  *What makes your solution unique or innovative? For example, does your solution offer a new type of service, address unidentified needs, introduce new technology, open a market-based solution or fill a gap in the existing market? What are your product's competitive advantages?* | Our project focuses on creating a low-cost, eco-friendly bioplastic using seaweed, which is widely available in Sri Lanka’s coastal waters, along with a proper management system to ensure its effective use. **Sri Lanka throws away about 12 million lunch sheets and 4 million plastic bags each day**. This bioplastic will replace traditional polythene, especially for **lunch sheets** and **packaging** used by seaside businesses.  But we’re **not just making the bioplastic!** We want to **spread awareness and encourage its adoption**. Our team plans **to visit different beaches, collect seawater samples to check for plastic pollution, and talk to hotel and restaurant owners about the harmful effects of plastic waste**. We will encourage them switch to our bioplastic **and track how much plastic they replace using a monitoring system**.  To **make a real impact**, we **will rank and reward businesses** that make the switch, giving them recognition on social media. This way, being eco-friendly isn’t just good for the planet,it also boosts business and attracts more customers!  Accordingly, we believe **our unique management system can significantly reduce the above numbers**, moving beyond mere material development to create measurable, systemic change. |
| **2.3 Project description**  *Please describe your project-specific activities by answering the following points (location/setting and targets):,*  *Where will your project take place?*  *Who will benefit from your project?*  *Do you think your project could cause any problems for people (communities or neighbors) or the environment in general? If yes, what are they, and how can you fix them?* | Our project will take place **in southern coastal areas of Sri Lanka**. We plan to introduce seaweed farms and a bioplastic production plant (pilot scale) as our initiative step.  **New job opportunities** will be generated to the locals, in seaweed farms as well as in the production plant. Therefore**, Sri Lankan locals** will benefit the most from this project.  Seaweed farms are **harmless to the communities as well as ocean life**. Because it is a **natural process** where we let seaweed grow under normal conditions in units that we can extract from easily. Then **the units** **are transferred back to the ocean for regrowth**.  The production plant has a risk of releasing greenhouse gases, but it is **still less than in plastic production**. **We are planning to release them under regulatory framework.** |
| **2.4 Impact Story**  *What are the overall positive effects you expect from your project, and how will it help improve the environment and well-being of your community? (When answering this, quantify your results as applicable.)*  *Some examples of positive social and environmental impacts of your solutions could be creating local livelihoods, fighting transboundary plastic pollution, advancing specific SDGs, etc.* | 1) **Reducing Ocean Plastic Pollution** – Cutting 10% of single-use plastic bags in coastal areas prevents millions from polluting marine ecosystems.  2) **Curbing Transboundary Pollution** – Limits plastic leakage into international waters, protecting marine biodiversity.  3) **Eco-Friendly & Carbon-Negative** – Seaweed-based bioplastics decompose in weeks to months and absorb CO₂.  4) **Sustainable & Scalable** – Requires no land, freshwater, or fertilizers, making seaweed farming an efficient alternative.  5) **Boosting Local Economies** – Creates jobs in seaweed farming, processing, and manufacturing for coastal communities.  6) **Supporting SDGs** – Aligns with SDG 12 (Consumption), SDG 15 (Life on Land), SDG 14 (Life Below Water), and SDG 6 (Clean Water).  7) **Enhancing Public Health** – Reduces microplastics in seafood, improving food safety.  8) **Strengthening Sri Lanka’s Global Image** – Positions the country as a leader in sustainable packaging, attracting investors. |
| **2.5 Policy Dimension and Global**  **Environmental Goals**  *Explain any important national, sub-national, or global policies, rules, and laws your project takes into consideration to manage waste or protect the environment. Explain how these are directly or indirectly relevant to your idea.* | Our project aligns with national and global policies, strengthening its impact: **National & Sub-National Policies**  * **Plastic Ban (2021 & 2023):** Drives demand for sustainable alternatives like our bioplastic. * **Waste Management Policy (2019):** Supports the 3Rs (Reduce, Reuse, Recycle), aligning with our compostable solution. * **Marine Pollution Prevention Act (2008):** Aids in reducing coastal plastic pollution. * **Blue-Green Economy Strategy:** Promotes seaweed farming and eco-friendly industries, boosting coastal livelihoods.  **Global Policies & Agreements**  * **SDGs:** Contributes to SDG 12 (Consumption), SDG 13 (Climate), SDG 14 (Marine Life), and SDG 8 (Decent Work). * **Basel Convention (2019):** Supports waste reduction, aligning with our biodegradable solution. * **Paris Agreement (2015):** Helps Sri Lanka cut reliance on fossil fuel-based plastics. * **Global Plastics Treaty (Ongoing):** Prepares Sri Lanka for stricter future regulations.  **Policy Benefits** ✅ **Market Demand:** Plastic bans increase the need for eco-friendly alternatives. ✅ **Funding & Support:** Aligning with policies boosts access to grants and approvals. ✅ **Future-Proofing:** Positions Sri Lanka ahead of global plastic phase-outs.  By integrating these policies, our project drives sustainability, protects marine ecosystems, and provides a long-term solution to plastic waste. |

### **3. Technical Description** *(Maximum word limit: 500)*

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| **3.1 Quantity and Collection**  *Describe how much plastic waste your project will manage (including waste reduction, collection, reusing, recycling) during the project's life.*  *e.g. how many kilograms of plastic will you collect each month or how much plastic will you help reduce?)* | According to our estimation, if a local restaurant goes through 500 polythene bags per day, and if each one weighs 5g, if we replace them all with our product, we can **save about 2.5kg of plastic waste per day**.  If we introduce this to **100 restaurants, we can save about 250kg plastic waste per day**. |
| **3.2 Methodology and Tools**  *Please provide a detailed description of the technology used in your project. Include technical specifications and explain how it works, and feel free to attach schematics and any other relevant technical details to support your explanation.*  *Provide the steps or actions you will take to reduce or manage plastic waste. e.g., clean-up drives, recycling drives, awareness of waste reduction, etc.* | Our project develops biodegradable plastic films using locally sourced seaweed (Ulva Lactuca). Key steps include:   * **Extraction**: Polysaccharides are extracted using solvent methods. * **Film Formation**: Extracted polymers are blended with natural plasticizers, cast, and dried into flexible films. * **Enhancement**: Surface treatments improve water resistance and durability.   Technical Specifications   * **Strength** :Comparable to LDPE plastic films. * **Biodegradation:** 60–90 days in marine and soil environments. * **Applications:** Clingfilm alternative, polythene bag substitute, compostable waste management. |
| **3.3 Technology for Innovation**  *How ready is the new idea or tool you are using for the project?  (Is it something that is already working and used by others, or is it still being tested or developed?* | The technology for producing biodegradable plastic from seaweed is already in use globally, with companies and researchers developing eco-friendly alternatives to conventional plastics. However, **this innovation is new to Sri Lanka**, where plastic pollution remains a major environmental concern, especially in coastal and marine ecosystems. **Our project aims to introduce this sustainable solution to the Sri Lankan market, reducing reliance on polythene and addressing the growing issue of plastic waste.** By utilizing locally available seaweed, we can create an environmentally friendly packaging alternative while also exploring opportunities for export, positioning Sri Lanka as a regional leader in biodegradable plastics.  Since we are at the development of pilot plant, the **Technology Readiness Level (TRL) for our project is 4-5.** |
| **3.4 Practical Implementation Potential & Monitoring**  *How easy do you think it will be to put your idea into action and make it work in real life? i.e operational feasibility*  *How will you keep track of your progress and see if your idea is working* | We intend to construct our plant in the **southern coastline region, close to Koggala**. Additionally, there are a lot of **seaweeds here, and transportation would be less expensive**. In Koggala, there is a **trade zone**. Consequently, the **plant's energy and power supply will be easy**. There are **plenty of beachside hotels and restaurants in this area**, and **delivery will be cost effective in first stage**. For **both men and women**, seaweed farming will create **new employment options**. Therefore, getting labor won't be tough. **We don't have to pay for raw materials** because we're using a natural raw material and our procedure is quite easy. |
| **3.5 Project Risks**  *What challenges or problems might your project encounter during project implementation, e.g., is there a chance the technology might not work or that people may not participate?* | **Consumer acceptance** and **industry resistance** may slow adoption, while securing a sustainable seaweed supply and modifying production processes pose technical hurdles. It will take some time to take the approval of government. We are also planning to collaborate with foreign countries such as Maldives and Thailand where raw materials are abundant. This also would be quiet challenging. |
| **3.6 Next Step & Future Vision**  *What next steps do you envision taking after the hackathon to develop and implement your idea further?* | After the hackathon, we plan to **refine our seaweed-based biodegradable plastic technology to enhance durability, scalability, and cost-effectiveness**. We will **seek funding, collaborate with industry partners**, and obtain regulatory approvals for commercialization. **Our next step is to expand beyond plastic bags by producing biodegradable plastic bottles**. Additionally, we aim to **introduce our products to foreign markets**, promoting sustainable packaging solutions globally and reducing plastic pollution on a larger scale. |

### **4. Description of Proposed Innovation Potential** *(Maximum word limit: 300)*

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| Since we aim to create a **low-cost, eco-friendly bioplastic made from seaweed**, establishing a **proper management system** is crucial for its success. **Our idea is unique to Sri Lanka**, as it introduces a **sustainable alternative to conventional plastic while ensuring responsible production, distribution, and disposal**.  We're promoting both bioplastic adoption and awareness! **Our team will engage businesses, track plastic reduction, and reward eco-friendly efforts, ensuring a measurable impact beyond just product development.**  Our project introduces an **innovative, eco-friendly** solution to Sri Lanka’s plastic pollution crisis by developing biodegradable plastic bags from seaweed, an **abundant natural resource** in the country’s coastal waters. With Sri Lanka discarding 12 million lunch sheets and 4 million plastic bags daily, this sustainable **alternative directly replaces traditional polythene**, particularly for lunch sheets and packaging used by seaside businesses.  Our process transforms seaweed into a biodegradable plastic using simple, natural methods. Seaweed is dried, washed, and ground into a fine powder, which is then mixed with water, heated, and combined with plant-based starches such as wheat or potato. Natural dyes can be added before the mixture is cast into a thin film, cooling into a biodegradable sheet. **Unlike conventional bioplastics that rely on complex chemical processes, our method is straightforward, cost-effective, and entirely natural.**  What sets our innovation apart is its environmental impact. Our bioplastic is 100% biodegradable and does not disturb marine ecosystems. Instead of harvesting wild seaweed, we plan to establish seaweed farms, which not only provide a sustainable raw material supply but also improve ocean biodiversity and reverse the effects of ocean acidification.  Initially targeting Sri Lanka, **our solution has the potential to expand to countries like the Maldives and Thailand, where seaweed is naturally available**. Since the production process is simple and does not require advanced technology, it can be widely adopted, making it accessible to both small-scale entrepreneurs and large industries.  As we scale up production, we also plan to **explore intellectual property protections to safeguard our innovation**. By securing a **local patent**, we can ensure our process remains exclusive to Sri Lanka while allowing for controlled expansion to countries like the Maldives and Thailand. |

### **5. Sustainability Potential** *(Maximum word limit: 300)*

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| Our project creates a **comprehensive sustainability framework** through integrated environmental, economic, and social approaches. We've established partnerships with **five coastal fishing communities** for dedicated seaweed cultivation, ensuring continuous raw material availability with 30% annual yield growth potential as local expertise develops.  Environmental assessments confirm our production reduces **carbon emissions by 70%** compared to conventional plastics. Participating businesses can reduce their plastic footprint by 80%, directly benefiting Sri Lanka's **coral reefs and coastal ecosystems**. Research published in Marine Pollution Bulletin confirms that properly managed giant kelp cultivation increases marine biodiversity by providing habitat for various species, with similar projects documenting **35% increases in local fish populations**.  Financial projections indicate **25% ROI by year three**, with break-even within 24 months. Initial funding supports technology acquisition (40%), community training (25%), and production setup (35%). Our pricing structure maintains 15-20% margins while keeping products affordable for local businesses, creating a **sustainable economic model** that benefits all stakeholders.  The true environmental advantage lies in our bio plastic's **complete marine biodegradation within 3-6 months**, unlike conventional plastics that persist for centuries. University research confirms these materials leave **no microplastic residues**, only organic matter supporting marine nutrient cycles.  We've mitigated key risks through **multiple cultivation sites** across different coastal regions, targeted market education campaigns, and extensive local technical training programs. Our cultivation follows **sustainable aquaculture guidelines** established by international marine conservation organizations, ensuring ecological balance while creating **meaningful employment opportunities** for coastal communities most affected by plastic pollution. Our carefully planned scaling strategy progresses from local restaurants to broader regional distribution, maintaining environmental integrity throughout expansion while fostering **cross-sector collaboration** between tourism, fishing, and conservation stakeholders. |

### **6. Stakeholder Engagement and Partnerships**

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**6.1 Stakeholder Engagement Matrix**

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| **Stakeholder type/ role in project** | **Interest**  **(High/ Medium/Low)** | **Influence**  **(High/ Medium/Low)** | **Key Risks** | **Opportunities to Overcome Risks** |
| *Coastal fishing communities* | *High* | *High* | *Concern about seaweed cultivation impacting traditional fishing areas* | *Incorporate their fishing knowledge into cultivation site selection; offer supplemental income opportunities through seaweed farming* |
| *Local seaside restaurants and food vendors* | *Medium* | *High* | *Reluctance to switch from familiar plastic packaging due to cost concerns* | *Provide samples and demonstrations; emphasize marketing advantages of eco-friendly practices to tourists; develop cost-comparable products* |
| *Environmental NGOs* | *High* | *Medium* | *Skepticism about true biodegradability claims* | *Share research studies and conduct transparent field tests with their participation; invite as monitoring partners* |
| *Local government authorities* | *Medium* | *High* | *Bureaucratic delays in approvals; shifting policy priorities* | *Align project with national plastic reduction goals; showcase economic development potential for coastal communities* |
| *Tourists and visitors* | *High* | *Low* | *Limited awareness about plastic pollution impacts* | *Create educational displays at popular beaches; develop "eco-tourism" partnerships with local businesses using our products* |
| *Material suppliers and equipment vendors* | *Medium* | *Medium* | *Unreliable supply chains; equipment maintenance challenges* | *Develop local technical capacity through training programs; establish multiple supply relationships* |

**6.2 Beneficiaries**

Highlight the number of people who will directly or indirectly benefit from the project.

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| Direct Beneficiaries:   * **Coastal fishing communities**: 125 fishing families (approximately 500 individuals) across 5 coastal villages will gain supplemental income through seaweed cultivation, with an estimated 60% being women who will manage cultivation and processing activities * **Local restaurant and food vendors**: 35 small businesses employing approximately 210 people (55% women) will benefit from access to affordable, eco-friendly packaging alternatives * **Production facility workers**: 15 full-time positions (8 women, 7 men) in the bioplastic production facility   Indirect Beneficiaries:   * **Local marine ecosystem**: Improved conditions for fishing communities through reduced plastic pollution, benefiting approximately 2,500 people dependent on healthy coastal resources * **Tourists and visitors**: Nearly 15,000 annual visitors to project-area beaches will experience cleaner shorelines * **Local government**: Revenue improvements for 3 coastal municipalities through enhanced tourism and business activity * **Educational institutions**: 5 local schools (approximately 1,200 students) and 1 technical college will benefit from educational programs and internship opportunities   Total Estimated Beneficiaries:   * Direct: Approximately 725 individuals (60% women) * Indirect: Approximately 18,700 individuals * **Project will ensure gender equity with targeted 60% participation of women in key project activities** |

### **7. Gender and Social Inclusion** *(Maximum word limit: 300)*

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| Understanding Gender Roles and Gaps  In Sri Lanka’s coastal communities, men typically engage in physical labor like fishing, while women take on supporting roles such as seafood processing and selling. This limits women’s access to new economic opportunities. A key gender gap is the lack of female participation in emerging industries like sustainable innovation.  Addressing Gender Gaps and Inclusion  Our project challenges these norms by **ensuring equal opportunities in seaweed farming**, bioplastic production and promoting our products to restaurants, **which require minimal physical labor and are accessible** to all. We will provide training and resources to encourage women’s involvement, promoting financial independence beyond traditional roles. **Inspired by Sway, a female-led startup**, and **with two female members in our team**, we emphasize gender inclusivity in sustainability efforts.  Inclusive Actions and Solutions   * **Women’s Participation:** Actively involving women in seaweed farming and production. * **Economic Empowerment:** Creating income opportunities beyond traditional roles. * **Awareness & Training:** Partnering with community leaders to challenge gender norms.   Key Challenges & Solutions   1. **Traditional gender norms** may limit women’s involvement → **We will promote awareness through local leaders and role models.** 2. **Limited access to training and resources** → **We will provide hands-on workshops and support.**   By fostering inclusivity and sustainability, our project not only tackles plastic waste but also empowers the coastal community, particularly women, through new economic opportunities. |

### **8. Potential for Replication and Scaling** *(Maximum word limit: 300)*

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| Our seaweed-based bioplastic products offer exceptional scalability **across South Asia and beyond, addressing the region's severe plastic pollution challenges while utilizing abundant coastal resources**.  **Regional Expansion Potential**  The South Asian region shares similar environmental challenges and policy directions, creating ideal conditions for expansion:   * Maldives: With its tourism-dependent economy and 2021 single-use plastic ban, the Maldives represents an immediate expansion opportunity. Their abundant seaweed resources provide ready access to raw materials for our biodegradable packaging solutions. * Bangladesh and India: Both countries have implemented policies limiting single-use plastics. India's 7,500+ km coastline offers significant seaweed cultivation potential, while Bangladesh's early adoption of plastic restrictions creates a receptive market for our shopping bags and food packaging. * Pakistan: With over 1,000 km of coastline and growing marine pollution concerns, Pakistan presents another viable market for our biodegradable alternatives.   **Technological Replication**  Our production model is designed for easy replication:   * Modular Production: Our pilot plant design can be replicated as "production pods" in different coastal communities, creating distributed manufacturing networks. * Existing Infrastructure: Partnerships with established packaging facilities can accelerate implementation while reducing capital investment needs. * Future Product Expansion: Once our current product line is established, we plan to expand into more complex applications like water bottles, leveraging the same base technology and production processes.   **Market Adoption**  The growing demand for sustainable alternatives creates strong adoption potential:   * Tourism Integration: Hotels, resorts, and restaurants across South Asia seek visible ways to demonstrate environmental commitment through our biodegradable food packaging. * Policy-Driven Demand: Increasing plastic bans will drive market growth for our alternatives. * Retail Partnerships: We can develop partnerships with major retail chains seeking plastic reduction solutions for packaging and bags. |

## **III. Proposed Budget (brief narrative)**

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| **I. Overview**  Our proposed budget of **$16,000 USD** aims to establish a **pilot-scale production facility** for seaweed-based bioplastic in **Sri Lanka's southern coastal region**. The budget ensures **cost-effectiveness**, **economic viability**, and **efficient resource utilization** while supporting sustainable development and environmental conservation.  **II. Budget Breakdown**  **1. Equipment and Materials ($3,600)**   | **Item** | **Cost (USD)** | **Justification** | | --- | --- | --- | | Seaweed drying equipment | $100 | Required for pre-processing raw seaweed efficiently. | | Grinding/processing machinery | $1,500 | Essential for converting seaweed into usable material. | | Heating and mixing units | $1,500 | Necessary for bioplastic production. | | Casting and molding equipment | $500 | Enables shaping of bioplastic into functional products. | | **Total** | **$3,600** |  |   The equipment is sourced locally to minimize costs while ensuring a **weekly processing capacity of 50kg**. We prioritize **cost-effective, scalable solutions**, deferring investment in **advanced molding** until the later expansion phases.  **2. Facility Setup and Operations ($1,150)**   | **Item** | **Cost (USD)** | **Justification** | | --- | --- | --- | | Facility rental (6 months) | $400 | Affordable workspace in a coastal area with good access. | | Utilities (water, electricity) | $250 | Basic utilities required for production. | | Initial raw materials | Free | Sourced from sea surrounded by the island . | | Quality testing equipment | $500 | Ensures product quality compliance with biodegradable standards. | | **Total** | **$1,150** |  |   We selected a **cost-effective coastal facility** to minimize initial setup costs while ensuring **adequate production space**.  **3. Technical Support and Training ($1,200)**   | **Item** | **Cost (USD)** | **Justification** | | --- | --- | --- | | Technical consultant fees | $500 | Expert guidance in optimizing production techniques. | | Staff training programs | $200 | Ensuring efficient and safe operation of production. | | Safety equipment & protocols | $500 | Compliance with industrial safety standards. | | **Total** | **$1,200** |  |   This budget ensures a **high standard of production efficiency** and **safety compliance**, preparing the workforce with **specialized training**.  **4. Labor Fees ($5,300)**   | **Item** | **Cost (USD)** | **Justification** | | --- | --- | --- | | Seaweed collectors/farmers (10) | $4,000 | Full-time employment opportunities for coastal communities. | | Production operators (4) | $1,000 | Workforce to manage production processes. | | Quality control technician (part-time) | $300 | Ensures consistent product quality. | | **Total** | **$5,300** |  |   This budget provides **fair wages**, encourages **gender-inclusive employment**, and integrates **local expertise** into the project.  **5. Administration and Project Management ($2,900)**   | **Item** | **Cost (USD)** | **Justification** | | --- | --- | --- | | Project coordinator | $700 | Ensures smooth execution and management of the project. | | Documentation & reporting | $400 | Required for accountability and progress tracking. | | Transportation & logistics | $1,500 | Distribution of products and raw material procurement. | | Communications | $300 | Outreach, customer engagement, and market development. | | **Total** | **$2,900** |  |   We maintain a **lean management structure** to ensure efficient use of funds while maintaining necessary oversight.  **6. Awareness and Adoption Campaign ($2,000)**   | **Item** | **Cost (USD)** | **Justification** | | --- | --- | --- | | Awareness sessions for businesses | $500 | Conducting educational sessions for hotels and restaurants. | | Beach plastic pollution analysis | $350 | Sampling and testing seawater for microplastic levels. | | Community engagement programs | $500 | Encouraging local participation in plastic reduction efforts. | | Promotional materials and signage | $300 | Flyers, posters, and digital content for awareness campaigns. | | Travel expenses for awareness sessions | $200 | Transport costs for team visits to businesses and beaches. | | **Total** | **$2,000** |  |   This budget ensures **effective education and engagement** to drive **bioplastic adoption** and **reduce plastic waste**.  **III. Projected Selling Prices**   | **Product** | **Selling Price (USD)** | | --- | --- | | Seaweed-based lunch sheets (50-pack) | $0.80 - $1.00 | | Biodegradable shopping bags (100g) | $1.00 - $1.50 | | Food-grade cling film (30cm, 100 SQ.FT) | $3.50 - $5.00 |   Initial **market research** shows a **willingness to pay** for **biodegradable alternatives**, particularly in **tourist and eco-conscious businesses**.  **IV. Financial Feasibility & Cost-Effectiveness**  Our **cost-effectiveness strategy** is based on:   1. **Local Resource Utilization:** Using **abundant seaweed** to minimize costs and transport expenses. 2. **Low Energy Requirements:** Production requires significantly **less energy** than traditional plastics. 3. **Scalability:** Equipment can scale as demand grows **without major reinvestment**. 4. **Competitive Pricing:** Products are priced only **15-20% above conventional plastics**, with costs decreasing at scale. 5. **Dual Economic Benefits:** Creating income streams for **local farmers** while promoting **sustainable industry development**.   **V. Conclusion**  This budget represents a **minimum viable investment** to **demonstrate technical feasibility and market viability** while positioning the project for **future expansion**. The budget is structured to ensure **financial sustainability, job creation, and environmental impact reduction** in Sri Lanka's **coastal economy**. Additionally, integrating an **awareness and engagement campaign** strengthens **market adoption**, ensuring **long-term impact and success**. |

## **IV. Annexes**

Please include the following below in this same document or you can add them as attachments (Word Doc or Excel Sheet) and upload them to the **Babele application portal** under the "Attachment" section.

**A: Negative List Compliance Declaration**

**B: Proposed Budget in USD**

**C: CVs of all members***(One-page CVs of team members)*

**D. Any awards, certificates or patents received** *related to their solution, if it was piloted before (optional).*

**All these files are attached in another document.**