

Team Name: Eco Warriors

Teacher Name: Dr. Chilkamari

Green Heart Action Plan

Problem Definition/ Problem Statement

Examine the stuff you buy, use, and throw away at home or in your school. Specifically, consider single-use plastics, food waste, e-waste, and fast fashion. How can you reduce the amount of waste created in your community?

Topic: Fast fashion, particularly denim, contributes significantly to textile waste and environmental degradation. Repurposing discarded denim into high-performance materials like carbon fiber alternatives could revolutionize sustainable manufacturing. This process not only reduces landfill waste but also provides a cost-effective, eco-friendly solution for industries relying on carbon fiber.

Root Cause of the Problem

- High Consumption and rapid turnover – Fast fashion encourages consumers to frequently buy and discard clothing, leading to excessive textile waste.
- Lack of recycling infrastructure – There are limited facilities and incentives for recycling or repurposing denim into sustainable materials.
- Environmental costs of denim production – Traditional denim manufacturing requires significant water, chemicals, and energy, leading to pollution and resource depletion.
- Limited awareness and sustainable alternatives – Consumers and manufacturers lack awareness or access to sustainable alternatives to conventional carbon fiber.

List at Least Three Credible Resources that Support Your Problem Statement

- [The Environmental Impact of the Denim Industry — MAKE FASHION BETTER](#)
- [Conversion of waste denim fabrics into high-performance carbon fiber anodes for sodium-ion batteries | Journal of Materials Science](#)
- [The Need for Denim Recycling and its Challenges - Fibre2Fashion](#)



Proposed Solution

- Turn old/used jeans Denim into consumer products – Repurpose denim into phone cases, glasses, and other accessories to reduce textile waste.

How We Will Measure Our Success

- Amount of denim collected – Track the volume of discarded denim repurposed into sustainable materials.
- Reduction in textile waste – Assess landfill waste reduction through recycling initiatives.
- Community engagement – Measure participation in educational programs and recycling events.

Who are Decision Makers We Need to Reach

- We would need to reach out to the Dekalb County: Clothing and Shoe Recycling Program.
<https://www.dekalbcountyga.gov/sanitation/shoe-clothing-and-toy-recycling-program>

Our 3-5 Step Plan for Change

1. Research and pilot testing – Develop and test denim-to-carbon-fiber alternative processes.
2. Community collection drives – Organize denim collection events to gather raw materials.
3. Industry outreach and partnerships – Engage businesses to adopt and invest in sustainable materials.
4. Education and advocacy – Launch campaigns to promote sustainable fashion and responsible consumption.
5. Scale up recycling infrastructure – Expand collection and processing facilities for larger impact.



Impact & Equity

- Environmental impact – Reduces textile waste, conserves water, and lowers carbon emissions.
- Economic equity – Creates new job opportunities in sustainable manufacturing and recycling.
- Social inclusion – Engages communities and educates diverse groups on sustainability practices.

What Help We Need to Be Successful

- Funding and grants – Secure financial support for research, infrastructure, and outreach.
- Technical expertise – Collaborate with scientists and engineers for material innovation.
- Community participation – Encourage volunteers and organizations to drive awareness and action.
- Industry buy-in – Gain support from manufacturers and fashion brands to adopt repurposed denim solutions.

