Project Name: Circular Economy Innovations: Rethinking Waste Management for a Sustainable Future
Big Idea: Circular Economy for Sustainable Communities
Essential Question: How can circular economy innovations turn plastic waste into useful products while promoting climate-smart solutions and improving community's environmental sustainability?
Team Members: (Gift, S; Fabian, E; Rose, A; David, S; Colman, N; Gasto, K; Francis, L, Mathew, A; Salma, K)
School/Organization Name: Everlasting Academy
Location (Kibaha/Pwani/Tanzania)

ENGAGE

Our project, Circular Economy Innovations: Rethinking Waste Management for a Sustainable Future, addresses the rising challenge of plastic pollution in the Pwani (Coast) Region of Tanzania, a community directly connected to the Indian Ocean. With limited land space and growing waste generation, plastic litter often ends up in waterways and eventually pollutes the ocean. To tackle this challenge, our team collects plastic waste from local communities and transforms it through recycling and upcycling. Using a circular economy model, we create climate-smart products such as vertical farming containers for urban areas, along with decorative items and ornaments for homes and offices. These innovations reduce land and marine pollution, protect the Indian Ocean ecosystem, promote sustainable food production, and encourage communities to view waste as a valuable resource. Through this project, we strengthen environmental protection, climate resilience, and sustainable development in the Pwani region.

We chose plastic pollution because it is a visible and urgent problem in our community, especially in the Pwani (Coast) Region, where plastics accumulate in streets, markets, and waterways, eventually reaching the Indian Ocean. This pollution affects both land and marine ecosystems, threatening biodiversity, public health, and local livelihoods that depend on fishing and tourism. As students, we felt a strong responsibility to take meaningful action by addressing a real-world environmental challenge that directly impacts our lives and community. Our team saw an opportunity to demonstrate how waste can be transformed into valuable products through circular economy practices, creating solutions that are both environmentally sustainable and socially beneficial. By tackling plastic pollution, we aim to inspire our peers and community members to adopt sustainable practices, protect the oceans, and promote climate-smart innovation in everyday life.

Plastic pollution is a real global problem because millions of tons of plastic waste enter the world's oceans every year, threatening marine life, ecosystems, and human health. According to the United Nations, approximately 11 million metric tons of plastic enter the oceans annually, while other scientific studies estimate around 8 million metric tons per year — both figures highlighting the scale of the problem. Plastics do not biodegrade; they break down into microplastics that persist for decades, entering the food chain and impacting humans and wildlife. This pollution also causes economic losses, damages marine ecosystems, and disproportionately affects coastal communities, particularly in developing countries. Without urgent action, the amount of plastic entering the oceans is projected to increase dramatically, making it a critical global concern that requires sustainable, scalable solutions like circular economy innovations.



To address the challenge of plastic pollution, our team implemented a circular economy approach that transforms plastic waste into useful products while promoting climate-smart solutions. We organized community clean-ups in schools, markets, streets, and coastal areas, collecting bottles, wrappers, and containers, and then sorted and cleaned the waste for recycling and upcycling. Using the collected plastics, we created vertical farming containers suitable for urban and peri-urban areas, providing space-efficient solutions for food production, and designed decorative items and ornaments for homes and offices, turning waste into valuable products. We also engaged the community through awareness campaigns, educational presentations, and digital tools such as Google Forms for data collection, Google Maps to track waste hotspots, and Canva for designing awareness materials. These actions not only reduced plastic accumulation and prevented it from entering the Indian Ocean but also increased student and community knowledge of sustainable waste management, fostered creativity, and demonstrated the practical benefits of circular economy practices.

ACTION

Our team conducted a comprehensive investigation to understand the scope and impact of plastic pollution in the Pwani (Coast) Region. We used surveys, field observations, sampling, interviews, and research to gather data on the types, sources, and disposal habits of plastic waste. Surveys of students, market vendors, and community members revealed low awareness of recycling and upcycling practices, while field observations and mapping identified streets, schools, markets, and coastal areas as major waste hotspots, with much of the plastic eventually reaching the Indian Ocean. Sampling and data collection allowed us to track the quantity and types of plastic collected over time, and interviews with local residents and waste collectors highlighted existing gaps in waste management and community readiness for change. Additionally, research on circular economy models and climate-smart solutions, such as vertical farming using recycled plastics, informed our approach. From this investigation, we discovered that plastic pollution is pervasive, community knowledge is limited, and that transforming waste into functional and decorative products offers both environmental and social benefits, while hands-on engagement increases community participation and sustainability.

Impact:

Our actions have had significant environmental, social, and educational impacts in the Pwani (Coast) Region. By collecting and upcycling plastic waste, we reduced litter in streets, schools, markets, and coastal areas, preventing much of it from reaching the Indian Ocean and harming marine ecosystems. The creation of vertical farming containers provided urban and peri-urban communities with climate-smart solutions for food production, while decorative and functional items made from recycled plastics demonstrated the value of circular economy practices. Additionally, our awareness campaigns and community engagement increased knowledge of sustainable waste management, inspired creative approaches to recycling, and motivated local residents, students, and youth to actively participate in environmental protection. Overall, our project fostered measurable improvements in environmental cleanliness, community awareness, and sustainable behavior, showing that practical, locally driven solutions can have meaningful and lasting impact.

The google form link that the students used to collect data on the recycling practice and plastic waste management

Https://forms.gle/DKfKvUiH3AGpwPFfA

The links that the students used to generate the ideas about the projects

https://m.youtube.com/watch?v=iDKRA0fAz-k

https://habitatmedia.co.tz/plastic-pollution-plagues-dar-beaches-infuriating-business-owners/

https://www.theflipflopi.com/blog/igniting-the-plastic-revolution-in-dar