CITIZEN SCIENCE

Award Scheme	**Others**
Themes	**Waste Management**
Sustainable Development Goals	**Goal 11 - Make cities and human settlements inclusive, safe, resilient and sustainable**

Summary

Citizen science – the involvement of the public in scientific research – is a cost-effective way to gather data over a large geographical area, while simultaneously raising public awareness of the environmental impacts of plastic waste. KEY CONSIDERATIONS: Ordinary citizens can tackle complex challenges by conducting research on large geographic scales over long periods of time in ways that professional scientists working alone cannot.

Background and Objective

Plastic pollution is a global problem, but gathering sufficient data for scientific research that could enable solutions on the issue is challenging and can often get political. Lack of data hinders the development of waste management strategies and investments in infrastructure, leading to insufficient or absent waste management services.

Actions and Implementation

By taking advantage of public interest on the issue of plastic in the natural environment, citizen science programs incorporate members of the public to provide valuable repeated sampling of plastic debris over wide geographic regions for long periods of time. Leveraging the efficacy of collaboration, citizen science has the power to gather data and help people understand issues that might not be achieved through traditional research methods by scientists alone. In a citizen science project, anyone can participate, but participants must use the same protocol so data can be combined and of high quality. According to the US Federal Community of Practice for Crowdsourcing and Citizen Science, there are five steps to creating a citizen science project: Scope your problem Design a project Build a community Manage your data Sustain and improve Some citizen science projects involve beach monitoring whereby citizens are assembled to comb beaches and remove plastic waste, which can then be analysed by researchers. Others take place in the digital world, using a wide range of approaches and include smartphone apps like Litterati, which enables citizens to contribute photographs of plastic debris on beaches or in the ocean, providing valuable information about date, time, packaging and extent of plastic pollution. Data accumulated by a respective citizen science community becomes publicly available and aims to generate valuable scientific conclusions. Source: https://www.citizenscience.gov/toolkit/howto/#

Outcomes and Impacts

CASE STUDY EXAMPLES Ocean Conservancy’s International Coastal Cleanup Project Over 11.5 million people have participated in the Ocean Conservancy’s International Coastal Cleanup project since it was founded in 1986. In addition to removing 100 million kilograms of debris from coasts around the world, the project has generated data that has been used in 85 reports and papers. See https://oceanconservancy.org/trash-free-seas/international-coastal-cleanup/ Citizen Science in Germany Citizen science has been practiced successfully in nature conservation projects in Germany. The long-term development of individual species populations and ecosystems are monitored to find out what effect environmental changes have on habitats. These insights lead to recommendations for the protection and care of species, which then lead the development of concrete policy measures and care programs implemented by nature reserves, conservation authorities and landscape management groups. See “Citizen Science for All: a guide for citizen science practitioners” for more information. The Federal Community of Practice for Crowdsourcing and Citizen Science (FedCCS) United States Federal agencies have used citizen science and crowdsourcing for over a century. The Federal Catalog of Crowdsourcing and Citizen Science lists over 420 federally supported projects in areas ranging from biodiversity to computer science, to health and medicine, and even disaster response. Support for these projects is underpinned by legislation including the Crowdsourcing and Citizen Science Act (2016). Case studies from the FedCCS can be found at: https://www.citizenscience.gov/toolkit/case-study/ Source: https://www.citizenscience.gov/assets/FedCCS.pdf Litterati Litterati is an app that empowers people to not just clean the planet, but to also contribute to their crowd-sourced Litter Database that is keeping track of the different types of litter that are found in specific locations at specific times. Litterati uses LitterAi (Image recognition) to extract the type of Object, Material and Brand (when possible) from each image and then derives patterns and insights to assist in finding solutions and support decisions with data. Litterati’s Global Litter Database has been used to inform government policy, influence changes to more eco-friendly packaging, and inspire greater personal responsibility amongst fellow

citizens. The Litterati community has grown to over 160,000 people across 165 countries.

Conclusion

ALTERNATIVE SOLUTIONS Coupling activism with citizen science is a powerful way to stimulate a greater appreciation for the role science plays in helping solve the global plastic waste crisis. See Youth-Led Initiatives.