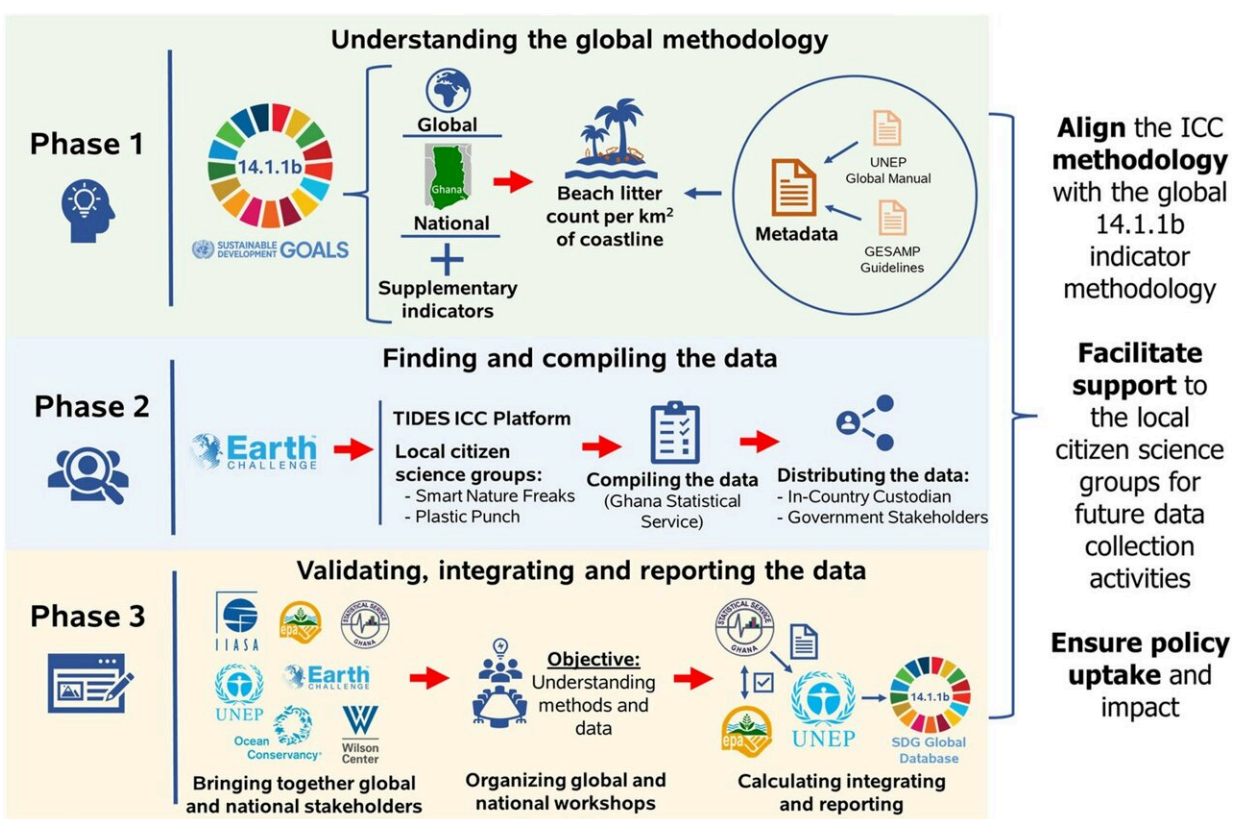# Turning the tide: Ghana's innovative approach to tackle marine plastic pollution with citizen science

September 19 2023, by Ansa Heyl

The process of integrating citizen science data on marine litter for SDG indicator 14.1.1b reporting in the Ghana case study. Credit: *Sustainability Science* (2023). DOI: 10.1007/s11625-023-01402-4

Working with IIASA researchers, Ghana has adopted a citizen science approach to addressing the problem of plastic pollution in marine environments, becoming the first country to integrate this type of data on marine plastic litter into its official monitoring and reporting processes. A new study presents this innovative approach on Ghana's citizen science journey and offers a pathway that can potentially be adopted in other countries.

Marine plastic litter poses a significant threat to [marine ecosystems](#), wildlife, human health, and economies dependent on industries such as tourism and fishing. Recognizing the urgency of the issue, the United Nations Environment Assembly adopted a resolution to combat plastic pollution in 2022. This issue is also recognized in the framework of the UN Sustainable Development Goals (SDGs).

Understanding the full extent of the marine plastics problem, however, remains challenging due to the vastness of the Earth's oceans and the complex circulation of plastic litter. Traditional monitoring methods are costly and often outdated, leaving significant data gaps.

The study, which has been published in *[Sustainability Science](#)*, demonstrates how existing [citizen science](#) data and networks can be leveraged to address the data gap on marine litter at national level and feed into global SDG monitoring and reporting processes, showing how Ghana has become a success story. The authors also highlight how these data and networks can help to inform relevant policies and action at a national level with global impact.

"Citizen science is more than just plugging data gaps; it is a powerful bridge between the public, the world of science, and policy. It not only raises awareness and inspires action to tackle challenges, but also fosters a democratic approach to policymaking, where the voice of the people becomes integral to shaping our collective future," explains Dilek Fraisl,

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lead author and a researcher in the Novel Data Ecosystems for Sustainability Research Group of the IIASA Advancing Systems Analysis Program

Ghana generates approximately 1.1 million tons of plastic waste annually, with only 5% being collected and recycled. To address this, the Ghanaian government has committed to sustainable plastic waste management and became the first country to join the Global Plastic Action Partnership in 2019. In addition, a growing citizen science community in Ghana provided an opportunity for citizen science to go beyond being a valuable data source on marine litter, to include the removal of litter from the environment and engaging with volunteers to promote education and raise awareness on the issue.

Through its International Coastal Cleanup initiative, the Ocean Conservancy (OC) has established a standardized approach to gather and categorize plastic pollution and marine litter data during cleanup campaigns. Various community groups and organizations in Ghana, including local civil society organizations, have adopted this methodology for their own cleanup campaigns. Data from these exercises are ultimately consolidated into the OC's Trash Information Data for Education and Solutions (TIDES) database, which is publicly accessible and houses the world's largest collection of ocean trash data.

Users can examine this data at both global and local levels, down to specific beach locations. As the International Coastal Cleanup platform operates in 155 countries worldwide, there is significant potential to employ this data for global-level monitoring, specifically for achieving SDG14 related to life below water. The Earth Challenge Marine Litter Data Integration Platform, an interoperable plastic pollution dataset, integrates data from various citizen science projects including the OC's TIDES, offering potential for monitoring plastic pollution globally.

The [case study](link) has had a significant impact on addressing marine litter issues in Ghana and beyond. Specifically, it will contribute to the development of the country's Integrated Coastal and Marine Management Policy. Government partners involved in the study, Ghana Statistical Service, and the Environmental Protection Agency Ghana, as the country leads of the project, have become more familiar with citizen science methodologies and data, and gained a better understanding of citizen science activities related to marine litter in the country.

Civil society organizations engaged in beach cleanups and data collection have also realized the potential and impact of their data for official statistics and policymaking. As a result, the country has become the first to officially report on plastic debris density under SDG 14.1.1b, using citizen science data.

"Ghana's citizen science experience has provided valuable insights into how data generated by citizen scientists can inform policies at the national level while contributing to global progress on the SDGs. It also offers a replicable pathway for other countries interested in incorporating citizen science data into their SDG monitoring efforts, not only for marine [plastic](link) [litter](link) but potentially for other indicators as well," notes co-author Linda See, who is associated with the same research program at IIASA.

"With less than seven years remaining to achieve the SDGs, we have to acknowledge the valuable opportunities presented by citizen science initiatives. They play a pivotal role in addressing data deficiencies and contribute to bolstering inclusive data ecosystems, informed decision making, and concerted action.

"We need to foster awareness and comprehension of citizen science data and methodologies to nurture the growth of more reliable partnerships around citizen science data and achieve evidence-based, all-

encompassing policies and collaborative efforts on a global scale for the SDGs and sustainable development more broadly," Fraisl concludes.

More information: Dilek Fraisl et al, The contributions of citizen science to SDG monitoring and reporting on marine plastics, *Sustainability Science* (2023). DOI: 10.1007/s11625-023-01402-4

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