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Thematic Research Network on Data and Statistics

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

GHANA STATISTICAL SERVICE

EPA-SL ENVIRONMENT PROTECTION AGENCY

STATISTICS SIERRA LEONE

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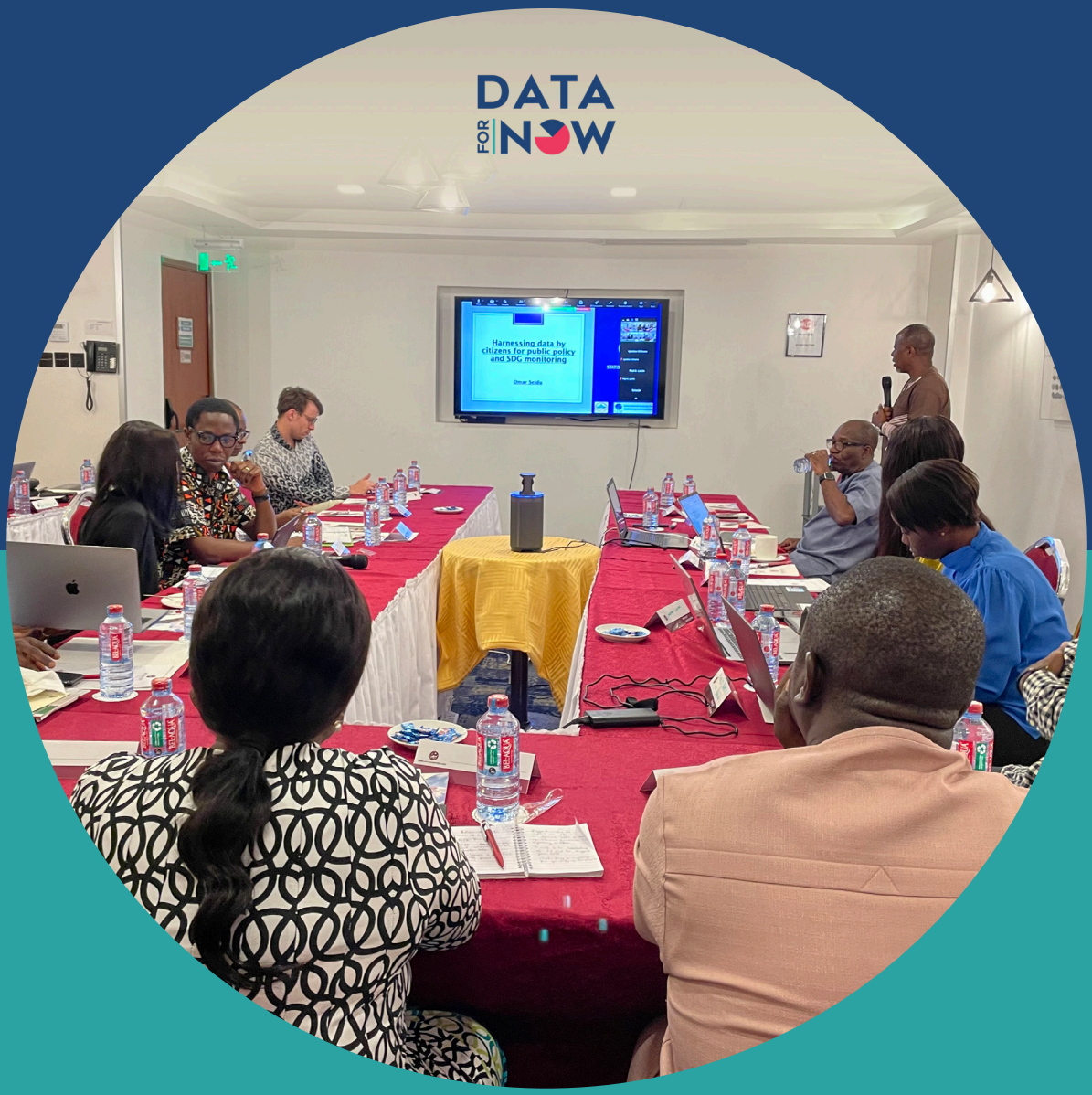

CASE STUDY REPORT

Knowledge Exchange Workshop between Ghana Statistical Services and Statistics Sierra Leone on Marine Litter Data and Citizen Science

MARCH 2024

ACKNOWLEDGEMENTS

This summary report was prepared by Maryam Rabiee (SDSN) and Stephanie Pietras (SDSN). We express our gratitude for the valuable contributions of Omar Seidu (GSS), Kwame Fredua (EPA Ghana), Isha Timbo (EPA Sierra Leone), and Christiana Conteh (Stats SL). We are grateful for the contributions of the Data For Now Initiative and all organizing and participating partners. This work was made possible through funding from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

INTRODUCTION AND BACKGROUND

With an estimated 11 million tons of plastic waste leaking into the ocean annually, many countries are affected by the marine litter problem, as it poses a significant threat to their wildlife and ecosystems (UNEP 2021). Under the United Nations (UN) framework of Sustainable Development Goals (SDGs), SDG indicator, SDG 14.1.1b, focuses on measuring floating plastic debris density in order to monitor the extent of marine litter. However, many countries lack the official data and resources needed to address marine plastic pollution.

The Data for Now initiative, launched in September 2019, aims to develop countries' capacities to deliver quality and timely data to achieve the SDGs. Through the use of robust, innovative methods and tools to improve the timeliness, coverage, and quality of SDG indicators, local and national decision-makers are better able to design effective development strategies and policy programs that align with the UN's 2030 Agenda for Sustainable Development. The Data For Now initiative is currently co-led by the United Nations Statistics Division (UNSD), United Nations Development Programme (UNDP), the World Bank, the Global Partnership for Sustainable Development Data (GPSDD), and the Sustainable Development Solutions Network (SDSN).

Countries supported through the Data For Now initiative are located in Africa, Asia, and Latin America. Led by their National Statistical Offices (NSOs), they identify work priorities that are urgently needed to achieve the SDGs. One such workstream that has been identified by these countries as a high priority issue is related to marine litter and citizen science.

Various stakeholders are exploring non-traditional data sources such as citizen science as a cost-effective mechanism to not only collect data on the SDGs but also increase community awareness and action (Fraisl 2020). Citizen science involves voluntary public participation in scientific research and knowledge production, and recent research demonstrates that it is already contributing to or could contribute to the monitoring of around 33% of the SDG indicators (Fraisl et al 2020).

According to the UN Environment Programme (UNEP), marine litter is any persistent, manufactured, or processed solid material that has been discarded or abandoned in the marine and coastal environment (UNEP 2009). The debris is human-created, and consists of items that have been intentionally or unintentionally discarded into the sea or on beaches. Some of the most common and harmful marine litter include plastics and abandoned fishing gear and vessels.

Ghana is one of the first countries to incorporate citizen science data on marine plastic litter into national statistics and official monitoring and reporting on SDG 14.1.1b for the years 2016–2020 (Fraisl et al 2023a). In 2021, Ghana demonstrated the potential of citizen science data to address marine litter monitoring gaps by leveraging the SDG framework. The results were then used in **Ghana's 2022 Voluntary National Review of the SDGs**, reported on in the **UN SDG Global Database**, and helped to inform relevant policies in Ghana (Fraisl et al 2023a). Given the success of incorporating citizen science with national statistics in Ghana, other Data For Now country partners have expressed interest in replicating a similar citizen science data validation and reporting process for this indicator and potentially others. This work is what led to the knowledge exchange workshops between Ghana and Sierra Leone.

WORKSHOP DETAILS

Held in Accra, Ghana, November 2–3, 2023, this workshop was hosted by SDSN's Thematic Research Network on Data and Statistics (TReNDS), the Ghana Statistical Services (GSS), and the Environmental Protection Agency of Ghana (EPA Ghana). More than 35 representatives from a diverse group of stakeholders came together to discuss best practices and opportunities for collaboration. See Annex 1 for a detailed agenda.

PURPOSE OF WORKSHOP

Without interventions, the release of marine and plastic pollution into water ecosystems is anticipated to almost triple by 2040 (UNEP, 2021). Although Ghana is at the forefront of utilizing citizen science and innovative approaches to enable data-driven monitoring and decision-making, many countries encounter challenges in implementing timely and robust data solutions to effectively address and reduce marine and plastic pollution.

Sierra Leone, a member country of the Data For Now Initiative, has actively invested in various approaches to address marine and plastic litter challenges. In 2021, the Environmental Protection Agency of Sierra Leone (EPA SL), with technical and financial support from GRID-Arendal, initiated a pilot program focusing on beach litter monitoring. This effort involved collaboration with youth from the University of Sierra Leone and community volunteers. Executed between June 2021 and April 2022, encompassing both dry and wet seasons, the pilot aimed to assess the extent of marine litter in coastal communities, identify sources and pathways of marine litter, and contribute to the development of a database informing policy decisions through citizen science.

Adhering to the guidelines of the African Marine Litter Monitoring Manual (Barnardo & Ribbink, 2020), the monitoring results indicated that the predominant litter items were of local origin, emphasizing the importance of involving local communities in the monitoring process. Despite the valuable insights gained, both the EPA SL and Statistics Sierra Leone (Stats SL) encountered challenges in scaling up monitoring efforts and securing capacity-building support for the creation of a database and a national marine litter management action plan in the long-term.

The Data For Now Initiative recognized the need for a platform to exchange knowledge and experiences in the domain of marine litter data and citizen science. Consequently, SDSN TReNDS organized a knowledge exchange workshop among stakeholders in Ghana and Sierra Leone to foster collaborative learning by sharing experiences, lessons learned, challenges, and opportunities for collecting marine litter data, with a special focus on harnessing citizen science data. Through this exchange, we explored sustainable strategies for expanding data collection efforts and enhancing cross-country cooperation within the Data For Now Initiative.

The workshop centered on three key areas:

- **MULTISECTORAL COLLABORATION**
  Examining activities undertaken across government bodies, universities, civil society organizations, UN agencies, and research institutions in Ghana and Sierra Leone, while assessing the successes and challenges associated with multi-sectoral collaborations.
- **METHODOLOGICAL APPROACH:**
  Delving into non-traditional approaches and new technologies that have been employed to bolster these efforts, including citizen science, artificial intelligence, drone imagery, and other innovative methodologies.
- **POLICY IMPACT:**
  Evaluating monitoring and reporting mechanisms that can contribute to decision-making and long-term sustainability measures.

PARTICIPATING ORGANIZATIONS

The following institutions are actively leading efforts in marine litter data collection and monitoring, and were fundamental in their contributions to this knowledge exchange workshop (see Annex 2 for a detailed overview of the organizations). The participating organizations included:

- Sustainable Development Solutions Network (SDSN)
- Ghana Statistical Service (GSS)
- Environmental Protection Agency (EPA), Ghana
- Environmental Protection Agency of Sierra Leone (EPA SL)
- Statistics Sierra Leone (Stats SL)
- Ghana National Plastic Action Partnership (Ghana NPAP)
- Smart Nature Freak Youth Volunteers Foundation (SNFYVF)
- Millennium Promise Alliance (MPA)
- Land Use & Spatial Planning Authority (LUSPA)
- SDSN Ghana
- Plastic Punch
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- University of Ghana
- UN Development Programme (UNDP)
- International Institute for Applied Systems Analysis (IIASA)
- University of the Aegean

KEY TOPICS OF DISCUSSION

The workshop commenced with opening remarks from Professor Samuel Annim, government statistician at the GSS, and Madam Jewel Kudjawu, director of ISN-EPA in Ghana, highlighting the challenges and opportunities associated with using citizen data for decision-making. The workshop brought attention to the following studies, initiatives, and topics, shaping and informing the discussions.

GOVERNMENT ACTION PLANS

The GSS provided a comprehensive overview of their utilization of citizen science data in reporting on SDG indicator 14.1.1b. Their approach began by mapping priorities and identifying tools to support the process. The GSS assumed the role of coordinating data collection and conducting workshops for government, academic, and Civil Society Organizations (CSOs) stakeholders to streamline the process. This coordinated effort was subsequently presented to UNEP for review. EPA Ghana then validated the data following UNEP guidelines, contributing to Ghana's Voluntary National Review.

EPA Sierra Leone and Statistics Sierra Leone presented the methodology employed in their pilot study undertaken June 2021–April 2022, encompassing online training on beach monitoring procedures, site selection and clean-up, and litter collection and classification. The monitoring results revealed the collection of 72,904 litter items (1,246kg) across sites, with plastics constituting an average contribution of 96% and 91% by count and weight, respectively.

EPA Sierra Leone also introduced the AFRIPAC Project, a global commitment to end plastic pollution, strengthen national action plans and policies, and enhance global policy links to prevent marine litter. Implemented in partnership with GRID-Arendal and IUCN, the project focuses on Cape Verde, Guinea Bissau, Sao Tome & Principe, Senegal, and Sierra Leone. The project conducted a capacity needs assessment for engagement in global plastic treaty negotiations.

The Ghana Land Use and Spatial Planning Authority presented a pilot study on marine spatial planning within the context of marine litter. Their spatial analysis featured maps depicting coral reefs, oil concessions, environmentally sensitive areas, migration routes of fish, and more. They highlighted contributing factors to marine litter such as population increase, improper land use, sea level rise, and inadequate disposal of domestic and industrial waste. The study underscored the imperative to develop a comprehensive Marine Spatial Plan (MSP) guiding the effective use, protection, and conservation of coastal and marine ecosystems and their services.

EPA Ghana highlighted the policy uses of citizen science and marine litter data. This approach allows for the development of more targeted, evidence-based, and community-driven policies and interventions. Additionally, it leads to more effective strategies for the prevention and reduction of marine pollution, and the promotion of healthier marine ecosystems. Moreover, this approach serves as a valuable mechanism for monitoring the effectiveness of policy interventions over time, enabling policymakers to assess the impact of their initiatives, and make informed adjustments based on real-time feedback from the community.

NON-PROFIT AND CIVIL SOCIETY INITIATIVES

Ghana NPAP highlighted its role in the National Plastic Action Partnerships, emphasizing its function as a locally led multi-stakeholder platform fostering collaboration between national governments and key partners. The primary focus is to translate commitments to reducing plastic waste and pollution into actionable initiatives. Through their strategic framework, they facilitate community engagement, foster meaningful conversations, generate insights, and develop action roadmaps to scale effective solutions. Taskforces have been formed to address thematic areas, including financing, inclusion, behaviors, policy, innovation, and metrics. This collaborative effort aims to understand future trends in plastic waste generation and identify pathways to achieve zero leakage into the oceans. The outlined actions involve coordinated efforts from government, industry, and civil society.

The Smart Nature Freak Youth Volunteers Foundation (SNFYVF) presented its initiatives centered on community engagement and educating fishermen on optimal waste reduction practices. The organization utilizes citizen science to collect data on marine litter and debris. Their methodology enables cleanup organizers and volunteers to classify marine litter accurately, contributing to Ghana becoming one of the first countries to officially report on SDG 14.1.1b using citizen-generated data (Fraisl et al., 2023a).

Plastic Punch showcased its approach to be0ach clean-up activities and citizen science, aiming to enhance knowledge and awareness among decision-makers, academia, and the public regarding plastic waste on Ghanaian beaches. Their data reveals that a significant portion of plastic pollutants originates from food and beverage packaging, with low-density polyethylene (LDPE), polyethylene terephthalate (PET), and polypropylene (PP) being the most commonly found plastic types in the waste stream, with an average recycling rate of 50%. The organization collaborates with the Ghana Statistical Service (GSS) and EPA-Ghana, contributing to SDG 14 reporting.

ACADEMIC RESEARCH

IIASA and the University of the Aegean presented the Feasibility Study on Marine Litter Detection and Reporting in Ghana (Fraisl et al., 2023b). The study aims to evaluate the viability of employing drones, citizen science, and artificial intelligence for data collection along Ghana's coastline to identify marine litter hotspots. The study presents the outcomes derived from a feasibility study that thoroughly explores four scenarios for coastal mapping and marine litter detection: 1) mapping the entire coastline; 2) mapping three cities (Accra, Cape Coast, and Sekondi-Takoradi) and Ada once; 3) mapping Accra seasonally; and 4) mapping Accra once. The study suggests citizen science approaches, including a) utilizing the **Picture Pile** application to generate a reference dataset for annotating drone images to train the AI algorithm, enhancing its accuracy, precision, and reliability; b) deploying drones to capture aerial images for system upload and further processing; and c) collecting ground-truth data to compare AI algorithm results with field data, testing the algorithm's accuracy, precision, and reliability. While resource-intensive, this approach is deemed highly valuable.

The University of Ghana presented its assessment of marine litter composition at Laboma Beach using a citizen science approach. Their goal is to gather data on macroplastics, mesoplastics, and microplastics in sandy beaches within African coastal environments. This collaborative citizen science project involves local secondary school students and teachers. The field sampling procedure, laboratory examinations, and spatial analysis revealed that the top three items are plastic bags, polystyrene, and plastic bag ends, with most macroplastics being single-use items. The impact of participants' activities during this assessment included increased well-being, positive changes in behaviors that reduce litter, and an improved understanding of the causes and consequences of marine litter.

UNITED NATIONS INITIATIVES

The UNSD introduced the Collaborative on Citizen Data, emphasizing the significance of citizen-generated data. The conceptual framework covers the importance of Citizen Data, defines citizen-generated data, outlines key principles, provides a roadmap for implementing the conceptual framework at the national level, and aims to bridge the global-regional-national levels. It also includes mapping existing initiatives, fostering the exchange of practices, and offering guidance. The Collaborative on Citizen Data invites participation from NSOs, Major Groups, Human Rights Institutions network, citizen science network, researchers, UN agencies, and philanthropic organizations to conduct a stocktaking/mapping exercise and establish a Community of Practice.

The UNDP introduced the Coastal Watch program, a collaborative initiative with the GEF Small Grants Programme aimed at empowering youth in marine plastic pollution reduction. The program successfully engaged students through educational activities, towards the goal of inspiring a sense of responsibility towards the ocean. Weekly workshops in schools and an immersive Bootcamp were organized in addition to two beach clean-up events involving 400 participants, resulting in the recovery of 900.24 KG of waste.

The program's outcomes emphasized the importance of active public participation in periodic clean-up exercises and waste recovery initiatives, both at national and district levels. The findings also underscored the significance of decentralized community-based solid waste management systems. These systems can facilitate investments in medium-sized recycling and processing centers in cities, processing up to 40,000 tons of waste annually. Additionally, the establishment of social enterprises to promote a zero-waste business system was identified as a potential positive outcome.

DEVELOPMENT AGENCIES

The GIZ introduced Go Circular, which aims to establish essential regulations, strategies, and structures for a circular economy, contributing to a more sustainable transformation globally and in three partner countries: Colombia, Ghana, and Vietnam. In Ghana, the focus is on reducing single-use plastic products and packaging, managing plastic waste, and preventing marine litter.

Also introduced was the Waste Flow Diagram (WFD), a rapid assessment tool estimating municipal solid waste leakage into the environment and water. Its primary functions include visualizing the flow of municipal solid waste quantities, quantifying plastic pollution sources, assessing macro plastic pollution fates, and facilitating waste management planning. The WFD serves as a proven engagement tool applicable for various purposes, such as baselining, benchmarking, monitoring, and scaling to national leakage assessments. It aids in tracking the progress of waste management interventions. Conducting a series of WFDs will yield valuable primary data for municipal waste management plans and national plastic pollution inventories.

RECOMMENDATIONS

Following two days of insightful discussions, the workshop brought forth key recommendations, providing a pathway for future actions and initiatives to address marine litter and promote sustainable solutions.

1. It was suggested that National Statistical Offices (NSOs) assume a leadership role in the collection and dissemination of data, underscoring the significance of assessing data quality during production. This strategic positioning is vital for enhancing the reliability of information.
2. Environmental Protection Agencies (EPAs) are urged to prioritize the deployment of available data to inform decision-making processes.
3. There was a call for enhanced collaboration among Environmental Protection Agencies, Ministries of Environment, National Statistical Offices, and Civil Society Organizations (CSOs) to drive data-driven monitoring policies. This includes the validation of non-traditional data, such as citizen data, to address biases and ensure robust insights.
4. The public sector was advised to consider institutionalizing a roundtable of stakeholders to enhance coordination and collaboration. Evaluating and replicating the impact of CSOs in different areas, and promoting the co-creation of solutions, can strengthen collective efforts.
5. Stakeholders were encouraged to establish a knowledge exchange platform for effective communication and the sharing of reports and information. This platform can serve as a centralized hub for fostering collaboration and disseminating valuable insights in a timely manner.
6. Exploring the creation of a common digital platform for inputting data from various sources was identified as a priority. This centralized space could streamline data collection and enhance collaboration.
7. A critical emphasis was placed on advocating for collaboration between West African countries, beyond bilateral exchanges. The recognition that plastic pollution knows no boundaries stressed the necessity for regional collaborative efforts.
8. Ghana's comprehensive efforts were acknowledged, particularly its incorporation of the Internet of Things (IoT), drone technology, and machine learning for insights into marine litter. The need to expand such initiatives across both countries was recognized.
9. The group underscored the need to enforce necessary measures and infrastructures for effective waste management. Institutions were urged to host events with minimal or no plastic usage, and promote education on the classification of plastic waste. Exploring affordable alternatives, such as sustainable materials for wrapping food, aligns with the broader goal of reducing plastic consumption.
10. Stakeholders were encouraged to advocate for diverse funding resources, urging national and local institutions to attract support from development actors. This aligns with the need for funding sources to sustain ongoing activities.
11. Finally, there was an emphasis on continuous collaboration, both virtually and in person. Leveraging insights gained from ongoing interactions is vital for driving sustained action beyond the confines of the workshop.

In conclusion, these recommendations will collectively guide future actions and initiatives, providing a structured approach to address marine litter and advance sustainable solutions.

NEXT STEPS

Moving forward, stakeholders in Ghana and Sierra Leone remain dedicated to ongoing strategic collaboration with local and international partners. The aim is to develop a comprehensive plan for the implementation of recommendations and action plans identified during the workshop. This continued collaboration will establish a solid foundation for improving data collection and analysis processes, actively contributing to the enhancement of marine litter monitoring mechanisms. The exchange of insights and collaborative planning will be instrumental in effectively translating workshop outcomes into tangible and impactful actions.

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ANNEX 1

Knowledge Exchange Event between Ghana Statistical Services and Statistics Sierra Leone on Marine Litter Data and Citizen Science

November 2-3, 2023

Hosted by SDSN TReNDS, the Ghana Statistical Services, and the Ghana Environmental Protection Agency

Objective: The objective of this knowledge exchange event is to foster collaborative learning by sharing experiences, lessons learned, challenges and opportunities for collecting marine litter data with a special focus on harnessing citizen science data. Through this exchange, we aim to explore sustainable strategies, for expanding data collection efforts and enhancing cross-country cooperation within the Data For Now Initiative.

Event Format: Hybrid

Zoom Dial-in Details: https://us02web.zoom.us/j/82226474453?pwd=U09SK3Q2R1VMZHlaanQ4R0xXNXJZQT09

Meeting ID: 822 2647 4453
Passcode: 044896

Find your local number: https://us02web.zoom.us/u/kccknHlV61

Location: Accra City Hotel - Barnes Road

Agenda

Thursday, November 2, 2023 *(all times in Accra, Ghana local time)*	
9:00 am – 9:30 am	Light Breakfast and Informal Networking
9:30 am – 9:35 am	Brief welcome remarks from SDSN TReNDS, scene-setting, and review of objectives and agenda (Ms. Maryam Rabiee) in-person
9:35 am – 9:45 am	Roundtable introduction of participants
9:45 am – 10:05 am	Brief welcome remarks from the Ghana Statistical Services, and the Ghana Environmental Protection Agency (Prof. Kobina Annim, Government Statistician and Ms. Jewel Kudjawu, Acting Director of ISN), in person
10:05 am – 10:30 am	How is Citizen Science Deployed to Measure Progress on SDG 14.1.1b? Presentation from GSS (Mr. Omar Seidu) in-person
10:30 am - 10:50 am	Q & A with participants on the presentation
10:50 am - 11 am	Break

11:00 am – 11:25 am	*Engaging com,,munities in data collection in Ghana.* Presentation by Plastic Punch (Mr. Richmond Kennedy Quarcoo) in-person
11:25 am – 11:50 am	*Convening multi-stakeholder efforts to tackle plastic waste and pollution.* Presentation by Ghana National Plastic Action Partnership (Mr. Kwame Asamoa Mensa-Yawson) in-person
11:50 pm – 12:05 pm	Q & A with participants on the presentations
12:05 pm – 1:30 pm	Lunch
1:30 pm – 2:00 pm	*Pilot Project Involving Citizen Science Data on Marine Litter in Sierra Leone.* Presentation by Stats SL and EPA SL (Ms. Christiana Conteh and Ms. Isha Timbo) in-person
2:00 pm - 2:30 pm	*AFRIPAC "Effective Capacity Building for Global Plastics Treaty in Africa."* Presentation by EPA (Mr. Paul A. Lamin) virtual
2:30 pm - 3:00 pm	Q & A with participants on the presentations
3:00 pm - 3:20 pm	*Citizen Data Collaborative*. Presentation by UNSD (Ms. Haoyi Chen, virtual)
3:20 pm - 3:30 pm	Q & A with participants on the presentations
3:30 pm - 3:40 pm	Break
3:40 pm - 4:25 pm	Roundtable Discussion on opportunities to scale up and enhance citizen-generated data on marine litter
4:25 pm – 4:30 pm	Closing Remarks

Friday, November 3, 2023	
9:30 am – 10:00 am	Light Breakfast and Informal Networking
10:00 am – 10:05 am	Brief welcome remarks from SDSN TReNDS and review of workshop objectives and agenda (Ms. Maryam Rabiee), in-person
10:05 am – 10:30 am	*Feasibility study on deploying drones for marine litter detection and reporting in Ghana*. Presentation by Dr. Dilek Fraisl (IIASA) and Dr. Konstantinos Topouzelis (University of the Aegean), virtual
10:30 am – 10:45 am	Q & A with participants on the presentation
10:45 am – 11:10 am	*Engaging communities, and fishermen on best practices for reducing waste, identifying types, and using citizen science to produce/collect marine litter / marine debris data*, Mr. Tyler Dzogbenyui Amaglo-Kobla (Smart Nature Freak Youth Volunteers Foundation of Accra Ghana - SNFYVF), in-person
11:10 am - 11:30 am	*Coastal Watch: Empowering the Youth for Marine Plastic Pollution Reduction*, Dr. George Ortsin (UNDP), in person
11:30 am - 11:50 am	*Assessment of marine litter composition at the Laboma Beach using the citizen science approach,* Mr. Ignatius Kweku Willams (University of Ghana), in-person
11:50 am - 12:00 pm	Q & A with participants on the presentation
12:00 pm - 1:30 pm	Lunch
1:30 pm - 1: 50 pm	*Marine Spatial Planning in Ghana,* Mr. Ebenezer Ntsiful (Land Use & Spatial Planning Authority, Ghana), virtual

1:50 pm -2:10 pm	*Lessons from applying the Waste Flow Diagram - a rapid observation based plastic leakage assessment tool and remote sensing approaches of plastic waste,* Mr Steffen Blume (GIZ), virtual
2:10 pm - 2:20 pm	*Potential policy uses of the marine litter data for Ghana,* Mr. Kwame Boakye Fredua (EPA Ghana), in-person
2:20 pm - 2:30 pm	Q & A with participants on the presentation
2:30 pm - 3:20 pm	Roundtable Discussion on Next Steps
3:20 pm - 3:30 pm	Closing Remarks by Stats SL and EPA SL (Ms. Christiana Conteh and Ms. Isha Timbo, in-person)

ANNEX 2

List of participating organizations

Created under the auspices of the UN Secretary-General in 2012, the **Sustainable Development Solutions Network** (SDSN) is an international nonprofit that mobilizes global scientific and technological expertise to promote practical solutions for sustainable development, including the implementation of the SDGs and the Paris Climate Agreement. TReNDS is SDSN's data research network advancing policy and technical solutions for sustainable development.

The **Ghana Statistical Service** (GSS) is the government's national statistics office (NSO). They are responsible for producing and coordinating national statistical systems (NSS), and for strengthening the production of quality, relevant, accurate, and timely data for the purpose of national development.

The **Environmental Protection Agency of Ghana** (EPA Ghana) is the government agency responsible for regulating the environment and ensuring the implementation of public policy as it relates to the environment. They work on and carry out government policy, inspect and regulate businesses, and respond when there is an environmental emergency.

The **Environmental Protection Agency of Sierra Leone** (EPA SL) is the government agency responsible for ensuring the sustainable use of natural resources through effective protection and management. They ensure compliance and enforcement of environmental impact assessment procedures and pursue environmental education for the creation of public awareness-raising of the environment and its importance to the economic and social life of Sierra Leone.

Statistics Sierra Leone (Stats SL) is the government's NSO. They are responsible for creating a viable NSS by coordinating, collecting, compiling, analyzing, and disseminating official statistics to support evidence-based decision-making processes within the government, private sector, and the wider national and international communities.

The **Ghana National Plastic Action Partnership** (NPAP) is the World Economic Forum's (WEF) platform for translating plastic pollution commitments into concrete action. The Ghana NPAP serves as the national platform for multi-stakeholder cooperation, facilitating initiatives and funding to scale up and accelerate in-country partnerships that address plastic waste and pollution while contributing to the nation's progress towards achieving many of the SDGs.

The **Smart Nature Freak Youth Volunteers Foundation** (SNFYVF) is a nonprofit organization in Ghana dedicated to providing real opportunities for young people to get involved in voluntary work. They are actively involved in citizen science data collection and beach clean-ups.

In consultative status with the UN Economic and Social Council (ECOSOC), the **Millennium Promise Alliance** (MPA), Ghana Chapter is a nonprofit organization that's mission is to implement innovative solutions and scalable systems aimed at achieving the SDGs. Their purpose is to participate in the mobilization of resources and technical expertise for the implementation of sustainable development projects based on the SDGs to advance living standards of populations in Africa.

Ghana's **Land Use & Spatial Planning Authority** (LUSPA) is a service delivery agency under the Ministry of Environment, Science, Technology and Innovation (MESTI) that is responsible for ensuring the sustainable development of land and human settlements through a decentralized planning system, ensuring judicious use of land, and creating an enabling environment for District Assemblies to better perform the spatial planning and human settlement management functions.

SDSN Ghana is SDSN's national network in Ghana. Including academic and research institutes such as the University of Ghana, African Health Economics and Policy Association, Alliance for Development, and Ghana Christian University College, SDSN Ghana focuses on country-specific projects and priorities in line with their local contexts and challenges to translate the latest expertise in sustainable development into action.

Founded in 2018, Plastic Punch is an NGO based in Ghana that aims to promote circular economy and environmental preservation, particularly marine conservation, to support sustainable development. Through their beach cleanups, PP aims to promote behavioral change through citizen science and raising awareness about sustainable waste management practices with an emphasis on reducing plastic pollution.

Supported by the German Federal Ministry for Economic Cooperation and Development (BMZ), the **Deutsche Gesellschaft für Internationale Zusammenarbeit** (GIZ) is the German development agency that provides financial support to businesses, civil society actors, and research institutions in more than 100 countries worldwide. This public-benefit enterprise works to foster successful interactions between development policy and other policy fields and areas of activity.

Founded in 1948, the University of Ghana provides and promotes higher education, learning and research. Their mission is to create an enabling environment that makes the University a leading institution for national and global development through cutting-edge research as well as high-quality teaching and learning.

The UN Development Programme (UNDP) is the UN lead agency on international development. UNDP works in 170 countries and territories to eradicate poverty and reduce inequality. They aim to help countries develop policies, leadership skills, partnering abilities, institutional capabilities, and to build resilience to achieve the SDGs. UNDP is one of the five core Data For Now partners leading this initiative.

Ghana has been a partner country for German development cooperation for over 30 years. GIZ Ghana is the local GIZ office that works on behalf of the German government to support public and private sector clients in a wide variety of areas, including economic development and employment, energy and environment, and peace and security.

The **UN Statistics Division** (UNSD) is the UN agency committed to the advancement of the global statistical system. They compile and disseminate global statistical information, develop standards and norms for statistical activities, and support countries' efforts to strengthen their NSS. UNSD is one of the five core Data For Now partners leading this initiative.

The **International Institute for Applied Systems Analysis** (IIASA) is an international research institute that advances systems analysis and applies its research methods to identify policy solutions to reduce human footprints, enhance the resilience of natural and socioeconomic systems, and help achieve the SDGs. IIASA (along with the University of the Aegean) recently prepared a feasibility study on marine litter detection through the use of drones, citizen science, and artificial intelligence (AI) to collect data along Ghana's coastline and identify marine litter hotspots, or areas with significant accumulation of plastics.

The University of the Aegean is an international research-oriented university dedicated to conducting high-level research and qualitative teachings through innovative educational programs and multidisciplinary fields of research. As previously mentioned, UAegean worked with IIASA to prepare a feasibility study on marine litter detection in Ghana.

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