REPORT ON POGO WORKING GROUPS

Contractor's Report

Title of Working Group: COLaB

Name of Contractor: University of Ghana (UG)

Names of Participants:

Benjamin Osei Botwe (UG)
Gregory Cowie (University of Edinburgh)
Jethan d'Hotman (SAEON)
Amanda Mgwali (SAEON)
Emmanuel Klubi (UG)
Kofi Ferni Anyan (UG)
Desmond MacCarthy (UG)
Eugene Attoh (UG)
Comfort Opoku (UG)
George Ofosu-Amoako (EPA-Ghana)
Emmanuel Fynn (Shama)

Total expenditure to be reimbursed (please attach a financial report with copies of receipts): EUR 2500.00

1) Please provide a brief description of the activities undertaken by the working group.

We launched the COLaB pilot project in July 2024 in Shama in the Western Region of Ghana. Shama is a coastal district that relies heavily on fishing for employment and livelihoods. However, the area faces growing environmental pressures, particularly from illegal upstream gold mining, which has disrupted ecosystems and threatened coastal resilience.

Our objectives were:

i. To measure river discharge and circulation (within the river, estuary and offshore), as well as sediment transport and physical and biogeochemical processes occurring across the estuarine salinity gradient using a subset of COLaB instruments and methods.

ii. To test newly developed affordable instruments (CTD, colorimeter, and fluorimeter) against commercial counterparts.

iii. To train local scientists, postgraduate students, and technicians in deploying instruments such as CTDs, pH probes, and spectrophotometers.

iv. To strengthen coastal community engagement in ocean observing, enhance youth participation in ocean literacy, and foster collaboration among government, academia, and civil society.

From 23-30 July 2024, we engaged with the Shama community to deploy COLaB and commercial instruments to study river discharge, flow and bathymetry, current, water structure and mixing through CTD profiling across the estuarine salinity gradient, mercury concentrations in suspended sediments and chemical analyses (nutrients, pigments, and dissolved organic matter) of water samples collected across the same gradient.

This was followed by a community engagement programme on 11 November 2025 in Shama, which brought together over 100 participants representing diverse sectors of the Shama community to bridge science, policy, and community action. In attendance were the Municipal Chief Executive and officials from the Shama District Assembly, staff and students from Shama Senior High School and Shama Technical Institute, as well as representatives from the Fishermen's Association, Dressmakers' Association, Hairdressers' Association, Transport Union, and the media.

2) Please describe the milestones and deliverables achieved.

i. Using a subset of COLaB instruments and methods, river discharge and circulation (within the river, estuary, and offshore), as well as sediment transport and physical and biogeochemical processes occurring across the estuarine salinity gradient, were determined.

ii. Comparative studies were conducted using the COLaB and commercial instruments, both of which captured very similar salinity and temperature features. Despite some differences in salinity values at depth, there was no consistent offset. Some local variability was observed, possibly due to strong currents and boat drift. The OpenCTD performed perfectly adequately for most coastal oceanographic applications.

iii. Some local scientists, postgraduate students, and technicians were trained in deploying instruments, including CTDs, pH probes, and spectrophotometers. Their capacity was strengthened in sensor calibration, protocol standardization, and the measurement of river discharge, currents, suspended sediment load, and mercury concentrations.

iv. Community engagements in Shama, which are expected to promote ocean observing efforts through long-term data collection and monitoring of coastal changes and the development of a community-led monitoring framework to inform policy and local actions.

v. Strengthened local commitment to monitoring coastal changes.

vi. Increased awareness among Senior High School students and youth about ocean threats, fostering long-term ocean literacy.

vii. Documented local narratives for inclusion in monitoring frameworks.

viii. Established preliminary indicators for community-led data collection.

ix. Enhanced collaboration between government, NGOs, and academia, laying the groundwork for sustained engagement.

x. Increased POG visibility through radio broadcast, expanding reach, raising awareness, and reinforcing POG's visibility.

3) Is this Working Group likely to continue to meet beyond the dates outlined in the original proposal?

We have plans in place for the COLaB working group to continue beyond the dates outlined in the original project proposal. This pilot study served as proof of the COLaB concept. We are seeking funding to support the regional COLaB training camp in Ghana for the Gulf of Guinea region and to continue our studies on the Pra and Ankobra rivers. We will continue to engage with the Shama community and integrate local knowledge with ocean observation tools to help build resilience, enhance ocean literacy, and ensure that community perspectives shape sustainable coastal management strategies.

4) Please provide your comments on the POGO-funded Working Group Initiative (e.g. has the funding made a significant difference in the progress of this Working Group?).

We remain grateful to POGO for providing funds for the COLaB working group initiative. The funds were instrumental in conducting the field study and the community engagements. The POGO funds supplemented those obtained through an *Experiment.com* crowdfunding bid.

Please return completed form by e-mail to pogoadmin@pml.ac.uk and enclose a copy of the Workshop report, if applicable.