Prioritisation of coastal sensitivities and development of site specific response plans in West Africa: challenges and learnings

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This paper shares the key challenges encountered and our learnings during the prioritisation of coastal sensitivities and development of site specific response plans (SSRPs) as part of sensitivity mapping along the coastlines of Mauritania, Senegal, and The Gambia in support of bp's offshore Greater Tortue/Ahmeyin Phase 1 Gas Production Project (the Project).

In the unlikely event of an incident, sensitivity maps for oil spill response provide responders with information on protected and sensitive areas, critical habitats, endangered species, and key socio-economic resources. Development of sensitivity maps for the Project region was based on international good practices and carried out considering three sensitivity themes:

1. Shoreline type and its general environmental sensitivity to oil spills
2. Sensitive ecosystems, habitats, species, and key natural resources
3. Sensitive socio-economic features

The process of sensitivity map development for the Project region also supported response planning activities, such as the identification of locations for preparation SSRPs. These locations are typically determined based on three important criteria:

1. Degree of environmental and/or socio-economic sensitivity
2. Risk of being impacted from a water borne oil release
3. Feasibility of successfully protecting the site with existing and available technology

During this process, we encountered key challenges that required innovative solutions and resulted in good learnings for our team regarding projects of this nature.

Challenge 1: Availability of quality geospatial data

The development of sensitivity maps is highly dependent on the availability of quality data with adequate geospatial coverage. During our review and gap analysis for the Project region, we were able to acquire numerous GIS datasets which facilitated the production of sensitivity maps, however missing metadata (e.g., data source and date) was an issue for some datasets and data were not equally available for the geographic extent we were interested in.

Learnings – We utilized several approaches to verify data and fill gaps:

- Using a data collector application (Coral App, www.chaac.tech) and best freely available satellite imagery to conduct a detailed scan of the coastline and human activities in proximity of to identify potentially missing and incomplete information
- Conducting targeted field surveys using local consultants with remote support from us. This was possible by providing virtual training to the consultants on data collection with the Coral App prior to the surveys and being able to remotely monitor their progress each day using the Coral Dashboard.
- Having local consultants with knowledge of past studies and access to established research centres was an important element contributing to the overall success of the data gathering effort.

- Engaging with local authorities and government agencies either via bp Community Liaison Officers (CLOs) or during in-country workshops provided valuable opportunities to verify the approach to sensitivity map development.

Challenge 2: An approach for synthesizing information across an extensive geographic area

The Project region encompasses approximately 5,000 km of shoreline, including coastline and extensive estuarine shoreline for various rivers and deltas, and required an objective approach for synthesizing information across this extensive geographic area to highlight the most sensitive resources to oiling and identify protection priorities using a conservative spill scenario.

Learnings:

- Systematic data validation and effective project management were key elements in the successful and timely delivery of a large database covering an extensive geographic area.
- Within the GIS for the Project, a shoreline 'corridor' that encompassed the delineated shoreline was identified where effects of oiling would be expected to be highest. All ranked sensitivities (i.e., ESI, ecological, socio-economic) captured within this corridor contributed to the integrated sensitivity of a shoreline segment and identified the most sensitive areas.
- Oil spill stochastic model results for Tortue Phase 1a were integrated in the same GIS and used to identify the sensitive resources and locations most vulnerable to oiling – this allowed the development of a list of sensitive locations to be considered for the development of SSRPs.
- Results from this objective approach were verified using the bp in-country team and were well received at subsequent workshops with regulators in the Project region.

Challenge 3: Development of accurate SSRPs in areas where artisanal fishing is a vital activity

SSRPs are site-specific tactical plans that provide detailed operational instructions for undertaking initial response actions at shoreline sites identified as being highly sensitive to oiling impacts and vulnerable based on an oil spill scenario. These plans need to be feasible to implement using technology available in the Project region and consider any logistical limitations.

Learnings:

- Field verification surveys of locations identified using our GIS approach were essential to identify important infrastructure (e.g., fish market building, fish drying area) and/or artisanal fish landing sites where available protection strategies would be feasible.
- Being accompanied by an experienced in-country security advisor was invaluable as they played an important community liaison role when visiting fishing villages and helped with gaining local knowledge from community members.
- Good communication is essential as most artisanal fishing sites are heavily used by the local population, with a large portion living in the immediate vicinity.
- An appreciation of the numerous logistical limitations, in particular access considerations (e.g., variable road quality [or whether they even exist], narrow widths of roads through fishing villages, roads or tracks that are impassable during the rainy season, etc.) was gained during site visits and this knowledge contributed to the preparation of accurate and useful SSRPs.