

# ANALYSING SHORELINE OIL SPILL RESPONSE IN SOUTH AFRICA: THE CASE STUDY OF “MV KIANI SATU”, KNYSNA, 2013.

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## Introduction

The South African shipping routes provide preferred access to different parts of the world resulting in high risk of shipping related oil spills. Although no shipping incident has been declared a disaster thus far, significant episodes or events such as the MV Treasure, MV Smart, MV Seli 1 and the MV Kiani Satu has left lasting lessons for the South African government (DEA, 2013).

MV Kiani Satu (vessel), a cargo carrier, en-route to Tema from Vietnam had 15 000 metric tons of rice on-board and approximately 350 tons of Heavy Fuel Oil (HFO) when it reported an engine breakdown on August 3<sup>rd</sup>, 2013 in the west coast of South Africa. The incident's location on the South African coastline is shown Figure 1, as an artist's impression. Failure to establish tug connection, the vessel ran aground in Goukamma Marine Protected Area, Knysna, South Africa on the 8<sup>th</sup> of August 2013 (Refer to figure 1 for the map). Whereas double hull design of MV Kiani Satu prevented potential greater damage, over 70 000 tons of HFO escaped into the marine environment.

While a relatively high per centage of the spilt product washed offshore, over six kilometres of pristine beach of the Goukamma nature reserve and estuary was contaminated, producing over a thousand tons of oiled waste. Fortunately, there was no visual impact recorded in the nearby coastal towns of Sedgfield and Wilderness. However, over 20 000 tons of HFO was reported to have affected four other beaches in the form of tar balls which were found in Port Elizabeth, over 200 kilometres from the scene. Bunker fuel was transferred from the vessel to an oil barge on the 14<sup>th</sup> of August 2013 to minimise the risk of spillage. MV Kiani Satu, finally sunk on the 20<sup>th</sup> of August 2013, 120 nautical miles off the town of Knysna at a depth of 100 metres.

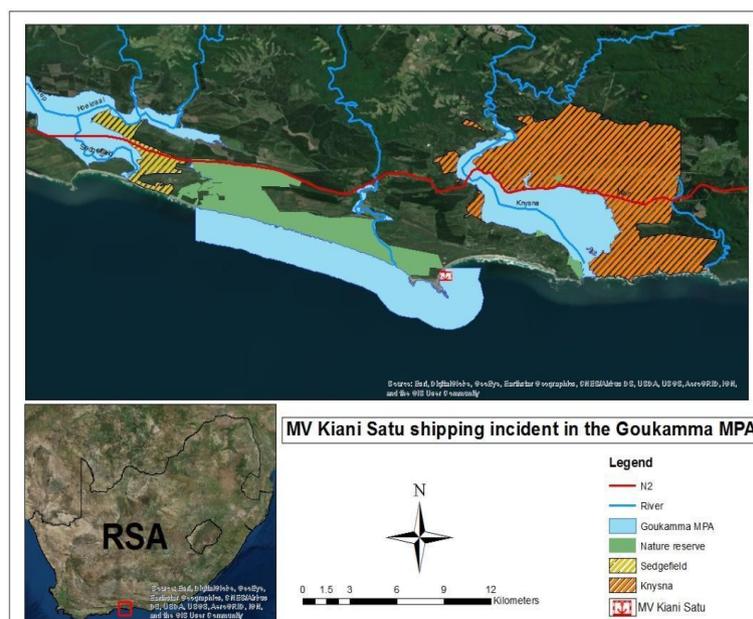


Figure 1: A Map depicting the case study area Goukamma Marine Protected Area

The risks of oil spill contamination were analysed in Goukamma MPA and estuary, Knysna lagoon and Swartvlei estuary where they were considered to have high, medium-low and least probabilities of oil-contamination, respectively. The incident had occurred in the Environmental sensitivity area with strong socio-economic activities in and around the places such as Goukamma nature reserve and Marine Protected Area (MPA), the wilderness conservation area and Knysna lagoon.

Goukamma was declared a Marine Protected Area (MPA) in 1990. The pristine Goukamma estuary located within the MPA and shares a boundary with the terrestrial reserve, creating favourable habitat for a wide range of threatened species of sea turtles, including leatherback (*Dermochelys coricea*), hawksbill (*Eretmochelys imbricate*) and loggerhead (*Corretta coretta*). Other species recorded in the area are dolphins, seals, whales, and sharks (Kaselowski & Adams, 2013). The area is similarly a renowned breeding ground of the rare African black oystercatcher (*Haemotopus moquini*).

Knysna Lagoon, is a home for about 43 % of South Africa's plant and animal species. It sustains a plethora of rare fish species such as the Cape stumpnose (*Rhabdosargus holubi*) and the Dusky kob (*Argyrosomus japonicas*), (SANParks, 2013). Recreational use, property value, and nursery value of the lagoon to range between 2, 8 and 3, 4 billion ZAR per annum, which is a 22 % contributions of all South African estuaries economic value (Turpie & Clarke, 2007). Socio-economic importance of the areas is beyond reproach; it is one of the most favourite holiday destinations for both local and international tourists. Although it was the least likely to be impacted by the spill, Swartvlei estuary, located within the Wilderness National Park, is an essential spawning area for a number of fish species such as the *R.holuhi* and *Liza richardsoml*.

Thus, the study was aimed at establishing a South African perspective to shipping-related oil spill response through identification of factors of concern and enabling capabilities. The methodology applied in this study focuses on using the descriptive survey on a case study of MV Kiani Satu oil spill incident which occurred in 2013 at Goukamma Marine Protected Area. Questionnaires were distributed to 50 responders from all participating government agencies and Non-Government Organisations, in which 30 participated in the survey. This participating sample represent 88 % of all agencies that formed part of the response team. The study combined a systematic evaluation of various mainstream interactive processes that effect efficient shoreline oil spill response. The case study is intended to address the following questions:

- What is the effect of local oil spill contingency plan in managing coastal oil spill response?
- How does funding influence oil spill response operation?
- How can collaborative oiled wildlife response be enhanced?

## **Main Results**

### *What is the effect of local oil spill contingency plan in managing coastal oil spill response?*

The lack of or poorly shared mental method and potential conflict regarding requirements and nature of decision-making are main contributors to poor inter-agency coordination in incident response situations (Smith and Dowell, 2000). The local (Knysna) coastal oil spill contingency plan (OSCP), is designed in such a manner that roles and responsibilities of various authorities involved are listed with clear direction to generic resources required from each response agency. Seventy per cent (70 %) of respondents reported that organisations involved did not have agency oil spill contingency plans, response procedure nor prior exposure to the existing OSCP. This resulted in confusion and subsequent strained relations, especially between national and local spheres of government. It is worth noting, however, that despite unfamiliarity with the OSCP, the transition from non-collaboration to cooperation was ultimately forged with varying attempts to operate within its premises. This outcome is supported by Perry & Lindell., (2003) notion that personnel's experience is an excellent indicator of job expertise and adaptability to challenges. The survey results further indicated that only 59 % of respondents had oil spill response experience before MV Kiani Satu Incident. However, the intensive years ( $\geq 5$  years) of experience of majority (67%) of the respondent personnel had worked in other forms of emergencies, gathering skills which will enhance incident management. Research findings

further demonstrated that unsystematic introduction of Incident Command System (ICS) principles by the district disaster management centre, parallel to the traditional Joint Operation Committee (JOC) organisational structure enhanced prioritization of environmental needs and better coordination of resources. This is one of the adaptation strategies inspired by long service of personnel.

*How does funding processes influence oil spill response operation?*

MV Kiani Satu was insured, allowing responders to mobilise required resources including aerial surveillance without any related monetary limitations. The implementation of emergency procurement and supply chain processes was reported as a point contention among oil spill response service providers (DEA, 2013). It was reported that some service providers were able to by-pass supply chain policies and approached the insurance directly without the consensus of the response team. Acknowledging the need for urgency of attaining resources during emergency situations, this approach may either increased response efficiency or diminished coordination or collaboration amongst responders, this study was unable to establish a premise. It is therefore recommended that further studies should be conducted to determine the influence of funding (procurement process) during an oil spill response operation.

*How can collaborative oiled wildlife response be enhanced?*

Approximately 185 Cape gannets and 85 African penguins had been oiled from the various locations between Knysna and Port Elizabeth, including the Bird Island. The study findings further highlight 67 % of respondents are of the perspective that there was an acceptable level of stakeholder collaboration in managing wildlife rescue. The perspective of some of the research institutions and small-scale wildlife rescue Non-Government Organisations (NGOs), however, is that the role of volunteer groups was not clarified in the plan. This is a consequence of disjoint preparedness efforts amongst interested and affected groups, resulting in arguments and misunderstanding within the oiled wildlife rescue team.

The success of beach clean-up operation with more than 90 % of visibly contaminated beach cleaned and rehabilitated to near natural state within six months provided a blueprint for a robust interagency collaboration structure between disaster management centres and government departments to enhance inclusive oiled wildlife response.

## **Summary of findings**

The study findings highlighted that:

- Seventy percent (70 %) of respondents reported that organisations involved did not have oil spill contingency plans, response procedure nor prior exposure to the existing programs.
- Only 59 % of respondents had prior oil spill response experience before responding to the MV Kiani Satu incident; this did not compromise the efforts because the overall majority (67 %) of response team were experienced in operating within an inter-agency incident management system.
- The manner in which emergency procurement processes affect collaboration and coordination during oil spill response is undefined, thus requiring further research.
- 67 % of respondents are of the perspective that there was an acceptable level of stakeholder collaboration in oiled wildlife response.

## **Conclusion**

The MV Kiani Satu incident has contributed to improving the level of confidence on the oil spill management skills and understanding of marine oil spill response. It provided a platform for improvement and furthering the country's oil spill management strategy.

Drawing from the lessons learnt from the MV Kiani Satu incident, government prioritization of the provision of oil spill response training and simulation exercise along the local authorities in the South African coastline has since been implemented with all coastal provinces. Feedback from this training programme alludes to awareness by local authorities of the need to improve their skills in oil spill response, policy alignment and operational procedure to enhance the capacity in managing the hazard. Furthermore, the principles of Incident Command System has been adopted in designing an improved oil spill incident management organisation. This undertaking will not only improve stakeholder collaboration for oiled wildlife response, but enhance the efficiency of oil spill response contingency plans in South Africa.

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