

Mombasa is the principle port of Kenya, serving inland countries in Eastern and central Africa. Mombasa port has undergone a massive infrastructure upgrade and dredging works with an expectation that more vessels and large post Panamax ships will be able to enter Mombasa port. Therefore, it is vital to carry out a marine traffic risk assessment in order to quantify the degree of navigation safety needed in the Mombasa approach channel and also to evaluate the navigation risk imposed on transit traffic by local ferry traffic. In this paper, a marine traffic risk assessment is carried out using the IWRAP mk2, Environmental Stress (ES) model, and the PARK model. Risk assessment results show that Likoni area has an unacceptable stress/ risk ranking at 20.7% by the ES model and 38.89% by the PARK model. The IWRAP mk2 model shows that the crossing area has the highest risk of crossing collision and the area at the entrance to the inner channel has a high risk of grounding. The conclusions derived from this study will provide the basis for proposing the most effective countermeasure to improve navigation safety in the Mombasa approach channel.