

Technology and Maritime Security of African Coasts¹

Shreya Goyal²

Abstract:

This paper seeks to discuss the use of new-age technology for maritime safety and security in the African waters for ensuring economical and effective exploration of sea resources. The paper deals with two main variables - technology and maritime security in African waters. Technology enhances surveillance, communication, information sharing, access control etc. which also decreases marine insecurities. Terrorist activities start on the terrestrial land but eventually make their way to the waters, making the sea a hotspot for illegal activities. This paper seeks to investigate how piracy, illicit oil bunkering, unreported and unregulated fishing, attacks on unmanned submersibles, etc. in the coastal zone of the African continent are major maritime menaces. This impedes the optimum exploration of the sea resources. Innovations in Africa's maritime security have led to greater regional coordination and cooperation. Moreover, the 5+5 dialogue between North Africa and Southern Europe, the Yaoundé Code of Conduct (2013) and the Djibouti Code (2009) are some of the main pillars to this issue. The paper undertakes qualitative and quantitative methodologies to study the problem of terrorism with a special focus on the Gulf of Guinea. The paper contends that though the implementation of science and technology requires massive investment, it is the most favourable path to address security threats at sea and boost sea exploration efforts. Since the technology for effective implementation of maritime security and optimum utilization of sea resources are at a nascent stage of development, much would depend on international cooperation and the development of an international regime.

Keywords:

Africa; Coastal states; Piracy; Gulf of Guinea; Technology; Maritime; Sea; Yaoundé Code of Conduct; Maritime Safety; Security.

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² PhD Scholar, Jadavpur University, West Bengal, India; ORCID: 0009-0006-1389-2214; shreya25capricorn@gmail.com.

Introduction

The African coastline is about 48,000kilometers, shared by 38 coastal states. Africa accounts for 2.7% of global trade by value (unctad.org, n.d.). African coastal states borders major sea lanes and the approaches to the Suez Canal making sea a strategic domain for the country. The Territorial sea and Exclusive Economic Zone (EEZ) of African maritime domain cover an area of almost 13 square kilometers while the Continental Shelf covers an area of approximately 6.5 square kilometers. The failure to keep up with the changing maritime technology has made researchers question whether the maritime strategies by Africa have been adequately able to deal with the threats and opportunities arising from maritime domain. In fact 90% of African commerce is facing the issue of legal trafficking. Ensuring a sound and secured environment in and around the sea is extremely important to address issues like poverty, food insufficiency, employment, trade etc., which continue to plague African economy. ‘Maritime insecurity makes it easier for criminals to traffic weapons, drugs and human beings’ (www.interpol.int, n.d.). However, the international community and the coastal states are making immense effort in coming together to combat the issues of maritime insecurities.

The issue of piracy and other maritime related crimes like trafficking, armed robbery, illegal and unreported fishing became most prevalent in the African waters since 2000s. It is also when pirate attacks received international attention in Africa. Maritime piracy peaked to almost 293 attacks in 2011 (Pichon, 2019). However, in Nigeria and West Africa, maritime crimes have dated back since the 1980’s with Nigeria’s oil rich Niger Delta being one of most exclusive region for pirate attacks. These crimes are a reflection of deficiency in the full proof security institutions of Africa. Unstable economic conditions have also acted as a catalyst in multiplying piracy attacks at the sea. Authority crisis is also a major problem for ship industries in Africa. However, the United Nations Conventions on the Laws of Seas (UNCLOS), provides a detailed provision under Article 101 on illegal activities like piracy, vessel management, exploitation of resources etc. 47 African States are parties to the Laws of Seas and have a shared responsibility in keep the sea safe and secured from armed interference and safe transit into international waterways (Vreÿ & Blaine, 2024). Along with this the European union is also building a code of conduct to bring the Indian Ocean island states and East African coastal states together to provide a full spectrum solution for criminal activities in the sea (Africa Maritime Security and Law Enforcement Primer, 2019). Maritime insecurities put immense pressure on the livelihood of coastal nations and their safety and security making it extremely fragile.

Piracy, armed robbery, illegal and unreported fishing, human trafficking across maritime zones, weapon smuggling etc. are some of the crimes that severely hamper international trade and commerce and national security. The main reasons behind the prosperity of crimes at sea in Africa are corruption, poverty, existence of marginalized

communities, lack of updated technology, unemployment etc. In fact as per T. Besley, piracy in Somalia has increased the shipping cost by 12% as ships are advised to take longer but safer routes to avoid hijacking and ransom payments (Besley, Fetzer & Mueller, 2015). The UN started to focus on threats to international shipping in Somalian waters since 2005. Lack of economic development often force marginalized communities to purchase stolen goods from the market thereby incentivizing criminal activities.

Earlier Africa lacked the expertise to direct technical knowhow, managerial and supervisory techniques to make advanced level technology at favorable levels. However, poor economic conditions and pressure from international partners have forced Africa to use new age science and technology. Interestingly, the total investment on technology to defend land borders were far greater in number compared to maritime security. But growing importance of African waters at a global level show that use of technology is a powerful tool to foster maritime security in Africa. Recently, as per United Nations Economic Commission on Africa, the technological capacity of African states has doubled from 25% to 41% (Wad, 1984). Technology has fostered Maritime Domain Awareness (MDA) in Africa. Installation of Automated Identification System (AIS), Synthetic Aperture Radar (SAR), and Electro Optical Imaging (EO), powerful sensors, radars, surveillance system can help in collecting database of hijacking activities, data mining, and pattern recognition of criminal attacks etc. (Balci & Pegg, 2006). It will help in the search and rescue of ship vessels, law enforcement, artificial intelligence etc. The major challenge to the use of advanced mechanisms to ensure maritime security apart from heavy investment, is that intelligence agents must work harmoniously on both revealed and unmarked data to figure out the anomalies of suspicious behaviors at the sea. Pirate attacks have become more sophisticated. They hijack cargo vessels, vessels containing oil, container ships etc. Moreover, pirates take advantage of the porous maritime borders and cross waters to reach another country. Capacity building, information sharing and training of security agency personnel should be two main focus. The use of technology can also provide environmental and meteorological benefits to African continent. The deployment of meteorological sensing network was completed in 2011 in West and Central Africa (Vogel, 2022).

Most affected regions

The Gulf of Guinea region includes two major oil and natural gas producer – Nigeria and Angola. Of recent, piracy attacks have increased in the southern region of the Angola's coast. Piracy attacks in Nigeria account for the maximum number of attacks in West Africa. After Nigeria, Angola is the second largest oil producer in sub-Saharan Africa. The fleeting upsurge of maritime crimes off East Africa has brought into light the inadequacy of African governance to create effective mechanism and responses to violent crimes at the sea. In comparison to East Africa, incidents in littorals off West Africa, have received greater regional attention from private companies, multi-national corporations, and regional organizations. As per the Crisis Group Report, the whole of



Gulf of Guinea region is reported to face rapid rise in maritime insecurities, after others like Somalia, Cameroon, Togo, Equatorial Guinea, Sao Tome etc. (Weldemichael, 2019).

The Gulf of Aden is also a high trafficked maritime bottleneck region. The hijacking of the Maersk Alabama in 2009 in the Horn of Africa led to serious international interventions and deployment of naval task forces to combat piracy in the area. Since 2023, Somali pirates have been involved in more than 30 incidents (Weldemichael, 2019). Off recently, the Houthi attacks on the Red Sea have also exposed the loopholes in the African maritime security. 25 percent of global shipping traffic flows from Red Sea through Gulf of Adens to the Western Indian Ocean (Vreÿ & Blaine, 2024). 133 reported incidents, including 14 vessels struck by missiles or drones and 18 vessels hijacked by Somali pirates have been reported since 2023 (Vreÿ & Blaine, 2024). The Houthi attack is major marker of subsea technological disruption of the African coastal states.

However, Maritime Security Centres (MSCs) in the Gulf of Guinea region is a major step towards decreasing robbery and piracy in the sea. Many other initiatives and international collaborations that have bridged the technological gap required to secure maritime borders in Africa have resulted in collaborative research efforts, information exchange, joint training exercises, early detection of maritime crimes.

2.1 Gulf of Guinea (GoG)

As per the reports by the International Maritime Bureau (IMB), the Gulf of Guinea region saw 130 maritime kidnappings in 22 separate incidents out of a total of 135 attacks in the year 2020 (ICC, International Chamber of Commerce, 2024). Since 2022, the UN and the African Union came together to address the issue of piracy in the GoG. Attacks by pirates, became most serious in 2000s. The region is extremely rich in oil, diamonds, gold, minerals and other natural resources (Denton & Harris, 2019).

Off West Africa in the Gulf of Guinea, regional cooperation efforts with the Economic Community of West African States (ECOWAS), the Economic Community of Central African States (ECCAS) and specialized groupings like Gulf Cooperation Council (GCC) have proved to be beneficial in tackling piracy. The heads of the above mentioned regional organizations met in Yaoundé in June 2013. The meeting at Yaoundé designed a Code of Conduct concerning the Prevention and Repression of Piracy, Armed Robbery against Ships, and illegal Maritime Activities in west and central Africa (Côte-Real, 2022). The Code highlights that regional cooperation and coordination in supporting coastal states in fighting piracy and armed robbery at the sea is pivotal for the GoG region. In case of Nigeria, the Nigerian Maritime Administrative and Safety Agency (NMIMASA), has also been instrumental in reducing threats in the GoG territorial waters. Apart from important international organizations like International Maritime Organization (IMO), United Nations Office on Drugs and Crime (UNODC) and International Criminal Police Organization (INTERPOL), the contribution of European

Union (EU) in creation of EU Maritime Security Strategy and the EU Gulf of Guinea Strategy play a special role (Côte-Real, 2022).

The use of technology has been able to enhance maritime domain awareness in the Gulf of Guinea. The region has limited human and financial resources. Technology installed in the region can lead to greater communication, use of military equipment in conjunction and harmonization of legal and regulatory frameworks related to criminal activities at sea (Ralby, Soud & Ralby, 2019).

Regional cooperation and coordination

Piracy has become an extremely threatening issue in Africa. Regional cooperation and coordination is the only way to contain criminal activities at sea that has now become more violent and sophisticated in their execution.

3.1 Yaounde code of conduct

The Yaoundé code of conduct was a collective action by 25 West African and Central African countries along with ECOWAS and ECCAS to fight against the impact of piracy, robbery, and other illicit maritime activities against ships sailing the Gulf of Guinea like unregulated and unreported fishing, transnational crimes like human and illicit weapon trafficking. It's been a decade since the maritime agreement was adopted. And since then, the code of conduct has been successful in bringing together different stakeholders for communication and information sharing to regulate the affairs of the African sea. The Obangame express exercise 2024 is one of the key steps undertaken under this regional cooperation to ensure the maritime safety in Africa. Regional Center for Operational Cooperation and a Regional Information Fusion Center in Madagascar coordinates among Zones and individual states. The Inter – Regional Coordination Centre (CIC) in Yaoundé looks after the operational, strategically and political aspects of maritime safety in the Gulf of Guinea region (Ralby, Soud & Ralby, 2019). The YARIS network, an information-sharing tool, connects all layers of the security framework, enabling consistent cooperation, surveillance, expeditious information exchange, and uniformity of operation within the framework (Gachie, 2023). The agreement has been successfully able to provide zonal security through technological cooperation and collaborative patrolling in the African waters.

3.2 Djibouti Code of Conduct

The Djibouti Code of Conduct adopted on 2009 is a soft law approach on repressing the maritime issues of piracy and armed robbery against ships sailing in the Western Indian Ocean and the Gulf of Adens. Djibouti, Ethiopia, Somalia, Yemen Kenya, Madagascar, Maldives, Seychelles, the United Republic of Tanzania. Comoros, Egypt, Eritrea, Jordan, Mauritius, Mozambique, Oman, Saudi Arabia, South Africa, Sudan and the United Arab Emirates have since signed the code, bringing the total to 20 countries from the 21 eligible to sign (www.imo.org., n.d). The code became immediately effective after the signatories agreed to cooperate in various aspects under the



International Law like arrest and investigation of suspects involved in piracy and armed robber, either fomented or self-intentionally, prohibiting and seizing suspicious ships and other properties in the African waters, rescue of harmed and attacked ships, provide help and assistance to victims on the ships and conduction shared operations and patrolling with the help of navies of the signatory countries, etc. Recently, the Djibouti Code of Conduct has collaborated with various international organizations like the IMO, NATO, EU, and the Turkish Maritime Programme on capacity building and enhancement of maritime security by training African navies to combat maritime threats more efficiently. In 2022, the Council espoused conclusions on the launch of the Coordinated Maritime aspects conception in the North- Western Indian Ocean, a frame for a strengthened EU part as a maritime security provider in the region and for cooperation with littoral countries and indigenous maritime security associations (Council of EU, 2024). Such Maritime presence became even more important as 80% of the world trade moves through the Indian Ocean, which makes it an important strategic center for maritime conduct and security. The code has been successful in creating a solid information sharing network to counter such threats in the region. Projects to increase the use of terrestrial automatic identification systems (AIS), long-range identification and tracking of ships (LRIT), coastal radar and other sensors and systems have been undertaken and continue to be implemented (The Djibouti Code of Conduct. n.d).

3.3 Lome Charter

The Lome Charter also called as the Africa Charter on Maritime Security and Safety and Development in Africa adopted in 2016, believes that cooperation among African states and coastal areas are the only way of preventing, managing and eradicating maritime threats faced by Africa in the Mediterranean Sea, Gulf of Aden, red sea, the Atlantic sea and the Indian Ocean (Lomé Charter, n.d.). The Charter refers to the “2050 AIM Strategy” which is the 2050 Africa’s Integrated Maritime Strategy adopted by the African Assembly on 27 January 2014. The Charter has proved to be immensely significant in bringing regional cooperation among 31 countries and regional economic countries (RECs). The Charter recognizes the importance of international partnerships by allowing for collaboration with the Indian Ocean Commission and the Gulf of Guinea Commission, in addition to the Commission of the African Union. This reflects a commitment to working together for a stable and secure maritime environment (Blédé & Walker, 2016). The Charter promotes blue economy in Africa which is a major step towards self-sufficiency and growth. The elaborate agreement is a legally binding framework that has successfully promoted social welfare and chalked out means and methods for African countries to combat both domestic and international threats to its maritime security.

However, despite such success, the Lome Charter continues to face some challenges like lack of structure, ambiguity in its articles, lack of strong individual state capacity to contain threats, resource limitation of the African countries, loose framework that may

lead the signatories to promote their self-interest and cause competition, absence of details in the articles of the Charter, etc. that may hinder the ambitions and goals of the Charter. By ensuring clarity and specificity in the terms laid and adopting stronger binding frameworks, the Charter can prove to be very efficient and significant to provide maritime security to Africa.

3.4 2050 African Integrated Maritime Strategy (AIM)

The African Union 2050 African Integrated Maritime Strategy which was adopted in 2014. It believes in linking the ends, means and the ways to achieve comprehensive maritime security conditions in Africa. The strategy uses a coherent, coordinated and comprehensive approach to understand existing and potential maritime threats in Africa and paves way towards environmental and socioeconomic development as well as the capacity to generate wealth from sustainable governance of Africa's seas and oceans. The African Union along with its Regional Economic Communities and other member states lay down a guided maritime review, budgetary planning and effective allocation of resources, in order to enhance maritime operability for a cohesive and economically prosperous Africa (2050 AIM Strategy, n.d.). The strategy functions on the SWOT (strength, weakness, opportunity and threat) analysis approach for development. The strategy is aimed towards improving the quality of life of the African citizens by ensuring security and growth in the African maritime domain. It directly hits the issues of toxic dumping, oil spilling, drainage of hazardous chemicals in the African waters, etc. that have detrimental effect on the biology of the oceans and human and illicit arms trafficking, loss of fishing, etc. One of the major goals of the 2050 AIM Maritime Strategy also includes human capital increment by involving ore social groups and hence, wealth creation. The 2050 AIM Strategy aims to release the pressure on African waters due to issues newer issues like aquaculture, intensive fishing, energy extraction drills, etc. The strategy has been successful in bringing together African nations that face common maritime challenges in the multi-polar world. However, the strategy implementation faces major setbacks like lack of institutional framework, inaccurate crime track records and inefficient regional coordination, etc. The maritime strategy ought to deal with its administrative issues to blossom completely and fulfil its aims. The success of the strategy depends on efficient leadership, increased cooperation among African nations, and greater participation from all levels of society.

3.5 5+5 Dialogue

This cooperation signed between 5 western Mediterranean countries and 5 Maghreb countries in 1990 is a bilateral political agreement that promotes regional development, interdependence and cooperation among the countries. The dialogue covers various topic like defence, security, tourism, education, finance, environment, etc. and is a great initiative towards progress and self-efficiency in Africa. Overtime, it has proved to be a forward looking agenda and joint management arrangement to combat issues illegal human trafficking, transnational migration, public awareness, data sharing, labour



sharing, etc. (International Organization for Migration, 2021). In 2024, Spain is appointed as the chair of the dialogue committee and 12 activities have been scheduled for this year which includes maritime rescue operations, disaster management, mutual tactical operations, etc. (Friedrich Naumann Foundation, 2024). The heterogeneity is the strongest factor behind the dialogue to achieve long term collaboration and capacity building to respond effectively towards maritime crimes. It is majorly operationalized within the ECOWAS to cater and address immediate security concerns like piracy, illegal fishing, sea robbery, etc. around West Africa. Under the 5+5 initiative, the revival of the dialogue after 10 years, marks its unfathomable importance in regional cooperation and development.

Conclusion

Technology enhances maritime security. Technology offers immense support in monitoring, surveillance and response capabilities to criminal activities in and around the sea. Use of comprehensive technology can help in detecting potential threat to ships, container, vessels and cargo more briskly. Regular communication and information sharing enabled through development of radar satellites, identification of vessels, sonar systems etc., help human assets deal critically with anomalies and maritime crimes in the sea. Innovation of technology to strengthen maritime security has also led to synergism and collaboration among various regional and international agencies and maritime security agencies that specialises in maritime technology, electronic information security and surveillances. The role of technology in maritime security is expanding as the criminal activities like piracy, hijacking, armed robbery etc. are becoming more sophisticated in their way of execution. The success of Yaoundé Code of Conduct, Djibouti Code of Conduct, 2050 AIMS etc. have reiterated how the use of advanced autonomous vessels, drones, trackers have reduced the frequency of attacks in the Gulf of Guinea Region. The attacks have reduced significantly from 45 in 2021 that is 16 attacks in the first quarter to 5 attacks in the first quarter of 2023. The Yaoundé Architecture has yielded a massive outcomes resulting in optimum use of naval assets. The recognisable decrease in maritime crimes since 2021 has also encouraged the International Maritime Organisation to extend support towards West Africa too. Therefore, it is visible that technology is a long term solution to major problems of African coastal states including maritime security and crimes against seafarers.

Conflict of Interest

The authors hereby declare that they have no financial interest in this manuscript.

Notes on Contributor

Miss Shreya Goyal is currently pursuing PHD in the Department of International Relations under the academic mentorship of Dr. Om Prakash Mishra, in Jadavpur University in Kolkata, West Bengal, India. She has received her bachelor's degree in Political Science and master's degree in International Relations. Her doctoral interest

addresses International Law and Deep Sea Mining particularly in India. Outside her professional endeavors, she is deeply passionate about public speaking and art. She believes that individuals are driven by two major forces – analytical or logical and creative. It is the mix of both in correct proportions that leads to a great research work. Her paper focuses on the technology and maritime security of African coastal countries. Prior to pursuing her PHD, she has worked as an educator, a social-work volunteer and a freelance researcher. She takes deep interest in cinema and literature.

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