

## Leveraging technology for maritime domain awareness and security in Southern Atlantic African countries.

Ifesinachi Okafor-Yarwood, University of St Andrews.<sup>1</sup>

### Introduction.

The Gulf of Guinea (GoG), comprising nineteen coastal states from West and Central Africa, is situated in the Southeasternmost part of the North Atlantic Ocean. Covering approximately 6,000 km of coastline and stretching from Senegal to Angola, the region is an important shipping zone for countries within and outside the Atlantic Ocean. It has vast [mineral, energy and fisheries \(marine\) resources](#). Critical maritime infrastructure, such as [undersea cables](#), vital for global communication and the digital economy, are laid beneath the regional seabed. These attributes make the region an important sealine of communication, attractive to countries from other parts of the Atlantic, in the West, and non-Atlantic nations in Asia. The region is an important part of the broader Atlantic region.

[Southern Atlantic countries in South America and GoG share](#) common threats that undermine the peace and security of the whole Atlantic region. These threats are not to be taken lightly. In particular, countries in the GoG face challenges with weak maritime governance and insufficient monitoring, control, and surveillance of their waters, which pose a significant risk to the security of the region and the broader Atlantic area. Specifically, piracy and armed robbery at sea disrupt the free movement of vessels travelling to and from other parts of the Atlantic, threatening international trade and economic stability. Southern Atlantic countries are transit routes for the trafficking of drugs, arms, and people, contributing to the global rise in organized crime. Criminal organisations use these routes to smuggle goods between other parts of the Atlantic, such as Europe, Africa, and South America, further destabilizing these regions, and distant water fishing vessels target weak monitoring and enforcement to engage in illegal, unreported, and unregulated fishing, exacerbating the depletion of fish stocks and undermining food and economic security in the region.

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<sup>1</sup> Dr Okafor-Yarwood is a leadership, security and development scholar, specialising in oceans governance and maritime security. She is also a PEW Marine Fellow (2023).

Moreover, South Atlantic countries are increasingly susceptible to cybercrime targeting critical infrastructure such as [port infrastructure](#) and [undersea cables](#). These attacks can be physical, involving [cutting of the cables](#), as well as [cyber-attacks](#) such as distributed denial-of-service (DDoS) that aim to disrupt the normal traffic of a targeted server, wiretapping and data interception perpetrated by state and non-state actors, all of which pose a serious threat to global communication and the digital economy.

No one country can efficiently address the maritime security threats highlighted earlier. Already, multilateral coordination mechanisms have proven essential in addressing these challenges, and technological tools have enabled countries to collaborate more efficiently in monitoring, controlling, and surveying their waters. In the GoG, technological tools have played a crucial role in improving maritime domain awareness (MDA) and, as a result, maritime security. Specifically, [technological tools](#) and systems have helped countries like Nigeria combat piracy in its waters, resulting in Nigeria being delisted as a piracy hotspot, while their deployment in Guinea-Conakry has facilitated the interception of illegal and unreported fishing vessels.

#### **Technological tools and maritime domain awareness.**

Our [recent research](#) found that technological tools have helped countries in the GoG to manage and monitor the marine environment more efficiently. They also support information sharing among law enforcement agencies, leading to successful interdictions and enabling the prosecution of pirates in the region. Specifically, since cargo and fishing vessels are mandated, under international law, to be fitted with systems that transmit data showing where they are, such as Vessel Monitoring Systems (VMS) and automatic identification systems (AIS), [technological tools](#) are being deployed by South Atlantic states through the integration of various systems to identify suspicious behaviours, communicate with each other and where possible successfully interdict criminals at sea or perpetrating vessels. These systems complement data from more traditional monitoring technologies, such as RADAR and satellite imagery, and when combined, are improving safety and transparency at sea by closing [information 'blind spots'](#).

While technological tools have undoubtedly enhanced MDA amongst GoG countries, they are still evolving at a rate many countries in the region cannot afford or have the human capacity to operate. For instance, [satellite mapping](#) technology uncovered significant vessel activity in

ocean areas previously inactive by public tracking systems. This includes both fishing and non-fishing vessels. Surprisingly, 7% of this activity occurs in African waters, with the western coasts of Africa being the most affected. Yet, many of the countries in the region either do not have the human capacity to deploy the technological tools or, even when they are regionally available, such as the YARIS platform, their navies or coast guards do not have the assets (patrol vessels) to interdict when the need arises.

Further, many of the current technological tools utilised by GoG countries, such as the YARIS system, Skylight, Global Fishing Watch, and Sea-vision, belong to, are funded by, or are managed by entities outside the GoG. Even when these agencies are from the wider Atlantic regions in the Americas and Europe, this exposes the technological and related human capacity gaps of GoG countries, which remain at the subsistence level of our ancestors. Without access to the [deep-sea technologies](#) central to extending MDA below the ocean surface, countries in the GoG are ill-equipped to tackle emerging forms of [cybercrime](#), such as the increased threat to under-sea infrastructure.

### **Towards a broader maritime cooperation within the Atlantic.**

Countries in the GoG recognise the importance of cooperating with their partners in the other parts of the Atlantic to improve safety and security in their waters and harness the potential of their oceans environment and resources. In September 2023, several countries from the Atlantic adopted a [Declaration on Atlantic Cooperation](#) in the United States. The declaration aims to expand cooperation between Atlantic countries on several shared goals and principles. Angola, Cabo Verde, Cote d'Ivoire, Equatorial Guinea, Gabon, The Gambia, Ghana, Guinea, Liberia, Mauritania, Nigeria, the Republic of the Congo, Senegal, Togo and other countries within the wider Atlantic region have adopted this Declaration. Information sharing capacity and technology, increasing maritime awareness, and identifying critical gaps in capacity and technology are key components of the Declaration's [Action Plans](#). Increasing access to maritime domain awareness technology and voluntary and mutually agreed-upon transfers of knowledge and technology are equally highlighted. These cooperative agreements are essential to elevating regional issues and interests on the global political agenda and increasing the visibility of [holistic approaches to maritime security](#) practised amongst African nations.

In addition to building inter-state cooperation, leveraging partnerships between [public and private](#) entities in Atlantic countries is crucial for advancing the deployment of technological tools for maritime security, especially since these tools are predominantly developed in the private sector. Both sectors can combine resources, expertise, and innovative capabilities to create technological solutions that effectively address evolving threats. This collaborative approach enables the rapid adaptation of technological tools to keep pace with advancements and emerging security challenges. Additionally, public-private partnerships foster knowledge exchange, promote best practices and ensure that technological developments align with maritime security stakeholders' needs. It will also address the funding gap, a major concern for GoG countries.

Finally, Southern Atlantic countries such as those in the GoG have made remarkable progress in improving their MDA by deploying [technological tools](#), resulting in successful criminal interdictions and prosecutions. However, as the nature of security threats at sea evolves, so should the strategy for addressing the threats. Technological tools have proven reliable for enhancing maritime safety and security cooperation in the wider Atlantic region. The next step in building sustainable safety and security at sea should be centred on delivering tangible results at the national, regional, and wider Atlantic levels, as well as on building capacity and establishing equal access to ensure technologies are utilised effectively.