Emerging Technologies and Maritime Peacebuilding in Africa: Rethinking Security Architectures Beyond Conventional Maritime Threats

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Abstract

Africa's maritime domain sits at the intersection of security, governance, and development shaped by both entrenched traditional threats and emerging risks. This article examines the potential roles of emerging technologies to advance maritime peacebuilding in Africa, focusing on how they can help security strategies move beyond conventional threats such as illegal fishing, trafficking, and insurgency. It argues that existing frameworks, including the African Integrated Maritime Strategy (AIMS 2050), the Lomé Charter, and regional mechanisms, such as the Yaoundé Architecture, - remain constrained by limited maritime domain awareness, uneven governance and inadequate resources.

Drawing on the peace-security-development nexus, this article analyzes how technologies such as artificial intelligence, big data analytics, and unmanned systems can strengthen maritime governance by improving domain awareness, reinforcing law enforcement, and enabling inter-regional cooperation. Beyond operational gains, these technologies can enhance state legitimacy, improve resource management, and support the blue economy in vulnerable or conflict-affected coastal states. Yet their adoption also carries risks, such as a widening digital divide, cybersecurity vulnerabilities, dependence on foreign suppliers, and the potential militarization of maritime governance.

The article therefore proposes a maritime peacebuilding framework that embeds technological innovation within the African Peace and Security Architecture (APSA) and the Post-Conflict Reconstruction and Development (FPRD) mechanisms. It concludes that emerging technologies should complement, rather than substitute for, governance efforts, and their contribution to peace depends on strong institutions, effective regional cooperation, and inclusive policy design.

Keywords: maritime peacebuilding; emerging technologies; maritime security architecture; blue economy; Africa; peace and security governance.

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Introduction

> Bakassi Peninsula, Cameroon, 24th July 2030 at 3:06 p.m. A fishing community along Gulf of Guinea coastline reports unusual activities. A fleet of unidentified vessels has entered the country's exclusive economic zone, disabling their tracking systems and exploiting marine resources without authorization. At the same time, an autonomous surveillance drone detects abnormal maritime movements linked to trafficking network operation between Cameroon, Nigeria and Equatorial Guinea. Within minutes, big data systems cross-reference satellite imagery, vessel data, and regional intelligence feeds, alerting maritime authorities across borders. Yet the response depends not only on technology but on whether states possess the institutional capacity, legal frameworks, and regional cooperation mechanisms needed to convert information into effective action.[1]

This imaginary scenario illustrates a trend that is becoming increasingly plausible across the African maritime realm: the rise of digital security governance. Indeed, studies determine that the future of maritime security will no longer rest on naval capability, patrol vessels, or conventional law-enforcement, but on the ability of states and regional organizations to embed emerging technologies within broader systems of governance, cooperation, and peacebuilding (Bueger & al., 2024; Talpur & al., 2025; Pohuntu and Ermolai, 2024; Rozbiewska, 2025). However, the central challenge facing Africa is not simply how to secure its maritime spaces, but how to transform them into zones of resilience, economic opportunity, and sustainable peace (Ogbobode, Sabella and Tohnji Samah, 2025).

Over the past decades, Africa's maritime domain has become a focal point where security, governance, development and geopolitical competition intersect (African Center for Strategic Studies, 2016; Oluyemi and Elhudairi, 2025). Spanning the Atlantic, Indian Ocean and Red Sea basins, these waters account for over 90 percent of the continent's external trade, on one hand, and constitute strategic spaces for energy infrastructure, fisheries and emerging blue economy initiatives, on the other hand (Africa Center for Strategic Studies, 2026; Okafor-Yarwood & al., 2020, 2022; African Union, 2014; European Commission, 2023). Yet, they remain prone to persistent insecurity, institutional fragmentation, and governance deficits that undermine state authority, economic development and regional stability (Africa Center for Strategic Studies,

[1] Fictional scenario created by the author with the assistance of ai tools.

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2016). This multifaceted insecurity encompasses traditional threats such as piracy, armed robbery at sea, illegal fishing, trafficking networks, and the maritime dimensions of violent extremism, all of which pose serious risks along coastlines (Hansen, 2013; Percy and Shortland, 2013).

Addressing these challenges effectively requires Africa to strengthen existing measures by drawing on innovations already tested in more technologically advanced regions. Satellites, surveillance, artificial intelligence, big data analytics, autonomous maritime systems and digital port infrastructure are becoming increasingly accessible tools for enhancing maritime domain awareness, enabling real-time tracking of vessels and improving the detection of illicit activities (UNCTAD, 2023; Steff, 2020). Used inappropriately, however, these same tools can generate perverse effects. Used well, as they are meant to, they can advance maritime peacebuilding in Africa and help transform security architectures beyond threat-centric approaches alone. In short, emerging technologies can reinforce the maritime governance capacity of African states, but that their contribution depends on the strength of institutional frameworks, the degree of regional cooperation, and the inclusiveness of governance arrangements.

This study, conducted in a qualitative analytical approach based on secondary sources, public policy documents and academic literature, successively examines the traditional maritime threats and the structural limitations of existing security architectures (part 1), analyzes the transformative potential of emerging technologies for maritime governance (part 2), and proposes a framework for integrating technological innovation into maritime peacebuilding and post-conflict reconstruction efforts in Africa (part 3).

1. Conventional Threats and the Structural Limits of African Maritime Security Architectures

African maritime space a range of security threats rooted in governance weaknesses. Existing maritime security frameworks established by states and regional organizations remain constrained by operational and institutional limitations, which this part examines in turn.

1.1. Persistent and Intertwined Traditional Threats

The expansion of maritime economic activities across Africa has been accompanied, paradoxically, by a diversification of security threats that pose a serious challenge to states and regional governance systems alike. Table 1 below summarizes the evolution of these conventional threats.

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Table 1- Evolution of Conventional Maritime Threats in Africa

Designation	Current Trend	Estimated Magnitude	Principal Areas
Piracy and armed robbery	Declining but still violent	Average 20 incidents annually	Gulf of Guinea and Somalia
IUU fishing	Increasing	US$9 to 11.5 billion annual losses	West, East and Southern Africa
Drug trafficking	Increasing	Hundreds of tons of cocaine transiting annually	Gulf of Guinea, Atlantic Coast
Oil theft	Increasing	100,000 to 200,000 barrels stolen daily	Gulf of Guinea
Human trafficking	Increasing	Thousands of migrants annually	Mediterranean and Atlantic routes
Environmental crimes	Increasing	Widespread ecological and economic losses	Continental coastline

Sources: ICC, 2025; Arora Akshat, 2025; Germany, 2025; Japan P & I News, 2024.

This synopsis indicates that piracy and armed robbery at sea remain among the most visible and pernicious manifestations of maritime insecurity in Africa, encompassing both kidnappings for ransom and armed attacks on commercial vessels. Although international naval operations and regional cooperations have significantly reduced the number of attacks since 2020, the Gulf of Guinea continues to rank among of the world's most dangerous maritime environments (Adejumo, 2026; Ogbobode Abidde and Tohnji Samah, 2025). According to the International Maritime Bureau, incidents in the Guinea declined from 84 attacks to 18 between 2020 and 2024 (IMB, 2025). Yet, violence has remained disproportionally acute; the region accounted for all 12 crew kidnappings recorded worldwide in 2024, suggesting that as attacks become less frequent, they grow more violent and strategically significant (ICC, 2024; US Maritime Administration, 2024). This pattern underscores the strong link between security issues governance and development challenges. Indeed, poverty, governance gaps and weak state presence in coastal areas continue to sustain the conditions favorable to maritime crime (Very, 2010, 2013; CASADE, 2022). Thus, the courses of action can vary from a space to another. For instance, Somali piracy focuses on taking hostages for ransom, whereas maritime crime in the Gulf of Guinea combines oil theft, kidnappings for ransom, and armed attacks on commercial vessels (International Maritime Bureau, 2023). These activities are deeply embedded in local political economies, where criminal networks often intertwine with corruption and failing enforcement institutions (Very, 2010, 2013; CASADE, 2022) – further confirming that maritime crime in Africa is not merely a security issue but also a governance and development challenge.

The table also shows that illegal, unreported and unregulated (IUU) fishing constitutes another major component of maritime insecurity, as African waters are intensively exploited,

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with considerable losses attributable to foreign industrial fleets as well as to illegal national operators. According to credible sources, African countries lose billions of dollars annually to IUU fishing with consequences for food security and coastal livelihoods (FAO, 2022; Okafor-Yarwood et al., 2022). In West and East Africa alike, the depletion of fish stocks has intensified competition among small-scale fishers, generating social tensions and undermining the economic stability of coastal areas. This illustrates how environmental exploitation compounds governance gaps to produce structural insecurity.

Vessel traffic networks add a further layer of complexity, as the continent's maritime routes are increasingly used to fraudulently move narcotics, weapons, counterfeit goods, and human beings (UNODC, 2024; Adejumo, 2026). These illicit activities are inherently facilitated by weak maritime surveillance capacities, corruption, and fragmented law enforcement across jurisdictions (UNODC, 2024). According to available documentation, the Gulf of Guinea and the western Indian Ocean function as transit points linking Latin American drug cartels, Middle Eastern arms suppliers and European markets (CSIS, 2021; Badurdeen, 2023), forming transnational networks erode state authority and sustain installing parallel economies competing with formal governance structures.

Additionally, maritime insecurity is also entangled with violent extremism and insurgency in some regions. In East Africa, for example, Al-Shabaab exploits coastal routes for logistics, financing, and the movement of fighters, underscoring the strategic importance of maritime space in contemporary asymmetric conflict (Badurdeen, 2023; Sithole, 2022). Similarly, the insurgency in Cabo Delgado province in Mozambique highlights the weight of maritime infrastructure and offshore natural gas reserves in shaping conflict dynamics (Pinto Arena, 2026; American Enterprise Institute, 2023). These cases illustrate the convergence of maritime insecurity with broader regional instability, particularly in fragile coastal states.

The last and not the least layer of insecurity is environmental and climatic pressures. Rising sea levels, coastal erosion, marine pollution and the overexploitation of marine resources increasingly affect African coastal communities, eroding livelihoods and heightening the risks of displacement and competition over scarce resources (IPCC, 2023). Several studies suggest that these environmental stressors amplify pre-existing socio-economic vulnerabilities and can fuel conflict dynamics in coastal regions. Maritime insecurity in Africa must therefore be understood

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as a multidimensional issue situated at the intersection of security, the environment, and development.

1.2. African Institutional and Normative Responses

Faced with the complexity of maritime threats, African States and regional organizations have established a range of institutional and normative structures to strengthen governance at sea. These frameworks recognize the fundamentally transnational nature of the threats and the need for coordinated regional actions. On the most influential is the African Integrated Maritime Strategy (AIMS, 2050), which offers a unified vision for African maritime governance. Adopted by the African Union in 2014, it underscores the importance of securing the maritime domain while harnessing its resources for sustainable development and economic progress, taking an integrated approach that links maritime security, environmental sustainability, governance reform and the rise of the blue economy (African Union, 2014). This mechanism was strengthened in 2016 by the African Charter on Maritime Safety, Security and Development (Lomé Charter), which establishes a legal and institutional framework for inter-state cooperation. It seeks to foster the fight against maritime crime, raise security standards, and promote sustainable maritime development, marking a shift towards governance frameworks that fully integrate economic and development dimensions.

Other operational mechanisms exist at the regional level, including the Yaoundé Architecture for Maritime Security in West and Central, which facilitates information sharing, joint surveillance and a coordinated response to maritime threats in the Gulf of Guinea (Onuoha, 2013; Menzel, 2026). In the western Indian Ocean, organizations such as Intergovernmental Authority on Development (IGAD), the Indian Ocean Commission, and the East African Community (EAC) have supported counter-piracy, maritime law enforcement, and regional coordination (Pinto Arena, 2026; Vrëy, 2013). Lastly, international actors, including the European Union (EU), the International Maritime Organization (IMO) and the United Nations Office on Drugs and Crime (UNODC) have further contributed through capacity building, technical assistance and maritime security training (IMO, 2023).

1.3. Structural Obstacles and Institutional Deficits

The persistence of maritime insecurity in Africa, despite the proliferation of governance frameworks, reveals deep structural constraints rooted in broader governance weaknesses. A first constraint is limited maritime domain knowledge awareness. It is established that effective

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maritime governance requires the capacity to monitor vast areas, detect anomalies, and coordinate rapid responses. Yet many African coastal states lack adequate surveillance infrastructure such as radars, patrol boats, satellite capabilities (Bueger, 2015). As a result, large portions of their exclusive economic zones are inadequately monitored and open to illicit maritime activities. In addition to the lack of adequate monitoring infrastructure, there are financial and logistical problems. It is obvious that maritime security demands substantial investment in infrastructure, technology and human capital. Yet many African governments must weigh these needs against competing development priorities, while reliance on external donors and partners can further undermine the sustainability and local ownership of maritime security initiatives.

Let's also mention the institutional fragmentation as another major obstacle . Responsibilities for maritime governance are often dispersed across multiple agencies, notably marines, coast guards, customs authorities, fisheries services, and environmental agencies; in the absence of effective coordination mechanisms, this fragmentation produces overlapping mandates, bureaucratic inefficiency, and weak policy coherence, undermining the states' ability of States to respond to threats that are inherently multidimensional.

Another major issue is governance deficit and corruption. Of course, weak regulatory frameworks and limited enforcement capacity allow illicit maritime activities to flourish, while corruption within law enforcement agencies can facilitate illegal fishing, trafficking, and other forms of maritime crime, eroding state authority and public trust (Transparency International, 2021). In some contexts, maritime crime networks are entangled with political and economic structures, making reform efforts even more difficult.

It is important to underline that all the above-mentioned pitfalls are more acute in fragile and post-conflict states, where institutional capacity is already weakened, and maritime governance is often relegated to the background behind more immediate security and humanitarian concerns. Yet neglecting maritime spaces can create governance vacuums exploited by criminal networks and armed groups, to the detriment of long-term peacebuilding (Bueger, 2015). Taken together, these limitations reveal the inadequacy of approaches centered narrowly on law enforcement and naval capability for addressing the complex, multidimensional nature of maritime insecurity in Africa, underscoring the need for more integrated approaches

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that combine security, governance, development, and technological innovation, as examined in part 2.

2. Emerging Technologies and the Transformation of Maritime Governance

Despite the existence of several continental and regional security architectures, maritime insecurity persists in Africa, exposing the limitations of traditional enforcement methods. Limited domain awareness, institutional fragmentation, and resource constraints continue to hamper existing maritime governance systems. Against this backdrop, emerging technologies are increasingly reshaping maritime governance at the operational, institutional and strategical levels. Far from being neutral tools, they are transforming how maritime spaces are perceived, monitored and managed.

2.1. The digital Revolution in Maritime Security

The global maritime sector is undergoing a major technological transformation driven by advances in artificial intelligence (AI), satellite surveillance systems, big data analytics, autonomous platforms and digital communication networks - innovations that are profoundly redefining how maritime spaces are monitored and secured (Kraska and Pedrozo, 2013). For African states, often constrained by limited capacity relative to the vast maritime territories they must govern, these technologies offer new opportunities to close long-standing gaps in surveillance and law enforcement.

A key development concerns the rise of maritime domain awareness (MDK) systems, broadly understood as the effective understanding of any activity associated with the maritime environment that could affect safety, security or economic interests (IMO, 2023). Satellite-based Automatic Identification Systems (AIS) and Synthetic Aperture Radar (SAR) technologies now enable real-time tracking of vessel movements across vast ocean areas, including the detection of vessels seeking to evade tracking (OECD, 2016).

Another determining contribution stems from artificial intelligence, and its derivatives, which facilitate the predictive analysis and anomaly detection. Actually, AI-based systems can process large volumes of maritime data to identify patterns associated with illegal fishing, smuggling, or piracy (Pohuntu and Ermolai, 2024; Talpur Kashif et al., 2025). This marks a significant shift from reactive to predictive maritime security that allows authorities to anticipate threats rather than merely react to them.

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For their part, unmanned systems, such as drones – aerial, surface and underwater - are increasingly used for coastal surveillance, search and rescue operations, and infrastructure protection (Raska and Bitzinger, 2023; Steff, 2020). They accordingly offer economically viable alternatives to traditional naval patrols for states with limited budgets. Existing studies indicate that the process of adopting unmanned systems in maritime surveillance is already underway in several African contexts, notably in Western Indian Ocean and Western (African Development Bank, 2022; Njoke Mboce, 2026).

The digital transformation is also reshaping port infrastructure and maritime logistics, as smart ports integrate sensors, automated systems and digital platforms to improve the efficiency, safety and transparency of maritime trade (UNCTAD, 2024). Given the central role of ports in African foreign trade and regional integration, these innovations have important implications for economic development and the resilience of supply chains.

2.2. Strengthening Governance and Institutional Effectiveness

Beyond operational gains, emerging technologies are equally redefining governance structures and institutional capabilities in the maritime domain. Let's recall that effective governance relies on the ability of institutions to regulate resources, enforce rules, and maintain legitimacy with citizens (Rotberg, 2004). It is obvious, that digital technologies, if proficiently used, can become levers of governance by improving transparency, accountability and administrative efficiency in maritime security. This can be applied foremost to fisheries governance to significantly curb illegal, unreported and unregulated fishing that remains a major challenge for African coastal states, generating considerable economic losses and ecological harm (FAO, 2022). Moreover, satellite monitoring systems and digital licensing platforms now allow governments to better track fishing activities, enforce regulations, and combat illegal exploitation of marine resources contributing simultaneously to environmental protection and stronger state control over marine resources (Okafor-Yarwood, 2020).

Emerging technologies also help reduce corruption and increase transparency, in the sense that ship registers, blockchain-based tracking systems, and automated customs platforms reasonably limit opportunities for illicit activities and administrative manipulation (World Bank, 2024). Given the role corruption plays in enabling maritime crime networks, such tools are essential to improving governance outcomes and restoring institutional credibility (Transparency International, 2021).

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Digital platforms further facilitate regional cooperation by accelerating information sharing among maritime agencies. Because maritime threats are transnational in nature, they demand coordinated responses across jurisdictions. Thus, integrated maritime information systems, such as those developed under the Yaoundé Architecture in the Gulf of Guinea, illustrate how digital connectivity can strengthen collective maritime situational awareness and operational coordination (Menzel, 2026; Onuoha, 2013), a pattern echoed by similar initiatives in the Western Indian Ocean (Njoke Mboce, 2026).

Finally, technological innovation contributes to strengthening the legitimacy of the state. When governments can effectively monitor and protect marine resources, they build public confidence in their ability to provide security and economic prosperity (Fukuyama, 2013). In coastal communities dependent on fishing and maritime trade, stronger enforcement capacity can mitigate grievances and reinforce the social contract between citizens and the state.

2.3. Technology and the Potential for Peacebuilding

The influence of emerging technologies extends beyond governance and security into broader peacebuilding and post-conflict reconstruction efforts. Contemporary peacebuilding scholarship emphasizes the need to link security measures to economic recovery, institutional strengthening, and social resilience, a nexus in which maritime governance is central to this, especially for coastal and island nations (Tschirgi et al., 2010). A first contribution lies in supporting the blue economy. Sectors such as fisheries, shipping, offshore energy and marine tourism are critical to Africa's economic growth; technologies that enhance maritime security and resource management directly benefit these sectors by curbing illegal activities and increasing productivity (African Union, 2014). In post-conflict contexts such as Somalia or Mozambique, improved maritime governance can contribute to economic stabilization and job creation.

Technological innovation also builds institutional resilience in fragile environments. Post-conflict countries often face weak administrative structures and limited governance capacities; digital governance tools, integrated data systems, and automated oversight mechanisms can strengthen institutional effectiveness by improving coordination, reducing inefficiencies, and enhancing service delivery (World Bank, 2024).

Environmental governance constitutes a further area where emerging technologies support peacebuilding. Climate change, marine pollution and coastal degradation are increasingly recognized as drivers of insecurity and displacement in maritime regions (IPCC, 2023). So,

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remote sensing technologies and environmental monitoring systems enable early detection of ecological stress, supporting preventive actions that can mitigate the risk of resource-related conflicts (IDE, 2023). Emerging technologies also advance regional integration by enhancing maritime connectivity and trade facilitation, as safer, more efficient maritime transport systems reduce transaction costs and strengthen economic interconnection among African states – a dynamic of particular relevance to the African Continental Free Trade Area (AfCFTA), which relies heavily on maritime infrastructure to expand trade (ECA, 2022).

In conclusion, emerging technologies are profoundly transforming maritime governance in Africa, strengthening surveillance capacities, maritime domain awareness and institutional effectiveness (Steff, 2020). Through satellite systems, artificial intelligence, unmanned platforms and digital governance tools, African states and regional organizations can better monitor their maritime space and address complex security challenges. Beyond operational improvements, these technologies help strengthen governance structures, promote transparency, and consolidate state legitimacy, with effects that extend to economic recovery, environmental sustainability, and regional cohesion. These benefits, however, are not automatic; their realization depends on institutional capacity, governance standards and regional cooperation. Technology should therefore be understood not as a substitute for governance, but as a multiplier within broader maritime peacebuilding frameworks, the subject to which part 3 now turns.

3. Towards a Technology-Enabled Maritime Peacebuilding Framework

The rapid evolution of technologies is reshaping the functioning of maritime governance and expanding the operational capacities of African States. Africa's maritime spaces are not merely geographical realities; they are integral to national economies, strategic trade routes and areas where security risks intersect with development challenges. The integration of technology into maritime governance therefore carries implications not only for security operations but also for broader goals of peacebuilding, post-conflict reconstruction, and sustainable development. Yet the impact of these technologies remains contingent on institutional, political and socio-economic factors that vary considerably across African states (Anning-Dorson, Segodi, and Boadi Nyamekye, 2026). While tools such as satellite surveillance, AI, and unmanned systems hold real potential to strengthen maritime domain awareness and law enforcement, their success depends on institutional support, political will and adequate financial resources.

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3.1. Risks and Unintended Effects of Digital Maritime Governance

Despite its recognized benefits, the digital transformation in the maritime domain raises several structural, political and ethical challenges, which must be carefully addressed if technology is to serve peace rather than exclusion or control. A first concern is the widening digital divide among African state. As formally underlined by the African Development Bank (2022), some coastal states, those with stronger economies and better governance structures, are rapidly adopting advanced surveillance systems, AI-driven analytics, and integrated command infrastructures, whereas many others remain constrained by inadequate physical infrastructure, weak institutional capacity, and financial resources. This disparity risks producing uneven security outcomes across the continent and reinforcing the fragmentation of governance structures (Njocke Mboce, 2016; Anning-Dorson, Segodi, and Boadi Nyamekye, 2026).

A second pattern is the growing exposure to cyber threats as maritime governance becomes increasingly digitized. Critical infrastructure (port management systems, ship tracking platforms, national maritime databases) is becoming attractive targets for malicious actors (World Bank, 2024). Cyberattacks on these systems could disrupt trade, compromise security intelligence, impede interagency coordination, and erode public trust in digital governance platforms, especially in fragile and post-conflict environments, given their limited cybersecurity expertise and reduced administrative resilience. Without parallel investment in cybersecurity infrastructure, the digitalization of maritime governance could introduce new drivers of instability.

Dependence on foreign technology providers also raises further questions of sovereignty. Many African states rely heavily on external sources for satellite imagery, surveillance systems, maritime data analysis, and digital infrastructure (Okechekwu Effoduh, 2025). While such partnerships can build capacity in the short term, they also risk creating dependencies that constrain states' autonomy in defining their own maritime security priorities. Genuine technological sovereignty, grounded in real ownership and control of the systems deployed, should therefore be a strategic priority, in order to avoid entrenching structural dependencies.

Furthermore, the adoption of advanced surveillance technologies also carries the risk of militarizing maritime governance. Expanding surveillance systems and law enforcement tools can steer governance towards a security-first model that alienates local maritime communities, straining relations between state authorities and coastal population whose livelihoods depend on

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maritime activity. On this note, researchers note that when surveillance and repression take precedence over support and partnership, state legitimacy weakens, grievances accumulate, and the conditions conducive to conflict and crime are reinforced (Okafor-Yarwood, 2020).

Lastly, the rapid deployment of AI, predictive analytics, biometric data collection, and digital tracking raises ethical and regulatory issues that African legal frameworks have yet to fully address (Njoke Mboce, 2026). Questions of ownership, storage, sharing, protection and liability related to AI-driven decision-making systems must be clarified to prevent misuse. Closing these ethical and regulatory gaps is essential if digital maritime governance is to effectively serve the public interest.

3.2. Integrating Maritime Technologies into the Peace-Security-Development Nexus

Addressing these interconnected challenges, and fully realizing the transformative potential of emerging technologies, requires situating maritime governance within a broader peace, security and development framework rather than treating it as a narrowly technical or security issue (Tschirgi et al., 2010). This approach recognizes that sustainable peace extends beyond the absence of armed conflict and requires simultaneous progress in effective governance, economic development, social inclusion and environmental sustainability. Within this framework, maritime technologies should be designed and deployed primarily as tools for governance, promoting transparency, coordination and accountability instead of instruments of control or surveillance alone. Human security should be central to this approach, recognizing that the safety and well-being of coastal communities are closely bound to the overall stability of maritime areas (FAO, 2022). This entails prioritizing community involvement in maritime governance decisions, as well as ensuring that the perspectives of small-scale fishers, small-scale traders, women's groups, and youth organizations inform policymaking, and developing technology systems that genuinely support, rather than undermine them, local livelihoods.

The consolidation of ecological peace is a further essential component. Sustainable management of marine resources, including fisheries, mangroves, coral reefs, seabed minerals, is not only an environmental imperative but also a peacebuilding one (IPCC, 2023). Historical conflicts linked to resource scarcity and ecological degradation of maritime areas underscore the importance of technologies that strengthen environmental monitoring and promote sustainable resource management as a means easing tensions.

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Regional cooperation mechanisms are equally indispensable given the transnational nature of maritime challenges and opportunities. Indeed, no single African state can govern its maritime space effectively in isolation. Strengthening and expanding information-sharing mechanisms, conducting joint surveillance operations, coordinating law enforcement efforts, and collaborative planning – as exemplified by the Yaoundé Architecture for Maritime Security in the Gulf of Guinea - remain therefore essential to building the institutional architecture required for genuinely technology-driven maritime governance.

3.3. Towards an Inclusive Maritime Peacebuilding Framework

Building on the preceding analysis, this article proposes the creation of a comprehensive maritime peacebuilding framework for Africa, one that relies on technology while encompassing a wide range of institutional, regional, and developmental initiatives. The framework is deliberately ambitious, attentive to the continent's institutional context of the continent, and organized around five component that together prioritize inclusion, sovereignty and sustainability.

The first component is the integration of maritime digital technologies into existing continental structures, in particular the African Peace and Security Architecture (APSA) and the African Union's Post-Conflict Reconstruction and Development (PCRD) framework. Embedding maritime governance explicitly within these structures would allow African states and the AU Commission to treat maritime peacebuilding as a central strategic priority rather than a secondary security concern, establishing coherent policy linkages between maritime governance, conflict prevention, and post-conflict reconstruction across the continent.

The second component concerns capacity-building and technology transfer to help bridge the digital divide. Regional centers of excellence dedicated to maritime digital governance could provide targeted training in AI applications, satellite analytics, cybersecurity protocols, autonomous systems management, and data governance (African Development Bank, 2022). Distributed across African sub-regions to reflect the continent's maritime diversity, such centers would strengthen technical skills while cultivating a new generation of African professionals capable of driving innovation in maritime technology, advancing genuine African ownership of these systems.

The third component involves strengthening of cybersecurity resilience through regional cooperation mechanisms. Collective action is needed to protect ports, surveillance networks,

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vessel-tracking databases and digital communication systems from cyber threats, including the sharing of threat intelligence, the establishment of common cybersecurity standards, and the implementation of rapid-response protocols (UNCTAD, 2023). Protecting this digital infrastructure is essential to preserving the integrity and public trust on which effective maritime governance depends.

The fourth component is the design of public-private partnership. While private sector actors play an important role in providing maritime surveillance technologies, data analytics platforms and digital port management systems, their involvement must be governed by clear rules that align public governance objectives, prevent commercial interests, prevent commercial interests from capturing critical infrastructure, and ensure that the pursuit of profit does not compromise accountability, equity, or national sovereignty (World Bank, 2021).

The fifth and most integrative component lies on linking maritime governance to socio-economic development strategies, particularly within the expanding blue economy. Well-governed maritime spaces are essential to facilitating regional trade, supporting fisheries, attracting investment in offshore energy, and strengthening economic integration within the African Continental Free Trade Area (AEC, 2022). By embedding maritime peacebuilding within development plans and linking it to the well-being and aspirations of coastal communities, African governments can ensure that the benefits of technology investments deliver benefits that extend security to the communities at the heart of sustainable maritime peace.

In summary, while emerging technologies offer significant opportunities to transform maritime governance in Africa, their contribution to peacebuilding is not automatic. Digital tools can strengthen surveillance, enforcement and institutional effectiveness, but they also introduce new challenges related to inequality, cyber risk, external dependency, community estrangement and institutional legitimacy. A sustainable maritime peacebuilding framework therefore requires more than the adoption of new technology; it demands institutional reorganization, an inclusive approach to governance, and robust regional cooperation grounded in shared African interests. By integrating emerging technologies into the peace-security-development framework, and by placing human security and African ownership at its core, African states can transform maritime governance a proactive instrument for peacebuilding, resilience and post-conflict recovery, rather than a purely reactive security function.

Conclusion

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This article has examined the evolving relationships between emerging technologies, maritime governance, and peacebuilding in Africa, arguing for a rethinking of African security frameworks beyond traditional maritime threats. It has shown that maritime insecurity in Africa is not merely a law enforcement problem, but a broader governance and development challenge, rooted in state fragility, economic exclusion, and environmental pressure. Despite the existence of several regional and continental frameworks, threats such as piracy, illegal fishing, trafficking, and violent extremism continue to destabilize African coastal and island states.

A first finding is that, while maritime security architectures such as AIMS 2050, the Lomé Charter and regional mechanisms have registered progress, their practical implementation continues to face persistent obstacles, including limited resources, insufficient coordination and governance gaps, particularly in fragile and post-conflict contexts. A second observation is that emerging technologies, especially satellite surveillance, artificial intelligence, drones, unmanned platforms, are transforming African maritime governance by strengthening surveillance capacity and enabling more proactive enforcement. These technologies improve not only operational efficiency but carry also have broader governance and peacebuilding implications, notably better resource management, redued illicit activity, and enhanced state legitimacy. Their adoption, however, is not without risks. Among them, digital inequality, cybersecurity vulnerability, and the potential weaponization of maritime governance, which all underscore the need for robust regulatory frameworks.

Recognizing the interdependence of peace, security and development in the transformation of maritime governance, this article calls for the systematic integration of digital transformation into Africa's existing security architectures. This includes strengthening regional cooperation, investing in cybersecurity, and promoting inclusive governance models that engage coastal communities and the private sector alike. By strategically embedding emerging technologies within governance frameworks, Africa can build more resilient maritime spaces, strengthen the legitimacy of its states, and advance sustainable peace and development across its oceans and coastal regions.

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