



SPOTLIGHT

Leveraging high-resolution imagery for insight into violent extremism in Mozambique



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MOZAMBICAN GOVERNMENT BATTLES INSURGENCY IN NORTHERN PROVINCE OF CABO DELGADO

Since October 2017, a violent insurgency has plagued Mozambique's northern province of Cabo Delgado. Actions by the radical group Ahlu-Sunnah Wa-Jama (ASWJ) have been claimed by the Islamic State and include raids on local villages, beheadings of civilians and attacks on government outposts. The government of Mozambique has struggled to control the insurgency, which has enabled ASWJ to establish control over land and sea passages. International investment in liquefied natural gas (LNG) in Cabo Delgado represents significant potential income for Mozambique, but security around a key LNG facility has been challenged by the insurgency.

Imagery accessed in February 2020 through Maxar's SecureWatch service enabled analysts to locate and identify unused patrol vessels in the Mozambican port of Pemba. Combined with in-depth analysis, high-resolution imagery revealed that maritime monitoring assets are not being fully utilized by the Mozambican government to counter activities by violent extremists and protect the waters near the Mozambique LNG Project.

The Mozambican government will need a complex, multipronged approach to the insurgency, using strategies for land and sea. High-resolution imagery access through the SecureWatch service, Maxar-led GeoHIVE campaigns and expert Emerging Hot Spot Analysis can provide change detection and asset monitoring, determine key locations that insurgents may exploit to gain funding and guide security officials toward points of conflict intensity.

SUMMARY OF UNIQUE TOOLS & APPLICATIONS

SecureWatch is the premier cloud-based subscription service for secure and timely access to Earth Intelligence. For government agencies and enterprise companies that need secure access to high-resolution imagery and geospatial information with global coverage, SecureWatch provides a comprehensive single point of access to the Earth Intelligence they need, when they need it.

Geospatial Human Imagery Verification Effort (GeoHIVE) is Maxar's team of geospatial analysts, developers and imagery analysts who interact with a vetted crowd of online users to validate, discover or annotate features in satellite imagery.

Emerging Hot Spot Analysis is a spatiotemporal statistical analysis tool used to identify trends in the clustering of point densities through a space-time cube. The tool identifies new, consecutive, intensifying, persistent, diminishing, sporadic, oscillating and historical spots.



NATURAL RICHES GAIN THE ATTENTION OF VIOLENT EXTREMISTS IN MOZAMBIQUE

The discovery of natural gas in the Rovuma Basin off the shore of Mozambique is one of the world's most significant gas finds in the last 20 years, according to the African Development Bank Group. The exploration, development and production of natural gas reserves have positioned the country to be one of the world's leading natural gas exporters. Violent extremists in the northern portion of the country have threatened local villages and the multibillion-dollar LNG facility in Cabo Delgado operated by French oil corporation Total.

A January 2021 attack on the gates of Total's Mozambique LNG Project and the nearby resettlement village prompted Total to remove 90% of its staff and halt operations. In March 2021, Total announced it would resume the \$20 billion project, but insurgents attacked the town of Palma, and Total evacuated its remaining employees. As of April 2021, operations have stalled again.

Total has publicly stated it trusts the Mozambican security forces charged with protecting a 25 km area around the LNG site, which includes land and marine domains and requires both land and sea approaches to security. Despite an August 2020 security agreement between Mozambique and Total, removing personnel in January and again in March indicates a hesitation to fully rely on these security forces.

THE ORIGIN OF VIOLENT EXTREMISM IN MOZAMBIQUE

In October 2017, ASWJ insurgents attacked the port city of Mocimboa da Praia in Cabo Delgado province, northeast Mozambique. ASWJ sought territorial control and targeted civilians in brutal attacks on local villages, highlighting the Mozambican army's lack of protection for residents. Although details remain guarded by government censorship, it is estimated that up to 2,000 people have died and 700,000 have been displaced by the ongoing insurgency. The Mozambican government has struggled to maintain legitimacy in the eyes of residents of Cabo Delgado, a notion furthered by extrajudicial detention, torture and killings perpetrated by Mozambican security forces, according to human rights monitor Amnesty International.

In July 2019, the Islamic State Central African Province (ISCAP) claimed responsibility for attacks carried out by ASWJ, with some insurgents posing with an Islamic State flag to demonstrate allegiance. Reports suggest ISCAP has funded ASWJ, which is also known as the Islamic State in Mozambique. The increased complexity of attacks, including taking strategic ports and roads and wooing civilians, indicates that militants from ASWJ have received training and support from militant networks connected to the Islamic State in East, Central and Southern Africa.



WEAK MARITIME ENFORCEMENT OPENS THE DOOR FOR INSURGENCY FUNDING

Maritime control is essential to manage the insurgency in northern Mozambique. ASWJ repeatedly attacked the port city Mocímboa da Praia in Cabo Delgado throughout 2019 and 2020. Because of weak interdiction capabilities, the Mozambican government has been unable to disrupt illicit trade networks in the north. Such networks may be exploited by ASWJ, potentially providing funding to the insurgency through the taxation of illegal goods in insurgent-held territory.

Since the appearance of the insurgency in Cabo Delgado, smuggling is believed to be a potential source of income for ASWJ. Informal ports allow long, thin boats called dhows to offload their goods undetected. Dhow landings are made on the beaches of Mocímboa da Praia, Quissanga and Pemba. Smuggling, human trafficking and religious networks have funded international religious and military training for Mozambican insurgents in Tanzania, Somalia and Kenya.

“The insurgents now have a strong maritime capability, which is rapidly evolving. They are sealing off the region both by land and sea and are exerting their dominance.”

- JASMINE OPPERMAN | AFRICA SENIOR RESEARCHER
THE ARMED CONFLICT LOCATION & EVENT DATA PROJECT

Smuggling along the coast of Mozambique has a long history and was problematic before the insurgency emerged in 2017. While Mozambique is battling corruption at all levels, its northern coast is a hub for human smuggling as well as ivory, rubies, timber, gold, cocaine and heroin, according to the BBC. Mozambique has become a major global hub for drug smuggling from Afghanistan and Pakistan through southern Africa, destined for European and Mediterranean markets. Mozambique specialist Joseph Hanlon, a longtime analyst and visiting senior fellow at the London School of Economics, estimates up to 40 tons of heroin pass through Mozambique

each year, making the drug the country's second biggest export after coal. Although no evidence directly links insurgents to heroin suppliers in Pakistan or Afghanistan, ASWJ's control of coastal sites could allow it to extort or tax traffickers moving through insurgent-controlled areas.

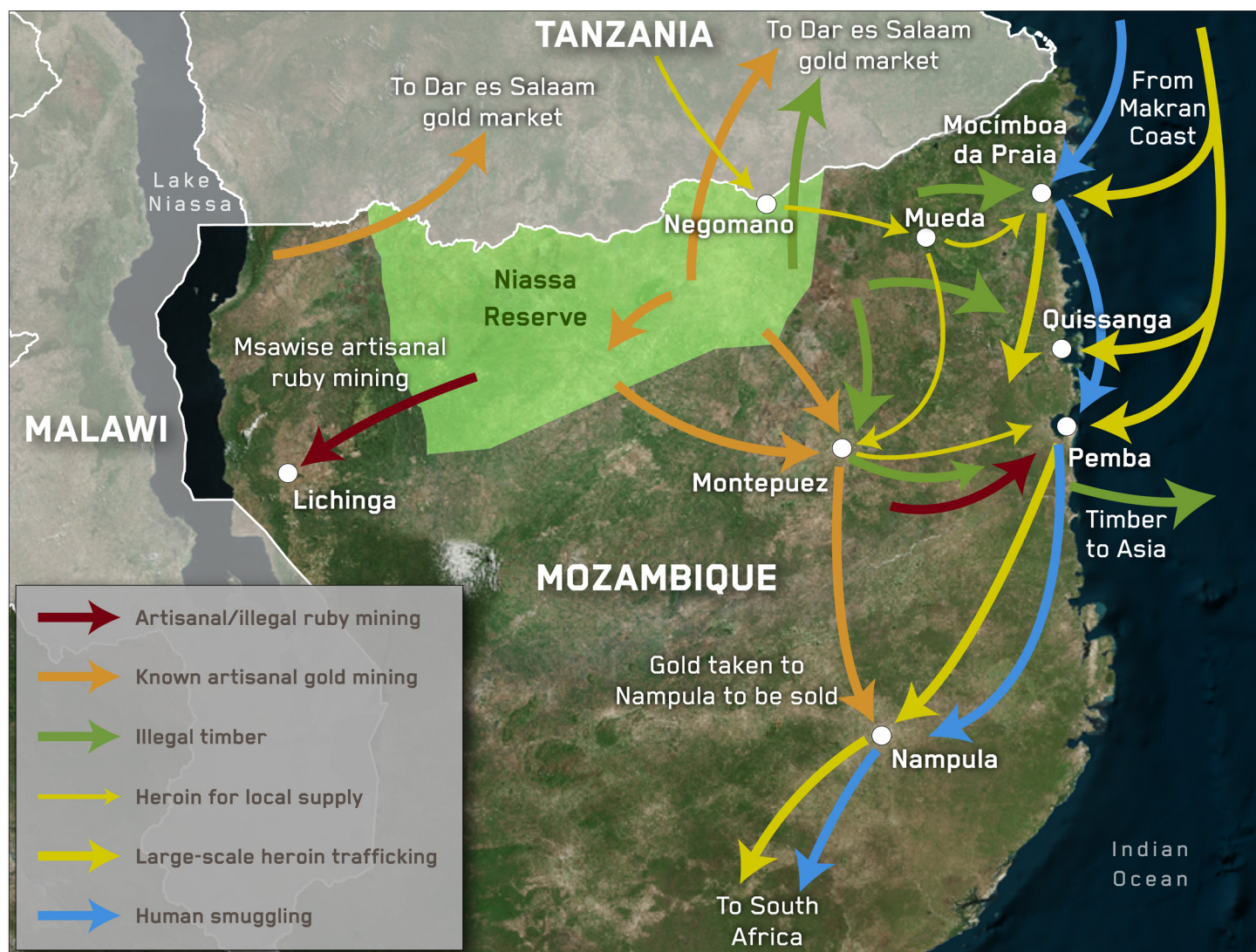
SMALL VESSELS USED FOR INSURGENT ATTACKS

In March 2020, insurgents used two speedboats to attack Mocímboa da Praia while other militants approached on land from the west; Mozambican security forces were able to retake the port. In August 2020, ASWJ overtook and occupied the port, which cut off the military from a major resupply point. The insurgents maintain a stronghold in Mocímboa da Praia, with control of the port vacillating between the group and Mozambican security forces.

In September 2020, insurgents attacked at least five islands and overtook Vamizi and Metundo, resort islands off the coast of Mozambique south of Palma, setting fire to villas and vehicles and ordering residents to evacuate. It is believed that the islands may be used to launch attacks on the mainland with boats that were taken in prior attacks. Experts at nongovernmental organization One Earth Future believe that island-hopping in the Quirimbas Archipelago is part of ASWJ's broader maritime strategy, which has allowed the group to move freely and gain assets and provisions. Attacking islands and intimidating residents also allows the group to project power and further recruitment. Movement between islands provides protection from authorities and is made possible by weak maritime enforcement capacity.

SMUGGLING HAS LONG BEEN A CHALLENGE IN CABO DELGADO

SMUGGLING ROUTES IN NORTHERN MOZAMBIQUE



Jasmine Opperman, Africa Senior Researcher at The Armed Conflict Location & Event Data Project, speculates that rubies and gold, both of which are mined in Cabo Delgado, are more likely than other products for a quick sell. Timber smuggling, while common in the area, requires extensive transport networks and trucks, making it less likely for insurgents to exploit. The Daily Maverick, a South African online newspaper, reports insurgents are most likely to benefit from involvement in the heroin trade.

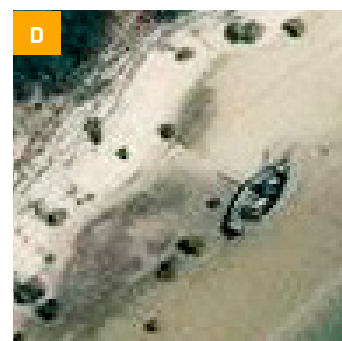
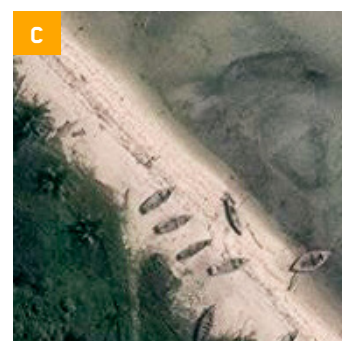
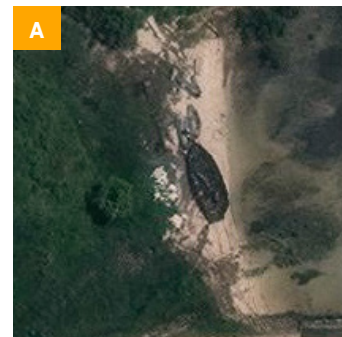
“While it was not possible to confirm any current connections between the insurgents and the gold market, this may be a risk to monitor in the future.”

- GLOBAL INITIATIVE AGAINST TRANSNATIONAL ORGANISED CRIME
VIA THE DAILY MAVERICK | SOUTH AFRICA | MAY 8, 2020

GEOHIVE IDENTIFIES POTENTIAL SMUGGLING DHOWS ON THE COAST OF MOCIMBOA DA PRAIA

Fast, high-accuracy verification of specific data points over an area of interest (AOI) is possible through crowdsourcing. Crowdsourcing through a GeoHIVE campaign can provide rapid results within hours from the order submission, enabling customers to identify on-the-ground points of interest over their AOIs. GeoHIVE hosts online campaigns in which crowd members are paid to answer simple questions about satellite images, tag features of interest or draw bounding boxes around features of interest.

Crowdsourcing efforts identified areas on the coast of Mocímboa da Praia where dhows are pulled on the beach. Experts at One Earth Future report insurgents have been known to disguise their boats as fishing vessels to avoid detection. Identifying smuggling dhow landing points can provide the Mozambican navy with targeted AOIs to patrol and monitor. The GeoHIVE campaign was able to identify wooden dhows and regularly used landing points in Mocímboa da Praia, and a similar methodology could be applied for other smuggling hubs such as Quissanga and Pemba. Knowing where boats disembark can help interdict smuggling before insurgents can exploit it.



COAST OF MOCÍMBOA DA PRAIA, MOZAMBIQUE | FEBRUARY 19, 2021 | WORLDVIEW-3



CROWDSOURCING UNCOVERS INSURGENTS CONTROLLING MAJOR INTERSECTION

In addition to controlling the port of Mocímboa da Praia, ASWJ exerts control over the N380 north-south road running from Mocímboa da Praia to Pemba, as well as portions of the R763 road running east-west from Nangade to Palma. The Mozambican military has struggled to regain full control of these roads, which could enable insurgents to expand their influence along smuggling routes. Control of ports and roads disrupts supply routes for the Mozambican military, further hindering attempts to stall the insurgency.

An operation to recapture Mocímboa da Praia from ASWJ in September 2020 failed after Mozambican security forces

were ambushed in Awasse, Mocímboa da Praia. Using specific parameters, GeoHIVE crowdsourcing participants identified people believed to be insurgents holding control over a major intersection in Awasse. Figures were seen blocking northbound traffic (A) and standing at the point where exiting vehicles would decelerate (B). The intersection in Awasse, seen occupied in May 2020 in this WorldView-3 image, was attacked throughout May 2020, with ISCAP immediately claiming responsibility. The intersection was recaptured by government security forces days after the September 2020 ambush.

INTERSECTION IN AWASSE, MOCÍMBOA DA PRAIA, MOZAMBIQUE | MAY 23, 2020 | WORLDVIEW-3



MARITIME SECURITY CHALLENGES IN MOZAMBIQUE

Evidence indicates that government corruption, inefficiency and a lack of naval personnel has led to inadequate monitoring of Mozambique's territorial waters. In the last decade, the Mozambican government invested in maritime equipment, boat building and repair, and vessels meant to patrol the country's coasts and fisheries. The plan was funded through a \$2 billion loan from Credit Suisse and other lenders then degenerated into a debt scandal that severely weakened Mozambique's economy.

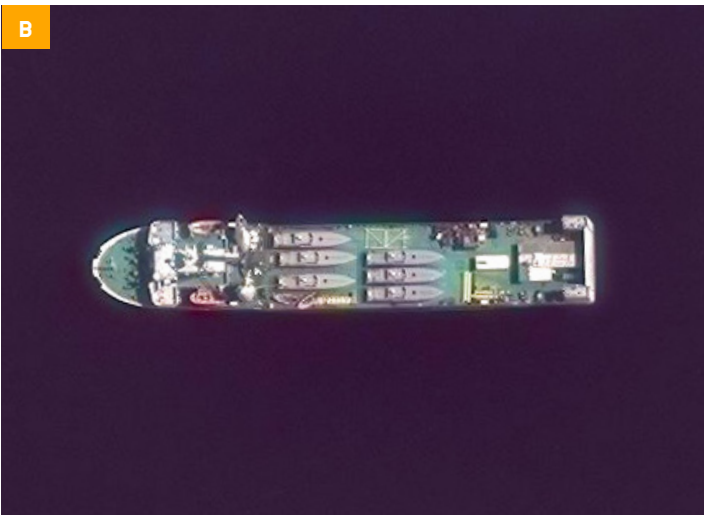
Despite the delivery of 60 boats, many remain unused because of corruption by Mozambican government officials, with some vessels rusting in dock. In 2010, the government commissioned an offshore patrol arm designed to enforce the law in territorial waters, specifically regarding illegal fishing. By 2014, the government abandoned the program, neglecting to contact the contractors providing the vessels and training as well as defaulting on the bond issued to undertake the offshore patrol program. The new vessels and equipment the loan provided could be used in the fight against illicit trade and smuggling in northern Mozambique and for monitoring insurgent activity in small boats in the Quirimbas Archipelago.

Maxar's extensive collection of archived imagery in SecureWatch reveals inactive patrol boats in Pemba's harbor, south of Mocimboa da Praia. WorldView-3 imagery shows docked DV15 interceptor patrol boats present on land from September 2018 through March 2021 (A2), before which they were absent (A1). Additional patrol vessels are seen docked on a mothership in the Pemba harbor since 2016 (B). Two L&T fast interceptors (C) provided by the Indian navy arrived in September 2019 and were present in Pemba continuously through March 2021. In September 2013, Mozambique commissioned dozens of Ocean Eagle 40 interceptors, including three specialized Ocean Eagle 43 interceptor vessels tasked with safeguarding fisheries and energy assets and conducting anti-piracy operations. Imagery (D) reveals one of the three Ocean Eagle 43 interceptors sits inactive at Pemba. Insights from high-resolution imagery analysis indicate that a lack of maritime surveillance assets is likely not the sole reason that illegal fishing, smuggling and insurgent activity persist off the shores of Mozambique; a lack of political will to leverage these assets is at least partly to blame.

PORT OF PEMBA, MOZAMBIQUE | FEBRUARY 25, 2021 | WORLDVIEW-3

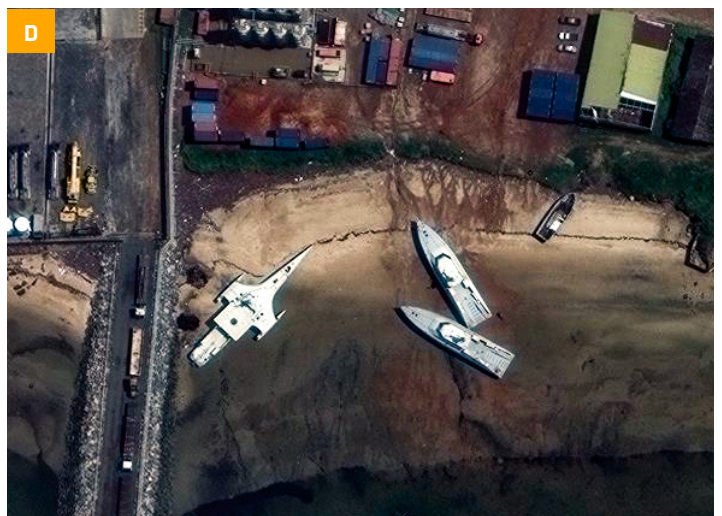
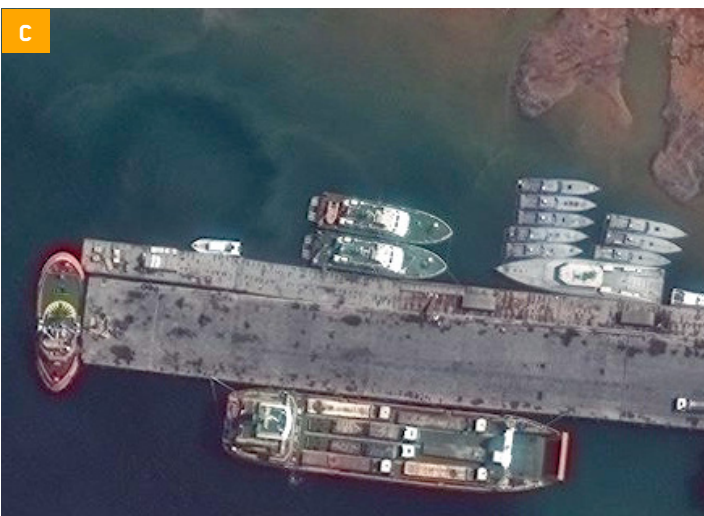


SECUREWATCH REVEALS INACTIVE VESSELS



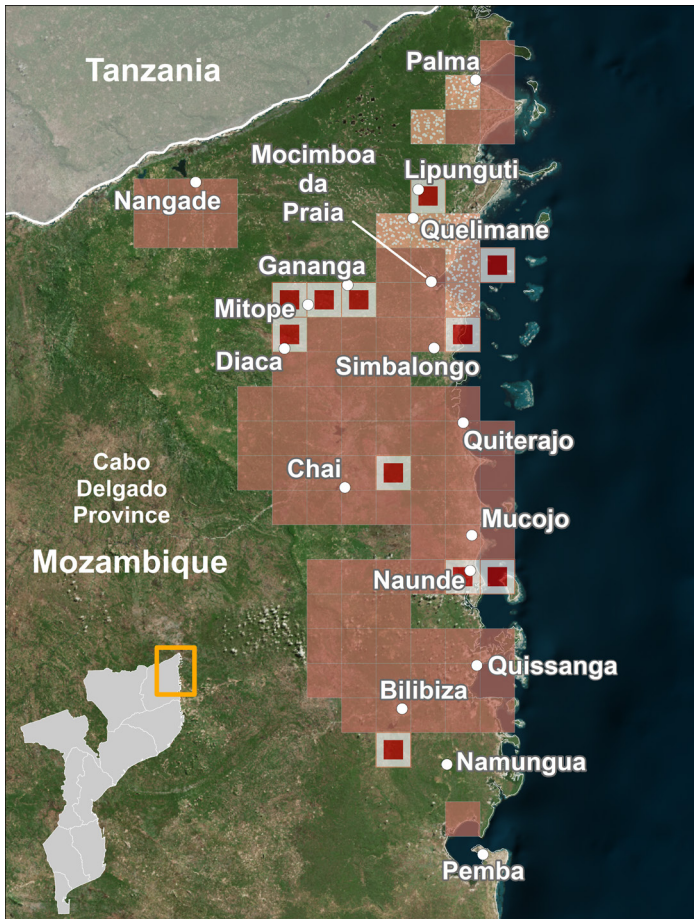
“Continued participation in U.S.-led regional maritime exercises, combined with Mozambican investments in its navy, would help improve security along the coast.”

- EMILIA COLUMBO | SENIOR ASSOCIATE
CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES



IDENTIFYING KEY CONFLICT LOCATIONS

EMERGING HOT SPOT MAP



In addition to the extensive SecureWatch service and GeoHIVE crowdsourcing, Maxar offers customized solutions and cutting-edge analysis using its vast collection of open-source and in-house datasets, enabling the application of predictive analytics such as the Emerging Hot Spot Analysis. Maxar analysts used internal data sources to conduct a spatial autocorrelation, testing the statistical significance of the clustering of conflict data in northern Mozambique to produce a hot spot analysis that identified new, consecutive and sporadic hot spots.

The city of Mocimboa da Praia registers as a consecutive hot spot, with consistent levels of conflict throughout the data-collection period. This supports research findings on the ASWJ insurgency in the seaside town. Sporadic hot spots are concentrated around the port of Mocimboa da Praia and north at Palma, indicating that conflict on land has been

intermittently recorded while conflict on the shoreline has been more consistent. New hot spots in Cabo Delgado appear both inland and on the coast, reinforcing the need for Mozambican security forces to enact joint land and sea operations in their fight against the insurgency.

Emerging Hot Spot Analysis can aid the Mozambican military in more accurately targeting its counterterrorism campaigns and focusing on areas with the greatest hot spot potential. One such application would be activating the patrol ships sitting idle at the port of Pemba in the southern part of the province, visible through SecureWatch imagery and analysis. Reallocation of unused interceptor vessels in the northern part of the province could help the military control smuggling by blocking the insurgents' ability to manipulate and extort smuggling networks along the coast, particularly at the hot spots of Mocimboa da Praia, Naunde and the coastal area outside Simbalongo.

Conflict data points span January 2017 through October 2020. Dark orange points represent consecutive hot spots where conflict was reported consistently over the data-collection period. Mottled orange and white points represent sporadic hot spots, locations that registered intermittent conflict over the time period of the data. New hot spots are represented by red points and are locations that registered as hot spots in the final stage of analysis but not before, establishing them as new points of conflict.

EMERGING HOT SPOT PATTERNS



New hot spot



Consecutive hot spot



Sporadic hot spot

REGIONAL COOPERATION AND IMPLICATIONS

Until the March 2021 attack on Palma, Mozambican president Filipe Nyusi was reluctant to accept international support, preferring Mozambican security forces to handle the insurgency internally with specialized support from private players, according to French news outlet RFI and Global Risk Insights. The U.S.-based private security group Academi (formerly Blackwater) provided helicopters and manpower to the Mozambican military in 2019, followed by the Russian Wagner Group, which provided private security personnel. Following the loss of seven members, Wagner pulled out of Mozambique. The Mozambican government then hired the Dyck Advisory Group and Paramount Group out of South Africa, the former for training and the latter for equipment.

At the start of the insurgency in 2017, Nyusi initiated regional support from the Southern African Development Community (SADC), a 16-member regional economic community whose goal is to achieve peace and security, development and economic growth in Southern Africa. Despite a commitment to its Mutual Defense Pact and to maintaining public security in the region, SADC has been slow to aid Mozambique with the insurgency, according to Foreign Policy.

Assistance from international partners has gained traction in recent months. U.S. Army Special Forces are providing training to Mozambique marines as of mid-March 2021, and Portugal has committed to send troops in mid-April to contribute to military training. South Africa is closely monitoring the situation to its northeast, and France is reportedly doing the same from the

nearby island of Mayotte, according to the BBC. The United Nations Office on Drugs and Crime and the German government have provided training, counterterrorism equipment, and guidance for criminal justice and law enforcement to authorities in Mozambique since November 2020.

Continuing to address the insurgency without a comprehensive strategy could allow the conflict's impact to be felt beyond the borders of Mozambique. Violence in Mozambique has already spilled over into Tanzania and is likely to affect neighboring Zambia and Malawi, according to reporter Charles Mwangiro on RFI's Africa Calling podcast. Regional cooperation between Mozambique and its neighbors will be key in stopping the insurgency in Cabo Delgado and preventing the flow of insurgents across borders.

TANZANIA FACES PRESSURE

ASWJ has been able to attract Tanzanian fighters to its cause, making international cooperation essential. In October and November 2020, ASWJ made incursions into Tanzania. This resulted in increased cooperation between Mozambique and Tanzania in the form of a joint border patrol.

CONCLUSION

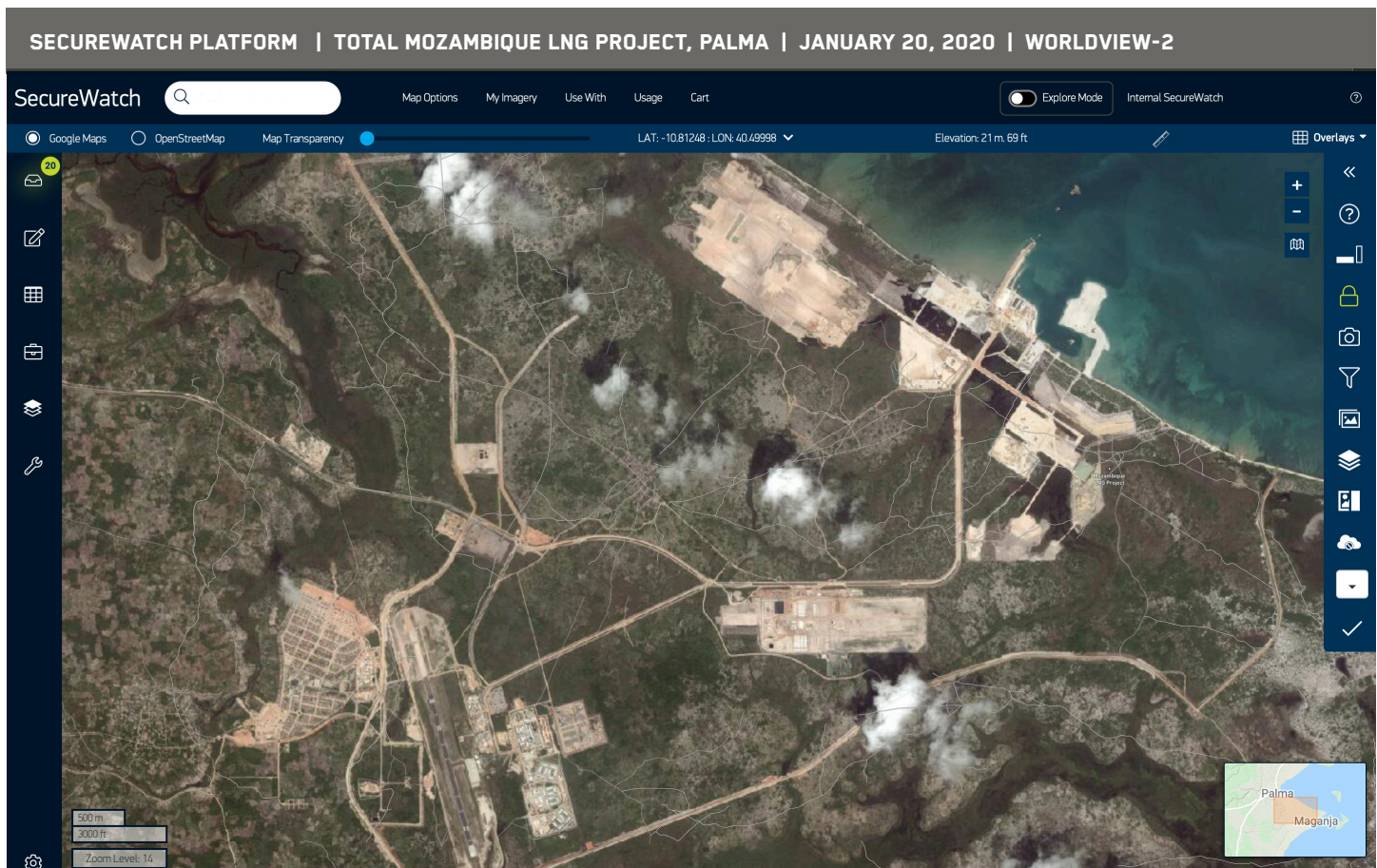
Addressing the insurgency in Mozambique will be vital to reestablishing confidence in the government among communities in Cabo Delgado and reassuring multinational corporations investing in the country's LNG industry. Maritime control is essential to manage the insurgency in northern Mozambique and will have an impact on international investment there. Access to actionable Earth Intelligence provided by Maxar's SecureWatch subscription, GeoHIVE crowdsourcing capabilities and Emerging Hot Spot Analysis can assist the Mozambican military in addressing the insurgency at the locations where it matters most.

The increased complexity of ASWJ's attacks by both land and sea reinforces the need for a multipronged approach to the conflict. High-resolution imagery from the SecureWatch service revealed unused patrol vessels that could be deployed to monitor dhow activity in Cabo Delgado, GeoHIVE crowdsourcing identified wooden dhows and landing points in Mocímboa da Praia, and Emerging Hot Spot Analysis highlighted key areas where local security forces should focus their counterterrorism campaigns. Maxar tools and capabilities add clarity to complex scenarios.

EARTH INTELLIGENCE THROUGH SECUREWATCH

Complex multinational projects rely on collaboration between local governments and foreign investors to ensure facility security for ultimate success. Significant risk exists when large investments cannot be adequately secured by the government, and this often results in costly delays to production or even withdrawal of major investment. Multinational corporations and government partners gain valuable insights from Maxar's SecureWatch subscription to monitor change and aid in planning for and ensuring security of key sites and assets. For government agencies and enterprise companies that need secure access to high-resolution imagery and geospatial information with global coverage, SecureWatch provides a comprehensive single point of access to Earth Intelligence.

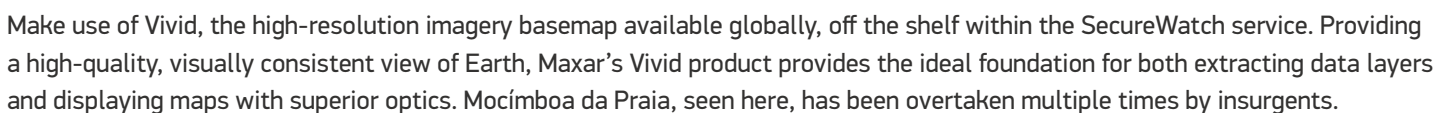
SecureWatch offers map-ready imagery of the globe, with an imagery stack inclusive of Maxar's earliest images (dating to 1999) in addition to Maxar's most recent images. SecureWatch is updated daily with new imagery collections from Maxar's satellite constellation. The entire optical imagery catalog is available for 24/7 cloud-based on-demand streaming that can sync directly with desktop and enterprise applications, smartphones and handheld devices for fast, seamless access to SecureWatch content from virtually anywhere. Rapid image availability (within 48 hours of acquisition) at the highest resolution commercially available (up to 30 cm) and using Maxar's imagery archive (spanning more than 20 years) can aid in change detection and monitoring of terrain and sea activity around the LNG plant.



Use the most recent high-resolution imagery to monitor assets, conduct change detection analyses over time across the archive, and utilize convenient user interface tools. Benefit from continuous worldwide coverage and annual updates incorporating our latest imagery collections. Captured here is Total's Mozambique LNG Project in January 2020.

SecureWatch offers the best value for a wide range of geospatial projects, such as mapping support, asset monitoring, disaster response, humanitarian efforts and more.

- Highest resolution commercially available—up to 30 cm
- Global coverage
- Imagery available within 48 hours of acquisition
- Key metadata included
- Time-lapse imagery archive for change detection
- True color orthorectified image strips and mosaics available for offline use
- Refresh alerts for subscriber's AOI
- Access via browser or API





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