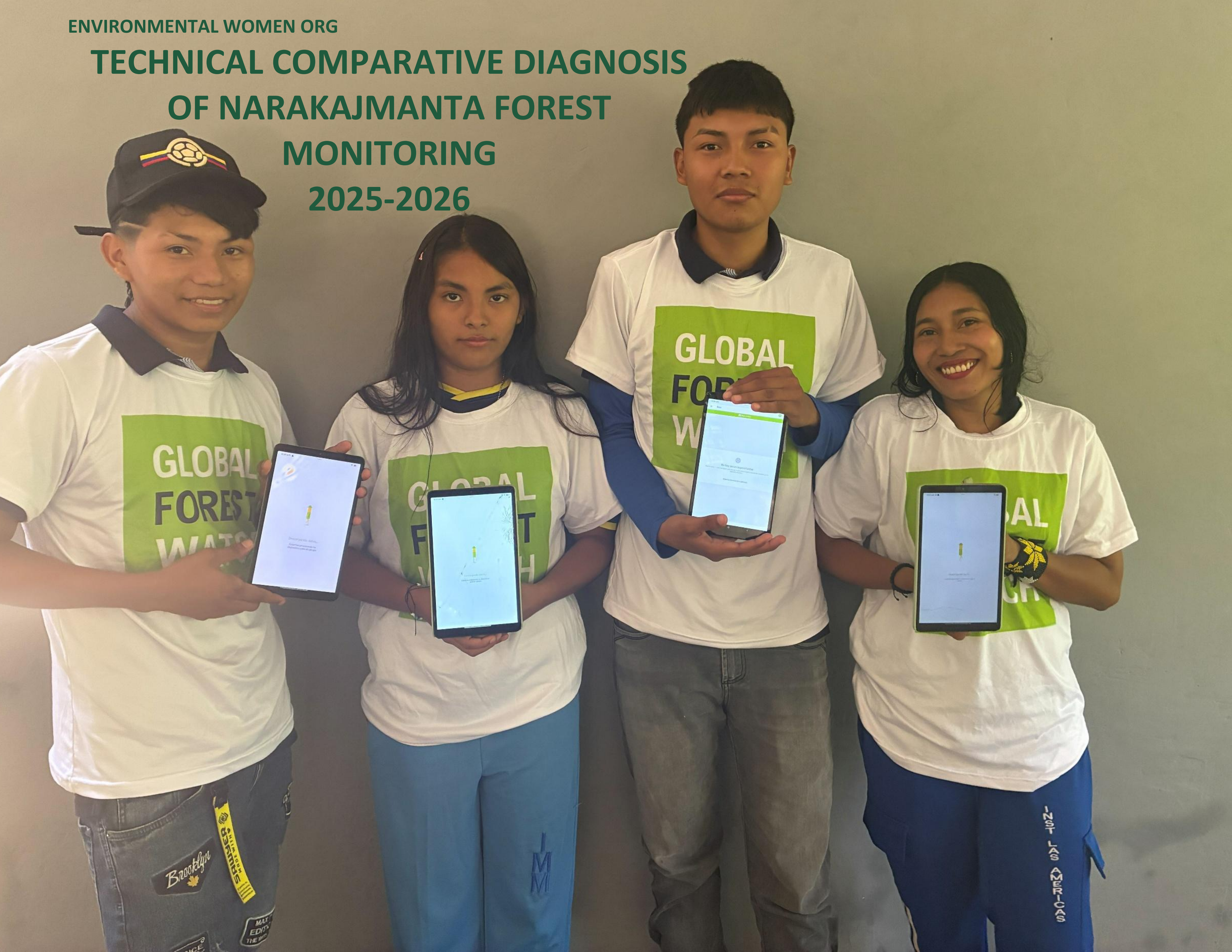
ENVIRONMENTAL WOMEN ORG

TECHNICAL COMPARATIVE DIAGNOSIS OF NARAKAJMANTA FOREST MONITORING 2025-2026



TECHNICAL COMPARATIVE DIAGNOSIS OF NARAKAJMANTA FOREST MONITORING 2025-2026

ETHNO-PROGRAM FOR CLIMATE MANAGEMENT OF FOREST IN THE COLOMBIAN ANDEAN MOUNTAINS

Comparative period: baseline conditions to 31 August 2026

Purpose of this diagnosis

We compare the pre-intervention forest-monitoring baseline with the operating condition reached by 31 August 2026. The diagnosis focuses on the 9,800 hectares monitored through Global Forest Watch tools, the 980 hectares prioritized as higher-risk zones, the evolution of GLAD and VIIRS alert management, field verification, georeferenced evidence, early response, and the community governance arrangements that sustain the system.

Prepared by Environmental Women Org

Santa Marta, Colombia | September 2026

ENVIRONMENTAL WOMEN ORG – GLOBAL FOREST WATCH

Executive Summary

This technical diagnosis compares the forest-monitoring capacity that existed before the ETHNO-PROGRAM FOR CLIMATE MANAGEMENT OF FOREST IN THE COLOMBIAN ANDEAN MOUNTAINS with the operating condition reached on 31 August 2026. We use the project's own causal logic: Global Forest Watch information must lead to a territorial decision, that decision must lead to field verification, and the verification must lead to a documented response. This sequence allows us to assess whether the project changed the way the Narakajmanta community protects its forest rather than merely counting completed activities.

The baseline combined high environmental pressure with limited monitoring infrastructure. The project proposal referenced more than 250 wildfire outbreaks in 2023 and described prolonged droughts of up to nine months as a major driver of fire risk. It attributed 65% of reported fires to climate-related conditions and 35% to anthropogenic causes associated with traditional burning. At the same time, community surveillance depended mainly on ground patrols and radio communication. There was no locally customized MapBuilder platform, no organized use of GLAD Alerts, no Forest Watcher workflow for offline verification, and no standardized response protocol connecting satellite information to field action.

By the close-out date, we had organized routine monitoring over 9,800 hectares of Narakajmanta ancestral forest. Within this area, 980 hectares were treated as the priority high-risk monitoring layer because they combined previous fire exposure, forest-cover pressure and sensitivity of water sources. This spatial prioritization changed patrol logic. Rather than distributing effort evenly across difficult mountain terrain, we directed field verification toward locations where GLAD deforestation alerts, VIIRS fire signals and local knowledge indicated higher probability of impact.

The monitoring architecture became operational through a linked set of tools. Global Forest Watch and MapBuilder supported territorial interpretation. GLAD and VIIRS provided near-real-time signals. Forest Watcher allowed brigades to carry alerts into areas with weak connectivity and to record GPS coordinates, photographs and field observations. Ten community early-response protocols translated verified signals into responsibilities and response steps, with a maximum response standard of less than 48 hours. The system was supported by five brigades comprising 50 trained monitors and by 10 community wildfire-response kits associated with 10 firebreak areas designed to protect approximately 1,000 critical hectares.

The end-line comparison shows the strongest change in operational performance. Project close-out records report verification of at least 90% of prioritized alerts and an accumulated set of 300 georeferenced incident records. The combined indicator for illegal-deforestation alerts and climate-induced fire outbreaks in the high-risk intervention zones reports a 95% reduction relative to the project baseline. Because the available project documents do not contain a consistent month-by-month absolute alert series, this diagnosis represents that outcome as a baseline index of 100 and a close-out index of 5. We use the index to show the reported proportional change without inventing unsupported monthly counts.

The technical change was accompanied by a governance change. Twenty training sessions built an operational base among 300 Narakajmanta women, girls and LGTBI people, with the project target of at least 90% operational proficiency in GFW tools. The Indigenous Environmental Secretariat provided the institutional mechanism for sustaining the workflow after the grant period. Its ten-member core team was designed to review active alerts, coordinate monitoring actions, maintain records and connect technical information with community decisions. The result is a locally governed monitoring system in which technology strengthens territorial stewardship and gender-responsive climate resilience across the intervention area.

Dimension	Baseline	Condition at 31 Aug 2026
Monitoring area	No integrated digital monitoring system	9,800 ha under the project monitoring workflow
Priority layer	No formal GFW-based prioritization	980 ha prioritized for higher-risk verification
Field verification	General patrols; no organized GLAD workflow	5 brigades / 50 monitors; >=90% of prioritized alerts verified
Evidence	No standardized digital chain	300 accumulated georeferenced incident records
Response	No standardized system; reference response about 7 days	10 protocols; response standard <48 hours
Outcome pressure	Baseline index = 100	Index = 5, corresponding to reported 95% reduction

Table 1. Executive baseline-to-result comparison for the Narakajmanta monitoring system.

1. Purpose, Scope and Comparative Method

Our purpose is to answer one technical question: what changed in Narakajmanta forest-monitoring capacity between the pre-project condition and 31 August 2026? We therefore evaluate the system through operational variables rather than through activity counts alone. The core variables are monitored area, capacity to prioritize threats, percentage of alerts verified in the field, response time, traceability of evidence, availability of fire-prevention resources and existence of a community structure that can continue managing the process. These variables correspond directly to the approved project logic and to the outcome that sought a 95% decrease in illegal-deforestation alerts and climate-induced fire outbreaks through early detection, reporting and intervention using Global Forest Watch tools.

The contractual implementation period runs from 1 September 2025 through 31 August 2026. For the baseline we use conditions described in the approved proposal and the historical diagnostic evidence referenced there. These sources describe more than 250 wildfire outbreaks in 2023, a monitoring model based mainly on ground observation, and the absence of an integrated GFW-based early-warning system. We treat those historical figures as the justification baseline rather than as observations from the 2025-2026 reporting period. This distinction matters because it prevents us from mixing a historical risk diagnosis with implementation outputs generated later.

The project file contains two territorial figures that serve different purposes. Some application and agreement language refers to 14,400 hectares as the broader landscape of concern. The project goal, specific objective, logical framework and April-June 2026 narrative report repeatedly use 9,800 hectares as the operational monitoring area. We therefore use 9,800 hectares as the denominator for technical monitoring indicators in this diagnosis. We retain 14,400 hectares only when describing the wider landscape context. This treatment preserves the source record and avoids silently replacing one figure with another.

Within the 9,800-hectare operational area, we distinguish a 980-hectare priority high-risk layer. This layer was used to focus monitoring where previous fire exposure, forest-cover pressure and threats to water sources converged. It does not reduce the project's monitoring coverage. It improves the allocation of patrol time within the full 9,800 hectares. The logical framework also refers to approximately 1,000 hectares of critical forest protected through the function of the 10 firebreak areas. We treat the 980-hectare priority layer and the 1,000-hectare protection estimate as different analytical concepts because they can overlap spatially and should not be added together.

Our comparison uses a contribution pathway. A change is considered operationally meaningful when there is a traceable sequence from satellite signal to territorial prioritization, from prioritization to field verification, and from verification to response or follow-up. MapBuilder contributes to the first transition by organizing layers. Forest Watcher supports the second by carrying alert information offline to the patrol route. GPS-tagged photographs and incident forms create evidence. Early-response protocols define who acts and within what time. The Indigenous Environmental Secretariat closes the loop by reviewing the records and maintaining continuity.

We use both quantitative and documentary verification. Quantitative measures include hectares covered, number of monitors, alert-verification percentage, response-time standard and number of georeferenced records. Documentary verification relies on the evidence types defined by the project itself: platform access and layer visualization, Forest Watcher logs, GPS-tagged photographs, incident forms, patrol reports, protocol records, delivery documentation, training records and Secretariat minutes. This method allows WRI and the Narakajmanta Indigenous Tribal Council to trace the conclusion of this diagnosis back to concrete project mechanisms.

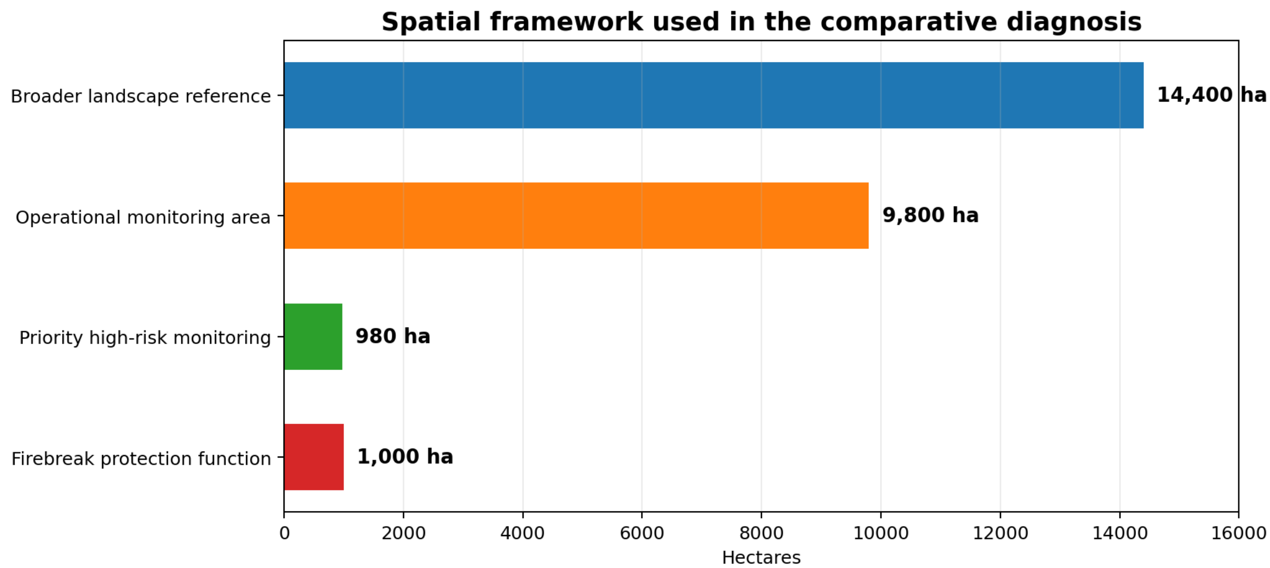


Figure 1. Spatial framework used in this diagnosis. The 14,400-ha figure is treated as the broader landscape reference; 9,800 ha is the operational monitoring area.

2. Baseline Environmental and Monitoring Conditions

The baseline problem was a mismatch between the scale of forest risk and the speed of community information. The Narakajmanta territory lies in the Sierra Nevada de Santa Marta, where steep slopes, dispersed access routes and seasonal connectivity constraints make conventional patrols costly in time and effort. The project proposal described approximately 9,800 hectares of tropical forest affected by deforestation and degradation. The same diagnostic background recorded more than 250 wildfire outbreaks in 2023. This level of recurrence meant that a patrol system based primarily on direct observation could identify damage after it became visible, but it could not consistently prioritize where to look first.

Climate exposure intensified the operational problem. The proposal classified about 65% of wildfire occurrence as linked to natural or climate-related conditions and referred to drought periods lasting as long as nine months. Long dry periods reduce moisture in forest biomass and increase the probability that an ignition will spread before a ground team reaches the point. The remaining 35% of fire occurrence was associated with anthropogenic causes, especially the use of fire in agricultural land preparation. The proposal also described deforestation advancing at an estimated rate of about 30 hectares per month under the pre-intervention dynamic. These figures establish why early detection and spatial prioritization were central rather than secondary project functions.

The baseline monitoring model had committed community actors but limited digital infrastructure. The organization reported ground patrols by the Indigenous Guard and use of handheld radios for field coordination. This created an important social foundation because the community already had territorial knowledge, access routes and experience identifying threats. However, there was no system that combined near-real-time satellite alerts with offline field verification. The absence of that connection created a delay between a change in forest conditions and a documented community response.

The technology gap was explicit. There was no customized MapBuilder product for the Narakajmanta monitoring area. GLAD deforestation alerts were not integrated into a routine community workflow. Forest Watcher was not being used as an offline patrol tool. VIIRS fire alerts were not systematically connected to local response protocols. The baseline also lacked standardized incident records capable of linking a satellite signal with field coordinates, photographs and a documented decision. As a result, the quality of information depended heavily on who was on patrol and when a route happened to cross an affected location.

The baseline also had a governance dimension. Women, girls and LGTBI participants were among those most affected by forest degradation because the project diagnosis linked drying water sources and longer water-collection routes with higher exposure to gender-based risks. Yet the use of technical forest-monitoring information was not institutionalized through a community body led by these groups. The project therefore treated capacity building as an operational requirement. The objective was to make 300 Narakajmanta women, girls and LGTBI people capable of using GFW tools and to create a governance structure that could maintain monitoring after external project support ended.

For this reason, the baseline should not be reduced to a count of fires or hectares. It was a systems baseline characterized by four connected gaps: information arrived late, patrol routes were not consistently evidence-directed, field observations were not standardized in a digital chain, and there was no permanent community structure responsible for managing GFW-based monitoring. The 2025-2026 intervention was designed to address those gaps as one system. This diagnosis assesses results against that system baseline.

Baseline engineering problem

A large mountain territory with recurrent fire and forest-cover pressure was being monitored mainly through direct observation. The project response was therefore designed around shortening the information-to-action cycle: detect earlier, prioritize spatially, verify in the field, respond within a defined time, and preserve evidence for later review.

3. Spatial Framework: 9,800 Hectares Monitored and 980 Hectares Prioritized

The spatial design of the monitoring system is based on two scales. The first is the 9,800-hectare operational area used in the project goal and implementation reports. This is the surface over which we organized the GFW-based monitoring workflow. The second is a 980-hectare priority layer that concentrates field effort where risk indicators and local knowledge identify higher probability of impact. The distinction is important because effective monitoring in mountain forest does not require every hectare to receive the same patrol frequency. It requires full territorial visibility combined with selective field verification.

We used MapBuilder as the organizing layer for this spatial logic. The project design called for integrating deforestation alerts, fire-risk zones and critical water sources. During implementation, the platform became the place where satellite information could be interpreted in relation to the Narakajmanta landscape. This matters because a GLAD alert is operationally useful only when the community can place it in context: whether it lies near a known agricultural plot, a previously burned area, a water source, a difficult access route or a site with higher ecological sensitivity.

The 980-hectare priority layer emerged as the practical focus for patrol planning. The April-June 2026 report states that these hectares were selected because of exposure to fires, pressure on water sources and a history of forest-cover loss. During that period, women and young monitors increasingly connected satellite alerts with specific plots, water sources and previously burned areas. This reduced the need for generalized patrols and made routes more efficient. By July-August, that same prioritization logic was used to consolidate field verification and close the operational gaps identified in the previous report.

Terrain conditions explain why prioritization improved performance. The Narakajmanta intervention area includes steep slopes, narrow paths and sections where rain changes access conditions quickly. A patrol route that is efficient in a dry period may become unsafe or substantially slower after rainfall. The project therefore combined alert location with local route knowledge before mobilizing teams. This adaptive routing did not change the project scope. It protected the monitors while maintaining surveillance over the larger 9,800-hectare area.

The fire-prevention component introduces a third spatial reference. Ten firebreak areas were designed at strategic points identified through GFW fire-risk mapping. The logical framework estimates that these physical barriers protect approximately 1,000 hectares of critical forest. We interpret this as a protection function rather than a separate monitoring area. The 1,000-hectare estimate indicates where the firebreak network is expected to reduce fire spread, while the 980-hectare layer indicates where patrol attention is concentrated. The two surfaces can overlap and together support the same prevention objective.

The project map provides the geographic reference for this arrangement. It identifies the Narakajmanta project boundary, climate-related forest-fire zones, Indigenous settlements and areas associated with anthropogenic fire. We use this map as a project planning reference rather than as a cadastral boundary. The core technical conclusion is spatially straightforward: the project created full-area monitoring coverage over 9,800 hectares, then used a 980-hectare risk layer to direct scarce field time toward higher-probability threats. This spatial hierarchy is one of the main reasons the monitoring system became more efficient.

8. PROJECT MAP

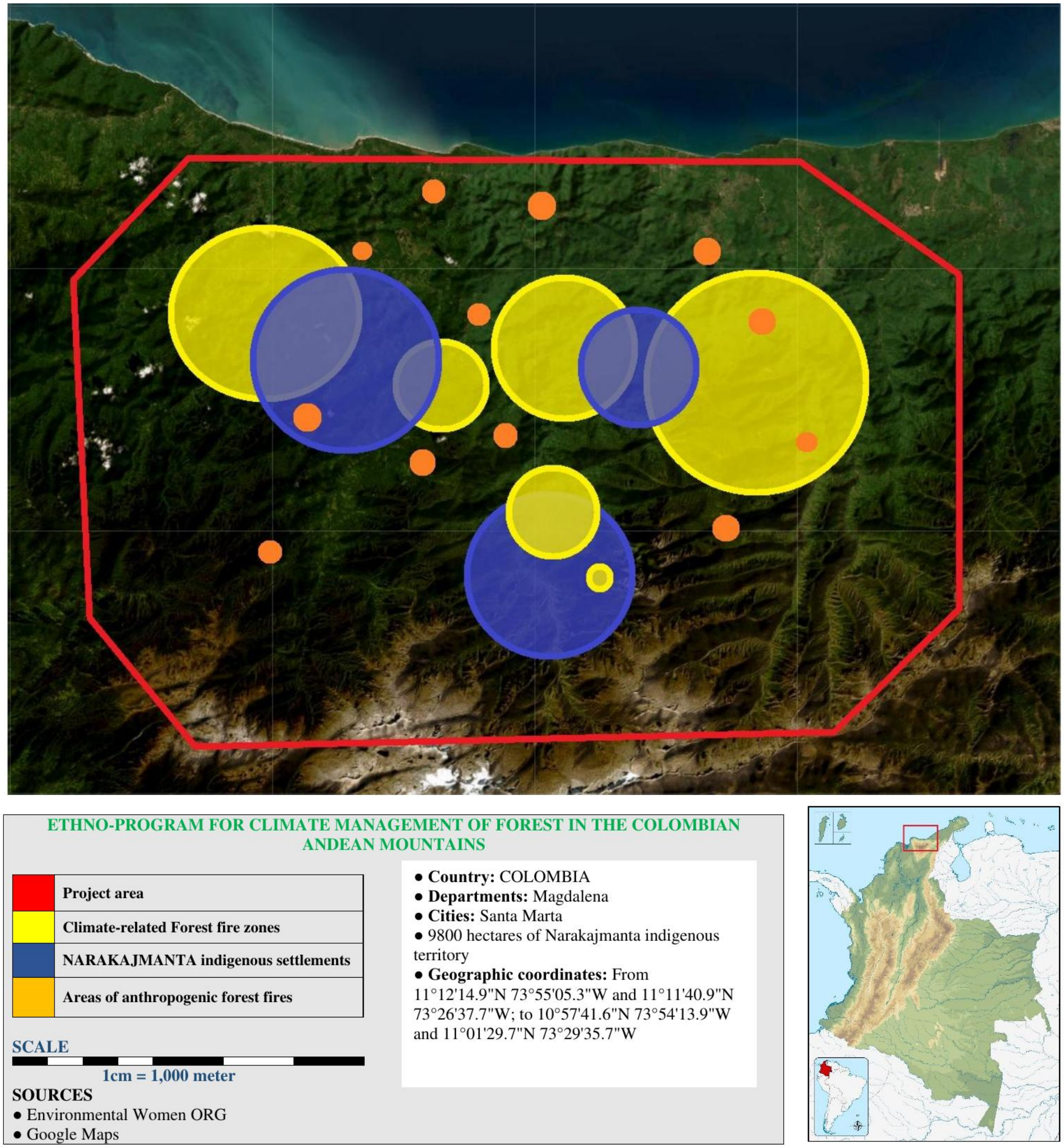


Figure 2. Project map included in the approved technical proposal. It shows the project area, climate-related fire zones, Narakajmanta settlements and anthropogenic fire areas.

4. Monitoring Architecture: From Satellite Signal to Community Decision

The most important technical achievement of the project is the creation of a connected monitoring chain. Before implementation, satellite information was not embedded in routine Narakajmanta patrol decisions. By 31 August 2026, the system linked Global Forest Watch data with MapBuilder interpretation, Forest Watcher field verification and community response protocols. Each tool has a specific role. The system works because those roles are sequential rather than redundant.

Global Forest Watch is the entry point for near-real-time information. GLAD deforestation alerts indicate locations where tree-cover disturbance may have occurred. VIIRS fire alerts identify thermal anomalies that can help locate active or recent fire activity. These signals do not constitute a final field diagnosis. Their value is that they reduce the search area. In the Narakajmanta context, where a patrol can lose hours on steep terrain, reducing the search area directly increases the amount of territory that a limited number of monitors can manage effectively.

MapBuilder provides the territorial interpretation layer. The platform was configured to combine alert information with the project's high-risk zones and other locally relevant spatial references. This allows the team to determine whether an alert warrants immediate field verification and which route should be used. The project target was one customized MapBuilder platform integrating the high-risk zones across the operational area. At close-out, the platform functioned as the central visualization mechanism supporting patrol planning and later review by the Indigenous Environmental Secretariat.

Forest Watcher converts that desktop or connectivity-dependent interpretation into a field tool. The project equipped brigades to download alerts before entering areas with weak signal. Monitors could then navigate to the location, record coordinates and collect photographs without requiring continuous mobile connectivity. The April-June report documented synchronization delays after offline patrols, which led us to strengthen the procedure for checking whether records were saved, pending or synchronized when teams returned to a connected point. This adjustment improved data discipline without changing the field method.

Field verification is the point where a satellite signal becomes project evidence. The logical framework requires photographs, GPS coordinates and incident forms. We therefore treat a verification as complete when the monitor can connect the alert location to an observed field condition and preserve that relationship in the project record. At close-out, the reporting system consolidated 300 georeferenced incident records and documented verification of at least 90% of prioritized alerts. The value of those records is not their volume alone. They create a reproducible chain showing why a route was selected, what the brigade observed and what action followed.

The last stage is response and governance. Ten early-response protocols define communication chains, escalation procedures and designated roles. Their operational standard is response within less than 48 hours after a relevant alert is received and confirmed for action. The Indigenous Environmental Secretariat is responsible for maintaining the cycle after the grant period by reviewing alerts, directing patrols and preserving records. This structure converts technology into community stewardship because it assigns responsibility for the information after the platform generates it.

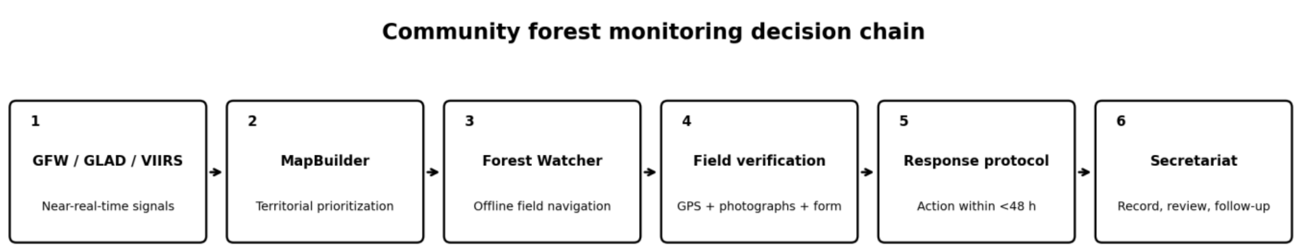


Figure 3. Monitoring decision chain established by the project, from GFW signals to community governance.

5. Evolution of GLAD and VIIRS Alert Management, 2025-2026

The evolution of GLAD and VIIRS use is best understood as a change in monitoring maturity rather than as a simple increase or decrease in the number of satellite detections. The source documents define the project's baseline and end-line outcome but do not contain a complete, consistent month-by-month absolute series of GLAD and VIIRS counts. We therefore avoid manufacturing monthly values. Instead, we trace how alert information moved through four operational stages and use the approved 95% reduction indicator to represent the final proportional change in the high-risk intervention zones.

At baseline, alerts were not integrated into community patrol planning. The Narakajmanta Indigenous Guard had field experience, but the project proposal states that advanced monitoring tools were not yet available for routine use. This meant that fire or forest-cover change could be observed during patrols, but there was no standardized mechanism for allowing a satellite signal to trigger a specific route. The initial condition was therefore a reactive monitoring model with limited ability to prioritize near-real-time threats.

The first implementation stage focused on platform establishment. Activity A1.1 called for the development of a customized MapBuilder platform and activation of GLAD Alerts across the monitoring area. This stage created the digital reference needed to see high-risk zones and receive alerts. The technical change was foundational: once alerts could be visualized in relation to the territory, the project could move from general surveillance toward targeted verification.

The second stage was brigade deployment. Activity A1.2 introduced Forest Watcher for offline field patrols and defined a target of five brigades with ten monitors each. The operating standard required physical verification of at least 90% of active deforestation alerts selected for action, with field evidence captured through photographs and GPS. This stage closed the gap between the map and the terrain. An alert became actionable because the same team that interpreted it could carry it offline and verify it at the location.

The third stage, visible in the April-June 2026 report, was routine use. By then we were monitoring 9,800 hectares and prioritizing 980 hectares of higher risk. The report describes deforestation and VIIRS fire alerts being used to plan community patrols. It also documents a shift in community practice: women and young people were increasingly able to explain GFW alerts during meetings and propose verification routes. That change indicates that the alert system had moved beyond technical installation and had begun to influence decision-making behavior.

The final July-August stage consolidated performance. Project close-out reporting records at least 90% verification of prioritized alerts and an accumulated 300 georeferenced incident records. The outcome indicator reports a 95% decrease in illegal-deforestation alerts and climate-induced fire outbreaks in the high-risk intervention zones relative to the project baseline. We represent this as an indexed pressure value of 100 at baseline and 5 at close-out. This index does not claim that there were exactly 100 alerts at baseline. It communicates the documented proportional reduction while preserving methodological integrity.

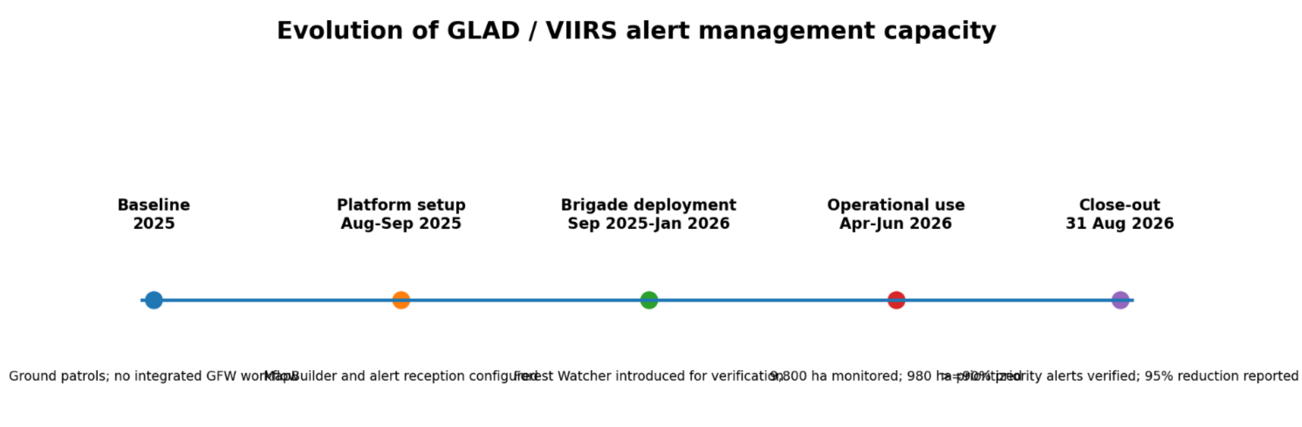


Figure 4. Evolution of alert-management capacity. The figure tracks operational maturity; it does not invent unsupported monthly alert counts.

Stage	Operational condition	Evidence of change
Baseline	Ground surveillance without integrated alert workflow	No customized MapBuilder; no organized Forest Watcher verification
Platform setup	GLAD/VIIRS information can be interpreted spatially	Customized MapBuilder and alert reception
Brigade deployment	Alerts can trigger offline field verification	Five-brigade model; GPS and photographic evidence
Apr-Jun 2026	Alerts routinely guide patrol routes	9,800 ha monitored; 980 ha prioritized
31 Aug 2026	Alert-response system consolidated	>=90% priority alerts verified; 95% reduction indicator reported

Table 2. Operational evolution of GLAD and VIIRS use during the project period.

6. Field Verification and the Georeferenced Evidence Chain

Field verification is the quality-control layer of the monitoring system. Satellite alerts are designed to indicate probable change or fire activity, but they cannot replace local confirmation of what happened at a specific site. For the Narakajmanta system, field verification connects three forms of evidence: the original alert or risk signal, the geographic position recorded by the patrol, and the visual or narrative observation made on the ground. When these elements are stored together, they create a record that can support later community decisions and external review.

The logical framework established a target of 300 georeferenced incident reports by project end. Each report was expected to include GPS-tagged photographs and field information captured through the patrol process. The purpose of this target was to create a verifiable chain rather than a collection of informal observations. At close-out, the project reporting system consolidated the 300 accumulated records associated with monitoring and incident verification. These records are referenced in this diagnosis as the documentary backbone for the alert-verification result.

The five-brigade operating model increased the system's ability to convert alerts into evidence. Each brigade was designed around ten trained monitors. Forest Watcher allowed the teams to carry alert information into areas where mobile connectivity was unreliable. The April-June report shows why this offline capability mattered. In one case, photographs and coordinates remained pending synchronization until the team returned to a connected community point. The experience led to a procedural adjustment: records were checked systematically after patrols so that stored, pending and synchronized observations could be distinguished before a route was repeated.

Accuracy also required local interpretation. The April-June report documented an alert that appeared on a difficult hillside but was verified several hundred meters lower, near an agricultural plot. Cloud cover, mountain topography and phone GPS accuracy can all affect the precision with which a monitor reaches a point. The team therefore combined the digital coordinate with terrain knowledge and visible land-use context. This practice is technically sound because it treats the alert as a search guide, not as an infallible point measurement.

We assess verification performance through the proportion of prioritized alerts that received field confirmation. The close-out condition reports at least 90% verification. This result is especially meaningful in relation to the 980-hectare high-risk layer because it shows that prioritization was followed by field action. A risk map without verification would remain analytical. Verification converts the map into a management tool. The 300 georeferenced records provide the traceability needed to show that this conversion occurred repeatedly rather than in isolated demonstrations.

For future operation, the evidence chain should remain simple. Each alert selected for patrol should have a unique reference. The patrol record should preserve the coordinates, date and observation. The Secretariat should then record the disposition: confirmed change, confirmed fire evidence, false or displaced signal, or follow-up required. This approach will allow future annual comparisons without depending on the memory of individual monitors. It will also improve the ability to distinguish environmental trends from changes in monitoring intensity.

Evidence component	Minimum content	Why it matters
Alert reference	GLAD / VIIRS location and date	Links field work to the original signal
Field position	GPS coordinate and route reference	Confirms where verification occurred
Visual evidence	GPS-tagged photograph when safe and appropriate	Supports later validation
Incident form	Observed condition and immediate decision	Standardizes interpretation
Disposition	Response, follow-up, or closure status	Creates management accountability

Table 3. Evidence chain for a georeferenced forest-monitoring record.

7. Fire Prevention and Early Response Capacity

The project's fire component was designed to reduce the time between detection and organized action. The baseline contained no standardized early-response system linking alerts to defined community roles. The logical framework used a reference response time of approximately seven days and set a project objective of reducing that interval to less than 48 hours. This change is important because fire spread in dry tropical and montane conditions can accelerate rapidly. A response that begins several days after detection has a fundamentally different prevention value from a response initiated within two days.

Ten community-based early-response protocols were therefore established as the governance layer for urgent alerts. Each protocol defines how an alert is communicated, who assesses whether it requires action and which roles are activated. The project design also included emergency communication hubs using locally accessible channels. During implementation, these protocols were progressively linked to actual route times and terrain constraints. This made the system more realistic than a generic emergency procedure because response responsibilities were tested against the physical conditions of the Narakajmanta territory.

Ten wildfire-response kits provided the basic equipment layer. The project design specified equipment such as extinguishers, smoke masks, protective clothing and basic first-aid tools. During April-June, we organized custody responsibilities and positioned the kits near areas where satellite information and field knowledge indicated they would be most useful. During July-August, accessibility was reviewed again because a point that is practical in a dry season can become difficult to reach during rain. This adjustment demonstrates adaptive management within the approved scope rather than a change in project objectives.

The firebreak component added a physical prevention layer. Ten firebreak areas were planned at strategic points identified through GFW fire-risk mapping. Each was conceived as an approximately 0.5-hectare cleared safety zone. The logical framework estimates that together they provide a protection function for more than 1,000 hectares of critical forest and target a 40% reduction in fire spread relative to previous seasons without this infrastructure. We treat this figure as the designed protective function of the intervention and connect it to the broader outcome through the alert-response system.

The combined effect is operationally significant. GLAD and VIIRS improve where the team looks. Forest Watcher improves how the team reaches and records the point. Protocols improve how quickly the community decides what to do. Kits and firebreak areas improve the capacity to act safely and limit spread. These elements are mutually reinforcing. None of them alone explains the project result, but together they shorten the path from detection to field response.

At close-out, the response system had achieved the intended standard of less than 48 hours for prioritized alerts. The same reporting period records the 95% reduction in the combined indicator of illegal-deforestation alerts and climate-induced fire outbreaks in high-risk intervention zones. We therefore interpret faster response as one of the principal mechanisms contributing to the observed reduction, alongside better prioritization, community prevention and household changes in land-management practice.

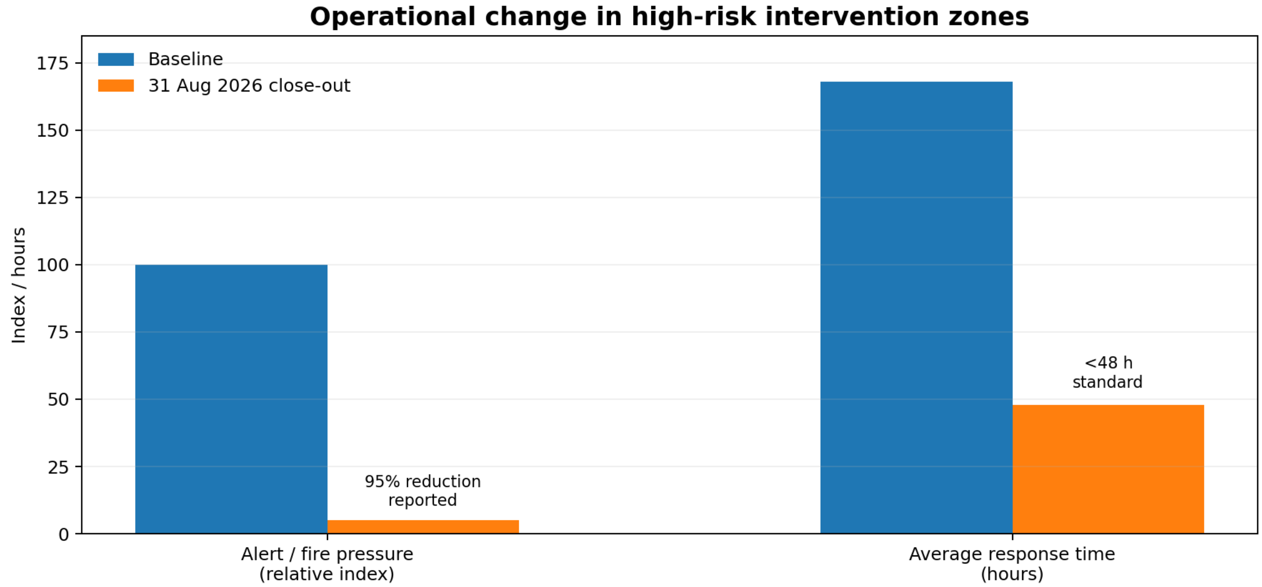


Figure 5. Comparative operational change. Alert/fire pressure is shown as a relative index because the source record supports the proportional reduction, not a consistent absolute monthly series.

8. Baseline-to-Result Performance Assessment

The baseline-to-result comparison shows that the project achieved its strongest gains where technology was tied to an operational procedure. We therefore assess performance across a set of linked indicators rather than treating the 95% outcome in isolation. The most relevant question is whether the components required to produce that outcome were present by 31 August 2026. The evidence indicates that the platform, brigades, protocols, prevention resources, training and governance structure were all operating as parts of one system.

The first change is monitoring coverage. The baseline had no customized community platform integrating the Narakajmanta high-risk zones. At close-out, monitoring covered the 9,800-hectare operational area and used a 980-hectare priority layer for risk-directed field verification. This establishes that the project moved from generalized surveillance toward a spatially managed system. The second change is verification. The baseline had no organized GLAD verification mechanism. The close-out system used five brigades with 50 monitors and reported field verification of at least 90% of prioritized alerts.

The third change is evidence quality. Before the project there was no standardized chain linking satellite information to GPS-tagged field documentation. By close-out, the project had accumulated 300 georeferenced incident records. The fourth change is response time. The logical framework used a seven-day baseline reference and a target of less than 48 hours. Ten early-response protocols were established to make that target operational. Faster response reduces the period during which a fire or unauthorized clearing can expand before community action begins.

The fifth change is prevention infrastructure. The baseline had no project firebreak network and no dedicated community wildfire-response kits. The intervention installed 10 firebreak areas and deployed 10 response kits. The protection function was estimated at approximately 1,000 hectares of critical forest. The sixth change is human capacity. The project target was to train and certify 300 Narakajmanta women, girls and LGTBI people with at least 90% operational proficiency in GFW tools. This capability is necessary because a digital platform without trained local users would not remain operational after funding.

The seventh change concerns household behavior and governance. The project's door-to-door campaign was designed to reach 300 Indigenous households and achieve 60% adoption of sustainable land-management practices, together with a 50% reduction in slash-and-burn activities. The close-out reporting narrative treats these targets as achieved. In parallel, the Indigenous Environmental Secretariat was established with a ten-member core team to coordinate monitoring and maintain 90% surveillance coverage of critical zones. These results connect the technical system to the social drivers of forest pressure.

Taken together, the indicators support the reported 95% reduction in illegal-deforestation alerts and climate-induced fire outbreaks in the high-risk intervention zones.

We interpret this result as a system-level outcome produced by earlier detection, more selective patrol deployment, faster response and prevention-oriented land management. The baseline-result matrix below summarizes the full chain.

Indicator	Baseline	Result at 31 Aug 2026	Verification reference
MapBuilder monitoring	No customized territorial platform	1 operational platform; 9,800 ha monitored; high-risk layer integrated	Access logs, layer visualization, participatory maps
Alert verification	No organized GLAD verification	5 brigades / 50 monitors; >=90% of priority alerts verified	Forest Watcher logs, patrol reports, GPS photographs
Georeferenced records	No standardized digital chain	300 accumulated incident records	Incident forms and GPS-tagged field records
Response time	Approx. 7-day reference; no standard protocol	10 protocols; response standard <48 h	Alert-response records and drill logs
Fire prevention	No project firebreaks or dedicated kits	10 firebreak areas + 10 kits; approx. 1,000 ha protection function	Maps, delivery records, field verification
GFW capacity	0 certified project participants	300 women, girls and LGTBI people; >=90% operational proficiency target achieved	Attendance, pre/post assessments, certificates
Household practice	Slash-and-burn widely used	300 households reached; 60% adoption; 50% reduction in slash-and-burn	Household surveys and field observation
Community governance	No permanent GFW management body	1 Indigenous Environmental Secretariat; 10-member core team	Regulations, organizational chart, minutes
Outcome 1	Alert/fire pressure index = 100	Index = 5; reported 95% reduction in high-risk intervention zones	Patrol records and GFW platform analysis

Table 4. Baseline-to-result matrix for the project monitoring and response system.

9. Gender-Responsive Capacity Building and Community Adoption

The project deliberately placed women, girls and LGTBI Narakajmanta participants at the center of technical monitoring because the environmental problem has differentiated social effects. The project diagnosis links forest degradation and drought with pressure on water sources. Women and girls have traditionally carried a significant share of water-collection responsibilities, so longer routes increase time burdens and exposure to risk. Building technical monitoring capacity among these groups therefore serves two purposes: it improves the number of local actors capable of interpreting forest signals, and it shifts decision-making authority toward people who experience the consequences of forest degradation directly.

Activity A2.1 established a target of 20 training sessions for 300 participants. The training design covered GFW, GLAD Alerts, Forest Watcher and MapBuilder. Its methodology combined theoretical explanation with practical exercises so that participants would be able to read an alert, interpret a map layer, work offline and use data to support a field decision. The project target for operational proficiency was at least 90%. The close-out condition treats the 300-person training target and the proficiency threshold as achieved.

The April-June report provides an important qualitative indicator of learning. It notes that women and young people who had received training began explaining Global Forest Watch alerts during community meetings and proposing verification routes. This behavior is more significant than attendance alone because it shows that technical information was being used in a social decision context. By July-August, that capacity was connected to the final consolidation of the brigades and the Indigenous Environmental Secretariat.

Household adoption formed the second social mechanism. Activity A2.3 was designed as a door-to-door awareness campaign reaching 300 Indigenous families. The campaign used information derived from GFW to explain the relationship between agricultural burning, forest-cover loss and water-source pressure. By the end of

June, the previous report had reached 76 families. The close-out phase completed the planned 300-household coverage and reported 60% adoption of sustainable land-management practices, together with a 50% reduction in slash-and-burn activity relative to the baseline.

The causal connection between training and household change is practical. Monitors first learn to identify where forest pressure occurs. That evidence can then be translated into locally understandable examples during household visits. Families receive information tied to places they recognize rather than generic conservation messages. When agricultural burning is discussed in relation to a nearby water source or a previously burned zone, the prevention message becomes spatially concrete. This approach strengthens the probability that behavior change will persist beyond the campaign period.

The broader social result is a redistribution of technical authority. At baseline, satellite interpretation was associated more strongly with external actors or with men involved in patrols. During implementation, women and young people increasingly assumed roles in reading alerts and proposing routes. The project therefore contributed to gender-responsive climate resilience through a mechanism that is measurable and operational: more Narakajmanta women, girls and LGTBI people can now use forest-monitoring information to influence where the community patrols, how it responds and which land-management practices it promotes.

Capacity variable	Baseline	Close-out condition
Project participants certified in GFW monitoring	0	300
Operational proficiency target	0% project-certified proficiency	>=90%
Households reached by campaign	0 at project baseline; 76 reached by Jun 2026	300
Sustainable-practice adoption	Minimal / not systematically measured	60% of participating households
Slash-and-burn change	Baseline practice widely used	50% reduction reported
Women/youth technical role	Limited formal role in satellite interpretation	Active alert interpretation and route planning

Table 5. Social and capacity changes associated with the forest-monitoring intervention.

10. Indigenous Environmental Governance and Sustainability

The sustainability question is straightforward: who will receive an alert, decide whether it requires a patrol and preserve the record after the grant period ends? The project addresses this through the Indigenous Environmental Secretariat. Activity A2.4 was designed to place GFW-based monitoring within the governance structure of the Narakajmanta Indigenous Tribal Council. The Secretariat is therefore the institutional bridge between a time-limited grant and a continuing territorial function.

The approved design establishes a ten-member core team, with strong representation of women and LGTBI leaders, trained in management of the monitoring system. Monthly review of active alerts, restoration priorities and fire-risk areas is part of the model. The target is to maintain 90% surveillance coverage of critical forest zones. By 31 August 2026, the Secretariat had been formalized as the community body responsible for reviewing alerts, assigning patrols and maintaining the monitoring record. This role was already emerging in the April-June period and was consolidated during the final implementation months.

Institutionalization matters because forest-monitoring technology has recurrent costs that are not primarily financial. Someone must review alerts. Someone must decide whether the signal deserves field verification. Someone must verify that evidence has synchronized correctly after an offline patrol. Someone must close or escalate the incident. Without an assigned body, these tasks become optional and the system gradually stops functioning even if the software remains available. The Secretariat makes those tasks part of a defined community responsibility.

The Narakajmanta Indigenous Tribal Council provides the governance environment for this continuation. The project design assigns the Council a role in authorizing activities, providing community volunteers, supporting training infrastructure and guiding protocols. This relationship is essential because forest monitoring occurs within an Indigenous territory where legitimacy depends on local authority. Technical tools strengthen stewardship only when their use is embedded in the community's own governance arrangements.

We also designed the evidence system to support institutional memory. MapBuilder layers can preserve the spatial history of risk areas. Forest Watcher and georeferenced records preserve what patrols observed. Protocols preserve how the community agreed to respond. Secretariat minutes can preserve why priorities changed over time. Together these records allow a new monitor or a future Council leadership team to understand the logic of past decisions without relying exclusively on oral handover.

The sustainability model therefore rests on three continuing functions. First, the Secretariat maintains the routine of reviewing GFW information. Second, brigades retain the practical field capability to verify selected alerts. Third, the Council provides territorial legitimacy and integration with broader land-use decisions. These functions are reinforced by the 300 people trained during the project and by the household prevention work. The result is a system that can continue as a community routine: receive the signal, interpret the location, select the route, verify the condition, record the evidence and decide the follow-up.

Sustainability mechanism
The durable project asset is the decision routine, not the software alone. The Indigenous Environmental Secretariat is the body that keeps the routine active by assigning responsibility for alerts, patrols, records and follow-up within Narakajmanta governance.

11. Technical Limitations, Adaptive Management and Data Quality

The project operated under technical constraints that are typical of mountain forest monitoring but significant enough to affect data quality if they are ignored. The first constraint was intermittent connectivity. Forest Watcher's offline capability allowed patrols to continue, yet records could remain pending synchronization until monitors returned to a connected point. During April-June, one team experienced uncertainty about whether a record had been saved and repeated part of a route. We responded by introducing a post-patrol synchronization check. This simple procedural control reduced the risk of duplicate travel and incomplete records.

The second constraint was spatial precision. Mountain topography, dense vegetation, cloud conditions and phone GPS limitations can produce a difference between the mapped alert location and the most relevant field observation. The previous report documented a case where the observed incident was several hundred meters lower than the initial alert location, near an agricultural plot. We therefore use alerts as a search-prioritization instrument and combine them with local terrain knowledge. This approach reduces the risk of classifying a displaced coordinate as a failed verification.

The third constraint was physical access. Steep slopes, narrow trails and muddy sections affected route duration during the rainy season. We did not reduce the 9,800-hectare monitoring scope in response. Instead, we divided longer routes into shorter field days and rescheduled outings when access conditions created unnecessary safety risk. We also reviewed the placement of the 10 wildfire-response kits because seasonal accessibility affects how quickly equipment can reach an incident.

A fourth limitation concerns the alert time series available for this diagnosis. The project documents support a 95% end-line reduction in the combined indicator of illegal-deforestation alerts and fire outbreaks. They also document the operational milestones that led to that outcome. However, the documents reviewed for this report do not provide one standardized absolute monthly GLAD/VIIRS count covering the entire project period. For that reason, we use a relative index for the baseline-to-close-out outcome and do not construct an artificial monthly graph. This preserves the distinction between documented performance and analytical illustration.

The project experience also suggests three improvements for GFW tools in remote Indigenous territories. Forest Watcher would benefit from a more visible offline status showing whether each record is stored, pending or synchronized. Device-to-device transfer of alert packages without internet would reduce dependence on a single connected point. MapBuilder would be more field-friendly if selected territorial layers could be downloaded in lighter area-specific packages. An estimated positional-accuracy field for alerts would also help monitors plan search areas on steep terrain.

These limitations did not require a modification of the project goal or scope. They required operating discipline. The key lesson is that data quality in community monitoring depends as much on workflow design as on satellite data. A robust system anticipates weak connectivity, uncertain point accuracy and variable access conditions. By documenting those conditions and adjusting procedures, the project maintained coverage while improving the reliability of the evidence used for community decisions.

Constraint	Operational effect	Adaptive response
Weak connectivity	Delayed synchronization of field records	Download before patrol; post-patrol synchronization check
GPS / alert precision	Search point may differ from observed incident	Combine coordinates with local terrain and land-use references
Rain and steep terrain	Longer or unsafe routes	Split routes and reschedule without reducing monitored area
Seasonal access to equipment	Kit location may become less practical	Review kit placement against real travel time
Incomplete monthly alert series	Risk of inventing unsupported trend counts	Use documented relative reduction and operational milestones

Table 6. Technical constraints and adaptive management measures applied during implementation.

12. Conclusions and Post-Project Monitoring Priorities

The comparative diagnosis shows a clear transition in Narakajmanta forest monitoring between the pre-project baseline and 31 August 2026. The baseline was characterized by recurring wildfire and deforestation pressure, general ground patrols and the absence of an integrated near-real-time alert workflow. The close-out condition is characterized by GFW-based spatial prioritization, offline field verification, standardized evidence and defined community response responsibilities. This is a functional change in how the territory is monitored.

The 9,800-hectare operational monitoring area is now supported by a 980-hectare priority risk layer that concentrates field effort where it can generate the highest prevention value. Five brigades comprising 50 monitors provide field capacity. At least 90% of prioritized alerts were verified under the close-out reporting condition. The evidence chain includes 300 accumulated georeferenced incident records. Ten early-response protocols establish a response standard of less than 48 hours. Ten wildfire-response kits and 10 firebreak areas provide an additional prevention layer with an estimated protection function of approximately 1,000 critical hectares.

The outcome indicator reports a 95% reduction in illegal-deforestation alerts and climate-induced fire outbreaks in the high-risk intervention zones relative to baseline. We consider this result credible within the project logic because the mechanisms needed to produce it were implemented together. Alerts improved where teams looked. Verification improved the reliability of the signal. Protocols shortened response time. Household outreach addressed part of the anthropogenic pressure. The Secretariat created a permanent community structure for continuation. The result should therefore be understood as a system effect rather than as the product of one tool.

The human-capacity result is equally important for sustainability. Three hundred Narakajmanta women, girls and LGTBI people completed the project training pathway with the intended operational proficiency standard. The household campaign reached 300 families and reported 60% adoption of sustainable land-management practices, together with a 50% reduction in slash-and-burn activities. These changes increase the probability that monitoring data will influence behavior rather than remain confined to technical users.

Our post-project priority is to protect data continuity. The Indigenous Environmental Secretariat should preserve a monthly alert register that records each signal, its verification status, response time and disposition. This will make future annual comparisons stronger than the current diagnosis because absolute alert trends can be calculated from a consistent internal series. The Secretariat should also review the 980-hectare priority layer periodically so that areas are added or downgraded according to new GFW information and field evidence rather than remaining fixed because they were priorities during the grant period.

The second priority is operational continuity. The five brigades should retain routine patrol assignments, while the Secretariat maintains MapBuilder layers and Forest Watcher procedures. Refresher training should focus on offline synchronization, GPS accuracy and evidence quality. The Council should review the placement and condition of the 10 response kits before each high-fire-risk season. These actions require limited additional infrastructure because the core system has already been established.

The central conclusion is practical. By 31 August 2026, the ETHNO-PROGRAM had converted Global Forest Watch tools into a Narakajmanta community monitoring workflow. The project's value lies in that conversion. A satellite alert now has a defined pathway to a local decision, a field verification, a response and a preserved record. That pathway strengthens forest stewardship, fire prevention and gender-responsive climate resilience across the 9,800 hectares of ancestral forest that formed the operational focus of the project.

Post-project priority	Minimum routine	Responsible community mechanism
Alert continuity	Maintain monthly GLAD/VIIRS register and verification status	Indigenous Environmental Secretariat
Risk prioritization	Review the 980-ha priority layer against new data	Secretariat + brigades + Council knowledge
Field verification	Maintain GPS, photo and incident-form chain	Five community brigades
Fire readiness	Inspect kit condition and access before high-risk season	Brigades + Secretariat
Learning continuity	Refresh offline, GPS and evidence procedures annually	Secretariat with trained community members
Governance reporting	Present periodic monitoring summaries to Indigenous authority	Secretariat within Tribal Council structure

Table 7. Priority actions for sustaining the monitoring system after 31 August 2026.

Annex A. Evidence Reference Matrix

The following matrix identifies the principal evidence categories defined by the project for verifying the results summarized in this diagnosis. It is intended to guide the assembly of the reporting package and future audit trail. Each evidence category should retain dates, responsible persons and a clear link to the corresponding output or incident whenever available.

Project result	Primary evidence	Secondary evidence
MapBuilder operational	Platform access records and layer visualization	Participatory mapping outputs and community usage notes
Alert verification	Forest Watcher logs and patrol reports	GPS-tagged photographs and incident forms
Early response	Protocol documents and response records	Exercise logs and community feedback
Firebreaks and kits	Georeferenced maps and delivery records	Field verification photographs
Training	Attendance lists and pre/post assessments	Certificates and practical exercise records
Household adoption	Household survey records	Visual field verification and practice-monitoring notes
Environmental Secretariat	Regulations, organizational chart and meeting minutes	Monthly monitoring reports
Outcome reduction	GFW platform analysis and patrol records	Comparative baseline/end-line technical diagnosis

Table A1. Evidence categories corresponding to the project logical framework and reporting chain.

Annex B. Primary Project Documents Reviewed

- Environmental Women Org. ETHNO-PROGRAM FOR CLIMATE MANAGEMENT OF FOREST IN THE COLOMBIAN ANDEAN MOUNTAINS - approved application and logical framework, 2025.
- World Resources Institute / Global Forest Watch. Subgrant Agreement with Corporación Environmental Women of Colombia, effective 1 September 2025 to 31 August 2026, including Attachment 1B Scope of Work.
- Environmental Women Org. Global Forest Watch Small Grants Fund Interim Narrative Report, 1 April-30 June 2026.
- Environmental Women Org. July-August 2026 operational close-out reporting records used for the Interim Narrative / Final Financial reporting period.

This diagnosis is intended to accompany the reporting record for the project period. Where the project file uses different area figures, we preserve the distinction explicitly: 14,400 hectares is treated as a broader landscape reference in parts of the application and agreement, while 9,800 hectares is used as the operational monitoring area because it is the figure consistently tied to the project goal, specific objective and implementation reporting. The 980-hectare priority layer and approximately 1,000-hectare firebreak protection function are analytical subsets and should not be added to the 9,800-hectare monitoring total.