

PREPARED BY AYANA WITH CPPM SBM ITB · THEMATIC SITUATION REPORT

KARHUTLA 2026: From Situation Analysis to Action Plan

Indonesia's 2026 forest and land fire (karhutla) crisis, a response that still begins after ignition, and what village-led prevention under Empowering Villages, Responsible Farming can change

Indonesia · KARHUTLA: kebakaran hutan dan lahan, Indonesian for forest and land fires · Data as of 13 October 2026

NOT THE FIRST TIME A recurring crisis	1997–98	2015	2019	2023	2026
9.5 million ha burned at least once in 2000–2024; 40% of it on peat ¹	About 11 million ha burned in Aug–Oct 1997; haze across the region ²	2.6 million ha; USD 16.1 billion cost ³ ; ~100,300 regional excess deaths ⁴	Singapore's PSI passed 300, the "hazardous" band ⁵	El Niño year; haze pushed Singapore into the unhealthy range again ⁵	Above 2019 and 2023, below 2015 on official data ⁶

Situation overview

Problem statement and current indicators

Indonesia still fights fires it has already allowed to start.

The 2026 response was built for the hours after ignition: 43 helicopters, 15 fixed-wing aircraft and cloud seeding in six provinces⁷, with district money flowing fastest once emergency status was declared⁸. Prevention money moved least: one village in West Kalimantan Province had no fire-prevention budget⁹, and unpaid volunteers died on the fire line¹⁰. The decisions that cause a fire were made months earlier, with no one assigned to them.

637,011 ha

Burned Jan–Aug, Auriga satellite count¹; official SiPongi: 202,004 ha to July¹¹

18,065

Hotspots detected on the peak day, 28 August, mostly in Kalimantan¹²

10.7m

People in affected areas at high risk of haze exposure (Ministry of Health)¹³

174,694

Acute respiratory infection (ARI) cases, 18 Aug–21 Sep; 40,363 in under-fives¹⁴

Rp 39–123 tn

Economic and health cost to Indonesia only, Jan–Aug, across CELIOS scenarios¹⁵

TRANSBOUNDARY HAZE

The fires are now a regional health crisis and a diplomatic cost

As of 12 October 2026

PSI 181

Singapore's 2026 high, 9 Oct; all five regions, about 6 million people, unhealthy^{16,17}

API 190

Segamat, Johor, on 8 Oct; schools closed across several Malaysian states¹⁸

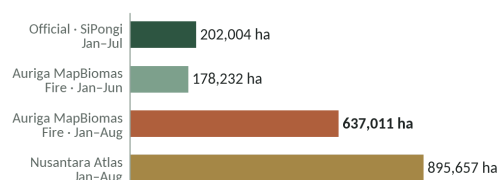
In court

West Kalimantan groups, incl. the Indigenous Peoples Alliance (AMAN), sued the government for negligence¹⁸

Goodwill

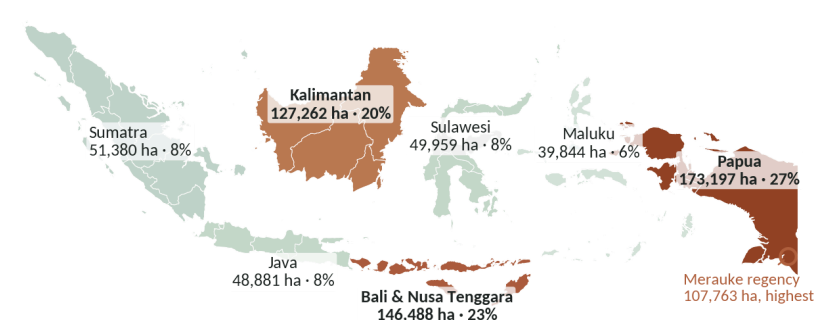
ASEAN's haze pact lets no state sue another¹⁹; neighbours press and offer help²⁰. Each season costs Indonesia standing

FIGURE 1 · OFFICIAL VS INDEPENDENT COUNTS



Independent satellite counts run 3–4× the official figure. Burned area, 2026, by source^{1,11,21}. Methods and coverage differ, so figures are not like-for-like; all cover the period up to August.

FIGURE 2 · PAPUA BURNED MOST



Burned area by region, Jan–Aug 2026, Auriga MapBiomas Fire¹. Papua leads with 27%; South Papua alone burned 144,210 ha.

Spread, status and outlook

By Auriga's count the Papua region burned most, led by South Papua (144,210 ha), ahead of East Nusa Tenggara (119,835 ha) and West Kalimantan (60,890 ha); West Nusa Tenggara, home to Rambitan Village, one of the potential target villages for the programme, burned 26,091 ha¹.

Riau declared standby emergency from February, Jambi from April, South Kalimantan from July. Kotawaringin Timur extended its emergency to 15 October, as recent rain came mostly from cloud seeding²². The Indonesian Agency for Meteorology, Climatology, and Geophysics (BMKG) expects rain in southern Kalimantan, Jambi and South Sumatra from mid-October, and across most of Indonesia only by November–December²³; El Niño is forecast to persist into early 2027²⁴.

FIGURE 3 · THE FIRE CHAIN: WHERE THE RESPONSE ACTS

1 Motive	2 Claim	3 Fuel	4 Decision	5 Ignition	6 Spread	7 Suppress
Burned land sells for more	Idle or disputed land, land letters	Drained peat dries out	Clear by fire or by machine	Often by paid proxies	Peat smoulders below ground	Aircraft, brigades, haze

Steps 1–4: before the dry season. Decide whether a fire is lit.

Steps 5–7: what the public sees.

How to read it. A fire starts long before the flame: someone expects to gain from burning (1), claims idle land (2), finds peat already drained and dry (3) and chooses fire over machines to clear it (4). Almost all 2026 money, from aircraft to emergency funds, went to steps 5–7; prevention means acting on 1–4, in villages and land offices²⁵.

Sources and method. Numbered notes refer to the reference list on page 5. Superscript **A** marks findings from the programme's four closed consultation rounds convened by AYANA and CPPM SBM ITB (11 June, 12 August, 4 September and 25 September 2026); participant identities are withheld.


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SITUATION REPORT / ROOT CAUSES AND IMPACTS

ROOT CAUSE DIAGNOSIS

Why the land burns, and who carries the cost

El Niño sets the stage, but people light the fires and drained peat spreads them. Of six interacting causes, only the first lies beyond village reach.

01 · CLIMATE

Very strong El Niño, positive IOD

A positive Indian Ocean Dipole (IOD), when waters off Sumatra and Java turn cooler than usual, cuts rainfall further. Below a rainfall threshold, burning rises steeply, as in 2015^{26,27}. BMKG named September 2026 the critical month and expects El Niño to persist into early 2027²⁴.

02 · PEAT HYDROLOGY

Drained peat is stored fuel

Hotspots cluster inside peat hydrological units drained by canals for monoculture plantations²⁸. Fire danger turns high once the water table falls below 40 cm, and burning occurs below about 60 cm²⁹. Only 5.72% of Riau's 4.9 million ha of peat is zoned protected, against a 30% legal floor^{28,30}.

03 · ECONOMIC INCENTIVE

Fire pays the people who organise it

In Riau, burned land sells for 29% more than slashed land and about 5.7 times more once planted with oil palm. Financiers, organisers and the officials who issue land letters share the gain, a trade known locally as *terima abu* ("receiving the ash")³¹. Young oil palms have appeared on Riau concession land burned weeks earlier²⁸.

04 · LAND GOVERNANCE

Ignition is organised, often by proxy

Riau police reported that every fire in the province was human-caused and that firms pay local people to burn: 36 suspects in 33 cases by late August³². Walhi counts 372 companies with fire-indicated concessions and 5 permits revoked³³. About Rp 3.4 trillion in final fire-damage judgments was unpaid as of 2021, with Rp 78.5 billion executed³⁴.

05 · VILLAGE CAPACITY

No one in the village owns prevention

The national fire instruction (Presidential Instruction, Inpres 3/2020) omits village heads and funds³⁵. The Village Fund (Dana Desa) 2026 lists fire prevention among eight competing focus areas³⁶. Fire Care Community brigades (Masyarakat Peduli Api, MPA) lack money for routine operation and for maintaining rewetting works³⁷.

06 · HOUSEHOLD VULNERABILITY

Poor households, and women, carry most risk

Villages that burned in 2015 were more remote and less developed³⁸. Women are hit hardest: with fewer savings, rarely land in their own name³⁹, and the care of children and elders, they are least able to move away from smoke or to recover.^A Disasters widen the life-expectancy gap against women where their status is low⁴⁰.

FIGURE 4 · FIRE PAYS: LAND VALUE BY CLEARING METHOD

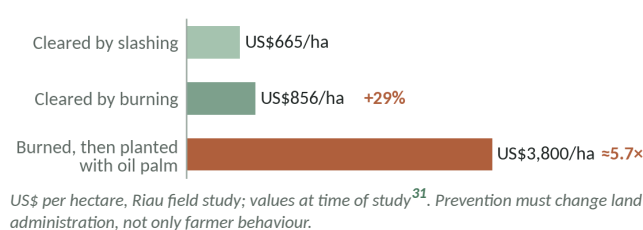
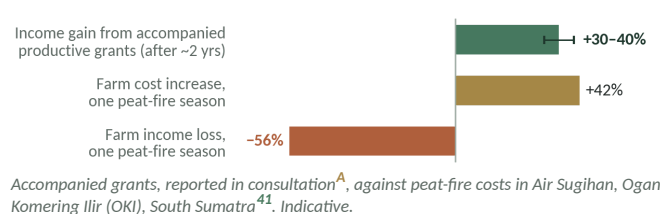


FIGURE 5 · WHAT ONE FIRE SEASON CAN ERASE



Who carries the cost

The burden reaches far beyond the farm gate

FARM HOUSEHOLD

Near-harvest pineapple lost in Natuna⁴²; a 63-year-old farmer died cutting a firebreak in Malang⁴³; extra pumping amid fertiliser and diesel shortages⁴⁴.

Benchmark: one peat-fire season, farm costs +42%, income -56%⁴¹.

FOOD SYSTEM

April rice harvest area down 15.5% year on year⁴⁵; rice output forecast to fall 3-5% if drought persists⁴⁶.

Benchmark: drought and fire strike the same households at once, through lost crops and lost workdays.

WOMEN, CHILDREN AND HEALTH

174,694 ARI cases, 40,363 in under-fives (18 Aug-21 Sep)¹⁴; 165,747 in West Kalimantan alone, Jan-early Aug⁴⁷. Women carry care and field work through the smoke.^A

Benchmark: prenatal exposure to the 1997 haze is linked to about 15,600 fetal, infant and child deaths⁴⁸ and to children about 3.3 cm shorter at age 17⁴⁹.

ECONOMY AND REGION

Rp 39.3-123.1 trillion in costs to Indonesia and 1.78 million people affected^{15,50}; haze reached Malaysia and Singapore^{16,51}.

Benchmark: 2015 fires cost Indonesia about USD 16.1 billion³; haze was linked to about 100,300 excess deaths region-wide⁴.

From programme findings to fire needs

Empowering Villages, Responsible Farming read through forest and land fire

Finding from the programme ^A	How it shows up in the 2026 fires	Concrete needs
Paperwork, not money, blocks finance	Farmers without title or a cultivation registration certificate (STDB) cannot reach grants, insurance or compensation; untitled idle land is easiest to claim and burn by proxy.	Land documentation: a plot registry, free STDB, and a legal entity so groups can hold pumps and village-fund contracts.
Farmers are losing the planting calendar	El Niño delayed the rains; farmers cannot judge when to plant or when land is too dry to touch.	Early warning that pairs inherited signs with BMKG fire-danger and hotspot data, translated by a trusted cadre.
The advisory layer has gone	MPA volunteers fight fires with little support; extension officers are absent at peak season.	MPA support: paid, equipped, registered under the hub; champion farmers as first reporters, never untrained firefighters.
Women hold the work, not the authority	Women carry care and field work through the smoke while under-fives carry the ARI burden.	Women's roles in hub governance and health protection; Rambitan's women's institutions as an anchor.
Capital exists but is disconnected	Recovery needs seed, tools and water fast; risk cover is absent.	Finance access: dry-season index insurance, zakat (Islamic alms) productive grants and Village Fund cash-for-work routed through the hub.



SITUATION REPORT / STRATEGIC RESPONSE

STRATEGIC RESPONSE

Fire prevention within Empowering Villages, Responsible Farming

The programme needs no separate fire component, only a fire lens on its three agreed priorities and one role that owns the months before ignition. Fire is already a quick win: replicating fire-care villages and the narrative "Wise Oil Palm Farmers, No Land Burning" (*Petani Sawit Bijak Tanpa Bakar Lahan*).^A

THE MODEL

Land Stewards (Penjaga Lahan)

A paid, year-round team of four to six residents, at least two of them women and one a young farmer, chosen through the Village Deliberation Forum (*musyawarah desa*, *musdes*), endorsed by faith and customary leaders and hosted by the village hub²⁵. Stewards report; they never confront.

- 1 Land stewardship registry.** Every plot with a known steward, use and status; idle and disputed land is where burning starts.
- 2 Keep peat wet.** Maintain canal blocks, read water-level gauges, fill small reservoirs (*embung*) and wells.
- 3 Change the clearing decision.** Agree a no-burn plan with every household before slashing season; book seed, compost and shared machinery.
- 4 Watch early signals.** Slashing left to dry, new canals, land sales, outsiders arriving; report to the village head and hub; organised burning to district and police.

Funding mix. A ring-fenced Village Budget (APBDes) line³⁶, company CSR, buyer premiums, and philanthropy or zakat. **Measure.** Zero ignitions on registered land.

PRIORITY 1 · VILLAGE INSTITUTIONS AND CADRES

- Register the MPA as a service unit of the hub so equipment, insurance and village funds have a legal home; train champion farmers to detect, report and evacuate, never to fight fires untrained.^A
- Field-school modules on no-burn preparation and keeping peat wet; scholarship returnees as field advisers.^A

PRIORITY 2 · RESILIENCE, MARKETS AND FAIR FINANCE

- Shared no-burn machinery as a paid hub service; canal blocks, reservoirs and wells through Village Fund cash-for-work; dry-season index insurance.
- Liberica coffee and other wet-peat (*paludiculture*) crops linked to exporters; fire-free practice as a traceability asset under the EU Deforestation Regulation.^A

PRIORITY 3 · NARRATIVE, COLLABORATION, POLICY

- The No Land Burning (*Tanpa Bakar Lahan*) message carried by religious and customary leaders through the mosque pulpit and village forums; a joint no-burn pact by village head, customary and religious leader, the model that has already held land in place.^A
- A fire-and-drought clause in the 2027 village work plan (RKPDes) and budget; build on Peat-Care Villages (*Desa Mandiri Peduli Gambut*), disaster agency (BPBD) posts and about 400 Prosperous Fire-Care Villages (*Desa Makmur Peduli Api*).^A

Evidence	Finding, and what it means for the design
Carmenta 2021⁵²	In Riau's Fire Free Village sites (n = 303), sanctions and health concern drove prevention more than rewards. Presence works, fairly only if alternatives come first.
Arisanty 2023⁵³, Tacconi 2016⁵⁴	Actively farmed, guarded peat had low fire potential; restoring peat is the route to stopping haze. Every plot needs a present steward, and water is core work.
Ekawati 2024⁵⁵, Syahza 2024⁵⁶	Imposed zero-burning hurt some households; one-to-one guidance with campaigns raised participation. Co-design alternatives, household by household.

Country	Practice, and the lesson for Land Stewards
Australia	Paid Indigenous rangers burn early in the dry season, cutting late-season wildfire and earning carbon revenue ⁵⁷ . A paid local role can carry its own income.
Brazil	A 2024 national integrated fire management policy ⁵⁸ follows brigade and early-burning programmes that cut late-season fire ⁵⁹ . Prevention as standing policy.
Singapore	The Transboundary Haze Pollution Act 2014 reaches conduct abroad that causes haze at home ⁶⁰ . Aim liability at those who profit from fire.

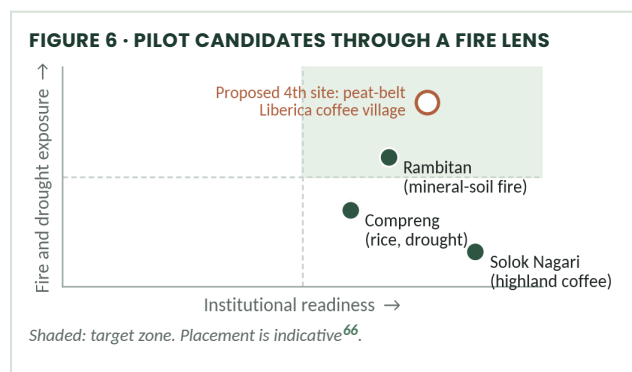
Reading risk early Method and indicator panel, so resources move on forecast rather than on smoke

Layer 1 · Season (3–6 months). Seasonal climate forecasts can signal a severe fire season months ahead⁶¹; CPPM proposes they trigger the village and district prevention budget before the dry season.

Layer 2 · Fortnight (up to 14 days). The Peat Fire Vulnerability Index combines rainfall, temperature and water table²⁹ and has run in priority areas of the Peatland and Mangrove Restoration Agency (BRGM) since 2021⁶²; on mineral soils, BMKG's fire danger rating⁶³.

Layer 3 · Village risk score (weekly, proposed). A classifier trained on 2015–2026 village hotspot history⁶⁴, the village determinants in Edwards et al.³⁸ and registry signals from stewards, validated out of sample on the 2019 and 2023 seasons, to rank plots for household visits.

Thresholds are proposed by CPPM SBM ITB from BMKG dry-spell classes, the 0.4 m peat water-table criterion³⁰ and PFVI findings²⁹; site-level calibration applies at baseline.



Indicator	Source	Watch	Act
Consecutive days without rain	BMKG ⁶⁵	21–30 days	> 30 days
Peat water table below surface	Gauges, BRGM	30–40 cm	> 40 cm
PFVI or fire danger class	BRGM, BMKG	High	Extreme
Hotspots near the village	SiPongi	Within 5 km	In village
Signals on idle or disputed plots	Registry	Slashing	Land sale

Recommendation: add a peat-belt pilot built on Liberica coffee

Compreng, Rambitan & Solok Nagari Villages are strong on readiness and can prove the hub model, but none sits in the peat fire belt, and no oil palm or cocoa village was put forward in the final round.^A Arabica and Robusta grow mainly in the highlands; Liberica coffee thrives on lowland peat zoned for cultivation, with about 2,710 ha in six peat sub-districts of Tanjung Jabung Barat, Jambi, and about 700 ha in Kepulauan Meranti, Riau, sold as far as Malaysia⁶⁷. A Liberica village earns its income from keeping peat wet and farmed, the core of fire prevention. CPPM recommends one such village, or an oil palm or mixed-crop village in the peat belt, ideally an existing Peat-Care or Prosperous Fire-Care Village.

Three relevance tests. **Direct:** fire or drought already costs households harvests, income or workdays. **Mechanism:** hub, groups, capital, leaders and water can carry prevention, with budget and indicators that name fire. **Location:** high exposure, a matching livelihood and ecosystem, and ready institutions.

SITUATION REPORT / STRATEGIC RECOMMENDATIONS

STRATEGIC RECOMMENDATIONS AND PUBLIC AWARENESS

Move fire policy to the months before ignition

Indonesia already pays for fire, in aircraft, emergency funds, lost harvests and children's lungs. The recommendations below shift part of that spending to the decisions that come first, and make the village the place where prevention is owned, funded and measured. The 2027 dry season is the deadline: what is not in place by June will be tested by fire.

Q4 2026

Recover and map

Post-fire recovery, fire-aware baseline, fire-economy mapping.

Q1 2027

Set the rules

No-burn pact, village regulation, prevention line in the 2027 village budget.

Q2 2027 · BY 30 JUNE

Be ready

Every plot stewarded, every household with a no-burn plan, funds disbursed.

Q3 2027

Live test

Dry-season peak; measure ignitions, not hectares extinguished.

Built on the quarterly framework agreed in the final consultation round^A, with fire milestones added²⁵.

Six recommendations for government

National, provincial, district and village levels

01

Give villages a mandate and a budget for prevention

The national fire instruction omits village heads and village funds³⁵, and the Village Fund lists fire prevention only as one of eight competing focus areas³⁶. Name villages as prevention actors and ring-fence a prevention line that is disbursed before the dry season.

INSTRUMENT · Revised Presidential Instruction 3/2020; Village Fund guidance for 2027

02

Release money on the forecast, not on the smoke

Funds now flow fastest once emergency status is declared⁸, while some villages enter the season with no fire budget⁹. Seasonal outlooks can flag a severe season months ahead⁶¹; use them to trigger prevention spending, including paid, year-round land stewards.

INSTRUMENT · Forecast-based financing in district and village budgets

03

Close the 2-ha burning loophole

Article 69(2) of Law 32/2009 still lets each household burn up to 2 ha as "local wisdom"⁶⁸; on 12 October the Environment Minister said the government will ask the DPR to remove it⁶⁹. Support it, and remove the gain: burned land sells for 29% more³¹, so bar sales and planting on burned land and execute unpaid judgments³⁴.

INSTRUMENT · Revision of Art. 69(2) Law 32/2009; moratorium on burned-land transactions

04

Keep peat wet as public infrastructure

Fire danger turns high once peat water falls below 40 cm²⁹, yet only 5.72% of Riau's peat is zoned protected against a 30% floor^{28,30}. Fund canal-block upkeep and water-table monitoring as a village asset, and move peat zoning toward the legal floor.

INSTRUMENT · PP 57/2016 implementation; village cash-for-work

05

Offer alternatives before enforcement

Bans without alternatives hurt the poorest farmers and leave the water table unchanged^{70,71}. Once the 2-ha exemption closes, households that relied on it need funded no-burn clearing, free smallholder registration and dry-season index insurance, so enforcement lands on organisers, not tenants.

INSTRUMENT · Plantation fund support; land-clearing aid on open-access land; agricultural insurance

06

Measure prevention, publish it, and pay for results

Most village fire schemes lack outcome data⁷². Report ignitions on village land, water-table readings and household no-burn uptake alongside hotspots and burned area, so funding follows villages that stay fire-free and data reaches the plot.

INSTRUMENT · Open village fire data linked to SiPongi and BMKG

RAISING AWARENESS

Four messages, carried by trusted voices

Smoke is a health emergency for the most vulnerable.

Children, pregnant women, older people and those with heart or lung disease face the highest risk⁷³; 40,363 under-fives had respiratory infections in five weeks¹⁴. For families and health offices.

Someone profits from every fire.

Burned land gains value³¹, the cost falls on farmers and the public. For the public, media and legislators.

Wet, well-managed peat rarely burns.

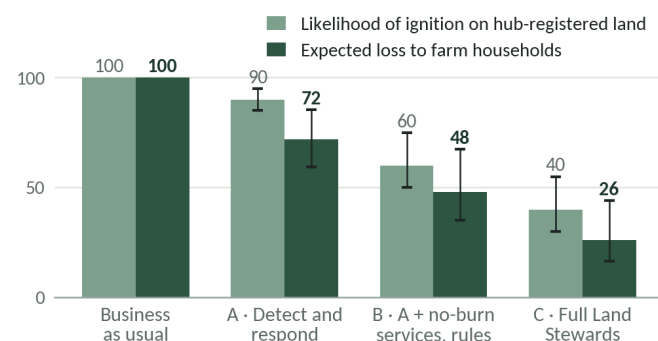
Tended peat with a high water table has low fire potential⁵³, but only on peat zoned for cultivation with water kept within 40 cm (PP 57/2016)³⁰; protected peat stays closed. For farmers and buyers.

Prevention is cheaper, and protects Indonesia's standing.

2026 costs reached Rp 39–123 trillion¹⁵, and haze closed schools in Malaysia¹⁶. For finance and foreign ministries and district planners.

Channels. Religious and customary leaders, the mosque pulpit and village deliberation forums, which farmers trust more than formal climate actors^A; a joint no-burn pact by village head, customary and religious leader; one-to-one household visits, which raise participation more than campaigns alone⁵⁶; and a public village fire dashboard before each dry season.

FIGURE 7 · ESTIMATED EFFECT ON FIRE LIKELIHOOD AND LOSSES



Index, business as usual = 100, peat-belt pilot village, strong El Niño year; whiskers show the planning range. Expected loss = likelihood × loss given fire.

How the estimate is built. A: faster detection and safe reporting cut loss given fire by 10–30%. B: no-burn services, household plans and village rules cut ignition by 25–50%^{31,52}. C: peat water held above 40 cm, a steward on every plot and insurance cut ignition by 45–70% and loss given fire by 20–45%^{29,53}. For a household facing the 56% income loss benchmark⁴¹, C removes about three-quarters of the expected loss. Planning assumptions, not measured effects.



SITUATION REPORT / SOURCES AND REFERENCES

Sources, method and references · APA 7th edition, numbered by first citation; news retrieved to 13 October 2026

PROGRAMME FINDINGS · A

Findings marked A come from four closed consultation rounds convened by AYANA and CPPM SBM ITB (11 June, 12 August, 4 September and 25 September 2026). Identities are withheld.

LIMITATIONS

Burned-area totals differ by source and period: Auriga Nusantara's MapBiomass Fire records 637,011 ha for January–August 2026, while the Ministry of Forestry's official SiPongi system records 202,004 ha to July. Figures after August were not published at the time of writing. NGO findings are cited as reported in the media.

ESTIMATES AND THRESHOLDS

Figure 7 scenarios and indicator thresholds are CPPM SBM ITB planning assumptions grounded in the cited literature, not measured effects, and are calibrated against village baselines during implementation.

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