

A LANDSCAPE 360 OCCASIONAL FACT SHEET

What the Smoke Costs

Indonesia, the health price of the 2026 fires

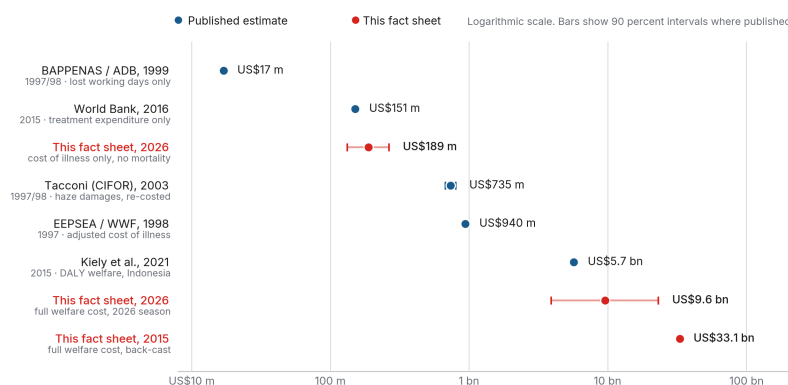


Figure 1. Health cost of Indonesian forest and land fires: every substantive estimate in the public domain, against the estimate built for this fact sheet. Logarithmic scale; each entry in the nominal dollars of its own year. The two-hundred-fold spread is not measurement error. It is four different definitions of what a health cost is: treatment expenditure, cost of illness, disability-adjusted life years, and the value of a statistical life. Sources: World Bank (2016); Kiely et al. (2021); Glover and Jessup, EEPSEA (1998); Tacconi, CIFOR (2003); BAPPENAS and ADB (1999).

The Record Is Almost Empty

Every rupiah figure in circulation for karhutla traces to one document. The World Bank's February 2016 damage-and-loss assessment put the 2015 fires at Rp 221 trillion, and its health line is US\$151 million, 0.9 percent of the total, covering treatment, equipment and health-worker overtime. It values no deaths at all, and says so.

After 2019 the record stops. Nothing has been published for the 2023 fires and nothing for 2026, and nobody has yet multiplied the excess deaths by a value of life, though Koplit's 91,600 Indonesian deaths and the World Bank's own transfer formula have been public for years.

What a Statistical Life Is

A value of statistical life is not what a person is worth. It is what a large group will collectively pay to avoid one death among them. If a hundred thousand people each spend Rp 97,500 to cut their annual chance of dying by one in a hundred thousand, they have together spent Rp 9.75 billion and, on average, prevented one death. That sum is the value of a statistical life, and it is the price this sheet puts on line A1 of Table 1.

Indonesia has no official one and no ministry guidance for valuing mortality. Every figure in use is transferred from wage-risk studies conducted elsewhere and rescaled by income: the target value is the American value times the income ratio raised to an elasticity. That elasticity decides almost everything. Viscusi and Masterman use 1.0, the World Health Organization 1.2, Vital Strategies' Jakarta work 1.5; the higher it is, the less a life is worth in a poorer country.

The central figure here is Rp 9.75 billion, about US\$550,000, from the WHO transfer at an elasticity of 1.2, ranging from Rp 4.96 to 17.73 billion. The simulation mean, Rp 10.8 billion, is roughly 120 times Indonesian income per head — the same multiple the American value bears to American income. That is defensible, and it is the generous end. The World Bank's own global accounting implies about US\$352,000 per Indonesian death; Kiely's route through life years implies US\$102,000.



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Putting a Price on It

Rebuilt from hectares upward, the health cost of the 2026 season is Rp 170 trillion. About 15,700 people die early for it, losing some 199,000 years of life between them, and ninety-three percent of the money is that one line.

Table 1. Health cost of the 2026 fire season, Sumatera and Kalimantan, itemised. Medians of 300,000 Monte Carlo draws.

COST ITEM	QUANTITY	UNIT	RP BN	US\$ M	90% RANGE, RP TN	SHARE
A · MORTALITY, VALUED AT THE STATISTICAL VALUE OF A LIFE						
A1 Premature adult deaths, age 30 and over	15,074	deaths	158,355	8,934	63 – 387	92.9%
A2 Infant deaths, under one year	578	deaths	6,056	342	2.2 – 15.9	3.6%
B · TREATED ILLNESS, COST OF CARE						
B1 Respiratory hospital admissions	2,348	admissions	14.6	0.8	<0.05	0.01%
B2 Cardiovascular hospital admissions	1,085	admissions	13.1	0.7	<0.05	0.01%
B3 Excess ISPA outpatient visits	206,936	visits	10.1	0.6	<0.05	0.01%
B4 Severe childhood asthma attacks, treated	109,520	episodes	27.2	1.5	0.01 – 0.07	0.02%
B5 Conjunctivitis and dermatitis presentations	4,140	visits	0.2	<0.1	<0.01	<0.01%
B6 Excess low-birth-weight births, care cost	8,828	births	154.5	8.7	0.06 – 0.38	0.09%
C · TIME LOST						
C1 Work days lost to illness	4,858,589	days	568.2	32.1	0.25 – 1.28	0.33%
C2 Caregiver days lost	838,096	days	98.0	5.5	0.06 – 0.16	0.06%
D · DAMAGE THAT OUTLIVES THE SEASON						
D1 Exposure in utero, lifetime earnings	640,331	people	2,215.7	125.0	1.01 – 4.82	1.30%
D2 Student-days of schooling lost	2,800,000	days	—	—	—	—
E – F · AVOIDANCE AND RESPONSE						
E1 Averting: masks and consumables	~12 million	people	357.7	20.2	0.15 – 0.70	0.21%
E2 Averting: purifiers and filtration	—	—	1,175.9	66.3	0.56 – 2.08	0.69%
F1 Public health emergency response	—	—	764.3	43.1	0.43 – 1.27	0.45%
SUB Cost of illness only, no mortality			3,358	189	2.3 – 4.7	2.0%
TOT Total health cost, 2026 season			170,403	9,614	70 – 410	100%

Note. Domain is Sumatera and Kalimantan, 77.5 million people. The central case assumes 720,000 hectares burned across the season, 35 percent of it peat, giving a fire-attributable population-weighted PM_{2.5} increment of 4.0 µg/m³ as an annual mean. Line A1 alone is 93 percent of the total. Three parameters carry seventy percent of the variance and only one is a fact about fire: the value of a life at 36 percent, the August-to-October burned area at 22, the response function at 13. The estimate is low by construction, since Jawa, the eastern islands, Papua and transboundary smoke lie outside the domain, and this is health only. Rp 17,725 per US dollar, 26 August 2026.

How Much Life Is Lost

The table counts deaths brought forward, not lives ended. A chronic response function attributes a share of ordinary all-cause mortality to the smoke, and those it counts are mostly old, dying of heart and lung disease earlier than they otherwise would have.

How much earlier is an assumption, not a measurement. European assessments on national life tables imply about 10.5 years lost per attributable adult death; Indonesian life expectancy at 60 was 18.1 years in 2019. At that rate for each adult and a full 71 for each infant, the season costs about 199,000 years of life.

Sources and method

Extent: SIPONGI KEMENHUT register, 202,011 ha to end July 2026; season projection lognormal, median 720,000 ha.
Emissions: peat 314 t DM/ha at 17.3 g PM_{2.5}/kg (Jayarathne 2018). **Exposure** calibrated on Hein et al., *Environmental Health* 21:62 (2022), who put the loss of life expectancy at birth from fire smoke at 0.9 years in Sumatera, 1.2 in Kalimantan.

Lives or Life-Years

None of that enters the table. The US EPA, the US Department of Transportation and WHO price a death identically whatever the age, and this sheet follows them: an infant and a man of 78 both cost Rp 9.75 billion.

Convert to life-years instead — the value over 22.5 discounted years, Rp 433 million a year — and 199,000 years come to Rp 86 trillion, half the headline. The table implicitly prices a year of life at Rp 855 million. That is the width of the disagreement, and why a DALY estimate lands lower.

Response: Vodonos 2018, WHO HRAPIE, Xue *eLife* 2021, Tan-Soo and Pattanayak *PNAS* 2019. **Valuation:** WHO benefit transfer at elasticity 1.2; constant-VSL convention from US EPA and DOT; VSLY divisor of 22.5 discounted years from US HHS (2025). **Life-years:** 10.5 per adult death, EEA 2025; life expectancy at 60, WHO GHO 2019.