

Air Pollution in the News, 2019-2026: Seasonality, Geography and Tone of Global Air Pollution Coverage, and How It Compares with Research and Invention

Fliar BI · Prism Research Layer · Working paper, October 2026 · Dataset and code: github.com/fliarbi/prism-news-api · Licence CC BY-NC 4.0

Abstract

We measure how air pollution was covered in a global news index from January 2019 to July 2026, using 96,198 de-duplicated air pollution articles, and set that coverage beside 56,508 research papers and 13,013 patent families on air pollution. Six results stand out:

1. **Seasonality.** On average 22.47% of each year's air pollution coverage appears in November, and 44.79% in October, November and December.
2. **Attention, not air quality.** November was the peak month in every year from 2019 to 2024. The share of news taken by air pollution was 36% lower in 2025 than in 2019 (5.99 against 9.36 per 10,000), even as raw article counts rose.
3. **Geography.** Between January 2023 and July 2026, India accounted for 63.83% of located air pollution news, 4.84 times its share of all located news. The United States is under-represented at 0.33. Thailand (5.78), Bangladesh (2.84) and Nepal (2.63) are also over-represented. Within India, Delhi leads (5.17), followed by Haryana (1.38); within the United States, Colorado (2.37), California (2.36) and Maryland (2.26).
4. **Tone and urgency.** 67% of air pollution articles are negative in tone (all news: 33.6%), and 84.4% are rated critical priority (all news: 42.6%).
5. **Measurement.** 11.08% of raw matches for air pollution vocabulary were automated alerts, weather-page templates, cryptocurrency items or figurative uses.
6. **Research and invention.** Air pollution papers grew from 4.98 to 9.4 per 10,000 papers between 2015 and 2025. As a share of all patent families, air pollution patents peaked in 2017 (3.01 per 10,000) and fell to 2.21 in 2024. China's office holds 80.3% of the filing-office records from 2015 to 2024.

Findings stated for citation

- **F1.** Between 2019 and 2025, an average of 22.47% of each year's air pollution news appeared in November, and 44.79% in October–December, against 25% for an even spread.
- **F2.** November was the peak month in every year from 2019 to 2024; November 2019 was the highest month of the period, at 29.76 articles per 10,000.
- **F3.** Air pollution took a 36% smaller share of news in 2025 than in 2019 (5.99 vs 9.36 per 10,000).
- **F4.** India's share of located air pollution news (63.83%) was 4.84 times its share of all news. The United States' (16.2%) was 0.33 times.
- **F5.** Among the 13 countries with the most located articles, Thailand (5.78), India (4.84), Bangladesh (2.84) and Nepal (2.63) were the most over-represented; Asia as a whole was over-represented 3.01 times.

- **F6.** 67% of air pollution articles were negative in tone, 1.99 times the all-news share; in India, 78.2% against 41.2% of Indian news.
- **F7.** 11.08% of raw air pollution matches were automated alerts, templates or figurative uses.
- **F8.** Air pollution papers rose 1.89-fold as a share of all papers between 2015 and 2025.
- **F9.** 80.3% of the filing-office records of air pollution patent families (2015–2024) were in China.
- **F10.** As a share of all patent families, air pollution patents peaked in 2017 (3.01 per 10,000) and fell 26.5% to 2.21 by 2024, although raw counts peaked in 2021.
- **F11.** Within India, Delhi held 67.09% of state-located coverage (lift 5.17).
- **F12.** Within the United States, Colorado (2.37), California (2.36) and Maryland (2.26) had the most over-represented coverage.
- **F13.** Air pollution's share of Pakistan's news rose from 10.46 to 32.84 per 10,000 between 2023 and 2024.
- **F14.** Air pollution's share of Vietnam's news rose from 5.11 to 32.78 per 10,000 between 2023 and 2025.
- **F15.** Air pollution's share of China's news fell from 11.89 to 4.62 per 10,000 between 2023 and 2025.

1. Introduction

Air pollution is one of the largest environmental risks to health. Most of the public learns about it through the news: the daily air quality index, school closures, crop-burning seasons, wildfire smoke and new rules on vehicles and power plants. News coverage shapes what the public and policy-makers treat as urgent. Yet coverage is rarely measured as data in its own right. Monitoring networks record concentrations. Bibliometric studies record research. Few sources record attention, meaning how much of the news air pollution takes and when, where and in what tone.

This paper and its dataset do that. They combine three records for one topic: a global news index, research papers and patents. Each comparison uses a denominator, so that growth in the index or in publishing is not mistaken for growth in interest. The companion dataset publishes an article-level sample (24,015 rows) and full coverage tables, so every figure here can be re-derived. The [Prism News API](#) serves the full history.

2. Data and methods

News. The Prism news index holds articles from outlets worldwide; non-English articles are indexed in English translation. Each article carries its opening text (the first few sentences), a primary location, a graded tone label, a machine-assigned priority rating (1–9), themes, keywords and named organisations. We count unique article identifiers; repeated rows for the same article are removed. When this release was built, 92.88% of the index was readable, so all counts are lower bounds.

Matching. An article is about air pollution when its opening text contains *air pollution*, *air pollutants*, *air quality index*, *AQI*, *smog*, *PM2.5* (or *PM 2.5*), *particulate matter*, *toxic air* or *polluted air* as whole words. The broad phrase *air quality* alone was not used, because it also matches indoor-air product advertising. Four families of matches are excluded:

- templated air quality alerts and weather bulletins, such as "weather alert... air quality alert in effect until midnight";
- templated city temperature pages that list a daily AQI reading;
- a cryptocurrency token named "smog";
- figurative uses, such as "a smog of confusion".

Together these removed 11,991 of 108,189 raw matches (11.08%). One reviewer read 40 randomly drawn matched openings. 36 used the terms in the atmospheric-pollution sense (precision 90%), and in 30 (75%) air pollution or air quality was the main subject. The false positives were a mistranslated political speech, a byline that named a pollution control board, a general explainer that listed air pollution in passing, and a business story where pollution was incidental. A second reviewer re-judged 15 of the 40 openings and agreed with every original label. Nine of the 40 openings (22.5%) were research-paper abstracts that the index carries alongside news; they use the terms correctly and were counted as relevant. The term that matched most often was *air pollution* (52,034 articles), followed by *AQI* (18,367) and *air quality index* (14,532).

Measures. Coverage over time is expressed per 10,000 articles in the index that month or year, because the index grew from 11,807,177 articles in 2019 to 26,990,006 in 2025. Seasonality uses each year's within-year month shares, averaged over the complete years 2019–2025. Geography, tone, priority and themes use January 2023 – July 2026. Geography is expressed as lift: a country's share of air pollution articles divided by its share of all located articles. State lift uses the same rule within a country. Place tags derived from ordinary words (such as "Congress", "Earth", "Winter", "Cloud", "Mobile" and "Hurricane"; 714 words in all) were treated as unlocated in every location field, which removed 15.3% of city-tagged articles.

Research and patents. Research papers are de-duplicated articles and reviews (2000–2025) with *air pollution*, *air pollutants*, *air quality index*, *smog*, *PM2.5*, *particulate matter* or *fine particulate* in the title. Repository deposits are excluded. Patent families (2006–2024) use a similar title rule (*air pollution*, *air pollutant*, *air quality monitoring*, *smog*, *PM2.5*, *particulate matter*) and are counted once per filing office. Printing and wafer-processing senses of particulate are excluded from both.

3. Results

3.1 How much and when

The index holds 96,198 air pollution articles from January 2019 to July 2026. Raw counts rose from 11,056 in 2019 to 16,162 in 2025, but the share of all news fell: 9.36 per 10,000 in 2019, 7.04 in 2023 and 5.99 in 2025 (Table 1). The 2025 share is 36% below 2019. The highest monthly share was November 2019, at 29.76 per 10,000. The month with the most articles was November 2024, with 4,544 (Figure 1).

Year	Air pollution articles	All articles in index	Per 10,000
2019	11,056	11,807,177	9.36
2020	10,927	16,230,014	6.73
2021	11,199	17,281,220	6.48
2022	11,404	19,115,515	5.97
2023	14,420	20,484,506	7.04
2024	15,563	23,311,896	6.68
2025	16,162	26,990,006	5.99

Table 1. Air pollution articles per year and as a share of the index. 2026 (January–July) is partial and omitted.

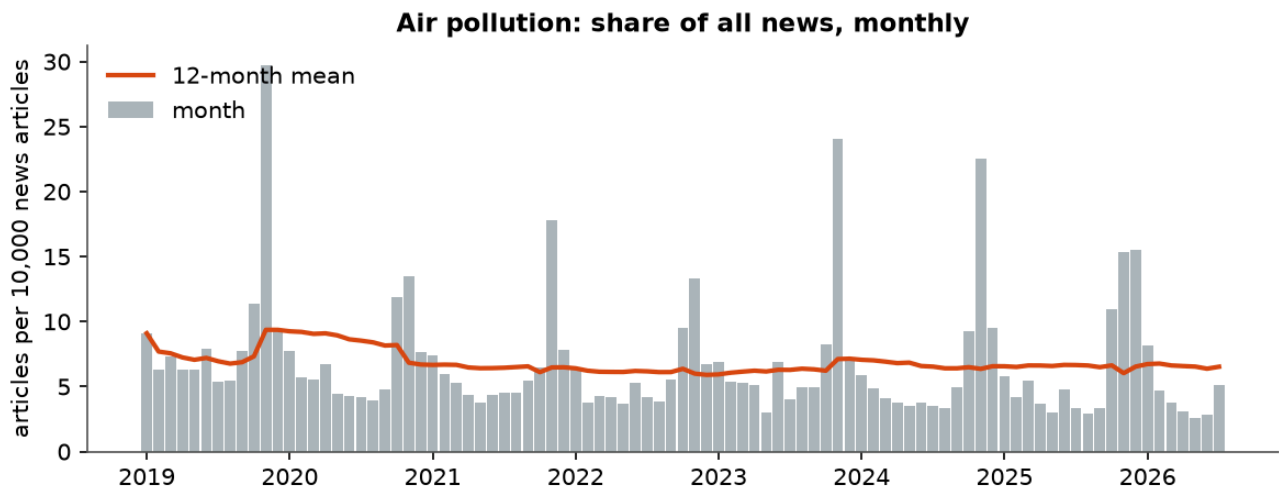


Figure 1. Air pollution coverage as articles per 10,000 news articles, monthly, January 2019 – July 2026. Bars are months; the line is the 12-month mean.

Coverage is strongly seasonal (Figure 2). November alone holds 22.47% of a typical year's air pollution articles, almost three times the 8.33% of an even spread. October (11.78%), November and December (10.54%) together hold 44.79%. May is the quietest month (4.83%). November was the peak month in each year from 2019 to 2024; in 2025 December (15.51 per 10,000) narrowly exceeded November (15.35). The peak falls in the winter smog season of northern India and Pakistan. Because India dominates located coverage, its calendar shapes the global one. The figures measure attention, not concentrations.

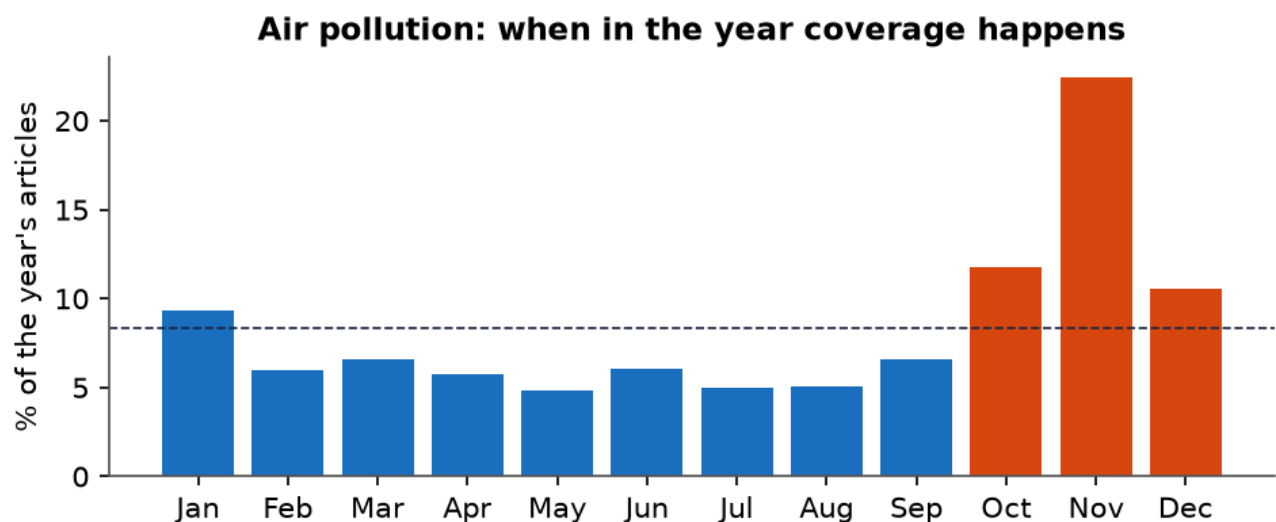


Figure 2. Share of each year's air pollution articles published in each month, averaged over 2019–2025. Dashed line = an even spread (8.3% per month).

3.2 Where

Between January 2023 and July 2026, 26,377 air pollution articles carried a primary location. India holds the largest share (63.83%) with a lift of 4.84. The United States holds 16.2%, but its lift is 0.33: air pollution takes a far smaller share of American news than of news overall. India's lift is 14.67 times the United States'. The most over-represented countries are in South and Southeast Asia (Table 2, Figure 3).

Country	Located articles	Share %	Lift vs all news
India	16,836	63.83	4.84
United States	4,272	16.2	0.33
China	646	2.45	0.93
United Kingdom	641	2.43	0.42
Pakistan	291	1.1	2.43
Thailand	289	1.1	5.78
Canada	256	0.97	0.45
France	198	0.75	0.38
Bangladesh	194	0.74	2.84
Indonesia	186	0.71	2.54
Nepal	125	0.47	2.63
Vietnam	123	0.47	2.56
Australia	118	0.45	0.21

Table 2. Leading countries in located air pollution news, January 2023 – July 2026, with lift against all located news.

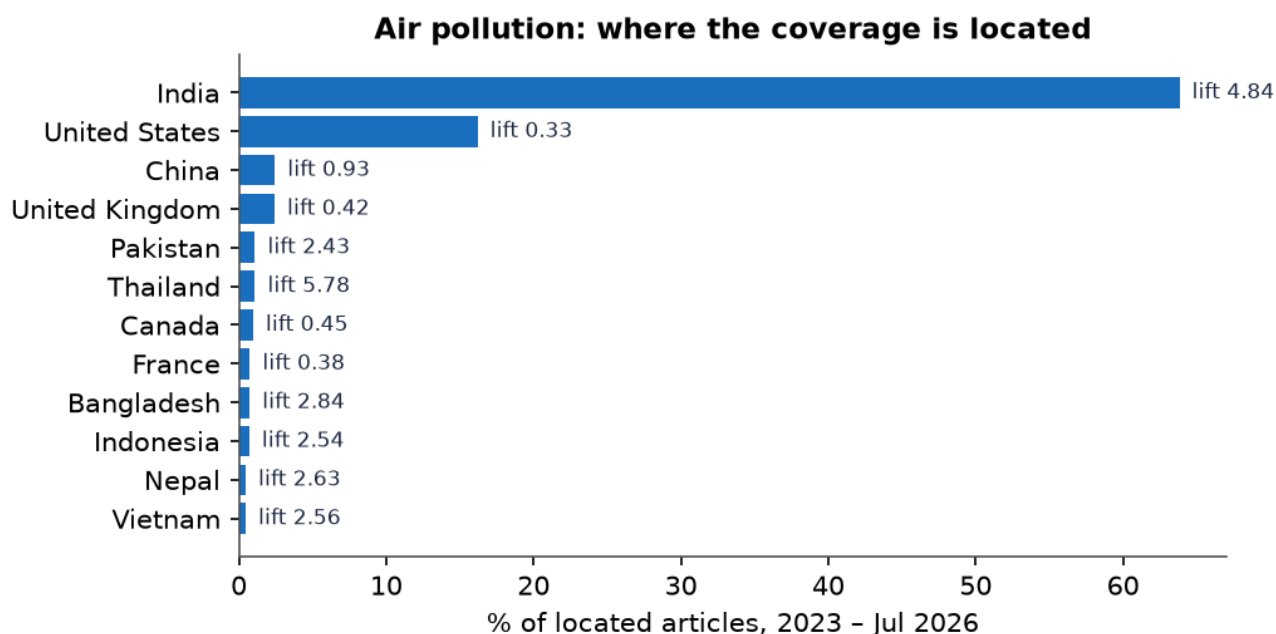


Figure 3. Leading countries by share of located air pollution articles, 2023 – Jul 2026, labelled with lift against all located news.

3.3 Geo intelligence: continents, states and shifting attention

The world map (Figure 4) shows the pattern at a glance. Air pollution is over-represented in the news of South and Southeast Asia and under-represented in North America, Europe and Australia. Most of Africa and South America is grey, because few countries there have

enough located articles. China sits slightly below parity (0.93). By continent, only Asia is over-represented (3.01). North America (0.34), Europe (0.37), Africa (0.41), Oceania (0.23) and South America (0.22) are all well below their weight in the index (Figure 7, left).

Air pollution: which countries over- and under-cover the topic

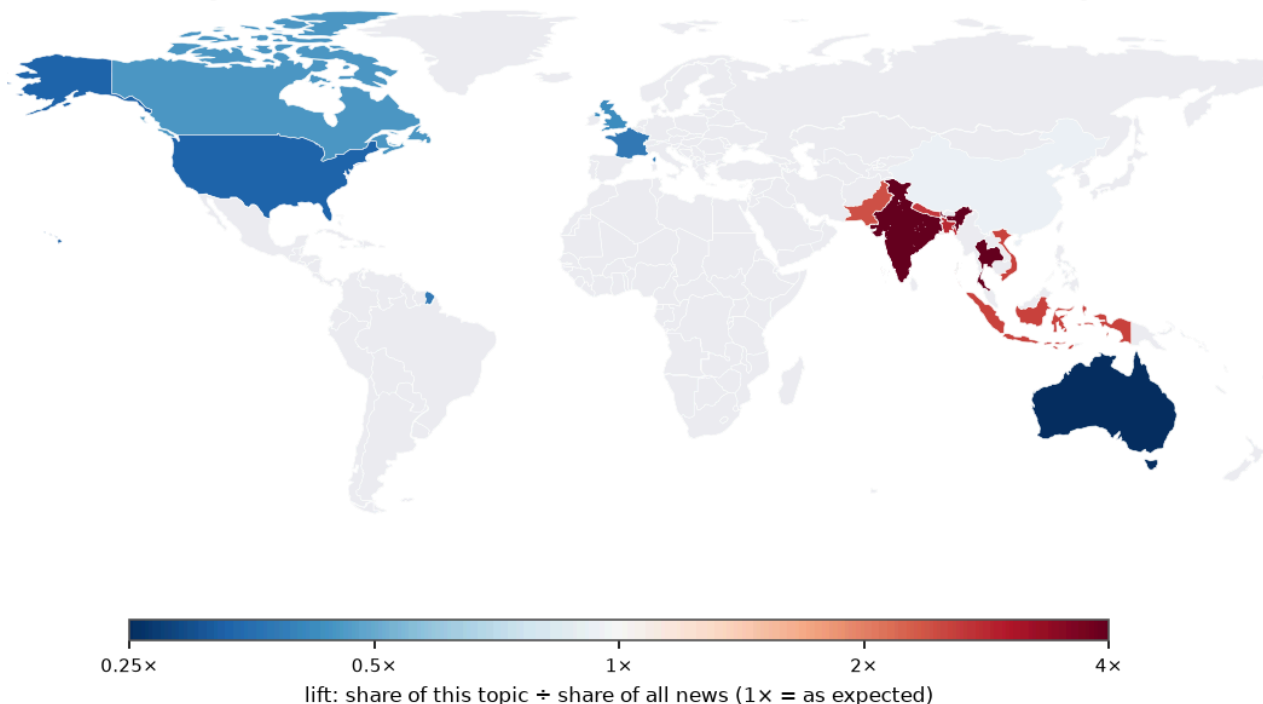


Figure 4. Lift of each country's share of located air pollution articles, January 2023 – July 2026 (red = over-represented, blue = under-represented, grey = too few articles). India is drawn with its official outline.

Within countries, coverage is highly concentrated (Table 3). In India, 16,115 articles carried a state. Delhi alone holds 67.09% of them, 5.17 times its share of Indian news. Neighbouring Haryana (1.38) is the only other clearly over-represented state. Punjab's lift (1.56) is overstated: more than a third of the sampled rows tagged Punjab, India, have Lahore or Faisalabad, in Pakistan's Punjab, as their city, so part of its count is Pakistani coverage. Uttar Pradesh (0.69) and Maharashtra (0.52) have large counts but lifts below one. Southern and eastern states are far below their weight: Telangana (0.11), Karnataka (0.13), Tamil Nadu (0.15), Odisha (0.15) and Madhya Pradesh (0.16) have the lowest lifts, and West Bengal (0.3) is also low (Figure 5). In the United States, 3,391 articles carried a state. Colorado (2.37), California (2.36), Maryland (2.26), Utah (1.79), Michigan (1.59) and Washington (1.57) lead by lift. New Jersey (0.15) and Florida (0.36) are far below their weight in American news (Figure 6). Louisiana, which led an earlier build, fell below 50 articles once place tags derived from ordinary words were treated as unlocated.

India: state	Articles	Lift	United States: state	Articles	Lift
Delhi	10,811	5.17	Colorado	156	2.37
Punjab*	638	1.56	California	799	2.36
Haryana	568	1.38	Maryland	78	2.26
Uttar Pradesh	1,409	0.69	Utah	54	1.79
Maharashtra	1,337	0.52	Michigan	126	1.59
Madhya Pradesh	75	0.16	Washington	139	1.57
Tamil Nadu	118	0.15	Tennessee	59	0.77
Odisha	51	0.15	Florida	66	0.36
Karnataka	117	0.13	New Jersey	95	0.15
Telangana	60	0.11			

Table 3. States with the highest and lowest lift in air pollution coverage, January 2023 – July 2026 (states with at least 50 articles). Lift = the state's share of the country's located air pollution articles ÷ its share of all located news from that country. *Punjab's count includes stories about Lahore and Faisalabad in Pakistan's Punjab.

Air pollution: states of India by lift

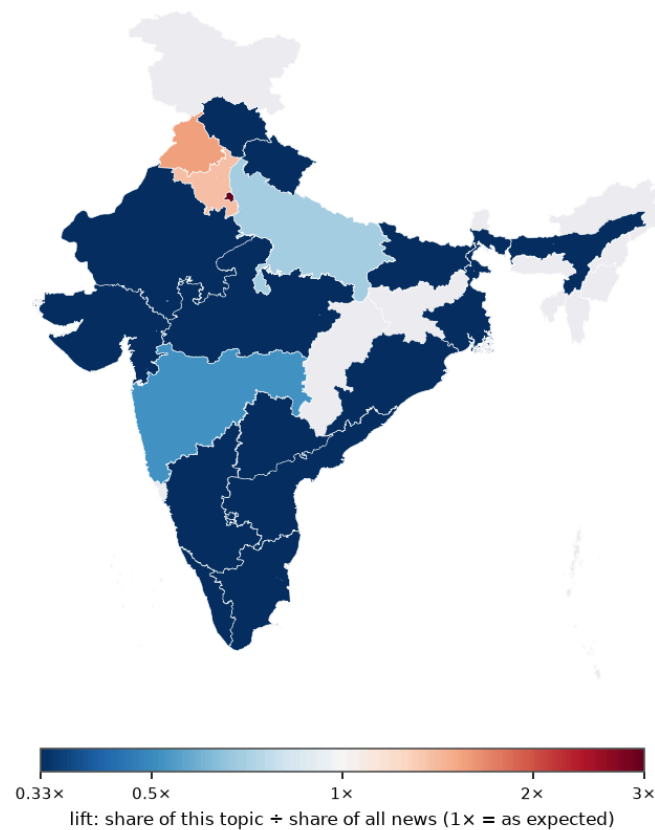


Figure 5. Lift of each Indian state's share of located air pollution articles against its share of all located Indian news, January 2023 – July 2026. Official outline; Ladakh is drawn within Jammu and Kashmir in the boundary file used.

Air pollution: states of United States by lift

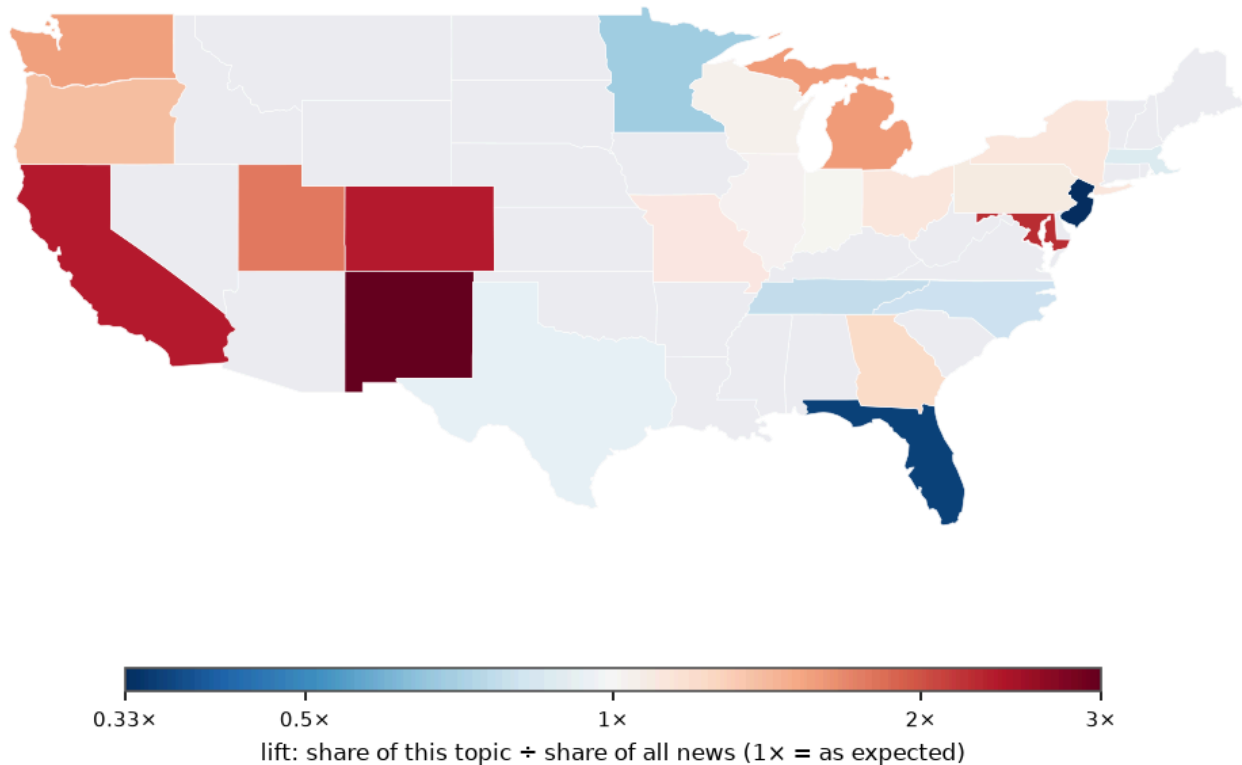


Figure 6. Lift of each US state's share of located air pollution articles against its share of all located US news, January 2023 – July 2026.

Attention also moves between countries from year to year (Figure 7, right). Measured as air pollution articles per 10,000 of each country's located news, India held steady between 2023 and 2025 (34.07 to 35.26, 1.03 times). The share fell in China (11.89 to 4.62, 0.39 times), the United Kingdom (4.3 to 2.5, 0.58 times) and the United States (3.09 to 1.92, 0.62 times), and in Canada (6.26 to 2.24). Among smaller countries, Vietnam rose from 5.11 to 32.78 and Nepal from 15.4 to 21.06, while Indonesia fell from 35.72 to 13.3. Pakistan peaked in 2024, the year of the India-Pakistan smog, at 32.84, up from 10.46 in 2023, before returning to 10.0 in 2025. The timing is a coincidence of dates, not a measured effect, and Pakistan's located baseline is small. Thailand moved sharply from year to year (54.31 in 2023, 22.73 in 2024, 35.33 in 2025).

Air pollution coverage is more negative than each country's news overall in all seven countries with the most labelled articles. The gap is widest in Thailand (90.7% negative against 35.8% for Thai news) and China (73.6% against 27.2%), followed by Canada (64.1% against 27.1%) and India (78.2% against 41.2% of Indian news). The United States (67.2% against 33.1%) and the United Kingdom (67.7% against 36.9%) follow. The gap is narrowest in Pakistan (79.4% against 59.5%), where news overall is already negative.

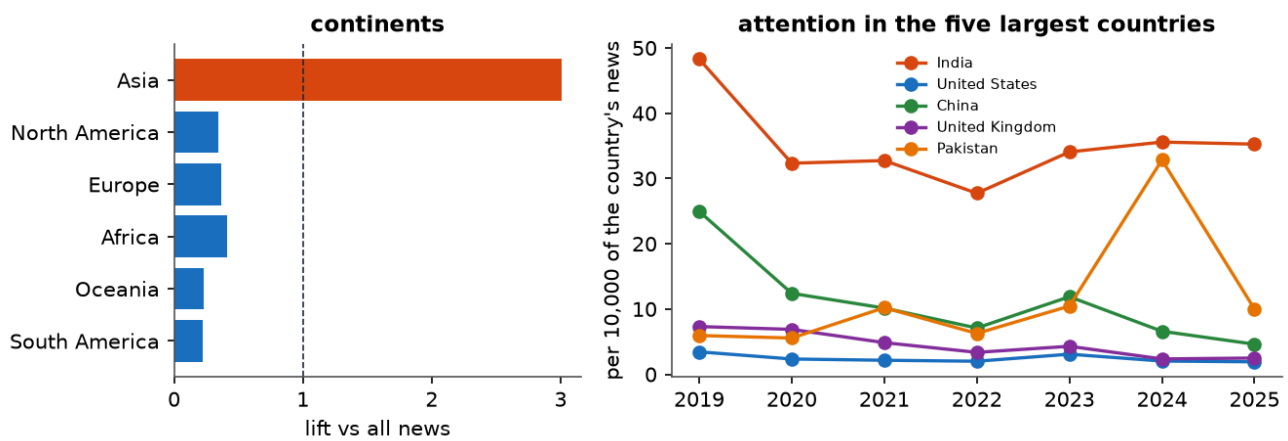


Figure 7. Left: lift by continent, January 2023 – July 2026. Right: air pollution articles per 10,000 of each country's located news, 2019–2025, for the five countries with the most articles.

3.4 Tone, urgency and themes

Air pollution coverage is more negative and more urgent than news in general (Figure 8). Among articles with a tone label, 67% are negative, against 33.6% across the index (1.99 times). A machine-assigned priority rating puts 84.4% of air pollution articles at critical level (7 or higher), against 42.6% of all news (1.98 times). The rating is a model label, not an editors' decision. Air pollution also has a sizeable positive share (30.4%).

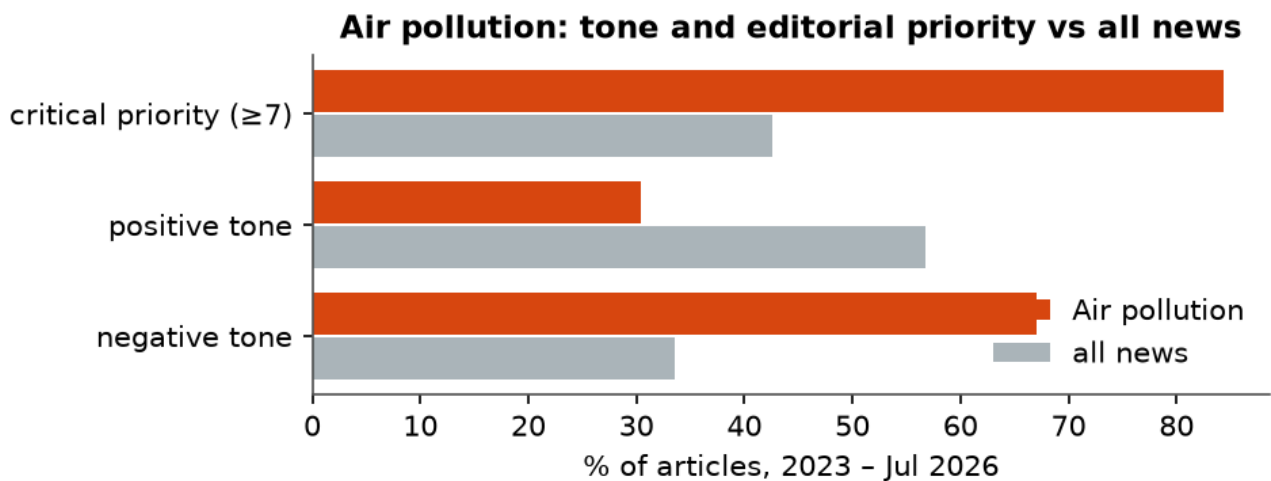


Figure 8. Tone and the share rated critical priority, air pollution articles vs all news, 2023 – Jul 2026.

Themes show what air pollution stories are about (Table 4). Air quality improvement initiatives are the most common theme (67.85% of themed articles), followed by environmental policy and legislation (21.48%). Health effects on breathing, pollution dispersion and atmospheric chemistry are smaller but highly specific to the topic. Wildfire smoke appears in 1.99% of themed articles.

Theme	Articles	Share %	Lift
air pollution effects on respiratory health	227	0.68	454.24
air quality improvement initiatives	22,575	67.85	351.58
air quality and pollution dispersion	150	0.45	311.42
air quality and pollution levels	4,451	13.38	277.04
climate change and public health	1,386	4.17	248.3
environmental health risk assessments	1,798	5.4	208.65
environmental policy and legislation	7,146	21.48	193.87
atmospheric chemistry and aerosol science	106	0.32	174.52

Table 4. Themes most specific to air pollution coverage (lift against all themed news), January 2023 – July 2026.

The organisations named most often are regulators and weather agencies: India's Central Pollution Control Board (5,179 articles), India's meteorological department (2,610 under its abbreviation) and the United States Environmental Protection Agency (2,227). The organisation field also carries mis-tagged place and outlet names, so the list is not analysed further.

3.5 Research attention and invention

Research on air pollution grew faster than the scientific literature. Papers with an air pollution term in the title rose from 4.98 per 10,000 papers in 2015 to 9.4 in 2025, a 1.89-fold increase in share, while the total literature in the corpus grew by a factor of 1.0 over the same years. The share peaked at 10.37 in 2022. Between 2015 and 2025, 56,508 such papers were published. The most-cited include estimates of the global burden of disease from ambient air pollution, reviews of particulate matter and cardiovascular disease, and work on the sources of premature mortality [1-3].

News attention does not track research attention (Figure 9). Research share rose almost every year to 2022, while news share fell from 2019 and has moved with the winter smog season since.

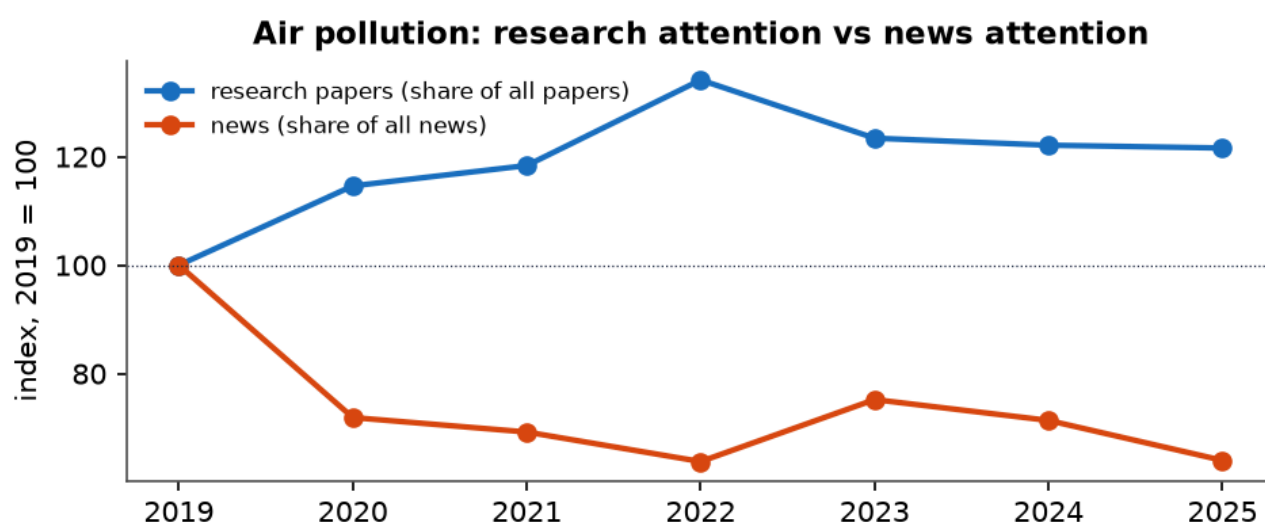


Figure 9. Research papers with air pollution terms in the title (share of all papers) and air pollution news (share of all news), each indexed to 2019 = 100.

Patenting rose and then fell. Measured against all patent families published each year, air pollution families rose from 2.65 per 10,000 in 2015 to a peak of 3.01 in 2017, then fell 26.5% to 2.21 in 2024. Raw counts peaked later (1,704 families in 2021, against 874 in 2015 and 1,230 in 2024), because patenting as a whole grew. China's office holds 80.3% of the

filing-office records from 2015 to 2024, followed by South Korea (5.5%) and the United States (4.8%) (Figure 10). The leading technology classes are measurement and analysis of materials (G01N, 1,683 families), which covers air quality sensors, and separation and filtration (B01D, 631), followed by climate-change adaptation technologies (Y02A, 489).

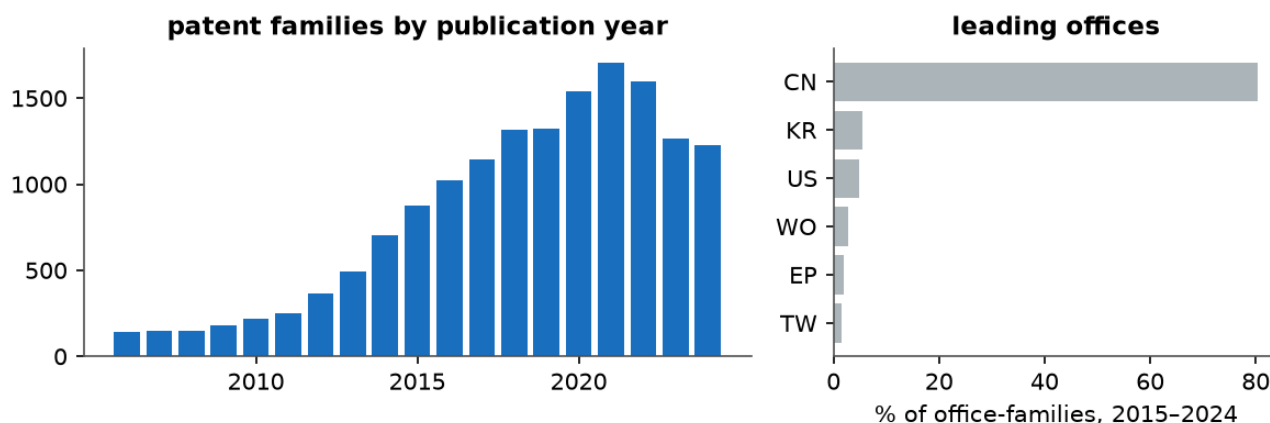


Figure 10. Air pollution patent families by publication year (left) and the leading filing offices, 2015-2024 (right).

4. Discussion

Three points matter for anyone who uses news as a record of air pollution. First, coverage measures attention. The November peaks reflect the north Indian smog season and the density of the Indian press in the index, not a global rise in concentrations each November. Second, coverage is highly concentrated. Located air pollution news is mostly Indian, and Indian coverage is mostly about Delhi and its neighbours. The countries where air pollution takes the largest share of attention, such as Thailand, Bangladesh and Nepal, are in South and Southeast Asia. North America and Europe are under-represented relative to their weight in the index. Third, keyword searches return a measurable share of items that are not journalism: automated air quality alerts and templated weather pages made up most of the 11.08% of raw matches excluded here.

Research, invention and news run on different clocks. Research share roughly doubled from 2015 and has levelled off since 2022. Patent share, mostly from Chinese filings, peaked in 2017. News share fell from 2019 and follows the seasons. The dataset lets researchers link the three, for example to test whether severe smog seasons with heavy coverage are followed by research or policy activity in the affected country.

5. Limitations

- **Index availability.** 92.88% of the index was readable at build time, so counts are lower bounds. Shares and lifts are less affected, because the missing part is spread across topics.
- **Coverage after May 2026.** The index thins after May 2026, so 2026 (January-July) is partial and is excluded from year comparisons.
- **Matching.** Matching uses the article opening. Articles that mention air pollution only later are missed, and 10% of matches are not about air pollution. Research abstracts carried in the index are counted as articles (9 of the 40 hand-checked openings).
- **Unlocated place words.** Place tags derived from ordinary words were treated as unlocated (15.3% of city-tagged articles), so located counts are smaller than tagged counts and some genuine places that share a name with an ordinary word are lost.

- **Concentration.** India accounts for most located coverage. Global seasonality and tone are therefore weighted towards Indian news.
- **Machine labels.** Location, tone, priority and themes are machine-labelled. The city field is noisy and is not analysed.
- **Outlet mix.** The index over-represents English-language outlets, which shapes geography.
- **Research and patent counts.** These match titles only. Office shares reflect filing practice; utility models are numerous in China.

Data availability

The dataset (article sample, monthly and country tables, state tables, research and patent tables, all metrics) is released under CC BY-NC 4.0 with this paper. The sample holds 24,015 of 96,187 matched articles to 31 July 2026. Full article text, headlines, publishers, later articles and other topics are served by the Prism News API: <https://github.com/fliarbi/prism-news-api> (base URL <https://radar-api.fliarbi.com/news>). A worked query: `prism-news trends "air pollution" --since 2019-01-01 --until 2026-07-31 --granularity monthly`.

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