

# Becoming a Crisis: Shifting Narratives of Seasonal Air Pollution in Northern Thailand (1996–2019)

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Chiang Mai, Thailand, has long experienced seasonal air pollution episodes at the end of the dry season (February–April). While the severity and length of the episodes vary annually, popular narratives describe how the “haze crisis” is worsening. In this article, we address the role of the media in driving the growing awareness of seasonal air pollution in Chiang Mai. The article contributes to scholarship on the politics of the representation of environmental problems and the understanding of discourses and practices through which natural phenomena are historically produced and become known. It takes into account social relations of power by addressing local environmental politics and how they are framed by political-economic interests. Based on the analysis of three Thai national newspapers over a 25-year period as well as extensive fieldwork and interviews in Chiang Mai Province, we chronicle the development of a collective concern about seasonal air pollution and its political-ecological drivers and consequences. Finally, we demonstrate how this shared perception of a worsening haze crisis is driven by ongoing debates surrounding the use of forests, agro-capitalism, and legitimate forms of political power. This article contributes to emerging scholarship in environmental media studies that addresses how environmental changes become environmental crises.

**Keywords:** Thailand, air pollution, Chiang Mai, narratives, anthropology, geography, environmental history

## Introduction

In this article, we address shifts in popular narratives of seasonal air pollution as an environmental crisis in Northern Thailand. Chiang Mai, the second largest city in

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Thailand, has long experienced seasonal air pollution episodes at the end of the dry season (February–April). The seasonality of air pollution is caused by a range of confounding factors, such as the city’s geographic setting in a valley, lack of wind during the dry season, agricultural burning, and urban development. While the severity and length of haze episodes often vary from one year to the next, the dominant narrative is that seasonal air pollution is rapidly worsening. What residents once considered a cyclical and unavoidable phenomenon in the early 2000s has become an unbearable threat to the environment, economy, and public health.

Growing awareness of the dangers linked to air pollution has generated academic discussions and political action among civil society groups at the highest levels of the state. These groups struggle over the representation of the causes, effects, and solutions of seasonal air pollution. Among academics, it was Thai health scientists who first addressed seasonal haze as an emerging public health crisis (Phongtape *et al.* 2001; Phongtape 2011; Chaicharn *et al.* 2016; Liwa *et al.* 2018). Following the initial warnings, other scientists began examining the chemical nature of particulate matter (hereafter PM)<sup>1)</sup> and its related emission factors (see Moran *et al.* 2019). However, few scholars have so far considered the social and political dimensions behind this growing environmental awareness. Some studies have stressed that the ineffectiveness of air pollution regulations in Thailand is due mainly to two factors. First, the seasonal nature of air pollution is inadequately tackled by year-round policies. Second, the absence of an integrative clean air act means that various Thai agencies work in silos with minimal collaboration (Nikam *et al.* 2021). The studies have also insisted on the transboundary nature of haze, the difficulty in implementing concerted action among regions or countries, mainly due to administrative fragmentation and the protection of vested economic interests by political and economic elites (Marks and Miller 2022). Yet scholars of Southeast Asia know much less about how awareness of air pollution emerges in local contexts and circulates across various segments of society.

The chronopolitics of the growing awareness of air pollution in Chiang Mai is reflected in the development of state-owned and independent sensor networks. These sometimes competing data sets generate debates among residents, scientists, and authorities on how to measure pollution as well as the safety thresholds and discrepancies between international and Thai regulations. Simultaneously, the persistence of shifting cultivation in rural areas, coupled with deepening commercial integration of agricultural practices (especially the development of maize crops), has revived long-standing debates

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1) Particulate matter (PM) includes microscopic matter suspended in air or water. PM10 includes particles less than 10  $\mu\text{m}$  in diameter and PM2.5 those less than 2.5  $\mu\text{m}$ . The toxicity of suspended particles is due mainly to particles with a diameter of less than 10  $\mu\text{m}$ .

about the “ecological crisis” in the highlands (Forsyth and Walker 2008) and the danger it poses to the entire population.

In what follows, we track shifts in public awareness of the threat of seasonal air pollution to better understand how environmental problems become known. Focused on three Thai national newspapers—*Bangkok Post*, *Matichon*, and the *Nation*—we chronicle the development of collective concern about air pollution as an environmental crisis, the main narratives it sustains, and its political-ecological consequences. Our research demonstrates how the understanding of environmental issues such as air pollution is framed in the media. We also address the factors that influence such framings (Matthes 2009; 2012), how they evolve over time, and how they shape public dialogue (D’Angelo and Kuypers 2010; Matthes and Schemer 2012). Arturo Escobar explains how “discourses and practices through which nature is historically produced and known” are intimately linked to relations of power between different segments of populations (Escobar 1996, 325). The Southeast Asia scholars Tim Forsyth and Andrew Walker note that “such apparently natural concepts as erosion or pollution should be seen as ‘hybrid’ mixtures of physical experiences and human values” (Forsyth and Walker 2008, 17). Drawing on these observations, we analyze media narratives of air pollution in Chiang Mai as “simplified explanations of environmental causes and effects, blame and responsibility, that emerge in contexts where environmental knowledge and social order are mutually dependent” (Forsyth and Walker 2008). We also engage with the work of scholars who have demonstrated how the late capitalist era is defined, at least in part, by a feeling of emergency and by the “catastrophization of nature” that goes with it (Agamben 2005; Fassin and Pandolfi 2010; Ophir 2010; Beck *et al.* 2013). This framing contributes to new understandings of how in many Asian countries, air became an “emerging coalescence of scientific and political substance” (Choy 2011, 17). In the case of Chiang Mai, we want to illustrate how the emergence of debates over seasonal air pollution in the mass media is the latest displacement of a well-established discourse on the degradation of nature in the uplands.

### *Air Pollution in Southeast Asia*

Air pollution throughout the Asian continent frequently reaches alarming levels. The world’s 148 most polluted cities are in the Asia-Pacific region. In 2020 the region had the highest AQI measurements to date, as indicated by the Swiss air quality technology company IQAir. Soot particles and gas pollutants produced by industries, road traffic, agricultural burning, and waste incineration periodically aggregate during dry periods into huge toxic slicks, covering megacities and the Himalayan foothills. Since the early 2000s, the “Asian Brown Cloud” (UNEP 2008; Verma and Iyanganarsan 2015; Sharma

*et al.* 2016) has been described as the “world’s largest polluted area” (Jarrige and Le Roux 2017, 342). Extending from Pakistan to China, it covers the entire Southeast Asia region. Primary pollutants (PM, sulfur dioxide, nitrogen oxides) regularly reach toxic levels that often exceed those recorded during the great London smog of the early 1950s (Fowler *et al.* 2020, 20). Recent pollution episodes in Beijing have been described as an “airpocalypse” (since 2013) and in Delhi as a “gas chamber” (Koshy 2022). In 2016 the WHO estimated that air pollution annually causes 4.2 million premature deaths. Today, 91 percent of these deaths occur in the regions of Southeast Asia and the Western Pacific (WHO 2016). Risk is linked not only to pollutant threshold but also to the time of exposure (in utero, for example) and to the simultaneous interactions between several pollutants.

During the last decades of the twentieth century, global environmental concerns focused on acid rain, the ozone layer, and deforestation. However, since the beginning of the 2000s, new epidemiological evidence has demonstrated how the health impacts of air pollution have contributed to the rapid growth in global attention to air pollution as a subject of critical environmental concern. As François Jarrige and Thomas Le Roux (2017) have demonstrated, rather than a “discovery,” this could perhaps be more accurately described as a “rediscovery.” During the last decades of the twentieth century, a “factory of environmental unconsciousness” evolved as a historical amnesia. The mitigation of air pollution episodes in the West and the overall improvement of air quality coincided with the relocation of most of the carbon emissions to Asia.

Growing awareness of seasonal air pollution has mobilized residents and political actors throughout newly industrialized countries. In 1997 in insular Southeast Asia, smoke produced by agricultural fires in Indonesia was exacerbated by unusually long droughts caused by El Niño (Forsyth 2014, 77) and combined with growing air pollution over cities. The air in urban areas of Indonesia, Malaysia, and Singapore felt particularly thick with smog, and popular media outlets officially recognized air pollution as a problem. The ASEAN Haze Transboundary Agreement was promulgated in 2002 and signed by all ASEAN countries except Indonesia, which eventually ratified the agreement in 2015. Though it committed parties to international collaboration and local action to prevent fires (no such commitments were made with respect to urban sources of pollution), haze episodes occurred again during the following years and became a recurrent disaster. Besides the ASEAN culture of “organizational minimalism,” other obstacles to the real implementation of the agreement included the vast array of motivations for fire use in rural areas, the closeness between big landholding companies and the authorities, the complexity of land tenure systems, the absence of pollution sensors able to track the source of emissions, and reluctance to impose clear regulatory constraints over urban

and industrial development (Heilmann 2015).

Seasonal haze in Chiang Mai is a particularly relevant topic in that respect since it is the first time in Thailand that air pollution has drawn attention from the media and public opinion outside of Bangkok. It is only since 2007 that it has become a source of concern in the national news. However, it encapsulates similar debates and generates similar calls for transnational cooperation as observed in insular Southeast Asia more than two decades ago.

### *Seasonal Air Pollution in Chiang Mai*

The Northern Thailand capital of Chiang Mai experiences seasonal air pollution each year between February and April, when winds are low, temperatures are high, and farmers burn their fields for the start of the agricultural season. Due to the area's geographic features, location, monsoon climate, agricultural practices, and more recently urban development, dust, smoke, and other dry particulates obscure the sky (haze) while photochemical reactions involving nitrogen oxides and hydrocarbons produce an oxidant-rich pollution mixture (smog). The smog gets trapped in the valley, where 1.8 million people have settled. It was not until 1996 that the Pollution Control Department (PCD) began taking official measurements of particulate matter smaller than 10 microns (hereafter PM10) and 2012 that it began officially measuring particulate matter smaller than 2.5 microns (hereafter PM2.5).

While the PCD began publishing its PM2.5 measurements only in 2012, historical documents reveal how haze has been a regular occurrence in Northern Thailand for more than a century. The British geographer James McCarthy surveyed and created Siam land border maps between 1881 and 1893. He described how haze and smoke rendered triangulation work often impossible, due to low visibility in February and March (McCarthy 1900, 130–135, 188, 191). The historical experience of seasonal haze and its predictable nature may help explain why, until recently, public opinion tended to view it as a normal occurrence. Even today, some residents continue to be skeptical about its health hazards.

The main narrative related to the causes of haze focuses directly on swidden agriculture in the highlands. What is left out of this narrative is the role of urban emissions. Highlanders have long been blamed for a range of ecological crises in Northern Thailand. Shifting cultivation practices have been an integral part of traditional forest management throughout Southeast Asia (and elsewhere in the world). With the advent of colonial forestry, many of the highlanders' livelihood strategies were criminalized and highlanders were deemed a threat to lowland Thai society (Pinkaw 2001; Usher 2009). Despite this, they have continued with traditional agricultural practices up to the present day. However, many continue to struggle over access to resources and land use claims.

Additionally, social differences that are often rooted in historical socioeconomic relations perpetuate such narratives (Kull 2004).

Narratives blaming highlanders for the haze crisis are rooted in the period of colonial forestry and internal colonization of the highlands by the Thai state during the Cold War. It was during this time that the “new ideological battleground” took hold (Forsyth and Walker 2008, 9). Over the last seventy years, the crisis narrative transitioned from opium cultivation to deforestation, watershed management, and now seasonal forest fires and air pollution. In each case, shifting cultivation, the primary means of livelihood for more than a million highland residents, is at the center of blame and is often the target of eradication. Since the early 2000s commercial agriculture, especially maize cultivation, has come under growing public criticism because it is identified as a primary driver of increased burning and amplification of toxic smoke due to its heavy use of pesticides (Greenpeace 2020). Behind the “corn boom” in the hills of the northern provinces also lies the (transnational) problem of unbridled agro-capitalism and access to land, with farmers responding to the requirements of big agri-food companies by turning forested areas into plantations in order to increase their incomes or to claim new agricultural land.

## Methodology

This article chronicles how the “smoky season” (*ladu mok khwan*) became known as the “haze crisis” (*wikrit molapid*) among residents of Northern Thailand. Interpretation of these findings is informed by several years of fieldwork among urban dwellers, farmers, local administrators, activists, and academics as well as narrative and content analyses of national newspapers. Here, our focus is limited to the coverage of the haze crisis in Chiang Mai by three daily newspapers—the Thai-language *Matichon* (hereafter MA) and English-language *Nation* and *Bangkok Post* (hereafter TN and BP)<sup>2</sup>—to understand when and how seasonal air pollution emerged as a widespread public concern in Thai society.

The choice of newspapers was based on three criteria:<sup>3</sup> regular publication over the entire period, a generalist line, and the existence of and access to a computerized database

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2) When quoting an article published in these newspapers, we give only the initials and the date: for instance, BP March 9, 2007. All articles quoted in the text, with their complete titles, are listed in the references.

3) Despite the growing importance of social networks since the early 2010s, we have not been able to integrate them into our analysis, mainly for lack of access rights and inability to process the enormous volume of data generated.

allowing keyword searches. Unfortunately, no local newspapers met these criteria, and we therefore focused on national newspapers. Established in 1946, the *Bangkok Post* is the oldest English-language newspaper still in operation in Thailand. Its management claims a daily circulation of around 50,000 (personal communication, *Bangkok Post* office, April 23, 2023). It employs more than 170 journalists, and Thai citizens—most of them Bangkok residents—constitute the majority of the readership. The *Nation* is Thailand’s second most widely read English-language newspaper, and since the 1991 coup (and the *Bangkok Post*’s neutral stance toward the coup makers) it has employed numerous former *Bangkok Post* journalists. Founded in 1971 as the *Voice of the Nation* and later shortened to the *Nation*, it claimed a circulation of around 50,000 before going fully online in 2019 (personal communication, *Nation* office, July 2022). In 2008 it transformed into a primarily business newspaper but continued to publish general articles. In 2018 it stopped publishing in print and is now entirely online. *Matichon* is Thailand’s most widely read Thai-language daily newspaper. Founded in 1978, it claimed a circulation of 950,000 in 2019 (Infoquest n.d.). In 1991 it founded the online Thai-language newspaper *Khaosod* and later an English version in 2013 (*Khaosod English*), which frequently reports on environmental and social justice issues. These periodicals are primarily read by the educated Thai middle and upper classes, a large proportion of whom live in the Bangkok metropolis and abroad. Their coverage of environmental issues remains relatively modest, although *Matichon*’s coverage is more extensive. All three newspapers are moderate and liberal in political orientation.

Our content analysis extends from 1996 to 2019. The Thai Pollution Control Department in Chiang Mai City began publicizing PM10 in 1996 and PM2.5 in 2012. We compare air pollution narratives with PM measurements to better understand their relationship. Although air pollution in Bangkok was covered episodically by the *Bangkok Post* from the early 1960s (Forsyth 2007, 2115),<sup>4</sup> reliable air pollution measurements in Chiang Mai did not yet exist.

A total of 410 articles about seasonal air pollution in Chiang Mai were published in the three selected newspapers between 1996 and 2019. Our content analysis is based on keyword searches of “air pollution,” “haze,” “northern haze,” and “Chiang Mai.” For Thai-language publications, we used the terms ควัน (*khwan* = smoke) and เหนือ ควัน (*nuea khwan* = northern smoke) as well as หมอกควัน เหนือ (*mokhwan nuea* = northern haze). To broaden the search we also added the terms ฝุ่น (*foun* = dust), มลพิษ (*molapid* = pollution), and มลพิษทางอากาศ (*molapid tang akad* = air pollution). The search was done

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4) The *Bangkok Post* has published 211 articles specifically on air pollution in Bangkok since 1996. The oldest mentions of air pollution by the newspaper date back to 1969.

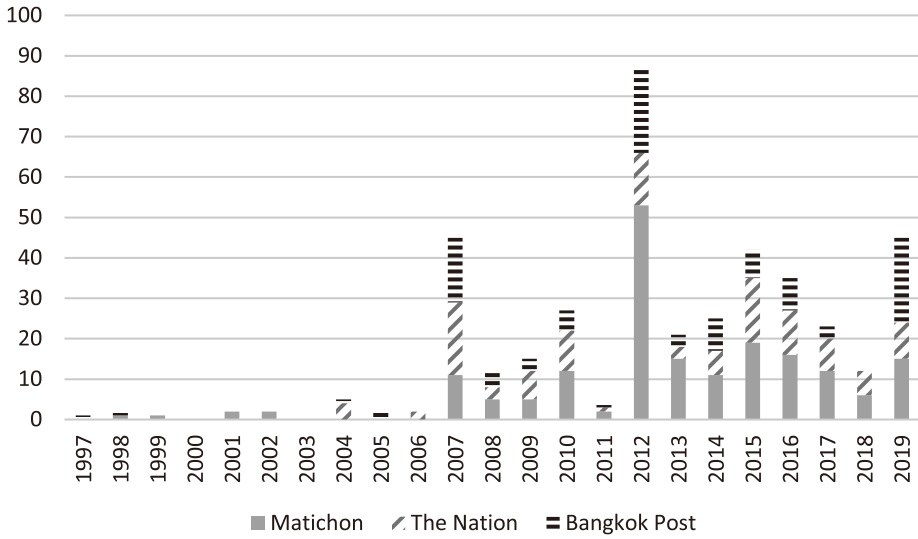
for all months between 1997 and 2007 due to the small number of articles published until 2007, and then only February and March from 2007 to 2019 since very few articles were published outside of this time frame. However, 2019 is a notable exception because of the longer haze period, which resulted in an additional 18 articles (not taken into account here) published by the *Bangkok Post* in April.

Through content analysis, we identified three categories: (1) causes/blame of air pollution, (2) consequences/effects of air pollution, and (3) solutions of/to air pollution (Table 1). Some categories were then regrouped under more general labels. For instance, in the causes/blame narrative, “burning rice straws,” “burning farm waste,” and “preparing swidden land” were classified under “traditional agricultural fires,” while “wildfires” was kept as a distinct category. Our analysis revealed nine causes (Table 2). We quantified the representation of these nine causes in the three study newspapers. We proceeded similarly with the impacts of pollution narratives (Table 3), which revealed five categories; and the solutions narrative, which revealed seven primary categories (see Table 4). We also identified the recurrent narrative of seasonal air pollution in Northern Thailand as a “worsening crisis.” This analysis was complemented by numerous interviews with academics, local officials, farmers, urban settlers, monks, and activists from 2018 to understand their conceptions of air pollution, its underlying causes, and their perceptions of appropriate responses to this problem.

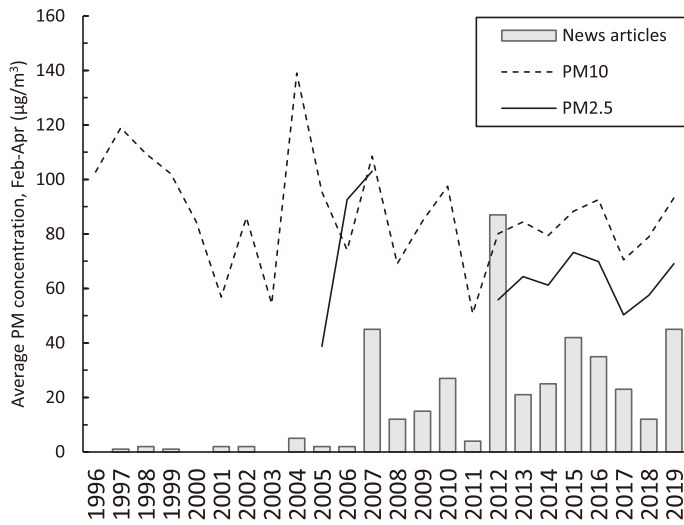
## Reading Air Pollution in Northern Thailand

Between 1996 and 2019, 410 articles about seasonal air pollution in Chiang Mai were published in the three selected newspapers. Coverage by the Thai-language *Matichon* was most consistent, with 46 percent of the articles published against 29 percent and 25 percent for the *Nation* and *Bangkok Post* respectively. These findings indicate that air pollution in Chiang Mai is perceived to be both a Thai and an international concern. Each year except 2007 and 2019, *Matichon* published the most articles on air pollution. In 2007 and 2019 the haze crisis in Chiang Mai was widely reported on in the international media. Among the two English-language newspapers, the *Nation* published more articles on air pollution than the *Bangkok Post*, except in 2019, when the latter published twice the number of articles as the *Nation*. Fig. 1 illustrates how 2007 was a turning point in that for the first time, the haze episode in Chiang Mai attracted the attention of national newspapers, with a significant number of articles: 45 articles were published that year against just 17 during the ten years prior. Since 2007 there has been regular reporting on air pollution, even if the number of articles has varied, sometimes substantially, with





**Fig. 1** Number of Articles Devoted to Chiang Mai Haze in Three National Newspapers, 1997–2019  
 Source: Olivier Evrard and Mary Mostafanezhad.



**Fig. 2** Average PM10 and PM2.5 Concentrations during Peak Haze Episodes (February–April) in Chiang Mai and Numbers of News Articles, 1996–2019

Source: Olivier Evrard and Mary Mostafanezhad with the collaboration of Naboon Riddhiraksa.

peaks especially in 2012, 2015, 2016, and 2019.

Do these variations reflect the actual severity of seasonal air pollution in Chiang Mai? If we look at Fig. 2, which combines the number of articles published with the average PM concentration from February to April each year (based on PCD data), this is the case after 2013. Before that date, however, the correlation is not obvious. While the haze episode was quite severe in 2007, it did not reach the levels of 2004 or even 1997 according to PCD data. The contrast is even more challenging to explain for 2012, which was only the fourth worst year in the period considered here while having the highest number of articles published (87 articles, more than 20 percent of the whole sample).

The first reference to seasonal haze is in a 1998 report in *Matichon*. This report notes a particularly intense air pollution episode throughout Southeast Asia in 1997, especially in Indonesia and Singapore. In September and October of 2006, severe haze episodes in Indonesia and Singapore were again followed by an increase in attention to the Chiang Mai haze episodes that began in February 2007. While 2012 experienced the highest surge of media reports covering the Chiang Mai episodes, the PCD measurements indicate that air pollution levels were typical for this period. Interestingly, air pollution episodes in other parts of insular Southeast Asia were relatively limited in 2011. However, the surge in media attention on the 2012 smoky season may be attributed to the 2011 dry season, which was virtually non-existent in Northern Thailand, with continuous rain (and, later in the year, major floods in Central Thailand).

### *A Worsening Crisis?*

Popular narratives widely suggest that the “haze crisis” is getting worse. Each of the three newspapers has reiterated this narrative since 2007. In a 2007 article in the *Nation*, the author describes the “haze crisis” which lasted 17 days as “the worst and longest” one in the area’s history (TN March 18, 2007).<sup>5)</sup> However, PCD indicates that 1999 and 2004 had significantly higher AQI measurements. Other newspapers adopted a more moderate tone and insisted on the complexity and uncertainty of air pollution measurements: “It is not clear if the smoke problem is getting worse (1999 had more PM10 than the present year) but Chiang Mai’s mid-March 2007 AQI reading of 180 was the highest since records began” (BP March 31, 2007). In 2012 the *Bangkok Post* quoted local officials saying that “the haze is even worse than the most recent crisis five years ago” because of the increase in the consecutive number of days with levels of dust particles above safe levels and a higher number of northern provinces affected (BP February 26, 2012).

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5) The notion that the haze problem in Chiang Mai started in 2007 is still widely popular among academics and the general public.

The year 2012 was a turning point in that the newspapers presented the haze not as an exceptional crisis like in 2007 but as a new regional and repetitive phenomenon. The *Bangkok Post* asserted, “Northern provinces have suddenly become smothered in choking smoke haze every year in February” (BP March 8, 2012). The narrative of a worsening situation was reiterated each year until 2019. By 2019, a more detailed narrative emerged about the general increase in environmental toxicity due to intensive commercial agriculture and also about the interactions between urban and rural sources of pollution. These interactions likely led to an evolution of the chemical composition and biochemical nature of the haze over the last decades due to the presence of polycyclic aromatic hydrocarbons (or PAHs, chemically related organic compounds with various levels of toxicity and carcinogenic potential that bind PM) from vehicular traffic, pesticide use, and coal plants, for which there is a lack of consistent, reliable data. This discourse is supported by interviews with leading local researchers. For instance, a 2011 article in the *Nation* titled “Study Shows Smog Up North Has Worsened” quotes a study by Dr. Tippawan Prapamontol from the Research Institute for Health Sciences at Chiang Mai University revealing that levels of PAHs in urine samples from children more than tripled, especially in rural areas (TN March 9, 2011).

The PCD PM10 and PM2.5 measurements do not indicate a long-term deteriorating trend (see Fig. 2), at least on a purely quantitative level. However, the newspapers tended to focus increasingly on public perceptions (visibility, numbers of consecutive days), the alarming results of new scientific studies, as well as the AQI readings given by independent networks of sensors based on international rather than Thai thresholds. After 2015, new technologies became widely available and used by local researchers to implement additional monitoring stations that publicized results in real time. A consequence of these new technologies is the ability of the general public to compare levels of pollution in various locations around the world (for instance, through websites such as [airvisual.com](http://airvisual.com)) and for Chiang Mai to be branded, a few days per year, “the most polluted city on earth.”

News about the northern haze in the Thai media reflects a sort of progressive “catastrophization of nature” (Ophir 2010). What was once considered a seasonal, unavoidable event has now been declared an emergency and become a metonym for the region’s environmental degradation. Several factors have played a role in the framing of the haze crisis. More research would help to better reveal key issues, including the seasonality of the phenomenon and its treatment in the media (most articles are published between February and March); toxicity levels and their health impacts; sociological changes in Chiang Mai’s population (second-home migration by Bangkok elites; travelers seeking “pure air” in the North); spectacular images popularized in mass and social media

(e.g., Doi Suthep hidden from view by the haze, Doi Suthep in flames, etc.). Presented simultaneously as a recurring event and as a worsening process, the haze now triggers multiple questions and concerns about its origin, effects, and potential solutions, which leads to the politicization of the seasonal air pollution crisis.

### Re-presenting Seasonal Air Pollution: A Content Analysis

Data from our content analysis demonstrate that references to the causes, effects, and solutions of seasonal air pollution follow different trends (Table 1). While references to the causes of seasonal air pollution declined, references to the effects remained relatively stable while references to solutions increased.

Media coverage of the northern haze tends to follow a similar pattern each year. Many articles about its impacts are published at the beginning of the haze season, followed by articles devoted to causes. Finally, in late March, the focus shifts to potential solutions. There are typically fewer than five articles per year published on seasonal air pollution outside of the haze period (roughly February to April).

#### *Attributing Blame: References to Causes*

In each article, the selected newspapers refer to the haze as a consequence of multiple

**Table 1** References to Causes, Effects, and Solutions during Five Selected Years between 1996 and 2019 in Three National Newspapers

Year	Total References	% of References
2006	36	Causes: 55.5% Effects: 25% Solutions: 19.5%
2007	142	Causes: 44% Effects: 23% Solutions: 32%
2012	435	Causes: 34% Effects: 27% Solutions: 39%
2015	11	Causes: 28% Effects: 34% Solutions: 38%
2019	106	Causes: 30% Effects: 23% Solutions: 46%

Source: Olivier Evrard and Mary Mostafanezhad.

**Table 2** Number and Percentage of References to Causes of Haze during Three Selected Years

Causes	2007	2012	2019
Forest fires	26 (30%)	38 (25%)	5 (15%)
Agricultural fires	22 (26%)	29 (19%)	7 (21%)
Urbanism	17 (20%)	5 (3%)	6 (18%)
Hunting and gathering	1 (1%)	15 (10%)	0 (0%)
Cash crops	3 (4%)	16 (11%)	2 (6%)
Natural factors	5 (6%)	9 (6%)	4 (12%)
Waste management	0 (0%)	13 (9%)	0 (0%)
Lack of control and corruption	2 (2%)	10 (7%)	5 (15%)
Transnational	8 (10%)	15 (10%)	5 (15%)
Total	84	150	34

Source: Olivier Evrard and Mary Mostafanezhad.

factors,<sup>6)</sup> but in the majority of cases (see Table 2), the emphasis is on forest and agricultural fires. The number of references to the former decreases sharply between 2007 and 2019, while references to the latter decrease only slightly. However, in 2019 forest and agricultural fires represent just a third of the references to causes of haze (compared to 56 percent in 2007). This downward trend reflects the progressive recognition (or rediscovery) among middle-class Thai urbanites that there are very few “natural fires” and that most fires are linked to traditional agricultural practices (TN March 17, 2010) for preparing a field before planting or getting rid of paddy straws or corn cobs after the harvest.

Second, the progressive decrease in exclusive references to “fires” as a cause of haze follows the growing recognition of natural factors (from 6 percent in 2007 to 13 percent in 2019) in PM measurements. These factors include the geographic location of Chiang Mai city in a valley surrounded by hills with little wind during the haze season; unusual weather patterns, especially the global climate phenomenon known as El Niño, which can affect the amount of rainfall, and therefore the humidity in the atmosphere and forest; and the transboundary nature of the haze crisis, with smoke produced in neighboring countries transported by the wind over the Chiang Mai valley. References to El Niño and its impact on the Chiang Mai haze are found as early as 2005 (BP February 21, 2005) and are used as arguments either to relativize the role of local fires in haze episodes—

6) The multifactor causality of haze is acknowledged as early as 2007. An article in the *Bangkok Post* on March 31, 2007 mentions urban pollution and smoke from rural areas as sources of haze and insists that local, regional, national, and transnational dimensions are intermingled.

experts say the haze “has more to do with unusual weather patterns” (BP March 22, 2007)—or to forecast the severity of seasonal pollution episodes in Southeast Asia as a whole. In 2016 (BP February 26, 2016), experts warned that the worst haze since 1998 was imminent. This reporting emerged after record AQI levels in Indonesia just a few months prior. Similarly, the proportion of references to transboundary causes of haze increased over the period from 10 percent to 16 percent. These references focused primarily on agricultural fires in the Shan States of Myanmar and the role of commercial agriculture in the production of haze.

Third, the proportion of references to forest or agricultural fires as the primary cause of haze has diminished in recent years. This is in part because of growing debates around incentives for setting fires and the appropriate use of forests by Northern Thai residents. One of these debates focuses on the use of fire at the end of the dry season to facilitate the hunting and gathering of wild products, especially mushrooms known as *hed thob*, which are sold as delicacies in the restaurants of Chiang Mai. In March 2007, the *Bangkok Post* described how

100 bushfires on Doi Pui in the preceding six months, which scorched 400 rai of land, were started by poachers hunting animals who use incense sticks and mosquito repellent to start fires, and this makes it hard to catch them in the act. (BP March 19, 2007)

In 2015, the same newspaper mentioned that according to the Fire Control Division, “forest fires linked to mushroom gathering occurred 754 times in Chiang Mai, 84 in Mae Hong Son, 216 in Lampang” (BP March 29, 2015). The criminalization of fire was a recurrent topic during these years. The authorities of Tak Province promised 5,000 baht to anyone who provided information leading to the arrest of people starting outdoor and forest fires (BP March 4, 2012). They officially asked their Burmese counterparts to help by engaging in firefighting practices (TN March 4, 2012).

No newspapers directly questioned the trigger effect of the tourism industry on customary fire practices (wild mushrooms sold to restaurants are consumed mostly by Thai and Chinese domestic tourists), but they sometimes gave space to the alternative voices of researchers who defended the customary practices of burning as unavoidable and necessary (TN February 7, 2019). Since forests around Chiang Mai are mostly composed of dry deciduous dipterocarps that produce large amounts of dry leaves each year, the researchers claimed that a “pre-season burning” (e.g., before the start of the agricultural year) helped to clean the forest and to avoid the accumulation of fuel on the soil, thereby preventing bigger, uncontrollable fires. This argument gained momentum throughout the study period and has also been used to advocate for prescribed burning rather than a blanket burning ban as a solution to the haze in Chiang Mai (see below).

Some researchers as well as NGO leaders interviewed by journalists also insist that highland ethnic groups are not to blame for starting forest fires. For example, a 2007 article describes how Hmong are heavily engaged in cabbage production, which requires very little use of fire, while Karen practice rotational swidden farming, which allows only strictly controlled fires (BP March 22, 2007).<sup>7)</sup>

However, the bulk of articles related to the use of fire in rural areas are focused not on customary practices but on cash crops, especially maize, and their perceived role in forest encroachment and the increased burning of rural areas. This argument is first mentioned in a 2007 *Bangkok Post* article indicating that the “high prices of maize trigger farmers to encroach on forest and this was the main cause of thick smoke” (BP March 13, 2007). Thereafter, the argument gained momentum and was especially visible in 2015, when a series of articles, primarily in English, pointed to the role of corn plantations—especially in Nan, Tak, and Chiang Rai Provinces—as a major cause in the production of the northern haze. For the first time, the *Bangkok Post* published two editorials blaming agri-business for “unbridled contract farming in the mountains” (BP March 6, 2015; March 20, 2015), creating denuded mountains, air and water pollution, as well as soil erosion. The journal called on residents to “face the real haze culprit” and to “tackle the haze at its roots” not by arresting poor farmers but by boycotting the big agri-food companies (both corn and sugarcane) and putting the pressure on the banks that funded them. An intertwined argument related to the socioeconomic inequalities, corruption, and land issues that favored the replacement of forest areas by corn plantations. This argument was especially pronounced in 2012 as a critique of the Yingluck Shinawatra government for not handling the haze problem appropriately. All three journals pointed out that the causes of fires were related not only to poachers and farmers but also to influential people who hired locals to set fires to turn areas into degraded forest so that they could be issued land title deeds (TN March 6, 2012; BP March 16, 2012). The same argument resurfaced during the 2019 haze episode (BP February 4, 2019; March 15, 2019), which also affected Bangkok, with denunciation of the lack of will of Bangkok-based politicians in front of the influential agri-food companies (corn as well as sugarcane plantations). Interestingly, the three national newspapers focused on this issue during times of political tension in 2012 and again in 2019.

The multiple debates linked to forest and agricultural fires also led to a decline in references to urban sources of pollution. Importantly, prior to 2007, national news coverage on air pollution in Chiang Mai was framed by concerns over urban pollution and

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7) Beyond the widespread “Karen consensus” (Walker 2001), some Karen still practice rotational farming with long fallow periods, while others also engage in various forms of commercial agriculture in which fire practices may vary.

urban development rather than forest fires.<sup>8)</sup> Though relatively limited (17 articles throughout the ten-year period between 1996 and 2006), the news articles addressed many different issues, including health impacts, the international reputation of the city, the decentralization of power, and regional cooperation for haze monitoring.

In February 1997 the *Bangkok Post* carried its first article on seasonal air pollution. The article featured an interview with then Minister of Interior Saneh Thienghong, who expressed concern over the degradation of air quality in urban areas. The second article in English was published in March 1998 and focused mostly on the management of waste. It described the 300 tons of garbage produced daily in Chiang Mai and the need for new landfills to avoid the increasing numbers of incinerators. It also described an impressive list of pollutants found in hospital garbage. Thereafter, no articles on seasonal air pollution were published until 2004. According to PCD data, 2004 was the worst year for air pollution; and the *Bangkok Post* published only one story—focused not on the haze per se but on the anger of locals against the proposed expansion of Chiang Mai airport for fear that it would increase air pollution. However, for the first time, the *Nation* covered the air pollution issue. Two articles published the same day (TN February 27, 2004) featured a debate between activists, scientists, and local authorities. The first was an interview with Duangchan Charoenmuang (then a researcher at the Social Research Institute, Chiang Mai University, and secretary-general of the Urban Development Institute Foundation), who called for a decentralization of power and for local people to “stand up and start claiming our city and feel as though we own it.” The second article, by contrast, was titled “Municipality Plays Down Environmental Concerns” and was based on an interview with the city clerk Sen Santitham, who highlighted the efforts made by the municipality to develop an emission inventory and the 2002 Air Quality Management Plan prepared with Maryland Department of the Environment and Portland city. He pointed to two main difficulties: public transport “in the hands of a very difficult and unreasonable songtaew (local taxi) association” and the lack of financial support from the central government (only around 400,000 Thai baht per year). Two other articles were published by the *Nation* in March 2004, both focusing on urban pollution: traffic congestion, waste burning, and construction dust (TN March 11, 2004; March 14, 2004). The articles commented on the poorly conceived development policy and echoed the criticisms of several urban planners and architects who played a prominent role in Chiang

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8) In his 2007 publication on environmental social movements in Thailand, Tim Forsyth mentions that the *Bangkok Post* periodically published air pollution stories between 1968 and 2000 (Forsyth 2007, 2115). It appears that those articles were focused mostly on urban pollution in Bangkok and its suburbs, as well as on the Mae Moh lignite power station in Lampang and industrial estates on the eastern seaboard.



Mai civil society at the time (notably Dr. Sirichai). They also insisted on the idea that there was no decentralization and no cooperation with residents. Increasing urban pollution was also blamed on then Prime Minister Thaksin Shinawatra, who launched 21 development projects during his mandate (including airport expansion and the Night Safari) to increase tourism without local consultations and without a plan for a mass transit system. The two articles published by the *Bangkok Post* in 2005 (BP February 21, 2005; March 19, 2005) also kept an urban focus and mentioned the worsening international reputation of Chiang Mai after National Geographic published a report saying that the city was “getting ugly” because of uncontrolled urban development, which also trapped dirty air.

During the following years there were regular references to urban pollution in articles devoted to the Chiang Mai haze, but urban pollution was quoted as just one factor among many, such as forest fires and climatic events. During the 2007 haze episode, several articles mentioned urban sources of PM and criticized the development plans made by the municipality, the increasing numbers of licensed cars, and the deteriorating air quality inside the city. Thereafter, discussions on urban pollution as a cause of haze disappeared until the 2019 episode, during which time six articles described non-agricultural sources of pollution, especially vehicles (315,607 vehicles were registered in Chiang Mai at the end of 2017, the second largest number in the country) and the 18,000 factories scattered around Chiang Mai, Lamphun, and Lampang (TN February 7, 2019).

#### *Identifying Risks: References to the Impacts of Haze*

As shown in Table 3, reportage focuses mainly on the public health crisis caused by air pollution, and to a lesser extent on the negative impacts for tourism and the image of the city. In 2002 *Matichon* (MA February 13, 2002; May 29, 2002) described the results of a national study conducted by a Thai doctor, Phongtape Wiwatanadate, who demonstrated

**Table 3** Number and Percentage of References to Impacts of Haze during Three Selected Years

Effects	2007	2012	2019
Health	30 (67%)	60 (51%)	10 (38%)
Transport	2 (4%)	22 (19%)	9 (3%)
Tourism	8 (18%)	21 (18%)	5 (19%)
Environment	1 (2%)	3 (3%)	1 (4%)
Visibility	4 (9%)	11 (9%)	1 (4%)
Total	45	117	26

Source: Olivier Evrard and Mary Mostafanezhad.

that Thailand's maximum lung cancer diagnoses were in Chiang Mai (Phongtape *et al.* 2001). This study was again highlighted by the *Nation* in 2004 (and has been repeated many times since) in an article that also featured other Chiang Mai University scientists pointing out that Chiang Mai's urban residents faced the slow but deadly violence of the "boiling frog syndrome" (TN March 11, 2004).<sup>9</sup> The following year, the *Bangkok Post* made its first reference to WHO statistics pointing out that 500,000 people per year were dying from air pollution in Asia.

During the 2007 haze episode, health concerns were given the widest coverage in the three newspapers. Several articles were related to the worrying research by Thai doctors in the preceding years showing that the number of patients with respiratory problems in Chiang Mai was rising and was higher than in other urban areas of Thailand, especially Bangkok (TN March 2, 2007), and that the rate of lung cancer (over 100,000 cases) was six times higher than the global average (BP March 31, 2007). This was the beginning of the popularization of PM10, PM2.5, as well as PAH (polycyclic aromatic hydrocarbons, a group of chemicals that bind PM and define their carcinogenic potential) among the general public. Most of the articles, however, focused on the rising numbers of patients admitted to hospitals throughout the northern provinces for respiratory diseases and nosebleeds, thereby popularizing the idea of a regional phenomenon and an "emergency disaster area" (MA March 20, 2007).

The *Nation* (TN March 24, 2007), for instance, reported that between March 15 and 23, 2007, a total of 57,765 patients had been admitted to hospital in nine northern provinces (Chiang Mai, Chiang Rai, Lampang, Lamphun, Mae Hong Son, Kanchanaburi, Nan, Payao, and Phrae)—an average of 7,220 per day—and that 90 percent of them suffered from respiratory problems. In the following years, the three newspapers regularly published statistics on the patients admitted to hospital with haze-related issues at the peak of the pollution season. For instance, in 2010 the *Nation* reported that 81,000 people visited hospitals in the North during the peak haze period, including 66,000 for respiratory problems, 10,000 for heart problems, and 2,000 for skin rashes (TN March 20, 2010). In 2015, the same newspaper devoted a series of articles to the health impacts of haze during the peak of the seasonal episode with descriptions of aggravated risks of heart attack, precautions for pregnant women and elderly people, and anticipated influx of patients in the main hospitals of the North, with preparations being made for extra

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9) The boiling frog syndrome is based on an urban legend of a frog being placed in water that is slowly heated; the frog does not notice the slow temperature increase and is boiled to death. While modern biologists have proven this premise to be false, the boiling frog story is often used as a metaphor to warn people about gradual changes in their environment if they do not want to suffer dramatic consequences later on.

beds and mask distribution campaigns. In 2016 the newspaper reported that 64,000 people had been admitted to hospitals in the northern provinces with haze-related problems (TN March 22, 2016), while in 2019 the *Bangkok Post* reported that 22,000 people had been admitted to state health facilities in eight northern provinces between March 3 and 9 (BP March 19, 2019).

The newspapers also regularly reported on the impacts of haze on the local economy and on the international image of Chiang Mai. Journalists described the cancellation of flights due to poor visibility and the economic loss from tourism. In 2007, the *Nation* reported that Chiang Mai was losing 30 million baht per day of tourist income due to seasonal haze (TN March 18, 2007). Mentions were also made of international organizations recalling their employees and their families from the northern area due to health concerns (BP March 21, 2007). In 2012 and the following year, newspapers again reported a decrease of tourism in Chiang Mai during the haze crisis, disrupted aerial transportation due to low visibility, and the closure of schools. Until quite recently, the various consequences of haze on health, the local economy, and Chiang Mai's international image were treated as separate issues, or as a catalog of risks that, depending on the year or on the newspaper, were given more or less attention. Between 2018 and 2019 (and in the years after), however, national newspapers described how these risks were directly linked to increasingly precise air pollution measurements and the popularization of local and independent low-cost sensors.

Measurements of air pollution were rarely mentioned before 2007. In 2010, newspapers began to regularly mention PM10 measurements and “safety levels” as well as the number of hotspots identified by satellites. By 2018, references to measurements became embedded in debates regarding their accuracy and the comparison between Thai and international standards. For instance, in March 2018 the *Nation* (TN March 2, 2018) pointed out that only five stations in Northern Thailand (two in Chiang Mai) monitored PM2.5 and that “air pollution hits hazardous levels in the North and Northeast although AQI gives all clear” because the AQI given by the PCD did not include PM2.5 in its calculation. A few days later (TN March 11, 2018), the newspaper indicated that authorities failed to provide accurate and up-to-date air pollution warnings because PM2.5 could increase even when PM10 was stable. The example of Tambon (subdistrict) Sri Phum in Chiang Mai shows that between March 3 and 9, PM10 was always under the officially “safe” level of 120 while PM2.5 was above the officially “safe” level of 50 for six days out of seven.

The shortage of PM2.5 measurement stations is blamed for the lack of pollution alerts and increasingly considered a fault of the government. A leading Chiang Mai University scientist, Chaicharn Pothirat, explained that every increase of 10 in PM10

increased mortality by 0.3 percent and asked for safety levels similar to Europe and the United States (TN March 22, 2018). While they kept a relatively moderate tone and did not report, for instance, on the local authorities' cancellation of a rally in Chiang Mai city by residents calling for more accurate air pollution measurements (Mostafanezhad and Evrard 2021), the national newspapers nonetheless echoed civil society's perception of increased hidden risks. They also reported on the launch of independent networks of air pollution measurements, presented as "the people's AQI," based on international standards as opposed to the official AQI given by PCD. In 2019, newspapers gave increased visibility to these private air measurement apps as they showed for the first time that Chiang Mai was the most polluted city in the world (BP March 13, 2019). The information was also published in international newspapers as well as social media and turned the 2019 haze season into a national political crisis, with the first visit to Chiang Mai by Prime Minister Prayut Chan-O-Cha since the 2014 coup.

### *The Politics of Fixing the Air*

On one hand, there is an inverse correlation between agricultural fires and the proportion of references to demands for greater state control of forests. On the other, the need for decentralization and campaigns with grassroots organizations is also evident (Table 4). Between 2007 and 2012, various actors made regular calls to impose stricter control on agricultural practices as well as a burning ban during the haze season. These emergent calls departed from previous years, when most of the references to seasonal haze in Chiang Mai revolved around urban sources of air pollution and consequently on urban-based solutions to combat it. Local and international organizations also called for a more regional and decentralized approach to development. In 2007, a burning ban became a

**Table 4** Number and Percentage of References to Solutions to Haze during Three Selected Years

Solutions	2007	2012	2019
Innovation	2 (3%)	6 (4%)	8(16%)
Control / Burn ban	19 (28%)	55 (33%)	10 (20%)
Protection	23 (34%)	19 (11%)	11 (21%)
Water spraying	7 (10%)	27 (16%)	6 (12%)
Artificial rain	10 (15%)	25 (15%)	0 (0%)
Decentralization / Campaign	5 (7%)	25 (15%)	13 (25%)
Transnational cooperation	2 (3%)	11 (7%)	3 (6%)
Total	68	168	51

Source: Olivier Evrard and Mary Mostafanezhad.

widely touted solution to the haze crisis. Newspapers supported calls to impose fines on poachers or people burning illegally forested areas either to gather non-timber forest products (mushrooms mostly) or to turn the land into a cultivation area. In 2010 and 2012, reports abounded of northern province administrations rewarding anyone who gave information leading to the arrest of people starting fires (BP March 20, 2010; MA March 3, 2012; TN March 4, 2012).

Simultaneously, a debate emerged about the legal framework necessary to ensure the implementation of the burning ban, especially the possibility for provincial governors—based on the 1992 Environmental Protection Act—to declare some areas as “disaster zones” in order to get a larger budget from the central government to fight the haze. In 2007 Chiang Mai, Chiang Rai, and Mae Hong Son were declared disaster zones for the first time (TN March 20, 2007), but the Chiang Mai governor removed the label after only a few days due to fears that it would negatively affect the tourism industry (TN March 24, 2007). Fears persisted despite the call by the central government “to give more importance to health than to tourism” (BP March 29, 2007). The Chiang Mai governor did not declare the city a disaster zone. However, there was a shift in focus to protective measures such as the distribution of masks, evacuation plans, and the setting up of “pollution clinics” in the most heavily affected areas.

In 2010 a “war room,” later renamed “control operation center,” was created. By 2016, its participants had developed a top-down approach to ameliorate the haze crisis (TN March 5, 2016). A collaborative effort by ten government agencies, the initiative was intended to help prevent fires and to implement the sixty-day (initially ninety-day) burning ban. However, newspaper reports had started to give more editorial space to calls for collaborative, decentralized, and bottom-up approaches. Efforts to decentralize governance and create collaboration between various government agencies and local people to prevent the haze are not new. Prior to 2007, Chiang Mai activists had sought out this approach in their struggle against urban pollution and called for more collaboration with residents (echoing the long history of tensions between Chiang Mai and the central power in Bangkok). However, it regained popularity in the media in 2014 after the government adopted a stronger, more authoritarian stance against the seasonal haze crisis. Instead of a “no-burning” approach, activists and Chiang Mai University researchers insisted on the positive role of fire in the management of northern Thai forests and advocated for a prescribed, or controlled, burning (TN March 22, 2015; BP March 29, 2015). Activists who worked with indigenous highland groups such as the Karen were especially vocal in supporting this approach, which gained political support in 2019. By 2019, it became clear that the burning ban policy was not ecologically or economically sustainable and did not prevent serious haze episodes (TN February 7,

2019). The increase in fires observed that year<sup>10</sup>) led to a change of paradigm and to the creation of the Chiang Mai Breathe Council, which was conceived as a new, more participatory form of collaboration between provincial authorities and the civil sector (BP March 31, 2019).

Since 2019, there has been a growing interest in identifying technological solutions to the haze crisis. This is due partly to the fact that independent networks of air pollution sensors, based on real-time measurements, are presented in the news as a way to increase awareness of health risks, although they sometimes also contradict the measurements given by the PCD and are based on the Thai AQI. Throughout the northern region, many governmental, nongovernmental, and academic groups have developed an effective haze-sensing and haze-predicting system that is connected to institutional frameworks responding to threshold alerts.<sup>11</sup>) In addition to these initiatives, other technological solutions frequently describe the use of agricultural biomass to produce fertilizers (biochar) or energy, the development of electric modes of transportation, the use of indoor air purifiers, and the improvement of filters for car and industrial emissions (TN March 23, 2015; March 11, 2016; February 25, 2019).

Additional proposals have included initiatives to produce artificial rain, or cloud seeding, and are often presented in the media as “royal rainmaking.” The expression is derived from the name of the project (*khrongkan fon luang*) launched by King Rama IX in November 1955, run by the Department of Royal Rainmaking and Agricultural Aviation, and operating under the Ministry of Agriculture, in order initially to alleviate the effects of drought for Thai farmers. Each year, newspaper reports describe the efforts of the northern Royal Rainmaking operation center to increase the level of humidity in the atmosphere and induce rain. The frequency of reports on these operations was especially high until 2012 and thereafter tended to decrease. These reports did not address the efficiency of the method (which requires a certain level of humidity already in the air to be effective) or the potential health effects of the chemicals spread in the atmosphere by aircraft of the “rainmaking unit.”

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10) After several years of continuous decline, the number of hotspots increased dramatically in 2019. Some informants attributed this to the no-burning policy, due to which dry leaves accumulated in the forest and fueled bigger and less controllable fires. Others argued that the farmers were seeking revenge for being blamed for the haze crisis. The farmers pointed out that pollution levels in Chiang Mai did not decrease proportionally to the number of hotspots. They therefore burned more that year to express their political discontent. This shows that, as in other contexts around the world, traditional burning practices can be redirected toward a political ecology of protests (Kuhlken 1999). There is a correlation between number of fires and periods of social unrest, because fire can be a weapon of the poor.

11) Since 2020, the provincial administration has implemented a prescribed burning policy that uses a mobile phone application named Fire D to manage farmers' requests for burning.

## Conclusion

Scholarship on the social dimensions of air pollution has mostly addressed relations of power and inequality, especially in cities where a few segments of the population can protect themselves through indoor air purifiers or seasonal escape trips under cleaner skies, while the majority suffer from long-term exposure to deadly particulate matter (Graham 2015). Several studies have also stressed the emotional, affective nature of urban atmospheres (Choy 2011; Adey 2013) as well as the uncertainties and conflict of interpretation raised by the implementation of monitoring systems (Garnett 2015). However, few works have offered a localized and empirical study of the emergence of concern in the public opinion, especially when it is related to an old and seasonal phenomenon. In this paper, we analyze how seasonal air pollution in Chiang Mai has been framed in three national newspapers over more than two decades, in order to understand how environmental issues become an environmental crisis.

Anders Ekström suggests that the media rhythms “resonate with a deep-seated amalgamation of repetition and disruption in the history of disaster discourse” and that “disasters in real-time create a sense of an intensified now” (Ekström 2016). In Chiang Mai, independent networks of sensors that analyze air pollution in real time offer new information to citizens who previously relied on PCD measurements. However, they also amplify mistrust based on micro-local and micro-temporal measurement variations (Buzzelli 2008). These concerns are then relayed by the press as well as digital media and social networks. The obsession with real time creates a kind of “monstrous present” (Hartog 2003, 119) that intensifies the feeling of emergency and its conceptualization as a form of “war,” a word often used by authorities in the media in reference to forest and agricultural fires in the northern region.

Simultaneously, there is a growing awareness of the temporal complexity of environmental hazards (Chakrabarty 2009). Natural emergencies call into question forecasting and historical ecology, triggering concerns about cross-temporal relations between hazards. For instance, in Chiang Mai journalists often question the relationship between El Niño episodes, the price of maize, and the severity of seasonal haze. Similarly, the media have popularized the idea that seasonal haze episodes have been getting worse over the last two decades, even though available data does not (yet) corroborate this point. This discrepancy illustrates Ekström’s (2016, 5349) expression of “slow disasters and the catastrophic now” in which a long-term and (until recently) low-profile form of violence clashes with new perceptions of and discourses about the degradation of our environment.

Since 2007, seasonal air pollution episodes have received regular coverage in the

Thai national press. However, it was not until 2015 that a correlation became visible between the number of articles published and the intensity of the pollution episodes. Prior to 2015, reporting was relatively infrequent except for 2007 and 2012. Throughout mainland Southeast Asia, as in other cities with more pollution than Chiang Mai (e.g., Hanoi), air pollution does not receive as much coverage. The relative freedom of the press in Thailand, compared to nearby countries, and the existence of a growing contestable civil society amidst the political turmoil over the last decade may help explain this difference. However, other factors such as the development of independent measurement networks relying on international standards as well as sociological transformations (Bangkokians buying second homes in the North) may also have played a role—though in the case of the latter, no study has yet been conducted to corroborate this hypothesis. A direct consequence of this evolution is that the population has largely appropriated the technical vocabulary of air pollution (e.g., PM2.5, PM10, IQA) and frequently expresses a need for better information from the authorities.

The emergence of public discourse and political debate on air pollution in Chiang Mai has been accompanied by two apparent trends in discussions of this issue in the national media. The first is a shift from urban causes of air pollution to broader debates about its rural origins, particularly in relation to the multiple fire practices in the surrounding countryside. The second is a progressively stronger emphasis on solutions rather than causes of pollution, as these become better known and a consensus is reached on the multifactorial nature of the phenomenon.

Beyond these differences, three consistent frames emerge. First, there is a shared perception of a worsening seasonal air pollution period. Although this perspective is not yet corroborated by scientific data, it nevertheless perpetuates a growing intolerance among urban and rural residents alike for a phenomenon that was until recently considered normal. The seasonality of the phenomenon, which is mirrored by its treatment in the press (the vast majority of the articles are published between February and March) may explain why people seem to forget and rediscover haze annually. However, other factors such as possible sociological changes in the Chiang Mai population as well as the impact of spectacular visual elements popularized by popular and social media (Doi Suthep hidden from view by the haze, Doi Suthep in flames, etc.) may also contribute to this tendency. Both of these possibilities require additional research to determine the relationship.

Second, newspapers often frame possible solutions as an opposition between, on the one hand, an authoritarian discourse favoring the criminalization of all fires (“zero burning” policy) and increased control by the central state and, on the other hand, more “regionalist” proposals invoking the need for decentralization, support for certain fires



that are necessary for the environment (“prescribed burning”), and better collaboration between civil society and public bodies. Criticism of agro-capitalism, particularly the expansion of maize cultivation and the land issues associated with it, is to some extent a cross-cutting issue on which the proponents of each of these visions may share the same arguments but with different perspectives on possible solutions. The three national newspapers echoed these debates during times of political tension and demonstrations, especially in 2012 and 2019.

Finally, there is a clear discrepancy between the frequent mention of the transnational nature of the phenomenon and the almost complete absence of articles detailing the concrete measures implemented with neighboring states to improve regional cooperation on this issue. This may be interpreted as a form of self-censorship, given the transnational interests of some Thai agri-businesses, especially in Myanmar, and their close proximity to political circles. Conversely, the framing of air pollution debates as a Thai microcosm undoubtedly reflects broader political issues that cannot be addressed under authoritarian rule.

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