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The Historical Formation of Environmental Consciousness in Japan: From Smoke Pollution Controversies to the Kōgai Movement (1900–1980)

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ABSTRACT

Japan is often regarded as a model case of successful environmental governance, yet the historical processes through which environmental consciousness emerged remain insufficiently examined. This article investigates the historical formation of environmental consciousness in Japan between 1900 and 1980, asking how environmental awareness was socially produced rather than arising naturally from economic development or policy reform. Drawing on historical sociology, social movement theory, and the sociology of scientific knowledge, the study synthesizes historical, epidemi - ological, legal, and sociological scholarship in order to trace a sequential process running from the smoke pollution controversies of early industrialization, through the emergence of pollution-related diseases, to large-scale litigation, citizen movements, and eventual institutionalization. The analysis demonstrates that early industrial pollution failed to generate sustained environmental awareness because it lacked social visibility, institutional channels for redress, and scientific articulation, even where the damage was severe and protracted, as the Ashio copper mine incident makes clear. In contrast, the pollution diseases of the 1950s and 1960s—Minamata disease, Itai-itai disease, and Yokkaichi asthma—transformed environmental harm into an embodied and scientifically verifiable injury, enabling new forms of legal and collective action. Through the interaction of scientific knowledge, litigation, and social movements, environmental harm was reframed as a matter of public responsibility, culminating in the comprehensive environmental legislation of the early 1970s and in the routinized regulatory apparatus of the decade that followed. The Japanese case indicates that environmental consciousness is historically contingent and socially constructed through conflict, knowledge production, and institutional change, and that its institutionalization both stabilized and depoliticized the awareness it consolidated —an ambivalence with broad implications for the study of environmental politics in industrial societies.

KEYWORDS

environmental consciousness · kōgai · pollution diseases · environmental movements · industrialization · environmental governance · historical sociology · Japan

1 INTRODUCTION

Japan is often portrayed as a paradigmatic case of successful environmental governance. From the strict pollution control regulations enacted in the early 1970s to its later reputation as an environmentally conscious society, Japan is frequently depicted as following a linear trajectory from environmental crisis to sustainable management (Imura & Schreurs, 2005; Schreurs, 2002). Such a narrative, however, obscures a more fundamental question: how did environmental consciousness emerge in the first place? Rather than assuming environ - mental awareness to be a natural or inevitable byproduct of economic development or institutional reform, this article examines the historical processes through which environ -

mental consciousness in Japan was socially produced. It argues that environmental consciousness did not arise spontaneously in response to pollution, nor was it simply imposed through state policy, but was gradually formed through a series of social conflicts, scientific interventions, and collective actions that unfolded across the twentieth century (Broadbent, 1998; Funabashi, 1992; Teranishi, 2023; Ui, 1992). From the early smoke pollution controversies that accompanied industrialization to the large-scale pollution movements (kōgai undō) of the 1960s and 1970s, environmental awareness took shape through sustained struggles over responsibility, visibility, and legitimacy (Avenell, 2012; McKean, 1981).

Existing scholarship has made important contributions to understanding Japan's environmental transformation. Political science research has emphasized institutional reform and state-led policy change, particularly the legislative shift surrounding the 1970 "Pollution Diet" and the administrative reorganization that followed (Pempel, 1977; Reich, 1984; Rosenbluth & Thies, 2010; Upham, 1987). Sociological studies have highlighted the role of citizen movements and political opportunity structures in enabling environmental protest (Almeida & Stearns, 1998; Broadbent, 1998; Hasegawa, 2004; McKean, 1981). Environmental historians have situated pollution within longer histories of industrial disease, landscape transformation, and political thought (Stolz, 2014; Walker, 2010). In parallel, medical and epidemiological research has documented pollution-related diseases such as Minamata disease, Itai-itai disease, and Yokkaichi asthma in exacting detail, providing evidence of the health consequences of industrial pollution that is difficult to contest (Aoshima, 2016; Guo et al., 2008; Harada, 1995; Yorifuji, 2020).

Despite these advances, much of the existing literature treats environmental consciousness either as a background condition or as a derivative outcome of policy change, rather than as a historical phenomenon in its own right. Two gaps follow. First, the analytical separation between scientific knowledge and social mobilization has obscured how medical evidence itself contributed to the social construction of environmental awareness, even though work in the sociology of science has long shown that contested expertise and lay knowledge are constitutive of, rather than incidental to, public problem formation (Brown, 1992; Epstein, 1995; Jasanoff, 2004). Second, the periodization common in the literature tends to begin with the postwar pollution diseases, which makes the prewar decades appear as an undifferentiated prehistory rather than as a period whose specific configuration of institutions and knowledge helps explain why awareness did not consolidate earlier (Notehelfer, 1975; Takahashi & Sagisaka, 2023). This article addresses both gaps by treating the absence of environmental consciousness in the early period as an outcome requiring explanation in the same terms as its later presence.

This study conceptualizes environmental consciousness not as an abstract value system but as a historically embedded form of social awareness involving three components: the recognition of environmental harm as a collective rather than individual problem, the attribution of responsibility for that harm to identifiable actors, and the belief that such harm warrants public intervention. This definition follows the constructionist tradition in environmental sociology, which treats environmental problems as claims that must be assembled, legitimated, and contested rather than as conditions that speak for themselves (Dunlap & Catton, 1979; Hannigan, 2006). Conceptualized in this way, environmental consciousness is analytically separable from environmental damage: the two may vary independently, and the Japanese case is instructive precisely because severe damage preceded widespread awareness by several decades.

The article proceeds as follows. Section 2 sets out the analytical framework and the interpretive strategy used to synthesize evidence across disciplinary literatures. Section 3 examines early industrialization and smoke pollution between 1900 and the 1930s, explaining why demonstrable harm did not consolidate into durable awareness. Section 4 analyses the pollution diseases of the 1950s and 1960s and the scientific work that rendered them legible as environmental harm. Section 5 turns to litigation and citizen movements in the 1960s and 1970s, through which environmental harm was publicized and moralized. Section 6 traces the institutionalization of environmental consciousness between 1970 and 1980 and the ambivalent consequences of that consolidation. Section 7 concludes by drawing out the implications of the Japanese sequence for the comparative study of environmental awareness in industrial societies.

2 ANALYTICAL FRAMEWORK AND APPROACH

2.1 A Process-Oriented Account of Environmental Consciousness

The framework adopted here is process-oriented: it asks how environmental risks became visible, morally salient, and politically actionable over time, and it treats each of these transitions as contingent rather than automatic. Three bodies of theory inform the analysis. The first is social movement theory, and in particular the political process tradition, which holds that grievances translate into mobilization only when the structure of political opportunities makes collective claims viable (Kitschelt, 1986; McAdam, 1982; Tarrow, 1998). Applied to Japan, this tradition directs attention to the openness of courts, parties, and local governments to environmental claims at particular moments, and it has been used to explain why mobilization at Minamata accelerated when and where it did (Almeida & Stearns, 1998).

The second is the framing perspective, which treats the interpretation of a condition as injustice—rather than as misfortune, cost, or fate—as an achievement of collective interpretive work (Benford & Snow, 2000; Snow et al.,

1986). Framing is not merely rhetorical: the alignment of victims' experiential accounts with broader cultural under - standings of responsibility determines whether harm is recognized as a public wrong, and the same insight under - pins analyses of injustice framing in environmental justice movements elsewhere (Taylor, 2000). Because framing opportunities are themselves structured by the political environment, the two traditions are best treated jointly rather than as alternatives (Gamson & Meyer, 1996).

The third is the sociology of scientific knowledge, which examines how authoritative claims about causation are pro - duced, bounded, and deployed. Boundary-work between science and non-science determines whose accounts of harm count as evidence (Gieryn, 1983); popular epidemiology describes the process by which affected communities gener - ate and validate knowledge that professional institutions have not produced (Brown, 1992); and studies of lay expertise show that non-credentialled actors can acquire standing within technical debates when they organize around credibility rather than around suffering alone (Epstein, 1995). Taken together with the idiom of co-production, which treats knowledge and social order as emerging simul - taneously rather than sequentially (Jasanoff, 2004), these approaches suggest that science did not simply reveal pollu - tion to a waiting public but participated in constituting pollution as a public object.

Finally, the institutional outcome of these processes is read through historical institutionalizm. Institutions are under - stood as carrying forward the settlements of earlier conflicts, so that the configuration of law and administration at any moment reflects prior struggles and constrains subsequent ones (Hall & Taylor, 1996; Steinmo et al., 1992; Thelen, 1999). The concept of increasing returns is particularly relevant to the Japanese sequence, since the development - alist arrangements consolidated in the first half of the century raised the cost of environmental claims and help explain the long delay before awareness crystallized (Pierson, 2000). The broader diagnosis of industrial modernity as generating risks that its own institutions are poorly equipped to perceive provides the background against which this delay becomes intelligible (Beck, 1992).

2.2 Sources and Interpretive Strategy

This article is a historical synthesis rather than an archival study. It draws on four bodies of published evidence and reads them against one another. The first is the environ - mental-historical and political-science literature on Japanese pollution and policy, which supplies the chronology of events and the institutional context (Broadbent, 1998; Miyamoto, 2013; Teranishi, 2023; Tsuru, 1999; Ui, 1992). The second is the clinical and epidemiological literature on the pollution diseases, which supplies the evidentiary record that con - temporaries contested and that later research consolidated (Ekino et al., 2007; Harada, 1995; Nogawa et al., 1983). The third is the legal literature on environmental liability and litigation (Gresser et al., 1981; Kawamura, 2018; Upham, 1987). The fourth is Japanese environmental sociology, which has produced sustained analyses of victimhood, gov - ernance, and movement organization (Funabashi, 2006; Iijima, 1994; Seki, 2006).

Reading these literatures together raises an interpretive difficulty that should be stated plainly. Each was produced for its own purposes: epidemiological studies establish causation under standards of proof that differ from those of courts, and historical accounts often rely on movement sources whose framing is itself part of the phenomenon under study. The synthesis pursued here therefore treats convergence across independent literatures as the principal warrant for a claim, and it flags points at which the record remains contested—most importantly the boundaries of the affected populations, which were disputed throughout the period and which later research has repeatedly revised upward (Tsuda et al., 2009; Yorifuji et al., 2008). The ana - lysis does not attempt to adjudicate these disputes; it treats the disputes themselves as evidence about how environ - mental harm was constituted as a public problem.

3 EARLY INDUSTRIALIZATION AND SMOKE POLLUTION: THE LIMITED VISIBILITY OF ENVIRONMENTAL HARM (1900–1930S)

3.1 Ashio and the Limits of Japan's First Pollution Incident

Japan's early industrialization at the turn of the twentieth century provided the material foundation for later environ - mental conflicts, yet it did not immediately generate envir - onmental consciousness. Pollution, and particularly the smoke produced by factories, mines, and urban infrastruc - ture, was widely normalized as an unavoidable cost of national development (Hashimoto, 1989; Horihata, 2022). Environmental harm was clearly present, but it remained constrained in its social visibility, its political articulation, and its moral interpretation. Explaining why early pollution failed to produce sustained environmental awareness is therefore essential to understanding the later formation of environmental consciousness in Japan.

The most severe early case, and the one that most sharply poses this question, is the Ashio copper mine incident. From the 1880s onward, effluent and smelter emissions from the Ashio mine devastated agricultural land and fisheries along the Watarase River, producing a protracted conflict between affected farmers and an enterprise closely tied to national industrial ambitions (Takahashi & Sagisaka, 2023). The incident generated organized petitioning, parliamentary controversy, and the sustained advocacy of Tanaka Shōzō, and it has been described as Japan's first pollution incident precisely because it exhibits, in embryonic form, the con - frontation between industrial growth and rural livelihood that would recur half a century later (Notehelfer, 1975). Its political afterlife, however, was limited. The state's response combined engineering remedies with the resettlement of affected villages, and the underlying framing of pollution as a

problem of water management rather than of corporate responsibility persisted (Stolz, 2014).

Ashio thus establishes an important negative case. Severity of damage, organized protest, national publicity, and articulate moral critique were all present, yet none of this consolidated into a durable category of environmental harm that could be transferred to other sites. What was absent were the institutional and epistemic conditions that would later make such transfer possible: a legal doctrine capable of assigning liability across diffuse causal chains, and a body of evidence linking exposure to specific, diagnosable injury in human bodies (Teranishi, 2023; Walker, 2010).

3.2 Why Early Smoke Pollution Did Not Produce Durable Awareness

Following the Meiji Restoration, rapid industrial expansion intensified coal consumption, heavy manufacturing, and urban concentration, making smoke emissions a common feature of industrial cities and an everyday element of urban life (Hein, 1990; Johnson, 1982). Despite tangible effects on air quality, daily comfort, and material surroundings, smoke pollution was rarely conceptualized as a public environmental problem. It was commonly regarded as a localized nuisance or a temporary inconvenience associated with modernization. Industrial production was tightly bound to national strength, economic survival, and imperial ambition, and within this framework pollution was widely presented as an acceptable sacrifice rather than a social injustice (Horihata, 2022). Early complaints about smoke were therefore often dismissed as private grievances, or as impediments to progress lacking broader social significance.

At the institutional level, the early Japanese state offered few effective channels for articulating environmental claims. Regulatory priorities emphasized industrial promotion, while legal mechanisms for holding polluters accountable were weak or largely absent (Gresser et al., 1981). When disputes arose between residents and industrial actors, they were typically managed through informal negotiation or administrative mediation rather than through public litigation, a pattern that persisted well into the postwar period and that systematically limited the transformation of environmental harm into a recognized social problem (Upham, 1987). Urban planning during the same decades developed as an instrument of orderly expansion rather than of amenity protection, and the associational life that might have carried environmental claims remained narrowly bounded (Sorensen, 2001). Without legal recognition or institutional support, smoke pollution remained politically marginal, and its marginality reinforced perceptions of its inevitability.

The absence of authoritative scientific knowledge further constrained the visibility of environmental harm. Although residents experienced irritation, reduced visibility, and damage to crops and buildings, these experiences lacked standardized measurement and clear causal attribution. Unlike the pollution diseases that emerged later, smoke pollution did not produce dramatic or medically diagnosable outcomes that could be mobilized as compelling evidence, and systematic air quality monitoring did not develop in Japan until the postwar decades (Hashimoto, 1989). The lack of epidemiological tools and air quality metrics rendered pollution diffuse and ambiguous, weakening claims of responsibility. In the terms of the framework set out above, no stable boundary had yet been drawn that would allow residents' accounts of harm to be admitted as evidence rather than dismissed as complaint (Gieryn, 1983).

Social conditions also limited collective mobilization. Early industrial workers and urban residents generally lacked organizational resources, legal literacy, and political leverage, while labor movements prioritized wages, working conditions, and employment security over environmental concerns. Paternalistic labor relations and hierarchical workplace structures further discouraged confrontational claims against industrial enterprises. As Tsutsui (2019) observes, the Japanese industrial system placed sustained emphasiz on productivity and managerial authority, leaving little space for environmental dissent to emerge as a legitimate political claim; environmental harm, when acknowledged at all, was framed primarily as an individual burden rather than as a collective injustice. In the vocabulary of political process theory, the opportunity structure was closed on every dimension that matters: elite allies were unavailable, repression of confrontational claims was credible, and institutional access was minimal (Kitschelt, 1986; McAdam, 1982).

Nevertheless, early smoke pollution controversies played a latent but significant role in shaping later developments. Early disputes exposed underlying tensions between industrial growth and social well-being, even where they did not produce lasting environmental awareness. They also established patterns of conflict management based on administrative compromise, technical adjustment, and localized containment that would later be challenged by more severe forms of pollution (Teranishi, 2023). These early experiences created a historical baseline against which subsequent pollution crises were evaluated, so that when pollution diseases emerged in the postwar period they were no longer interpreted merely as inconveniences but increasingly as intolerable violations of social responsibility. This is the sense in which the prewar period matters institutionally: the settlements reached at Ashio and in the industrial cities were carried forward, and they raised the threshold that later claims had to clear (Pierson, 2000; Thelen, 1999).

From a historical perspective, the limited visibility of smoke pollution demonstrates that environmental consciousness does not arise simply from the presence of environmental harm, but depends on the availability of interpretive frameworks, scientific knowledge, institutional channels, and collective actors capable of redefining harm as a public problem (Hannigan, 2006). In early twentieth-century Japan these conditions were largely absent. Smoke pollution remained

embedded within a developmentalist logic that prioritized economic growth and national strength, delaying the emergence of environmental awareness. Yet by exposing the contradictions of industrial modernity, early pollution controversies laid the structural groundwork for the more confrontational struggles that unfolded after the Second World War.

4 POLLUTION DISEASES AND THE SCIENTIFIC REFRAMING OF ENVIRONMENTAL HARM (1950S–1960S)

4.1 Pollution Diseases and the Embodiment of Environmental Harm

The postwar period marked a decisive turning point in the historical formation of environmental consciousness in Japan, as pollution-related diseases transformed environmental harm from a diffuse external condition into a direct threat to human life. Unlike earlier smoke pollution, which primarily affected daily comfort and urban surroundings, the chemical pollution that emerged during the 1950s and 1960s penetrated the human body and produced chronic, often irreversible damage (Walker, 2010). Rapid industrial expansion in chemical manufacturing, mining, and heavy industry led to the large-scale discharge of toxic substances into rivers, coastal waters, and residential environments, creating forms of exposure that accumulated over time and that became legible only in retrospect (Teranishi, 2023).

Minamata disease provided the most emblematic example of this shift. Beginning in the mid-1950s, residents of communities around Minamata Bay developed severe neurological symptoms that were initially misunderstood or attributed to individual illness, yet sustained clinical observation gradually revealed a shared pattern of suffering linked to industrial wastewater (Harada, 1995). The identification of methylmercury as the causal agent fundamentally altered the interpretation of pollution by establishing a direct connection between industrial activity and bodily injury, and subsequent work traced the contamination pathway from effluent through the marine food chain to human consumers (Kudo & Miyahara, 1991). The recognition of congenital Minamata disease, in which intrauterine exposure produced severe impairment in infants whose mothers showed comparatively mild symptoms, extended the moral reach of the case by demonstrating that harm could be transmitted across generations (Harada, 1978).

A similar process occurred in the case of Itai-itai disease in the Jinzu River basin of Toyama Prefecture, where chronic cadmium exposure through contaminated rice and water resulted in intense bone pain, multiple fractures, and renal dysfunction, particularly among older women who had borne several children (Nogawa et al., 1983). Later clinical research documented the systemic character of the injury, including renal tubular osteomalacia, impaired erythropoietin production, and hepatic pathology, establishing that the disease was not a localized skeletal disorder but a multi-organ consequence of prolonged exposure (Aoshima, 2016; Baba et al., 2013; Horiguchi et al., 1994). The visibility of bodily damage and the severity of the suffering challenged earlier assumptions that pollution effects were temporary or tolerable, and the affected community's long effort to secure recognition and environmental restoration became a reference point for later movements (Kubota, 2023).

Yokkaichi asthma extended this transformation into the urban industrial context. Residents living near the petrochemical complex at Yokkaichi experienced elevated rates of respiratory illness from the early 1960s, and contemporaneous clinical and environmental surveys linked the pattern to sulfur oxide emissions from the complex (Yoshida et al., 1964, 1966). Later analysis reconstructed the meteorological and emission conditions that concentrated exposure in particular districts (Kitagawa, 1984), while long-term follow-up established that the episode produced enduring effects: mortality among certified patients remained elevated and life expectancy reduced decades after emissions had been controlled (Guo et al., 2008). Yokkaichi mattered analytically because it demonstrated that pollution harm was not confined to isolated rural communities dependent on a single contaminated resource, but could be produced by the ordinary operation of an urban industrial agglomeration.

These were not the only cases. The Kanemi rice oil poisoning of 1968, in which polychlorinated compounds entered the food supply through a manufacturing fault, produced a large cohort of victims whose difficulties in obtaining recognition and redress paralleled those of the pollution disease patients, and whose case illustrates how quickly harm can fall into a political void when it fits no established administrative category (Uda, 2023). Taken together, these cases marked a qualitative shift in the experience of pollution. Environmental harm was no longer confined to landscapes or living spaces but became embodied within human bodies, generating identifiable victims whose suffering could not be dismissed as incidental. This embodiment fundamentally altered the moral weight of environmental harm, making it increasingly difficult to justify industrial development at the expense of human health.

4.2 Scientific Knowledge and the Reconstitution of Environmental Awareness

The emergence of pollution-related diseases did not by itself produce environmental consciousness. It was the intervention of scientific knowledge that transformed bodily suffering into socially recognized environmental harm. Medical and epidemiological research rendered pollution legible by establishing causal links between industrial emissions and specific disease patterns. Through clinical documentation, pathological analysis, and population-based studies, researchers translated localized experiences of illness into authoritative knowledge that could circulate beyond the affected communities (Ekino et al., 2007; Hachiya, 2012).

In the case of Minamata disease, epidemiological investigation demonstrated that mercury exposure through contaminated seafood was responsible for neurological damage, shifting the interpretation of illness from personal misfortune to industrial causation (Harada, 1995). The evidentiary record continued to develop long after the initial identification: population-based studies conducted in the surrounding communities showed that neurological signs and psychiatric symptoms persisted decades after exposure ended, and that they extended well beyond the officially certified patient population (Yorifuji et al., 2008, 2011). The retrospective reassessment of early-stage epidemiological work has since become a subject of methodological reflection in its own right, illustrating how the boundaries of a pollution disease are established as much by research design and administrative definition as by pathology (Yorifuji, 2020).

Research on Itai-itai disease similarly clarified the mechanisms through which cadmium accumulation damaged renal and skeletal systems, and it did so in a way that supported dose-response reasoning: estimates of cumulative intake and comparisons between populations consuming contaminated rice or river water established exposure thresholds that could be used administratively (Inaba et al., 2005; Kobayashi et al., 2008). Long-term epidemiological follow-up of certified patients confirmed elevated mortality attributable to renal disease, closing the causal argument at the population level (Nishijo et al., 2017). Synthesizing reviews consolidated these findings into a chronic cadmium poisoning framework that could travel beyond the Jinzu basin (Kasuya, 2000). These scientific findings collectively redefined pollution as a public health crisis with long latency periods and irreversible consequences, expanding both the temporal and the moral dimensions of environmental risk.

Scientific expertise also reshaped the boundaries of responsibility by undermining narratives that framed pollution as accidental, unavoidable, or socially neutral. This was not a smooth process. Corporate actors and state authorities contested findings, sponsored alternative causal hypotheses, and delayed acknowledgement, and the public health response to Minamata has been characterized as a systematic failure in which institutional caution prolonged exposure that was already understood to be dangerous (Tsuda et al., 2009). What eventually constrained denial was the accumulation and convergence of independent lines of evidence, together with the willingness of particular researchers to align themselves with affected communities rather than with the institutions funding their work (Kaji, 2012).

That alignment points to the second contribution of science, which was to supply affected communities with a shared language through which suffering could be articulated and mobilized in legal, political, and media arenas. Victims did not merely receive scientific findings; in several instances they helped generate them. Residents' systematic recording of symptoms, household exposure histories, and patterns of illness constituted a form of popular epidemiology that preceded and prompted professional investigation (Brown, 1992), and the participatory research organized by Niigata Minamata disease victims shows the process operating with particular clarity in the Japanese case (Seki, 2006). Through such work, lay actors acquired standing within technical debates, a dynamic documented across a range of health-based movements (Epstein, 1995). The resulting configuration is best described as co-production: the evidentiary basis of pollution and the social identity of the pollution victim were established together, each stabilizing the other (Jasanoff, 2004).

Pollution diseases thus functioned as a critical epistemic bridge between early industrial pollution and later environmental movements. By naming, measuring, and explaining harm, science transformed environmental damage into a public issue that demanded response, and Japanese environmental sociology has accordingly treated the pollution disease as the formative object of the field (Iijima, 1994). This reframing did not resolve environmental conflict, but it created the cognitive and moral conditions under which litigation, social mobilization, and institutional change became possible, setting the stage for the large-scale pollution movements of the late 1960s and 1970s.

5 LITIGATION AND SOCIAL MOVEMENTS: THE SOCIAL MOBILIZATION OF ENVIRONMENTAL CONSCIOUSNESS (1960S–1970S)

5.1 Environmental Litigation and the Publicization of Pollution

By the late 1960s, environmental harm in Japan had moved beyond scientific recognition and entered the legal arena, marking a crucial stage in the social mobilization of environmental consciousness. Litigation became a central mechanism through which pollution was transformed from a technical or administrative issue into a matter of public responsibility and social justice. The four major pollution lawsuits—concerning Minamata disease, Niigata Minamata disease, Itai-itai disease, and Yokkaichi asthma—challenged the long-standing assumption that environmental harm was an unavoidable byproduct of economic growth, or a matter best resolved through informal negotiation (Gresser et al., 1981; Upham, 1987). In court, pollution victims sought not only compensation but public acknowledgement of causality and responsibility, thereby redefining the meaning of environmental harm itself.

Legal proceedings required the translation of scientific knowledge into legally admissible evidence, forcing judges, lawyers, and the wider public to confront the relationship between industrial activity and bodily injury. The doctrinal innovation that made this possible was the acceptance of epidemiological proof of causation and a relaxed standard for establishing negligence in cases of technology-related mass damage, which together shifted a substantial part of the evidentiary burden away from individual plaintiffs (Kawamura, 2018). Expert testimony and epidemiological

data consequently played a decisive role, reinforcing the authority of scientific findings while situating them within normative debates about liability and justice. The role of sympathetic experts was pivotal precisely because the plaintiffs could not otherwise have assembled a technical case against well-resourced corporate defendants (Kaji, 2012).

Environmental litigation also altered power relations by granting victims a formal voice in arenas previously dominated by industrial and bureaucratic interests. Although legal outcomes were often delayed and contested, the act of bringing pollution into court destabilized the developmentalist logic that had long shielded industrial actors from accountability. The court rulings of 1971–1973, which found for the plaintiffs in each of the four cases, established precedents that extended well beyond the individual disputes and signalled a broader shift in social expectations regarding the limits of acceptable industrial behavior (Upham, 1987). Their effects were not confined to the courtroom: the Yokkaichi judgment in particular supplied a template for subsequent air pollution litigation in other industrial regions, where plaintiffs combined damages claims with demands for regional environmental regeneration (Hayashi et al., 2023).

It is important, however, not to overstate the sufficiency of legal victory. Litigation delivered recognition and compensation to certified plaintiffs while leaving the boundaries of certification contested, and the resulting administrative distinction between recognized and unrecognized sufferers became a durable source of grievance that outlasted the judgments themselves (Funabashi, 2006). Through litigation, nevertheless, environmental harm was no longer confined to affected communities or expert circles, but became a public issue debated in newspapers, political forums, and everyday discourse, contributing to the broader diffusion of environmental consciousness.

5.2 Citizen Movements and the Collective Framing of Environmental Harm

Parallel to the expansion of environmental litigation, citizen movements emerged as a powerful force in transforming environmental awareness into collective action. During the late 1960s and early 1970s, pollution-related protests expanded in scale, diversity, and social composition, drawing participation from residents, workers, women's groups, and local associations (McKean, 1981). These movements reframed pollution not merely as a technical failure or legal violation but as a moral and social problem that threatened community well-being and human dignity. Unlike earlier disputes over smoke pollution, which remained fragmented and localized, pollution movements articulated shared grievances that transcended individual sites of exposure, and in doing so they contributed to a wider reconstruction of the citizen as a political subject in postwar Japan (Avenell, 2010).

Victims' narratives played a central role in this process, as personal suffering was mobilized to evoke empathy, outrage, and a sense of collective injustice. In the vocabulary of the framing perspective, this was frame alignment: experiential accounts of illness were connected to widely held understandings of responsibility and fairness, producing an injustice frame that could recruit participants far beyond the affected localities (Benford & Snow, 2000; Snow et al., 1986). Media coverage amplified these narratives. Television documentary in particular gave the pollution diseases a national audience and established visual conventions for representing victims that shaped public understanding for decades (Kato et al., 2018), while the institutional structure of Japanese broadcasting shaped which claims received sustained attention and in what terms (Krauss, 2000). Comparable dynamics in contemporaneous infrastructure disputes show that media access was itself an object of movement strategy rather than a neutral channel (Groth, 1996).

Citizen movements also interacted strategically with scientific experts and legal advocates, combining experiential knowledge with technical expertise to strengthen their claims. This alliance between lay actors and professionals enhanced the credibility of environmental demands while broadening their social appeal (Seki, 2006). Political opportunity structures further facilitated mobilization. Progressive local administrations elected in major cities during the late 1960s proved willing to adopt pollution control ordinances stricter than national standards, providing movements with institutional allies and demonstration effects that national politics did not yet offer (Broadbent, 1998; Reich, 1984). Growing international attention to environmental issues added a further opening, and Japanese activists increasingly understood their struggles as part of a transnational conversation about industrial pollution (Avenell, 2017). Contemporaneous accounts written for foreign audiences carried the Japanese pollution experience abroad and helped establish it as a cautionary reference in international environmental debate (Huddle & Reich, 1975; Ui, 1992).

Environmental movements thus functioned as arenas in which scientific knowledge, legal claims, and moral arguments converged, producing a shared interpretive framework that defined pollution as unacceptable and preventable. Through demonstrations, petitions, and community organizing, environmental consciousness was no longer confined to victims or specialists but became embedded within a broader civic culture (Hasegawa, 2004). The comparison with toxic waste movements in other industrial democracies is instructive: there too, the convergence of embodied harm, contested expertise, and local organization produced movements whose claims could not be contained within existing regulatory categories (Szasz, 1994). By the early 1970s, sustained mobilization had generated sufficient pressure to compel a state response. In this sense, citizen movements did not simply respond to environmental consciousness; they actively constituted it, transforming dispersed experiences of

harm into a collective understanding of environmental injustice and social obligation.

6 THE INSTITUTIONALIZATION OF ENVIRONMENTAL CONSCIOUSNESS AND STATE RESPONSIBILITY (1970–1980)

6.1 Legislative Transformation and the Formal Recognition of Environmental Responsibility

The early 1970s marked a decisive moment in which environmental consciousness in Japan was absorbed into formal political and legal institutions, transforming social pressure into state responsibility. The convergence of widespread litigation, sustained citizen mobilization, and growing public concern created conditions under which environmental harm could no longer be treated as a marginal or exceptional issue (Reich, 1984). The extraordinary session of the National Diet convened in late 1970, subsequently known as the "Pollution Diet," symbolized this transformation: it produced a sweeping revision of existing statutes and introduced new regulatory frameworks addressing air and water pollution, industrial waste, and environmental health, and it was followed in 1971 by the establishment of a dedicated Environment Agency (Hashimoto, 1989; Pempel, 1977).

These legislative changes reflected more than technical policy adjustment. They represented a shift in how the state conceptualized its own role in relation to environmental harm, moving from a developmentalist posture that prioritized industrial growth toward a regulatory stance that acknowledged public responsibility for environmental protection (Miyamoto, 2013; Tsuru, 1999). Two features of the reform deserve emphasiz. First, the removal of the clause requiring pollution control to be harmonized with economic development removed the principal legal basis on which industrial interests had previously qualified environmental obligations. Second, the 1973 compensation legislation created an administrative route to redress funded by a levy on emitters, effectively generalizing the liability principle that the courts had established in individual cases and converting it into routine state practice (Gresser et al., 1982; Kawamura, 2018).

Legal recognition of corporate liability for pollution-related damage thereby institutionalized the principle that environmental harm was neither inevitable nor socially acceptable. Implementation remained uneven and enforcement encountered resistance, and the reforms were in important respects a defensive response by a governing party facing electoral losses in polluted urban constituencies rather than a wholesale conversion (Broadbent, 1998; Rosenbluth & Thies, 2010). Even so, the legislative transformation of the early 1970s marked a qualitative break with earlier periods in which environmental grievances had been managed informally or administratively. Environmental consciousness, previously articulated through protest and litigation, now acquired formal expression within the legal and policy apparatus of the state, completing its transition from contested social claim to institutionalized norm—a sequence that historical-institutionalizt accounts would recognize as a critical juncture at which accumulated pressure reconfigures a previously stable settlement (Steinmo et al., 1992; Thelen, 1999).

6.2 Environmental Governance and the Stabilization of Environmental Awareness

Following the initial wave of legislative reform, the 1970s witnessed the consolidation and stabilization of environmental consciousness within Japan's governance system. New administrative bodies and monitoring mechanisms were established to enforce pollution standards, assess environmental risks, and coordinate policy implementation across sectors (Imura & Schreurs, 2005). Environmental regulation became routinized through licensing procedures, emissions monitoring, and compliance requirements, embedding environmental considerations into everyday industrial and administrative practice. The results were substantial in their own terms: sulfur oxide concentrations in the major industrial regions fell sharply over the decade, and the pollution control investment undertaken by Japanese heavy industry in this period was without contemporary parallel in scale (Hashimoto, 1989; Yoshida, 2002).

This institutionalization did not eliminate environmental conflict, but it altered its form. Rather than relying primarily on protest and litigation, environmental issues increasingly entered policy debate as matters of regulation, management, and expertise. Much of the subsequent implementation proceeded through pollution control agreements negotiated between local authorities and firms, an instrument that achieved compliance efficiently while shifting decisions into bilateral settings less open to public scrutiny (Arimura et al., 2019). Environmental consciousness thus became normalized as part of the broader framework of public administration, shaping expectations regarding acceptable industrial behavior and state responsibility, while the administrative reliance on technical criteria has led observers to characterize the resulting regime as technocratic in its fundamental orientation (Weidner, 1986).

At the same time, institutionalization introduced new tensions. As environmental protection was absorbed into bureaucratic structures, the moral urgency that had characterized earlier movements was tempered by technical and procedural considerations. Environmental problems were increasingly framed in terms of risk management and regulatory optimization, raising concerns about depoliticization and the marginalization of affected communities—a dynamic that the literature on ecological modernization has described as the reformulation of environmental conflict into a discourse of efficiency and technical adjustment (Barrett, 2005; Hajer, 1995; Mol & Sonnenfeld, 2000). The consequences were concrete for pollution victims. Certification boundaries tightened as the decade advanced, the compensation system came under sustained pressure from industry, and communities that had won judicial recognition found that

administrative implementation could narrow what the courts had granted (Funabashi, 2006; Yokemoto, 2023).

The organizational legacy was similarly ambivalent. Japanese environmental activism after the 1970s developed a dense base of small, local, and largely non-professionalized groups, effective in place-based disputes but with limited capacity for national advocacy, a configuration traceable in part to the legal and fiscal environment consolidated in this period (Pekkanen, 2006). Later siting conflicts show the state deploying an increasingly sophisticated repertoire of incentives and procedural instruments to manage local opposition rather than to accommodate it (Aldrich, 2008). Where environmental issues required scientific claims that Japanese institutions were not yet organized to produce, as in the case of transboundary acid deposition, the same technocratic orientation slowed recognition considerably (Wilkening, 2004). Parallel developments in consumer regulation suggest that this pattern was not specific to environmental policy but characteriztic of how protective regulation was institutionalized more generally (Vogel, 1992).

Nevertheless, the stabilization of environmental consciousness during the 1970s represented a significant historical achievement. By the end of the decade, environmental protection was firmly established as a legitimate public concern, supported by legal authority, administrative capacity, and broad social consensus (Barrett & Therivel, 1991; Tsuru, 1998). The transformation of environmental awareness from a contested social demand into a stable component of governance marked the culmination of a historical process that had begun with early industrial pollution and unfolded through scientific reframing, legal struggle, and collective mobilization. The institutionalization of environmental consciousness did not signify the end of environmental conflict, but rather the creation of durable structures through which environmental harm could be recognized, regulated, and contested within the modern state. The subsequent construction of museums and archival centres dedicated to the pollution diseases indicates a further stage, in which the memory of these conflicts was itself institutionalized as a public good (Shimizu & Hayashi, 2023).

7 CONCLUSION

This article has traced the historical formation of environmental consciousness in Japan from the early twentieth century to 1980, emphasizing the processes through which environmental awareness emerged rather than treating it as a predetermined outcome of development or policy reform. By examining early smoke pollution controversies, the appearance of pollution-related diseases, the role of scientific knowledge, and the expansion of litigation and citizen movements, the study has shown that environmental consciousness was gradually constructed through conflict, negotiation, and institutional change.

The sequence can be summarized as four transitions, each of which was contingent rather than automatic. Environmental harm first had to become visible through embodied suffering, which the pollution diseases supplied and which diffuse smoke pollution had not. It then had to be scientifically articulated through causal knowledge, which converted illness into evidence and supplied affected communities with a language of claim. It had to be collectively framed as injustice rather than misfortune, which movements achieved by aligning victims' experience with wider understandings of responsibility. Finally it had to be institutionally absorbed, which the legislation of the early 1970s accomplished. The Ashio case is analytically important because it shows the first transition occurring without the others: severe, visible, publicly contested harm did not consolidate into transferable environmental consciousness in the absence of the epistemic and institutional conditions that arrived only much later.

Two implications follow. The first concerns the relationship between knowledge and mobilization. The Japanese case indicates that scientific evidence and collective action were not sequential but mutually constitutive: expertise made claims credible, and mobilization made expertise consequential. Analyses that treat science as an external input to environmental politics will therefore misdescribe how environmental problems are constituted. The second concerns institutionalization itself. The consolidation of the 1970s secured environmental protection as a legitimate state function, and at the same time narrowed the interpretive space within which environmental harm could be expressed, relocating conflict from the street and the courtroom into administrative procedure. Institutionalization should accordingly be understood as a transformation of environmental conflict rather than as its resolution.

Several limitations should be acknowledged. This article is a synthesis of published scholarship rather than an archival investigation, and it therefore inherits the emphases of the literatures on which it draws—literatures weighted toward the four major pollution cases and comparatively thin on disputes that did not reach the courts. The analysis also concentrates on the national scale, while much of the decisive action in this period occurred in prefectural and municipal arenas whose variation deserves closer comparative treatment. Finally, the account ends in 1980 and thus does not address how the institutional settlement described here fared under the deregulatory pressures of subsequent decades.

Subject to these limitations, the Japanese case illustrates that environmental consciousness is neither spontaneous nor linear, but historically contingent and socially produced. Understanding this process offers a framework for examining how environmental awareness may emerge in other industrial societies confronting the tensions between economic development, social justice, and environmental protection—and a reminder that the interval between demonstrable harm

and its public recognition is itself a political outcome requiring explanation.

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