Does Information Spur Collective Action Against Environmental Harms? Experimental Evidence from Ghana's *Galamsey*

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Abstract

Information can mobilize community collective action against environmental harms, but its impact depends on how it is delivered and by whom. Local leaders can transmit and legitimize new information, or distort and suppress it when incentives misalign. We study these trade-offs in the context of artisanal and small-scale gold mining (*galamsey*) in Ghana. In a cluster randomized controlled trial across 99 affected communities, stratified by leaders' conflicts of interest, we screened a documentary on mercury's health risks either privately to leaders (traditional local chiefs) or publicly to both leaders and community members. Leader-only screenings improved health-risk learning among chiefs but not among community members, and often crowded out community efforts. Public screenings generated strong learning and, only when paired with leaders without conflicts of interest, shifted voting preferences toward stricter community mining rules and mobilized follow-up participation. Where leaders were conflicted, however, public screenings polarized preferences; nevertheless, communities increased accountability pressure on their leaders and redirected engagement toward external channels (an NGO-moderated WhatsApp Group). Together, the results suggest that building consensus and mobilizing community collective action requires both an informed public and non-conflicted leadership; neither alone is sufficient.

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> "...environmental problems created by non-sustainable resource use will ultimately get solved in one way or another: if not by pleasant means of our own choice, then by unpleasant and unchosen means."
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> Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed*

1. Introduction

Resource extraction is among the largest human interventions in natural systems. While the benefits are immediate and concentrated among resource system users, the degradation accumulates silently across atmospheres, watersheds, food chains, and generations. The conventional view holds that correcting such environmental externalities requires state interventions. As the geography of resource booms shifts from developed to developing countries, these conventional approaches face distinctive challenges. In the rural areas where most resource extraction takes place, the state is often absent due to limited capacity, and when present, it tends to predatory and extractive rather than regulatory, undermining even well-intentioned regulations. This motivates a different route: community collective action, where local leaders and community members work together to manage the resource more sustainably.

This paper studies community collective action in the artisanal and small-scale gold mining sector, which employs roughly 10–20 million miners across more than 80 countries and is the largest source of mercury pollution worldwide, responsible for about one-third of annual human-caused emissions; in South America and Sub-Saharan Africa it accounts for over 80% of mercury emissions (UNEP, 2018). In Ghana, where this study takes place, ASGM is known as *galamsey*.[1] In response to the environmental and health harms *galamsey* causes, the Government of Ghana has launched repeated crackdowns, including multiple waves of military operations and a two-year national ban on small-scale mining, yet these efforts have not produced sustained reductions in environmental damage.

Collective action to mitigate environmental harms from *galamsey* has emerged in some communities. In the farming community of Jema, located in the Western North Region, traditional leaders and community members established a community regulation, in the form of a customary bylaw, that banned mining and introduced regular assembly meetings to monitor compliance and coordinate responses. This local initiative has proven effective: Jema successfully repelled multiple attempts by *galamseyers* to begin mining within its territory and remains free of *galamsey*. As the only unaffected community in its district, the case of Jema is widely cited as a success story. Yet, it is the exception rather than the norm. What prevents community collective action from taking shape in more communities? Standard explanations point to free-riding, where people can benefit from others' efforts without contributing themselves (Olson, 1965), and coordination problems, which arise from uncertainty about others' actions (Schelling, 1960). This paper focuses on a less studied but fundamental precondition: gaps in information about the severity of the problem.[2] The health risks associated with mercury exposure are often long-term, diffuse,

[1] *Galamsey* derives from the phrase "gather and sell" in the local Twi language. Because more than 80% of ASGM operations are unlicensed, and even licensed ones often violate environmental regulations, the term *galamsey* is also commonly used in media and public discourse to refer to illegal mining.

[2] While our main focus is on information, as detailed below, the research design and findings also shed light on the classic challenges of free-riding and coordination.

and difficult to attribute directly to mining activities, leading to underappreciation of the hazards among community members. This internality can dampen motivation for collective action, as individuals may not perceive its urgency or necessity. These facts motivate our focus on information dissemination as a potential catalyst for collective action.

In our setting, a key choice to turn information into learning and action is the delivery channel: via local leaders or straight to the public. As influential local leaders with deep contextual understanding, traditional chiefs could play a crucial mediating role, legitimizing new information and translating technical concepts into language that resonates with their communities. On the other hand, the very authority that positions chiefs as effective intermediaries also gives them opportunities to extract private gains from the resource system that produce environmental harm; this conflict of interest may leave them reluctant to spread information that goes against their vested interest. These trade-offs lead to two research questions. First, in the absence of leader conflicts of interest, does leader-mediated delivery generate community learning and spur collective action? Second, does public dissemination overcome the barriers posed by conflicted leadership? Or does public dissemination only translate learning into collective action when paired with non-conflicted leadership?

To answer these questions, we conducted a cluster randomized controlled trial in 99 ASGM-affected communities in Ghana. The intervention delivered a professionally produced documentary, *Poisoned for Gold*, created by a prominent Ghanaian journalist independent of this study. Communities were randomly assigned to one of three groups: a control group with no screening, T1 leader-only screenings for traditional chiefs, or T2 public community-wide screenings to both chiefs and community members. We pre-registered the stratified treatment randomization by the baseline share of mining households in each community and, importantly, by chiefs' conflicts of interest. Conflicts of interest were measured using household perceptions elicited through a randomized response module and were validated against leaders' own self-reports to carefully worded questions about rent-seeking behavior.

To trace the causal chain from chiefs' efforts in information dissemination and mobilization to learning and collective action, we collected data at multiple levels. On the same day the information was delivered, we convened structured town halls in all 99 communities, modeled after familiar local gatherings known as Durbars. First, to assess chiefs' efforts in information dissemination and mobilization, we documented their speeches and observable actions during the town hall.[3] Second, to measure learning and actual follow-up discussion, we surveyed leaders and community members again three weeks after the town hall. Third, to measure collective action with real stakes, each town hall included secret-ballot votes on prospective mining bylaws to capture local regulation preferences, volunteer sign-ups for regular community meetings to measure time commitments, enrollment in an NGO-moderated WhatsApp group to gauge reliance on external channels, and a group bidding exercise to elicit willingness to contribute financially toward bringing an NGO workshop to the community. These activities were designed not only as measurement tools but also to mirror successful grassroots initiatives in the region. They were intended to be consequential beyond the study: bylaws voted on at the meetings could be carried forward for adoption, and volunteer lists served as the foundation for real collective tasks.

[3] In cases they excused themselves from the town hall and send a delegate from the traditional council to represent them, we record the speeches and actions of the delegate instead.

The documentary produced strong learning effects among chiefs in both the leader-only (T1) and public (T2) screening groups. Using a standardized index of health knowledge on long term health conditions *galamsey* can cause, chiefs in both T1 and T2 communities scored 0.48–0.57 standard deviations higher than those in control communities.

Although chiefs' own learning was similar across arms, the effects on communities differed and depended on whether chiefs had conflicts of interest. Under leader-only screenings (T1), 95 percent of non-conflicted chiefs made an effort to disseminate the information, whereas conflicted chiefs were 39 percentage points less likely to do so. Despite these dissemination efforts, neither type of leader generated improvements in community members' health-risk learning or shifts in bylaw preferences. We also find no effects on follow-up engagement under conflicted leadership; the impact stops at the chief's palace, where the private screening took place. Worst still, non-conflicted chiefs' mobilization efforts during the town hall crowded out community members' participation in follow-up engagements.

When the information was shared publicly with both chiefs and community members (T2), conflicted chiefs were 41 percentage points less likely to attend the town hall themselves, instead sending a delegate — a 60 percent decrease relative to the 68 percent chief attendance rate in control communities. No such pattern is observed among conflicted chiefs in the leader-only treatment (T1), consistent with conflicted leaders seeking to avoid accountability pressures created by public dissemination. Despite this, direct exposure to the public documentary screening increased community learning by 0.50 standard deviations relative to the control group, regardless of leader type.

Turning to collective action, under non-conflicted leadership, public screenings (T2) shifted community preferences toward stricter mining bylaws: the combined vote share for the two most stringent bylaw options, namely banning all mining activities, or banning mining in forest reserves and river bodies as well as amalgam burning near homes, increased by 16.5 percentage points. On follow-up engagements, sign-ups for regular community meetings increased by 0.40 standard deviations. In line with this pattern, the endline survey three weeks later shows more frequent discussions about *galamsey* among community members.

Under conflicted leadership, public screenings (T2) generated comparable levels of follow-up engagements, but polarized mining bylaw preferences without a level shift: the dispersion in bylaw preference increased by about 19 percent relative to control communities, with a 45 percent increase in the share voting for maintaining the status quo and a 47 percent increase in the share voting for the most stringent option of banning all mining activities.

Although the public information treatment (T2) did not generate consensus on mining bylaws under conflicted leadership, it strengthened community demand for accountability from chiefs. In the endline survey, community members were 42 percent less likely to express unconditional respect for their chiefs and 56 percent more likely to state that they should both respect and question their role — echoing the lower town hall attendance of conflicted chiefs during public screenings. We also find that when local leadership is compromised, an informed public redirects collective action efforts toward external channels that substitute for local initiatives, as reflected in a 39 percent increase in enrollment in the NGO-moderated WhatsApp group.

Together, these results suggest that building consensus and mobilizing collective action requires both an informed public and non-conflicted leadership; neither alone is insufficient. Despite the overall positive collective action results under non-conflicted leadership and the increased accountability under conflicted leadership, public screenings also fostered pessimism: respondents reported lower perceived efficacy of collective action and reduced willingness to take collective action, both for themselves and others. We discuss the external validity and policy implications of both the key takeaway and the seemingly paradoxical pessimism result in the conclusion.

We contribute to three strands of literature. First, we add to research on how information influences responses to environmental problems. A large empirical literature has causally identified the effects of information on private adaptation to environmental hazards (Madajewicz et al., 2007; Bennear et al., 2013; Barwick et al., 2024). In contrast, studies examining information and collective action are mostly conceptual or descriptive (Ostrom, 1990; Baland and Platteau, 1996), and the few well-identified studies rely primarily on lab experiments. This paper moves beyond private adaptation and provides field-experimental evidence on how information affects real-world community collective action to address environmental harms.

Second, we contribute to the political economy of leadership. We begin by engaging with studies of leaders in environmental contexts (Jack and Recalde, 2015; Kosfeld and Rustagi, 2015). A closely related paper, Armand et al. (2020), shows in the context of Mozambique's natural gas discovery that when information reaches citizens, it can discipline leaders' rent-seeking and reduce violence, whereas information confined to elites can exacerbate capture. Our paper extend this evidence by explicitly measuring and stratifying treatments by leaders' conflicts of interest, an underexplored source of heterogeneity. Through the lens of our information intervention and a detailed data collection design that captures both the words and actions of leaders, we demonstrate how conflicts of interest shape their responses to interventions. These findings have implications for future programs that engage local leaders — not only for information interventions, but for development strategies more broadly. This contribution is particularly timely given the growing interest in involving traditional chiefs as agents of development (Acemoglu et al., 2014; Henn, 2023; Balán et al., 2022; Basurto et al., 2020). We add to this expanding literature by examining chiefs' roles in collective responses to environmental harms, a policy domain where they play a particularly prominent yet understudied role.

Third, we extend research on video-based information interventions. Most existing studies evaluate impacts on individual outcomes — knowledge, attitudes, and private behavior (Hussam et al., 2022; Banerjee et al., 2019; Riley, 2021). Recent work shows that documentaries can also foster cooperation across group lines (Siddique et al., 2024). Natural experiments from the U.S. and China suggests that environmental documentaries can shift demand for environmental quality (Jacobsen, 2011; Tu et al., 2020). In terms of information content, a survey experiment shows that videos focusing solely on climate impacts fail to raise support for climate policy, while those that also clarify policy mechanisms succeed in doing so (Dechezleprêtre et al., 2025). We build on this literature by embedding a documentary in a field experiment, demonstrating the potential of video-based information interventions to convey complex, long-term environmental risks that are otherwise difficult to communicate, and to test when such information translates into community collective action.