On February 9th, the Geological Survey of India announced it had discovered 5.9 million tons of lithium, a metal in high demand for electric vehicle batteries and other low-carbon energy technologies. Though the findings are preliminary, if borne out, the discovery would put India among the world’s top holders of lithium, with significant implications for India’s own electric vehicle (EV) deployment, environmental management, and energy independence. However, the potential reserves’ location in Jammu and Kashmir state—heavily militarized territory disputed by Pakistan—underscores the security challenges associated with critical mineral wealth. These challenges highlight the urgent need to prepare for the potential negative security repercussions of expanded mining in India and elsewhere, including via improved mining governance, new technologies, reduced lithium demand, and conflict resolution.

ECONOMIC AND ENVIRONMENTAL IMPLICATIONS

The development of lithium resources in Kashmir would have lucrative and disruptive implications that could exacerbate existing security challenges. First, the lithium would be a major economic and resource asset for the Indian government, as global demand for lithium is projected to increase forty-two-fold in a future scenario that meets the Paris Agreement’s climate targets. This boon could help India generate revenue to tackle climate and other challenges or meet its domestic renewable energy and EV goals with cheaper and more independent lithium supplies—if India can develop adequate refining capacity alongside extraction.
Second, however, lithium mining could damage local ecology, populations, and economies. The environmental impacts of extracting lithium of the hard rock variety potentially located in Jammu and Kashmir include excessive freshwater use, deforestation and resulting carbon emissions, and the contamination of water or fertile land with mining byproducts. This is all in an area the World Resources Institute’s Aqueduct rates as Extremely High in physical water stress. Moreover, this economic gift and environmental burden comes at a dangerous time in a dangerous place. Jammu and Kashmir is the Indian-administered portion of the broader Kashmir region, which has been disputed between India and Pakistan since 1947 and is split by a heavily militarized Line of Control under a delicate ceasefire. The territorial dispute has sparked three wars, communal violence, regular border skirmishes, and separatist militancy supported by Pakistan. In 2019, India’s Hindu nationalist central government revoked the semi-autonomous status of the majority Muslim Jammu and Kashmir state, suspending political rights, resorting to internet blackouts, increasing its military presence, and arming local militia proxies.

The extraction of lithium resources centered in Salal in Jammu and Kashmir risks disrupting agricultural livelihoods, displacing residents or contaminating the Chenab River watershed upstream of Pakistan, all of which could exacerbate internal and international flashpoints amid persistent tensions. Sources: Armed Conflict Location and Event Data Project (ACLED), Government of India, ESRI India, UNESCO, CIA World Factbook.
INTERNAL TENSIONS

The introduction of lithium exploration to this mix is poised to increase tension within local communities, and between Jammu and Kashmir residents and New Delhi. Given wider economic and political inequities in Jammu and Kashmir, the mining sector’s checkered human rights record, and lithium mining’s consistent prompting of protests elsewhere, there is reason to expect lithium mining in Jammu and Kashmir to similarly contribute to communal tensions and animosity toward the central government.

Since Jammu and Kashmir’s loss of semi-autonomous status, Indian government policies have contributed to systematic marginalization of Kashmiri Muslims, a pattern that will likely replicate itself in the distribution of costs and benefits from lithium mining. The Indian government has reduced Kashmiri Muslim representation in key local government posts and banking institutions and switched the state’s official language from Urdu to Hindi. Meanwhile, Kashmir’s Muslims report increasingly losing out on mining contracts, government jobs, and other economic opportunities amid an expansion of state residency permits granted to outsiders, which they fear is a prelude to anti-Muslim demographic-engineering in the state. Already, militant groups India claims are Pakistani proxies regularly attack and kill Hindus in Kashmir. Unevenly distributed local mining impacts, or fear thereof, could fuel local violence. While Jammu and Kashmir state is a Muslim majority enclave amid a largely majority Hindu India, Reasi district where the lithium is located is evenly split between Muslims and Hindus, potentially exacerbating religious dimensions to disputes. Among local residents in Salal—the village at the epicenter of the lithium find—the announcement has prompted skepticism that they will benefit from its extraction and worry about how mining could pollute water and land, exacerbate land subsidence, and displace them from their longtime homes and culture.

Indeed, locals’ concerns that they will not see the dividends of destructive lithium mining in their backyards are reasonable. While mining could generate investment and jobs, economic and political barriers may prevent local residents from being the ones to capitalize on them. Meanwhile, mining and its byproducts threaten fertile land, undermining the agriculture sector that underpins roughly 70% of employment in the state. Similarly, while lithium riches could help power India’s ambitious plans to electrify its transportation sector with EV adoption, EVs are nearly unheard of in Jammu and Kashmir compared to more populous, urban, and overwhelmingly Hindu states. That is unlikely to change, with Jammu and Kashmir allocated less than 1% of planned EV chargers under Indian industrial planning. Anecdotally, locals in Salal have expressed a desire to resist government lithium exploitation because its benefits will flow elsewhere in India, partly informed by similarly poor experiences with other infrastructure projects in the area.

The bottom line is that, India’s national benefit from lithium mining at the expense of an already repressed minority population would risk fueling communal tension and local resistance to heavy-handed rule by India’s Hindu nationalist government. This, in turn, could lead the Indian government to strengthen existing repression in the region, fueling ongoing instability.
GEOPOLITICAL RISKS

Wider India-Pakistan tensions could also be inflamed by an economic prize in disputed territory, real and perceived repression of Kashmir’s Pakistan-supported Muslim population, and downstream environmental impacts of lithium mining. 5.9 million tons of lithium are worth roughly $300 billion dollars even at current prices\(^29\)—rivaling Pakistan’s annual GDP\(^30\)—giving Islamabad a financial prize to eye in territory it already thinks it should control. Short of that, it would be a valuable Indian asset that Pakistan could hold at risk for leverage. Meanwhile, real and perceived victimization of India’s Kashmir-based Muslim population from the burdens of mining could fuel popular pressure on Islamabad to confront India, as demonstrated by protests in Pakistan over India’s treatment of the region.\(^31\) Long-active anti-Indian militants in the region could use economic grievances to recruit or could target mining interests, perhaps supported by Pakistan or exploiting safe haven in Taliban-ruled Afghanistan, echoing the incubation of earlier generations of Kashmir militants.\(^32\)

Indeed, last month a Kashmir-based militant group that India considers a Pakistani proxy threatened to attack Indian companies who might extract the lithium deposits, which it called “colonial exploitation and theft of resources.”\(^33\)

Finally, lithium mining’s excessive water use and pollution could disrupt shared management of transboundary water resources. India and Pakistan govern the Indus River and its tributaries via the Indus Waters Treaty,\(^34\) which has successfully brokered peaceful cooperation despite past hostilities. Nevertheless, one of the treaty’s six rivers, the Chenab, flows through the prospective mining area and could be impacted by mining’s water use or pollution, affecting downstream Pakistan. This would add to existing tensions over India’s construction for a new upstream dam on the river, already the subject of tense negotiations over the treaty.\(^35\)\(^36\)

A BROADER CHALLENGE

While there is time to minimize potential security problems from India’s lithium resources, they are emblematic of a global challenge that will become more pressing as the world grows hungrier for lithium and other critical minerals. Just since last year, protests and conflict have broken out in Bolivia,\(^37\) Chile,\(^38\) Portugal,\(^39\) the United States,\(^40\) and Serbia\(^41\) over lithium mining’s impact. Political violence in Peru\(^42\) connected to elites’ hoarding of benefits from copper mining offers another cautionary tale. Such challenges underscore the need for stricter mining governance, technological investment, and lithium demand reduction policies globally, in parallel with bilateral engagement to shape Indian behavior in Kashmir.
SOLUTIONS

A near-term U.S. priority should be working toward a more robust global governance regime for mining lithium and other critical minerals, with more uniform and enforceable standards to minimize local harms and potential security repercussions, in Kashmir or elsewhere. These include standards for community consent, benefits sharing, human rights protection, environmental responsibility, and others that would reduce the most serious mining harms. Voluntary industry consortia like the Responsible Minerals Initiative and third-party verification services like the Institute for Responsible Mining Assurance promote such standards, but they could be given more teeth by government regulations and incentives for mining companies and their industrial customers further down the supply chain. U.S. government programs including the State Department’s Energy Resource Governance Initiative and Minerals Security Partnership and USAID’s mining governance work in producer countries are promising avenues, and could be expanded to shape potential lithium mining in India.

Technological innovation and investment can also reduce potential mining harms. A technique called direct lithium extraction would reduce the environmental impact of lithium extraction from brine, but is nascent and not applicable to hard rock lithium resources like those in India. Recent U.S.-funded breakthroughs in nascent sodium ion batteries that use cheap and abundant sodium rather than lithium also underscore a potential alternative to lithium batteries in some applications. The U.S. Department of Energy’s Earthshot programs, which funds other ambitious clean energy and grid-scale battery technologies, could be one avenue to accelerate such next generation battery technologies.

Even still, the downsides of mining can likely only be managed, not eliminated, meaning that parallel policies to minimize mining expansion and associated security challenges are needed. Domestic policies aimed at reducing demand growth for lithium via less car-dependent cities, smaller and lighter EV batteries, and increased battery recycling would bring benefits for international security. For example, one recent analysis highlights that ambitious battery recycling, battery size restrictions, and alternative transit policies could reduce lithium demand from a decarbonizing U.S. transportation sector by up to 74 percent. In this way, metropolitan public transit initiatives can contribute to reduction in conflict risks around global critical minerals extraction, like those in Kashmir.

Turning back to India, the time and technology transfer needed to commercialize Kashmir’s lithium resources offer a window for such policies to shape extraction in a less destabilizing direction. Though India is seeking to auction the lithium resources quickly, the discovery is still relatively preliminary, at the second of four stages of exploration. There are years of likely work to precisely determine the minerals’ quality and location and acquire necessary mining and refining technology before production would begin in earnest. Although U.S. policymakers probably welcome an India that is more energy independent from China, they should push New Delhi to adopt best practices in community involvement, compensation, and mining techniques, including via the ERGI or MSP or private bilateral engagement. India’s need for mining and refining technology to exploit its lithium reserves—an area where Australia has expertise—may provide the U.S. and allies influence.
Though politically difficult under a Hindu nationalist government, such engagement should also push New Delhi to relieve the political repression in Kashmir that contributes to the underlying conflict risk.

CONCLUSION

India’s plans for lithium extraction in Jammu and Kashmir are a clear example of the potential security risks that must be managed during the necessary transition to a minerals-intensive low-carbon energy system, but they are just one example. As the world intensifies and expands minerals mining to meet growing demand, conflicts over the local damage and the economic benefits are likely to increasingly follow. Avoiding harmful consequences for human, national, and global security will require not only case-by-case conflict prevention, but a broader push to improve mining governance and minimize demand worldwide.

ABOUT THE AUTHOR

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