A Report to the Public and A Warning
to the Businesses and Authorities of Indonesian
Mineral and Energy Mining

The Archipelago
At the Edge
of Drill Bit Threat

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the Mount Geureudong, Mount Talang, Padarincang,
Sano Nggoang Lake to Papuan Bird's Head Peninsula
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The Nine Critical Warnings from Sorik Marapi Mine Site

- The massive global financial investment on the geothermal-mining industry in Indonesian archipelago spells bad news for the Indonesian people and is dangerous for current and future generations of islanders.

- What is new and renewable regarding the electricity generated from geothermal mining is actually the escalation of disaster risks from all stages of its operation. Is there any good for human and nature if geothermal mining to generate electricity also generates new and ongoing sources of disaster? Geothermal mining is being exaggerated as a low-carbon mitigation which is considered as a solution to replace fossil fuels, the main source of global warming. But the low carbon emissions of the geothermal mining industry come at the expense of not only people, but also of forests, waterscapes and the complete ecological infrastructure of island life, all of which are far more harmful than the magnitude of its carbon emissions.
• Human and nature's security are completely ignored in the design and product of political provisions, legal instruments, and national standards that contain a classification of geothermal-mining investment prospects based solely on electricity production potential, without any criteria for human safety and landscape ecological integrity. Today, the investment regulatory framework and industrial operation control for geothermal mining industry investors, as well as financial investors, explicitly transfers all risks of mining/generation operations, from operating companies and investors as well as state offices, to residents in their common living space, which the state gave away as company concession asset.

• The geothermal industry belongs with mining. State administrators as well as the people of the Indonesian archipelago have to declare and treat legally and politically that the geothermal industry is a mining industry with all its destructive power, including the exploitation of natural landscapes and waterscapes, the poisoning of humans and non-humans, and the forced occupation of people's living space.

• The Law Number 21 of 2014 concerning Geothermal, which excludes the geothermal mining industry from the mining industry category, to grab two-thirds of geothermal mining targets in forest areas into industrial investment land, is misleading and is a violation of the mandate and responsibility of the publicly funded offices to protect the integrity of nature, as well as an organized sabotage to the sustainability of peoples' life across the Indonesian archipelago.

• The current political reality is that the government's business, in the name of the public interest, officially treats what on paper is called a public administration region including the embedded terrestrial and marine ecological infrastructure that should be protected- as a money-generating area or a prospect for one.

• The well-being of the Indonesian people and the integrity of the archipelago's terrestrial and marine living spaces are of strategic import. It must not be surrendered to or sacrificed for the interests of expanding the geothermal and electric-battery mineral mining. While such a mischievous endeavour has been compromising both conditions, these industries are heavily protected, mislabeled as "strategic projects to serve the national interest" and weaponised by criminalisation or violence for those who disagree.
• The evident impacts on the life safety, human health, vegetation and animals, from all stages of geothermal mining operations for electricity generation—both those that are easily tangible and those that require in-depth research to identify, should not be blamed on the induced natural phenomena, get converted into monetary or economic values, and redeemed by financial compensation mechanisms. An example would be the offsetting of carbon emissions into the air from dirty-industrial companies through trading in carbon's monetary value from carbon-dense islands and waters.

• Protecting the homeland from aggression, occupation and operation of the geothermal-mining industry is the most important and an irreplaceable part of all efforts to sustain the fulfilment of these two safety requirements.
1. Aggression of the Geothermal Mining Industry: An Introduction

Sorik Marapi has uncovered the story of the downplayed risk of catastrophe from the investment and operation of the geothermal-mining industry, which belongs with the industries extracting energy-containing resources from the Earth such as fossil oil, gas and coal. The track record of the Sorik Marapi project also provides clues to the intricacies of geothermal mining investment in the Indonesian archipelago, of things hidden from the public eyes as well as those taking place on the ground.

What has not been reported to citizens? Among other things, the wickedness of language politics behind the 2014 Geothermal Law, the risk-shifting tactics for the failure of industrial operations behind the industrial standards and rules for facilitating investment, occupation, conversion of lifespace into geothermal mining areas; investment financing and guarantee transactions, and lest forget about the readiness of state-violence operation to force people to bear all consequences of industrial operations.

From the viewpoint of the people in the extraction areas, the sequences of geothermal mining and power generation operations are aggressive and sustained. The disruption or terrors of people’s daily life begin with the encroachment of subsistence land-production since the investigation of the of heat sources...
behavior in the depths of the earth; the extraction and pollution of waterscapes; heat and noise pollution from the deployment of dismantling and well-digging machines; the assembly of giant fluid-flowing pipes; cooling wheels and giant power-generating wheels; and the installation of a tangle of transmission and distribution cables.

The history of the sacrifices of the Sorik Marapi residents is inseparable from similar dramas in nearly three hundred geothermal mining targets across the Indonesian archipelago, from the Mount Geureudong project proposed on the tip of Sumatra Island, to the target areas of Manokwari, Bird's Head- West Papua. Until now, hasn't the political line of state officials in defense of transferring the risks of geothermal mining industry operations to island residents and ecological infrastructure, undermined the promise of social and ecological benefits from this giant business? Behind the slogans of clean and low-carbon energy, the "transition of the energy industry's footprint- from 100% dirty to a dirty-clean hodgepodge", from "old to new", from "once exhausted to inexhaustible", the geothermal fever in Indonesia is a great portrait of the loss of reference to public rationality.

The current deluge of global financial investment in the geothermal extraction in Indonesia is a way out of the fiscal and governance crisis for the state-managers of the former colony and its former colonizers. Lest we forget, the power generation from heat extraction is a tactic used by the fossil energy industry to overcome its own crisis, including falling profit levels from shrinking stocks of "old" and "non-renewable" energy sources.

The requirements for extractivism of the accelerated expansion of geothermal power consumption and the technical advances that encourages it- are not mitigation or reduction. It is an escalation of disaster risk for all citizens of Indonesia's islands and its waters. More than anything else, the entire chain of the business operations of electricity generation by geothermal mining including the production process of regulatory instruments as an essential commodity for this dangerous industry, demands the willingness of the people to be deprived of their independence; deprived of their rights; willingness to sacrifice their hereditary livelihoods, their homes-lives, getting injured, and even losing their lives.
2. Sorik Marapi: A Long Way of Nurturing An Organized Disaster

The End of Tranquility. Similar to the role of "the intrusion of external disrupting element" in the proliferation of the cancerous network in the human body, there are times when disasters in the hereditary life of a people group do not arise and grow "on their own", but are the inevitable result of organized acts of dispossessing, dismantling and extracting to reap material benefits out of the Earth. That is the case with the story of life around the Sorik Marapi volcano in northern Sumatra. The warmth of the montane forest huta (hamlets) behind place names, meshes of settlement and outdoor playgrounds as well as the peasantry life that has grown with the volcanic activities of the mountain for hundreds of years, is now inching towards its end.

An urgent warning from the Center for Volcanology and Geological Hazard Mitigation in early October, about the potential phreatic eruption of Mount Sorik Marapi in the historic village of Sibanggor Julu, sounded like a caricature in the face of disasters, which have even transformed the lives of the mountain dwellers over the past few years, unprecedented in the volcano's social and ecological history. The series of ordeals began with a burst of H2S gas from PT Sorik Marapi Geothermal Power's drilling well on Monday, 25 January 2021, which killed five women from Sibanggor Julu. Two of them are Suratmi (46) and her daughter Sahrani (15) who were mending their crops. The others are Kayla and Yusniar, only five and two years of age, got killed when their respective mothers left them in the sopo-saba (hut), while their mother was farming on the community field, which the villagers later referred to as the "field of death".
Although it has been almost two years since the SMGP project operation killed five residents of Sibanggor Julu village on 25 January 2021, at this report writing, the children in the village still tremble when they hear the announcements of operations at the drilled well location. The traumatic experiences of living with PT SMGP mining operations for residents of villages targeted by PT SMGP drilling, occurred repeatedly. At least after the first incident, there have been five more occurrences when the company failed to control its own operations until the end of September 2022. The invasion of the mining operation attacks not only humans. Residents also recounted the death of fish in ponds and wild animals.

Serenity and beauty, the inspiration for bedtime stories in palm-roofed sleeping quarter, the Mandailing folk rhythms and dances, have now been replaced by the swish of drills and the hum of turbines at the SMGP project operated by KS Orka, a subsidiary of the gigantic corporation, the Chinese Kaishan Compressor. How Sorik Marapi gets told today has been dominated by the descriptions of industry spokespersons, the geology, geophysics and geochemistry scientific authorities, the project financing firms, and the rulers of mining and energy politics.
The H2S gas leak at PT SMGP (27 September 2022) caused dozens of residents fainting and hospitalized.

Losses, suffering, and deaths of community members within the PT SMGP operational area is a system failure of the Sorik Marapi geothermal power plant.

How did the company and the government treat the catastrophe at the SMGP project site?

The statements of ministry officials, who took turn visiting the project site and were quoted by the media sounded strange. It is as if the ministry’s office is a support facility for the company’s operations.

The repeated promises from PT SMGP, such as "we will always follow the SOP", since the first fatal accident up till today have been contradicted by the recurring similar failures. In each accident, PT SMGP had never failed to inform the publics that all systems are in good condition. “The technical work that we carried out could remotely encouraged gas release, [the company] ensured there was no H2S gas leakage from the test well,¹ etc.

The geothermal mining industry’s operation at Sorik Marapi indicates that, claims of decades of experience from the joint-venture operator PT SMGP; advances in heat-extraction and power generation techniques; standing rules and procedures, cannot guarantee the safety of the people. The failure to conduct a safe geothermal mining operations since the plant started generating electricity up till today reveals not only the incompetence of PT SMGP in controlling its own operations, but also the very limited capabilities of geothermal mining techniques in the face of Nature's behaviour.
Throughout the month of September 2022, a series of H2S poisoning incidents reoccurred. On the night of September 16, nine residents of Sibanggor Julu were poisoned by the gas, vomiting and fainting, and had to be hospitalized. This was the fifth incident in the history of Sorik Marapi geothermal power plant operations. Two weeks later, on September 28, the plant produced its sixth failure. The plant emitted a gas bursts, and about 79 residents were poisoned by gas and had to be hospitalized.

How did the company, the State Electricity Company and the Ministry of Energy and Mineral Resources react? Just five days later, PT SMGP carried out the unit 3 power production testing.

With the completion of the test, Sorik Marapi plant was deemed to have "met the operational requirements" to announce the commercial operation date (COD) of unit 3 of the power plant. On 7 October, SMGP COO CTO Riza Pasikki briefed the media that, the successful URC test proved the overall reliability of the Sorik Marapi plant system. This success is also "in line with efforts to maximize geothermal potential in a safe and sustainable system,... in the energy transition to realize Net Zero Emission by 2060". There is no sense of apprehension in the statement celebrating the "success" that brought additional real income to PT SMGP from the operation of the Sorik Marapi geothermal plant.

Keeping Secret What Should Have Been Announced, Promises and Riddles

Being aware of the ability of residents to organize themselves as in the massive protests in 2014, since the exposure of the chaos of Sorik Marapi project operations in early 2021 until last week, the regional government officials or the entourage of ministry officials from Jakarta often told the media that "the situation remains conducive". Conducive means good for project operations, where the disturbed or victimised residents do not
protest openly. Even when the mudflow and hot gas were still ongoing and terrorizing villagers (May 1, 2022), the local police chief took the time to threaten, "no one should even think of looting, instigating riots and mobilising protest rally".⁵

Under these "conducive" circumstances, geothermal extraction and generation could continue uninterrupted. Even the Ministry of Energy and Mineral Resources- the most responsible office, played a major role, in always hastily allowing PT SMGP to resume operation, not because PT SMGP's internal investigations succeeded in formulating the ways to prevent a recurrence of the disaster. In the 25 January 2021 case, the ministry's permission came after the regional management bureaucracy (regional leadership communication forum) approved the plant to resume operation.⁶ It is not entirely impossible that the serial disasters in Sorik Marapi will continue to recur, victims will continue to fall, when political support for PT SMGP substitutes the process of accountability and the submission of regular reports to the people, especially to the residents of Mount Sorik Marapi who got their lives disrupted and are forced to keep their mouth shut.

The most important point about the Sorik Marapi geothermal power plant is that the rules, regulations, legal footings regarding power generation from geothermal, mining, as well as business process of its regulator, i.e., the Ministry of Energy and Mineral Resources, as well as the binding PPA (purchasing power agreement) between the GPP operator and the PLN, have been treating the human and non-human casualties as "unexpected" disaster, blaming them on the uniqueness of the weather or wind direction at the time of the incident, or the "negligence of the operating company crew", rather than representing the failure of the power generation and geothermal mining industry or the intrinsic limitations of earth engineering technology, which arrogantly temper with the Earth's behavior that cannot be fully mapped, let alone get controlled.⁷
# A Trajectory of Events in the Sorik Marapi Geothermal Mining

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
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<tbody>
<tr>
<td>2007</td>
<td>Investigation of the geothermal area of Sampuraga.</td>
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<tr>
<td>30 Dec 2008</td>
<td>Sorik Marapi geothermal area is designated as WKP.</td>
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<tr>
<td>2010</td>
<td>PT SMGP obtained the Geothermal Business License (IUP). PT SMGP will conduct environmental studies for geothermal activity licenses, namely AMDAL and UKL/UPL, for activities that do not have a significant impact on the environment and social conditions.</td>
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<tr>
<td>3 Feb 2011</td>
<td>The Sorik Marapi geothermal project will be able to supply 500,000 homes and industries without pollution. As of April 2022, it turned out that there were 10 villages in Mandailing Natal district remains without electricity.</td>
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<td>11 Nov 2014</td>
<td>Residents of five sub-districts held a large protest against the company. One person got killed, dozens were taken to into police custody. On May 26, 2022, Mukhlis, a resident of Sibanggor Julu Village, said that since the Sorik Marapi geothermal power plant project began, almost all the people around the geothermal concession site refused the project.</td>
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<tr>
<td>2005 - 2014</td>
<td>In 2005, SK 44/Menhut-II/2005 was issued concerning the Designation of Forest Areas in the North Sumatra Province, covering an area of ± 3,742,120 Ha. In 2014, Decree 579/Menhut-II/2014 was issued regarding the Forest Area of North Sumatra Province with an area of ± 3,055,795 Ha. (There was a reduction of 686,000 hectares, the reasons and confirmation were unclear.) In the same year, Law No.21/2014 was passed by the House of Representatives.</td>
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<tr>
<td>Apr 2015</td>
<td>PT SMGP pocketed the initial license of WKP (geothermal working area) covering an area of 62,900 Ha, referring to the provisions of Law No.21/2014.</td>
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<tr>
<td>25 Jan 2021</td>
<td>The first incident. Well T-1 (SM T02) spouted gas. 5 got killed, 20 are poisoned and got hospitalized.</td>
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<tr>
<td>26 Feb 2021</td>
<td>The Ministry of Energy and Mineral Resources allowed PT SMGP to resume operations.</td>
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<tr>
<td>9 Feb 2022</td>
<td>Second incident. Residents were poisoned by gas and had to be hospitalized.</td>
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<tr>
<td>7 Marc 2022</td>
<td>The third incident. Burst from well T-12. 58 residents were poisoned and had to be hospitalized.</td>
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<tr>
<td>24 Apr 2022</td>
<td>Fourth incident. Hot mud and pungent gas gushed into the air as high as 30 meters at the geothermal drilling site owned by PT SMGP. 21 people were poisoned and had to be treated at Panyabungan Regional Hospital.</td>
</tr>
</tbody>
</table>
The funeral process of the gas leak victim. Five people died and 23 others were hospitalized. The accident is now said to be investigated by cops and a team from the Ministry of Energy and Mineral Resources (ESDM). Photo: Samman Siahaan/METRO TANAGSEL.

PT SMGP carried out an AMDAL public consultation, to increase output from 165 MW to 240 MW, including a plan to open a wellpad in PT SMGP’s working area. Potentially affected villages include Huta Baringin Village, Hutanamale Village, Sibangor Julu Village (Puncak Sorik Marapi District), and Hayuraja Village, Huta Julu Village (South Panyabungan District).¹⁷

The fifth incident. On the Evening at 19:30 pm. Sibanggor Julu. 9 residents were poisoned by gas, vomiting and fainting, and had to be hospitalized.

Sixth incident. 79 residents were poisoned by gas from PT SMGP and had to be hospitalized.¹⁸

SMGP successfully conducted Unit Capacity Rate (URC) testing of Unit 3 with a capacity of 50 MW. With the completion of the URC testing, Sorik Marapi Geothermal had officially met the operational requirements and reached the important stage of Unit 3 Commercial Operation Date (COD). SMGP CTO Riza Pasikki: the success of URC testing also proves the reliability of the entire Sorik Marapi geothermal system. This achievement is a clear proof of KS Orka Group’s commitment in supporting the government’s program in energy transition to achieve Net Zero Emission by 2060.¹⁹
Hazard as a Source of Wealth

The map of geothermal mine distribution and potential above provides a warning that the precarious situation that haunts the future of life in Sorik Marapi is by no means an exception, anomaly, or special case that is unlikely to occur in other geothermal mine sites. The too-short life span of little girls Kayla Zahra and Yusniar in the "field of death" of Sibanggor Julu, is a red-light signal for hundreds of villages across the archipelago, which have suddenly been unilaterally decided by the trading partnerships of state administrators and the mining industry to be targeted by drills and power plants.

To generate electricity, wells drilled thousands of meters deep bring heat-carrying fluids to the surface to run turbines. The geothermal-mining industry, as the name suggests, depends for its real-income on how high the temperature of the fluid at the bottom of the reservoir is, and the accuracy of the geothermal field modeling, that determines whether the amount of electricity and money generated from the heat source, is profitable enough to mine. In general, heat sources are symptoms and activities of
volcanism and/or tectonics of the Earth's crust. It is no coincidence that the covert and overt campaigns of the global energy and mining industries, along with their political-lobby and consultancy players, are concentrating their political guerrilla work to ignite heat sources in the Indonesian archipelago as part of the active zone of the Earth's "Ring of Fire".

As a consequence, the growth potential in the economic value of the geothermal-mining industry is also intertwined with the embedded risk from the dynamics of volcanism and/or tectonic activities in geothermal fields, the very target of the financial/investment financing industry as well as the global energy corporate networks, especially oil and fossil gas mining companies, which are quick to seize the new opportunity. In other words, regarding the critical risks for all forms of life in the hot-spot hunting zone, the geothermal mining and power generation industry can hardly avoid the paradox of "where there is a risk of volcanic and/or tectonic disaster, that is where we have to thrust our drill bits". The graphic presentation on the side shows the overlap of three giant forces: the 19 Sumatran fault segments, the chain of volcanic phenomena from Weh island to the southeastern tip of the island, and the concession asset parcels and operating fields of geothermal power plant-mine investments. All three are co-influencing the course of life on the main island and the western and eastern chains of islands.

The lessons from many countries suggest that geothermal mining operations can even affect the dynamics of tectonic and volcanic processes, including the generation of induced seismicity.

In the face of accumulated critical knowledge from within the industry itself, Indonesia’s mining and energy management authorities decided to play havoc with giant swathes of geothermal mining areas, right on the path of Sumatra's great fault and the chain of volcanoes along the Bukit Barisan mountain range. While the understanding of the
complex nature of the Earth's crust is essential, including in predicting the likelihood of major disasters from volcanic and tectonic processes and activities, the same system of knowledge and mathematical modeling has also enabled a revolution in industrial capital based on the global extraction of oil and gas. It must be said that, aside from the state offices and other political institutions as producers of rules in rent transactions with extractive industries, the authorities of the earth sciences, especially Geology, Geophysics and Geochemistry in the ivory towers of high schools in the big cities of the archipelago, as well as extractive industry technicians, have played a vital role in the "geothermal rush" that is now afflicting the lives of ordinary people living in the Indonesian archipelago.

The picture above also shows that the rather poor imagination that the threat to Andalas or Sumatra is only coal, ignores the two sides of productive power and escalating disaster risk that are being sown by the geothermal extraction-based energy industry. Firstly, in the face of the crisis of the dependence on fossil oil and gas sources and coal, the energy industry is migrating to the next hunting ground: the extraction of non-fossil energy sources. Sumatra and the volcanic island chain to the end of the Banda Arc, is one of the most important fields of geothermal extraction due to the intensity of tectonic and volcanic phenomena, in there.

Secondly, the expansion of energy consumption, especially electricity, is determined not by local needs, but is triggered by the acceleration of extraction and the feasible integration of electricity supply grids on an inter-island and Southeast Asian scale. Geothermal extraction areas such as Mount Sorik Marapi are "tasked" with bearing the social and ecological risks of energy consumption modes elsewhere, part and parcel of the production and reproduction circuits of an industrial-urbanism mode of life, which sucks energy and materials from without and which has the unsatiable desire to expand its energy consumption.
The serial failure of the Sorik Marapi geothermal power plant highlights the indispensability of the precautionary principle in the act of changing landscapes, especially for industries that operate by manipulating subsurface layers to a depth of thousands of meters, in volcanic and/or tectonic regions. In simple word, the application of the precautionary principle in industrial/organized operations should be as follows: "if there is no certainty or doubt about the danger, don’t do it”.

Industry regulators are responsible not only for mobilizing and regulating the flow of capital investment to increase non-tax revenues. Regulatory offices, their heads and crew, can be held accountable for ensuring that industry operators to adhere to the precautionary principle. For the industry of electricity generation from geothermal mines, the assurance of safe operations from the implementation of SOPs, as well as the standing operating procedures for project-scale operations, while indispensable, depends on how rigorous the SOPs are in implementing the precautionary principle based on the accumulated empirical knowledge of the worst things that can be
triggered by the entire chain of mining and power generating operations throughout their operating life-time. If we decide to believe the statement from the Ministry of Energy and Mineral Resources that, the regulator's SOPs have been implemented, and the repeated statements from PT SMGP that "we have implemented the SOPs" or "there is no gas leak" in every case, we can conclude that it is the SOPs of both parties that are problematic.

We cannot be assured whether the Sorik Marapi geothermal-mine disaster will not be recurring, if the worst that had happened or is happening get treated as anecdotal information, random incidents, and are not subject to independent, thorough examination, by research entities that are free from conflicts of interest, or if such an investigation were carried out quietly without being reported to the people who are burdened with the risks. It noteworthy that cases of death and severe poisoning by similar causes have occurred at several other geothermal mine sites, both in Indonesia and in power plant geothermal mines in various countries.

The monitoring of H2S concentrations from geothermal plants around the city of Reykjavik, Iceland between 2007 and 2009, for example, concluded that H2S emissions around Reykjavik surged with the increase in power production there.²⁰ A research report published last year from Tuscany, Italy, that described serious connections up to death risk, of the long-term exposure to H2S in Tuscany and Iceland with cardiovascular disease and Asthma.²¹ The study on the impact of H2S exposure from 34 mine-thermal power plants in Tuscany between 2011 and 2017, for example, considered a 3000m radius for its sampling.²²
Let us compare this with the case of PT SMGP’s safety standards (SOP), when the first incident of mass H2S poisoning around the Sorik Marapi project borehole in 2021, which mentioned 300m as the safe distance radius. In the fifth incident on September 16, 2022 when eight villagers were severely poisoned, survivor witnesses mentioned that the distance between the victims’ location and well T-11 was around 300m. The graphical presentation above shows a static approximation of 1,000m and 3,000m radius from well pad T, the culprit in the 25 January 2021 disaster. The long-term risk to the health of the inhabitants around the well pad, which spans a much wider area and more villages, is impossible to ignore.

The lethal dangers and long-term health effects of toxic gases exposed to humans, especially H₂S at geothermal mining sites, must urgently, albeit a bit too late, be one of the top research priorities, to re-evaluate the all-out support of the various state administrators’ offices for the expansion of geothermal mining operations in Indonesia.

The calamities triggered by geothermal mining operations also include those that are not broadcasted by television channels, uploaded to YouTube, or reported by independent media, industry’s media or the media of the industry regulator. The absence of dramatic catastrophes such as that at Mataloko does not mean that the environs in the geothermal power plant- mine area are fine. The water consumption of a binary-type plant for operation only -- to compensate for the loss of geofluid during operation, for example, is 5.13 liters for every kWh generated. We can imagine for large-scale plants of tens to hundreds of megawatts, the amount of water required from the local waterscape, and the long-term consequences for surrounding agriculture or food-producing areas.

Some of the problems that can be triggered by geothermal-mining operations are: hot fluid spouts in the protected forest of Rimbo Panti; widespread fluid spouts outside the pipes of the geothermal-mining installation at the Mataloko geothermal power plant project; the drop in the water level of the Tiwu Ata Bupu crater, one of the craters of the tri-colored lake Kelimutu, allegedly caused by the operation of the Sokoria geothermal-mine, a concession of PT Sokoria Geothermal Indonesia, a subsidiary of Kaishan, similar to PT Sorik Marapi Geothermal Power, the damage to people's crops/farms (e.g. rice not filling, cocoa fruit rotting on the trunk, perennial crops that are the mainstay of the population produce much less fruits) around the installation of geothermal mining power plants, as happened in Mataloko, Sarulla, and Ulumbu, as well as the pollution of shallow wells, the vital source of drinking water for residents in the Dieng geothermal power plant area.

Such diverse problems above, even though they may involve a very vast area affected by geothermal mining operations, are relatively limited in spatial scale, and it is possible to detect them continuously. The more complicated catastrophic risk generated by large-
scale geothermal power plant-mine operations is the phenomenon of induced seismicity. Induced seismicity has occurred at many geothermal power plant-mine projects around the world, is well documented, and has led to increased public demand for tightened conditions for the expansion of the large-scale thermal power plant-mine industry.²⁷ In the most high-profile cases, where the induced seismicity reached more than low-scale tremors and are therefore impossible to underestimate, regulators in those countries have stopped the mining operations, froze generation projects or putting off investment. In more than one cases, the investor decided to suspend operations altogether, as the cost of insurance claims was too high for the company to bear.²⁸ Earthquake triggered by geothermal mining operations can occur not only in stimulated mine-generation (EGS) projects, but also in projects using conventional geothermal mining technology.

At Geysers, USA, induced seismicity from geothermal extraction in the steam-dominated geothermal field has been documented since 1975. In the mid-1980s, in 1997 and 2003 operators increased the volume of large-scale water injections into deep wells from the wastewater of towns surrounding the mine plant, making it qualified as an EGS system. Every year thousands of >M1.5 earthquakes occur, in addition to the much less frequent (less than once a year) earthquakes of >M4.0 magnitude²⁹ In the Philippines, mining-generation operations at the Palinpinon I project (1983-1986) have caused small-scale (M<2.5) earthquake surges with high frequency (up to 100x per day), which have been shown to be positively correlated with changes in water injection rates and production.³⁰

In Basel, Switzerland, a series of earthquakes triggered by geothermal mining operations in 2006 and 2007 led to the entire project being halted in 2009. That same year a quake occurred at a geothermal mine project in the small town of Landau in der Pfalz, Germany.³¹ A similar problem occurred at a geothermal mine in the town of St. Galen in 2013. In both cases of induced seismicity triggered by geothermal mines in Switzerland, the Swiss Seismological Service (SED) conducted an open investigation, in addition to regularly organizing learning events for the general public and various institutions, in order to make the seismic risks of geothermal mining operations get comprehended by as many parties as possible.³² The SED, which is fully funded by public money, is responsible for monitoring and examining induced seismicity phenomenon and communicating them to the public. It operates under the principles of independence (from industry interests and government politics) and transparency, to report/transmit to the peoples everything that is important for them to know, especially industry- induced seismicity.³³,³⁴

It is astonishing that, in Indonesia, the industry regulator decided to push ahead with giant investments along Sumatra's precarious corridor as shown in the map of overlapping geothermal working areas with Sumatra’s major fault lines and manifestations of volcanic phenomena on the same pathway.³⁵ Have the offices under the ministry of energy and
mineral resources or relevant research institutions, conducted the research on the non-negligible possibility of catastrophic risks due to induced seismicity for the Sumatran tectonic-volcanic belt, as well as the risks of landscape changes other than seismicity, which could be used as a basis for considering the issuance of massive concession on the site? Every Indonesian citizen has the right to ask, has the possibility of induced seismicity at geothermal mining sites across the island of Sumatra ever become the top research priority of the most responsible scientific authorities? Since the giant power generation geothermal mining projects in Sumatra became operational, is there any research from the offices responsible for seismicity in Indonesia examining whether the recurring earthquakes on various scales are related to or triggered by activities at these power generation geothermal mining projects? To date, any critical questions about geothermal mining investments, especially if they are raised by ordinary people, peasants in the areas where the projects are or will be located, are always rebuked by scientific authority spokespersons, industry spokespersons or regulators, and dismissed as "lack of knowledge", "due to outside instigation" and the like.

What is more questionable is that, the Sumatra island is not the only one that gets treated like an empty island, uninhabited, lifeless, by the Ministry of Energy and Mineral Resources, the Ministry of Finance including its financial investment set up, the World Bank and other international financial institutions, along with their lobbying and social-marketing networks. Who and which office, can provide the people with comprehensive information and held accountable at any time for political stances, investment terms, classification of geothermal-mining potential across the archipelago, subsidies and mobilization of public funds to stimulate interest from potential investors with exploratory drilling?
4. Extractivism as the Financial Backbone of the State Office: A Swap of Fiscal Patronage with Concession, Investment Facilities, Subsidies and Protection

On 14 January 2021, a week before Dahni, Suratmi, and their daughters, Kaila and Yusniar, got killed in the death-field at the vicinity of PT SMGP's geothermal mine in Sorik Marapi, a spokesperson for the Ministry of Energy and Mineral Resources told the media that in the year 2020, investors invested IDR 10.7 Trillion in geothermal mining. The 2021 non-tax state revenue (PNBP) target from geothermal mining investors is IDR 1.44 Trillion.³⁶,³⁷

On 14 September 2022, two days before PT SMGP's operation and geothermal extraction techniques for the fifth time disrupted the peoples' calm, injured eight villagers in the vicinity of a borehole at the Sorik Marapi project,³⁸ the chair of the organizing committee of the Indonesia International Geothermal Convention and Exhibition, Riza Pasikki, who is also the operating chief technical officer of KS Orka, operator of the Sorik Marapi geothermal-mine, stated at the opening of the event, that "[geothermal] has been proven to provide a multiplier effect for the welfare of the people. There is no reason to delay the utilization of geothermal in Indonesia."³⁹

The two statements on "revenue targets", "multiplier effect" or "people's welfare" above reveal the quid pro quo or swap involving the state administrator and investors. The first statement (January 2021) implied pride in money measure, while the second (September 2022) sounded anxious and defensive, accompanied by florid words.

During the three decades of Soeharto's presidency, state administrator has been the advocate of extractivism. Rent maximization was carried out through the designation of state territory into extractive industry concessions. The politics of industrialization during this period relied on short-sightedness or myopia about the ecological consequences
of the choice of primary energy sources - oil, gas and coal. Under the same regime, "industrialization" was not only a matter of enlarging investment and goods-producing operations with the deployment of labourers and machines in factories, but also the extraction of fossil oil, gas and coal. Equally important is the enlargement of monetary value from dismantling the islands' ecological infrastructure, especially their forests and vital waterscapes, for the extraction of timber from tropical forests, biomass from industrial farms, and various industrial minerals.

The question is, why is the "geothermal rush" only emerging now, not some time during the previous decades? Do all the preferential services for investors in geothermal power plants today demonstrate the evidence of state managers' political awareness of the earth-scale ecological crisis, including the earth's temperature warming as well as the climate change that they encourage? Is the shift in the target of fiscal sponsorship from oil gas and coal extraction to geothermal reflecting a political choice to defend the wellbeing of life on Earth, or is it actually an opportunistic response to the crisis that the oil, gas and coal industry itself engendered?

The current flurry of marketing campaigns about the potential of geothermal is apt to compare to the same story for the oil and fossil gas mining industries in the 1970s: both were hailed as sources of revenue for state offices, both were vaunted as the backbone of "energy security", because of their abundant stocks. Industry propaganda about the potential "savings" in greenhouse-gas emissions from geothermal mining, calculated from how many megawatts of electricity have been generated without coal, seems to forget that geothermal mining drilling has been officially legalized to operate in any islands' forests, and that the worst for any lives around the boring-wells had happened and may likely to continue.

Similar to the coal industry, the fossil oil and gas mining, which on paper will still take place, albeit now a burden on public finance, is no longer a dependable fiscal sponsor. Extraction continues to fall from 1.66 million barrels per day (bpd) in 1991, to 1.1 million bpd in 2003 – when Indonesia started becoming a net importer of fossil oil, then 975 thousand bpd in 2013, to 820 thousand bpd in 2014. While fossil oil extraction rates continue to fall, consumption has consistently risen, from 1.1 million bpd in 2003 to almost 1.6 million bpd in 2012⁴¹,⁴²

From the perspective of the industry and investors, the main question is whether there is legal certainty and investment guarantees, including the ease of financing and/or operational support for the exploration phase of geothermal mining?

In 2003 the Law No. 27 of 2003 on geothermal got enacted. Within a year, the geothermal areas worth mining, those ready to be developed and those proceeded with exploration
stage, were announced. It took more than 10 years to prepare the geothermal market for investors, with one of the most important “achievements” being the formulation and swift passage of Law No.21 of 2014 replacing Law 27 of 2003. What's the rub? Up to 2013, the exploration and exploitation of geothermal energy were still hampered by the licensing procedure of the Ministry of Forestry and the Ministry of Environment, due to the presence of word and term ‘mining’ in Law 27/2003. The Chairman of the Geothermal Association admitted in 2013, that "to be sure, geothermal developers will need forests. Seventy per cent of such an energy source is located in conservation and protection forests."43

The issuance of Law No.21/2014 was the response of the state administrator to the pressures of the geothermal mining and finance industries. Three years later, the Ministry of Environment and Forestry went a step further by issuing the Minister of Environment and Forestry Regulation No.46/2016 on the "Utilization of Geothermal Environmental Services in National Parks, Botanical Forest Parks, and Nature Tourism Parks", preceded by securing its legal footing, namely, the issuance of the Government Regulation No. 108/2015 on Amendments to Government Regulation 28/2011 on the Management of Nature Reserve Areas and Nature Conservation Areas.44

As to the finance and project financing facilities, it is not only the global financial capital powerhouses and equity-capital firms that play an important role. The Office of the Ministry of Finance, in a joint venture with the World Bank and the Asian Development Bank, have established a company, PT SMI, which, by getting the certification to issue "green" bonds, has been playing a major role in mobilizing and channeling gigantic funds from the global portfolio/financial investment banks to accelerate investment in geothermal power plants in Indonesia, in the name of "green economy". One of the most important supports, for example, is the issuance of the Minister of Finance's regulation, PMK number 62 of 2017, on the Management of Geothermal Sector Infrastructure Financing Funds in the Company (persero) PT Sarana Multi Infrastruktur.45

In the same year, the Ministry of Energy and Mineral Resources issued Ministerial Decree No. 2268 K/30/MEM/2017, designating "Flores Island as a Geothermal Island".46

With a single signature, the industry regulator converted a network of historic social-ecological entities into a complex of geothermal commodity stocks in dozens of mine-ready locations across the island –with neither an island-scale impact risk assessment nor consent from the islanders. Two years later, the same Ministry announced a partnership with the Eastern Indonesia Geothermal Consortium. It is a consortium of several multinational financiers and geothermal power companies, including a commercial NGO and the Dutch project finance office.47
Why the rush? One of the answers is that the occupation of the island is necessary to supply electricity for the large-scale mining industry that is operating there. In the Manggarai region alone, there are 11 large mining companies that require large electricity supplies. For example, one manganese smelter in the region requires a 10MW power supply.⁴⁸ Therefore, the occupation of the island by the geothermal power plant-mine industry and the project finance dealers behind it is surely a good news for the mining industry operating on Flores island. Such a preferential treatment and the shifting of risk to the islanders gets "neutralized" through the per capita electricity consumption statistics, which divide the amount of electricity consumed in a region in kWh by the region's population. The increase in consumption, which may qualify as an improvement in the quality of life or the welfare of the people, can in fact obfuscate the story of who the biggest consumers of electricity are.⁴⁹

The 2017 ministerial decision on Flores is, pars pro toto, arguably representing the unspoken reality on a larger space-time scale, that the Indonesian archipelago has been quietly designated a "Geothermal Archipelago". The ongoing organized disaster at Sorik Marapi uncover the secret of appropriating the Sumatera island into a network of geothermal power plant-mine concession areas. In the bad precedent of 2017 above, the entire body of the Flores island, along with its inhabitants and their lives, were designated as a network of geothermal mines for power generation. Fundamentally, the island's territorial, water bodies, and the inhabitants have been treated as an empty land, a terra nullius.

In September 2022, the Presidential Regulation No. 112 of 2022 on the Acceleration of Renewable Energy Development for Electricity Supply was issued. The content of the regulation includes pricing, application and covenant on power purchase agreement, as well as assistance in the form of "fiscal incentives", such as the exemption from value-added tax and import duties for renewable energy property owners, as well as support for financing, guarantees and project development at the exploration stage –which from a financing perspective, is considered high-risk. The regulation was designed to accelerate the early retirement plan of coal-fired power plants, and to encourage investment in eight types of power plants other than coal-fired power plants, including, or especially, power plants from geothermal mines. The regulation is a successor to a series of regulations to make it easier for industrial investors to invest in Indonesia in large-scale power generation projects.

Beyond the certainty of legal guarantees and project financing facilities, investors also need tenurial security over the concession property of the geothermal mining working area. In this respect, various provisions and standing operating procedures in the production of extraction space for geothermal mining had even been in place, to expedite the establishment of geothermal mining concession area, such as the SNI 13-5012-
1998 on the Classification of Indonesia's Geothermal Energy Potential.⁵⁰ A property plot for geothermal mining is ready for the Ministry to offer to potential investors when "proven reserve" can be declared once the delineation drilling and feasibility study got accomplished. (see chart on the side).
Throughout the standardized procedure in SNI 13-5012-1998 (which can take many years), geothermal is examined in terms of its geological, geophysical and geochemical context, its economic potential, and its "proven-reserve" status as a "ready-to-sell commodity". As the title implies, the SNI focuses on categorizing geothermal potential according to its level of certainty.

It is striking that at each step in the series of investigation stages, the ecological and social context of the process of acquiring technical information on geothermal energy sources is missing. Similarly, the products of each process, especially the qualification of its final product of "proven reserve" categorically ignore the consideration of whether or not such a proven reserve were fit to develop, in the face of the social and ecological risks at the designated mining area for electricity generation.

The foregoing preliminary discussion suggests that a full application of the procedures in the SNI 13-5012-1998 by the assessment and investigation apparatus of the industry regulator (the Ministry of Energy and Mineral Resources) to grant a concession property to potential investors and/or operators, is indeed dismisses the worst risks of geothermal mining and treats them as force majeure, unforeseen circumstances that prevent a stakeholder from fulfilling the contract.

In 2021, 23 years after the SNI 13-5012-1998 got released as a guideline, the World Bank published a guideline on feasibility study for project financing, "Preparing Feasibility Studies for Financing Geothermal Projects-An Overview of Best Practices", aimed at the industry and the regulator of geothermal power plants. Its sixth section, social and environmental safeguards (pages 17-20), mentioned six examples of environmental risks and five examples of social risks from project operations.

Environmental risks include loss of land and "habitat", waterscapes, solid spoil and waste, gas, dust, noise, and occupational health and safety. Social risks include livelihoods and ecosystem services, disruptions during the project, conflict, cultural heritage of the project site, fear and resistance.

The eleven types of risks are presented as a list of case examples, without a more fundamental analytical framework. Most of the risks on the list are evident in geothermal projects on the islands and elsewhere. Internal guidelines for regulators and investors, especially the SNI 13-5012-1998, blatantly exclude them from the standard investigation procedures that lead to the above-mentioned "proven reserves" status. In other words, the regulator of the geothermal mining for power generation industry created two problems that is impossible for it to solve. Firstly, the denial of the real possibility of destruction of living spaces including forest landscapes and surface and/or groundwater landscapes, induced seismicity, acute and chronic (long-term) poisoning
from toxic gas emissions, especially H₂S. Secondly, the transfer of these risks to the shoulders of the people. On top of this, the "proven reserves" status of one ministry is deemed sufficient to nullify the citizen’s rights to live for generations to come, in the historical social-ecological entities they inhabit.

Under the the geothermal mining industry spatial regime as it is now, the "National Standards", with its technical and neutral connotations, turns out to be a political instrument, or rather, an anti-political instrument, that can disrupt and change the lives of many people for a very long time. The Sorik Marapi case is just one of many cases of geothermal mining operations in the archipelago, where the application of the national standard has been able to help explain the peculiarities of the relationship between the regulator and the operating company, and the relation between power-object of both, with the people in the project area.
5. Opposition of the Islanders: The Peoples as Obstacle to Progress in the Geothermal Mining Industry Investment, or Geothermal Mining as Disturbance to Peoples' Lives?

Sorik Marapi has opened the eyes of islanders to what has never been reported to the people about the danger of the geothermal mining for power generation industry. From the assessment of the potential monetary value of reservoir bottom temperatures; the determination of "proven reserves"; to the mapping of the potential content of "complementary minerals" such as Lithium at the bottom of geothermal wells, the threat of mining for power generation to human and non-human life is treated as an incidental, case-by-case matter, and such an issue will be handled when the problem occurs.

Colonial Forced Investment: Compliance with the Occupation of People's Living Space and Risk Transfer as the Value-Chain Infrastructure of the Geothermal Mining for Power Generation Industry

What is the citizen's position in relation to the geothermal mining for power generation company and its operation?

Article 65 of Law 21/2014 provides clarity on this.⁵⁷

In paragraph 1, community participation is limited to "safeguarding, protecting, and preserving the area of geothermal operations", and "submitting reports of hazards, pollution, and/or environmental destruction in the area of geothermal operations".⁵⁸
These two forms of "participation" reveal the political context of Law 21/2014 that people are allowed to participate post-factum, after the project. What is not written is that the community may not participate in agreeing or rejecting the presence of the project in their living space.

Paragraph 2 of the same article mentions four rights of the community after the project is present, namely obtaining information regarding geothermal exploitation, obtaining benefits through the fulfillment of corporate social responsibility and/or the development of surrounding communities, obtaining adequate compensation due to errors in geothermal exploitation activities, and submitting a lawsuit to the court for damages due to geothermal exploitation activities that violate the provisions.⁵⁹ Paragraph 2 mentions the right to information, but the context is similar to the context of paragraph 1 of article 65, which is after the project is operated. In terms of adequate compensation, can the loss of injury and death, prolonged trauma, loss of food farming land, be redeemed with material compensation, or CSR (corporate social responsibility) packages? The last point of Paragraph 2, which mentions that the public can submit lawsuits for deviations from the provisions of the regulator, can hardly be claimed to be beneficial to the residents in the project area, especially when the layered provisions of the state-management itself are questionable and challenged for neglecting the precautionary principle and transferring the risks of the mine of geothermal power plant operation to the people.

The affirmation of the citizens' positions before the industry is stated in Articles 46 and 74 of Law 21/2014. Article 46 states that everyone is prohibited from obstructing or hindering geothermal exploitation that has held a Direct Utilization Permit or Geothermal Permit, and has completed the obligations as referred to in Article 42.

The penalties for violating the prohibition are stated in Article 74. Any person who intentionally obstructs or hinders geothermal exploitation for indirect utilization of geothermal license holders as referred to in Article 46 letter b, shall be punished with a maximum imprisonment of 7 (seven) years or a maximum fine of IDR 70,000,000,000.00 (seventy billion rupiah).

The above key articles are questionable, in the context of "forced-investment" which involves the selective abandonment of the risks of mining-generation operations throughout the process of preparing for the issuance of mining concessions. The transfer of risks of mining-power generation operations as discussed earlier, is not contained by Law 21/2014. In the face of escalating catastrophic risks to the landscapes and inhabitants of the living spaces occupied by geothermal mines, it is unfair and illogical that citizens' resistance to the entrance of geothermal mining projects, is treated like a felony to the state and subject to criminal offenses.
Why do the Islanders Oppose Geothermal Mining?

A recurring motif in people's resistance to the geothermal mining for power generation in Indonesia and in other countries is to protect what should not be disturbed and hence is always guarded. In the Buru Island, Maluku, the movement to resist geothermal mining is a contemporary expression of the imperative of Sasi, a rite of nature preservation.⁶⁰ In Sano Nggoang, the largest volcanic lake in the Lesser Sunda Islands, the people reject it because "this geothermal project threatens the integrity of our living space".⁶¹ In Padarincang- Banten, the awareness of the invaluable integrity of the living water that has been guaranteeing the sustainability of forests, farmlands and people's lives, is sufficient as the basis for a collective agreement to reject the project. "Prevention is better than cure." ⁶²

Contrary to the "lack of public understanding of the mine of geothermal power plants", one of the most popular slogans used by the industry and regulators to denigrate the people who reject the project. Opposition generally comes from the unconvincing "safety assurances" of the mine of geothermal power plant operators, or the classification of the mine of geothermal power plant operations as an industrial activity with the minimum environmental,⁶³ impact in the face of indigenous knowledge systems about the extreme behavior of the local landscape.⁶⁴,⁶⁵

The mining of geothermal power plant industry often relies on organized violence to coerce people into accepting projects, confirming that the "geothermal invasion" currently raging in the islands, is a forced-investment. One resident of Wae Sano, East Nusa Tenggara said "we are currently living in a situation of anxiety and fear, since the project continues to be imposed in various ways."⁶⁶ At the geothermal mining for power generation in Mount Talang in Solok, protests and inquiries about the risks of geothermal mining in the area surrounding the Talang volcano, right on the path of the Sumani fault segment, got responded by sending infantry troops for "battle training" in the project area.⁶⁷
6. **A Misleading Story: Expansion of Electricity Consumption is a Common Need of the Indonesian Peoples, and Is Good for All.**

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**Power Supply Enlargement is a Common Need of the Indonesian Peoples, and Good for All of Us.**

The expansion of industrial energy consumption, including electricity, has been portrayed as progress and as the only way to improve the peoples’ quality of life. The progress of a human settlement area is measured by the percentage of electricity demand that has been met. The progress is even calculated in advance as a long-term plan for electricity supply availability, in response to population growth, improvements in public services including transportation systems, changes in lifestyle such as the use of electricity for communication networks, and expansion of industrial activities.
The story bear some grains of truth, but it does not convey a whole picture of the life cycle of the presence of electricity, from the stage of natural material extraction, especially primary energy sources such as oil and fossil gas, coal - and now geothermal, to the stage of conversion/generation and consumption. The expansion of electricity consumption demands the expansion of extraction and conversion infrastructure, transmission and distribution. All of them demand the dismantling of landscapes, the shared life-space of humans and non-humans, in a complex supply chain.

The story also obscures, where the main source of the increase in electricity demand comes from. Does the trigger comes from an increase of population of a region, or an increase in the activities of various industries producing goods and services?

In fact, the breakdown of climate stability that is now affecting the lives of all Earth's inhabitants- one of the most striking consequences of the Earth's soaring surface temperatures - is driven by the massive supply of energy from fossil fuels for the industrial production of goods. Social metabolism for human biological reproduction is growing, but techno-metabolism is rising much faster.

In this light, who decides which electricity needs should be prioritized, whether additional power plants are needed or not, and what should be sacrificed to pursue additional power targets, constitute the most important areas of people's politics today.

In short, the important question when the energy industry including the power industry dominates the ongoing conversation is: whose energy needs are being discussed?

The Sorik Marapi story answers some of the big questions: the expansion of power supply; the target date for the commencement of the plant's commercial operations; the profits of the Kaishan holding company and the KS Orka partnership and the leftover profits for the Mandailing Natal regional management: all of these are entirely unrelated to the daily matters and agreements of the residents of Sibanggor Julu, Puncak Sorik Marapi or Lembah Sorik Marapi or any of the sub-districts included in the "geothermal working area" concession of PT SMGP. The Sorik Marapi project is a piggy-back ride of the industry, where everything is decided from ministerial offices in Jakarta, with an estimated amount of electricity that can be immediately converted to investment magnitude, company revenue, non-tax state revenue, CSR funds, etc.

The expansion of the mining of geothermal power plant industry, especially in the context of the current "geothermal invasion", rests entirely on the legally binding list of proven reserves.
Almost every day, consumers of newspaper and electronic media are bombarded with the doctrine of “prosperity from expanding energy supply and consumption”. Spokespersons for the geothermal invasion from state and corporate offices also recite it to try to convince the peoples. Criticism of this vision has not only come from activists in the South. Roger Fouquet, a pro-growth economist from the LSE, even warns about the bleak side of the energy industry’s campaign. Energy supply systems will continuously depend on the trajectory of previous decisions and actions. Why? Because of the entanglements to technologies, infrastructures, institutions and behaviors that have already been created. Yet, in the face of the prospect of providing cheap industrial energy to stimulate economic expansion, state administrators - Indonesia is no exception, often encourage investment in large-scale engineering projects as well as in public expenditure on subsidies, tax exemptions and other sweeteners.

Thus, particularly when industrialization is being pushed forward, and energy supply systems are being massively transformed, the technocrats' offices in the Capital city must be reprimanded and warned that, not only is the choice of an energy-intensive consumption path able to disrupt to the vision of long-term economic prosperity. In the context of electricity generation from geothermal mining, the plant's operation over the lifetime of the project with all its risks could seriously do damage to the lives of the people around the project for a very long time.

With all the limitations of the industry as it is now, the expansion of investment in the geothermal mining industry will be a new and ongoing source of risk for islanders.
7. Strengthening the Protection of Our Living

Lessons from the West to the East of Indonesia: Geothermal Mining as a New, Renewable and Sustainable Source of Disaster

The geothermal mining invasion that continues to expand, along with a series of disastrous events that continue to occur unmitigated, shows that the state administrator prioritizes industrial investment over the people and their life space. Such an interest bias is exacerbated by a variety of policies and regulations that not only clears the way for the expansion of the geothermal mining industry, but also systematically paralyzes the people’s veto right and resistance.

In each industrial disaster, as happened in Sorik Marapi, Dieng, and other areas in Indonesia, even though it brought death tolls, we do not see the state administrator’s sidedness with the people. The present situation should provide a collective lesson, that
today and in the future, the presence of the state is not necessarily beneficial for the future of the citizens. Similarly, the expansion of the geothermal mining industry, albeit wrapped in new words, “clean energy”, “environmentally friendly”, “low emissions”, still operate with the same characters and methods: devastating the life space including ancestral territories, destroying the water landscape, poisoning the air.

The critical awareness of every citizen at the forefront of the crisis of geothermal mining must continue to be raised, that the monstrous operations of extractive capital through the dismantling of mining and energy materials, including the massive water mining to support the geothermal mining industry, aim to cater to the industrial-urbanism mode of life that is neither related to ancestral heritage nor constitutes the direct needs of the peoples in the kampongs.
List of Quotations/Source


4. PLTP Sorik Marapi Geothermal Power COD Unit 3


7. Kasih acuan tentang kegagalan fracking, CCS, bendungan besar, yang menyangkut manipulasi air dalam volume raksasa, dan bencana yang dipicunya (AS, China, Eropa)


A Report to the Public and A Warning to the Businesses and Authorities of Indonesian Mineral and Energy Mining


22Daniela Nuvolone et al., 2020. Health effects associated with short-term exposure to hydrogen sulfide from geothermal power plants • a case-crossover study in the geothermal areas in Tuscany. Daniela Nuvolone et al., op. cit.


30Ibid.


[39] https://rechtssammlung.sp.ethz.ch/Dokumente/414en.pdf#search=integrity


[43] https://lokadata.beritagar.id/chart/preview/konsumsi-listrik-per-kapita-1521725112


A Report to the Public and A Warning to the Businesses and Authorities
of Indonesian Mineral and Energy Mining

55 Teks Undang-Undang No. 21 tahun 2014, hal.19.

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57 Ibid.


60 https://www.biem.co/read/2021/04/07/77239/warga-padarincang-kembali-pasang-span- duk-tolak-geothermal/


64 Ibid.


66 Fouquet, Roger, 2016. Path dependence in energy systems and economic development, LSE.

68 Dunlap, Alexander. 2023. The Green Economy as Counterinsurgency., or the ontological power affirming permanent catastrophe. Environmental science and policy 139 (2023) 39-50
A Report to the Public and A Warning to the Businesses and Authorities of Indonesian Mineral and Energy Mining

The Archipelago At the Edge of Drill Bit Threat

Sorik Marapi amidst geothermal hunting from the Mount Geureudong, Mount Talang, Padarincang, Sano Nggoang Lake to Papuan Bird’s Head Peninsula


2022