ADB Geothermal Debacle in Indonesia

Source photo: https://joss.co.id/2022/01/warga-dieng-tolak-pengeboran-untuk-proyek-pembangkit-listrik-panas-bumi-ini-alasannya/

Titi Soentoro

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Foreword

The new 2021 ADB Energy Policy promotes the development of geothermal systems and supports their construction, expansion, and efficiency improvement despite demands from the Indonesian CSOs during the policy review process to exclude geothermal from the policy. This direction poses a real threat to people in volcanic countries like Indonesia, which are heavily targeted for geothermal extraction.

Geothermal Power Plants (GPPs) pose significant financial, environmental, and social risks in Indonesia. These risks include health issues arising from noise, water and air pollution, deforestation, water scarcity, biodiversity loss, earthquakes, threats to community livelihoods, and land conflicts. Consequently, local and indigenous communities often oppose GPPs, leading to intimidation and violence from the government and companies in response to their resistance.

The testimonies of women experiencing problems regarding the exploration and exploitation for GPPs highlight their courage and resilience. Despite facing significant risks, these women resist the impacts of GPPs. Ignorance of the reality that many communities in Indonesia resist the GPPs in their areas due to the havoc impacts on people, their livelihoods, and the environment, ADB, the World Bank, and climate financiers like the Climate Investment Fund (CIF) continue to promote geothermal energy development in Indonesia. Since 1995, ADB has financed a geothermal development program in Indonesia through technical assistance, sectoral reform programs to remove policies and institutional barriers, aid for investment transactions, and financing several geothermal power plant projects. There are seven ADB finance geothermal power plants (GPP) in Indonesia, and all these GPPs are problematic.

This document of ADB Geothermal Debacle in Indonesia comprises of two documents: (1) an overview of ADB activities in pursuing development and regulatory frameworks for the geothermal development in Indonesia; and (2) a case study on the resistance of the Dieng Community to the Dieng Unit 2 GPP based from the community bad experiences with the Dieng Unit 1 GPP. We would like to thank the NGO Forum on ADB for its support to this desk review and investigation we did in December 2024, as well as the advocacy and campaign efforts of the community affected by geothermal power plants in Indonesia.

Jakarta, April 2025
Aksi! for gender, social and ecological justice

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Abbreviation

ADB	Asian Development Bank
ANDAL	Analisis Dampak Lingkungan (Environmental Impact Assessment/EIA)
CO2	Carbon dioxide
CTF	Clean Technology Fund
EIA	Environmental Impact Assessment
GCF	Green Climate Fund
GDE	Geo Dipa Energi
GPP	Geothermal Power Plant
H2S	Hydrogen sulfide
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
IFIs	International Financial Institutions
IUCN	International Union for Conservation of Nature
JBIC	Japan Bank for International Cooperation
PLN	Perusahaan Listrik Negara (state-owned enterprise)
KfW	Kreditanstalt für Wiederaufbau
LHK	Lingkungan Hidup dan Kehutanan (Environment and Forestry)
MDB	Multilateral Development Bank
NEXI	Nippon Export and Investment Insurance
NGO	Non-Government Organization
OCR	Ordinary Capital Resources
Permen	Peraturan Menteri (Ministerial Decree)
Permenkes	Peraturan Menteri Kesehatan (Ministerial of Health Decree)
PLTP	Pembangkit Listrik Tenaga Panas Bumi (Geothermal Power Plant/GPP)
PMN	Penyertaan Modal Negara (State Capital Participation)
PP	Peraturan Pemerintah (Government Order)
PT	Perseroan Terbatas (Limited Liability Company)
PTSP	Power Transmission Sector Project
RPL	Rencana Pengelolaan Lingkungan (Environmental Management Plan)
RPL	Rencana Pemantauan Lingkungan (Environmental

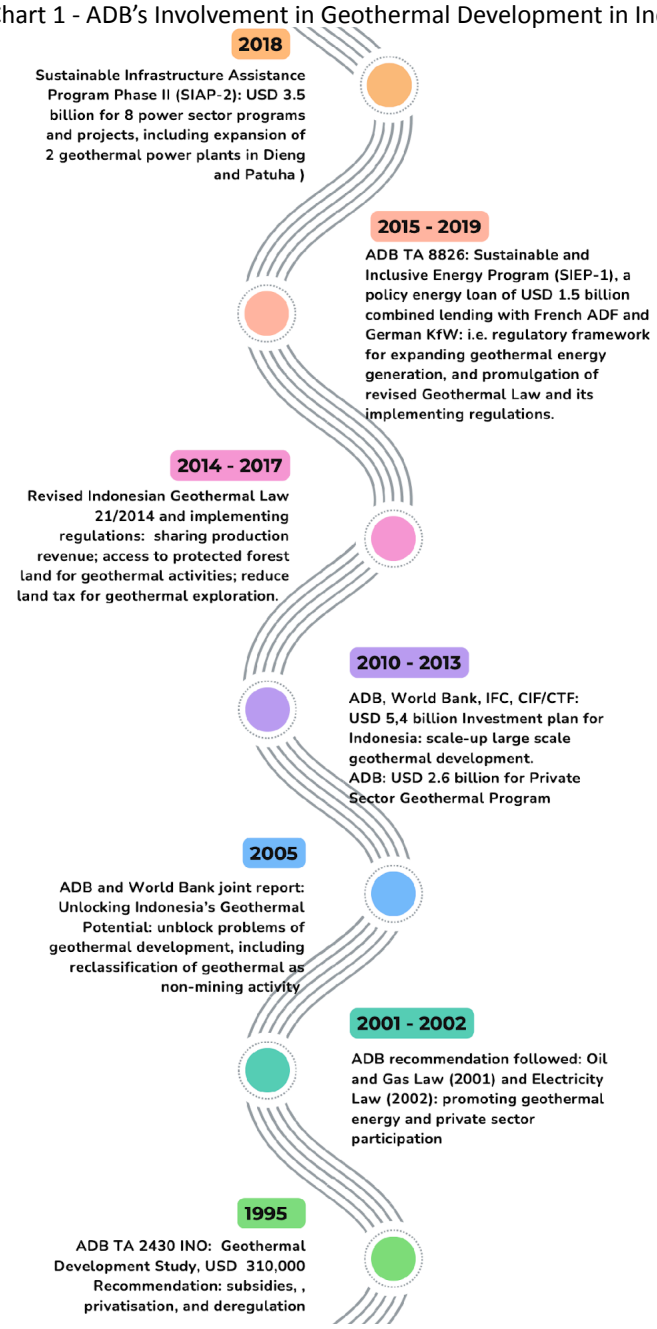
	Monitoring Plan)
SEAEI	Sustainable Energy Access in Eastern Indonesia
SIAP	Sustainable Infrastructure Assistance Program
SIEP	Sustainable and Inclusive Energy Program
SOE	State-owned Enterprises
SPS	Safeguard Policy Statement
SREAP	Sustainable and Reliable Energy Access Program
TA	Technical Assistant

Source photo:
canva premium

ADB's Involvement in Geothermal Energy Development in Indonesia

ADB, together with the World Bank, is a promoter of geothermal development in Indonesia and only represents the interest of investors and financiers. For that purpose, ADB financed a geothermal sectoral reform program to remove policies and institutional barriers to geothermal resource development and assist with geothermal power investment transactions.

Chart 1 - ADB's Involvement in Geothermal Development in Indonesia:



1. ADB's involvement and Investments in Geothermal Energy Development in Indonesia

ADB began its involvement in geothermal power development in Indonesia with Technical Assistance TA 2430-INO Geothermal Power Development Study in 1995 for USD 310,000.[1] The primary objective of this TA was to identify barriers to harnessing Indonesia's geothermal potential. At that time, Indonesia had only developed 195 MW of its 14,000 MW geothermal potential. The recommendations from the TA included implementing subsidies and tariffs to offset high investment costs, revoking Pertamina's (the state-owned oil and gas enterprise) monopoly, and rationalising taxation. It also suggested deregulation to privatise geothermal generation and to separate PLN (the state-owned electricity enterprise) from geothermal power operations. As a follow-up to these recommendations, the Oil and Gas Law (Law No. 22/2001) and the Electricity Law (Law No. 20/2002) were developed, both aimed at promoting the optimal use of renewable energy sources for electricity generation, including geothermal energy, to encourage private sector participation.

In 2005, ADB and the World Bank published a joint report on *Unlocking Indonesia's Geothermal Potential.*[2] The study's objectives were to find ways to unblock the problems of geothermal development in Indonesia, including amendments to the Geothermal Law and the reclassification of geothermal as a non-mining activity, a revised tariff issuance, and a crucial new regulation on tendering. According to the study, the underlying problem is the capital intensive of geothermal power plants: to achieve an additional 3,000 MW geothermal capacity in the foreseeable future will require USD 4 billion in equity and USD 9.5 billion in debt finance (assuming USD 4,500/kW total cost, and 30% equity). The problem of mobilising equity is primarily the up-front investment for

[1] ADB (1998). *Technical Assistance Completion Report. 2430-INO: Geothermal Power Development Study* at: https://www.adb.org/sites/default/files/project-documents//tacr-ino-2430.pdf

[2] Asian Development Bank and The World Bank. (2015) *Unlocking Indonesia's Geothermal Potential*, at: https://www.adb.org/sites/default/files/publication/157824/unlocking-indonesias-geothermal-potential.pdf

exploration—much more costly than in other countries where most of the up-front exploration effort was public finance.

In 2010,[3] the Asian Development Bank (ADB), in collaboration with other multilateral development banks (MDBs) such as the World Bank and the International Finance Corporation (IFC), led by the Climate Investment Plan (CIF) developed a Clean Technology Fund (CTF) Investment Plan for Indonesia. This plan was revised in 2013.[4] The goal of the investment plan was to scale up large-scale geothermal power development and to accelerate initiatives that promote energy efficiency and renewable energy, particularly biomass. It aimed to mobilise up to USD 2.7 billion in financing from a combination of multilateral financiers, state-owned enterprises (SOEs), and the private sector. The Investment Plan was revised in 2013 as shown in Table 1.

Table 1.
Updated CTF Investment Plan for Indonesia (2013)

MDB / Program	Total	CTF	MDB	Other Cofinancing
IBRD Geothermal Clean Energy Project	*575*	125	175	275
ADB Private Sector Geothermal Program	*2,625*	150	375	2,100
IFC Geothermal Program (Investment & Advisory)	*1,760*	40-50	120	1,600
IFC Energy Efficiency and Renewable Energy	*260*	25-35	125	100
ADB Energy Efficiency and Renewable Energy	*250*	50	50	150
Total	***5,470***	**400**	**845**	**4,225**

Source: *Clean Technology Fund. Update of Investment Plan for Indonesia (draft 2013).*

Under this financing plan, the ADB Private Sector Geothermal Program would mobilise about USD 2,625 billion; for other energy efficiency and

[3] Climate Investment Fund (18 February 2010). Clean Technology Fund Investment for Indonesia. A Meeting of the CTF Trust Fund Committee on 15 March 2010. CIF. https://www.cif.org/sites/cif_enc/files/meeting-documents/ctf_investment_plan_for_indonesia2_0.pdf

[4] Indonesia CTF IP Update. Draft: 28 February 2013. Clean Technology Fund. Update of Investment Plan for Indonesia. Kemenkau. https://fiskal.kemenkeu.go.id/files/berita-kajian/file/Indonesia_CTF_IP_Update_28_Feb_2013.pdf

renewable energy, about USD 250 million. In total, the Investment Plan was USD 5,470 billion.

ADB provided an energy policy loan, TA 8826-INO: Sustainable and Inclusive Energy Program (SIEP),[5] to Indonesia for USD 1,000,000 (later revised to USD 1,537,375) from 2015 to 2019 as a combined lending with the French Agence Française de Développement (AFD) and German KfW. The objectives of this TA were to review and assess the overall regulatory framework in the energy sector and to develop innovative policy proposals, implementing regulations, and improved implementation plans that can help pave the way for a sustainable and inclusive energy future for the country. One of the objectives of this TA regarding geothermal was a regulatory environment for expanding geothermal energy generation.

This TA supported the promulgation of three regulations by the Indonesian government: (1) Implementing regulations required by the revised Geothermal Law, Law 21/2014, which was guidance on sharing of production revenue with local governments under Government Regulation (Peraturan Pemerintah, PP) 28/2016; (2) access to protected forest land for geothermal power development activities under Minister of Environment and Forestry Regulation (Peraturan Menteri Lingkungan Hidup dan Kehutanan, Permen LHK) 46/2016; (3) reduced land tax payable during geothermal exploration to help reduce exploration costs (PMK 172/2016); and PP 7/2017 on indirect use of geothermal to govern tendering and award of geothermal concessions for power generation.[6]

The Sustainable Infrastructure Assistance Program Phase II (SIAP2)[7] supported the effective identification, preparation, implementation, and financing of infrastructure projects, building on the successes and

[5] The Government of Indonesia and Asian Development Bank (January 2018). *TA 8826-INO: Sustainable and Inclusive Energy Program. Final Report*. ADB at https://www.adb.org/sites/default/files/project-documents/48323/48323-001-tacr-en.pdf

[6] ibid

[7] ADB. (November 2018). *Sustainable Infrastructure Assistance Program Phase II: Technical Assistance Report.* ADB. https://www.adb.org/projects/documents/ino-52152-001-tar

lessons learned from SIAP Phase I (SIAP1). In the energy sector, the project preparatory activities expanded connectivity through clean and renewable energy generation, including geothermal power, natural gas infrastructure to replace diesel as an electric generation fuel, transmission and distribution, and carbon capture and storage.

SIAP-2 approved on 29 November 2018 a TA for USD 3,570,000 to prepare eight power sector programs and projects:[8] (1) Electricity Grid Strengthening—Sumatra Program (EGSS); (2) Sustainable Energy Access in Eastern Indonesia (SEAEI)—Electricity Grid Development Program (EGDP1); (3) SEAEI—Electricity Grid Development Program Phase 2 (EGDP2); (4) SEAEI—Power Generation Sector Project (PGSP); (5) SEAEI—Power Transmission Sector Project (PTSP); (6) Geothermal Power Generation Project (GPGP); (7) Sustainable and Reliable Energy Access Program (SREAP); and (8) Gas Distribution Infrastructure Project (GDIP). GPGP aims to support the expansion of two geothermal power plants (Dieng and Patuha), including constructing and commissioning additional geothermal generating capacity at two existing geothermal power plants of 55 megawatts each.

2. ADB's Energy 2021 Policy - a direction to support Geothermal Energy Development in Indonesia

The new ADB Energy Policy 2021[9] promotes the development of geothermal systems and supports their construction, expansion, and efficiency improvement. This direction poses a real threat to people in volcanic countries like Indonesia, which are heavily targeted for geothermal extraction. The Indonesian CSOs have called upon the ADB Review Team to exclude geothermal energy in its new Energy Policy due

[8] ADB. (November 2019). *Project Number: 52152-003. Transaction Technical Assistance Cluster (C-TRTA). Republic of Indonesia: Sustainable Infrastructure Assistance Program Phase II. Subproject 3: Supporting Sustainable and Universal Electricity Access Phase 2.* Technical Assistance Report. ADB.
https://www.adb.org/projects/documents/ino-52152-003-tar

[9] ADB (June 2023). *2021 Energy Policy of the Asian Development Bank. Supporting Low-Carbon Transition in Asia and the Pacific*. ADB.
https://www.adb.org/sites/default/files/institutional-document/737086/energy-policy-2021.pdf

to its havoc impacts on people and the environment. We have enough examples of environmental damage, loss of livelihoods, and community displacement in many geothermal sites in Indonesia financed by ADB, like Lahendong, Sarulla, Ulumbu, and Dieng. Again, ADB ignores the suffering of the people and the environment caused by geothermal extraction.

The new ADB Energy Policy sets forth ambitious goals for women, positioning them as pivotal drivers of change in the energy transition. It advocates for women's active involvement in energy policy- and decision-making, encourages women's entrepreneurship to enhance energy access and combat energy poverty, among other initiatives. These goals, if achieved, could be transformative for women and have a profound influence on the energy sector. However, based on our observations of ADB's operations, these goals often remain aspirational.

It's a common misconception that gender inequality in the energy sector stems from a lack of women's access to clean and modern energy services. In reality, the extraction of energy sources, such as geothermal, biofuel, and coal, which often leads to the loss of livelihoods and natural resources, and the structure of the energy business are the primary causes of gender inequality. ADB's privatisation strategy, including electricity and water, has further exacerbated this issue. The new Energy Policy, unfortunately, fails to acknowledge these root causes. Therefore, the crucial question remains: how will the Energy Policy effectively address these fundamental issues of gender inequality in the energy sector?

The new Energy Policy pledges to engage women in a meaningful consultation process, conduct comprehensive gender analysis, and collect sex-disaggregated data to ensure gender considerations are integrated throughout the project cycle (para 64). However, ADB's failure to apply gender considerations in the Safeguard Policy Statement (SPS) 2009, particularly in relation to women's participation, gender impacts, and risk assessment in project preparation and operation, raises concerns. The question that arises is: how will the new Energy Policy ensure the full implementation of paragraph 64, which is crucial for achieving gender mainstreaming?

The international community is in agreement to shift from the extractive high-carbon path to the low-carbon path. However, without immediate and essential structural changes in the extractive mode, the' business as usual' approach will perpetuate the same systematic exploitation and oppression in the low carbon development path. The ADB's new Energy Policy does not indicate a departure from this' business as usual' mode, underscoring the pressing need for structural change in the energy sector.

3. Risks and Concerns in Geothermal Investment particularly to women and the environment

3.1. Risk and Concern regarding geothermal investment and operation:

Financial risks:

- In the foreseeable future, 3,000 MW of geothermal capacity will require USD 4 billion in equity and USD 9.5 billion in debt financing, assuming a total cost of USD 4,500 per kW and 30% equity.
- Even the International Financial Institutions (IFIs) such as the Asian Development Bank (ADB), International Finance Corporation (IFC), and World Bank (WB) are cautious about funding up-front exploration. Typically, they will provide financing only once 50% or more of the steam resource is proven. The Green Climate Fund (GCF) also supports WB in providing finance for exploration.

Environmental Risks

- Indonesia - 324 geothermal potential sites: mostly on active volcanoes with many occurrences of earthquakes, 70% inside the mountainous protected forest, sources of water for millions of people.
- Pollution from geothermal fluids is a significant concern. Overflow from brine water ponds could result in soil erosion, resulting in the loss of fertile land for crop farming. Uncontrolled drainage to nearby areas could contaminate water sources, posing a threat to the health of local communities.

- Excessive water use affects the lake, springs, and groundwater in the surrounding area, which are needed for the agricultural and other needs of the local communities.
- Changes in land use associated with exploration and plant construction, noise and sight pollution, water and gas discharge, foul odour production, and soil subsidence.

Health issues:
Elevated noise level, frequent H2S smell and exposure from the gas emitted from the rock muffler, and saline water in the community's wells.

Safety issues
- Geothermal drilling activities can trigger earthquakes, such as the Pohang earthquake in South Korea and the Basel earthquake.
- Earthquakes can also disrupt geothermal drilling activities, as seen in the Sidoarjo mudflow case in Indonesia. Here, a distant earthquake caused the blowout of a natural gas well drilled by PT Lapindo Brantas. This event spewed up to 180,000 cubic meters of mud per day, highlighting the potential for significant environmental damage.

3.2. Why women resist?
Women in various regions of Indonesia, displaying remarkable courage and a deep understanding of the potential impacts, resist planned and existing geothermal projects. Their choice to reject these projects is a testament to their awareness of the potential impacts of geothermal power plants and their determination to protect their communities and the environment.

- ***Mud pollution from geothermal exploration destroyed women's livelihoods.***
  The affected communities, especially women in Panembangan village on the foot of Slamet volcano, experienced destructive impacts of geothermal energy exploration of the Baturraden Geothermal Power Plant. The exploration on the slope of Mount Slamet polluted the Prukut River, and their clean water resources

became turbid and muddy. The women could not use it for months. Thus, women in Panembangan village and the surrounding areas, especially in the Cilongok district, economically experienced material losses as they had to buy clean water, often at inflated prices due to scarcity; health issues since they had to fetch clean water far from their homes; and psychological impacts due to the social conflicts to fight for obtaining clean water sources.[10]

- ***The fear of losing land and cultural identity***
  Women and other communities of Padarincang in West Java stand united in their concerns about the planned Geothermal Power Plant Development Project. They fear specific and significant losses like water depletion, landslides, earthquakes, and the disruption of their agricultural activities. The women believe that if the Geothermal Power Plant Development Project is pursued, there is no guarantee of security for the fate of women in Padarincang in the future. They are afraid of losing farming as their cultural identity and the cultural heritage of Padarincang. Umi Eha,[11] one of the women's leaders in the resistance against the geothermal project since 2013, said that the communities' resistance is based on fears of environmental damage, loss of agricultural livelihoods, and the erosion of local cultural and religious values. They also endure for a long time all kinds of threats and intimidation from outsiders.

[10] Kusuma A., Bintarsari N., and Diryat D. (11 December 2023). *Gender, Geothermal Energy, and Environment: The Impact of Baturraden Geothermal Power Plant Exploration on Women and Environment in Banyumas, Indonesia*. ResearchGate. https://www.researchgate.net/publication/376443834_Gender_Geothermal_Energy_and_Environment_The_Impact_of_Baturraden_Geothermal_Power_Plant_Exploration_on_Women_and_Environment_in_Banyumas_Indonesia

[11] Sulistiani S., Indriyany I.A. (9 November 2024). *Ecofeminism: Women's Resistance to the Development of a Geothermal Power Plant Project in Padarincang, Serang Regency.* ResearchGate. https://www.researchgate.net/publication/385953607_Ecofeminism_Women's_Resistance_to_the_Development_of_a_Geothermal_Power_Plant_Project_in_Padarincang_Serang_Regency

- ***Resistance against geothermal power plant is defending future generations***

Picture 1 - Women from Gunung Talang staged protest actions against the planned GPP.

Source:https://www.wrm.org.uy/bulletin-articles/indonesia-the-gloomy-truth-behind-geothermal-energy-a-misleading-narrative-of-clean-energy

The struggle of the Salingka Gunung Talang women[12] is a manifestation of guarding their lands for their children, grandchildren, and future generations. In Minangkabau in West Sumatra, a region that still applies a matrilineal system, the Minang women are 'Bundo kanduang': mothers who guard the customary lands they will inherit to their children, grandchildren, and future generations. The Minang women from Salingka Gunung Talang worry about the environmental impacts of the geothermal project, which will destroy their agricultural land, dry up their water sources, trigger soil erosion, and cause pollution from the exploration and exploitation of the geothermal project. Moreover, the women also see that the loss of land and livelihoods will be accompanied by increasing health costs, food and water costs, and new living costs, such as repairing building properties due to damage to roof zinc from acid rain. Therefore, the women see it as their task to defend their customary lands for their children, grandchildren, and future

[12] Yolanda S.M., Anggraini D., Putra I.A. (21 April 2021). *Gerakan Perempuan Salingka Gunung Talang dalam Menolak Pembangunan Geothermal di Kabupaten Solok*. PKP. https://shariajournals-uinjambi.ac.id/index.php/tpj/article/download/674/374/2569

generations. One of the protest actions by the women was a week of *dhikr* (a form of Islamic worship in which phrases or prayers are repeatedly recited). This act of worship was not just a religious practice, but also a powerful symbol of the women's rejection of the geothermal project and their determination to protect their lands. They brought agricultural products to convey a message to the government and the geothermal company that their agrarian lands are fertile. They take great pride in what the earth of Gunung Talang produces. Moreover, the *dhikr* was to show that the women reject the incoming disaster that the project will bring to their lands.

- ***If the lands are hurst, then the hearts of mothers also are hurt***
  Communities in the Manggarai region in Flores recognize land as a mother who provides life and a source of livelihood. The land has to be respected. Yustina, a woman who resisted the expansion of the Ulumbu Geothermal Project to her area of Poco Leok, said: "If the land is hurt, the hearts of us mothers are also hurt because women who are the ones that take care of lands and springs." For the Poco Leok community, the land and springs are not just sources of economic security, but also deeply ingrained in their cultural and spiritual beliefs. Many women of Poco Leok are against that expansion because they are worried that the project will destroy several springs around the area, which are considered sacred. The land, on the other hand, is seen as a nurturing mother, providing life and sustenance. The productivity of coffee and cloves, the leading commodities from the land of Poco Leok, has been decreasing due to the Ulumbu geothermal project operation.[13] Most women who were against the project expansion said they rejected geothermal energy not just because of its potential damage to the land. However, also because it would desecrate their ancestors' graves, a cultural concern deeply rooted in their beliefs. The Poco Leok women have received sufficient information from other geothermal sites about the harmful impacts on their living space, like landslides, earthquakes, subsidence, and ground cracks. Other impacts are

[13] Susabun A. (15 Maret 2023). *Mengapa Perempuan Poco Leok Ada di Garis Depan Melawan Proyek Geothermal?* Sunspirit for justice and Peace. https://sunspiritforjusticeandpeace.org/2023/03/15/mengapa-perempuan-poco-leok-ada-di-garis-depan-melawan-proyek-geothermal/2215/

related to health, especially respiratory tract infections. Representatives of Poco Leok communities have also been to Mataloko in Ngada Regency, one of the geothermal project points that the government later abandoned, while residents are now suffering after the emergence of smoke on their agricultural lands.

Picture 2 - Women from Poco Leok community in Flores Island staged protest actions against the planned expansion of problematic Ulumbu GPP financed by ADB to their areas.

Source:https://floresa.co/perspektif/analisis/58436/2023/12/11/perempuan-poco-leok-melawan-demi-tanah-dan-air-bukan-bara-panas-bumi

- ***Mostly women and children will suffer if the environment is destroyed***

  The women fight back because whenever there is environmental damage, the ones who suffer the most are women and children, according to Yanti from Pasir Cina village in Cipendawa district.[14] Other villages on the foot of Mount Gede Pangrango, where geothermal plants are located, such as Cipanas Village, Sukatani,

[14] Firmansyah R. (30 July 2024). *Kisah Para Puan Penolak Geotermal dari Pasir Cina.* https://independen.id/kisah-para-puan-penolak-geotermal-dari-pasir-cina

Galudra, Nyalindung, Ciputri, Sindangjaya, and Ciherang, also refuse. A documentary film titled Barang Panas,[15] which they viewed together in the village, informed them about the impacts of geothermal energy on various places in Indonesia. What surprised them was that geothermal energy can trigger earthquakes. Many of those villagers are still under the trauma of the Cianjur earthquake that rocked their villages in early 2021. Moreover, many villagers successfully recovered their agricultural land from sand mining, a process that involved filling in the mined areas, restoring the soil, and replanting native vegetation. It took almost 20 years of recovery before the lands could be planted again. "*If the geothermal project is pursued, then all the hard work will be wasted*," according to Yanti.

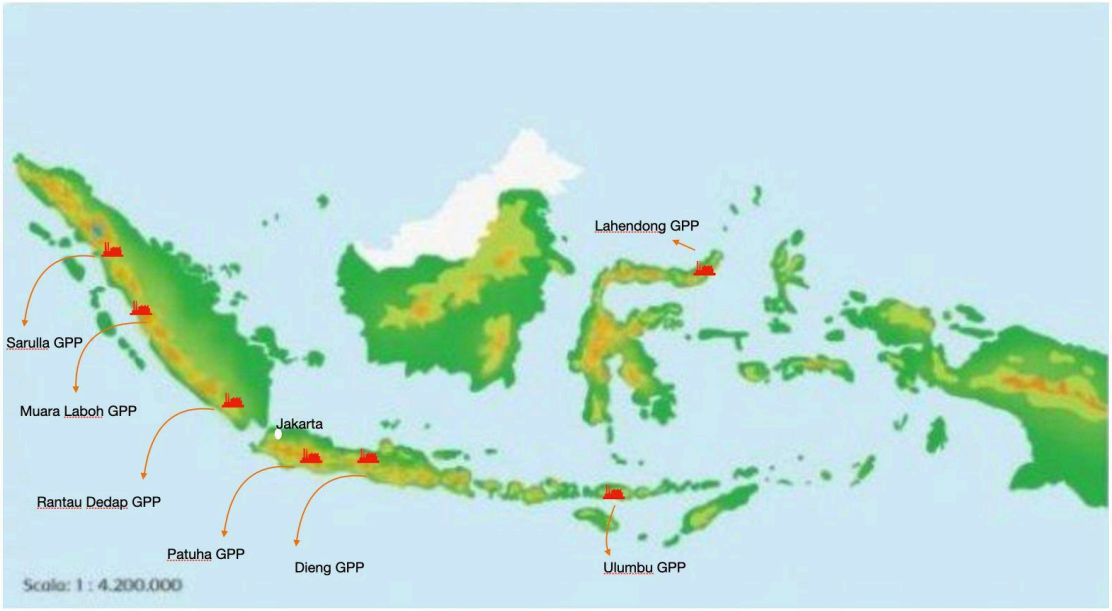
- ***Trauma from the geothermal accident***
  On the afternoon of 23 February 2024, Lisdawati[16] was exposed to leaking gas from a well operated by PT Sorik Marapi Geothermal Power. Her husband, in a panic, rushed her to a hospital. The impact of the gas leak on her health was severe as she heard her neighbours and other villagers fleeing their homes. She was left in the dark until she finally opened the door to find people scattered on the street. The pungent odour that greeted her was a stark reminder of the danger. "*I felt very dizzy; my chest was pounding. I was immediately taken to the Sibanggor Jae health centre by my husband for treatment*," she said. However, her condition did not improve. This middle-aged woman admitted that she still felt dizzy, nauseous, and vomiting. That's why her husband rushed to Panyabungan Regional Hospital. The distance from Lisdawati's house to the location of the leaking well is about one kilometre.

[15] '*Barang Panas*' (Hot Stuff) is a documentary film by Dandhy Laksono and Farid Gaban together with the New Indonesia Expedition Team, and also supported by civil society organizations such as the National Mining Advocacy Network (JATAM). The film, which tells about high praised geothermal as a renewable energy source that are problematic to many communities on geothermal sites.

[16] BBC News Indonesia (24 Februari 2024). *Kebocoran gas Sorik Marapi di Mandailing Natal kembali terulang - 'Ini bukan lagi kelalaian sistem, tapi kejahatan kemanusiaan*'. https://www.bbc.com/indonesia/articles/c2l7wnjk2pqo

4. ADB financed geothermal projects and problems they triggered

Picture 3
Map of the Spread of ADB financed Geothermal Projects in Indonesia



An overview of ADB finance geothermal projects in Indonesia.
Chart 2 - ADB financed geothermal projects in Indonesia:

Table 2.

ADB Geothermal Debacle in Indonesia

No.	Name	Problems
1.	Lahendong II and IV Geothermal Power Plant in North Sulawesi (40 MW) - approved 2002	• Air pollution of H2S and other toxic substances from the geothermal hot stream has led to rice and vegetable plants drying up, rendering them unable to grow • Pungent smell • Health issues • Extinction of lake specific insects
2.	Ulumbu Geothermal Power Plant in Flores Island (5 MW) - approved 2002	• Drastic decrease of clove, cocoa, coffee and candlenuts harvests that reduced community income • Water scarcity • Landslides • H2S air pollution that caused rapid rusting of bridges, zinc roofs of houses, and schools. • Land conflicts • Oppression to community resistance
3.	Sarulla Geothermal Power Generation Project in North Sumatra (320 MW) - approved 2013	• Pollution on the rice fields emitting sulphur smell, and over time, the smell of sulphur reached the villages. • Noise • Harvest started to decrease e.g. the damaged community's frankincense garden, which is about 20km from the project location • Threat to a critically important area of high biodiversity value
4.	Rantau Dedap Geothermal Power Project in South Sumatra (240 MW) - approved 2014	Potential adverse impacts on the critical habitat of Bukit Jambul Gunung Patah, where at least eight endangered species are on the IUCN list
5.	Muara Laboh - 2 Geothermal Power Project in South Sumatra - approved 2016	• The project location is in a critical habitat. • The project exacerbates all those problems already experienced by the communities and the environment from Muara Laboh -1 such as forced and discriminatory land acquisition process; crop failure experienced by due to pollution and reduced water supply; public health and safety problems due to gas concentrations; impact of flooding due to changes in the landscape.

6.	Dieng and Patuha Geothermal Power Plants in Central and West Java (each 55 MW) - approved 2020	• Exacerbated the impacts of the preparation and operation of Dieng Unit 1 GPP including health problems, environmental problems such as noise, bad smells, water depletion, and decreased harvests. • Oppressive atmosphere is widespread among the villagers resisting the expansion of Dieng-1 to Dieng-2 Geothermal
7.	Planned Geothermal Power Plants Expansion Project in Dieng Plateau - not yet approved.	• Continue exacerbating the impacts of the preparation and operation of Dieng Unit 1 GPP including health problems, environmental problems such as noise, bad smells, water depletion, and decreased harvests; as well the oppressive atmosphere is widespread among the villagers resisting the expansion of Dieng-1 and Dieng-2 Geothermal

4.1. Lahendong Geothermal Power Plant in North Sulawesi and Ulumbu Geothermal Power Plant in Flores Island.

In December 2002, ADB approved a package of project loan 1982-INO Indonesia: Renewable Energy Development Sector Project for around USD 153 million for expanding renewable energy use in the outer island regions of Indonesia. The sub-projects were eight run-of-river micro hydropower plants, two hydropower power plants, and two geothermal power plants (GPPs), part of the least-cost development plan for remote and small islands in eastern Indonesia. The geothermal projects were Lahendong II (20 MW) in North and Ulumbu (5 MW) on Flores Island. Lahendong IV (20 MW) was added to the sub-projects to replace the Poigar 2 hydropower in 2009 due to the failure to acquire a forestry permit for the site.[17] Lahendong II geothermal power plant has been in full commercial operation since 2008, the Lahendong IV since 2012, and Ulumbu GPP started operating in full commercial capacity in July 2014.

ADB classified these geothermal projects as Category B because they were small in scale, not in environmentally sensitive areas, and had limited environmental impacts during construction and operation. The Project prepared an initial environmental examination for each subproject, which concluded that there would be no significant negative impacts on the subproject sites' environments except for occasional dust

[17] ADB (2014). *Completion Report. Indonesia: Renewable Energy Development Sector Project. ADB* at: https://www.adb.org/sites/default/files/project-documents//34100-013-pcr.pdf

and noise.[18] ADB did not carefully learn from the villagers' experiences facing environmental problems with operating the existing Lahendong power plant. It is urgent that the environmental and social categorisation be reclassified from Category B to Category A to prevent further environmental issues!

The two examples of problems are as follows:

(**a) Lahendong Geothermal Power Plants in North Sulawesi**

The two geothermal power plants have compounded the already problematic environmental and safety issues in Lahendong, significantly impacting the local community. In 2005, villagers in the Lahendong, Tondangow, and Pangolombian sub-districts reported that pollution had affected approximately 10,000 people. This pollution, believed to be from H2S gas or other toxic substances, has led to rice and vegetable plants drying up, rendering them unable to grow. The villagers suspect this is due to the hot steam emitted by the Lahendong geothermal power plants.[19] In March 2024, the Leilem community, Minahasa, once again complained about the pungent odor from the Lahendong geothermal drilling activities. The air pollution around the Lahendong geothermal power plants seriously threatens the villagers' health, further exacerbating the situation.

In addition to the complaints of the Leilem community, at almost the same time, the Tondangaw community and its surroundings heard the sound of explosions coming from drilling clusters of the plants. Moreover, the villagers reported the destruction of Lake Linow after the project operated, with the geothermal power plants playing a significant role. One evidence of water body contamination was the disappearance of '*sayok*' and '*komo*', the lake-specific insects on the water' surface that are also source of nutrient for the villagers. They are a bioindicator of

[18] ibid

[19] Roni Sepang (March 2024). "*Soal Keluhan Terkait Dampak Pengeboran PT. PGE Lahendong, Warga Leilem Dihimbau Pakai Masker dan Periksa Kesehatan*," Kanal Metro at: https://kanalmetro.com/2024/03/26/soal-keluhan-terkait-dampak-pengeboran-pt-pge-lahendong-warga-leilem-dihimbau-pakai-masker-dan-periksa-kesehatan/ in Suci Fitriah Tanjung (2024). Perkembangan Geothermal di Indonesia.

lake water pollution since they are incredibly fragile and sensitive to even little water body change.[20]

(b) Ulumbu Geothermal Power Plants in Flores Island

According to a study by Celios and Walhi in 2024, the Ulumbu geothermal project has triggered high negative impacts such as disruption of agricultural productivity, reduced community income, and water problems.[21] An investigative report of the Indonesian Mining Network and JPIC OFM Indonesia in September 2022[22] informs that clove production has decreased drastically for the past six years, and even clove farmer gardens in Damu village are threatened with extinction. The villagers, who rely on the income from their clove gardens, are now facing a significant threat to their livelihoods. The once reliable cycle of clove production has been disrupted, leading to a three-year gap in fruiting and a drastic decrease in production. Similarly, cocoa, candlenuts, and coffee plants have seen a decline in productivity, further impacting the community's income.

Furthermore, the suspected impact of geothermal drilling activities on landslides is a pressing concern. In the northern and eastern parts of the drilling point, particularly to the east of the Ulumbu crater, the contour of the cliff land consistently slides at regular intervals. This ongoing landslide disaster poses a significant risk to the safety of over 30 families in Tantong Village, located directly above the landslide site. The H2S generated from geothermal extraction is believed to be causing rapid rusting of several infrastructures, including bridges, zinc roofs of residents' houses, and schools. The presence and activities of the

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[20] Celios-Walhi (2024). Indonesia's Geothermal Challenge Amidst Potential and Exploitation in the name of Energy Transition. Researchgate. https://www.researchgate.net/publication/381804605_Indonesia's_Geothermal_Challenges_Amidst_Potential_and_Exploitation_in_The_Name_Of_Energy_Transition/link/667f8debf3b61c4e2c998ca9/download?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19

[21] ibid

[22] Jaringan Advokasi Tambang (JATAM) dan JPIC-OFM (Justice, Peace, Integrity of Creation - Ordo Fatum Minorum) Indonesia (September 2022). *Derita Rakyat dan Lingkungan di Balik PLTP Ulumbu*. Catatan Lapangan. JATAM. https://jatam.org/wp-content/uploads/2022/09/Catatan-Lapangan-PLTP-ULUMBU-Final.pdf

Ulumbu GPP in Wewo Village, Satar Mese District, have the potential to escalate into social conflict, primarily related to the issue of land acquisition and the company's promise to provide job opportunities.

After their experiences with Ulumbu GPP, the villagers are strongly opposed to the expansion of Ulumbu GPPl to Poco Leok. The planned 60 drilling sites in 3 villages of Desa Lungar, Desa Mocok, and Desa Golo Muntas are a source of grave concern. The villagers fear that this project will devastate their land, livelihoods, and water sources. On 2 October 2024, the Poco Leok communities' peaceful demonstration was met with brutal suppression by the security forces. The violence against the community, including journalists, during PLN's entry into the project site with security forces, resulted in the arrest of numerous villagers and journalists.[23]

The German Kreditanstalt für Wiederaufbau (KfW) finances the Ulumbu Geothermal Power Plant unit 5-6 in Poco Leok, which is operated by PLN (a state-owned enterprise) with Euro 150 million signed in October 2018.[24]

4.2. Technical Assistance for Geothermal Power Development in West Java and Jambi

The Technical Assistance for USD 1,725,000, TA-7583-INO: Geothermal Power Development,[25] initiated in 2010, was aimed at preparing for an investment in two geothermal power plants. These plants, Karaha Bodas in West Java and Sungai Penuh in Jambi, Sumatra, were to be financed jointly by ADB and the Clean Technology Fund (CTF). However, the

[23] Belseran. CJ. (10 October 2024). *Soroti Kekerasan di Proyek Panas Bumi Poco Leok, Koalisi: Lindungi Masyarakat.* Mongabay. https://www.mongabay.co.id/2024/10/10/soroti-kekerasan-di-proyek-panas-bumi-di-poco-leok-koalisi-lindungi-masyarakat/

[24] Walhi (3 October 2024). *Poco Leok Kembali Memanas: Tarik Mundur Aparat, Hentikan Intimidasi dan Kekerasan Pada Warga Poco Leok dan Jurnalis!.* Siaran Pers Koalisi Advokasi Poco Leok. Walhi. https://www.walhi.or.id/poco-leok-kembali-memanas-tarik-mundur-aparat-hentikan-intimidasi-dan-kekerasan-pada-warga-poco-leok-dan-jurnalis

[25] ADB (2010). *Technical Assistance Completion Report TA-7583-INO: Geothermal Power Development* at: https://www.adb.org/sites/default/files/project-documents//43249-012-tcr.pdf

project's trajectory changed when the Indonesian government decided not to borrow from ADB. In response, the National Development Planning Agency (BAPPENAS) played a crucial role in redirecting the technical assistance (TA) grant towards capacity development for GDE and supporting the Ministry of Energy and Mineral Resources (MEMR) in revising its geothermal policy.

4.3. Sarulla Geothermal Power Generation Project in North Sumatra

The project, which will develop the steam resources in the Sarulla concession area and construct, operate, and maintain three geothermal power generation units with a total capacity of about 320 megawatts (MW). ADB approved this private sector project of 42916-INO in December 2013 with a USD 250 million loan and co-financing with the Clean Technology Fund of USD 80 million and the Canadian Climate Fund of USD 20 million.[26] JBIC also co-financed the project with USD 533.6 million. In addition to these financial institutions, some private corporations such as Inpex Corporation, Itochu Corporation, Kyushu Electric Power Company, Medco Power Indonesia, and Ormat International also sponsored this category A project for Environment, Involuntary Resettlement, and Indigenous People.

Anticipated impacts of the geothermal power plant operation were air quality (H2S) noise and community unrest due to workforce recruitment.[27] Although the project claimed that more than 93% of the communities of Pahae Julu and Pahae Jae responded positively and optimistically due to job and business opportunities,[28] the project occupied about 472,000 m2 of land and triggered environmental and social issues. Two years after the plants started operation, the villagers

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[26] ADB. *Indonesia: Sarulla Geothermal Power Generation Project. Nonsovereign Project | 42916-014*. ADB at: https://www.adb.org/projects/42916-014/main

[27] ADB (August 2009). *Environmental Impact Assessment. INO: Sarulla Geothermal Power Generation Project. Executive Summary.* ADB. at: https://www.adb.org/sites/default/files/project-documents//42916-01-ino-eia-01.pdf

[28] Pertamina Geothermal Energy dan Sarulla Operation. https://www.lw.com/en/insights/2019/10/rantau-dedap-indonesia-geothermal-project -latham-watkins ions Ltd (August 2009). *Environmental Impact Statement: Development of Sarulla Geothermal Field and Power Plant of 330 MW Capacity. North Tapanuli Regency, North Sumatera Province*. ADB. https://www.adb.org/sites/default/files/project-documents/42916-01-ino-eia-02.pdf

found foam appearing in their rice fields and emitting a sulphur smell. Over time, the smell of sulphur reached the villages. Moreover, the harvest started to decrease. For example, the damaged community's frankincense garden is about 20km from the project location.[29]

The Sarulla GPP in Indonesia is situated in a critically important area of high biodiversity value. This location is at risk of experiencing severe consequences, including the loss of habitat connectivity due to the construction of access roads, increased fauna mortality from vehicle collisions, heightened threat of hunting or poaching of endangered species, and habitat clearance for project components, including the well pads.[30]

4.4. Rantau Dedap Geothermal Power Project

The location of the 240 MW Rantau Dedap Geothermal Power Plant is in South Sumatra, Indonesia. This project is composed of two phases. (1) Phase I constitutes the project development's geothermal resource exploration and drilling phase. PT. Supreme Energy Rantau Dedap is an Indonesian project company owned by GDF Suez, Marubeni Corporation, and PT. Supreme Energy borrowed USD 50 million for this project from the ADB and Clean Technology Fund (CTF) that approved it in June 2014. Phase (1) was a Category B Project for the Environment, Involuntary Resettlement, and Indigenous People for the initial geothermal resource exploration, involving the drilling of wells to better ascertain steam reservoir characteristics and capacity.[31]

Rantau Dedap Geothermal Power Plant (Phase 2) develops geothermal steam resources through production and injection facilities and constructs, operates, and maintains a power generation plant with a total capacity of approximately 90 megawatts (MW). The borrower is PT

[29] Syahni. D. (September 2020). Keluhan Seputar Pembangkit Panas Bumi, Ada Omnibus Law Khawatir Perburuk Kondisi. Mongabay. https://www.mongabay.co.id/2020/09/12/keluhan-seputar-pembangkit-panas-bumi-ada-omnibus-law-khawatir-perburuk-kondisi/

[30] Chapter 9. Key issues for SEA in the geothermal energy sub-sector. P7. https://www.iaia.org/downloads/SEA-Guidance-Reneweable-Energy/Chapter 9-Geothermal-preliminarydraft(12 April 23).pdf

[31] ADB. I*ndonesia : Rantau Dedap Geothermal Power Project (Phase I. Nonsovereign Project | 47937-001*. ADB. https://www.adb.org/projects/47937-001/main

Supreme Energy Rantau Dedap, and the project sponsors are Engie Electrabel SA, Marubeni Corporation, PT Supreme Energy, and Tohoku Electric Power. The land occupied for this project is 124.5 ha, and 157 households have been resettled from the area. So, this project is Category B for Involuntary Resettlement, Category A for the Environment, and Category C for Indigenous People.[32] ADB approved this project in March 2018 for an ADB CTF loan of USD 50 million and an OCR loan of USD 175 million. The USD 539 million of loans for the Rantau Dedap, besides ADB and CTF, came from JBIC with USD 188.8 million and another USD 125.9 million from three commercial banks: Mizuho Bank Ltd (Mizuho), MUFG Bank Ltd (formerly known as Bank of Tokyo-Mitsubishi UFJ Ltd), and Sumitomo Mitsui Banking Corporation. Commercial bank loans benefit from NEXI.[33]

The US government decided to abstain from the approval of this project due to several reasons, such as[34] (1) potential adverse impacts on the critical habitat of Bukit Jambul Gunung Patah, where at least eight endangered species are on the IUCN list; (2) the 2017 ESIA that included a critical habitat assessment, and a biodiversity action plan, fell short. The 2017 ESIA did not go far enough in measuring cumulative impact or fragmentation impact on habitat; (3) Third, the 2017 ESIA does not include an analysis for the associated 39-km transmission line because PLN is still in the process of preparing the ESIA for this portion of the project.

4.5. Muara Laboh Geothermal Power Project

The project ADB Loan 50156-INO[35], approved on 7 December 2016, with a USD 70 million OCR loan and co-financed by the CTF of USD 19.25 million and Leading Asia's Private Infrastructure Fund (LEAP) of USD 20

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[32] ADB. *Indonesia: Rantau Dedap Geothermal Power Project (Phase 2). Nonsovereign Project | 50330-001.* ADB. https://www.adb.org/projects/50330-001/main

[33] Latham & Watkinds LLP (2019). *Rantau dead steams ahead*. https://www.lw.com/admin/upload/SiteAttachments/RantauDedapArticle-PFI.pdf

[34] 23 March 2018. *U.S. Position on ADB's Rantau Dead Geothermal Power Project (Phase 2) in Indonesia.* https://home.treasury.gov/system/files/206/U.S.-Position-on-ADB-Investment-in-Rantau-Dedap-Geothermal-Power-Project-March-23,-2018.pdf

[35] ADB. *Indonesia: Muara Laboh Geothermal Power Project. Nonsovereign Project | 50156-001*. ADB. https://www.adb.org/projects/50156-001/main

million, developed geothermal steam resources through production and injection facilities in the Liki Pinangawan Muaralaboh concession area and construct, operate, and maintain a single power generation unit with a total capacity of approximately 80 megawatts (MW). The concession is located in the South Solok Regency, 150 kilometres (km) southeast of Padang, West Sumatra. Engie Electrabel SA, PT Supreme Energy, and Sumitomo Corporation sponsor this project: Category A for Environment, Category B for Involuntary Resettlement, and Category C for Indigenous People. The project location is adjacent to a national park, and because threatened species have been observed in the area, the project is considered to be located in a critical habitat.

The Japan Bank for International Cooperation (JBIC) signed on 26 January 2017 a loan agreement amounting to approximately USD 198 million (JBIC portion) with PT. Supreme Energy Muara Laboh (SEML) is an Indonesian company invested in by Sumitomo Corporation and other entities for the Muara Laboh Geothermal Power Project. The loans are co-financed by three private financial institutions, Mizuho Bank, Ltd., Sumitomo Mitsui Banking Corporation, and the Bank of Tokyo-Mitsubishi UFJ, Ltd., and with the loan from ADB bringing the total co-financing amount to approximately USD 439 million. Nippon Export and Investment Insurance (NEXI) provides insurance for the portion co-financed by private-sector banks.[36]

ADB approved Muara Laboh Geothermal Power Project Stage 2 on 19 August 2024.[37] The Project Loan 57311-INO will (i) develop geothermal steam resources through production and injection facilities in the Liki Pinangawan Muara Laboh concession area and (ii) construct, operate, and maintain a new 82.7megawatt (MW) net capacity GPP. The new plant will operate with the existing Muara Laboh GPP. The two plants will aggregate to a total net capacity of 168.7 MW. ADB provides a USD 40

[36] JBIC. (30 January 2017). *Project Financing for Muara Laboh Geothermal Power Project in Indonesia. Supporting of Renewable Power Generation Businesses by Japanese Company in Collaboration with the Asian Development Bank and Other Financial Institutions*. JBIC. https://www.jbic.go.jp/en/information/press/press-2016/0130-52890.html

[37] ADB. *Indonesia : Muara Laboh Geothermal Power Project Stage 2. Nonsovereign Project | 57311-001*. ADB. https://www.adb.org/projects/57311-001/main

million OCR loan, co-financed by Australia of USD 15 million and another of USD 34.70 million. The project sponsors are Inpex Corporation, PT Supreme Energy, and Sumitomo Corporation. This project is Category B for Environment and Involuntary Resettlement and Category C for Indigenous People.

On 3 April 2024 Walhi submitted a petition to JBIC and NEXI to discontinue their support to the expansion of Muara Laboh Stage 2 since the expansion will exacerbate the existing problems with that geothermal power plant.[38] According to the Petition, Muara Laboh Stage 1 exercised forced and discriminatory land acquisition process; the impact of crop failure experienced by the community in the Liki Pinangawan Muara Laboh location due to pollution and reduced water supply; public health and safety problems due to gas concentrations; impact of flooding in the Liki Pinangawan Muara Laboh site due to changes in the landscape. The Muara Laboh Geothermal Stage 2 can worsen all those problems already experienced by the communities and the environment. The negative impact on the community cannot be ignored.

4.6. Dieng and Patuha Geothermal

On 28 May 2020, ADB approved the project Loan 52282-INO Indonesia: Geothermal Power Generation Project[39] with OCR Loan of USD 300 million, co-financed by the Clean Technology Fund of USD 35.00 million, and as additional financing from Japan Fund for the Joint Crediting Mechanism of USD 10.00 million. The project will support GDE, a state-owned geothermal company focused on the development and operation of geothermal resources, to commission an additional 110 megawatts (MW) of geothermal electricity generating capacity - 55 MW at the Dieng geothermal field in Central Java and 55 MW at the Patuha

[38] FOE Japan (4 May 2024). *Indonesian NGO Urges JBIC and NEXI to Stop Considering Support for Muara Laboh Geothermal Power Expansion Project "Do not support a project that harms the environment and communities and causes human rights violations under the name of a just energy transition!"* FOE Japan. https://foejapan.org/en/issue/20240405/16900/

[39] ADB. *Indonesia: Geothermal Power Generation Project Sovereign Project | 52282-001.* ADB. https://www.adb.org/projects/52282-001/main

geothermal field in West Java. Another additional funding of USD 180 million is proposed for this project.[40]

This planned project, categorised as B for Environment and Involuntary Resettlement and C for Indigenous Peoples, is met with resistance from the communities of Dieng Plateau. They have seen the experiences of their fellow villagers surrounding the well pads and the power plants of Dieng-2: health problems, environmental problems such as noise, bad smells, water depletion, and decreased harvests. The intimidation atmosphere is widespread among the villagers resisting the expansion of Dieng-1 to Dieng-2 Geothermal, but their awareness of the project is evident in their resistance.

4.7. The planned Geothermal Power Expansion Project in Dieng Plateau

The problematic Dieng Geothermal Project will receive another finance from ADB with a USD 300 million OCR loan. The ADB Board's deliberation of this planned 58342-INO Geothermal Power Expansion Project has not been announced yet.[41] The project will support an expansion of Indonesia's geothermal generating capacity to contribute to the electricity system's sustainability, resiliency, and sufficiency. The project will support PT Geo Dipa Energi (GDE), a state-owned geothermal company, to commission an additional 110 megawatts (MW) of geothermal electricity generating capacity at the Dieng geothermal field in Central Java.

This planned project is categorised as B for Environment and Involuntary Resettlement and C for Indigenous Peoples. It is a historical project that ignores the communities of Dieng Plateau's existing environmental, social, and economic problems and the intimidation and violation they have experienced.

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[40] ADB. *Indonesia : Geothermal Power Generation Project (Second Additional Financing) Sovereign Project | 52282-003*. ADB. https://www.adb.org/projects/52282-003/main

[41] ADB. *Indonesia : Geothermal Power Expansion Project. Sovereign Project | 58342-001*. ADB. https://www.adb.org/projects/58342-001/main

Conclusion

The Indonesian government, with massive support from the Asian Development Bank (ADB), World Bank, and Climate Investment Funds (CIF), is ambitiously developing geothermal as renewable and clean energy. These international financial institutions are crucial in providing policy direction, technical assistance, and project financing for geothermal power plants (GPPs). Geothermal energy is being hailed as the green solution of the future, but it is a matter of serious concern.

The women and their communities in various regions of Indonesia where GPPs are situated provide compelling evidence that the extraction of geothermal energy harms their lives, livelihoods, and the environment. GPPs primarily benefit corporations, investors, and banks rather than the local communities. Therefore, geothermal energy produced by these power plants, along with their well and gas pipelines, is not environmentally, socially, or economically sustainable. The urgency of this issue requires immediate attention and action,

We cannot afford to overlook the urgent issue of the claim that geothermal energy is a clean and sustainable resource. The Asian Development Bank (ADB) and other public and private financiers must refrain from investing in Geothermal Power Plants (GPPs) to avoid jeopardising their investments, destroying the lives and livelihood of the communities, and encountering their resistance. We must take action to prevent any further harm like stop financing geothermal power plants and acknowledge the negative impacts to people and the environment. We must end the ignorance surrounding the struggles of affected communities. The definition of clean energy must be redefined to include the perspectives of these communities, particularly the women, regarding their lives, livelihoods, environment, and natural resources.

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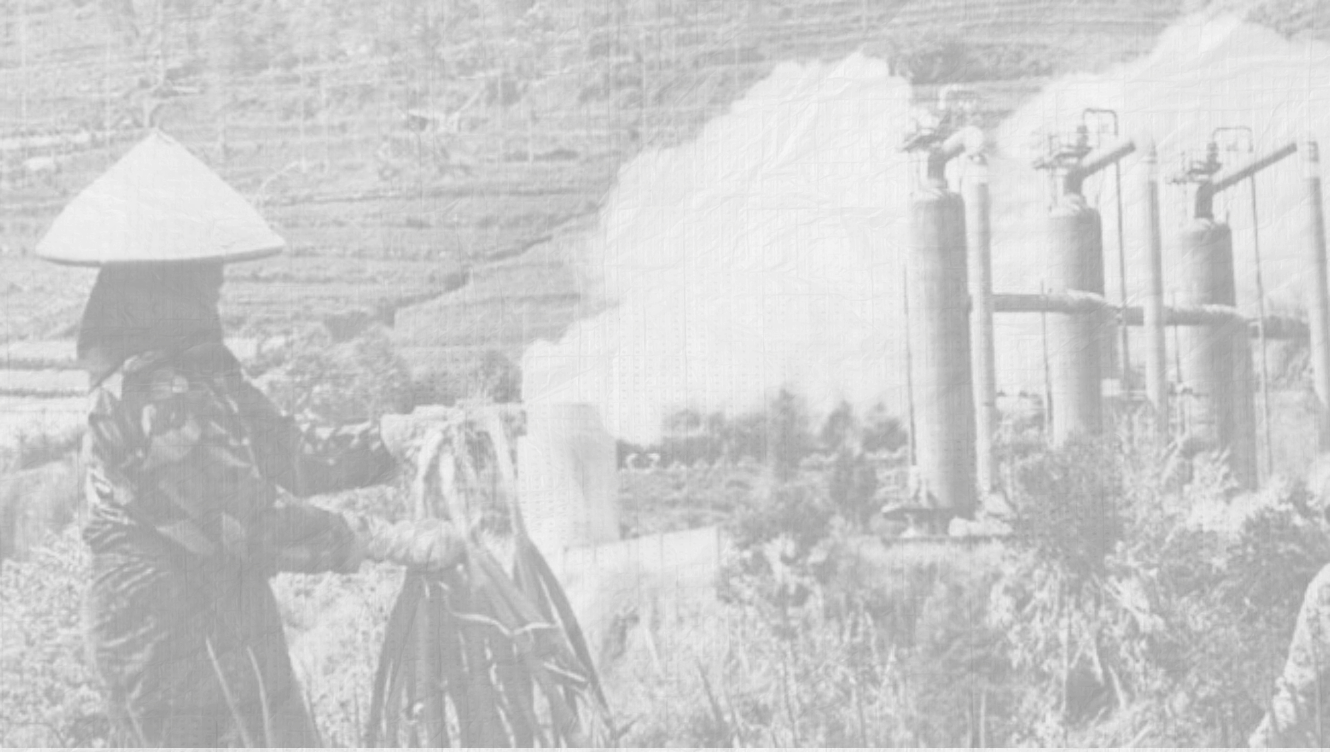

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