

ANALYSIS OF BARRIERS AND PROTECTION POLICY PRACTICES FOR WOMEN WORKERS IN THE GEOTHERMAL ENERGY SECTOR

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Abstract

Geothermal development in Indonesia has become an important part of the transition toward sustainable energy. However, the sector still faces challenges related to gender equality and the protection of female workers. This study aims to analyze the barriers faced by female workers and the protection policies implemented within the geothermal sector. The study employs a qualitative literature review approach through the analysis of academic articles, institutional reports, and related publications using a literature synthesis matrix table. The findings show that female workers continue to face masculine workplace cultures, limited gender-responsive policies, low representation, and dual domestic burdens. Several companies have implemented mentoring programs, Diversity, Equity, and Inclusion (DEI) strategies, gender awareness training, and anti-harassment policies to support a more inclusive work environment. However, the implementation of these policies remains uneven, and empirical evaluations of their effectiveness are still limited. Conceptually, the protection of female workers is linked to the social sustainability of the geothermal sector through increased female participation and the strengthening of inclusive workplaces. This study highlights the importance of strengthening more operational and gender-responsive protection policies within the geothermal sector.

Keywords: Female Workers, Gender Equality, GeothermalSector, Policy, Workplace Protection

Abstrak

Pembangunan proyek panas bumi di Indonesia menjadi bagian penting dalam transisi energi berkelanjutan, namun sektor ini masih menghadapi tantangan terkait kesetaraan gender dan perlindungan pekerja perempuan. Penelitian ini bertujuan menganalisis hambatan yang dihadapi pekerja perempuan serta praktik kebijakan perlindungan dalam sektor panas bumi. Penelitian menggunakan metode tinjauan literatur dengan pendekatan kualitatif melalui analisis artikel ilmiah, laporan institusi, dan publikasi terkait menggunakan tabel matriks sintesis literatur. Hasil sintesis literatur menunjukkan bahwa kebijakan responsif gender, rendahnya representasi perempuan, serta beban ganda domestik. Sejumlah perusahaan telah menerapkan program mentoring, strategi *Diversity, Equity, and Inclusion* (DEI), pelatihan kesadaran gender, dan kebijakan anti-pelecehan untuk mendukung lingkungan kerja yang lebih inklusif. Namun, implementasi kebijakan tersebut masih belum merata dan evaluasi empiris mengenai efektivitasnya masih terbatas. Secara konseptual, perlindungan pekerja perempuan berkaitan dengan keberlanjutan sosial sektor energi panas bumi melalui peningkatan partisipasi perempuan dan penguatan lingkungan kerja inklusif. Penelitian ini menegaskan pentingnya penguatan kebijakan perlindungan pekerja perempuan yang lebih operasional dan responsif gender dalam sektor energi panas bumi.

Kata kunci: Kebijakan, Kesenjangan Gender, Pekerja Perempuan, Perlindungan di Tempat Kerja, Sektor Panas Bumi

INTRODUCTION

Indonesia has the world's largest geothermal energy potential, with 362 identified geothermal sites and a total capacity of 23.6 GWe as of December 2024 (Hakim et al., 2022). The development of geothermal energy has become an important component of the sustainable energy transition, as it is considered capable of

supporting national energy security while also promoting regional economic growth. However, behind the expansion of this sector, issues of gender inequality within the geothermal workforce have received relatively limited attention compared to discussions surrounding technical aspects, investment, and energy transition policies. The energy sector, including geothermal energy, continues to be dominated by men due to persistent gender stereotypes regarding physical capability and technical expertise (Wang et al., 2023). This condition contributes to the low representation of women in STEM education as well as in technical occupations within the energy sector. Data from the Geothermal Directorate of the Ministry of Energy and Mineral Resources indicate that women account for only 14% of the total workforce in the geothermal sector, with the majority employed in administrative positions (World Bank, 2019). Women's representation in technical and field managerial positions also remains very limited. These findings demonstrate that women have not yet obtained equal access and opportunities within the geothermal sector.

Previous studies have shown that the low participation of women in the energy sector is influenced by patriarchal culture, gender discrimination, limited gender-responsive policies, and insufficient protection for women workers (Brotheridge, Bydder, Blair, & Ibrahim, 2018; Oktafiana et al., 2023; Okoroafor et al., 2022). Masculine workplace environments further increase women's vulnerability to gender-based violence, job insecurity, and barriers to career advancement (Brotheridge et al., 2018; Okoroafor et al., 2022). In addition, women workers often face a double burden arising from the simultaneous demands of domestic responsibilities and productive work (Putri, 2021).

Although numerous studies have examined women's participation in the renewable energy sector, research specifically addressing the barriers faced by women workers and the practices of protection policies within Indonesia's geothermal sector remains limited. Existing studies generally focus on women's labor participation in broader terms and have yet to comprehensively examine the relationship between structural barriers, worker protection, and gender inclusivity within geothermal workplace environments. This gap indicates that the agenda of sustainable energy transition has not been fully accompanied by the implementation of gender equality within the geothermal sector. In fact, gender diversity contributes to increased innovation, improved decision-making quality, higher productivity, and the long-term sustainability of energy companies (Becerra, 2024; IESR, 2021). In the Indonesian context, gender mainstreaming has also become part of national policy through Presidential Instruction Number 9 of 2000 on Gender Mainstreaming in National Development, which emphasizes the importance of integrating gender perspectives across all development sectors, including labor and energy.

Nevertheless, gender issues within the energy sector are still frequently positioned as complementary concerns and have not been substantively integrated into labor policies or the protection of women workers. As a result, the development of the geothermal sector risks reproducing gender inequality if it is not accompanied by inclusive and gender-responsive workplace policies. Therefore, strengthening gender equality within the geothermal sector is essential to support a more just, inclusive, and sustainable energy transition. Based on these issues, this study aims to analyze the barriers faced by women workers in the geothermal sector and to examine the protection policy practices implemented by companies through a literature review approach. The novelty of this research lies in its analysis of the interrelationship between structural barriers, the protection of women workers, and gender inclusivity

within Indonesia's geothermal sector, an area that remains rarely discussed in previous studies.

RESEARCH METHOD

This literature review was conducted using a qualitative approach consisting of several stages: determining the PICO (Problem, Intervention, Comparison, Outcome) questions, searching for publications, assessing relevant journal articles and official reports, and conducting article analysis and synthesis. Relevant articles were identified through electronic databases, including Google Scholar, ResearchGate, and Google, using the keywords "barriers faced by women workers in the geothermal energy sector," "gender policies in the geothermal sector," and "protection programs in geothermal workplace environments," in both Indonesian and English.

This literature review addresses the following research questions:

1. What forms of structural and social barriers are experienced by women workers in the geothermal energy sector?
2. What policy practices and protection programs for women workers have been implemented by geothermal companies?
3. What indications of effectiveness can be identified from protection policy practices in overcoming barriers faced by women workers and in supporting gender inclusivity within the geothermal sector?

This study employs a literature review method with a qualitative approach. The research data were obtained from 10 relevant publications published within the last ten years, consisting of scientific articles, reports from international institutions, project documents, policy briefs, and industry practice reports discussing issues related to gender, women workers, and the geothermal energy sector. The selected publications focused on the structural and social barriers faced by women workers, the policy practices and protection programs implemented by companies or energy institutions, as well as the relationship between protection policy practices and efforts to create more gender-inclusive workplace environments in the geothermal sector. Data analysis was conducted using a matrix table to compare the focus of the studies, research methods, forms of barriers, implications of the barriers, protection policy practices, as well as indications of effectiveness or empirical evaluations presented in each publication.

Table 1. Results of the Analysis and Synthesis of Publication

No.	Sumber	Fokus Penelitian & Metode	Hambatan Utama	Implikasi, Kebijakan & Efektivitas	Catatan / Gap Penelitian
1	Brotheridge, Bydder, Blair, & Ibrahim (2018)	Mentoring & women's representation in geothermal (descriptive qualitative)	Low representation, masculine culture, workplace discrimination	Women mentoring programs to support career & retention (34% reported workplace discrimination)	Does not comprehensively discuss worker protection
2	ESMAP / World Bank (2019)	Gender equality in geothermal sector (policy review & case studies)	Social norms; barriers to technical positions	Workforce training, OHS, inclusive procurement to improve participation & sustainability	Not specific to Indonesian context
3	Liling, Pandowo, & Massie (2022)	Experiences of female workers in PGE (qualitative)	Sexual harassment, discrimination, work-life balance	Self-development & time management; discrimination shown to affect performance & comfort	Limited policy evaluation
4	Okoroafor et al. (2022)	DEI in geothermal community (organizational survey)	Lack of diversity & inclusion; women/minorities underrepresented	DEI Task Force shown to increase representation & inclusivity	Not specific to women worker protection
5	Antasya & Kersana (2023)	Gender issues in renewable energy, Indonesia (qualitative)	Patriarchy, gender stigma, double burden	Gender mainstreaming; patriarchal culture shown to affect women's participation	Not specific to geothermal
6	Putri (2021)	Dual role conflict & workload of female employees (descriptive-verificative quantitative)	Dual role conflict and workload	No specific protection policy; conflict/workload lowered performance by 63.9%	Not specific to geothermal worker
7	Winarsa, Haning, & Noya (2024)	GESI in energy transition (policy analysis)	Fragmented regulations; weak gender integration	GESI integration & cross-sector coordination shown to support inclusive transition	Macro-level policy focus
8	UN Women (2022)	Gender analysis in energy infrastructure (guidance note)	Lack of gender-sensitive data & representation	Gender analysis & mainstreaming framework provides indicators for inclusion	Conceptual and non-empirical
9	González, Siles, Rojas, Wen, & Prebble (2019)	Gender-responsive geothermal generation (case study)	Unfriendly workplace and GBV risks	CSR & gender equality policy shown to strengthen participation & community relations	No long-term impact evaluation
10	Sosa (2020)	Gender inclusion practices in geothermal industry (literature review)	Masculine work culture, limited facilities, GBV risks	GAP, anti-harassment policy, women-friendly facilities considered relevant to reduce barriers	No systematic empirical evaluation

RESULTS AND DISCUSSION

By the 10 publications analyzed, 4 employed qualitative approaches, including descriptive qualitative studies, qualitative analyses, and case studies exploring the experiences of women workers. Furthermore, 3 publications applied policy review, policy analysis, and literature review approaches, while 2 publications utilized organizational survey and quantitative empirical methods. In addition, 1 publication consisted of a conceptual guidance note related to gender analysis in the energy sector.

Among the analyzed publications, 4 originated from Indonesia, while the remaining 6 were international studies, including 1 publication discussing gender and the geothermal sector in El Salvador, as well as publications from global institutions addressing the geothermal energy sector and gender-responsive energy transition, such as UN Women and ESMAP/World Bank. Moreover, among the three variables that became the focus of this literature review—namely barriers faced by women workers, protection policy practices, and indications of the contribution of policy practices toward gender inclusivity—4 publications discussed all three variables simultaneously. Meanwhile, 3 publications examined two variables, particularly gender barriers and policy practices, whereas the remaining 3 publications focused primarily on a single variable, such as structural gender barriers or gender mainstreaming within the energy sector.

The results of the analysis were subsequently grouped into three main categories: (1) Structural and social barriers faced by women workers in the geothermal sector; (2) Policy practices and protection programs for women workers within the geothermal energy sector; and (3) Indications of the effectiveness of protection policy practices in addressing barriers faced by women workers and in supporting gender inclusivity within the geothermal sector.

Structural and Social Barriers Faced by Women Workers in the Geothermal Sector

By the 10 publications analyzed, 8 publications discussed the structural and social barriers faced by women workers in the geothermal and renewable energy sectors. The synthesis results indicate that these barriers do not exist independently; rather, they are interconnected through the masculine structure of the geothermal energy industry and social constructions regarding women's gender roles.

Structural Barriers

Most of the literature (8 out of 10 publications) demonstrates that women workers encounter structural barriers originating from organizational culture, work systems, and power relations within the geothermal sector. The low representation of women in technical and managerial positions emerged as one of the primary barriers identified in several studies (Brotheridge et al., 2018; ESMAP/World Bank, 2019). This condition indicates that the geothermal energy sector continues to be influenced by gender stereotypes that associate technical work, fieldwork, and decision-making roles with men.

In addition, the masculine workplace culture within the geothermal sector creates a working environment that is not yet fully inclusive for women. Brotheridge et al. (2018) found that 34% of women reported experiencing discrimination in the workplace. Meanwhile, Liling, Pandowo, and Massie (2022) identified sexual harassment, age discrimination, and work-life balance conflict as factors affecting

women's job satisfaction and work performance. These findings demonstrate that gender barriers in the geothermal energy sector are not only related to women's access to employment opportunities, but also to their ability to remain and advance within the sector.

Several publications further indicate that workplace policies and facilities in the geothermal energy sector remain insufficiently gender-responsive. Gonzáles, Siles, Rojas, Wen, and Prebble (2019), as well as Sosa (2020), show that the limited availability of women-friendly facilities, the lack of anti-harassment policies, and weak protection against gender-based violence (GBV) continue to be significant issues within geothermal workplace environments. In this context, the structure of the geothermal industry tends to accommodate the needs of male workers more than those of women. Consequently, women workers are more vulnerable to exclusion, limited career advancement opportunities, and job insecurity.

Most of the existing literature still frames gender issues in the geothermal energy sector primarily as a matter of low female representation. However, the more fundamental issue lies in organizational structures and workplace cultures that systematically reproduce gender inequality (Brotheridge et al., 2018; Okoroafor et al., 2022; UN Women, 2022). Therefore, increasing the number of women workers alone is insufficient unless it is accompanied by transformations in work systems and power relations within the geothermal energy sector.

Social Barriers

Half of the analyzed publications (5 out of 10) explicitly discussed social barriers faced by women workers, including patriarchal norms, gender stigma, work-life balance conflict, and women's double burden in domestic and productive roles. In addition to structural barriers within the workplace, women workers also face social barriers rooted in patriarchal norms and gender constructions within society. Antasya and Kersana (2023) demonstrate that gender stigma and patriarchal culture continue to influence women's involvement in the energy sector. Women are often perceived as being more suited to domestic roles rather than working in technical sectors such as geothermal energy. Consequently, women's participation in the energy sector is still frequently regarded as inconsistent with traditional gender constructions.

The social barriers experienced by women workers in the geothermal sector are also closely related to gender constructions that continue to position women as the primary individuals responsible for domestic work. In addition to carrying out productive work in the geothermal energy sector, women remain burdened with reproductive responsibilities such as household management and caregiving for family members. This condition creates a double burden that increases work-related pressures for women compared to male workers, particularly in maintaining a balance between work and family life. Liling et al. (2022) identified work-life balance conflict as one of the main challenges faced by women workers in the geothermal energy sector. This finding is reinforced by the study of Putri (2021), which showed that role conflict and workload significantly affect the performance of female employees at the Center for Mineral, Coal, and Geothermal Resources (PSDMBP). These findings indicate that gender-related issues in the geothermal sector are influenced not only by workplace conditions, but also by social norms that continue to place disproportionate domestic responsibilities on women.

Several publications further highlight that social norms and gender inequality within the energy sector may reinforce the marginalization of women in the energy transition process. Winarsa, Haning, and Noya (2024), as well as UN Women (2022), demonstrate that the limited integration of gender perspectives into energy policies has resulted in women remaining underrepresented in decision-making processes and sustainable energy development initiatives. Thus, gender inequality within the geothermal sector is not only reproduced through industrial structures, but is also reinforced by social norms that restrict women's access, participation, and positions within the energy sector.

Conceptually, these structural and social barriers have significant implications for the sustainability of the geothermal sector. An energy sector that continues to reproduce gender inequality risks creating an exclusive and inequitable energy transition (Winarsa et al., 2024; Antasya & Kersana, 2023). Conversely, reducing gender barriers and strengthening protection for women workers can enhance the social sustainability of the geothermal sector through increased workforce participation, greater diversity of organizational perspectives, and the creation of more inclusive workplace environments (ESMAP/World Bank, 2019; Gonzáles et al., 2019).

Policy Practices and Protection Programs for Women Workers in the Geothermal Sector

Of the 10 publications analyzed, 8 publications explicitly discussed policy practices and protection programs for women workers within the geothermal and renewable energy sectors. The synthesis results indicate that several energy companies and institutions have begun developing policies and programs aimed at supporting gender inclusivity in the geothermal sector. These policies include women's mentoring programs, Diversity, Equity, and Inclusion (DEI) strategies, workforce training, anti-harassment policies, the provision of women-friendly facilities, and the integration of gender mainstreaming into energy project governance (Brotheridge et al., 2018; Okoroafor et al., 2022; Gonzáles et al., 2019).

Nevertheless, the synthesis findings reveal that most policies remain primarily oriented toward increasing women's participation in an administrative sense and have not fully addressed the root causes of structural gender issues within geothermal workplace environments. Mentoring programs, for example, may assist women in obtaining professional support and career development opportunities, yet such policies do not necessarily transform masculine organizational cultures or discriminatory workplace relations. Similarly, DEI strategies and gender mainstreaming initiatives often emphasize institutional commitment more than substantive transformation of workplace systems and power distribution.

Several studies further indicate that protection policies for women workers in the geothermal energy sector remain normative and fragmented in nature. Winarsa et al. (2024) and UN Women (2022) demonstrate that the integration of Gender Equality and Social Inclusion (GESI) within the energy sector continues to face challenges related to weak institutional coordination, limited availability of gender-disaggregated data, and insufficient indicators for evaluating policy implementation. These findings suggest that gender mainstreaming within the energy sector frequently remains at the level of formal policy commitments without being accompanied by adequate implementation and monitoring mechanisms.

Critically, most of the existing literature still tends to position the protection of women workers primarily as an instrument for improving productivity and industrial sustainability, rather than as part of fulfilling workers' rights and advancing gender justice. Such an approach risks reducing gender inclusivity to merely a component of organizational efficiency strategies without genuinely transforming unequal workplace structures. Therefore, the existence of protection policies does not automatically indicate the creation of an equal and safe working environment for women workers.

Indications of the Effectiveness of Protection Policy Practices in Supporting Gender Inclusivity in the Geothermal Sector

Of the 10 publications analyzed, 7 publications discussed indications of the effectiveness of protection policy practices in supporting gender inclusivity within the geothermal sector. The findings suggest that protection policy practices may contribute to increased professional support, women's participation, and organizational awareness of gender-related issues. Brotheridge et al. (2018) demonstrated that mentoring programs help improve women's retention and career development, while Okoroafor et al. (2022) indicated that Diversity, Equity, and Inclusion (DEI) strategies contribute to increasing women's representation within the geothermal energy community. In addition, Gonzáles et al. (2019) found that gender-responsive policies and women's involvement in geothermal projects can strengthen social relationships with communities surrounding project sites.

Within the context of geothermal sector sustainability, the protection of women workers is conceptually linked to the social sustainability dimension of the energy transition (Winarsa et al., 2024; UN Women, 2022). The transition toward clean energy is not only related to emission reduction and technological advancement, but also to the creation of fair and inclusive workplace systems (ESMAP/World Bank, 2019; UN Women, 2022). Therefore, a geothermal sector that continues to reproduce gender inequality risks generating an exclusive and inequitable energy transition (Antasya & Kersana, 2023; Winarsa et al., 2024). Conversely, the protection of women workers can expand workforce participation, enhance diversity of perspectives in decision-making processes, and strengthen the social legitimacy of sustainable energy projects (ESMAP/World Bank, 2019; Gonzáles et al., 2019; Okoroafor et al., 2022).

Nevertheless, the reviewed literature does not yet provide strong empirical evidence regarding the long-term effectiveness of protection policies in generating structural change within the geothermal sector. Most studies remain descriptive in nature, rely on case studies, or merely indicate policy contributions without systematically measuring their impacts. As a result, it remains difficult to determine the extent to which policies such as mentoring programs, DEI strategies, and gender mainstreaming are genuinely capable of reducing discrimination, improving workplace safety, or strengthening women's positions within geothermal organizational structures.

These limitations indicate that studies on gender issues within the geothermal sector remain largely focused on identifying barriers and developing policy recommendations, rather than conducting empirical evaluations of the effectiveness of protection policies for women workers. In addition, research that specifically links the protection of women workers with the social sustainability of the geothermal sector remains relatively limited, particularly within the Indonesian context.

CONCLUSION AND RECOMMENDATIONS

The findings of the literature synthesis indicate that women workers in the geothermal sector continue to face interconnected structural and social barriers, ranging from masculine workplace cultures, discrimination, and limited gender-responsive protection policies to the burden of domestic double responsibilities. These barriers demonstrate that gender issues within the geothermal energy sector are not solely related to the low representation of women, but are also associated with organizational structures, power relations, and social norms that systematically reproduce gender inequality. On the other hand, several policy practices and programs—such as women’s mentoring initiatives, Diversity, Equity, and Inclusion (DEI) strategies, gender mainstreaming, anti-harassment policies, and the provision of women-friendly facilities—have been identified as contributing to the creation of more gender-inclusive workplace environments. Nevertheless, most of these policies remain normative in nature and have not fully addressed the structural roots of gender inequality within geothermal workplace settings.

Conceptually, this study demonstrates that the protection of women workers is closely linked to social sustainability within the geothermal sector and the broader energy transition. An energy sector that continues to reproduce gender inequality risks generating an exclusive and inequitable energy transition. Conversely, the protection of women workers can strengthen gender equality through increased female workforce participation, greater diversity of organizational perspectives, and the creation of safer and more inclusive workplace environments. Therefore, this study contributes academically by highlighting that gender issues in the geothermal sector should be understood not merely as a matter of women’s representation, but also as a structural issue closely related to the social sustainability of the energy sector.

The policy implications of this study highlight the need to strengthen more operational protection policies for women workers within the geothermal sector. These include the establishment of reporting and response mechanisms for gender-based violence, the strengthening of anti-discrimination and anti-harassment policies, the provision of gender-responsive workplace facilities, the integration of GESI into corporate governance and geothermal energy project management, and the development of evaluation indicators for gender policy implementation within workplace environments. In addition, companies and energy institutions need to develop monitoring and evaluation systems that measure not only the number of women participating in the workforce, but also the quality of women’s participation, workplace safety, and opportunities for career advancement within the geothermal energy sector.

Previous literature also indicates a relationship between the protection of women workers, gender inclusivity, and the sustainability of the geothermal sector, particularly through increased women’s participation, the strengthening of inclusive workplace environments, and support for a more equitable energy transition. However, most existing studies remain descriptive in nature, and empirical evaluations of the effectiveness of protection policies for women workers in the geothermal energy sector remain limited, particularly within the Indonesian context.

This study has several limitations due to its reliance on a literature review approach, which depends on the scope and quality of available publications. Scientific

publications specifically addressing the protection of women workers in Indonesia's geothermal sector remain very limited; therefore, this study also utilized institutional reports as supporting analytical sources. Furthermore, most of the reviewed literature has not conducted extensive empirical evaluations of the long-term effectiveness of policy practices and protection programs for women workers. Accordingly, further research is needed to empirically evaluate the implementation and effectiveness of protection policies for women workers in the geothermal sector, including through field studies, evaluations of company programs, and analyses of women workers' experiences within Indonesia's geothermal industry context.

REFERENCES

- Antasya, A., & Kersana, R. (2023). Gender inequality and renewable energy: How women's interests and lack of participation leading to women marginalization in renewable energy in Indonesia. *Journal of Indonesian Social Sciences and Humanities*, 13(2).
- Becerra, L. (2024, May 30). *Memberdayakan Perempuan dalam Transisi Energi yang Berkeadilan: Inisiatif Pelatihan Ulang dan Pelatihan Ulang untuk Masa Depan yang Berkelanjutan*. NEYEN. https://neyen.io/id/empowering-women-in-just-energy-transition-retraining-reskilling-initiatives-for-sustainable-future/#_ftnref16
- Brotheridge, J., Bydder, J., Blair, A., & Ibrahim, R. (2018). Geothermal Mentoring Program – Empowering Women in the Industry. *The 6th Indonesia International Geothermal Convention & Exhibition (IIGCE)*, 1–5.
- ESMAP. 2019. *Gender Equality in the Geothermal Energy Sector: Road to Sustainability*. Energy Sector Management Assistance Program (ESMAP) Knowledge Series 028/19. Washington, DC: World Bank.
- González, Siles, Rojas, Wen, & Prebble. (2019). *Advancing Gender in the Environment: Gender-Responsive Geothermal Generation*. IUCN.
- Hakim, A. F., Krismadiana, Sholihah, F., Ismawati, R., & Dewantari, N. (2022). Potensi dan Pemanfaatan Energi Panas Bumi di Indonesia. *Indonesian Journal of Conservation*, 11(2), 71–77.
- Institute for Essential Services Reform. (2021, July 26). *Perempuan dan Energi: Memastikan Keadilan dan Kesetaraan Gender dalam Bidang Energi*. IESR. <https://iesr.or.id/women-in-energy-memastikan-keadilan-dan-kesetaraan-gender-dalam-bidang-energi/>
- Kementerian Energi dan Sumber Daya Mineral Republik Indonesia. (2024, December 17). *Panas Bumi jadi Andalan Capaian Bauran EBT Hingga Akhir 2024*. ESDM. <https://www.esdm.go.id/id/media-center/arsip-berita/panas-bumi-jadi-andalan-capaian-bauran-ebt-hingga-akhir-2024>
- Liling, N. K., Pandowo, M., & Massie, J. (2022). Challenges on female employees at PT Pertamina Geothermal Energy area lahendong. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis Dan Akuntansi*, 10(3), 422. <https://doi.org/10.35794/emba.v10i3.42304>
- Okoroafor, E. R., Letvin, A. I., Jong, E. de, Ostrum, J., Thomas, G., Radonjic, M., Mora, L., Lindberg, V., Blake, K., Trujillo, J., & Pettitt, W. (2022). Diversity and Inclusion in the Geothermal Community: Beginning the Journey of a Thousand Miles. *Geothermal Resources Council Transactions*, 46, 922–936. Geothermal Rising.

- <https://geothermal.org/sites/default/files/2023-02/2022%20GR%20DEI%20paper.pdf>
- Oktafiana, S., Laazulva, I., Christanti, Y. I., & Saptariani, N. (2023). Laporan Hasil Penelitian Peran dan Partisipasi Perempuan pada Sektor Energi Terbarukan di Provinsi Maluku. In *nsmates.org* (p. 5). NZMATES. [https://nzmates.org/sites/default/files/2023-08/Laporan%20gender%20study Indonesia signed.pdf](https://nzmates.org/sites/default/files/2023-08/Laporan%20gender%20study%20Indonesia%20signed.pdf)
- Putri, A. S. (2021). *Pengaruh Konflik Peran Ganda dan Beban Kerja Terhadap Kinerja Pegawai Wanita di Pusat Sumber Daya Mineral Batubara dan Panas Bumi (PSDMBP)*. Undergraduate Thesis, Universitas Informatika dan Bisnis Indonesia, Bandung. <https://repository.unibi.ac.id/583/>
- Richter, A. (2020, May 3). *The important role of women in El Salvador's geothermal industry*. Think GeoEnergy - Geothermal Energy News; ThinkGeoEnergy. <https://www.thinkgeoenergy.com/the-important-role-of-women-in-el-salvadors-geothermal-industry/>
- Sosa, D. O. (2020). *Best Practices on Gender Inclusion relevant to the Geothermal Industry*. Indonesia Geothermal Resource Mitigation Project (P166071).
- UN Women. (2022). *Gender analysis in technical areas: Energy infrastructure*. United Nations Entity for Gender Equality and the Empowerment of Women.
- Wang, N., Tan, A.-L., Zhou, X., Liu, K., Zeng, F., & Xiang, J. (2023). Gender differences in high school students' interest in STEM careers: a multi-group comparison based on structural equation model. *International Journal of STEM Education*, 10(59), 1-21. <https://stemeducationjournal.springeropen.com/articles/10.1186/s40594-023-00443-6>
- Winarsa, S., Haning, D., & Noya, S. D. (2024). *Ringkasan Kebijakan: Mempromosikan Kesetaraan Gender dan Inklusi Sosial Sebagai Bagian Dari Transisi Energi Berkeadilan di Indonesia*. Humanis Foundation. [https://humanis.foundation/wp-content/uploads/2024/10/REVISED-2-BAHASA-INDONESIA-Policy-Brief Promoting-Gender-Equity-in-Energy-Transition-1.pdf](https://humanis.foundation/wp-content/uploads/2024/10/REVISED-2-BAHASA-INDONESIA-Policy-Brief-Promoting-Gender-Equity-in-Energy-Transition-1.pdf)
- World Bank. (2019). *Project Appraisal Document - GREM*
- World Bank Group. (2019, June 12). *Promoting Gender Equality in the Geothermal Sector Can Lead to Inclusive Growth*. World Bank; World Bank Group. <https://www.worldbank.org/en/news/feature/2019/06/12/promoting-gender-equality-in-the-geothermal-sector>