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CELIOS

NATIONAL PUBLIC OPINION SURVEY ON JUST ENERGY TRANSITION PARTNERSHIP (JETP)

2023

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Energy sovereignty lies
in the hands of the people.
A just energy transition process
needs to be implemented
to ensure energy equity,
energy security, and energy
sustainability.

Executive Summary

At the G20 Summit in Bali, Indonesia secured a commitment of USD 20 billion, equivalent to 314 trillion Indonesian Rupiah, in funding for the Just Energy Transition Partnership (JETP). This funding is aimed at assisting Indonesia in achieving net-zero emissions. The JETP funding scheme takes the form of loans, thus there needs to be transparency regarding the projects that will be funded, with detailed information provided to the public. Therefore, drawing from the experience of JETP in South Africa, it is essential for Indonesia to prioritize public engagement as a central issue that cannot be overlooked.



This study is significant because there has been no research conducted on the level of knowledge, perceptions, and acceptance of the JETP among the Indonesian public. Additionally, this study aims to elaborate on public perceptions regarding the closure of coal-fired power plants and energy transition schemes in Indonesia. The study utilizes primary data from a survey with respondents representing Indonesia's national population.

The key findings of this study indicate that a large proportion of respondents (76%) are still unaware of the JETP. Most of the respondents who are aware of the JETP reside in urban or suburban areas with middle to high incomes, indicating that the government needs to intensify its efforts to raise

awareness of the JETP in rural areas. Moreover, the majority of mining concessions are located in rural areas, making rural communities particularly vulnerable to direct and significant impacts.

Another crucial finding is that young Indonesians have a higher level of concern regarding the importance of energy transition in Indonesia. However, women exhibit stronger concern compared to men regarding the potential negative impacts resulting from the closure of coal-fired power plants, such as household electricity outages, job loss and relocation, as well as the ability to adjust to new habits once the energy transition is completed.

The study also reveals that the coal sector is considered the biggest obstacle in energy transition, and nuclear power is perceived as the least favorable energy transition solution. Additionally, the study finds that highly educated individuals tend to be more critical of energy transition regulations and expect an acceleration of the development of Renewable Energy (EBT). With regards to the labor sector, the study discovers that formal sector workers have a greater interest in energy transition than those in the informal sector. In other words, individuals with better skills and resources are more prepared to seek new jobs related to clean energy.

In response to these findings, we propose the following recommendations to policymakers, private sector entities in the energy sector, CSOs and civil society coalitions, as well as the JETP Secretariat:

- 1 To encourage community engagement, particularly among vulnerable communities experiencing negative impacts of energy transition, in the process of developing energy transition programs.
- 2 To strengthen the role of CSOs and civil society coalitions in the policy-making process of energy transition and in data collection to generate more inclusive, effective, and impactful policy solutions.
- 3 To implement a phased closure of coal-fired power plants (PLTU) accompanied by appropriate compensation and incentive schemes for vulnerable communities significantly affected by the closure of PLTUs.
- 4 To promote upskilling programs for vulnerable communities, especially in rural areas, and to apply a gender lens when designing development programs in the renewable energy sector.



Acknowledgment

This study is a collaborative initiative between the Center of Economic and Law Studies (CELIOS) and Unity of Trend (UniTrend).



The ideas, opinions, and concepts presented in this report were developed by Bhima Yudhistira, Media Wahyudi Askar, Ignatius Ardhana R, Muhammad Zulfikar Rakhmat, and Bara Setiadi.

The data and report in this study were collected, analyzed, and visualized by Kayla Queenazima Santoso and Diah Ayu Widyati. We extend our highest appreciation for their time, networks, and various resources that enabled the collection of primary research data and allowed the team to process it into a

high-quality and informative analysis. We would also like to thank Rizki Ardinanta, Galau D Muhammad, and Erythrina Orie for their contributions in reviewing and evaluating the prepared report. Lastly, we appreciate the contributions of Mochamad Satria Riza Permana and Bimo in designing this final report.

This publication is expected to make a positive contribution to discussions regarding energy transition in Indonesia.

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Introduction

The commitment towards zero or low carbon emissions has entered a new phase in Indonesia following the G-20 Summit. Indonesia, along with other G-20 member countries, has agreed to finance the energy transition through the Just Energy Transition Partnership (JETP) scheme, with an investment value of 314 trillion Indonesian Rupiah. Energy transition is defined as the government's effort to achieve the net zero emission target by shifting from fossil energy sources to non-fossil renewable energy sources. In this context, the Indonesian government must promptly put an end to the operational period of coal-fired power plants (PLTU).



Based on the IPCC report (2018), in an effort to maintain global temperature rise below 1.5 degrees Celsius, emissions must be reduced to net zero by 2050. Therefore, the share of renewable energy in global electricity generation needs to reach 59-97% by 2050. By doing so, the proportion of electricity generated from fossil fuels will decrease to 0-25% by 2050. In addition, the Indonesian government has updated its Nationally Determined Contribution (NDC) from 29% to 31.8% using domestic funding calculations. With global support, nonetheless, Indonesia can increase its reduction from 41% to 43.2%.

The Just Energy Transition Partnership (JETP) in Indonesia is initiated with the primary goal of promoting a fair energy transition while

considering social, economic, and environmental interests in a balanced manner. Through this partnership, the government, private sectors, research institutions, and communities can work together to identify innovative solutions and implement sustainable energy policies.

JETP is crucial for the Indonesian government to ensure a just energy transition. The investment of 314 trillion Indonesian Rupiah is not only used for the adoption of new energy technologies, but also takes into account the human aspect as the subject of energy. The funding scheme through JETP emphasizes the aspect of justice or "just," ensuring that vulnerable groups directly affected by the energy transition process are not left behind

At the same time, however, Presidential Regulation 112/2022 shows a half-hearted gesture from the Indonesian government in accelerating the closure of coal-fired power plants. The regulation suggests that the lifespan of coal-fired power plants can be extended until 2050 through technology development, carbon offset, and/or a mix of renewable energy. The involvement of the community in a fair energy transition process is key to the success of the JETP program. The community plays an important role in expressing their needs and aspirations regarding sustainable energy sources. Involving the community in policy formulation and decision-making will ensure fair representation of various groups, prevent social inequalities, and ensure that the positive impacts of energy transition are felt by all parties.

A study on public responses to a fair energy transition has significant implications. We can understand the public's perceptions and preferences regarding proposed energy policies. The results of this study can be used to realize more inclusive policy-making and ensure that a fair energy transition reflects the needs and desires of the broader community. Additionally, this study can help minimize uncertainty and potential resistance to change in order to achieve a successful energy transition in Indonesia.

Research Questions

Public participation has become a crucial aspect in the implementation of JETP programs. Currently, there has been no research conducted to ascertain the public's knowledge, perception, and acceptance of JETP in Indonesia. Therefore, this study aims to address the following three research questions:

- What is the level of public knowledge about the energy transition under the Just Energy Transition Partnership (JETP) scheme?
- What is the public perception regarding the acceleration of coal-fired power plant (PLTU) closures in Indonesia?
- Do the people support the energy transition agenda in Indonesia?

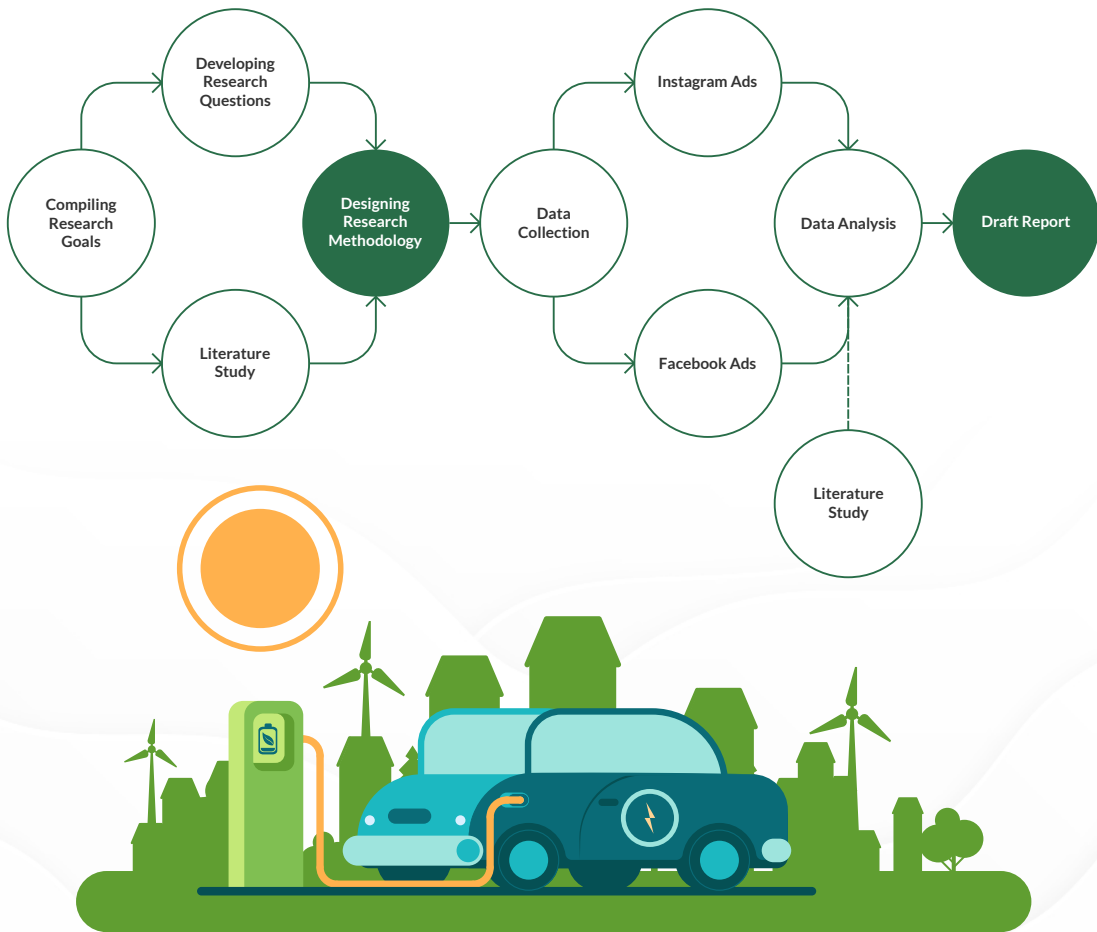


Methodology

This study uses a quantitative approach with a survey research method distributed across all provinces in Indonesia. The number of respondents used in this study is 1,245 respondents from various regions in Indonesia with rural, suburban, and urban characteristics. The study applies a random sampling technique based on national representation with data collection conducted digitally or online using Facebook and Instagram Ads. Through the ad features distributed on these two social media platforms, the study targets respondents based on categorization of topics or keywords, location, interests, age, and gender.

This study applies statistical weighting to the national adult population aged 18 and above. The weighting is done based on gender, age, province, education, and income, using the database from the Central Statistics Agency (BPS). Based on the data obtained, this study elaborates survey findings with various other secondary data on energy transition in Indonesia. This analysis is conducted to place the data in the appropriate context and argumentation.

Figure 1. Research Methodology



Respondent Profile

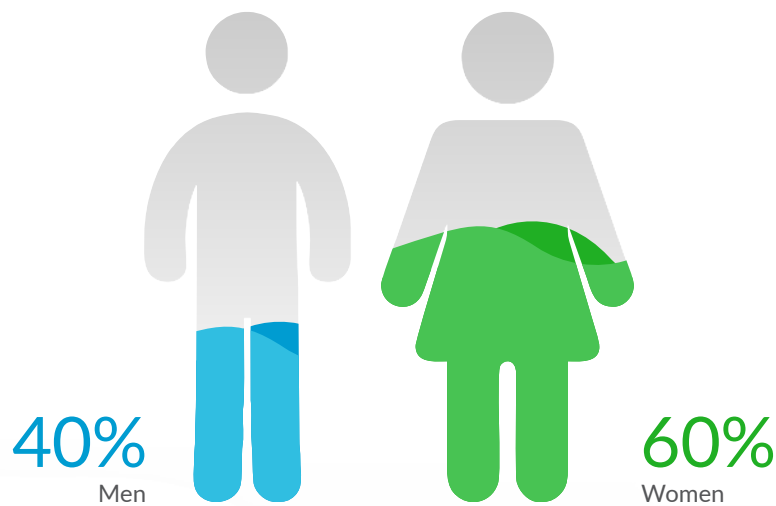
The majority of survey respondents are women, accounting for 60%, while the remaining 40% are men. The majority of respondents (48%) come from urban areas, followed by rural areas (29%) and suburban areas (23%). The distribution of respondents' residences includes the islands of Java, Sumatra, Kalimantan, Maluku, Papua, Bali, and Sulawesi. The majority of respondents reside in West Java province (25%), Central Java (16%), East Java (15%), and DKI Jakarta (13%).

Based on the age of respondents, this study has a median age of 31 years, with the majority falling within the 25-34 age range, accounting

for 48%. A total of 43% of respondents have higher education qualifications (Bachelor's, Master's, or Doctoral degrees, D4, and D1/D2/D3), while only 1% of respondents have completed primary education.

Furthermore, the majority of respondents come from the lower middle-income class. This can be seen from the number of respondents with incomes between 2-5 million Rupiah, accounting for 50% with a median income of 3 million Rupiah. The majority of survey respondents have monthly electricity expenses in the range of 100-300 thousand Rupiah, with 43% having a median of 200 thousand Rupiah.

Figure 2. Gender



This study found that most respondents allocate around 7% of their income to obtain electricity every month.

Figure 3. Job Status

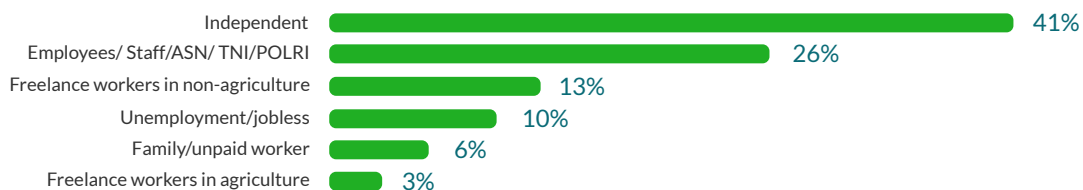


Figure 4. Income (IDR)

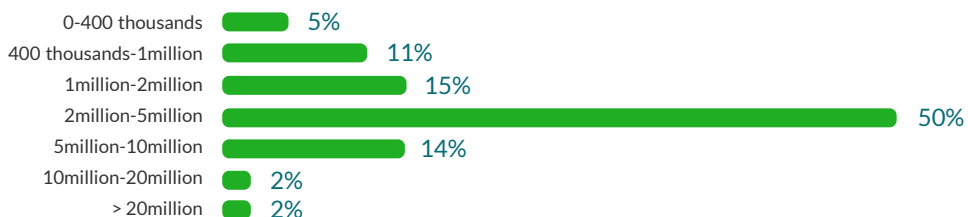


Figure 5. Education

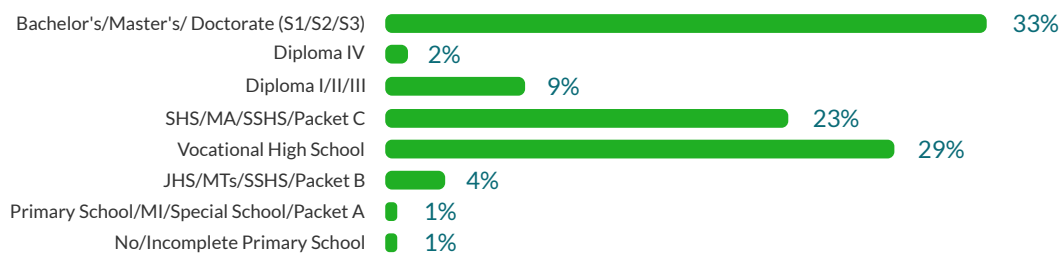


Figure 6. Domicile area



Figure 7. Age

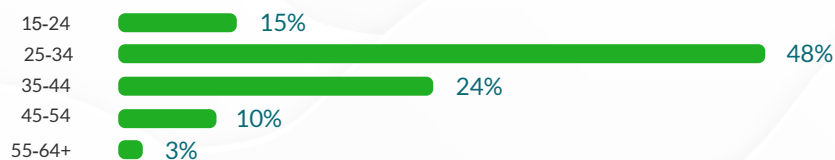


Figure 8. Monthly Electricity Spending

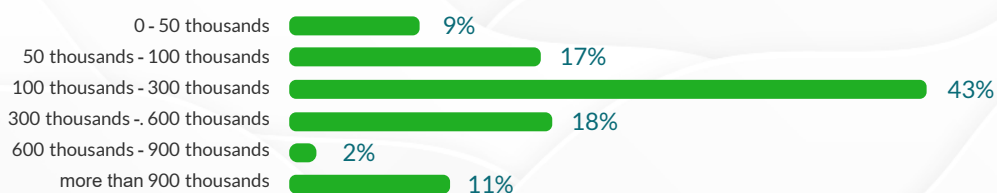
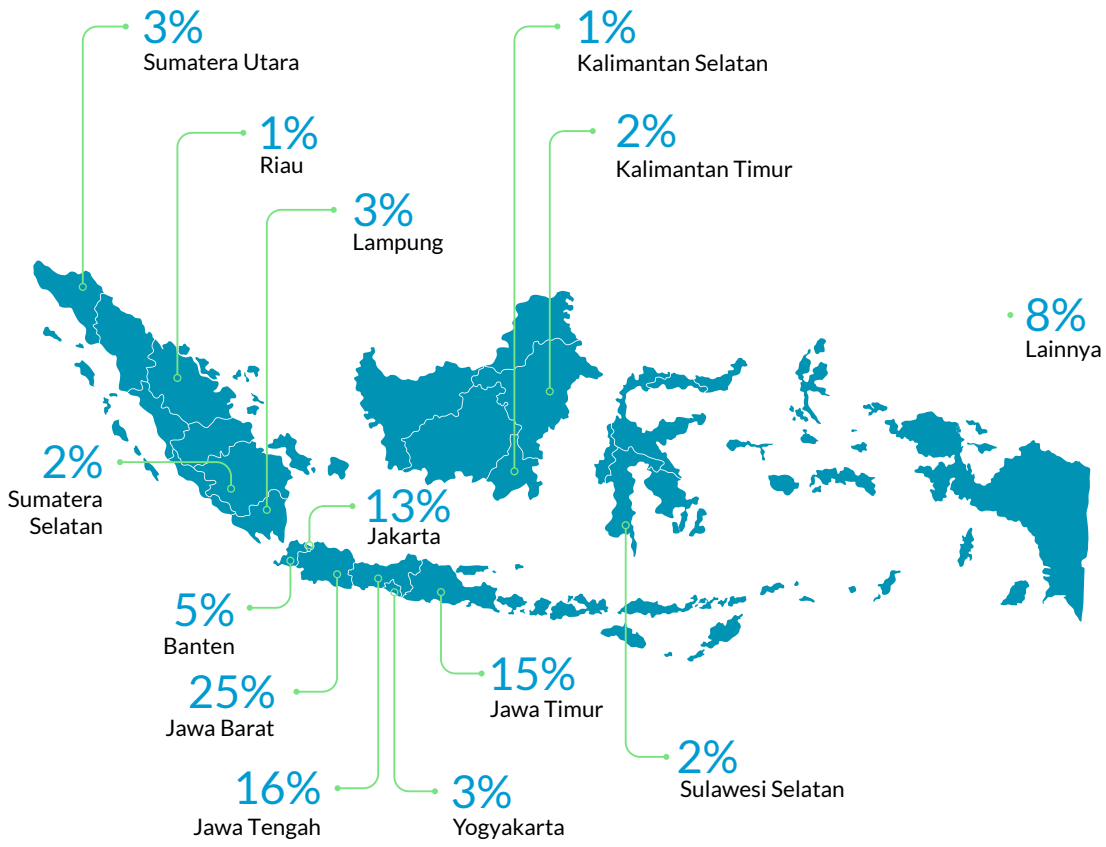


Figure 9. Distribution of Respondents Based on Domicile

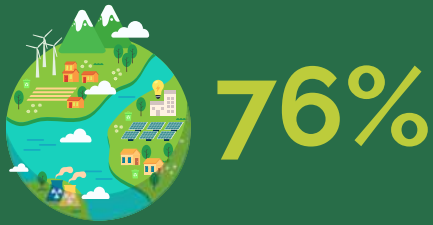




What is the Knowledge and Perception of Indonesian Society Regarding JETP?

Just Energy Transition Partnership (JETP) is a funding scheme for energy transition in Indonesia, consisting of loans, grants, and investments worth 314 trillion Rupiah. This financing is expected to bring various breakthrough innovations and technologies to accelerate the transition to new and renewable energy sources (EBT). Public participation in overseeing the acceleration of energy transition in Indonesia is crucial to avoid false energy transition solutions.

1.1 The JETP scheme for energy transition funding is still relatively unknown to the public

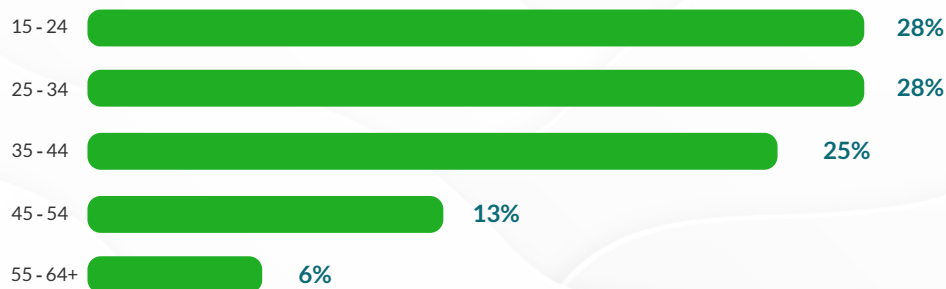


This study indicates that many respondents are still unaware of the Just Energy Transition Partnership (JETP) funding scheme. A total of 76% of respondents have reported that they are not aware of the JETP funding for energy transition in Indonesia.

Public knowledge about JETP is crucial for overseeing fair energy transition funding. The investment funds allocated through the JETP scheme need to be closely monitored to ensure that JETP programs do not lead to false solutions. Achieving a just energy transition requires the active involvement and knowledge of the public in JETP programs.

The level of public knowledge about JETP determines the level of public participation in energy transition. Civil society participation in energy transition needs to be expanded through socialization efforts targeting all segments of society. By doing so, the democratization of energy transition as a part of human rights can be achieved in a fair manner.

Figure 10. Knowledge of JETP by age

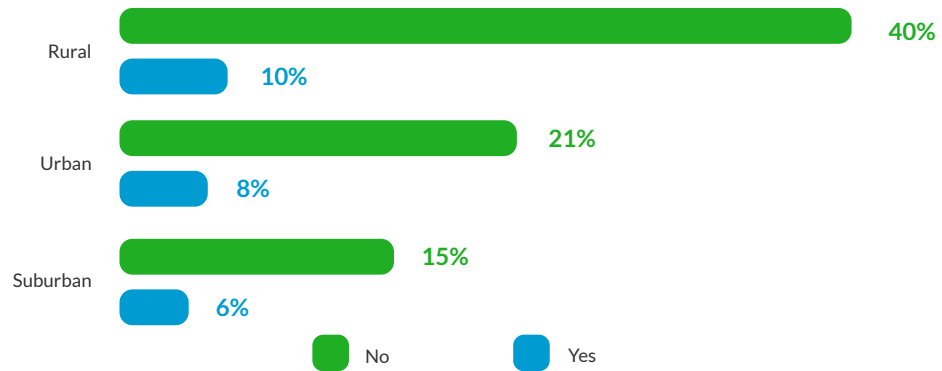


Source: Author. N = 1,245. Respondents were asked, "Have you ever heard of the term Just Energy Transition Partnership (JETP) before participating in this survey?" The answer options included "No" and "Yes". Respondents were also asked to provide their age in numerical form.



Interestingly, this study found that the majority of individuals who were familiar with JETP fell within the age range of 25-34 and 15-24, accounting for 28% each. This data indicates a positive trend where young people have a higher awareness of environmental issues, particularly energy transition. This trend implies that the level of awareness regarding energy transition is considered adequate. Additionally, there is a tendency for the younger generation to quickly absorb new knowledge, considering many of them are students, university students, or young productive workers with relatively easy access to JETP information.

Figure 11. Knowledge of JETP by area of domicile



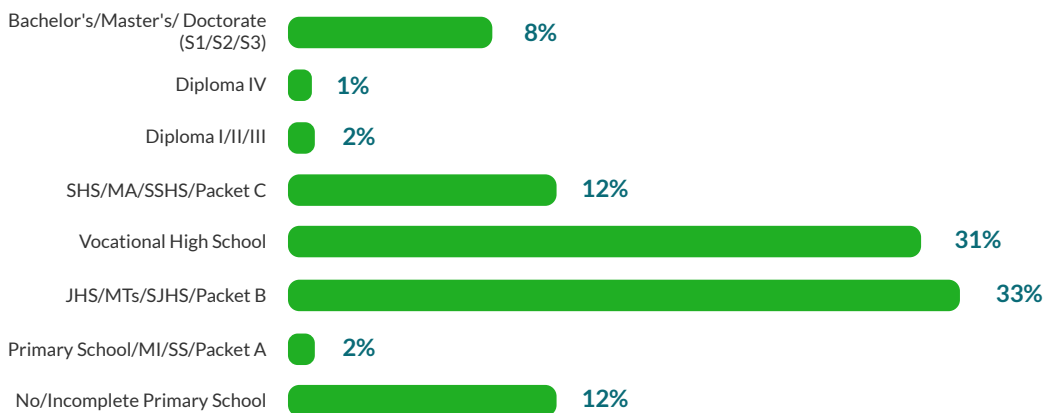
Source: Author. N = 1,245. Respondents were asked, "Have you ever heard of the term Just Energy Transition Partnership (JETP) before participating in this survey?" The answer options included "No" and "Yes". Respondents were also asked to select the environmental classification of the area where they reside. The answer options included "Rural", "Urban", or "Suburban".

This study also found that 6 out of 10 respondents who were familiar with JETP lived in urban or suburban areas. This simultaneously indicates the urgency to strengthen the knowledge of rural communities regarding energy transition issues. The idea of rural energy transition remains largely unexplored. There is a need for more awareness campaigns in rural areas regarding the potential for renewable energy development. Key elements of energy transition are closely tied to the space and human resources in rural areas. Specifically, rural areas host a significant amount of

renewable energy infrastructure, such as wind turbines, solar power plants, biogas facilities, and transmission networks. Meanwhile, it is also crucial to note that there is a need for a critical approach to protect the rural landscape from the development of energy transition. This means that ET development must consider several implications on the empowerment of local populations, including economic, social, environmental, and cultural aspects.

1.2. Knowledge of JETP is not closely related to the level of community education

Figure 12. JETP knowledge by education



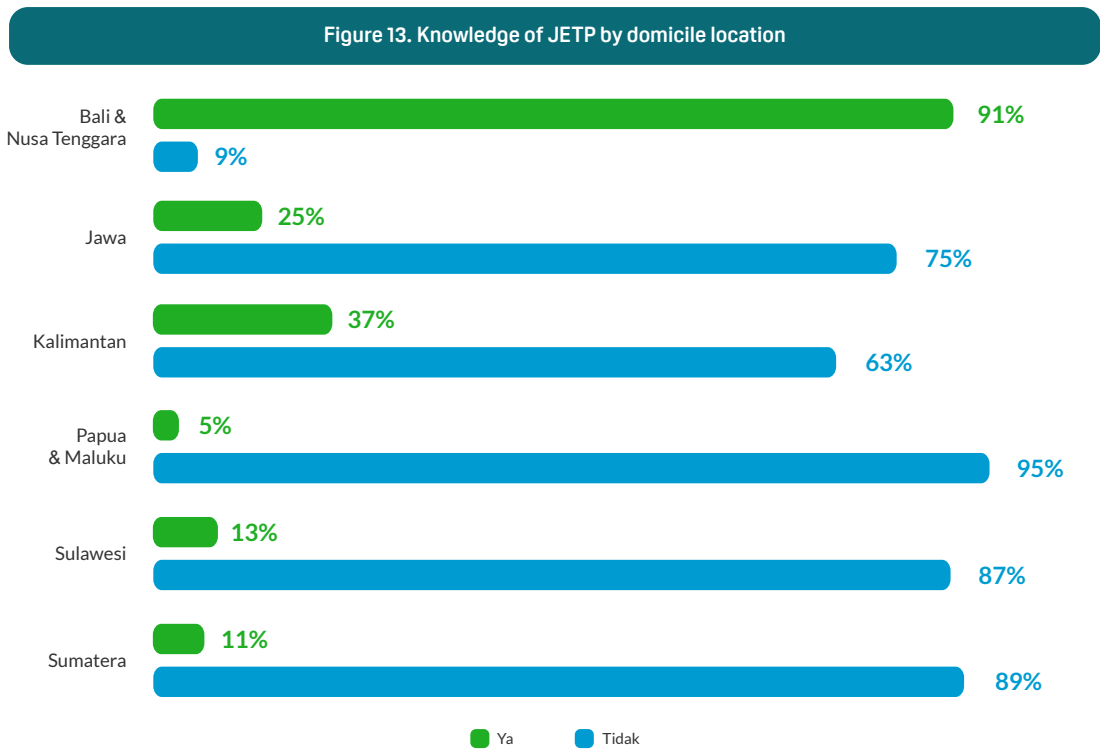
Source: Author. N = 1,245. Respondents were asked, "Have you ever heard of the term Just Energy Transition Partnership (JETP) before participating in this survey?" The answer options included "No" and "Yes". Respondents were also asked about their level of education. The answer options included "No/Incomplete Primary School, Primary School/Madrasah Ibtidaiyah/Special School/Packet A, Junior High School/Madrasah Tsanawiyah/Special Junior High School/Packet B, Vocational High School, Senior High School/Madrasah Aliyah/Special Senior High School/Packet C, Diploma I/II/III, Diploma IV, or Bachelor's/Master's/Doctoral Degree".

This study reveals an interesting fact that education does not necessarily reflect the knowledge of the public regarding JETP.



This may be due to the one-way distribution of JETP-related information primarily from the government, which is limited to certain locations or urban areas. The variation in data collection methods is also a factor in reaching respondents, suggesting the need for additional alternative methods or an extended data collection period. Furthermore, the respondents' experiences regarding environmental issues in their surroundings also influence the accumulated knowledge about energy transition. Although many studies have explored the causality between education levels and people's knowledge, these research findings cannot be generalized to conclude that certain individuals are knowledgeable about the JETP topic. Therefore, the dissemination of JETP-related information should ideally be a two-way process conducted by the government through various media platforms, including news channels and social media.

1.3. JETP knowledge needs to be increased in the areas of energy sources



Source: Author. N = 1,245. Respondents were asked, "Have you ever heard of the term Just Energy Transition Partnership (JETP) before participating in this survey?" The answer options included "No" and "Yes". Respondents were also asked about their place of residence. The answer options included all provinces in Indonesia prior to the division of West Papua into three provinces on July 25, 2022.

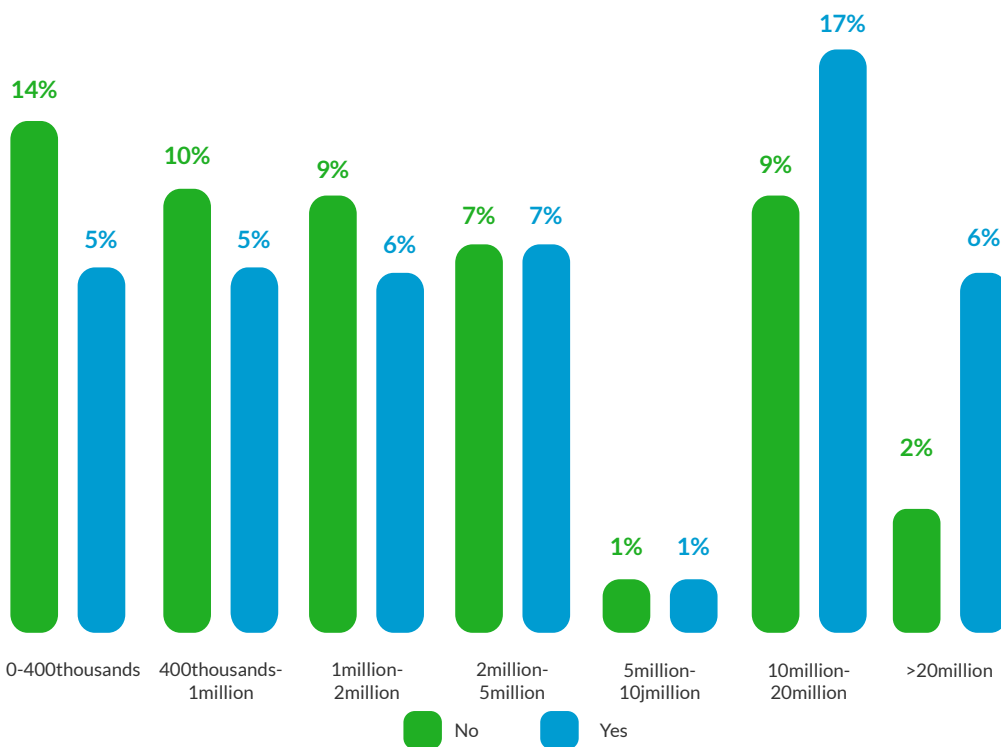
The study found that the highest percentage of knowledge about JETP was among the communities in Bali and Nusa Tenggara, reaching 91% compared to other regions. There are two possible reasons. First, the JETP agreement was reached during the historic G20 moment held in Bali, which exposed the communities in this region to more news coverage about JETP. Second, a significant amount of information about JETP is available in English documents. Being a major destination for international tourists in Indonesia, the people in Bali are relatively multilingual, particularly in English, due to extensive exposure to a diverse linguistic landscape. Therefore, their wider exposure to information about energy transition in English texts is likely to contribute to the higher percentage of knowledge about JETP in the Bali and Nusa Tenggara region in this study.

On the other hand, knowledge about JETP in other regions is still very low

The findings of this study suggest that there is a need for more socialization efforts regarding JETP, especially in the regions of Sumatera, Papua, and Maluku, which have several mining concessions and coal-fired power plants.

1.4. Low-income people tend not to know about JETP

Figure 14. Knowledge of the term JETP by income (IDR)



Source: Author. N = 1,245. Respondents were asked, "Have you ever heard of the term Just Energy Transition Partnership (JETP) before participating in this survey?" The answer options included "No" and "Yes". Respondents were also asked about their income level. They were requested to provide their income in numerical form



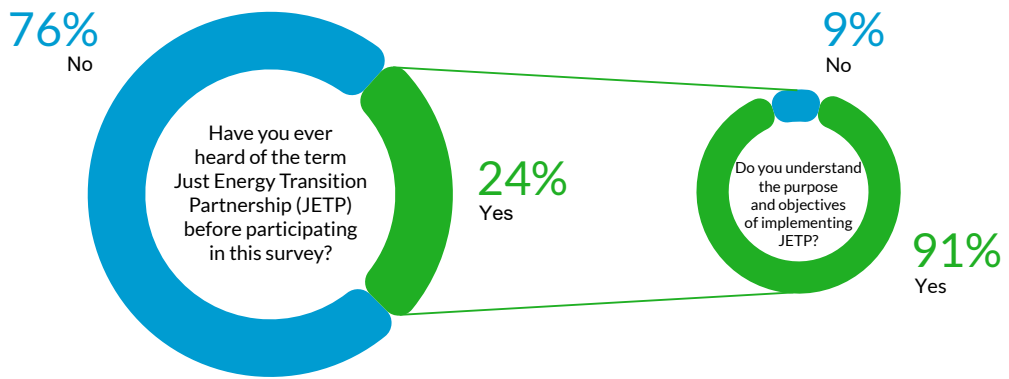
The data from this study indicates an imbalance in knowledge about JETP based on the income level of the communities. Low-income communities tend to be less aware of JETP compared to high-income communities.

Approximately 17% of those who are aware of JETP belong to the income bracket of 10-20 million Indonesian rupiahs. This knowledge imbalance can have implications for the overall income distribution (per capita GDP) within a country. The data obtained in this study strongly correlates with the findings reported by Our World In Data (2021), where

higher income levels are associated with better access to education and learning outcomes compared to low-income communities. This has an impact on individuals' ability to accumulate new knowledge rapidly due to relatively easier access to information sources and facilities.

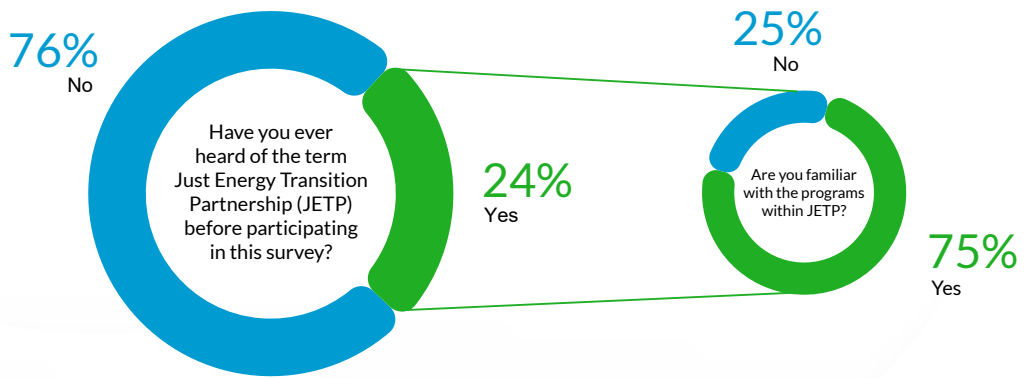
1.5. Public perception is very potential to continue to be improved in guarding JETP

Figure 15. Relationship between knowledge of JETP and understanding of the aims and objectives of JETP



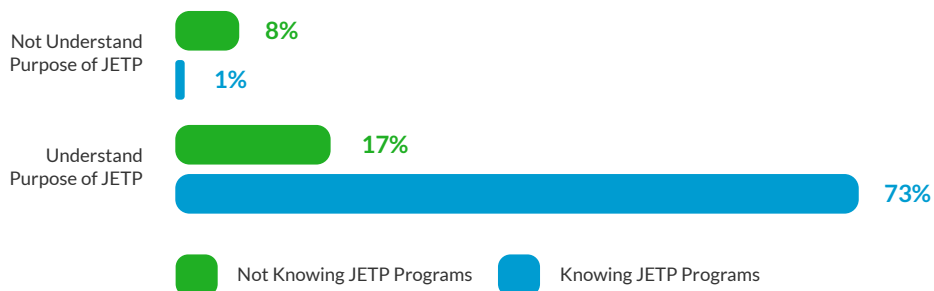
Source: Author. N = 1,245. Respondents were asked, "Have you ever heard of the term Just Energy Transition Partnership (JETP) before participating in this survey?" The answer options included "No" and "Yes". N = 597. Respondents who answered "Yes" were then asked, "Do you understand the purpose and objectives of implementing JETP?" The answer options included "No" and "Yes".

Figure 16. Relationship between JETP knowledge and understanding of the JETP program



Source: Author. N = 1,245. Respondents were asked, "Have you ever heard of the term Just Energy Transition Partnership (JETP) before participating in this survey?" The answer options included "No" and "Yes". N = 597. Respondents who answered "Yes" were then asked, "Are you familiar with the programs within JETP?" The answer options included "No" and "Yes".

Figure 17. Relationship between knowledge of JETP and understanding of the aims and objectives of JETP



Source: Author. N = 597. Respondents were asked, "Have you ever heard of the term Just Energy Transition Partnership (JETP) before participating in this survey?" The answer options included "No" and "Yes". Respondents were then asked, "Are you familiar with the programs within JETP?" The answer options included "No" and "Yes".

Among the respondents who have knowledge of JETP, 91% understand the purpose and objectives of JETP. Additionally, 75% of respondents who are aware of JETP also understand the various programs under the

scheme. The intersection of these two data points indicates that 74% of respondents who understand the purpose and objectives of JETP also have an understanding of the programs within it.

Figure 18. JETP program knowledge by gender



Source: Author. N = 597. Respondents were asked, "Are you familiar with the programs within JETP?" The answer options included "No" and "Yes". Respondents were also asked about their gender. The answer options included "Male" and "Female".



This study shows that women have a higher awareness of JETP compared to men. This can be seen from the majority of women, which accounts for 79%, who are aware of the programs within JETP, compared to 69% of men.

This data also indicates that women have a higher awareness regarding environmental issues and the importance of energy transition. There are more women who realize that energy transition has a significant impact on their daily lives. Women are more likely to be household energy managers across regions and indirectly play a role as agents of change in the energy sector. They possess the experience and skills needed for energy transition and can bring different

perspectives to the renewable energy (RE) sector that are more aligned with society while driving RE technology innovation. Another supporting factor that may explain why women have higher awareness is the existence of numerous non-profit organizations (NGOs or donor agencies), both domestic and international, that have created initiatives, programs, and policies for women's empowerment in the ASEAN region.

Figure 19. Understanding of the regulatory framework

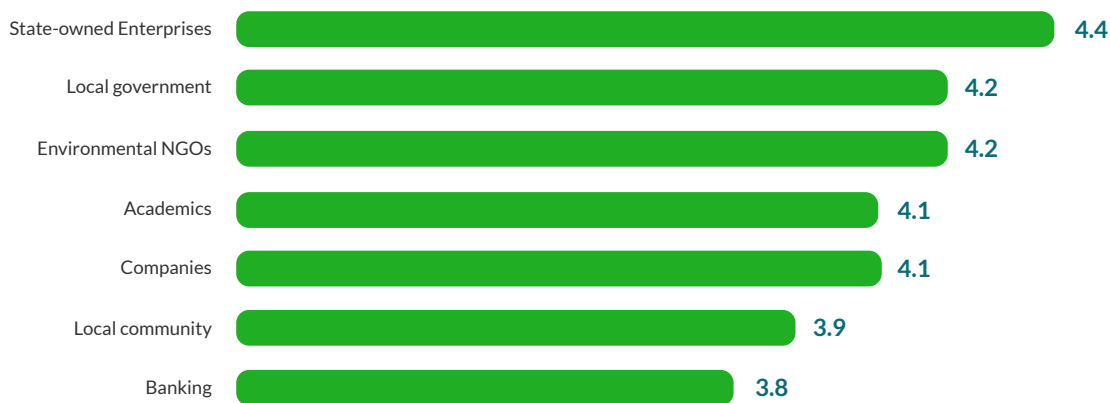


Source: Author. N = 597. Respondents were asked, "In your opinion, do the existing regulatory framework in Indonesia support the energy transition agenda, especially JETP?" The answer options included "Not yet" and "Yes".

This study shows that 7 out of 10 individuals who are aware of JETP believe that the existing regulations already support the implementation of JETP. The government and the JETP Secretariat need to continue their efforts in creative awareness campaigns about JETP programs to encourage public awareness of JETP, thereby significantly increasing public participation in monitoring and overseeing JETP.

1.6. State-owned Enterprises, Local government and NGOs are considered to have the most strategic role in implementing JETP

Figure 20. How important is the involvement of various actors in JETP



Source: Author. N = 1,245. Respondents were asked, "In your opinion, who are the most important actors involved in determining energy transition programs?" For each displayed option, "Academics, Local community, Local government, Environmental NGOs, Companies, State-owned Enterprises (BUMN), Banking," respondents were asked to provide a rating ranging from 1 (not important at all) to 5 (very important).

The implementation of JETP programs relies on the involvement of state institutions, business institutions, and civil society organizations. The engagement of various institutions needs to be built to strengthen the state's capacity in energy transition. This study found that the public has a relatively high level of trust in the involvement of State-Owned Enterprises (BUMN) in managing JETP programs. In this regard, BUMNs in the energy sector, such as State Electricity Company (PLN), have a significant responsibility in shifting energy sources from fossil fuels to renewable energy. BUMN involvement in JETP programs can include investment in infrastructure that supports the production and distribution of renewable energy. BUMNs can also drive energy efficiency and technology improvements to ensure cleaner and more sustainable energy usage.

The community also recognizes that local governments play a strategic role in determining energy transition programs (average score of 4.1 on a scale of 1-5). In doing so, local governments can act as facilitators between the private sector, including BUMNs, and local communities along with civil society organizations in addressing challenges and in reaping

opportunities in energy transition. Additionally, NGOs are also deemed highly important by the public with an average score of 4,1 on a scale of 1-5. NGOs hold a crucial role not only in overseeing energy transition programs but also in offering alternative solutions to the government. Moreover, NGOs can assist in educating the public about sustainable energy practices and promoting active community participation in decision-making processes related to energy transition.





What is the Public Perception of Energy Transition in Indonesia?

The energy transition process faces various challenges, one of which is the dependence on fossil fuels as the primary source of energy. Currently, energy consumption in Indonesia is predominantly derived from coal, petroleum, and gas to meet the needs of industries and households. Not only as a consumer, but Indonesia has also become the world's largest producer of coal and actively exports its production to various countries.

2.1. The coal sector is considered the biggest bottleneck in the energy transition

Figure 21. Public opinion on which energy sector is the main obstacle to the energy transition



Source: Author. N = 1,245. Respondents were asked, "In your opinion, which energy sector will be the main obstacle in transitioning to clean energy sources?" The answer options included "Coal, Gas, Petroleum, and Nuclear."

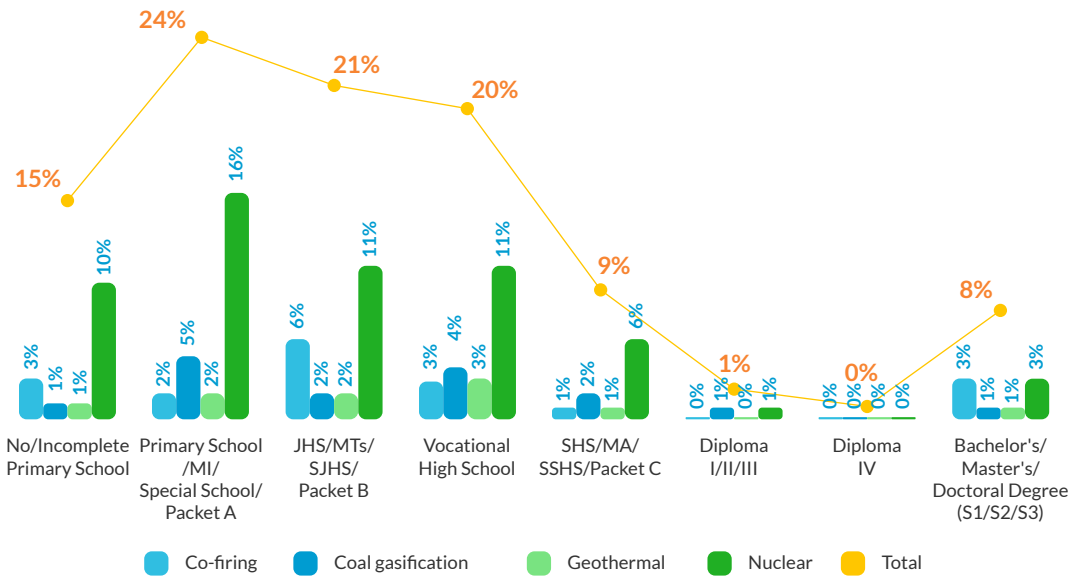


This study found that 32% of the respondents consider coal to be the main obstacle in the energy transition towards clean energy.

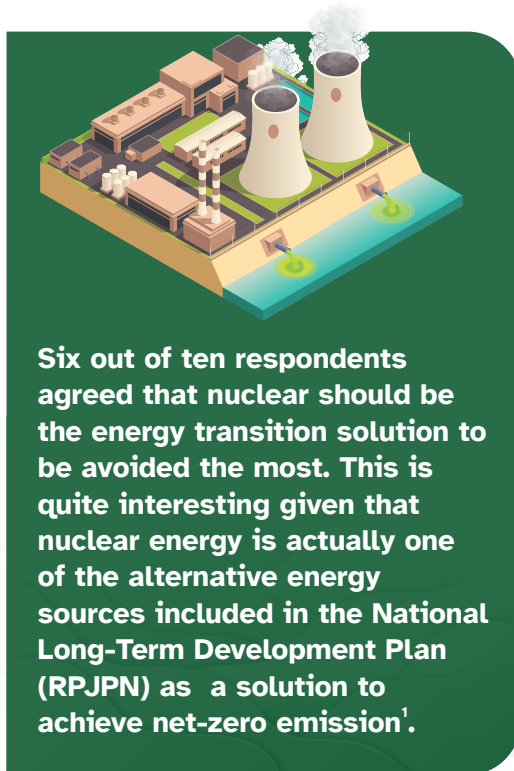
The use of coal remains a subject of controversy in Indonesia in relation to the efforts to transition to clean energy. This is for several: (a) Indonesia remains one of the world's largest coal producers; (b) coal plays a crucial role in the supply of raw materials for the battery industry; and (c) the coal processing process is environmentally unfriendly. The relatively high dependence on coal is also evident from the majority of the primary energy mix for electricity generation in Indonesia, which comes from coal. After coal, petroleum was chosen by 31% of the respondents as the second main obstacle in the energy transition process in the country. This is because petroleum remains one of the key commodities for Indonesia, with a significant percentage in national energy consumption.

2.2. Nuclear is the most avoided energy transition solution

Figure 22. Energy solutions to avoid



Source: Author. N = 1,245. Respondents were asked, "In your opinion, which energy transition solution should be avoided?" The answer options included "Co-firing (addition of biomass as a partial substitute fuel or coal mixture), Coal gasification (conversion of coal into gas products), Geothermal (thermal energy from the Earth), and Nuclear."



The data rejecting various false solutions indicates that the respondents' level of knowledge and awareness is considered adequate in choosing answer options regarding energy transition solutions to be avoided based on the risks of exposure to hazardous substances or the environment. Nuclear is the most avoided choice because public knowledge is already sufficient regarding the negative impacts it can cause, including the non-renewable nature of uranium, highly hazardous nuclear waste, malfunction risks of the system, and the potential life-threatening composition of fuel materials.

Co-firing is the second most avoided choice as the risks it poses remain within the scope of the combustion process. Co-firing biomass and coal are still considered alternative solutions as they can extend the lifespan of power plants, especially in the transition towards low and zero-carbon trends².

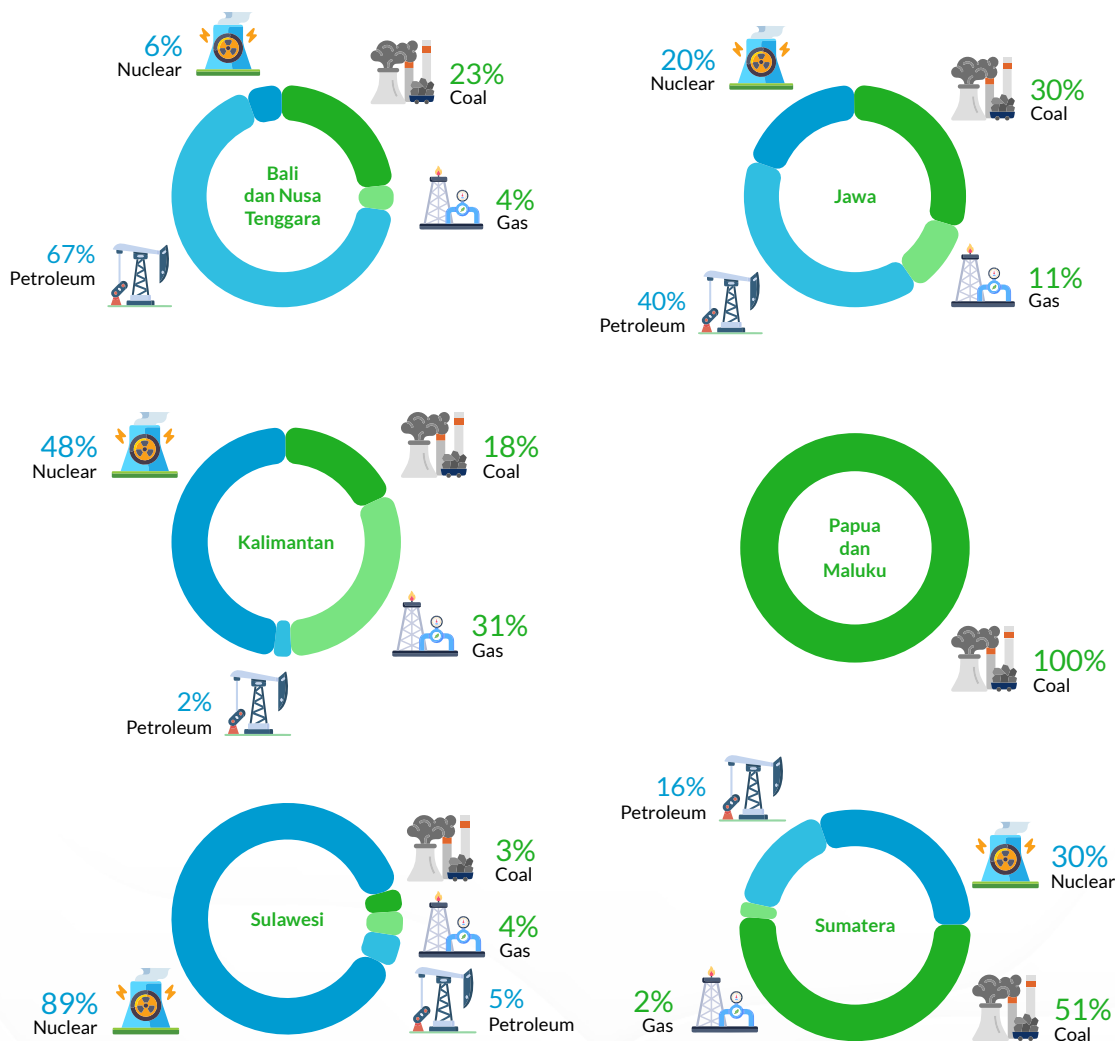
¹ Pengembangan energi nuklir sebagai salah satu alternatif dalam mencapai transisi energi bersih masih menjadi perdebatan karena biaya yang mahal dan potensi limbah radioaktif.

² Hariana, et al. (2022). A comprehensive evaluation of cofiring biomass with coal and slagging-fouling tendency in pulverized coal-fired boilers

Geothermal, or thermal energy from the Earth, is ranked the last as the most avoided energy transition solution. This is likely related to the fact that geothermal energy has been recognized as a renewable energy resource with very low risks as it relies on geothermal

steam to drive electricity-generating turbines, resulting in almost zero-carbon energy. However, the practice of geothermal mining in various forest and rural areas has caused conflicts related to environmental impacts and land conversion.

Figure 23. The energy sector constraining the clean energy transition



Source: Author. N = 1,245. Respondents were asked, "In your opinion, which energy sector will be the main obstacle in the transition towards clean energy?" The answer options included "Coal, Gas, Oil, and Nuclear." Respondents were also asked about their place of residence. The answer options included all provinces in Indonesia before the division of West Papua into three provinces on July 25, 2022.

In the Papua and Maluku regions, all respondents agreed that nuclear is the sector that primarily hinders the transition agenda. 89% of respondents in Sulawesi also chose nuclear as the main hindering sector, followed by Kalimantan with a percentage of 48%. Meanwhile, respondents in the Bali-Nusa

Tenggara and Java regions chose oil as a source of obstacle, with percentages of 67% and 40% respectively. Interestingly, the majority of respondents who selected coal as an obstacle to clean energy mostly came from the Sumatra region.

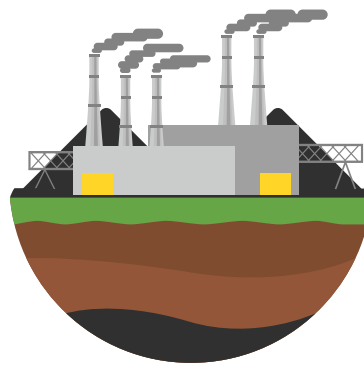


Public Support for Coal Phase Out in Indonesia

The government has prepared a regulatory framework through the issuance of Presidential Regulation Number 112 of 2022 on the Acceleration of Renewable Energy Development for Electricity Supply. In general, there are four aspects regulated in Presidential Regulation No. 112/2022:

- 1 **The preparation of the electricity supply business plan (RUPTL)**
- 2 **The development of an accelerated roadmap for the termination of the operational period of coal-fired power plants (PLTU)**
- 3 **The implementation of electricity purchase**
- 4 **Government support in accelerating the development of renewable energy.**

Presidential Regulation 112/2022 also suggests that the operational life of coal-fired power plants can be extended until 2050 through technology development, carbon offset, and/or a mix of renewable energy sources. This actually shows that the government's stance seems half-hearted or counterproductive towards energy transition efforts. Therefore, the implementation of JETP programs must be continuously monitored to ensure effectiveness. The formulation and the implementation of JETP programs should also be democratic and consider the involvement of civil society. The management of JETP should uphold the values of transparency and accountability, so as not to avoid undermining the main principle of JETP, which is fairness.



3.1. Those who are aware of JETP are more supportive of closing the Steam Power Plant (PLTU)

Figure 24. Approval of PLTU closing based on JETP knowledge



Source: Author. N = 1,245. Respondents were asked, "Do you think the existing regulatory framework in Indonesia supports the energy transition agenda, specifically JETP?" The answer options included "Don't agree" and "Agree".



This study found a significant correlation between knowledge about JETP and public support for the closure of coal-fired power plants (PLTU).

About 9 out of 10 respondents who were aware of JETP agreed with accelerating the closure of coal-fired power plants. Therefore, JETP should be a momentum for policymakers to enhance public literacy on issues related to energy transition. Public support in closing PLTUs is crucial to mitigate environmental damage, improve public health, accelerate the transition to renewable energy, drive innovation, fulfill climate commitments, and promote environmental justice. This is a collective effort to address the urgent challenges of climate change and create a more sustainable future for all.

3.2. Women need understanding and involvement in early closure strategies for coal-fired power plants.



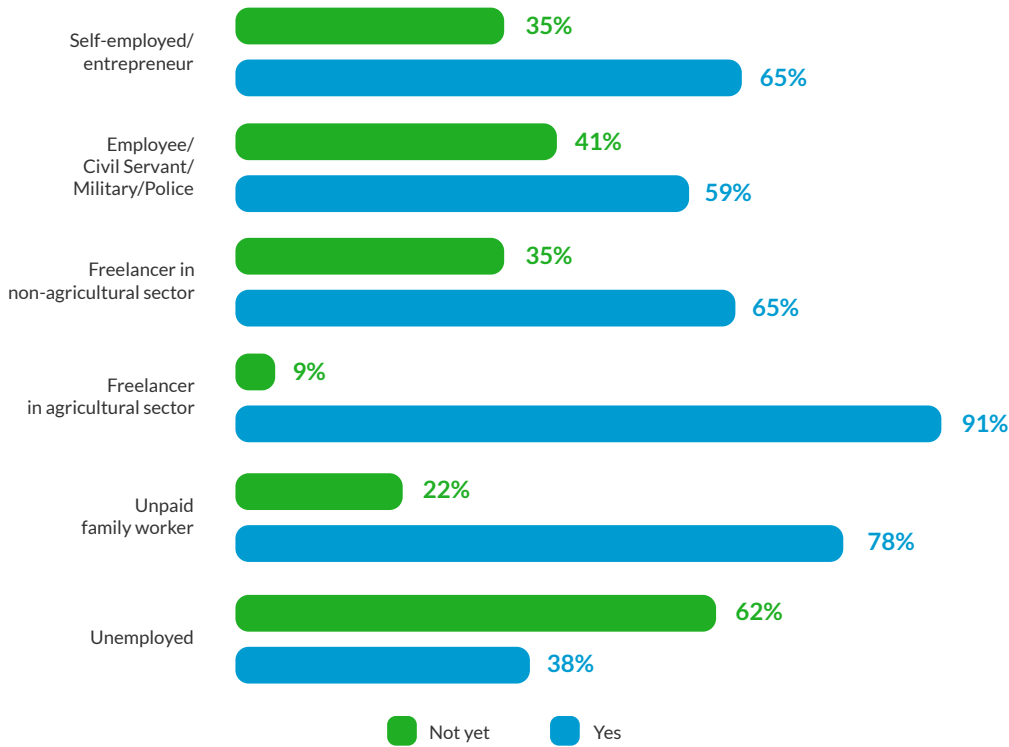
This study estimated the factors influencing support for the closure of PLTUs using logistic regression. There are several interesting findings. First, women tend to express little support for the closure of PLTUs compared to men. This may be due to women having concerns about the impact of energy transition on their lives. Women are more vulnerable to the negative impacts of PLTU closures, such as household power outages, job losses and relocation, and the ability to adapt to new habits after the energy transition. In the study by Hu et al. (2021), it is also argued that women showed lower adaptability to new habits compared to men³.

Second, unpaid family workers are also the population least supportive of PLTU closures. This is likely correlated with the fact that unpaid family workers are part of vulnerable communities facing various challenges such as irregular income and lack of insurance. They are concerned that the closure of PLTUs could lead to increased electricity and food prices, negatively impacting their well-being.

Third, individuals with vocational education degrees significantly support the closure of PLTUs. This is likely because they are directly involved in sectors closely related to energy, such as manufacturing and automotive industries.

3.3. Workers in the agricultural sector are the most optimistic about the government's ability to develop regulations that support energy transition

Figure 25. Agreement on the regulatory framework that supports a work-based energy transition



Source: Author. N = 597. Respondents were asked, "Do you think the existing regulatory framework in Indonesia supports the energy transition agenda, especially JETP?" The answer options included "No" and "Yes." Respondents were asked about their occupation. The answer options included "Self-employed/entrepreneur, Employee/Civil Servant/Military/Police, Freelancer in non-agricultural sector, Freelancer in agricultural sector, Unpaid family worker, and Unemployed."

Workers in the agricultural sector not only have higher knowledge about JETP but also almost all of them, 91% of respondents working in the agricultural sector, have a more optimistic view and attitude towards the government's ability to establish solid regulations to support the current energy transition agenda, including JETP.

Although not specifically discussing JETP, this argument aligns with a study by Wang et al. (2023), which states that most workers in the agricultural sector consider renewable energy (RE) to be more useful and cost-

effective than other energy sources. They largely perceive RE to be more environmentally friendly than the current energy sources⁴.

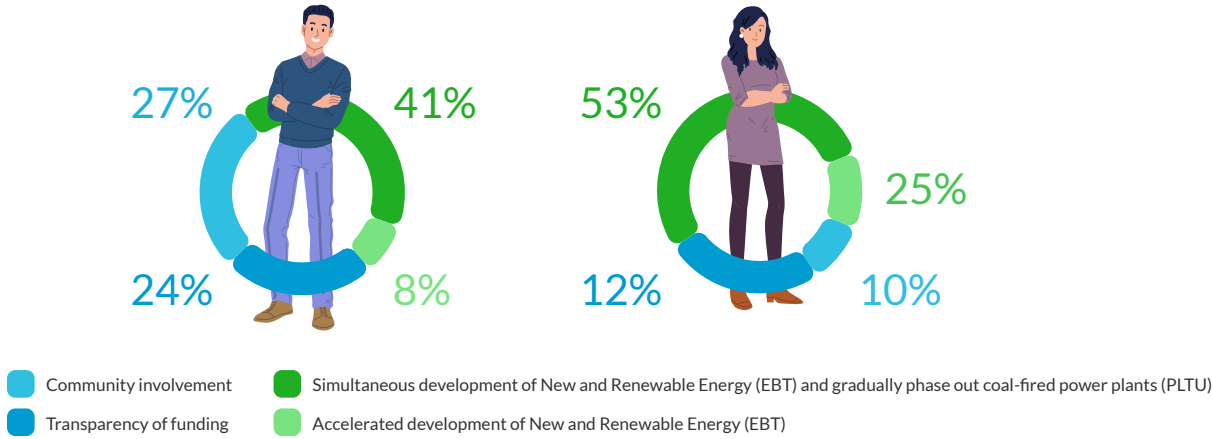
⁴ Wang J, Li W, Haq Su, Shahbaz P. Adoption of Renewable Energy Technology on Farms for Sustainable and Efficient Production: Exploring the Role of Entrepreneurial Orientation, Farmer Perception and Government Policies. Sustainability. 2023; 15(7):5611. <https://doi.org/10.3390/su15075611>



Program Priorities for the Community in JETP

4.1. The community expects accelerated development of new and renewable energy (EBT)

Figure 26. Program initiatives proposed in JETP by gender



Source: Author. N = 597. Respondents were asked, "In your opinion, what needs to be discussed in the Joint Energy Transition Partnership (JETP) program?" The answer options included "Community involvement, accelerated development of New and Renewable Energy (EBT), simultaneous development of New and Renewable Energy (EBT) and gradually phase out coal-fired power plants (PLTU), and transparency of funding." Respondents were asked about their gender. The answer options included "Male" and "Female."

The involvement of the public in the energy transition process through the JETP scheme is crucial. It should be noted that the JETP is a loan scheme, whereby budget efficiency is required to optimize the impact of the energy transition. Therefore, it is essential to review the various aspects of democratizing the

energy transition that determine the people's livelihood aspirations in receiving energy as a human right. One form of public involvement in the JETP is to absorb the aspirations and the interests of the community regarding programs that can be accommodated by the JETP Secretariat.

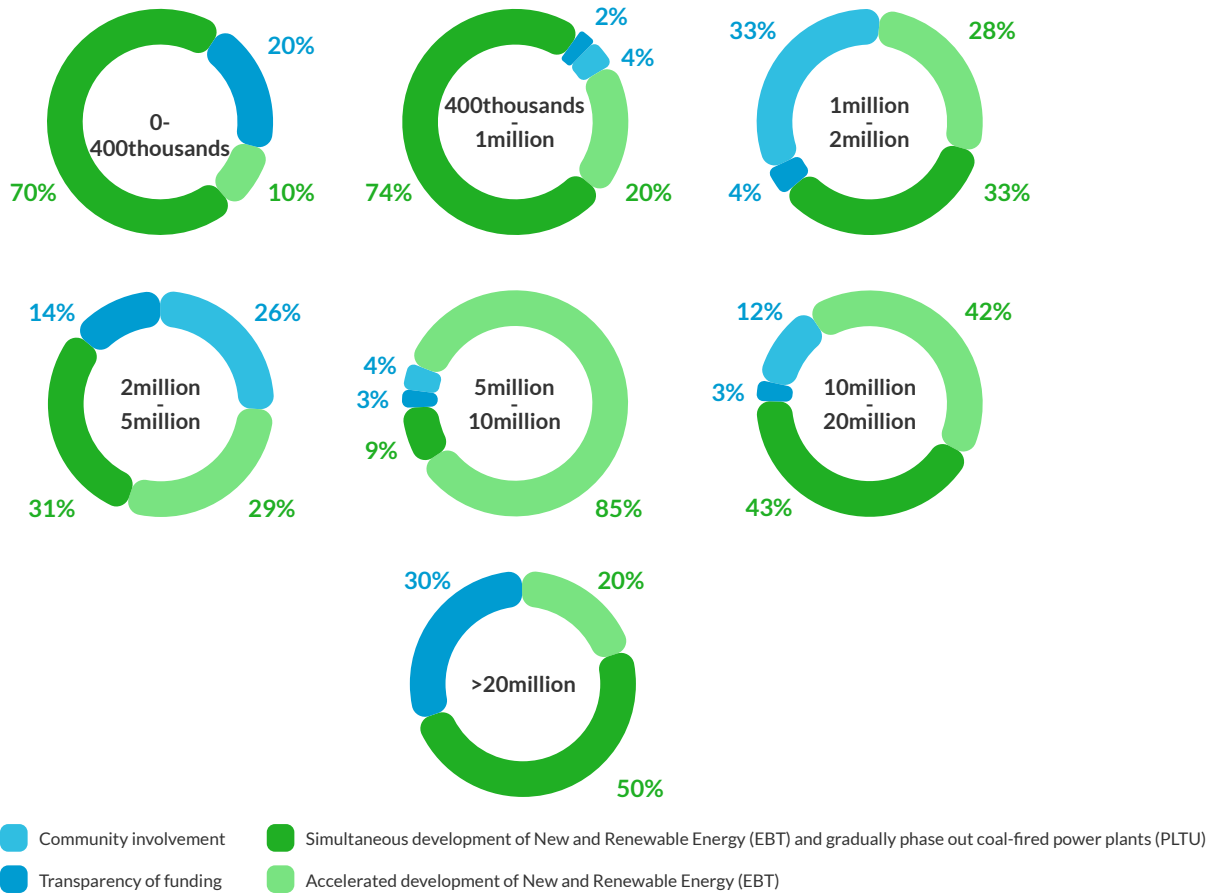
This study shows that the community, in general, has two main interests that need to be addressed in JETP programs, namely the simultaneous development of EBT and the gradual cessation of coal-fired power plant operations. Additionally, the community also has particular concern for the accelerated development of new and renewable energy (EBT).

The study indicates that 53% of female respondents pay attention to the government's efforts to develop EBT and gradually phase out coal-fired power plants. The attention given to these issues is higher among females compared to males, which stands at 41%.

However, both genders prioritize the accelerated development of EBT, with slightly more males (27%) focusing on this issue. Interestingly, when it comes to funding transparency, females (12%) show higher awareness compared to males (8%), while for the issue of community involvement, males (24%) demonstrate higher awareness compared to females (10%).

4.2. Low-income communities tend to support clean energy and the phasing out of coal-fired power plants (PLTU Batubara)

Figure 27. Proposed program initiation in JETP based on income (IDR)



Source: Author. N = 597. Respondents were asked, "In your opinion, what needs to be discussed in the Joint Energy Transition Partnership (JETP) program?" The answer options included "Community involvement, accelerated development of New and Renewable Energy (EBT), simultaneous development of New and Renewable Energy (EBT) and gradually phase out coal-fired power plants (PLTU), and transparency of funding."

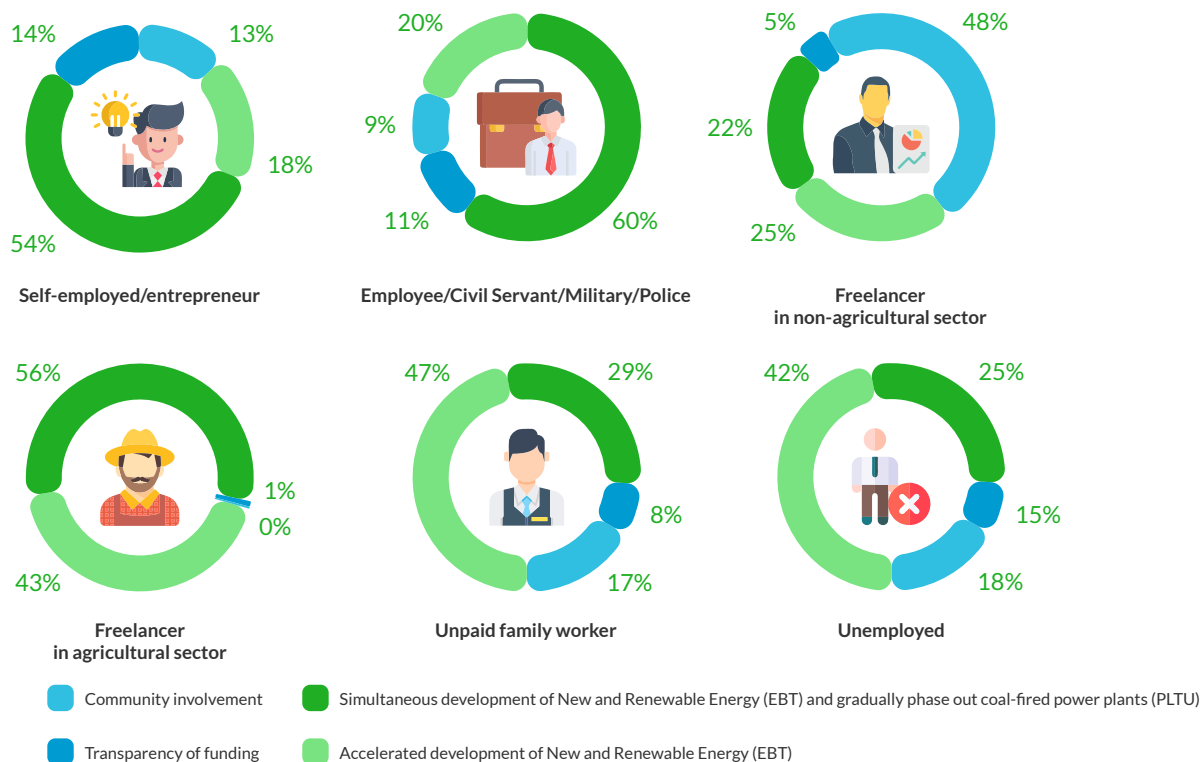
This study indicates that the majority of low- to middle-income communities prefer the government to simultaneously develop new and renewable energy (EBT) and gradually phase out coal-fired power plants (PLTU). Furthermore, the study states that low-income communities have relatively high support for clean energy and efforts to phase out coal-fired power plants (PLTU Batubara).



The data shows that 70% of respondents with an income range of Rp 0-400 thousand and 74% from the range of Rp 400 thousand - 1 million desire the discussion of simultaneous development of new and renewable energy (EBT) and gradual phasing out of coal-fired power plants (PLTU) in the JETP program.

4.3. There are differences in public expectations regarding the JETP program between formal and informal workers

Figure 28. Proposed program initiation in JETP based on work



Source: Author. N = 597. Respondents were asked, "In your opinion, what needs to be discussed in the Joint Energy Transition Partnership (JETP) program?" The answer options included "Community involvement, accelerated development of New and Renewable Energy (EBT), simultaneous development of New and Renewable Energy (EBT) and gradually phase out coal-fired power plants (PLTU), and transparency of funding." Respondents were also asked about their occupation. The answer options included "Self-employed/entrepreneur, employee/civil servant/armed forces/police, non-agricultural informal worker, agricultural informal worker, unpaid family worker, and not working."

When viewed from the perspective of occupation, individuals working in the formal sector (60%), self-employed (54%), and agriculture (56%) have a greater interest in discussions regarding the government's efforts to simultaneously develop new and renewable energy (EBT) and gradually phase out coal-fired power plants (PLTU).

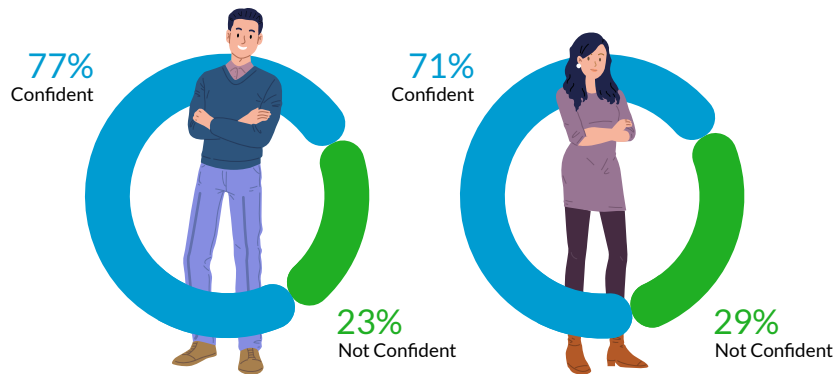
Environmental risks affect economic activities and all related policy measures. This includes impacts on areas that are geographically vulnerable, on economic capabilities, on workers, and groups of poor communities, which can occur in different ways. Therefore, awareness of the transition to renewable energy makes them understand that continued dependence on fossil fuels is not sustainable. There is a need for a collective commitment to shift from coal-fired power plants to cleaner and more sustainable energy sources in the future. Another significant aspiration comes from the majority of unpaid family workers and informal workers in the agricultural sector, who prioritize the accelerated development of EBT within the JETP, with 47% and 43% respectively.



Future Professions in Indonesia's Energy Transition

5.1. Men are more optimistic and interested in new jobs in the field of energy transition

Figure 30. Beliefs about creating new jobs by gender

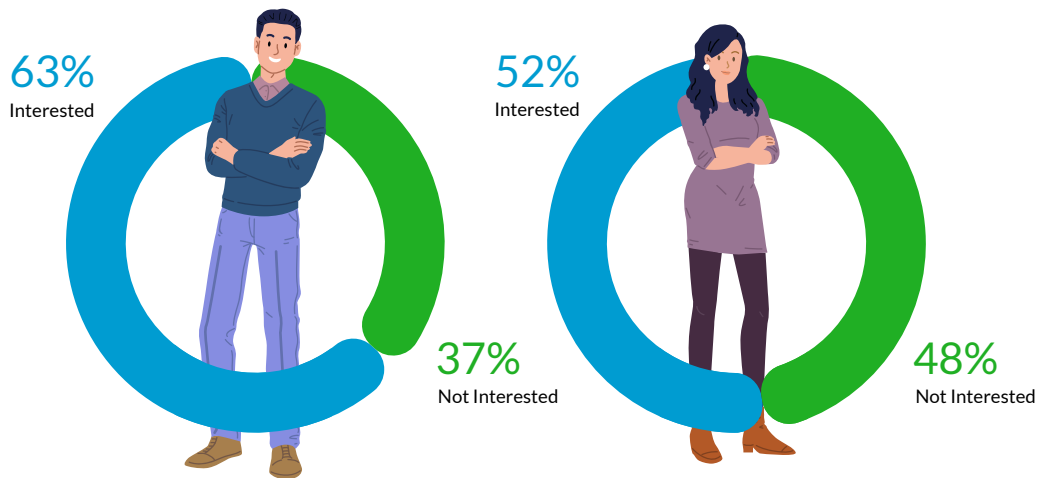


Source: Author. N = 1,245. Respondents were asked, "Are you confident that the energy transition will bring about new and more potential job opportunities?" The answer options included "Not confident" and "Confident." Respondents were also asked about their gender. The answer options included "Male" and "Female."

The energy sector is often perceived by society as a gender-biased sector. There are many stigmas circulating in society that justify the notion that jobs in the energy sector are more suitable for men because they often involve physical work and technical calculations.

This survey found that 77% of men are optimistic about the potential emergence of new jobs in the field of energy transition compared to women (71%). Efforts to counter these stigmas need to be made to increase women's participation in a fair energy transition.

Figure 31. Interests in energy transition work by gender



Source: Author. N = 1,245. Respondents were asked, "Are you interested in contributing to work in the field of energy transition?" The answer options included "Interested" and "Not interested." Respondents were also asked about their gender. The answer options included "Male" and "Female."

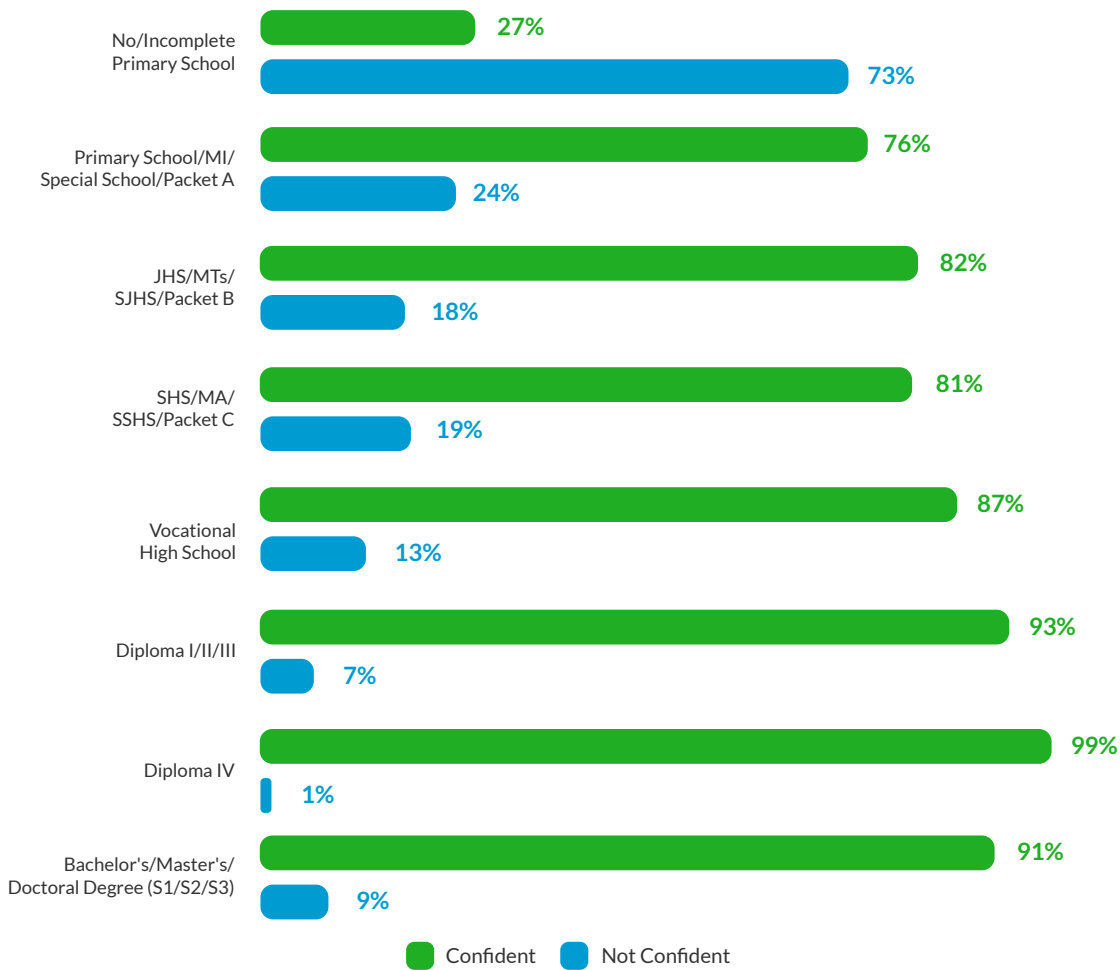
Interestingly, this study shows that men (63%) have a higher interest in working in the field of energy transition compared to women (52%).

However, women's participation in working in energy transition is essential to improve the community well-beings and poverty eradication.

Despite common assumptions, jobs in the energy sector are not solely related to technical or physical work. Women can also participate in the formulation of technical and economic policies, in assessing societal acceptance socially and politically, and in evaluating environmental safety and feasibility. Therefore, encouraging women to enter the energy sector is a task that the government needs to do.

5.2. Optimism and Interest in Working in the Field of Energy Transition are Proportional to Education

Figure 32. Confidence in the Creation of New Jobs based on Education

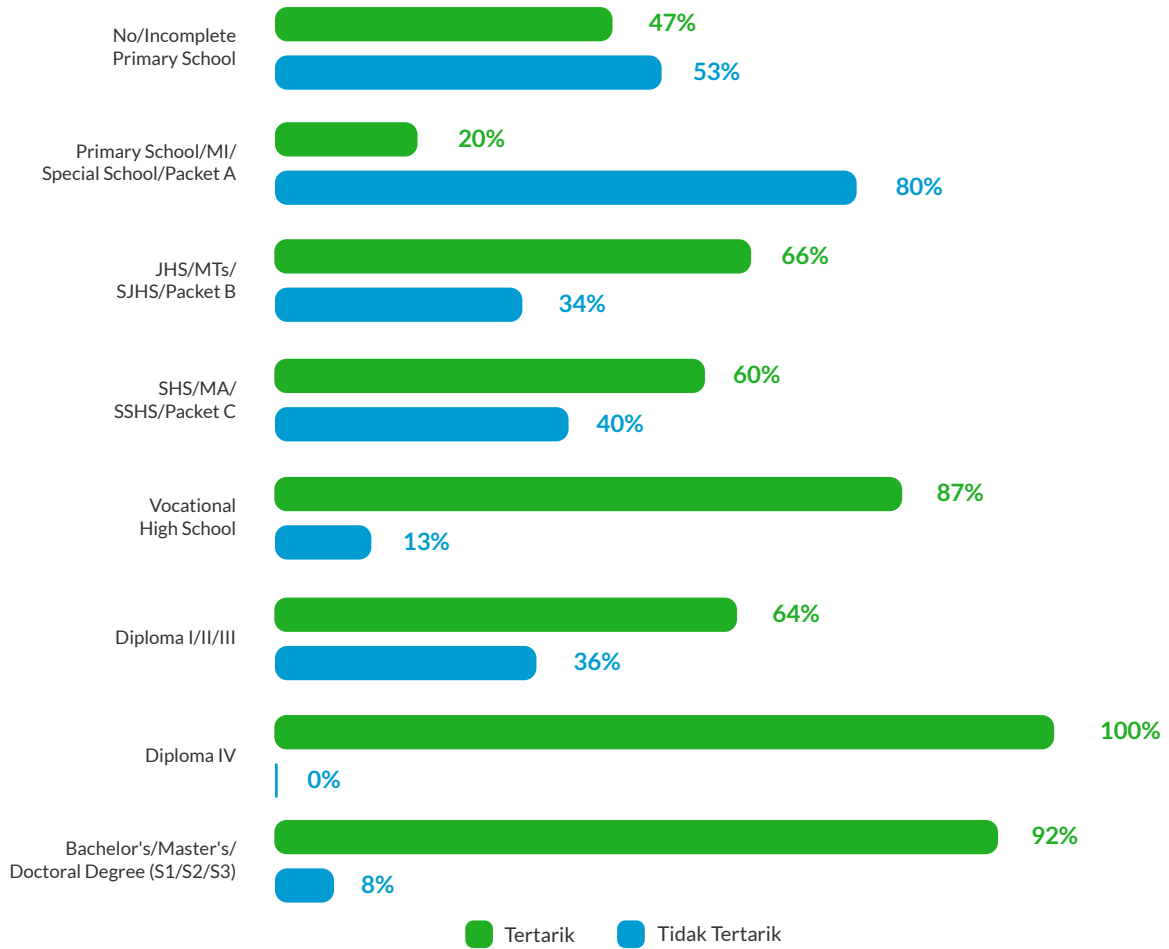


Source: Author. N = 1,245. Respondents were asked, "Are you confident that the energy transition will bring about new and more potential job opportunities?" The answer options included "Not confident" and "Confident." Respondents were also asked about their education level. The answer options included "Not/completion of primary school, Primary school/Junior Elementary School/Special Education Primary Level A, Junior high school/Madrasah Tsanawiyah/Special Education Junior High Level B, Vocational high school/Madrasah Aliyah Kejuruan, Senior high school/Madrasah Aliyah/Special Education Senior High Level C, Diploma I/II/III, Diploma IV, and Bachelor's/Master's/Doctoral degrees."

This study shows that the majority of individuals with higher education backgrounds have higher optimism towards new jobs emerging from the energy transition.

99% of individuals with a Diploma IV education level feel confident that the energy transition will bring about new jobs, followed by Diploma I/II/III (93%) and Bachelor's/Master's/Doctoral degrees (91%).

Figure 33. Interests in Energy Transition Jobs based on Education



Source: Author. N = 1,245. Respondents were asked, "Are you interested in contributing to work in the field of energy transition?" The answer options included "Interested" and "Not interested." Respondents were also asked about their education level. The answer options included "Not/completion of primary school, Primary school/Junior Elementary School/Special Education Primary Level A, Junior high school/Madrasah Tsanawiyah/Special Education Junior High Level B, Vocational high school/Madrasah Aliyah Kejuruan, Senior high school/Madrasah Aliyah/Special Education Senior High Level C, Diploma I/II/III, Diploma IV, and Bachelor's/Master's/Doctoral degrees."

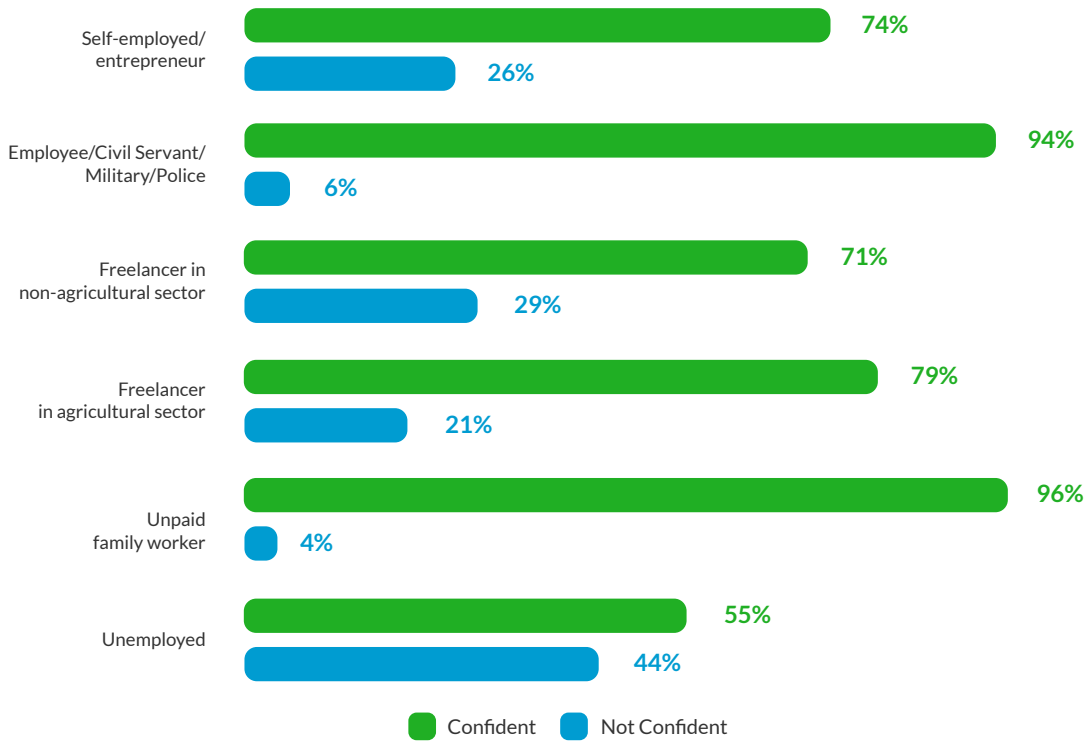
This study also shows that the interests in working in the field of energy transition is strongly influenced by a person's education level. In other words, a person's interest in working in the field of energy transition is highly dependent on their capacity and skills.



The majority (92%) of individuals with Bachelor's/Master's/Doctoral degrees show an interest in working in the field of energy transition, followed by Diploma IV (100%) and Diploma I/II/III (64%). In contrast, the study also found that 80% of individuals with basic education are not interested in working in the energy transition sector.

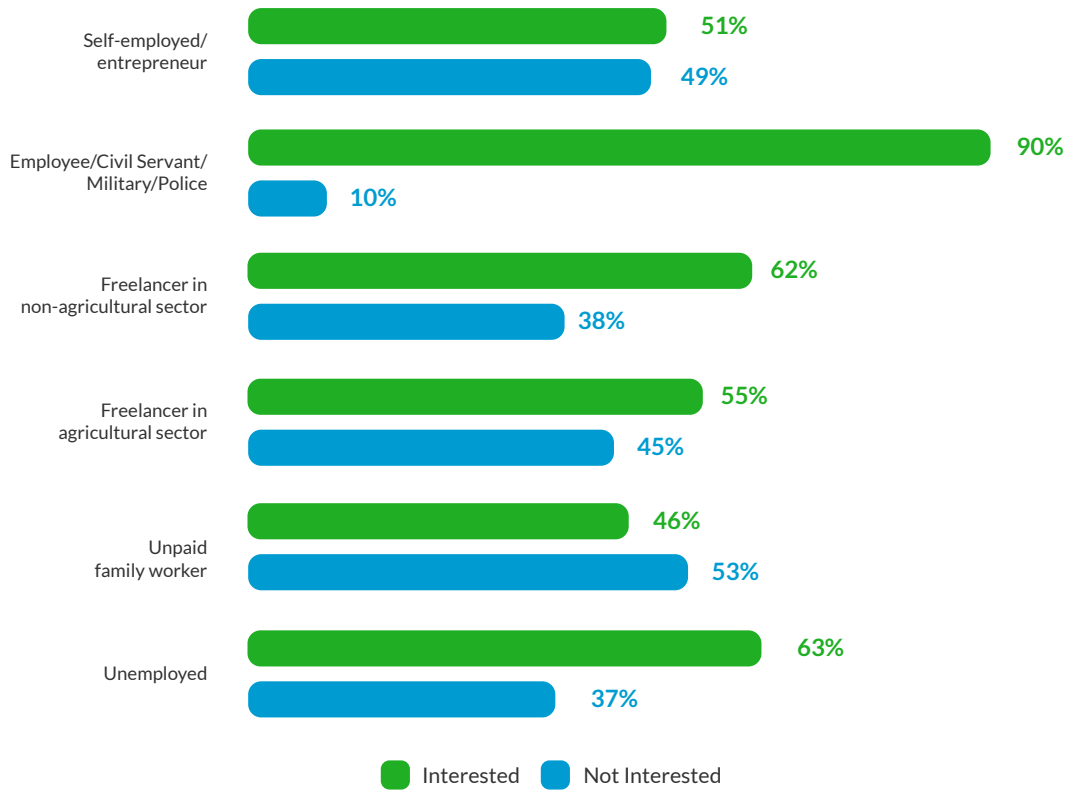
5.3. Workers in the formal sector are more optimistic and interested in working in the field of energy transition

Figure 34. Confidence in the Creation of New Jobs based on Occupation



Source: Author. N = 1,245. Respondents were asked, "Are you confident that the energy transition will bring about new and more potential job opportunities?" The answer options included "Not confident" and "Confident." Respondents were also asked about their occupation. The answer options included "Self-employed/entrepreneur, employee/civil servant/military/police, freelancer in non-agricultural sector, freelancer in agricultural sector, unpaid family worker, and not working."

Figure 35. Interests in Energy Transition Jobs based on Employment Status



Source: Author. N = 1,245. Respondents were asked, "Are you interested in contributing to work in the field of energy transition?" The answer options included "Interested" and "Not interested." Respondents were also asked about their occupation. The answer options included "Self-employed/entrepreneur, employee/civil servant/military/police, freelancer in non-agricultural sector, freelancer in agricultural sector, unpaid family worker, and not working."

This study found that the majority of individuals working in the formal sector (Employees/Civil servants/Military/Police) are highly optimistic (94%) that the energy transition can bring about new job opportunities. Additionally, 96% of unpaid family workers are also optimistic or confident about the emerging job prospects. Many individuals from various employment statuses believe in the potential for new jobs arising from the energy transition, but only a few of them are interested in working in the field. However, among those who are optimistic and interested in working in the energy transition field, the majority are individuals currently working in the formal sector.

This survey suggests the potential for a shift in job fields within the formal sector. The energy transition may not necessarily absorb the workforce from the informal sector. Appropriate policies need to be formulated by the government to optimize the energy transition for the creation of new job opportunities, especially for individuals in informal employment.



Policy Recommendations

This study indicates that despite the agreement on the Energy Transition and Earthquake Risk Mitigation Program (JETP), more intensive and expansive efforts are still needed at the implementation level to enhance public knowledge, perception, and acceptance of government programs.



The study also confirms and identifies various barriers and challenges in realizing energy transition, gradual closure of coal-fired power plants (PLTU), and accelerating the development of new and renewable energy (EBT).

To support these efforts, the study offers several recommendations to the government and relevant stakeholders. The following four main recommendations are summarized below:

Rekomendasi



Promoting community engagement, particularly among vulnerable communities affected by the energy transition, in the process of developing energy transition-related programs.

Community participation plays a significant role in realizing the energy transition. Increased involvement of community members can generate more support for influential interventions. By listening to directly involved citizens, potential errors in the preparation and the implementation of energy plans can be avoided. However, comprehensive mapping is needed to understand the needs, priorities, and challenges faced by local communities. In particular, rural areas significantly impacted by mining concessions and coal-fired power plants, but with minimal knowledge about JETP, such as regions in Sumatra, Papua, and Maluku. Initiating an information platform through intensive social media publications and employing creative communication approaches involving young people is necessary to foster cross-stakeholder awareness. In order to support government programs in an effective and targeted energy transition, policy designs should be based on reflecting the reality on the ground. Additionally, the government should engage local community leaders as agents of change by providing informative training on JETP so that they can become drivers and advocates for community involvement in creating more inclusive JETP program.

Rekomendasi



Strengthening the role of civil society organizations (CSOs) and civil society coalitions in the process of energy transition policy development and data collection to create more inclusive, effective, and impactful policy solutions

To ensure that knowledge and information regarding JETP have consistent standards and goals for creating energy sector fairness, there is a need for capacity-building programs for policymakers in the energy sector, which enables cross-sectoral dialogues. Capacity-building programs should involve not only non-governmental actors but also government actors involved in JETP. Civil society organizations can act as trustworthy intermediaries between the government, private sectors, and energy users in the field. They possess expertise in designing and providing energy services, particularly for poor and vulnerable groups. Additionally, it should be noted that effective solutions cannot be achieved without the government's commitment to uphold the principles of open data and public information in the policy formulation process. Accountability and transparency are also strategic steps to safeguard the design of JEPT program. Equally important, the government should provide space for CSOs and civil society coalitions, such as academics and researchers, to act as catalysts in accompanying communities towards a clean energy transition in line with expectations.



Gradually phasing out coal-fired power plants (PLTU) accompanied by appropriate compensation and incentives for vulnerable communities significantly affected by the closure.

The idea of discontinuing the operation of PLTU always faces controversy and various obstacles, as Indonesia has traditionally relied on this method for many years. Therefore, collaborative synergy among relevant stakeholders, especially local governments and communities, is necessary. The government's first maneuver should involve consolidating the registration and auditing of operating PLTU concessions. Financial institutions should distance themselves from coal and explicitly commit to divestment, limiting or prohibiting thermal coal financing. Subsequently, the closure roadmap for PLTU should detail timelines, stages, and a solid action plan. In this context, impact assessment studies play a vital role in providing an overview of the impact of PLTU closures. These studies are expected to identify vulnerable communities significantly affected by the phased shutdown of PLTU. The primary goal is to provide appropriate and targeted compensation and incentives to ensure that policies implemented by the government are effective. Regular and sustainable monitoring should be enhanced to reflect data and public responses. This is intended to ensure that the planned programs generate effective solutions for energy transition policies.



i. Encouraging upskilling programs for vulnerable communities, especially in rural areas, and applying a gender lens when designing renewable energy development programs.

Investment in the energy sector is continually driving the utilization of clean and renewable energy (EBT) towards a clean energy transition. The Indonesian government has committed to boosting EBT development, including advocating for community participation in achieving this mission. One way is promoting the creation of upskilling programs for vulnerable communities residing in rural and mining areas. The main priority is to identify the skill gaps among local communities, which allows the development of training curricula tailored to their needs and the realities on the ground. Providing opportunities for vulnerable communities to develop the necessary skills for full participation in the workforce will create more inclusive and sustainable economic and social empowerment, leaving no one behind⁵.

5 Li, L. (2022). Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond. *Information Systems Frontiers*, 0123456789. <https://doi.org/10.1007/s10796-022-10308-y>

Table 1. Policy recommendations regarding the energy transition in Indonesia

1 Encouraging community involvement, especially vulnerable communities who experience negative impacts from the energy transition, in preparing programs related to the energy transition

| Objectives | Programs | Indicators |
|---|--|--|
| <ul style="list-style-type: none"> Inclusive Access Competitiveness | <ul style="list-style-type: none"> • Mapping the needs, priorities and challenges faced by local communities • Intensive publications on various social media with a creative communication approach involving young people. • Mapping priority areas to intensify socialization, especially areas that have mining concessions and PLTU but minimal knowledge about JETP such as Sumatra, Papua and Maluku. • Initiating a cross-stakeholder platform that involves the community. • Providing information to the various regions. • Data-based policy making (surveys, FGDs and other feedback) • Training for local community leaders. | <ul style="list-style-type: none"> • The number of communities involved in preparing the JETP program • The level of satisfaction of the people involved |
| <p> Main stakeholders</p> <ul style="list-style-type: none"> Government Private CSO Donor | | |

2 Strengthening the role of CSOs and civil society coalitions in the process of formulating energy transition policies and collecting data so that they can produce more inclusive, effective and impactful policy solutions










| Objectives | Programs | Indicators |
|---|--|---|
| <ul style="list-style-type: none"> Inclusive Access Competitiveness | <ul style="list-style-type: none"> • Stakeholder mapping in the energy sector (CSOs, civil society coalitions, academics, researchers) • Workshop on strengthening the capacity of policy makers in the energy sector, CSOs and civil society • Openness of public data and information in the policy formulation process • Working group discussion involving cross-sectoral experts • Resource support for CSOs and civil society in the community assistance process related to energy | <ul style="list-style-type: none"> • Number of CSOs involved • Number and impact of proposed policies |
| <p> Main stakeholders</p> <ul style="list-style-type: none"> Government Private CSO Donor | | |

3 Implementing the gradual closure of the PLTU accompanied by appropriate compensation and incentive schemes for vulnerable communities who are significantly affected by the closure of the PLTU

| Objectives | Programs | Indicators |
|---|--|--|
| <ul style="list-style-type: none"> Inclusive Access Competitiveness | <ul style="list-style-type: none"> • Compilation of a PLTU road map (Timeline, stages, action plan) • Impact assessment study to identify the impact of PLTU closure • Developing incentive and compensation schemes for vulnerable and negatively affected communities due to the closure of the PLTU • Collaboration between stakeholders, especially with local government and local communities • Collecting data and auditing PLTU concession contracts that are still operating • Strengthening the monitoring and evaluation scheme based on data and public response | <ul style="list-style-type: none"> • Number of power plants closed • Effectiveness of compensation and incentive schemes |
| <p> Main stakeholders</p> <ul style="list-style-type: none"> Government Private CSO Donor | | |

4

Encouraging upskilling programs for vulnerable communities, especially in rural areas and applying a gender lens when designing development programs in the renewable energy sector

|  Objectives | Programs | Indicators |
|---|--|---|
| <ul style="list-style-type: none">  Inclusive  Access  Competitiveness | <ul style="list-style-type: none"> • Identifying community skill gaps, especially in rural areas and around mines • Development of an upskilling program curriculum based on local and community needs • Integrating gender aspects by strengthening women's access to resources, information and decision-making • Collaborating with local partners including training institutions and MSMEs for training and employment. • Monitoring the impact of training on a regular basis | <ul style="list-style-type: none"> • Number of people participating in the upskilling program • Gender equality in the upskilling program • The impact of the upskilling program on improving people's welfare |
|  Main stakeholders | | |
| <ul style="list-style-type: none">  Government  Private  CSO  Donor | | |

Appendix

Appendix A

Table 2. Logistic regression: Factors influencing PLTU closure

| Variable | (1) | (2) | (3) | (4) | (5) | (6) |
|---|-------------------|-------------------|-------------------|--------------------|----------------------|---|
| Log(electricity cost) | -0.069 (0.234) | 0.014 (0.243) | 0.076 (0.216) | -0.009 (0.210) | 0.097 (0.238) | 0.053 (0.227) |
| Log(income) | | -0.113 (0.184) | -0.115 (0.165) | -0.257 (0.211) | 0.032 (0.179) | 0.104 (0.173) |
| Gender Woman | | | -0.785 (0.561) | -0.622 (0.572) | -1.249** (0.557) | -1.073* (0.567) |
| Education SD/MI/SDLB/ Paket A | | | | -1.496 (1.296) | -1.840 (1.259) | -1.439 (1.292) |
| SMP/MTs/SMPLB/ Paket B | | | | -0.070 (1.209) | -0.422 (1.168) | 0.085 (1.299) |
| SMK/MAK | | | | -0.035 (1.287) | 0.190 (1.238) | 0.563 (1.323) |
| SMA/MA/SMLB/ Paket C | | | | -0.340 (1.242) | 0.529 (1.371) | 1.008 (1.493) |
| Diploma I/II/III | | | | 2.175 (1.482) | 4.323** (1.931) | 5.625** (2.311) |
| Diploma IV | | | | 4.244** (1.708) | 3.866** (1.782) | 3.991** (1.861) |
| Bachelor's/Master's/ Doctorate (S1/S2/S3) | | | | 0.467 (1.360) | 1.584 (1.522) | 1.585 (1.628) |
| Age Range 25-34 | | | | | -1.682* (0.876) | -1.842** (0.736) |
| 35-44 | | | | | -2.828*** (0.908) | -2.748*** (0.908) |
| 45-54 | | | | | -1.433 (0.991) | -1.256 (0.919) |
| 55-64+ | | | | | -4.199*** (1.204) | -4.178*** (1.217) |
| Occupations Employees/ Staff/ASN/ TNI/POLRI | | | | | | 0.006 (0.816) |
| Free Labor on the farm Family/ unpaid worker Doesn't work | | | | | | -0.645 (0.744) -0.915 (0.910) -2.024*** (0.730) -0.668 (0.612) |
| Constant | 1.598 (2.791) | 2.172 (3.147) | 1.882 (2.797) | 5.187 (3.858) | 2.111 (3.262) | 1.688 (3.441) |
| Observations | 1,245 | 1,221 | 1,221 | 1,221 | 1,221 | 1,221 |
| Prob > F | 0.769 | 0.818 | 0.437 | 0.006 | 0.000 | 0.000 |

Note

The dependent variable is support for the closure of PLTU. Respondents were asked "Should the Steam Power Plant (PLTU) be closed gradually to achieve the low carbon target?" Answer options include "Yes" (1) and "No". Numbers in parentheses indicate the standard error, *, **, and *** indicate the statistical significance at 5%, 1%, and 0.1%, respectively





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