Research Report on the Role and Participation of Women in the Renewable Energy Sector in Maluku Province

The research team:

Sari Oktafiana, Indana Laazulva, Yusnita Ike Christanti & Nani Saptariani

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Foreword

Praise and gratitude be to the Almighty God for His blessings and mercy, which have enabled us to complete the study on the Role and Participation of Women in the Renewable Energy Sector in Maluku. We also extend our thanks to the BAPPEDA (Regional Development Planning Agency) of Maluku Province for their assistance and participation in this study, as well as the Agency of Energy and Mineral Resources of Maluku Province, PT. PLN (Perusahaan Listrik Negara) for Maluku and Maluku Utara, Bappeda in 10 districts/cities, the Agency of Women's Empowerment and Child Protection of the province and districts/cities, the Agency of Community and Village Empowerment of districts/cities, PT. PERTAMINA, PT. MEA, CSO, the 11 villages in 10 districts/cities that were involved in the Focus Group Discuccions (FGD), interviews, and surveys, Ms. Mercy Barends (member of the Indonesian House of Representatives for Maluku), Mr. J. Lewerissa (member of the Maluku Provincial Regional Council) who participated in this research as respondents.

The role and participation of both men and women in all development sectors, including the energy sector, are equally important. However, the energy sector has been predominantly male-dominated. The lower involvement of women is due to the societal perception that this sector is more suitable for men. Data from 2021 indicates that women's participation in the workforce is still lower than that of men. Specifically, in the gas and electricity sector, women's participation is only about one-sixth (40,000) of the total number of men (240,000)[1] The NZMATES program itself aims to encourage women's involvement in capacity-building activities by setting a target of 20% female participants out of the total participants. However, the current participation of women is still below that target, at approximately 15.3%.

In the initiative of the "Women in the Energy Sector" activities, female professionals and students who are involved in this sector express the challenges faced by women. Among these challenges are feelings of isolation due to being dominated by male workers/students and certain jobs being perceived as unsuitable for women. Women at the grassroots level also experience similar challenges regarding their roles and participation. They are often occupied with household chores such as cooking, washing, cleaning, and more. This is especially prevalent in areas that uphold traditions/norms that perpetuate practices disadvantaging women. Consequently, it results in a lack of opportunities for women to express their opinions and thoughts. However, in their daily lives, domestic work that is closely associated with women requires energy, making women both managers and users of energy at the household level. The challenges faced by women are generally constructed by society, where technical jobs are considered more suitable for men, and domestic work at home is burdened upon women.

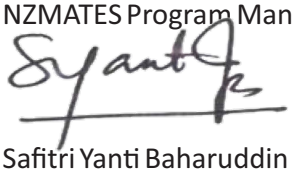
The study on the Role and Participation of Women in the Renewable Energy Sector in Maluku conducted by NZMATES captures the involvement and participation of Maluku women in the energy sector. It identifies the challenges that hinder their participation and explores the support that can be provided to encourage increased involvement of women in the future. This study also offers recommendations to local governments, community leaders, civil society organizations, and NZMATES to advocate for gender

[1]BPS [the Indonesian Statistic Bureau], Labor Force Situation in Indonesia, August 2021.

mainstreaming in the energy sector and strengthen capacity-building regarding knowledge and practices of gender justice and equality.

We hope that this study will serve as a reference for various stakeholders engaged in the energy sector, particularly in renewable energy, when formulating policies, programs, or activities from a gender perspective. This will lead to a transformation in the values/norms that have previously hindered women from fully participating and playing active roles in the sector.

NZMATES Program Manager



Safitri Yanti Baharuddin

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List of Abbreviations

APKM	Access, Participation, Control and Benefit
Bappeda	Regional Development Planning Agency
Bappelitbangda	Regional Development Planning, Research and Development Agency
DP3A	Department of Women Empowerment and Child Protection
DP3A & PMD	Department of Village Community & Women Empowerment, and Child Protection
EBT	New Renewable Energy
ET	Renewable Energy
FGD	Focus Group Discussion
GRK	Greenhouse Gas
IDG	Gender Empowerment Index
IPG	Gender Development Index
KEN	National Energy Policy
KII	Key Informant Interview
LSM	Non-Governmental Organization
Musrembang	Development Planning Consultation *(Musyawarah Perencanaan Pembangunan)*

Perda	Regional Regulation
Perbup	Regent Regulation
PKK	Family Welfare Empowerment
PLTMH	Micro Hydro Power Plant
PLTS	Solar Power Plant
PMD	Village Community Empowerment
P2TP2A	Integrated Service Center for Women and Children Empowerment
PUG	Gender Mainstreaming
SDGs	Sustainable Development Goals
RAD	Regional Action Plan
RENSTRA	Strategic Plan
RKP	Government Work Plan
RPJM	Medium-Term Development Plan
RUED	Regional General Energy Plan
RUEN	National General Energy Plan
UU	Law

Executive Summary

The study titled "The Role and Participation of Women in the Energy Sector in the Maluku Province" aims to understand the current roles and participation of women, the challenges they face, and the support available to women in the energy sector in the Maluku Province. This study is important because nearly 24 hours of human life, especially for women, is closely related to energy. The development and policies in the energy sector need to consider gender dimensions to achieve inclusive energy. Development and policies in the energy sector are important to consider gender dimensions so that energy sector inclusivity can be achieved. Data collection for this study used mixed methods, including a survey with 358 respondents from 11 villages in 10 districts/cities in the Maluku Province. Qualitative methods involved interviews with key figures and informants through focus group discussions with various stakeholders, ranging from village-level community members to local government officials.

At the normative level, the study findings indicate the absence of gender mainstreaming in energy regulations in Indonesia. As a result, energy regulations and policies in regions like Maluku Province have not fully integrated gender dimensions. However, there have been initiatives for gender mainstreaming in policies by the Ministry of Energy and Mineral Resources (ESDM) and State-Owned Enterprises (BUMN). For example, gender mainstreaming policies have been implemented in PT. Pertamina and PT. PLN.

Furthermore, the study findings also indicate limitations and minimal access, participation, and control of women in Maluku in the energy sector, including renewable energy. The limited access, participation, and control of women in energy policy and development affect their ability to derive optimal benefits from energy. Women have not been able to benefit from clean and safe energy for their health. Barriers to access, participation, control, and benefits (APKM) for women in Maluku are related to the patrilineal kinship system in society. This context potentially leads to stigmatization, subordination, stereotypes, and discrimination against women. Additionally, geographic, economic, educational, and political will factors contribute to the limited APKM for women in the energy sector.
Analysis based on the gender transformative approach (GTA) shows that the majority of survey respondents, interview informants, and focus group discussion participants are still unaware of gender inequalities in the energy sector. This means that most participants in the study lack the ability to recognize gender inequality in the energy sector.

However, there are opportunities for women to have roles and participation in the energy sector. Dynamics exist through state interventions in customary institutions that still firmly adhere to patriarchal culture, regulated by Village Law No. 6 of 2004. Customary institutions that are manifested through *negeri/ohoi* accommodate regulations involving women in all development fields. Additionally, normative support such as Law No. 12 of 2005 on the Ratification of the International Covenant on Civil and Political Rights and Presidential Instruction No. 9 on Gender Mainstreaming in National Development Year 2000 encourage stakeholders in the energy sector to involve women.

The recommendations for the government, NZMATES, civil society, and community leaders are to promote gender mainstreaming (PUG) in energy sector regulations, policies, and development. Multi-sectoral and cross-sectoral collaboration is an important part of achieving gender mainstreaming in the energy sector. Social and cultural strategies, including advocacy, education, and mentorship, should be prioritized programs to realize gender mainstreaming and energy inclusivity.

Chapter I
Introduction

"The challenges for women when discussing energy transition, the first challenge I mentioned earlier; the habit issue, the prolonged reliance on fossil fuels for various activities, and the perception that it is the fastest and easiest option. Indeed, it requires collective efforts for capacity building, enhancing knowledge, skills, and critical awareness that they have other alternatives, cleaner energy sources that do not harm the environment."

Mercy Barends, Member of the Indonesian House of Representatives, Commission VII

A. Background

The study on "The Role and Participation of Women in the Energy Sector" aims to understand the current condition of women's roles and participation, the challenges that hinder them, and the support for women in Maluku Province, particularly in the renewable energy sector. Until this study was conducted, there had been no specific research on the existing condition of women's roles and participation in the energy sector in Maluku. The study on gender and energy is a strategic examination because the human lifecycle, especially for women, is closely related to energy almost 24 hours a day. Moreover, gender issues are important aspects in energy because gender is associated with access, utilization, opportunities, and control (Alamsyah, 2013). Gender issues in energy also determine the needs, priorities, and perspectives between men and women in different societies (Ibid, 89). In addition, the low accessibility of energy resources for low-income households and disadvantaged groups (including women) exacerbates global issues of poverty, the marginalization of women, urbanization, and population (the Asian Development Bank (ADB), 2018). This indicates that the energy sector is not a gender-neutral arena, but rather exhibits gender biases such as the division of roles between men and women in energy utilization, management, and energy policies (Dutta, 2003). Gender biases also occur regarding women's career opportunities in the energy sector (Rahmatulloh et al., 2014: IRENA, 2019).

Despite the presence of gender biases, several studies have shown opportunities where women have significant control and roles in the governance and utilization of renewable energy, both for domestic purposes such as household appliances, lighting, cooling/heating, and in economic domains such as laundry businesses, sewing, salons, and restaurants (Lubis, 2011; Fatimah et al., 2018). The study of gender mainstreaming in renewable energy is crucial

because women play an important role in the management and control of renewable energy (Fraune, 2015; Hidayah, 2020; Takayasa et al., 2021).

Studies on women in the energy sector, encompassing access, participation, control and benefits, are of great importance. This is because such studies can map gender relations, analyze gender inequalities, identify challenges leading to gender injustices, and identify opportunities for women to achieve equality with men. The conditions for women to access, participate, exercise control and benefit from the energy sector vary across different communities in Indonesia. Social, cultural, religious, economic, educational, and geographical contexts can determine the conditions of women's access, participation, control and benefits in the energy sector. The study conducted by Permana et al. (2015) demonstrates that cultural, religious and educational backgrounds influence women's roles in energy consumption and utilization. Therefore, the study on the role and participation of women in the energy sector in Maluku Province was conducted in 11 villages and 10 districts/cities with diverse cultural, religious, social and geographical conditions. The diverse context of this study will enrich the references on the role and participation of women in the energy sector, thus producing targeted policy references that are aligned with the specific context of a community.

The research output of this study includes recommendations regarding the role and participation of women in the renewable energy sector in Maluku Province. Specifically, it focuses on women's access, participation, control, and benefits (APKM -Akses Partisipasi Kontrol Manfaat) in the energy sector. The research findings also provide recommendations for gender mainstreaming policies that should be implemented by various stakeholders to enhance inclusivity in the energy sector in Maluku, particularly for women. In the future, this study will contribute to the development of a gender mainstreaming roadmap in the energy sector for the government and relevant institutions.

B. Research Objectives and Questions

The objectives of the research on the role and participation of women in the energy sector, particularly in the renewable energy (RE) sector, in Maluku Province are as follows:

1. To provide an overview of the current condition of women's roles and participation in the energy sector, specifically in the renewable energy (RE) sector in Maluku.
2. To identify challenges that perpetuate gender roles and hinder women's participation in the renewable energy sector ini Maluku.
3. To identify support systems for promoting women's roles and participation in the renewable energy sector in Maluku.
4. To provide recommendations to:
    - The government/local institutions to enhance gender mainstreaming in the development of the renewable energy sector at the level of development policies, programs, and activities.
    - Community leaders to promote gender mainstreaming in the social and cultural aspects of energy sectors.
    - NZMATES (New Zealand-Maluku Access to Renewable Energy Support) to

promote and develop gender mainstreaming designs in their programs and activities.
- Serve as a reference for various stakeholders in developing studies, policies, and gender mainstreaming programs in the renewable energy sector in Maluku.

To address the research objectives, three questions serve as the focal point of the study regarding the role and participation of women in the energy sector, specifically in renewable energy. The following are the three guiding questions:

1. What is **the current condition of women's roles and participation in the renewable energy sector** in Maluku?
2. What are **the challenges that hinder the role and participation of women** in the renewable energy sector in Maluku?
3. What **forms of support exist for promoting the role and participation of women** in the renewable energy sector in Maluku?

C. Literature Review of the Study on the Role and Participation of Women in the Energy Sector

Women play an important role in the energy sector. Their daily lives, spanning for 24 hours, are closely related to energy. From the moment women wake up and start their activities to the end of the day, energy is involved. Referring to a study conducted by the Indonesian Women's Coalition (2019), the involvement of women in energy sector policies and development is a necessity. This is related to three roles of women: reproductive, productive, and social. The reproductive role of women, such as providing food at home, clean water, lighting, giving birth, breastfeeding, storing breast milk, and other domestic work, requires energy. The productive role of women, such as entrepreneurship and other professions, requires energy as it is closely related to production tools. The social role of women, including organizing, associating, and socializing with other social groups, is closely linked to energy. Energy needs for lighting, power, transportation, heating, and cooling are real needs for all humans, including women. However, unfortunately, stakeholders tend to overlook women in energy initiative programs (Semai, 2019:7).

The results of a study conducted by the Institute for Essential Services Reform (IESR) in 2017 stated that Indonesia still faces challenges in energy equity. There is an imbalance in electricity access between regions outside of Java and the eastern part of Indonesia. Specifically for Maluku Province, the electrification ratio is 92.44%, while the national electrification ratio in 2021 has reached 99.45%. Additionally, other energy access such as fuel remains a challenge in terms of affordability and distribution. Rural communities still rely on firewood for cooking, which has a negative impact on women's health. However, the availability and affordability of clean energy are prerequisites for women-centered development (IESR, 2017:2). Access and affordability of clean energy will provide opportunities for women to improve their quality of life and self-development. The findings of a World Bank study (2003, cited in IESR, 2017:3) explain the unequal division of tasks between men and women in rural areas, where women bear the majority of domestic burdens. The study results also indicate that women are the primary energy users in households. This, of course,

results in a high burden for women in providing household energy and vulnerability to women's health. Several factors that pose challenges to women's access and participation in energy include poverty, climate change, and gender inequality. Therefore, civil society continues to advocate for policies and practices that prioritize gender mainstreaming in the energy sector and renewable energy.

In the global context, gender and energy inequality are targets of the Sustainable Development Goals (SDGs), specifically Goal 5 on gender equality and Goal 7 on affordable and clean energy. This is important because gender mainstreaming in clean energy can drive economic opportunities and improve the quality of life for both women and men (Nelson & Kuriakose, 2017). Another significant contribution is that renewable energy can reduce greenhouse gas emissions (ESMAP, 2013a cited in Nelson & Kuriakose, 2017:3). Based on lessons learned from various global experiences, gender mainstreaming in renewable energy is crucial due to several benefits, such as reducing poverty, improving educational opportunities, social capital, and well-being for women. However, there are also challenges, such as the potential high cost of grid connections that may limit access for poor users, including households headed by women, and unequal employment opportunities for women and men in the renewable energy sector (Ibid, 3). According to a study by the International Renewable Energy Agency (IRENA) in 2019, with 1,500 respondents from 144 countries, women's participation was reported at 32% in the renewable energy sector and 22% in the global oil and gas industry. Women's participation in STEM (science, technology, engineering, and mathematics) positions in the renewable energy sector is lower compared to administrative roles. This is due to barriers faced by women, particularly gender role perceptions which are seen as the most significant barrier to entering this sector.

Cultural and social norms play a significant role in influencing many fundamental decisions, creating barriers for women. Views on gender roles also contribute to the lack of access to career information and relevant networks for women. This, in turn, shapes recruitment practices and the extent to which women have access to employment and internships. To address this, IRENA recommends a gender mainstreaming perspective, through audits and awareness training, to change perceptions to be more inclusive and adopt certain workplace practices. Gender mainstreaming can be achieved by creating supportive networks and mentorship opportunities for women. Additionally, affirmative actions such as access and opportunities through scholarships, adequate education and training, and policy support, including maternity leave, quotas for women, equal training opportunities, and supportive workplace practices for women. Support for women, as indicated by survey results, can reduce barriers for women to pursue careers in the renewable energy sector.

Gender mainstreaming in the renewable energy sector remains a challenge in the context of Indonesia. MENTARI (*Menuju Transisi Energi Rendah Karbon Indonesia/*Towards Low-Carbon Energy Transition in Indonesia) in 2022 published findings from its study after conducting training with various renewable energy stakeholders, highlighting three challenges in mainstreaming gender in renewable energy projects and companies. The first challenge is the patriarchal culture that affects women's involvement in the

renewable energy sector. The perception of women's domestic roles reinforces the dominance of men in this sector, shaping the notion that women should not pursue careers in the energy field. The second challenge is the limited number of competent female candidates in this sector. This is due to limited access to information and opportunities for women to enhance their skills and capacities (IRENA, 2019, cited in MENTARI, p. 25). The third challenge is the lack of awareness and expertise regarding gender mainstreaming among project developers, which hampers the inclusivity of programs.

The research conducted by NZMATES on Women in Energy, 2021, involving female staff from various energy stakeholders and college students in Maluku, presents the motivations of women to pursue careers in the energy sector. Hence, the result of the study presents the need for support through policy and infrastructure for women. The result of the study also shows the existence of masculinity perspectives that persist to challenge women pursuing careers in the energy sector. One limitation of this research is that it does not extensively address the roles of women at the grassroots level in the energy sector.

Despite the challenges faced by women in the energy sector in Indonesia, several studies also indicate the presence of opportunities. According to a study by Naimah (2018), women in rural areas have full access to household resources. Some of them are decision-makers within their households, but their roles are still limited to managing electricity usage at home. The challenge for women is that their understanding of electricity and renewable energy, in general, is still limited. However, in urban areas where women have better access to education, they have control over energy usage and are more energy-efficient compared to men. Here are some other research findings on the roles and participation of women in the energy sector in Indonesia.

Table 1.1 The results of studies on the roles and participation of women in the energy sector in Indonesia

Journal Title	Location of Study	Result of Study
Bariklana, T.I.T.M.N.,& Azizah, S. (2021). “Peran Koalisi Perempuan (KPI) Kota Salatiga dalam Meningkatkan Pemberdayaan Energi Baru Terbarukan (EBT)” [“The Role of the Women's Coalition (KPI) of Salatiga City in Promoting New Renewable Energy (EBT) Empowerment]”.	Salatiga City, Central Java	The study highlights the role of civil society, specifically the Women’s Coalition (KPI), in promoting inclusive renewable energy. Through strategies such as educational development, participation and empowerment, advocacy, and networking with a top-to-bottom and grassroots approach, the KPI has been instrumental in developing inclusive energy issues.
Widhyharto, D. S. (2015). “Perempuan sebagai Agen Perubahan Sosial-Ekonomi Masyarakat Pesisir Sekitar PLTH (Pembangkit Listrik Tenaga Hybrid) Pantai Baru, Kabupaten	Coastal Communities around Hybrid Power Plant (PLTH) Pantai Baru, Bantul Regency, Yogyakarta Special Region	The study focuses on the changing roles and positions of women following the development of the PLTH, which has opened access for women to participate in productive sectors and express themselves according to their abilities and skills. The PLTH project has

Journal Title	Location of Study	Result of Study
Bantul, Daerah Istimewa Yogyakarta." ["Women as Agents of Socio-Economic Change in Coastal Communities around the New Hybrid Power Plant (PLTH), Bantul Regency, Special Region of Yogyakarta"] Jurnal Pengabdian Kepada Masyarakat, 156-171.		contributed to the improvement of women's status and economic well-being. Women engage in activities such as culinary endeavors, selling souvenirs, working as toilet attendants, and managing various types of games, all of which contribute to their economic empowerment.
Atahau, A. D. R., Sakti, I. M., Huruta, A. D., & Kim, M. S. (2021). "Gender and Renewable Energy Integration: The Mediating Role of Green-microfinance." Journal of Cleaner Production, 318, 128536.	East Sumba	The study explores the role of green microfinance institutions in encouraging members to develop environmentally friendly activities and energy solutions such as biogas equipment, water pumps (turbine), micro-hydro, and waste banks. Green microfinance institutions empower women and contribute to the positive impact of renewable energy on women. Electrification has helped women in Sumba to fulfill their multiple roles more effectively in terms of reproduction, economic productivity, and social engagement.
Hermawati, W., Ririh, K. R., Ariyani, L., Helmi, R. L., & Rosaira, I. (2023). "Sustainable and green energy development to support women's empowerment in rural areas of Indonesia: Case of micro-hydro power implementation." Energy for Sustainable Development, 73, 218-231.	Case Study in three different locations in Indonesia, i.e. Cinta Mekar Village (CM), Subang Regency, West Java Province ; Seloliman Village (SL), Mojokerto Regency, East Java Province, and Gunung Sawur Village (GS), Lumajang Regency, East Java Province	This case study examines the implementation of micro-hydro power projects in rural areas of Indonesia and their impact on women's empowerment, gender relations, and women's roles in rural development. Local NGOs and donor agencies provide financial assistance, technical support, and training, leading to women's empowerment and gender-related improvements in rural development.

Several studies presented above have shown the involvement and participation of women, barriers and challenges for women, benefits of energy for women, and the role of civil society organizations in mainstreaming energy for women. However, studies specifically addressing the roles and participation of women in terms of access, participation, control, and benefits, particularly in the diverse context of communities in Maluku Province, are not yet available. Therefore, conducting unique studies can fill the gaps in gender studies in the energy and renewable energy sectors within the context of communities residing in island regions, considering the diverse social, economic, and cultural aspects of the population.

D. Methodology

The research methodology employed for the study on the roles and participation of women in the energy sector in Maluku Province, conducted by the NZMATES program, is designed using a mixed methods approach, combining quantitative and qualitative methods. The integration of these two methods will be used to address three research questions: the current status of women's roles and participation in the renewable energy sector, the challenges hindering women's roles and participation, and the support for women's roles and participation in the energy sector in Maluku.

To address the three key research questions, the theoretical framework used in this study is a combination of **the Gender Transformative Approach (GTA)** and **Harvard gender analysis**. The Gender Transformative Approach (GTA) is an approach to examine and identify **the potential and risks associated with women's roles and participation** in aspects of social norms, culture, and public policies that contribute to gender inequality. **The GTA** will identify potential and risks in social norms, culture, and public policy at the individual, household/family, community, and government decision-making levels, according to the local context. The aspects of social norms, culture, and public policy that will be examined include:

- Social and cultural norms in society: the views and practices related to gender equality, patriarchal culture, masculine stereotypes, stigma surrounding gender equality, and potential discrimination against women stemming from traditional practices and customs in their daily lives.
- Public policies: regulations such as local regulations, regent/mayor regulations, governor regulations, other gender mainstreaming (GM) policies/programs, gender-responsive policies, and others.

The GTA perspective is used as an approach in this study considering that it will provide an overview of the ecosystem in terms of the social, cultural, and public policy contexts that shape women's roles and participation in the energy sector.

The Harvard Gender Analysis, on the other hand, will analyze women's access, participation, benefits, and control as individuals, as well as at the household, community, and government decision-making levels in the energy sector. The Harvard Analysis will examine data at the micro-level (households and communities) based on four interrelated components: access, participation, benefits, and control (APKM). Referring to Faraz (2012), the analysis is conducted on the following aspects:

a. Activity profiles

The concept of division with disaggregated data by gender and detailed breakdown of activities (who does what) and scheduling (time allocation) for different socioeconomic groups. Activity profiles are grouped into productive, reproductive, socio-cultural, and community activities in the energy sector. The activity profiles can map the roles and participation of women in productive, reproductive, socio-cultural, and community activities in the energy sector.

b. Access, benefits, and control profiles

The access, benefits, and control profiles identify the resources controlled by men and women to carry out their activities and the benefits obtained by each individual from these activities. The access profile shows who has access to resources and control over the use of resources, especially

in the energy sector. The benefits profile will demonstrate the usefulness of women's access and control over resources in the energy sector.

c. Analysis of influencing factors on access, participation, benefits, and control

The profile analysis examines the underlying factors that determine support, challenges, and barriers for women's roles and participation in the energy sector.

The operational definitions are as follows:

- **Access**: The opportunity to obtain information and utilize economic, social, cultural, and political resources.
- **Participation**: Involvement in economic, social, cultural, and political activities.
- **Control**: The ability to make decisions and utilize economic, social, cultural, and political resources.
- **Benefits**: The impacts received from all development activities (economic, social, cultural, and political).

The analysis will be conducted at various evels, starting from the individual level (women), interpersonal level (household), community level, up to decision-making by both customary and village and regional governments. The indicators of access, participation, control, and benefits (APKM) form the basis for examining the role and participation of women in the energy sector. The combined theoretical framework of the GTA and Harvard gender analysis will be used to analyze data on the potential and risks associated with women's roles and participation, shifting them from objects to subjects in the energy sector. The use of the Harvard Analysis in this study with the addition of the GTA provides a core analysis of women's roles and participation in the renewable energy sector. Figure 1.1 below illustrates the analytical framework overview of this research.

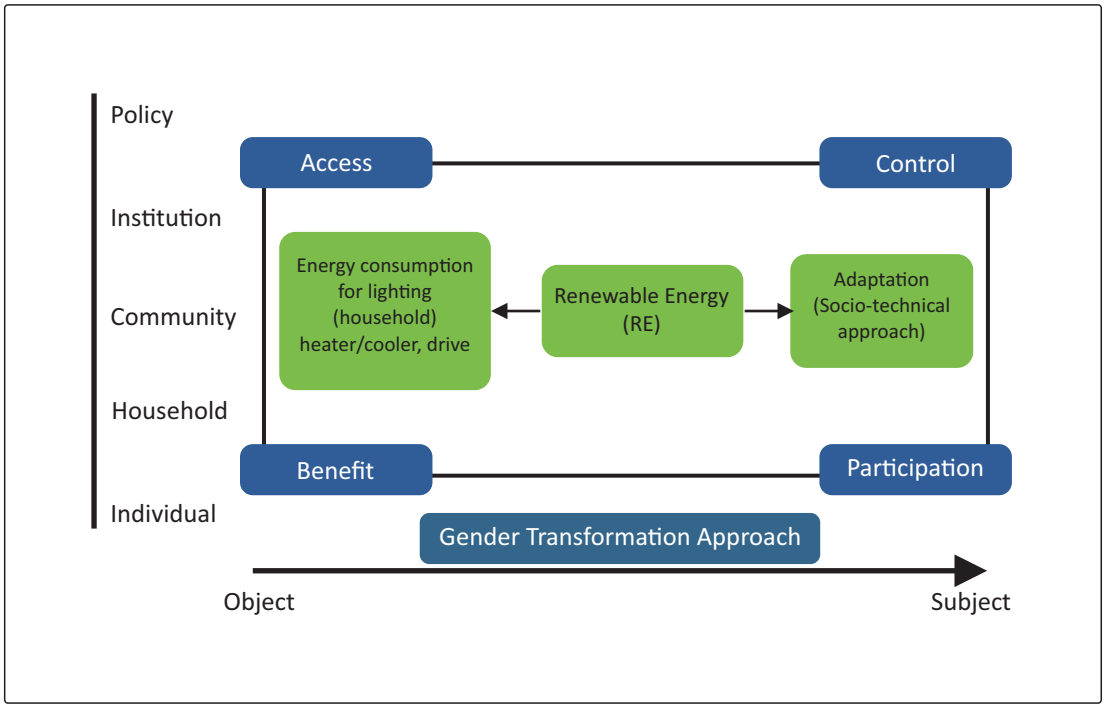


Figure 1.1 The analytical framework for the research on the roles and participation of women in the energy and renewable energy sectors

D. 1. Data Collection Techniques and Research Location

As explained earlier, this study utilizes mixed methods, combining qualitative and quantitative approaches, to answer the research questions. Qualitative data collection techniques include desk study, key informant interviews (KII), focus group discussions (FGD), and surveys. Desk study involves reviewing relevant literature such as previous research, working papers, regulations, and other secondary data sources. Supporting data may include gender mainstreaming regulations, Performance Accountability Reports of Government Institutions (LAKIP), and the strategic plans of local government organizations such as the Department of Energy and Mineral Resources, Regional Planning, Research and Development Agency, Department of Women's Empowerment and Child Protection, Department of Empowerment and Village Governance, and others.

Data collection through interviews, observations, and focus group discussions (FGDs) is conducted purposively in six villages selected based on the Gender Empowerment Index (IDG) of the respective districts/cities, characteristics of indigenous communities, types of power generation sources, and religious diversity of the village population, as presented in Table 1.2.

Table 1.2 List of sampling in 6 villages

Criteria	Village	KII with Village Head/ Secretary	KII with women/religious/ indigenous leaders	FGD
Highest IDG	Soya Village, Ambon City	1 person	2 person	Women FGD : 8 persons Men FGD : 7 persons Adolescent FGD : 6 persons
Low Gender Empowerment Index (IDG) & micro hydro systems (PLTMH)	Tihu Village, West Part of Seram	1 person	1 person	Women FGD : 7 persons Men FGD : 8 persons Adolescent FGD : 12 persons
Indigenous Communities	Nuanea Village, Central Maluku	1 person	2 persons	Women FGD : 7 persons Men FGD : 6 persons Adolescent FGD : 6 persons
Types of power generation sources	Erersin Village (Solar Power Plant)	1 person	2 persons	Women FGD : 11 persons Men FGD : 8 persons Adolescent FGD : 9 persons
Religion of the population	Gogorea Village (majority of population is Moslem)	1 person	1 person	Women FGD : 7 persons Men FGD : 8 persons Adolescent FGD : 6 persons
	Klis Village (majority of population is Christian)	1 person	1 person	Women FGD : 7 persons Men FGD : 8 persons Adolescent FGD : 6 persons
Total of informants		6 persons	9 persons	137 persons

The criteria of the Gender Empowerment Index (IDG) at the district/city level, characteristics of indigenous communities, types of power generation sources, and religious diversity of the village population are used to understand and identify social, cultural, and religious factors that differentiate the context of women. These contextual differences serve as factors that can explain the findings of APKM (access, participation, control, and benefits) of women in the energy sector. In-depth interviews are conducted with 15 key informants at the village level. The key informants at the village level include indigenous leaders, religious figures, women leaders, and village heads/secretaries. Data exploration through FGD involves 137 participants from women's groups, men's groups, and adolescent groups.

In addition to the village level, Key Informant Interviews (KII) are also conducted with various stakeholders, including relevant stakeholders at the district/city, provincial, and national levels. The following is Table 1.3, which shows the list of informants involved in the KII.

Picture 1. FGD activity with women's group

Picture 2. Interview with religious figures

Picture 3. Interview with Village Head

Picture 4. FGD with adolescent group

Picture 5. FGD with men's group

Picture 6. Interview with women leader

Table 1.3 List of *Key-Informant Interview* (KII) of district/city, provincial and national level

No.	Institution	Number
1	Member of the Indonesian Parliament, Commission VII	1
2	Member of the Maluku Provincial Parliament, Commission II	1
3	Regional Development Planning Agency of Maluku Province (Bappeda)	1
4	Agency of Energy and Mineral Resources of Maluku Province	1
5	Agency of Women's Empowerment and Child Protection (DP3A) of Maluku Province	1
6	Women's NGO Representatives	2
7	PT. Pertamina Maluku Area	1
8	PT. Maluku Energi Abadi (Regional State-Owned Enterprise)	1
9	PT. PLN Maluku Region	2
10	Regional Development Planning Agency (Bappeda)	10
11	Department of Village Empowerment, Women's Empowerment, and Child Protection	4
12	Department of Women's Empowerment and Child Protection (DP3A)	4
13	Department of Community Empowerment and Village Affairs (PMD)	5
Total KII at the district/city, provincial, and national levels		34

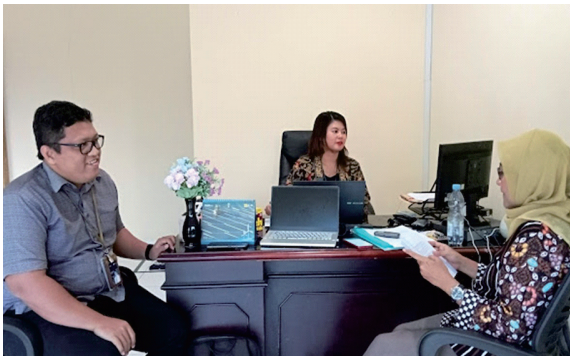
To obtain accurate information and a comprehensive overview of the data obtained through KII, the researchers conducted method triangulation by distributing questionnaires in the form of Google Forms involving 6 respondents from Bappeda and the Department of Energy and Mineral Resources of Maluku Province, as well as PT. PLN Maluku Region. Therefore, the total number of informants and respondents involved in the study is 550 individuals.

Triangulation of data through follow-up interviews with stakeholders was also conducted to delve deeper into the information obtained from previous sources. Additionally, field observations were carried out to verify the accuracy of the information gathered during KII or FGD, such as observing the damage to solar panels in Erersin Village and the damage to micro-hydro power plants in Tihu Village.

Picture 7. KII with Bappeda

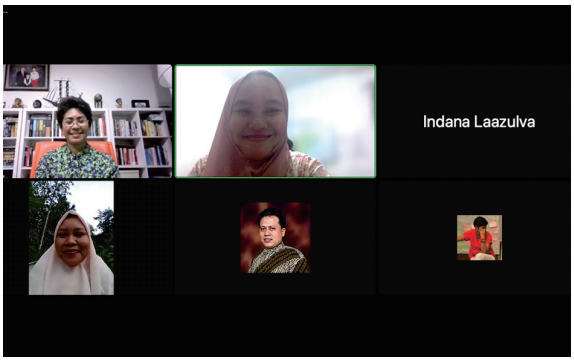
Picture 8. KII with DP3AP

Picture 9. KII with Department of PMD



Picture 11. KII with PT.PLN Maluku Region

Picture 10. KII with Department of Village Empowerment, Women's Empowerment, and Child Protection



Picture 12. KII with Member of the Indonesian Parliament, Commission VII

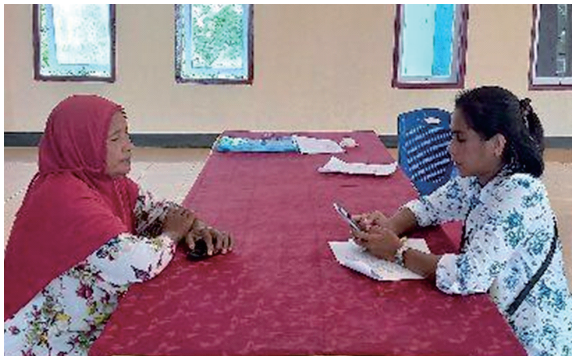
In addition to qualitative data, this research also utilized quantitative data through survey techniques. Primary data collection was done through surveys involving 358 respondents from 11 villages located in 10 districts/cities in Maluku Province. Table 1.4 presents the number and characteristics of the respondents.

Table 1.4 Characteristics of the respondents in 11 villages

Characteristics of the respondents	Men		Women		Total	
	n	%	n	%	n	%
Village						
Soya Village, Ambon City	18	10.2%	21	11.5%	39	10.9%
Haruku Village, Central Maluku District	16	9.1%	17	9.3%	33	9.2%
Nuanea Village, Central Maluku District	17	9.7%	20	11.0%	37	10.3%
Wisalean Village, East Part of Seram District	15	8.5%	15	8.2%	30	8.4%
Tihu Village, West Part of Seram District	15	8.5%	15	8.2%	30	8.4%
Gogorea Village, Buru District	15	8.5%	15	8.2%	30	8.4%
Dullah Laut Village, Tual City	15	8.5%	15	8.2%	30	8.4%
Letvuan Village, Southeast Maluku District	16	9.1%	17	9.3%	33	9.2%
Erersin Village, Aru Islands District	17	9.7%	16	8.8%	33	9.2%
Lamdesar Barat Village, Tanimbar District	15	8.5%	15	8.2%	30	8.4%
Klis Village, Southwest Maluku District	17	9.7%	16	8.8%	33	9.2%
Village Status: RE						
RE Village	79	44.9%	77	42.3%	156	43.6%
Non RE Village	97	55.1%	105	57.7%	202	56.4%
Status in the family						
Head of the Family	166	94.3%	44	24.2%	210	58.7%
Wife	0	0.0%	132	72.5%	132	36.9%
Others	10	5.7%	6	3.3%	16	4.5%
Age						
20-24 years old	9	5.1%	7	3.8%	16	4.5%
25-29 years old	9	5.1%	19	10.4%	28	7.8%
30-34 years old	22	12.5%	28	15.4%	50	14.0%
35-39 years old	22	12.5%	23	12.6%	45	12.6%
40-44 years old	42	23.9%	32	17.6%	74	20.7%
45-49 years old	29	16.5%	25	13.7%	54	15.1%
50-54 years old	20	11.4%	23	12.6%	43	12.0%
55-59 years old	23	13.1%	25	13.7%	48	13.4%
Highest Education attained						
No formal education	4	2.3%	9	4.9%	13	3.6%
Elementary school or equivalent	50	28.4%	67	36.8%	117	32.7%

Characteristics of the respondents	Men		Women		Total	
	n	%	n	%	n	%
Junior high school or equivalent	27	15.3%	34	18.7%	61	17.0%
Senior high school or equivalent	72	40.9%	56	30.8%	128	35.8%
Diploma degree	3	1.7%	6	3.3%	9	2.5%
Bachelor's degree	19	10.8%	9	4.9%	28	7.8%
Master's degree	1	0.6%	1	0.5%	2	0.6%
Profession						
Farmer	84	47.7%	49	26.9%	133	37.2%
Fisherman	35	19.9%	10	5.5%	45	12.6%
Daily laborer	4	2.3%	2	1.1%	6	1.7%
Civil servant	20	11.4%	8	4.4%	28	7.8%
Private sector employee	13	7.4%	2	1.1%	15	4.2%
Entrepreneur	17	9.7%	14	7.7%	31	8.7%
Housewife	0	0.0%	96	52.7%	96	26.8%
Unemployed	3	1.7%	1	0.5%	4	1.1%
Monthly income						
< Rp 1,5 million	124	70.5%	142	78.0%	266	74.3%
Rp 1,5 million – Rp 2,5 million	24	13.6%	24	13.2%	48	13.4%
Rp 2,5 million – Rp 3,5 million	12	6.8%	8	4.4%	20	5.6%
> Rp 3,5 million	16	9.1%	8	4.4%	24	6.7%
Having a social safety net program card from the government						
Yes	109	61.9%	129	70.9%	238	66.5%
No	67	38.1%	53	29.1%	120	33.5%
Marital Status						
Married	160	90.9%	129	70.9%	289	80.7%
Divorced (living)	4	2.3%	11	6.0%	15	4.2%
Widow/widower	7	4.0%	39	21.4%	46	12.8%
Single	5	2.8%	3	1.6%	8	2.2%
Disability status						
Yes	8	4.5%	9	4.9%	17	4.7%
No	168	95.5%	173	95.1%	341	95.3%

Characteristics of the respondents	Men		Women		Total	
	n	%	n	%	n	%
Religion/belief						
Islam	64	36.4%	64	35.2%	128	35.8%
Catholic	16	9.1%	16	8.8%	32	8.9%
Christian (Protestant)	83	47.2%	91	50.0%	174	48.6%
Hindu	13	7.4%	8	4.4%	21	5.9%
Others	0	0.0%	3	1.6%	3	0.8%



Picture 13. Enumerator conducting interview with survey respondent

Picture 14. Enumerator conducting interview with survey respondent

Picture 15. Enumerator conducting interview with survey respondent

Picture 16. Enumerator conducting interview with survey respondent

Data collection for this research was conducted using the KoboCollect application. KoboCollect is an open-source Data Kit Collect (ODK Collect) app that can be downloaded from Google Play. This Android-based application replaces traditional paper survey forms with digital forms. The use of KoboCollect in the survey process automates data collection and eliminates some of the manual survey processes, making the survey more efficient. This application facilitates data collection in the field and allows for data storage both online and offline. In cases where uploading the survey forms requires a stable internet connection, some enumerators used paper-based survey questionnaires as a backup during interviews to ensure accurate information gathering from respondents.

D.2. Data Collection Challenges

Other challenges encountered with the KoboCollect application include issues with incompatible smartphones, unstable internet connections leading to difficulties in data entry and transmission, and failure to attach respondent photos during the survey. Another challenge is the rapid depletion of smartphone batteries. Additionally, for most enumerators, this research was their first experience using the KoboCollect application, which required an adaptation process and a learning curve at the beginning. Another challenge was the remote location of the researched villages, with irregular transportation schedules that sometimes did not align with the research timeline.

D.3. Design of Interview Question Guidelines, FGDs, and Surveys

The blueprint in the form of a general guide for KII, FGD, and survey questions is an operationalization of the Gender Transformative Approach (GTA), which identifies t**he potential and challenges regarding women's roles and participation** in the aspects of social norms, culture, and policies, as well as **the Harvard Gender Analysis**, to explore data on APKM (access, participation, control, and benefits) for women in the energy sector. Table 1.5 presents the design of the KII, FGD, and survey guide.

Table 1.5. Design of guideline for KII, FGD and Survey.

Target Data	General Questions
Understanding energy context	• What is the history of power generation or the electrification program in the village? • What is the availability of energy like? • How is energy utilized? • What are the challenges regarding energy availability? • How is the coordination between the provincial and district governments?
Understanding the social and cultural context of the community	• What is the condition of the kinship system? • What are the roles and participation of women in the community? • What is the position of women in customary rules and practices? • How are women involved in village deliberations and development?
Understanding the current conditions of women's roles and participation in the energy sector in Maluku	• What is the knowledge about gender equality? • How are gender equality practices? • How are the APKM (access, participation, control and benefits) of women in the energy sector?

Target Data	General Questions
• Knowledge, perceptions, and attitudes towards gender equality in general: Access, Participation, Control, and Benefits of energy for women in productive, reproductive, socio-cultural, and community roles • Knowledge about renewable energy	• How is the knowledge about renewable energy? • How is the division of productive and reproductive roles among women in the domestic sphere? • How is the division of socio-cultural roles among women in the community?
Understanding the challenges/barriers to APKM for women in the energy sector.	• What are the barriers women meet in accessing energy? • What are the barriers women meet in participating in the energy sector? • What are the barriers women meet in utilizing/accessing education/training, use and management in the energy sector? • What are the challenges and barriers women face in controlling the management of the energy sector?
Understanding the support for women's access, participation, control and benefits in the energy sector	• How do the regulations/policies/programs support women for the APKM in the energy sector? • What are the affirmations for women's APKM in the energy sector?

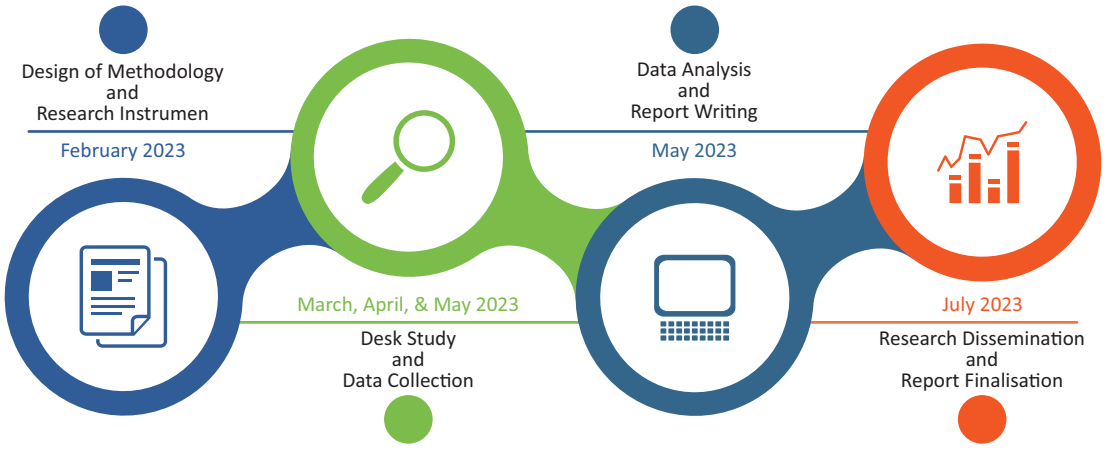
D.4. Data Analysis

Data analysis is the process of sorting data after data collection to present useful information (Hardy & Bryman, 2009:4). One similarity in data analysis between quantitative and qualitative research methods is data reduction. Qualitative data analysis begins by preparing and organizing visual and textual data in the form of transcripts (Creswell, 2013:251). The next step is data reduction and starting the process of coding and summarizing codes. After that, the categories are connected according to the analytical framework, and data interpretation is conducted until the data is presented. Some keywords in coding in this research include kinship system, patriarchy, gender relations, equality, division of roles, access, participation, control, benefits, culture, customs, domestic, and others.

Quantitative data analysis begins with data collection through surveys using the KOBOcollect application. Next, data verification is conducted. The following stage is data cleaning to ensure the validity of the analyzed data. After data cleaning, the survey results are processed descriptively and cross-tabulated. Statistical analysis is performed to measure respondents' knowledge about gender and renewable energy, which is then scored and presented in categorized levels of respondents' knowledge.

D.5. Research Timeline

The research activities were conducted from February to June 2023. Picture 17 presents the information of the timeline of research activities.



Picture 17. The Timeline of Research Activities

D.6. Research Ethics

Research ethics is an important aspect of research. The entire research process should not be harmful to research participants, adhering to the principle of **"do no harm".** To uphold research ethics and ensure the safety of participants throughout the research process, the following measures are implemented:

- **Informed consent** is obtained during the data collection process to ensure that informants/respondents willingly participate in the research.
- Standards during surveys, KII, and FGD include **seeking permission** to record audio, take pictures, and videos for research purposes.
- Conducting oneself with appropriate behavior by **adhering to norms of courtesy** during data collection.
- **Ensuring confidentiality**: protecting the identities of informants and respondents by using anonymity in research reports if there is a potential risk.
- Adhering to ethical codes during the transcription process by **maintaining the confidentiality of research data.**

D.7. Conducting Survey Data Control

Data quality is a priority in this research. Therefore, the researchers conducted callbacks to survey respondents as a control on the data collection process carried out by enumerators. The callbacks also aimed to assess respondents' understanding of the research questions and ensure that the data collection process was conducted in accordance with research norms and ethics. The research team conducted callbacks from April 26 to May 3, 2023, via mobile phones to 89 respondents out of the 152 survey respondents who had mobile phone numbers. The callbacks involved 33 respondents, with the breakdown as follows: 4 respondents from Soya Village, Nuanea Village, Dullah Laut Village, Letvuan Village, 3 respondents from Haruku

Village, Wisalean Village, Gogorea Village, Klis Village, and 2 respondents from Tihu Village, Erersin Village, and 1 person from Lamdesar Barat Village.

The results of the callbacks indicated that enumerators visited respondents and conducted surveys on energy-related topics, such as electricity and fuel for cooking. Respondents also conveyed that enumerators behaved politely during their duties. Challenges encountered during the callback implementation were signal and electricity constraints in respondents' locations, as well as some respondents being unwilling to answer phone calls.

Chapter II
Contextual Overview of Women and Energy Sector

This section presents the research findings in the form of a contextual overview of gender, women, and energy. The presentation begins with an analysis of regulations, the socio-cultural-energy context, and gender policies in the Maluku Province.

A. Study of Gender Perspectives in Regulations and Policies in the Energy Sector in Indonesia

The energy sector is a strategic sector in the national development of Indonesia, and concerns the livelihood of the people. The energy sector is closely related to the welfare and improvement of human quality of life. There are several regulations that govern the energy sector, i.e.:

- Article 4, paragraph (I) of the Constitution of the Republic of Indonesia of 194.
- Law of the Republic of Indonesia Number 30 of 2007 on Energy.
- Law of the Republic of Indonesia Number 30 of 2009 on Electricity.
- Law of the Republic of Indonesia Number 4 of 2009 on Mineral and Coal Mining.
- Law of the Republic of Indonesia Number 3 of 2020 on Amendment to Law Number 4 of 2009 on Mineral and Coal Mining.

While the derivatives of some of the laws above are as follows:

- Government Regulation Number 79 of 2014 on the National Energy Policy (KEN-*Kebijakan Energi Nasional*).
- Presidential Regulation Number 1 of 2014 on Guidelines for the Preparation of the National Energy General Plan (RUEN-*Rencana Umum Energi Nasional*).
- Presidential Regulation of the Republic of Indonesia Number 22 of 2017 on the National Energy General Plan (RUEN).
- Presidential Regulation of the Republic of Indonesia Number 26 of 2008 on the Establishment of the National Energy Council and the Procedures for the Screening of Candidates for Members of the National Energy Council.

The priorities of KEN and RUEN are energy transition from fossil fuels to renewable energy. Referring to Presidential Regulation RUEN 2017, the Indonesian government targets 23% renewable energy utilization by 2025 and aims for a continuous increase to reach 31.2% by 2050 (Wardhana & Marifatullah, 2020). In the context of regional regulations, Local Governments play a role in elaborating RUEN into Regional Energy General Plans (RUED-*Rencana Umum Energi Daerah)* and implementing energy sector policies and programs at the regional level.

Analyzing the aforementioned regulations, gender mainstreaming has not yet been integrated into energy regulations and policies, both at the national and provincial levels, including in the province of Maluku. Although Presidential Instruction Number 9 on Gender

Mainstreaming in National Development has been enacted since 2000, the gender aspect has not been fully integrated into all areas of development. Gender has not become an integral part, including the representation of women in the National Energy Council (DEN-*Dewan Energi Nasional*).

It is evident that there is a lack of affirmation for women's participation in Presidential Regulation of the Republic of Indonesia Number 26 of 2008 concerning the Formation of the National Energy Council and the Procedures for Screening Prospective Members of the National Energy Council. All members of the National Energy Council (DEN) from various stakeholders for the 2020-2025 period are exclusively men. Since 2019, the Indonesian Women's Coalition (KPI-*Koalisi Perempuan Indonesia*) has proposed gender mainstreaming in the Draft of New and Renewable Energy Law (RUU EBT-*Rancangan Undang-Undang Energi Baru dan Terbarukan*). Additionally, KPI has recommended gender mainstreaming in the policies, planning, implementation, and evaluation of EBT development. Access to and knowledge about EBT are crucial for women to actively participate in EBT development.

Although gender mainstreaming is not yet incorporated into energy sector regulations, there are opportunities evident from several initiatives undertaken by the Ministry of Energy and Mineral Resources (Kementerian ESDM) and state-owned enterprises (BUMN). The Ministry of Energy and Mineral Resources, through its Secretary General Ego Syahrial, has introduced breakthroughs in engaging women in the energy transition through the *Patriot Energi* and Solar Energy Initiative Movements (GERILYA). Gender and energy inclusivity have been a focus, as seen by the participation of more than 30% women in GERILYA. Ego Syahrial also mentioned that as of July 2022, there are 11 women holding director or level 2 executive positions, out of a total of 55 level 2 units in the Ministry of Energy and Mineral Resources[1].

The involvement of women in energy conservation has also been a focus. The Directorate of Energy Conservation, in collaboration with the Indonesian Women's Coalition (KPI), conducted socialization on the role of women in energy efficiency in 2021. This socialization, in this context, is part of knowledge dissemination for behavioral changes towards energy-saving consumption[2]. Another good practice is the collaboration between the Ministry of Energy and Mineral Resources (KESDM) and PT Astra International in April 2022 through the event "Netizen Gathering: Earth in the Hands of Woman." The Directorate General of New, Renewable Energy, and Energy Conservation (EBTKE-*Energi Baru Terbarukan dan Konservasi Energi*) conveyed the Ministry of Energy and Mineral Resources mission to enhance women's role in Indonesia's energy transition and their involvement in energy-efficient lifestyles.[3]

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[1] Information obtained from EBTKE public relations, "Kementerian ESDM-USAID Dorong Peran Perempuan Dukung Transisi Energi", Tuesday, 12 July 2022 accessed through https://ebtke.esdm.go.id/post/2022/07/13/3208/kementerian.esdmusaid.dorong.peran.perempuan.dukung. transisi.energi

[2] Information from Unit News Directorate General of EBTKE "Peran Perempuan dalam Efisiensi Energi Melalui Pemanfaatan Lampu LED" 2021, accessed through https://www.esdm.go.id/id/berita-unit/direktorat-jenderal-ebtke/peran-perempuan-dalam-efisiensi-energi-melalui-pemanfaatan-lampu-led

[3] Information from the Press Release of the Ministry of Energy and Mineral Resources, "Gelar Temu Netizen Ke-17, KESDM Gandeng Astra International Tingkatkan Peran Perempuan dalam Transisi Energi" Sunday, 24 April 2022, accessed through https://www.esdm.go.id/id/media-center/arsip-berita/gelar-temu-netizen-ke-17-kesdm-gandeng-astra-international-tingkatkan-peran-perempuan-dalam-transisi-energi

Gender mainstreaming has also become a policy of the Ministry of State-Owned Enterprises (BUMN), which serves as one of the assessment indicators within the body of state-owned enterprises. Its aim is to create a safe and comfortable environment for women and to encourage their involvement in improving company performance. Minister of State-Owned Enterprises, Erick Thohir, stated that currently, women make up 16% of the boards of directors of state-owned enterprises. It is expected that by 2023, the composition of women will reach 25 percent. PLN's President Director, Darmawan Prasodjo, also expressed PLN's commitment to promoting women's participation in the company's development. This commitment is realized through PLN's efforts to provide opportunities for women to develop their potential and careers within PLN.

The "Srikandi PLN" program is one manifestation of gender mainstreaming in PLN. In 2021, PLN held the "PLN Women Summit 2021" which was attended by more than 250 Srikandi PLN in various structural positions, including leaders of units such as ULP, ULT, UP3, and parent units.[4] The commitment to gender mainstreaming is also evident in the important positions held by women in PLN. There are seven Srikandis holding strategic positions in PLN and its subsidiaries.[5] PLN hopes that through the role of women in strategic positions and Srikandi PLN, the stigma of women's lack of self-confidence and distrust in women's capacity to pursue careers in technology-intensive engineering companies can be eliminated.[6]

At the regional level, PLN's commitment to gender mainstreaming is also conveyed by Mrs. EA, one of the officials at PT PLN Area Maluku, who stated:

> *"Because in technical aspects the mindset used to be that they can only be done by working in the field, mostly by men, but as time goes by, with women's empowerment, we still target the most strategic positions, from the smallest scope to the structural level, we strive to have representation from women. It may not reach 30% immediately, but we will gradually work towards it."*[7]

Some of the gender-responsive policies implemented in PT PLN Area Maluku are as follows:

- 20% proportion of women to support gender equality in engineer and non-engineer positions.
- Policies that prioritize women and gender mainstreaming, such as sexual harassment protection, Srikandi PLN (PLN Women), and empowering women for PLN's CSR programs.
- Career support for women, including training and talent development programs for Srikandi PLN
- One-day menstrual leave per month for female employees and one-month paternity

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[4] Information obtained from PLN News, "Wujudkan Woman Empowerment, PLN Dorong Iklim Kerja Sehat Melalui Pengarusutamaan Gender" 2022, accessed through https://web.pln.co.id/cms/media/siaran-pers/2022/04/wujudkan-woman-empowerment-pln-dorong-iklim-kerja-sehat-melalui-pengarusutamaan-gender/

[5] The Seven Srikandi of PLN i.e. PLN Finance Director Sinthya Roesly, PLN Retail and Commerce Director Edi Sri Mulyati, Main Director of PT Haleyora Power Sinung Triwulandari, Main Director of PT PLN Enjiniring Chairani Rachmatullah, Director of Finance of PT PLN Indonesia Power Endang Astharanti, General Manager of PLN Main Unit for East and Kalimantan Regions North Joice Lanny Wantania and General Manager of PLN Main Unit for East Nusa Tenggara Region Fientje Lumembang.

[6] Information obtained from PLN News, "Holding Sub-Holding PLN Beri Ruang Besar Bagi Perempuan, 7 Srikandi Jabat Posisi Penting" 2022, accessed through https://web.pln.co.id/cms/media/siaran-pers/2022/09/holding-sub-holding-pln-beri-ruang-besar-bagi-perempuan-7-srikandi-jabat-posisi-penting/

[7] Interview with Ms. EA, an official at PT. PLN Maluku Area, 17 March 2023.

- leave for husbands accompanying their wives during childbirth.
- In PT PLN Area Maluku, lactation rooms and childcare facilities are being prepared for female employees. Additionally, the policy allows female employees to bring their children and caregivers during training programs to support the productivity of Srikandi in PT PLN.

Figure 2.1. Illustration of Srikandi PLN in PT PLN Calendar of 2023

Meanwhile, gender mainstreaming commitments in PT Pertamina have been implemented intensively since 2020, as reflected in policies and initiatives promoting gender equality in the workplace, marketplace, and community. In 2021, PT. Pertamina demonstrated its commitment to gender equality by signing the Women's Empowerment Principles (WEPs) (Widyasari, 2022). This implementation is realized through the establishment of PERTIWI (Empowered, Inspirational, Resilient, and Integrious Women of Pertamina). Affirmative actions for women within PERTIWI include enhancing the capabilities of Pertamina employees through cross-exposure mentoring, webinar series, and sharing sessions, preparing aspiring female leaders through Coaching for Aspiring Female Leaders, Focus Group Discussions, and the PERTIWI Award, and making social contributions at both national and global levels through the development of womenpreneurs, scholarships, voluntary days, as well as external and internal partnerships.[8]

Support for women pursuing careers in Pertamina is implemented through strategic workforce planning, succession planning, remuneration based on equality principles, openness, fairness, and the avoidance of discriminatory practices and harassment in the workplace. The gender mainstreaming policy in Pertamina has successfully increased the participation of female

[8]Information from the news in https://www.pertamina.com/id/kesetaraan-gender-dan-kesejahteraan-pekerja.

Figure 2.2. Illustration of the role of women of Pertamina in upstream oil and gas sector
Source: Instagram phe.pertamina

employees by 6% in management positions in 2019 compared to 2018. Affirmative actions for women are also evident with two out of six Pertamina directors being women, and more than 16% of the total management-level employees being women. Pertamina's support is further demonstrated through equal opportunity policies in the recruitment process that are free from gender bias, a gender pay gap of zero percent between remuneration of male and female employees, ensuring the rights of female employees to return to the same or equivalent positions after maternity leave, and facilitating the needs of female employees who have dual roles as mothers and career women.[9]

The policy of Pertamina that supports women's participation and role is also expressed by Mr. MR, an official at PT. Pertamina Maluku, who stated:

> *"In recruitment for operational activities,* ***we do not differentiate based on gender. As long as the individual has the competence, capability, and professionalism, it doesn't matter what gender they are."***[10]

In summary, PT. Pertamina in Maluku has implemented Gender Mainstreaming Policy (PUG) in both its policies and practices, in accordance with the guidelines from the headquarters, including:

[9] Information obtained from https://www.pertamina.com/id/kesetaraan-gender-dan-kesejahteraan-pekerja.
[10] Interview with Mr. MR, an official of PT. Pertamina Maluku Area, 16 March 2023.

- Complying with government regulations on PUG and implementing gender equality policies in its business management as a state-owned enterprise (BUMN).
- Presently, Pertamina has female employees comprising 30% of the total workforce in both operational field and office areas. Women compete for positions alongside men, such as becoming field supervisors and safeguarding personnel.
- Open recruitment processes prioritize the capacity and quality of applicants.
- Pertamina implements policies to protect women's rights and fulfill the rights of children. For example, staff who have recently given birth and are breastfeeding are given flexibility in working hours, especially during times of breast pumping, and there are lactation rooms or accommodations when their child is sick. Pregnant field staff are assigned office positions during their pregnancy to ensure the safety of both the mother and child, and maternity leave rights are fulfilled.
- Pertamina has a quota policy for women in training programs to enhance the capacity of its staff. Women are encouraged to participate in internal company training programs.

B. Energy Policy Context, Social Context, Cultural Context of Society, and Women's Context in Maluku Province

This section presents the social, cultural, energy, women, and gender policy context in Maluku Province. The context relates to the roles and participation of women in the energy sector. The explanation of the context maps various factors that serve as enabling conditions, barriers, as well as opportunities for women in Maluku to engage and participate in the energy sector. There are several subsections in this section, starting with an overview of the energy policy landscape in Maluku.

B.1. Energy Policy in Maluku Province

Maluku Province has a total land area of 712,479.69 km2 with 1,390 islands (BPS, 2022). The majority of its area consists of marine territory, covering 662,565.66 km2 (92.99%), while the land area is approximately 49,914.03 km2 (7.01%). As an archipelagic region, Maluku Province has a coastline length of 10,630 km and is comprised of 12 island clusters. Administratively, there are 11 regencies/cities with 1,248 villages. The highest number of villages is found in East Seram Regency (SBT) with 198 villages. The total population of Maluku Province is 1,862,626 people, consisting of 943,073 males and 919,553 females. The highest population density is in Ambon City, while the lowest is in the Aru Islands. Figure 2.5 presents a map of Maluku Province.

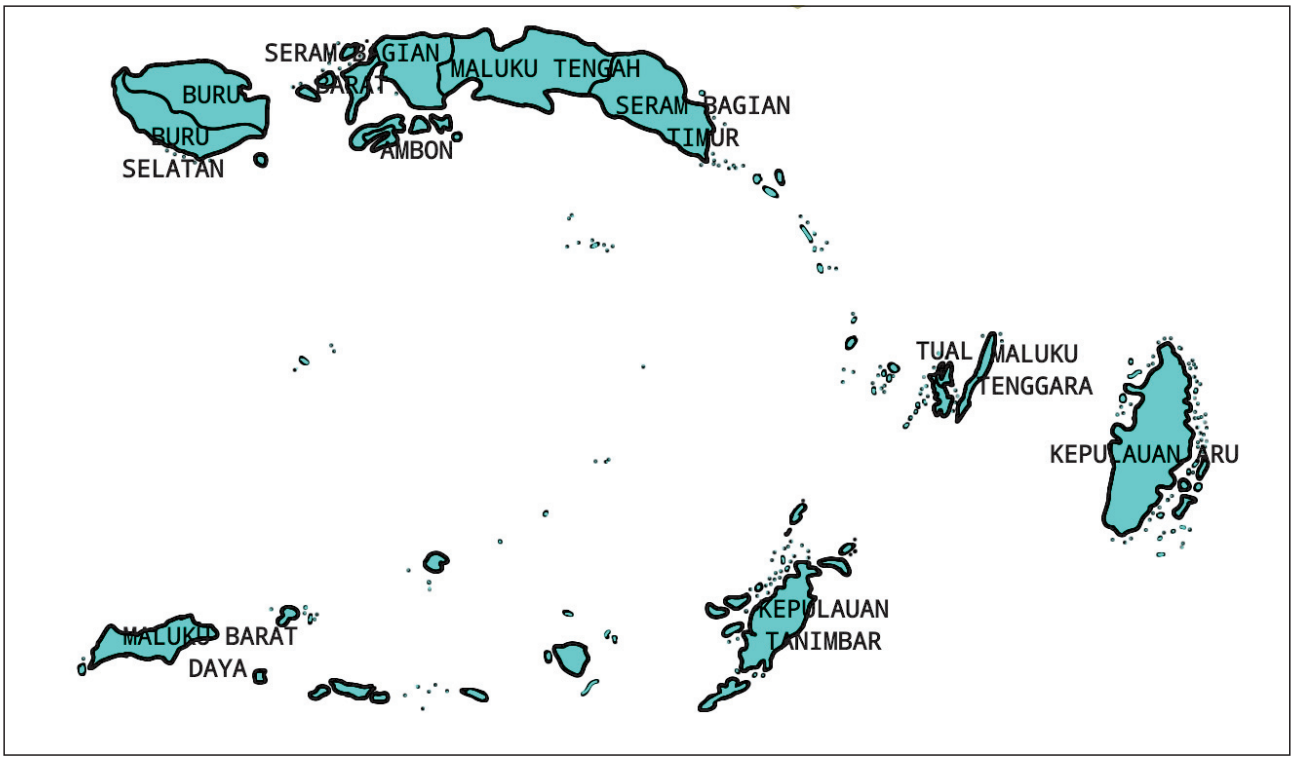

Figure 2.3 Map of Maluku Province

source: https://upload.wikimedia.org/wikipedia/commons/4/4a/Prov._Maluku.jpg

Referring to Maluku Province's Regional Medium-Term Development Plan (RPJMD) 2019-2024, its vision is **"A MANAGED MALUKU THAT IS HONEST, CLEAN, AND SERVICE-ORIENTED. ENSURING WELFARE AND SOVEREIGNTY OVER THE ARCHIPELAGO."** To achieve this vision, there are six missions outlined. The first mission is to enhance the capacity and integrity of the bureaucracy. The second mission is to improve access and quality of basic services in education and healthcare. The third mission is sustainable natural resource management. The fourth mission is to enhance infrastructure and connectivity among island clusters. The fifth mission is to create a conducive environment for investment, culture, and tourism. Lastly, the sixth mission is to develop a professional, creative, independent, and high-achieving human resource. In order to realize the vision and these six missions, strategic energy policies are necessary to ensure energy security in the Maluku Province. [11]

The direction of energy policy of the Maluku Province government is regulated through the Regional Regulation (Perda) of Maluku Province No. 1 of 2022 on the Regional Energy General Plan (RUED) of Maluku Province 2022-2050. Referring to the RUED of Maluku Province 2022-2050, there are four main policies, namely: energy availability, development of the energy sector, especially New Renewable Energy (EBT), improvement of energy resource utilization, and local energy reserves.

As for energy conservation, conservation of energy-producing natural resources, energy diversification, reduction of greenhouse gas emissions, pricing, subsidies and incentives, and

[11] The concept of energy security is part of the energy trilemma, which includes energy security, energy equity, and environmental sustainability. Energy security refers to the management of energy supply, reliability of energy infrastructure, and the ability of energy to meet present and future needs (Wardhana et al., 2020:271).

improvement of supporting energy infrastructure, institutional policies are in place. One of the programs under the regional energy strategy of Maluku Province is the implementation of off-grid-based self-reliant energy villages.

To provide an overview of energy access for the community, based on data from the Central Bureau of Statistics (BPS), the highest number of electricity customers in Maluku Province in 2021 is in Ambon City with 102,503 customers, followed by Central Maluku Regency with 98,099 customers. The lowest number of customers is in the Aru Islands with 11,252 customers (BPS, 2021:430). Additionally, there are still 228 villages without electricity (Maluku Province Mid-Term Regional Development Plan 2019-2024:42). The electrification ratio in Maluku Province in 2022 reached 92.44%. Referring to the target of the Regional Energy General Plan (RUED) of Maluku Province 2022-2050, the aim is to reach near 100% by 2022. However, as of now (2023), the target electrification ratio has not been achieved. Even in some villages that have access to electricity, the coverage is not optimal, with electricity provided by PLN for only 6 or 12 hours.

This situation is compounded by the lack of sustainability in renewable energy power plants, such as in Tihu Village, Lamdesar Barat Village, Dullah Laut Village, Erersin Village, and Wisalean Village. This reflects the underutilization of renewable energy potential, which contributes to the heavy reliance on fuel-based power plants, including electricity from PLN. To meet energy needs, local communities still heavily rely on firewood and kerosene as domestic energy sources. Therefore, the Maluku Provincial Government focuses on increasing electrification in villages as part of its energy and mineral resources policy (RPJM: 108). Additionally, the Maluku Provincial Government prioritizes increasing the share of renewable energy sources and the number of targeted households using renewable energy in its programs.

Maluku Province is rich in natural resources. There are oil and natural gas explorations located on Seram Island. However, since the authority over oil and gas belongs to the central government, the benefits for the region are minimal. The economic multiplier effect has not been fully optimized for the people of Maluku (RUED,2022-2050). The goal of oil production is for export, not for local consumption. This is also due to the absence of an oil refinery station in Maluku Province. The potential of natural gas is also found in Masela Block, located in the region of Southwest Maluku and Tanimbar Islands, which is currently one of the national strategic projects.

One potential source for new renewable energy (EBT) for electricity in Maluku Province lies in the hydro resources on Seram Island and Buru Island. Meanwhile, geothermal potential is found on Ambon Island and Haruku Island. As an archipelagic region, Maluku Province also has solar, wind, and ocean wave energy potential. Bioenergy potential, such as biomass, biofuels, and biogas, is also present in Maluku Province, but feasibility studies for bioenergy potential have not been fully optimized. Additionally, the utilization of biogas requires livestock manure, which has not yet been widely adopted by livestock farmers in Maluku Province. Figure 24 illustrates the energy mix in Maluku Province.

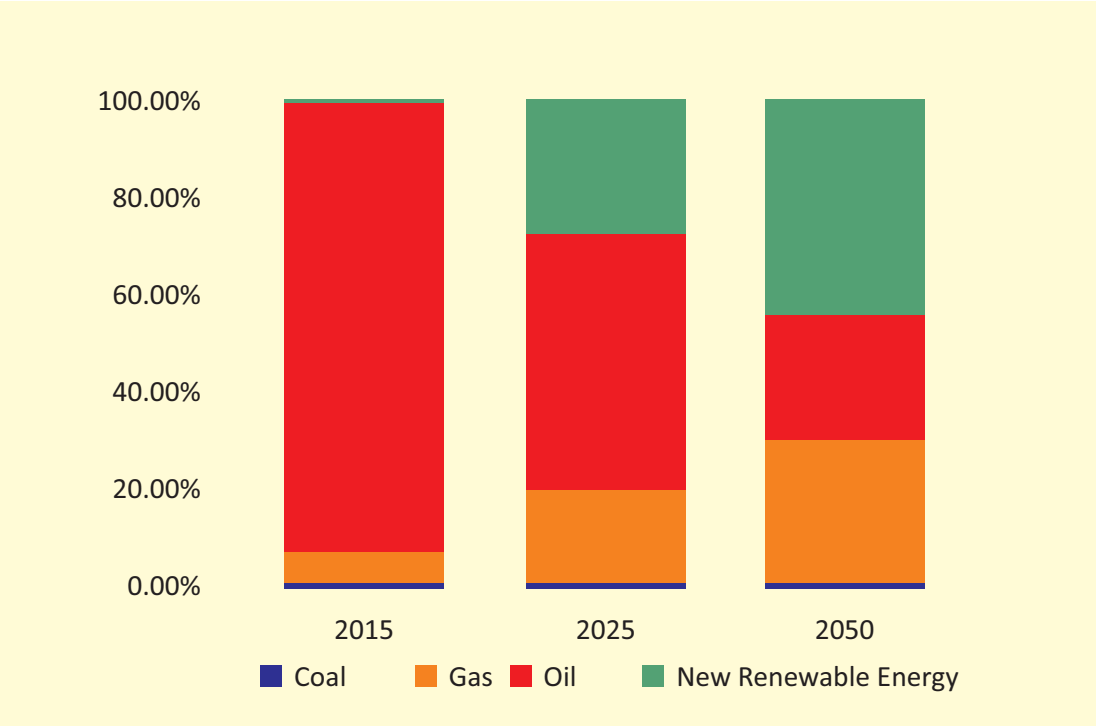

Figure 2.4. Maluku Province primary energy mix 2015, 2025 and 2050.
image source: Maluku Province RUED 2022-2050: 41

Based on Picture 25 above, it shows that the potential of EBT is still not optimal, as the energy usage is still dominated by fossil fuels. The potential of EBT in power generation in Maluku Province is not yet fully utilized due to several factors, including geographical constraints, infrastructure limitations, non-competitive pricing of EBT due to subsidies on fossil fuels, land and spatial planning issues, ineffective implementation of pricing policies, ambiguity of EBT subsidies on the buyer's side (off-taker), regulations that fail to attract investments, lack of incentives for EBT utilization, and limited availability of financing instruments that meet investment needs (RUED 2022-2050:27).

In addition to the factors mentioned above, there are also governance factors related to energy authority. Referring to Law No. 23 of 2014 on Regional Governance, Article 14 paragraph (1) states: "The implementation of government affairs in the forestry, maritime, energy, and mineral resources sectors is divided between the Central Government and the Provincial Government." According to the mandate of the Regional Governance Law, energy affairs fall under the authority of the provincial government. However, the extensive control range for archipelagic regions like Maluku Province has an impact on the suboptimal provision and management of energy, including EBT. Additionally, there is a limitation in budget allocation when energy affairs are delegated to the provincial government without adequate funding. This was stated by Mr. DI, an official from the Department of Energy and Mineral Resources of Maluku Province, who highlighted the challenges related to energy authority at the provincial level.

"More like a shortage. You see, when the Regional Governance Law of 2004 was implemented, the regencies had their own Department of Energy and Mineral

Resources with personnel and budget allocated to them. But when the authority was transferred here, only the personnel and data, known as P3D, were transferred, while the budget did not increase for us, even though the authority became broader. The funding that used to be allocated at the regency level was not included. So, before the authority was transferred to the province, our budget remained the same, and until now it has remained the same, even though the authority is now at the provincial level. It's more like we haven't developed, but rather we are limited by our local budget."[12]

Indeed, Government Regulation No. 70 of 2009 on Energy Conservation, in Article 2 and 5, states:

a. Article 2, Paragraph (1): "National energyconservation is the responsibility of the government, provincial governments, regency/city governments, businesses, and the public."
b. Article 5: "Provincial governments, as referred to in Article 2, are responsible according to their authority in their respective provinces for formulating and establishing policies, strategies, and energy conservation programs."

Despite the stated provision above referring that regency/city governments have a role to take, the interview with Bappeda and Bappelitbangda indicated that the authority and responsibility over energy matters are under provincial government. This was expressed by Mr. NR, the head of Bappelitbangda:

"In our planning, our RPJMD [Medium-Term Regional Development Plan], there is no mention of energy. In terms of authority, it is not within the jurisdiction of the regency/city governments, but the province. There is no planning related to that, and the ESDM [Energy and Mineral Resources] department has no involvement in it."[13]

The lack of authority for regency/city governments in energy matters also poses challenges in coordinating between local governments for electricity provision, fuel supply, and institutional oversight in the energy sector, particularly in sustaining renewable energy power plants. The issue of weak coordination is also mentioned in the RUED document. To address this coordination problem, the provincial government intends to strengthen institutional capacity at the provincial and regency/city levels. This aims to clarify the coordination among sectors responsible for energy planning, development, and management. Additionally, the Maluku provincial government plans to establish a dedicated task force to monitor and coordinate the resolution of bureaucratic issues and address jurisdictional mismatches (RUED:59).

In addition to the lack of synchronized policy support, there are several factors contributing to the sustainability issues of power plants at the village level. Based on Naimah (2018:19), several indicators of energy system sustainability in communities include technical, economic, environmental, social, and institutional aspects. In terms of social aspects, indicators such as

[12] Interview with DI, ESDM Agency Maluku Province, 17 March 2023.
[13] Interview with NR, Head of Bappelitbangda Ambon City, 16 March 2023.

community acceptance, business existence, and job creation can support the presence of power plants in communities that require operational costs for maintenance. Regarding institutional aspects, these relate to the capacity of the community in managing energy infrastructure, including technical skills (education and training), annual financing, and the involvement of women in management.

Several solar power plants (PLTS) in Erersin Village, Dullah Laut Village, Wisalean Village, and West Lamdesar Village are currently in a damaged condition. The micro-hydro power plant (PLTMH) in Tihu Village is also damaged, causing the community to switch to PLN electricity supply, although it is limited to 12 hours (from 6:00 PM to 6:00 AM). A resident of Tihu Village stated that one of the causes of the PLTMH damage is climate-related, such as reduced water flow and floods. Meanwhile, the case of sustainability issues with the PLTS in Erersin Village is due to social and institutional aspects, where the community is reluctant to contribute to operational costs due to the perception that government assistance is entirely free.

These new renewable energy (EBT)-based power plant projects have undergone feasibility studies in their planning phase. Mr. DI, an official from the ESDM Agency, stated that the feasibility studies were based on proposals submitted by the villagers. The feasibility studies include assessing the available electricity sources, technical calculations, economies of scale, land availability for infrastructure development, institutional aspects, and the availability of personnel to operate and maintain the power plants. However, the feasibility study results have not been able to fully predict various risk aspects related to energy infrastructure management. This is reinforced by the fact that the lifespan of power plants ranges from 1 year to 7 years.

The failure of several energy infrastructure projects in Maluku indicates a lack of social engineering and cultural strategies to prepare for a new culture within the community. The approach to energy infrastructure projects should not only focus on technical aspects alone but should also consider cultural and social aspects in a balanced manner. Additionally, overcoming sectoral egos is crucial, as energy matters require coordination across sectors. More inclusive infrastructure projects that involve both men and women can foster synergistic cooperation.

B. 2. The Socio-Cultural Context of the Maluku Society

Maluku's society is diverse. Various ethnic groups have settled and intermingled in Maluku since ancient times. The encounters between different races from different countries and continents have resulted in a mixture of cultures and diverse cultural characteristics (Leirissa & Latuconsina, 1999).1999). The Maluku Islands have long been known as a producer of spices, attracting the arrival of various nations from around the world. The archipelago's rich natural resources have become a meeting place for diverse cultures and a contested arena among different ethnic groups. Various ethnic groups from across the Indonesian archipelago, such as Javanese, Makassarese, Butonese, Buginese, Minangkabau, Batak, Madurese, and Sundanese, have become part of the cultural fusion in Maluku. Similarly, various nations including the Portuguese, Spanish, English, Dutch, Japanese, Arab, Chinese, and Indian have also contributed to the cultural diversity of the Maluku society.

Figure 2.5 Gong of Peace in Ambon City.

Meanwhile, the indigenous ethnic groups of Maluku include Ambon, Lease, Buru, Nuaulu, Kei, Banda, Tanimbar, and others (Ajawaila, 2005 cited in Wakano, 2019). According to the publication of the Ministry of Education and Culture in Maluku Province, there are 62 local languages spoken, such as Alune, Ambalau, Asilulu, Balkewan, Banda, Barakai, Batuley, Bobat, Boing, Buru, Kei, and others. The use of these local languages is spread across various districts and cities.[14] The kinship system in Maluku is generally patrilineal, although certain ethnic groups have a matrilineal kinship system (Lakburlawal, 2014). There are various family names or clans in Maluku that indicate identity, origin, ethnicity, and ethnic assimilation. Some local family names include Toisuta, Sanaki, Manuhutu, Pattikawa, Latuconsina, Wakano, Latu Patty, Pattinasarane, Sahenaya, Sahetapy, and others. There are also family names of assimilated ethnicities such as Bugis, Buton, and Makassar, represented by prefixes like "La" and "Wa," as well as family names of Portuguese origin like De Fretes, Da Costa, De Lima, Fareire, and others (Wakano, 2019). Family networks transcend religious, national, and even island boundaries.

In Maluku, there is local wisdom in maintaining social relations known as "Pela." Pela is understood as a bond of friendship or brotherhood that connects people from two or more communities. Pela is formed and established by the indigenous people of Maluku's ancestors in specific circumstances and involves

[14] Information obtained from https://kantorbahasamaluku.kemdikbud.go.id/2021/10/inilah-bahasa-bahasa-daerah-di-maluku.

rights and obligations for those involved (Ibid:34). There are different types of pela, such as blood pela and betel nut pela, which signify the sense of brotherhood between communities. Additionally, there is Gandong, which is formed based on genealogical ties. The scope of gandong can be broader than pela as it indicates origin and lineage (Opcit:38). Proverbs like "Ale rasa beta rasa" (what you feel, I feel) and "sagu salempeng dibage dua" (sago split in two) demonstrate the form of genealogical brotherhood or gandong.

Ethnic groups, sub-ethnic groups, and clans in Maluku reside within the village, known as the Negeri/Ohoi/Ratshap/Fenafanan/Pnue/Oho/Leke/Momor/Kampong/Fanua. The term Ohoi is used in Southeast Maluku and Tual. The different terminologies correspond to the historical context of each region (Lakburiawal, 2021). Currently, in Maluku Province, there is no legal status for traditional villages as desa adat. So far, the legal status of desa adat in Indonesia is only found in Papua Province.[15] The status of Negeri/Ohoi/Ohoi Ratshap/Fenafanan/Pnue/Oho/Leke/Momor/Kampong/Fanua still holds sociological and historical significance, as it represents the state's acknowledgment of the existence of traditional villages. The process of obtaining legal status as desa adat requires a lengthy process, as expressed by the Head of the Regional Development Agency (Dinas PMD), GR:

> "*The process to become a traditional village is long. We have been struggling since 2018 until now, and all requirements have been fulfilled, and the regional regulations have been enacted. We have regulated the entire process from the beginning until its establishment as a traditional village, which has been approved by the Regional People's Representative Council (DPRD). Then, we have determined the village boundaries. Fortunately, there have been no significant issues regarding the village boundaries, which are one of the essential requirements in the process of organizing a traditional village. However, we still do not have the village code from the Ministry of Home Affairs; it is still considered an administrative village. In Indonesia, only 14 villages in Papua have been designated as traditional villages, while we haven't. There are 27 villages (that have been proposed) meeting all the requirements except for the village boundaries. So, there has been no change from administrative village to traditional village. We consider this process a transitional phase, and gradually we are taking steps to implement the governance of traditional villages."*[16]

Each negeri/ohoi/fanua has its own governing structure and territorial boundaries based on genealogy or lineage. The negeri is led by a raja or king and assisted by heads of Soa. According to Maluku's customs, Soa can be understood as a territorial genealogical association within the negeri, consisting of various households. The Saniri negeri functions as the legislative body. The position of king or government is limited and obtained through a restricted selection process, chosen by the complete saniri and not directly elected by the entire population. This selection method still exists in some negeri in Maluku (Ibid:21). There are several provisions for

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15 Information about the legal status of traditional villages in Indonesiahttp://binapemdes.kemendagri.go.id/blog/detil/pertama- dalam-sejarah- pengakuan-desa-adat-wamendagri-serahkan-14-kode-desa-adat-untuk-kabupaten-jayapura.

16 Interview with GR, Head of PMD Agency of Tual City, 15 May 2023.

selecting a king, which generally prioritize prominent individuals based on their lineage, with a preference for males. If there are no male heirs, the selection may fall to male siblings. If a woman becomes a potential heir, certain conditions and requirements apply. This was expressed by the Head of the Regional Development Agency (Dinas PMD), GR:

> *"In the kingdom, the inheritance of the throne is not granted to everyone; only those called heirs have that right, specifically in the direct line of male descent. Women can be heirs as long as they are still considered potential heirs, but if they marry outside the lineage, they are no longer eligible because we adhere to the patrilineal system of direct male descent."*[17]

The governance system of negeri indicates limited roles for women in leadership positions. The patrilineal system provides more opportunities for men than women. However, in some negeri, there are female village chiefs, such as in Halong Village and Rumah Tiga Kota Ambon, Tananahu Village, Kilmury Village, Pulau Putih Village in Seram Island, Lauran Village in Tanimbar, Ketti Letpei Village, and Emplawas Village in Southwest Maluku Regency, Ohoifauw Village, and Larat Village in Southeast Maluku Regency. However, traditional villages led by women have not yet received recognition and a guaranteed position within the customary government but remain as alternative leaders (Opcit:x).

The Law No. 6 of 2014 concerning Villages and the Provincial Regulation on the Arrangement of Traditional Villages in Maluku have not clearly stipulated the position of women in the role of village chiefs. However, regulations regarding women's involvement in village deliberations and development have been recognized in the Village Law and the Regional Regulation of Ambon City No. 8 of 2017 concerning Negeri. In this regulation, Article 58 mentions the role of women within the saniri. Different social-cultural contexts are found in the Aru Islands Regency, where village chiefs are directly elected by the villagers. Yet, clan roles still intervene in the position of the village chief. There is a current female village chief in Aru, which is due to the capacity and integrity of the woman deemed suitable for leadership. This was expressed by the Head of the Regional Development Agency of Aru Islands Regency, YP:

> *"Yes, there is capacity, integrity, and good behavior."*[18]

The involvement of women in the saniri is also a concern for the government, especially the DP3AP & PMD, which encourages the regional government to involve women in village leadership. Mrs. MG, the head of DP3A & PMD in Ambon City, stated:

> *"The saniri used to be exclusively male, but now, in its development, there are also women in the saniri. We are actively promoting regulations, such as in the Village Consultative Body (BPD), where the inclusion of women is mandated. Now, in some villages, there are women in the saniri. For example, Mrs. Dian is an official in Batu Merah, one of the traditional villages. Since there is no definitive king, she*

[17] Interview with GR, Head of PMD Agency of Tual City, 15 May 2023.
[18] Interview with YP, Head of PMD Agency of Aru Islands, 13 April 2023.

holds the position. So, there are women in the saniri now. Historically, there have never been women in the governance of Batu Merah. And in Negeri Kilang, there are also women in the saniri. In general, we are promoting the representation of women in the saniri, even though women have not previously been part of the BPD or saniri structure in the villages. But now, it's changing."[19]

The involvement of women in the governance structure is a form of social and community role, especially in terms of control, although still limited. Notwithstanding, state interventions through regulations have made customary norms more dynamic and accommodative to gender equality developments.

Despite the dynamics, within the context of a patrilineal society that shapes a patriarchal culture, women's roles tend to be limited. Women's participation remains marginalized and subordinated. This was expressed by a Maluku women activist, ZK:

"But the reality in the saniri structure of villages and kingdoms is that we do not find it. Within the structure of the saniri of the negeri, there are always references to female figures or women's groups, with their female leaders. There are female leaders, but we see that their roles are not strong. They may have prominent roles in traditional activities and such, but in my understanding, those roles are merely decorative and do not involve decision-making. They have roles in receiving guests and similar tasks. But the dominant roles are still very weak. So, it is true that in urban areas, they are relatively strong, but when it comes to the traditional governance system, it is our challenge. It is our challenge...."[20]

Social-cultural norms at the individual, community, government, and institutional levels still pose barriers for Maluku women to access, participate, and make decisions in traditional villages/negeri, despite the roles performed by women. Women's access, participation, and control within the governance structure of traditional villages are not given and must be fought for by women's groups, advocated by the government, and intervened in through regulations by various stakeholders.

This research has found that the male-dominated culture in traditional villages has the potential to change. The institutionalization of gender equality norms into cultural entities can be promoted through state policies. This is evidenced by several regulations that have adopted gender equality in various regions. The support and involvement of women in communities that adhere to patriarchal cultures can still be negotiated.

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19 Interview with Ms. MG, Head of DP3AP & PMD Agency of Ambon City, 14 March 2023.

20 Interview with Ms. ZK, Maluku women's activist, 8 March 2023.

B. 3. Context of Women in Maluku Province

Currently, there are 919,553 female residents in Maluku Province (BPS Maluku Province, 2022: 94). The sex ratio indicates that for every 100 female residents in Maluku, there are 103 male residents (Gender Statistics of Maluku Province 2021: 5). In terms of health, women in Maluku, according to the results of the National Socioeconomic Survey (SUSENAS) 2021, experience more health complaints compared to men. From a socio-economic perspective, particularly regarding marriage, the SUSENAS 2021 results indicate that both women and men who are married outnumber those who are unmarried, separated, or widowed. Additionally, women who are separated or widowed choose not to remarry more often compared to men.

Access to mobile phones is more prevalent among the male population compared to females. The number of females aged 5 years and above who have never attended **school** is higher than males. Similarly, the proportion of females aged 15 years and above without educational qualifications is significantly higher than males. In 2021, the proportion of women **employed** in formal sectors is lower compared to men. Many women work in informal sectors, while men are more likely to have formal employment. SUSENAS 2021 data indicate that women in Maluku face unequal conditions in terms of health, socio-economic status, and employment compared to their male counterparts.

Meanwhile, the achievement of **the Gender Development Index (IPG)** in Maluku Province reached 93.04 in 2019 and 92.97 in 2020, slightly above the national IPG average of 91.6. The achievement of **the Gender Empowerment Index** (IDG) in Maluku Province in 2019 was 75.77 and in 2020 was 75.54, slightly above the national IDG average of 75.24 in 2020. This data is confirmed by the number of members of the Regional People's Representative Council (DPRD) of Maluku Province based on gender in 2021. The number of male members of the DPRD is 34, while the number of female members is 10, with the highest number from the PKS faction. Furthermore, the highest number of female members in the District Regional People's Representative Council is in Ambon City and Tanimbar Regency (BPS, 2021:59-61).

The gender mainstreaming policy is relatively new in Maluku Province because, until now, **neither** the provincial government nor the regency/city governments in Maluku **have submitted any nominations for the Anugrah Parahita Ekapraya award**. This award is given by the central government as recognition of the commitment, efforts, and achievements of ministries, institutions, and local governments in implementing development that ensures gender equality and justice. The criteria for the Anugrah Parahita Ekapraya award are the fulfillment of the seven pillars of gender mainstreaming.[21] Some challenges have been identified by Ms. OC, Head

[21] The seven indicators of gender mainstreaming are as follows: first, the presence of political commitment reflected in the strategic plan. Second, the existence of a policy framework as a manifestation of commitment through policy strategies, programs, and guidelines. Third, institutional support: the presence of structures that support program mechanism, such as working groups (pokja) and fórums. Fourth, adequate resources such as gender-sensitive human resources and budget (ARG). Fifth, the existence of a segregated data system. Sixth, integration into planning, monitoring, and evaluation processes. Seventh, community support (especially CSOs) to promote Gender Mainstreaming.

of DP3AP Buru Regency, who stated that there is a lack of consistent PUG (gender mainstreaming) spirit among government agencies (OPD), making it difficult for DP3AP, as the coordinating OPD, to implement PUG and fulfill the seven pillars of PUG at the local government level.[22] Table 2.1 shows the map of PUG regulations, which currently exist in only four regencies/cities in Maluku Province.

Table 2.1 Gender mainstreaming regulatory conditions in regencies/cities in Maluku Province

No.	Regency/ City	Gender Regulation	Regulation Purpose/Objective	Notes
1	Tanimbar	Tanimbar Islands Regency Regulation No. 07 of 2019 on Gender Mainstreaming	To provide a legal basis for the local government in implementing gender-responsive governance, development, and public services. The scope of gender mainstreaming in the fields of education, health, employment, social affairs, credit union and micro, small and medium enterprises, food security, agriculture, regional autonomy and general governance, national unity and domestic politics, law, public works, women's empowerment, and family planning.	The regulation governs the implementation of gender mainstreaming related to development in various fields except for energy. Imposes sanctions and grants awards to villages/sub-districts that implement gender mainstreaming. No specific mention of energy terminology.
2	Tual	Tual City Regulation No. 05 of 2019 on Gender Mainstreaming in Regional Development	Purpose of the regulation is to ensure gender-responsive regional development starting from planning, budgeting, implementation, monitoring, and evaluation.	The regulation does not specifically explain the scope of fields. No mention of energy terminology.
3	Southeast Maluku	Southeast Maluku Regent's Regulation No. 40 of 2019 on General Guidelines for Implementing Gender Mainstreaming (PUG) in Regional Development in Southeast Maluku Regency	Purpose: to provide guidance to OPD (government agencies), sub-districts, and **Ohoi** (traditional villages) in integrating gender through planning, formulation, implementation, budgeting, monitoring, and evaluation of development policies, programs and activities.	The scope of the regulation includes not only OPD but also extends to **Ohoi** (traditional villages). No mention of energy terminology.

22 Interview with Ms. OC, Head of DP3AP Buru Regency, 22 March 2023.

No.	Regency/ City	Gender Regulation	Regulation Purpose/Objective	Notes
4	Ambon City	Ambon Mayor's Decree No. 610 of 2021 on the Formation of the Gender Mainstreaming Working Group in Ambon City	Formation of the Gender Mainstreaming Working Group in Ambon City to promote and facilitate gender mainstreaming to each Organizational Unit of the Regional Government.	The scope of the decree is only for Organizational Units of the Regional Government for the establishment of the working group. No mention of energy terminology.

Referring to table 2.1 above, out of the 10 regencies/cities studied, only 4 areas have gender mainstreaming regulations, and none of the regulations mentioned energy specifically. This is also echoed by almost all heads of the DP3A and DP3A & PMD offices, stating that gender and energy issues have not yet become a concern for local governments. The DP3A, as the government agency responsible for women's affairs, focuses on issues related to violence against women, women's protection, and women's involvement in the Family Welfare Program (PKK). Therefore, in Buru Regency and Ambon City, there are regulations specifically addressing the protection of women from violence. Table 2.2 below provides a brief overview of the issues faced by women in Maluku Province. The data presented is a summary of interview results and desk studies from the DP3A strategic plan in the 10 regencies/cities.

Table 2.2 Map of women's problems in Maluku Province

No.	Issue	Problem	Informant Statement
1	Capacity and access to education	The quality of human resources for women and children is still low, especially those from economically disadvantaged groups.	*"**Education, as I said earlier, is that if the middle and above are capable,** well, on average, women and men are given equal opportunities."*[23]
2	Patriarchal norms and culture	Socio-cultural values in society have not fully supported women's progress.	*"The main obstacle for women in Buru Regency is because they are still co-opted within a very, very strong patriarchy, on average in Maluku actually **the patriarchal culture is high**."*[24]
3	Discrimination	There are still various forms of discrimination against women.	*"The problem is when a woman follows her husband and something happens to her husband, divorce, or sorry, her husband dies and so on, this woman then becomes poor. For when she returns to her original family, she does **not get customary land rights**."*[25]

[23] Interview with Ms. OC, Head of DP3AP Agency of Buru Regency, 22 March 2023.
[24] Interview with Ms. OC, Head of DP3AP Agency of Buru Regency, 22 March 2023.
[25] Interview with Ms. ZK, Maluku women activist, 6 March 2023.

No.	Issue	Problem	Informant Statement
4	Gender Mainstreaming (PUG) policy is not optimal	Not all agencies/institutions produce gender-disaggregated data.	*"There is **no disaggregated data** yet because the policy doesn't yet exist."*[26]
		Weak coordination between related sectors at all levels and inadequate work mechanisms are both inhibiting factors as well as challenges that must be faced in efforts to empower women.	*"Initially, the DP3A in the city was still on duty with other OPDs, still joining other OPDs. Related to Anugrah Ekapraya, there are indeed **many things that must be prepared to fulfill the 7 pillars of gender mainstreaming**."*[27]
		Weak gender mainstreaming institutions and networks	*"There is a PERDA (regional regulation). It has gone through a long struggle, it was rejected several times. The Ministry of Law and Human Rights was **confused with gender mainstreaming (PUG), "What's the importance of this, Ma'am?"***[28]
		Gender-based budget planning is not optimal	*"Actually, we want to do a lot, but from the start**, from the budget perspective, it doesn't support us. We want to socialize about gender**, that there is no separation of men and women, but with minimal support, we can't do anything about it."*[29]
5	Violence against women	High rates of violence against women	*From January to May 2022, **170 cases of violence** were recorded handled by P2TP2A Maluku.* *"During COVID-19, many were laid off, and there were terminations of employment so that it became one of the factors contributing to **domestic violence against women**."*[30]
6	Limited support for women's self-development	Lack of development in productive economic activities and women's careers.	*"The challenge faced by women is **balancing work and their roles as mothers or wives at home,** which **hampers their full potential development**."*[31]

Data sources: Regional Government Administration Report (LPPD) of Maluku Province 2021, page 25, as well as interviews with various government agencies, Regional Development Planning Agency (Bappeda), DP3A in districts/cities in Maluku Province, PT PLN, and women activists in Maluku.

26 Interview with Ms. ST, Bappeda of Southwest Maluku, 31 March 2023.
27 Interview with Ms. MG, Head of DP3AP & PMD Ambon City, 14 March 2023.
28 Interview with Ms. OC, Head of DP3AP Agency of Buru Regency, 22 March 2023.
29 Interview with Mr. PL, Head of the DP3A Women's Empowerment and KB Section of West Seram, 29 March 2023.
30 Interview with Ms. IM, Head of DP3AP Maluku Province, 7 March 2023.
31 Questionnaire respondent, Ms. IS, staff of PT PLN Maluku Area.

The data from table 2.2 indicate that social and cultural norms, including views and practices regarding gender equality, patriarchal culture, masculine stereotypes, violence, and discrimination against women, continue to be challenges for women in Maluku. Additionally, the support for gender mainstreaming policies is still not optimal.

Chapter III
The Roles and Participation of Maluku Women in the Energy Sector

"Indeed, the men are the ones collecting firewood, but when it's out of stock and we need it for cooking, it means it is the mothers who have to intervene to look for it."

Ms. AH, a woman of Negeri Nuanea, Central Maluku

This chapter describes **the current status of women's roles and participation** in the energy sector. This presentation is based on the analysis framework of access, participation, control and benefits (APKM) and the Gender Transformative Approach (GTA). The findings arederived from surveys, FGDs, interviews, questionnaires and desk studies. This analysis presents a mapping of women's roles and participation in three domains: reproductive, productive and social. The chapter begins with an explanation of the respondents' and informants' understanding of gender and its practical implications for equality and justice in everyday life.

Gender is a concept that refers to the differing roles and responsibilities of men and women, which are shaped by social conditions and cultural norms and can be subject to change.

A. Gender Knowledge and Practice on Energy Sector in the Maluku Society

Chapter 2 has already highlighted several commitments made by various regional governments in Maluku Province to promote gender mainstreaming and support women through policies and programs at the provincial, district/city and even village levels. However, some local governments still lack a commitment to gender mainstreaming and its institutionalization. While a Department for Women's Empowerment and Child Protection (DP3A) has been established in all districts/cities in Maluku Province to address women's issues, the mere existence of DP3A does not necessarily demonstrate the commitment of local government to fulfill the seven pillars of Gender Mainstreaming[1].

Currently, discussions on women's issues tend to focus solely on cases of violence against women. This narrow focus reflects a limited understanding of gender, overlooking the essence of gender equality and justice, which ensures equal

[1] The establishment of DP3A is more driven by the mandate of Law No. 23/2014 on Regional Government rather than representing the political will of the local government in Maluku Province.

opportunities and rights for both women and men. Achieving justice and gender equality is rooted in gender knowledge acquired throughout one's life cycle. This section presents the gender knowledge of respondents and informants, as indicated by the division of roles between men and women in the reproductive, productive, and social domains.

This study utilizes a mixed-methods approach, combining qualitative and quantitative data. Qualitative data collection was conducted in six villages, while survey-based quantitative data collection took place in 11 villages. Table 3.1 below describes the socio-cultural and energy conditions in the six villages.

Table 3.1 Socio-cultural and energy conditions in six villages

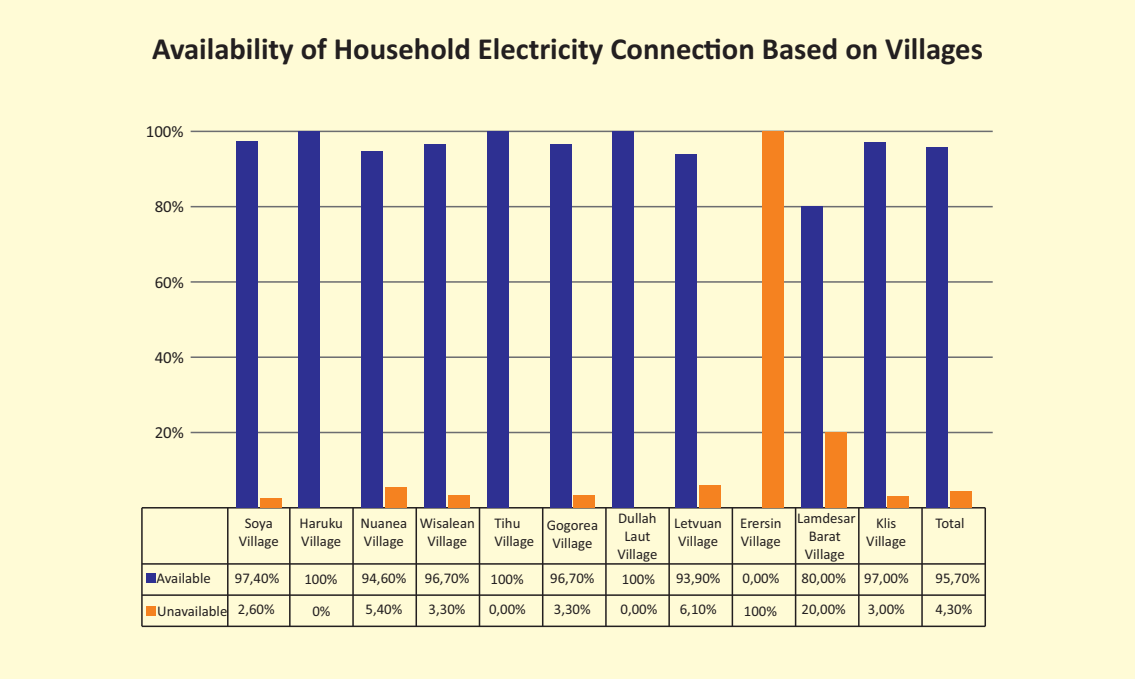
Village Name	Electricity Existence History
Soya	• Located in Ambon City, Soya Village consists of two areas, i.e. uptown Soya and downtown Soya. Uptown Soya is a farming area, while downtown Soya is a residential area. • Soya Village has 8 neighborhood units (RW) and 1,631 households (KK). • The majority of the population follows the Christian religion. • The primary occupations of the residents include civil servants (ASN), private employees, entrepreneurs, Indonesia's Army (TNI) members, and farmers. Some residents also engage in hydroponic farming, which relies on electricity to maintain water flow. • Electricity from PLN has been available since the 1980s. It is provided 24 hours a day, with households having electricity power ranging from 450 VA, 900 VA to 2,000 VA. • Electricity usage in households includes lighting, refrigeration, rice cookers, fans, laptops, computers, mobile phone charging, washing machines, etc. • Electricity usage in economic activities includes hydroponic farming, refrigeration, blenders, rice cookers, freezers, etc. • Electricity usage in social activities includes church services, village hall events, customary activities, and activities by the Family Welfare Movement (PKK). • Solar-powered water pumps are used to meet the water needs of Soya Village residents. • The primary sources of energy in households for cooking comes from kerosene and some firewood. The challenge in accessing kerosene arises when there is a scarcity that leads to increased cost.
Nuanea	• Located in the Amahai sub-district of Central Maluku Regency, Negeri Nuanea is a traditional community that follows a local indigenous religion. The Nuaulu tribe is the indigenous tribe in Negeri Nuanea. • The kinship system of the Nuaulu tribe is patrilineal, and it consists of several clans. • Married Nuanea women can be identified by the way they wrap their clothing, such as a skirt or sarong, known as *jarik*. Meanwhile, married Nuanea men can be identified by wearing a headband or cloth called *karinunu*. • The Nuanea community regularly performs traditional rituals and ceremonies when girls and boys enter adolescence (transitioning to adulthood). It is

Village Name	Electricity Existence History
	customary for these traditional activities to exclude electricity provided by the national power company (PLN). ● The livelihood of the Nuanea community revolves around farming and agriculture. ● Electricity has been provided by PLN since 2003 or 2004, and it is available 24 hours a day. The average electricity power for households is around 450 VA to 900 VA. ● Household electricity usage includes lighting, refrigeration, mobile phone chargers, and other appliances. ● Electricity is used for economic activities such as carpentry tools, kiosks (refrigerators), and other purposes. ● The primary energy source for cooking in households is firewood. The main challenge in sourcing firewood is its increasing distance from residential areas.
Gogorea	● Located in the Waeapo sub-district of Buru Regency. ● The village of Gogorea has experienced changes in livelihood dynamics since the discovery of gold mines in 2011. Initially, the residents were engaged in cultivating patchouli and operating patchouli oil distilleries. However, later on, the community shifted towards gold mining. ● The majority of the population follows the Islamic religion. ● The kinship system is patrilineal. ● Electricity service from PLN (state-owned electricity company) has been available since the 1990s. Electricity is provided 24 hours a day. Household electricity power ranges from 450 VA to 900 VA and is used for lighting, cooking appliances, refrigeration, mobile phone chargers, laptops, and other purposes. ● Electricity usage for economic activities includes cooking appliances (blenders), refrigeration, carpentry tools, patchouli oil distillation, and others. ● Electricity usage for social activities includes religious practices, traditional events, the village office, worship at the mosque, and activities by the Family Welfare Movement (PKK). ● The primary energy source for cooking is firewood.
Erersin	● Located in the North South Aru sub-district, Aru Islands. This village faces challenges in terms of accessibility. It is situated on a coral island, which poses difficulties in accessing clean water. ● There are 79 households with a total population of 416 residents. ● The primary livelihoods are Karaka (mangrove crab) fishing and seaweed farming. ● The majority of the population belongs to the Aru ethnic group and follows the Protestant Christian religion. ● There is a small dam to collect water, but currently, the solar-powered water pump is damaged. ● There used to be a solar power plant (PLTS) provided as assistance from the Department of Energy and Mineral Resources of Maluku Province, but it only functioned for two years (2018-2020).

Village Name	Electricity Existence History
	• Electricity access is through private diesel generators (gensets), and only 10% of the households (7 households) have access. • Electricity usage is limited to lighting, mobile phone charging, and limited use of sound systems, typically from 6:00 PM to 12:00 AM. • Households without generators rely on kerosene lamps, which account for 90% of households. • Electricity is used for religious activities in the church. • Solar energy is utilized for economic purposes, such as drying seaweed, and this role is carried out by women.
Klis	• Located in the Moa Lakor sub-district, Southwest Maluku Regency. • The majority of the population follows the Christian religion. • The village of Klis has a population of 1,400 people distributed across three hamlets: Moa, Syota, and Klis. • The primary livelihoods of the residents include farming, running small shops, and raising buffaloes, goats, and pigs. Each household in Klis Village owns buffaloes, with the number ranging from dozens to hundreds. • The kinship system in Klis Village is patrilineal. The position of Soa and Saniri leaders is held by men, but the current head of the Village Consultative Body (BPD) is a woman. • PLN electricity (provided by the national power company) started reaching Klis Village in 2012, and it is available 24 hours a day. The average household electricity capacity in Klis Village is between 450 and 900 VA. • Solar energy powers the water pumps in the gardens. • Electricity usage in households is primarily for lighting, water pumps, refrigeration, rice cookers, mobile phone charging, air conditioning, fans, and other purposes. • Electricity usage for economic activities includes refrigeration, lighting, photocopying businesses, and others. • Electricity usage for social activities includes worship in the church, the village head's office, and others. • The primary energy sources for cooking are firewood and kerosene.
Tihu	• Tihu Preparatory Village was originally a hamlet under the parent village of Tahalupu, located on Kelang Island, Huamual Belakang sub-district, West Seram Regency. The change in administrative status from a hamlet to a preparatory village occurred in September 2021. Therefore, its current status is a preparatory village. • The number of households is 514, with a total population of 2,209 individuals. • The majority of the community belongs to the Buton ethnic group and practices the Islamic religion. • The residents engage in various livelihood activities, including fishing, farming, horticulture, animal husbandry, and gold mining in Mount Botak Buru. • The kinship system is patrilineal.

Village Name	Electricity Existence History
	• Efforts to obtain electricity and lighting in the village have been ongoing since 2007, with assistance from the Department of Energy and Mineral Resources of Maluku Province through a solar home system. In December 2015, a micro hydroelectric power plant (PLTMH) was built utilizing the flow of a waterfall. However, the PLTMH functioned for only one year and has been damaged since December 2016. • Currently, electricity service is provided by PLN (the national power company) since 2019, but it is available for only 12 hours, from 6:30 PM to 6:00 AM. • Household electricity usage includes lighting, television, mobile phone charging, washing machines, blenders, fans, and other appliances. • Electricity is used for economic activities, such as carpentry tools, coconut grating, "kasbi" (cassava) grating, bakery businesses (mixer), refrigeration (kiosks), and others. Due to the limited 12-hour electricity service from PLN, some households in Tihu have their own private generators for economic activities. • Electricity usage for social activities includes worship in the mosque and others. • The primary household energy sources for cooking are firewood and kerosene. The majority still rely on firewood. • Solar energy is used for drying fish, cocoa, and cloves.

Meanwhile, the condition of electricity access in the 11 villages depicted in the diagram regarding household electricity connections shows that not all villages have access to PLN electricity. A qualitative study conducted in 6 villages with diverse socio-cultural contexts reveals that some villages have been enjoying PLN electricity since the 1980s. Conversely, there are still villages that have not obtained access to PLN electricity due to geographical isolation. This condition can be observed in Erersin Village, Aru Islands. This data aligns with the fact that one of the lowest electrification ratios in Maluku is currently found in the Aru Islands.



	Soya Village	Haruku Village	Nuanea Village	Wisalean Village	Tihu Village	Gogorea Village	Dullah Laut Village	Letvuan Village	Erersin Village	Lamdesar Barat Village	Klis Village	Total
Available	97,40%	100%	94,60%	96,70%	100%	96,70%	100%	93,90%	0,00%	80,00%	97,00%	95,70%
Unavailable	2,60%	0%	5,40%	3,30%	0,00%	3,30%	0,00%	6,10%	100%	20,00%	3,00%	4,30%

Figure 3.1 Bar chart of household electricity connections based on villages

The bar chart above depicts the household electricity connections in the research locations. Electricity serves as the primary source of energy used and needed by the community in the research locations. The research findings identify that out of the 11 surveyed villages, one village, namely Erersin Village in the Aru Islands, does not have electricity connections. On the other hand, in Tihu Hamlet and Haruku Village, 100% of the respondents have electricity connections in their homes. Among the 10 villages with electricity connections, it was identified that 95.7% of the houses have connections, while 4.3% of the houses do not, as illustrated in the following diagram.

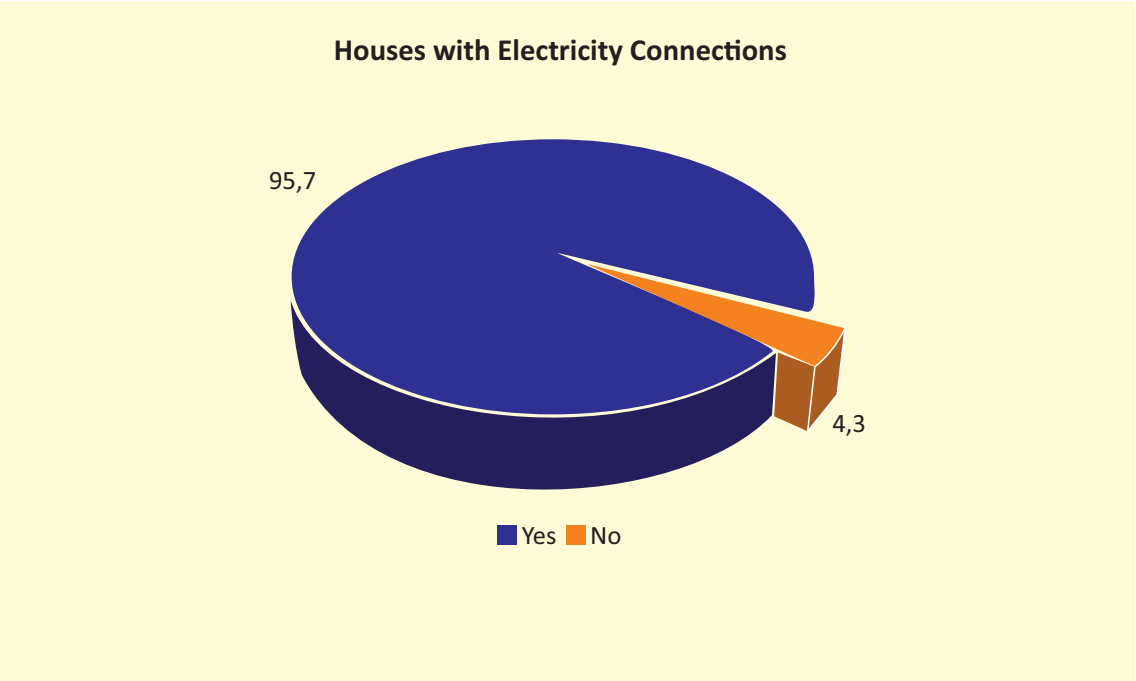


Figure 3.2 Diagram of Circle Graph: Houses with Electricity Connections

Household cooking energy sources are firewood and kerosene. Additionally, in social activities within the community, firewood and kerosene are also used for cooking. Table 3.2 below indicates that the usage of firewood is greater than that of kerosene. This issue implies the vulnerability of women to the impacts of using firewood for cooking and the low awareness among women regarding accessing clean energy.

Table 3.2 Energy sources for cooking in social activities

Cooking energy sources used in social activities	n	%
Kerosene	312	87.2
Firewood	334	93.3

Figure 3.3: Women Engaging in Reproductive Role - Cooking in Erersin Village

Figure 3.4: Illustration of Women's Productive Role - Farming in Tihu Village

The conditions depicted in both Figures 3.3 and 3.4 regarding the productive and reproductive gender roles are undoubtedly related to the knowledge and gender practices in daily life. To understand individual knowledge and gender practices, the survey questions measure understanding of sex (biological differences between males and females) and gender (cultural and social constructions of the expected roles, functions, responsibilities, attitudes, and behaviors of women and men) in the energy sector. Questions related to women's inherent nature, roles of men and women in productive, reproductive, and social domains serve as measurement tools.

Each question is assigned a value and subsequently scored. The assessment and determination of knowledge scores range from 0 to 10. The summarized results of knowledge measurements are categorized as follows:

- Scores 0-3 are categorized as low knowledge
- Scores 4-6 are categorized as moderate
- Scores 7-10 are categorized as high knowledge

The survey results identified that only **a small percentage of respondents (3.6%) had high knowledge**, while **the majority (63.7%) had moderate knowledge**. These findings **reflect the limited knowledge that respondents possess regarding gender** in the energy sector. This finding is further supported by statements made during focus group discussions with groups of men, women, and adolescents in the 6 villages, where it was observed that **women's household tasks such as serving their husbands, taking care of children, managing the household (preparing meals, cleaning the house, cooking, doing laundry) were perceived as inherent to women**. Meanwhile, earning a livelihood was seen as inherent to men.

When cross-tabulating the data on knowledge levels with gender, the results show that **a higher percentage of male respondents (67%) have moderate knowledge compared to female respondents (60.40%).**

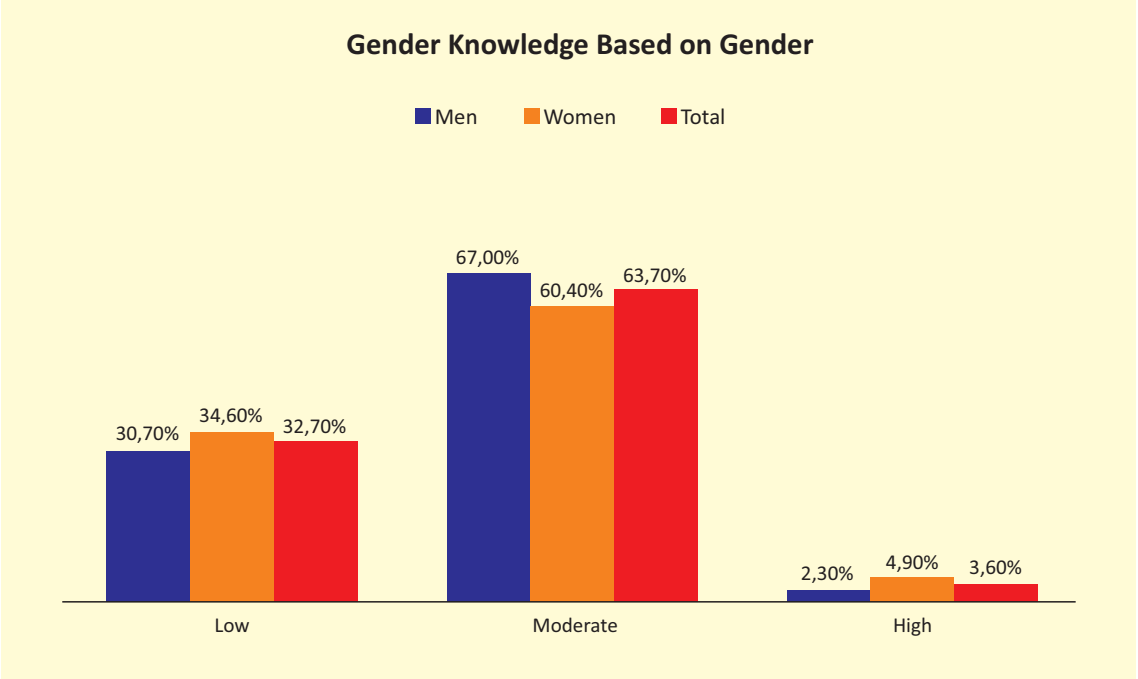
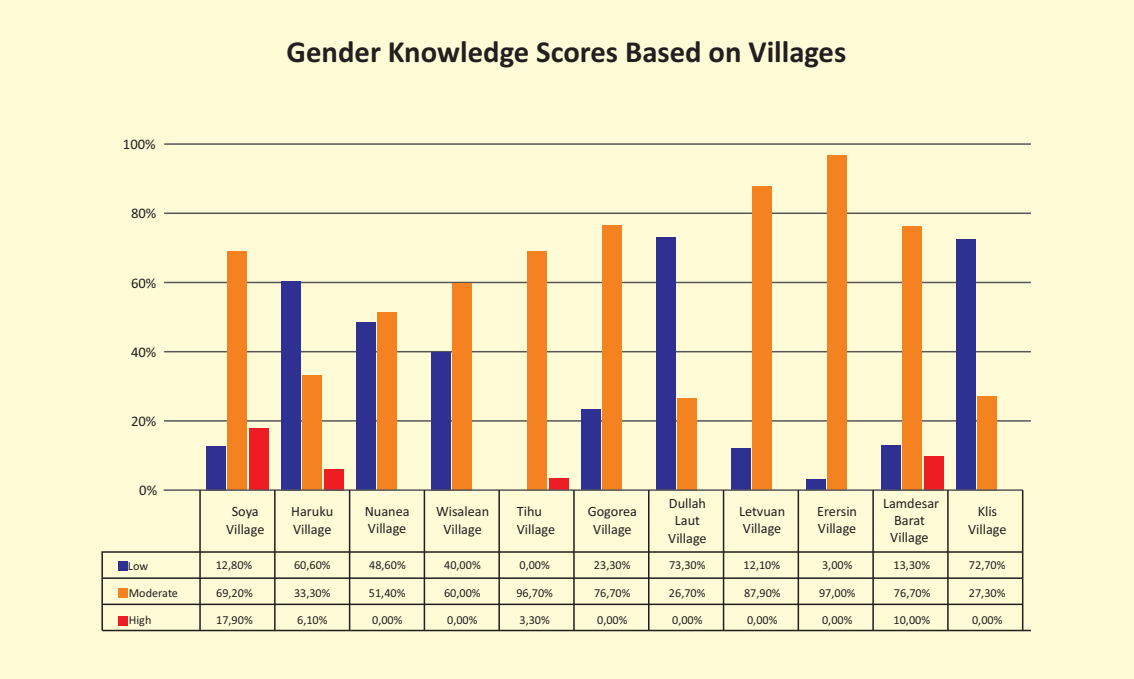


Figure 3.5 Bar chart of gender knowledge based on gender

Figure 3.6 presents the data on gender knowledge and practices in the 11 villages.



	Soya Village	Haruku Village	Nuanea Village	Wisalean Village	Tihu Village	Gogorea Village	Dullah Laut Village	Letvuan Village	Erersin Village	Lamdesar Barat Village	Klis Village
Low	12,80%	60,60%	48,60%	40,00%	0,00%	23,30%	73,30%	12,10%	3,00%	13,30%	72,70%
Moderate	69,20%	33,30%	51,40%	60,00%	96,70%	76,70%	26,70%	87,90%	97,00%	76,70%	27,30%
High	17,90%	6,10%	0,00%	0,00%	3,30%	0,00%	0,00%	0,00%	0,00%	10,00%	0,00%

Figure 3.6 Gender knowledge scores based on villages

The survey results on gender knowledge and practices in the 11 villages reveal that Soya Village has respondents with higher gender knowledge compared to the other 10 villages. On the other hand, Dullah Laut Village and Klis Village have the highest number of respondents with low gender knowledge. The survey findings indicate that more than 70% of the respondents in these two villages have low gender knowledge.

Several factors can explain the differences in gender knowledge and practices, including geographic conditions (urban and rural) and the level of heterogeneity within the communities. Urban areas are characterized by multiculturalism and openness to cultural changes, social values, behaviors, and mindsets. Additionally, easier access to information in urban areas influences the level of gender understanding, distinguishing it from the characteristics of rural communities.

ZK, a women's rights activist in Maluku, explains that the city of Ambon is more heterogeneous, dynamic, and inclusive compared to homogenous communities, which tend to be less inclusive in understanding gender. Two officials at the village level in rural areas stated that women's involvement in the energy sector is not necessary. This sector is considered a male domain. Activities perceived as extreme or with higher risks, such as farming in high-altitude areas, electric shocks, climbing, and others, are depicted as masculine expressions of gender. Mr. LD, an official from Tihu Village, stated that women were not involved in the initiation of micro-hydro power plant (PLTMH) development because electricity matters were still considered a male domain.

> *"At the initial meeting, we didn't involve women... We thought it was something specifically for men, discussion materials for men..."*[2]

[2] Interview with LD, Secretary of Tihu Village, 3 April 2023

Meanwhile, the gender knowledge and practices scores also reflect gender blindness, gender neutrality, gender responsiveness, and gender awareness. Table 3.3 presents the average gender knowledge scores according to respondents' gender.

Table 3.3 Average gender knowledge scores by gender

Gender	n	Mean	Std. Deviation	Minimum	Maximum
Male	176	3.9716	1.04433	2.00	10.00
Female	182	3.9121	1.27577	1.00	9.00
Total	358	3.9413	1.16649	1.00	10.00

Overall, the average gender knowledge score of the respondents is 3.93 ± 1.17. The average gender knowledge score for male respondents is 3.97 ± 1.04, while the average gender knowledge score for female respondents is 3.91 ± 1.27. The difference in average knowledge scores between male and female respondents is not significantly pronounced, suggesting that both genders have relatively balanced knowledge levels. If we categorize the average knowledge scores, both male and female respondents fall into the low knowledge category (0-3), without reaching the moderate knowledge category (4-6).

Referring to Table 3.3, it can be concluded that the average score between male and female respondents is 3.9 (moderate score). This indicates that there is still a level of gender blindness in terms of gender knowledge and practices.

Gender blindness refers to the condition of lacking the ability to recognize the existence of gender differentiation, inequality, and injustice in various aspects. It also entails not realizing that gender is a primary determinant of life choices available.

It should be understood that the transmission and reproduction of gender knowledge have their foundation in the family. The family, as the primary socializing agent for children, plays a significant role in shaping the reproduction of norms and knowledge. Figure 3.7 illustrates the sources of gender information based on gender.

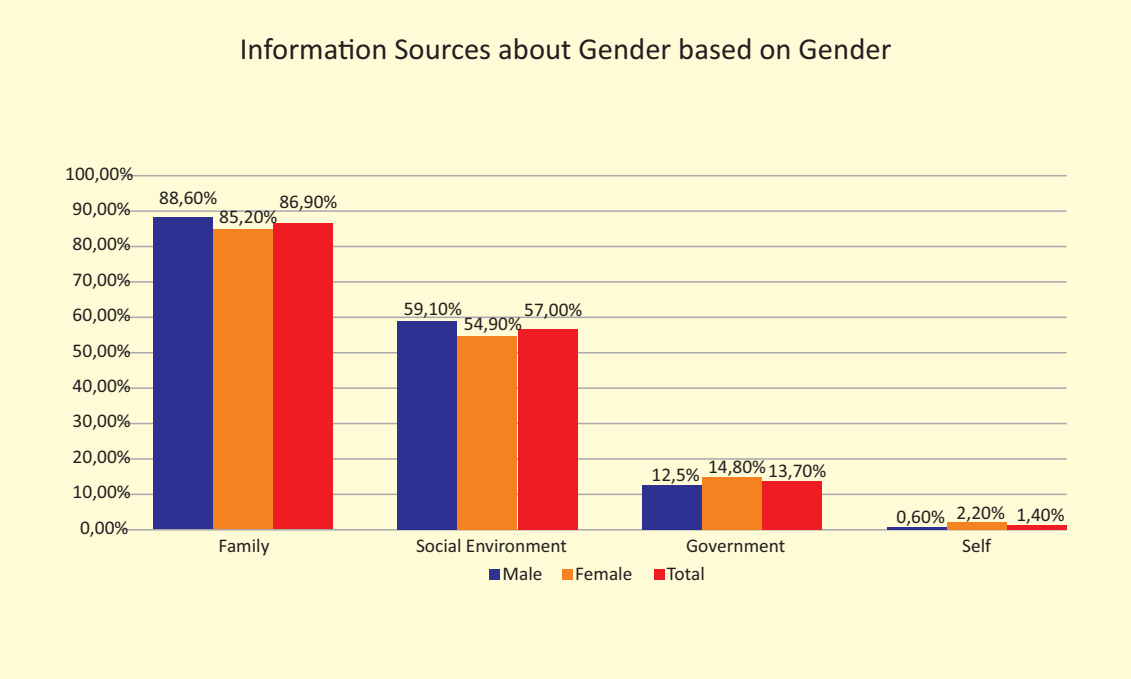


Figure 3.7 bar chart of information sources based on gender

Referring to the above diagram, it is evident that the primary source of initial gender information is predominantly from the family. Subsequently, the community and government play a role in shaping the secondary socialization of an individual's gender knowledge.

Gender knowledge certainly influences individual practices in daily activities through various roles. Table 3.4 illustrates gender-related behaviors based on gender.

Table 3.4 Gender-related behaviors based on gender

Gender-Related Behaviors Based on Gender	Male				Female			
	Always	Often	Sometimes	Never	Always	Often	Sometimes	Never
Husband/father/ brother is the decision-maker in the family	55 31.3%	100 56.8%	19 10.8%	2 1.1%	63 34.6%	90 49.5%	19 10.4%	10 5.5%
Wife determines the use of money in the household	92 52.3%	67 38.1%	14 8.0%	3 1.7%	111 61.0%	59 32.4%	9 4.9%	3 1.6%
Husband performs household chores such as cooking, washing, ironing, and cleaning	5 2.8%	52 29.5%	100 56.8%	19 10.8%	6 3.3%	26 14.3%	87 47.8%	63 34.6%

Gender-Related Behaviors Based on Gender	Male				Female			
	Always	Often	Sometimes	Never	Always	Often	Sometimes	Never
Husband seeks income/provides for the family	151 85.8%	22 12.5%	3 1.7%	0 0.0%	139 76.4%	23 12.6%	5 2.7%	15 8.2%
Wife determines the use of energy sources for heating/ cooling appliances such as cooking, ironing, refrigerator, AC, and motorized devices like blender, fan, etc.	31 17.6%	68 38.6%	32 18.2%	45 25.6%	45 24.7%	70 38.5%	22 12.1%	45 24.7%
Husband determines the use of energy sources for lighting/ lamps in the house	104 59.1%	57 32.4%	12 6.8%	3 1.7%	81 44.5%	60 33.0%	16 8.8%	25 13.7%
If there is a damage or disruption in the electrical network at home, the wife reports it to the technician	8 4.5%	18 10.2%	51 29.0%	99 56.3%	18 9.9%	23 12.6%	52 28.6%	89 48.9%

Based on the data above, it shows that the majority of respondents stated that the **husband/father/brother becomes the main decision-maker** in the family. However, the majority of respondents also stated that **the wife always determines the use of money in the household**. Additionally, the majority of respondents mentioned that **husbands sometimes** engage in household chores such as cooking, washing, ironing, and cleaning the house. Moreover, most respondents indicated that **husbands always provide financial support** for the family. These findings reflect **the societal and cultural gender constructs regarding the expected roles, functions, responsibilities, attitudes, and behaviors of men and women in the community. Providing for the family is seen as the most suitable role for men, while managing finances is considered the most appropriate role for women.**

Regarding gender-related behavior in the energy sector, the data indicates that **wives often determine the use of energy sources** for household appliances. When it comes to the use of energy sources for lighting in the house, the majority of respondents stated that **husbands always make the decisions**. Similarly, if there is a problem or disruption in the electrical network at home, most respondents mentioned that **wives never report** it to the authorities. This differs from the gender-related behavior in the energy sector for female-headed households. Based on interviews with Mr. LD, the village secretary of Tihu, widows and other women who are the heads of households are involved in training for

the maintenance of home solar panels. The absence of a husband or adult male members in the household indirectly encourages women's involvement.

These findings are confirmed by the results of the FGDs in the 6 villages, as presented in Table 3.5, which maps out the roles between men and women. Based on the FGDs conducted in the 6 villages with three groups, namely the women/mothers' group, men/fathers' group, and adolescent boys' group, which consisted of 137 female respondents. The FGDs were conducted to identify the mapping of roles between men and women in three areas within gender relations in everyday life practices.

Productive Role
The productive role refers to activities carried out by both men and women that involve producing goods and services for trade, exchange, or to support the family's livelihood. Examples include livelihood activities and other economic activities.

Reproductive Role
The reproductive role refers to activities that ensure the reproduction of the workforce. This includes making decisions about family planning and providing care for family members such as parents, children, and domestic workers. These roles are typically unpaid and are mostly carried out by women.

Social-Community Role
The social-community role refers to activities aimed at contributing to the community's well-being and participating in resource management. This can include activities such as community health services, religious practices, village meetings, and organizing community groups. These roles are usually unpaid and are predominantly carried out by women.

Source: Adapted from the gender glossary of the Ministry of Women Empowerment and Child Protection (Kemenpppa)

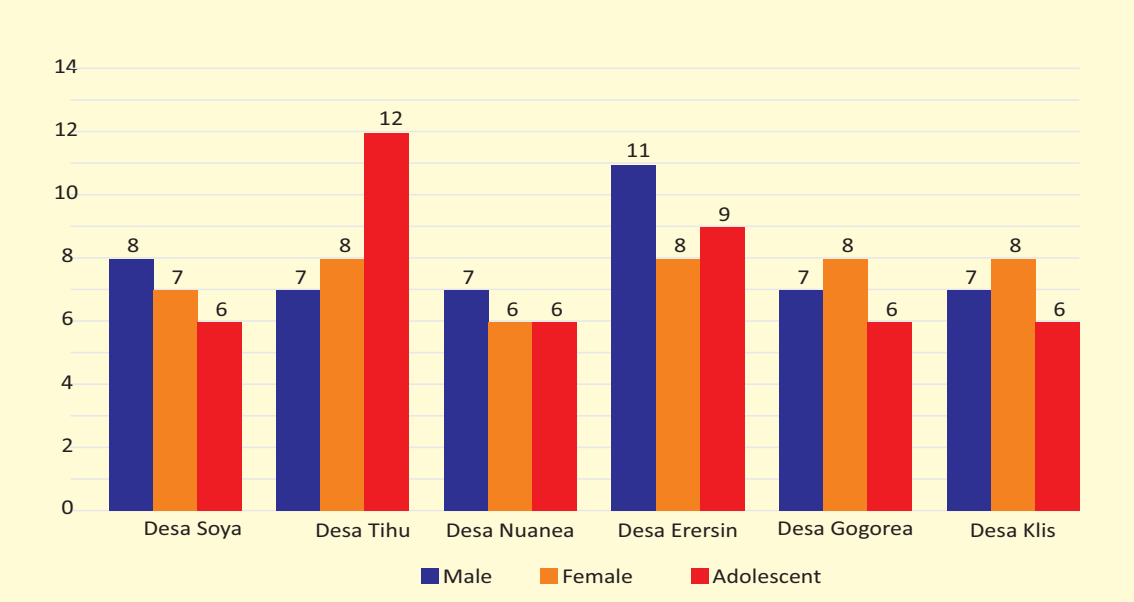


Figure 3.8 Graph of the number of participants in FGD in 6 villages

Table 3.5 Mapping of roles for women and men in 3 domains/activities

Activities	Male		Female	
	Adult	Adolescent	Adult	Adolescent
A. Production Activities				
Farming				
Planting vegetables	Planting peanuts	Assisting parents	Growing pokcoy, long beans, tomatoes, chili peppers	Assisting parents
Planting tubers	Planting *kasbi* (cassava)	Assisting parents	Planting *kasbi* (cassava), sweet potatoes, taro	Assisting parents
Planting herbal plants	Planting ginger	Assisting parents	Planting ginger	Assisting parents
Planting fruits and other plants	Planting oranges	-	Selling oranges	-
	Planting corn	Assisting parents	Assisting in planting and harvesting	Assisting parents
	Planting on high/ steep mountains	Assisting parents	Planting in flat garden	Assisting in gardening
Other Occupations				
Fishermen	Fishing, catching crabs, collecting seaweed	Assisting parents	Selling fish, drying seaweed	Assisting parents
Livestock farmers	Herding buffaloes	Assisting parents in herding	Raising chickens, goats & pigs at home	Assisting in feeding livestock
Miners	Gold mining	Assisting in mining	Gardening	Online selling
Distilling patchouli leaves	Patchouli distillation	Assisting in distillation	Assisting in distillation	Assisting in distillation
Making venison jerky	Hunting deer	Processing deer meat into jerky	-	-

Activities	Male		Female	
	Adult	Adolescent	Adult	Adolescent
Making sopi palm wine	Collecting sap	Assisting	Distilling sopi palm wine	-
Selling	Selling food in the market	Assisting in selling parents' fish/crab catches	Selling garden produce in the market, selling food at home and at mining sites	Assisting
Working/Studying in Another City				
Migration	Work in another city	Work in another city	Live at home, engage in selling	Study in another city
B. Reproductive Activities				
Household Chores				
Preparing meals	Rarely does it	Occasionally helps	Cooking	Assists in cooking
Managing grocery money	Men tend to delegate the management to women. Men only manage money for cigarettes and gasoline	-	Women manage the grocery money	-
Using contraception	Determined together	Minimal reproductive health knowledge	Determined together	Minimal reproductive health knowledge
Caring for children	Rarely done	Rarely assisting	Accompanying children	Assisting with caring for siblings
Cleaning the house	Rarely done	Sometimes assisting	Always done by women	Always assisting mother in cleaning the house
Washing clothes	Rarely done	Rarely assisting mother in washing	Always done by women	Always wash their own clothes
Fetching water	Fetching water from hill	Helping in fetching water	Fetching water from the island and dam	Helping parents in fetching water

Activities	Male		Female	
	Adult	Adolescent	Adult	Adolescent
Regarding household energy sources				
Kerosene	Rarely buy kerosene	Sometimes help to buy kerosene	Always buy kerosene	Often help to buy kerosene
Electricity	Providing gasoline for the generator; maintaining the installation	Sometimes help with generator maintenance	Not involved in installation maintenance; cleaning the area of solar power plant	Not involved
Firewood	Cutting large wood	Helping with wood cutting	Cutting small wood	-
	Searching in the forest	Assisting in wood searching	Collecting branches in the garden	Assisting in gathering branches
Oil lamps	Preparing kerosene	Helping	Buying kerosene and preparing it for the lamp	Helping with kerosene purchase at the shop/kiosk
C. Participation in social and political activities in the community				
Active in church assemblies, religious study groups, sports	Active participation	Active in choir/arts, serving in youth groups, sports	Active participation	Active in choir/arts, serving in youth groups
Religious activities	Building churches, mosques	Assisting in preparing materials	Providing refreshments	Assisting with refreshments
Traditional activities	Important roles, event organizers, hunting, and others	Decorations, setting up tents, supporting event	Providing refreshments	Refreshments, entertainment, supporting the event
Village meetings	Member of the Village Consultative Body (BPD)	Youth organization	Women's organization, Integrated Service Post (posyandu)	Youth organization

Activities	Male		Female	
	Adult	Adolescent	Dewasa	Adult
Community work	Cleaning in public areas	Assisting in cleaning public areas	Cleaning in residential areas	Assisting in cleaning residential areas

Table 3.5 illustrates the division of roles between men and women, clearly delineating the areas assigned to each gender in the domains of reproductive, productive, and social activities. Some tasks are commonly performed together or exchanged, such as vegetable farming, gardening, fetching water, gathering firewood, engaging in religious activities, and participating in community activities. The division of roles is most pronounced in the reproductive sphere, particularly in cooking, childcare, house cleaning, and laundry. There are roles that explicitly reflect patriarchal culture and gender bias, where men dominate tasks such as electrical maintenance, generator care, cattle herding, and farming in hilly areas, while women are assigned tasks in flat areas, among others. The reasons given by men include women's perceived physical incapability for farming in mountainous areas and a sense of pity.

These role models influence adolescent boys and girls, who tend to adopt and perpetuate these gender-biased divisions. As known, primary socialization of children occurs within the family through patterns of imitative parenting, leading children to mimic the patterns exhibited by their parents or adults. The reproduction of norms and practices regarding gender roles begins at home. Secondary socialization is carried out by the extended family, peer groups, society, schools, social media, religion, and other influences.

Such gender role divisions, in turn, impact how access, participation, control and benefits over resources are distributed between men and women, as presented in Table 3.6. The table reflects Harvard analysis of access and control/benefits profiles derived from the FGDs conducted in 6 villages.

Table 3.6 The Harvard Analysis on the access and control/benefits profiles

	Male		Female	
	Adult	**Adolescent**	**Adult**	**Adolescent**
1. Access to Resources				
Land	Men have access to and control over land	In the context of patrilineal societies, inheritance rights are passed down and attached to male children for access and control.	Women are largely limited in their control over land ownership.	Female children also have limited access to and control over land.
Productive equipment	Ownership of motorcycles tends to be in the name of men.	Access and control over productive tools such as motorcycles and boats tend to be inherited to male children.	Women are limited in their control over productive equipment.	Female children have limitations in controlling productive tools.
Money/ savings	Control and access to savings tend to be equal.	Control and access to savings tend to be equal. There are students who receive scholarships and need to open savings accounts.	Control and access to savings tend to be equal.	Control and access to savings tend to be equal. There are students who receive scholarships and need to open savings accounts. Additionally, it is for the purpose of studying outside the city.
Education	The average participants of the FGD are from the baby boomer, Generation X, and Generation Y, so they still face constraints in accessing primary education (high school/vocational school).	The average participants of the FGD are from Generation Z, so they tend to have better access to education. The educational opportunities have become equal.	The average participants of the FGD are from the baby boomer, Generation X, and Generation Y, so they still face constraints in accessing primary education (high school/vocational school).	The average participants of the FGD are from Generation Z, so they tend to have better access to education. The educational opportunities have become equal.

	Male		Female	
	Adult	**Adolescent**	**Adult**	**Adolescent**
Training	Training for electricity and energy is still limited for men. Access and participation in this field are Good.	Training tends to be equal for adolescent boys and girls.	Microeconomic enterprise training is open to women. Access and participation in household-based economic activities are generally open.	Training tends to be equal for adolescent boys and girls.
2. Control/Benefits over Resources				
Fossil Fuel	The utilization of fossil fuels is used for lighting, propulsion, and heating purposes.	The utilization of fossil fuels is used for lighting, propulsion, and heating purposes.	The utilization of fossil fuels is used for lighting, propulsion, and heating purposes.	The utilization of fossil fuels is used for lighting, propulsion, and heating purposes.
Renewable Energy	The utilization of renewable energy is still limited to equipment such as water pumps and street lighting.	The utilization of renewable energy is still limited to equipment such as water pumps and street lighting.	The utilization of renewable energy is still limited to equipment such as water pumps and street lighting.	The utilization of renewable energy is still limited to equipment such as water pumps and street lighting.
Asset Ownership	The utilization of movable and immovable assets for productive and reproductive roles.	The utilization of movable and immovable assets for productive and reproductive roles.	The utilization of movable and immovable assets for productive and reproductive roles.	The utilization of movable and immovable assets for productive and reproductive roles.
Education	The benefits of education tend to enhance knowledge and capacity.	The benefits of education are able to enhance knowledge and capacity.	The benefits of education tend to enhance knowledge and capacity.	The benefits of education are able to enhance knowledge and capacity.

Summing up the data from the table above, there are limitations for women in terms of access and control over resources such as land and productive assets. This is due to patriarchal norms and systems that restrict women's access and control. However, in other aspects such as education and savings, there is greater inclusivity in terms of women's access and participation. Additionally, both men and women benefit from various types of energy sources, including electricity, fossil fuels, and biomass (firewood).

B. Women's Access, Participation, Benefits, and Control in the Energy Sector

In this section, the current conditions of women's access, participation, control and benefits (APKM) in the energy sector will be discussed. As mentioned earlier, not all villages have access to electricity from the national power company (PLN). Out of the 11 villages surveyed, there is still one village that does not have access to PLN electricity.

B.1. Women's Access in the Energy Sector

Women's access in the energy sector is assessed based on the availability of electrical connections, access to household electricity installation, and energy sources for cooking at home.

Table 3.7 Houses with electrical connections

	Male		Female		Total	
	n	%	n	%	n	%
Houses with existing electrical connection						
Yes	155	97.5%	156	94.0%	311	95.7%
No	4	2.5%	10	6.0%	14	4.3%
Houses with own electricity kWh-meter						
Yes	149	96.1%	152	97.4%	301	96.8%
No	6	3.9%	4	2.6%	10	3.2%
Beneficiaries of free electricity program						
Yes	40	26.8%	33	21.7%	73	24.3%
No	109	73.2%	119	78.3%	228	75.7%

Table 3.8 Reasons for not having electrical connection

Reasons for Not Having Electrical Connection	n	%
Lack of funds for installation cost	8	57.1
Waiting for network installation	2	14.3
New house	2	14.3
Far from electrical poles	1	7.1
Prohibited due to proximity to traditional house	1	7.1
Total	14	100.0

Referring to Table 3.7 and Table 3.8 above, out of the 4.3% of respondents who do not have electricity connections, the most common reason for households not having electricity is the lack of funds for installation (57.1%). This finding is consistent with the income of the majority of respondents (74.3%) being less than Rp. 1,500,000 per month, which means prioritizing basic needs such as food for the family over electricity installation. There is also a cultural reason, whereby the presence of electricity is prohibited due to the proximity of the house to the traditional house (7.1%). This fact is found in Nuanea Village, which still strongly upholds traditions. Another reason is the technical aspect, where the houses are far from the electricity poles, requiring significant additional costs.

The table regarding households with electricity connections also found that there are more female respondents whose houses do not have electricity connections (6%), indicating limited access to electricity. Out of the 311 respondents who have electricity connections at home, 96.8% have their own KWH-meter, while the remaining 3.2% do not have their own KWH meter at home. They have electricity connections in their homes by tapping into the electricity from neighboring houses or relatives. Out of the 301 respondents who have a KWH meter at home, 24.3% benefit from the free electricity program, with the majority of them being male respondents (26.8%), while female respondents make up 78.3% of those who do not receive benefits from the free electricity program. In summary, in terms of energy access for women, especially for female respondents facing economic constraints, there are more female respondents whose houses do not have PLN electricity connections.

Meanwhile, Table 3.9 below illustrates that firewood (87.2%) is the primary source of energy for cooking at home. Table 3.10 explains the reasons for using biomass at home, with the majority of respondents stating that firewood is easily accessible and more affordable. Although some respondents also use kerosene (70.4%), its high cost and limited availability lead some respondents to combine its usage with firewood.

Table 3.9 Source of energy for cooking at home

Energy source for cooking at home	n	%
Kerosene	252	70.4
Firewood	312	87.2
Coal Briquettes	1	3
Electricity	1	3

Table 3.10 Reasons for using biomass at home

Reasons for using biomass at home	Male		Female		Total	
	n	%	n	%	n	%
More cost-effective	81	98.8	90	100.0	171	99.4
Easily accessible	78	95.1	82	91.1	160	93.0
Can ease household chores, especially cooking	67	81.7	72	80.0	139	80.8
Utilizing local resources	65	79.3	69	76.7	134	77.9
Neighbors also use it	39	47.6	42	46.7	81	47.1

Referring to the table above, there is **a similarity in reasons between male and female respondents when choosing to use biomass (firewood) at home**. As many as 98.8% of male respondents and 100% of female respondents state that the reason for choosing firewood is that it is more cost-effective as they do not need to buy fuel. Firewood is also abundant in the surrounding village environment.

Meanwhile, women's access to renewable energy is still predominantly seen through the use of firewood, both in domestic and social community settings. Women's access to solar power systems (PLTS) and micro-hydro power systems (PLTMH) is still limited, and one of the factors is the condition of the PLTS and PLTMH in the 11 villages, which are non-functional due to damage. Although these systems are non-functional, the presence of renewable energy projects has been **able to increase women's knowledge about renewable energy, as evidenced by their good level of knowledge (56.60%) in the field of renewable energy.**

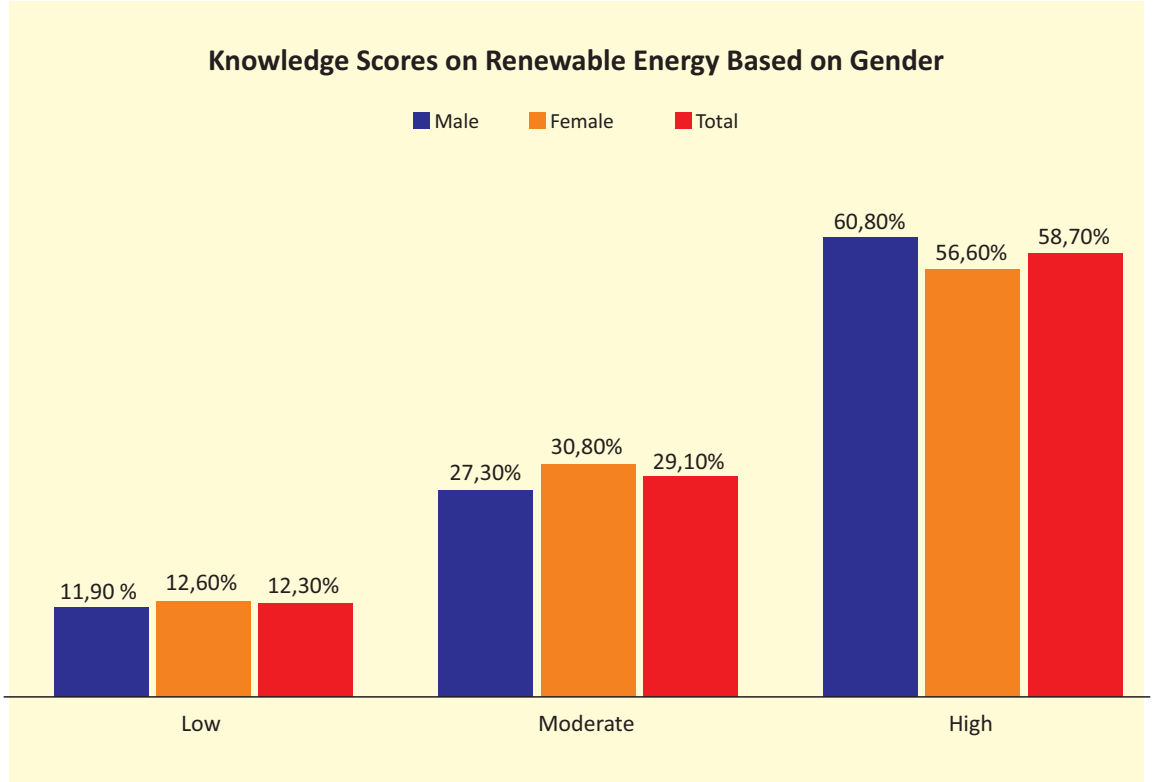
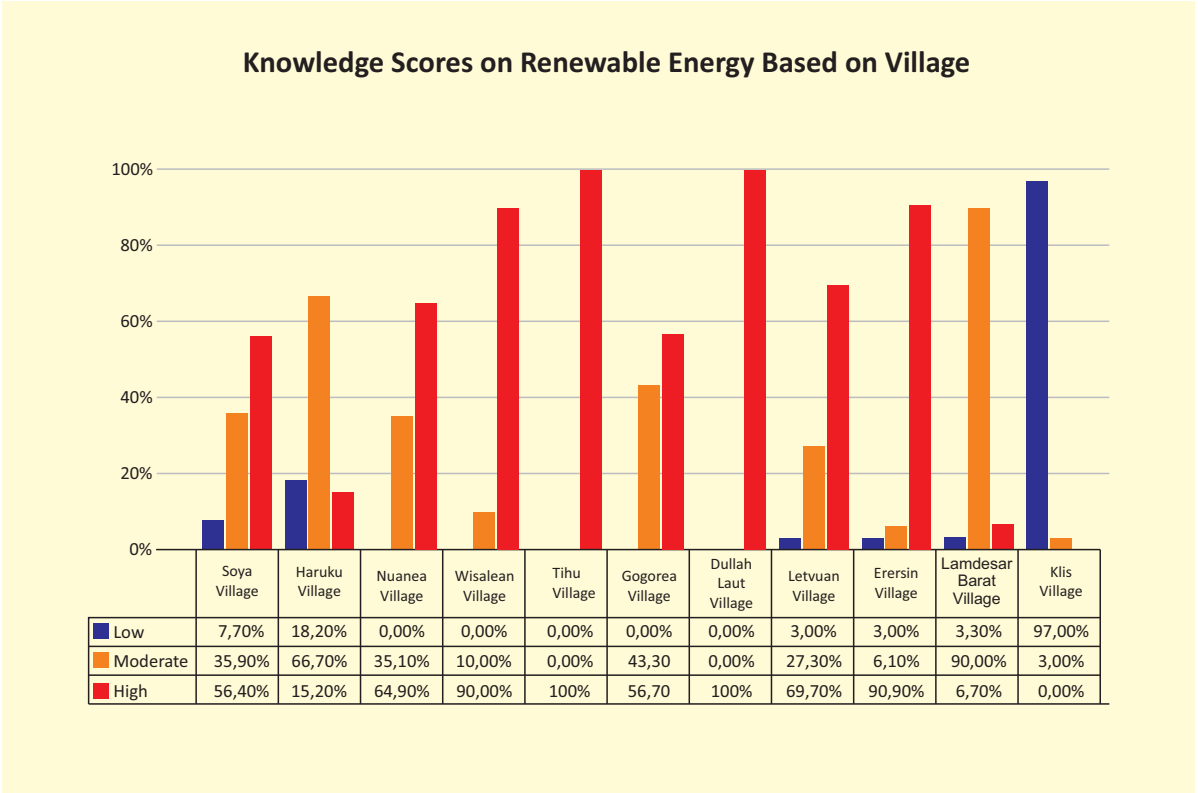


Figure 3.9 Bar chart of knowledge scores on renewable energy based on gender



	Soya Village	Haruku Village	Nuanea Village	Wisalean Village	Tihu Village	Gogorea Village	Dullah Laut Village	Letvuan Village	Erersin Village	Lamdesar Barat Village	Klis Village
Low	7,70%	18,20%	0,00%	0,00%	0,00%	0,00%	0,00%	3,00%	3,00%	3,30%	97,00%
Moderate	35,90%	66,70%	35,10%	10,00%	0,00%	43,30	0,00%	27,30%	6,10%	90,00%	3,00%
High	56,40%	15,20%	64,90%	90,00%	100%	56,70	100%	69,70%	90,90%	6,70%	0,00%

Figure 3.10 Knowledge scores on renewable energy based on village

Based on the knowledge scores about renewable energy according to the villages included in the study, Table 3.11 shows that 100% of women in four villages, i.e. Dullah Laut Village, Tihu Village, Wisalean Village, and Erersin Village, fall into the high category of knowledge. On the other hand, the majority of women with low knowledge scores are found in Klis Village, Southwest Maluku. Table 3.11 explains the knowledge scores about renewable energy based on villages that have used renewable energy (RE) and villages that have not used RE. The villages classified as RE include Lamdesar Barat Village, Tihu Village, Dullah Laut Village, Wisalean Village, and Erersin Village. Meanwhile, the villages classified as non-RE include Soya Village, Haruku Village, Nuanea Village, Gogorea Village, Letvuan Village, and Klis Village. The survey results show that respondents from RE villages have higher knowledge about renewable energy compared to respondents from non-RE villages. This is because they have experience with renewable energy in their villages. Respondents from Soya, Nuanea, Gogorea, and Letvuan villages also have relatively good knowledge scores about RE, as these villages have installations that use solar energy. For example, Soya Village has a solar-powered water pump for distributing clean water to households, while Gogorea and Nuanea villages have solar-powered streetlights.

Table 3.11 Knowledge level of female respondents on renewable energy
Based on villages

Village	Low		Moderate		High	
	n	%	n	%	n	%
Soya Village	3	14.3	9	42.9	9	42.9
Haruku Village	4	23.5	11	64.7	2	11.8
Nuanea Village	0	0.0	9	45.0	11	55.0
Wisalean Village	0	0.0	0	0.0	15	100.0
Tihu Village	0	0.0	0	0.0	15	100.0
Gogorea Village	0	0.0	8	53.3	7	46.7
Dullah Laut Village	0	0.0	0	0.0	15	100.0
Letvuan Village	1	5.9	4	23.5	12	70.6
Erersin Village	0	0.0	0	0.0	16	100.0
Lamdesar Barat Village	0	0.0	14	93.3	1	6.7
Klis Village	15	93.8	1	6.3	0	0.0

Table 3.12 knowledge scores on renewable energy based on re and non-re village status

Knowledge Score on Renewable Energy	RE Village Status					
	RE		Non RE		Total	
	n	%	n	%	n	%
Low	2	1.3	42	20.5	44	12.3
Moderate	32	20.9	72	35.1	104	29.1
High	119	77.8	91	44.4	210	58.7

Access to energy for women, such as kerosene, is utilized in productive, reproductive and social-community domains. As mentioned by Ms. BT, a women's activist in Maluku who supports the *Jamu EMPU* community[3], kerosene is a primary source of energy used in making traditional herbal medicine by women in the *EMPU jamu gendong* community. In addition to kerosene, electricity is also used for processing the herbal medicine (blender). Therefore, without access to energy, women face obstacles in carrying out their productive roles.

> *"...for the mothers in the urban areas here, most of them live in rented places, they don't own their own houses... so they use kerosene stoves to cook the herbal medicine, and electricity for blending the processed herbs. Cooking is done with the stove, so everything relies on energy, and without energy, it becomes difficult..."*[4]

The same sentiment is conveyed by the official from Bappeda Seram Bagian Timur, Mr. HS, who states that in the reproductive role, women use kerosene, especially for those living in urban areas. However, for women living in rural areas, they still rely on firewood.

> *"In the capital city, the majority still use kerosene, but in other island regions, they use firewood"*[5]

The access of women to and their role in managing household energy sources is also confirmed by Mr. SM and Ms. WV from Bappeda Kabupaten Tanimbar.

> *"For daily needs, we use kerosene as our fuel"*[6]

[3] Jamu EMPU Communitiy is a community consisting of mothers who make and sell traditional herbal medicine. This community is spread across Yogyakarta, Sragen, Ambon, Gemba, Masohi, and several other regions in Indonesia.
[4] Interview with Ms. BT, Maluku women's activist, 24 March 2023.
[5] Interview with Mr. HS, Bappeda SBT, 17 April 2023.
[6] Interview with Bapak SM & WV, Bappeda Kab. Tanimbar, 19 May 2023.

B.2. Women's Participation in the Energy Sector

Women's participation in the energy sector, as observed through the survey, is assessed based on several aspects: involvement in the installation of household electrical connections, maintenance of electrical installations at home, participation in village electrification projects, and training in electrical maintenance at home. Figure 3.12, which shows the participation diagram regarding giving ideas for installing electrical connections at home based on gender, indicates that **71.40% of male respondents answered that they participate in the installation of electrical connections at home. On the other hand, 55.40% of female respondents also participate. This indicates that male participation dominates in providing ideas for installing electrical connections at home.** Installation and arrangement of electrical connections at home include aspects such as the wattage of installed lights, the location of switches/power outlets, cable placement, and so on.

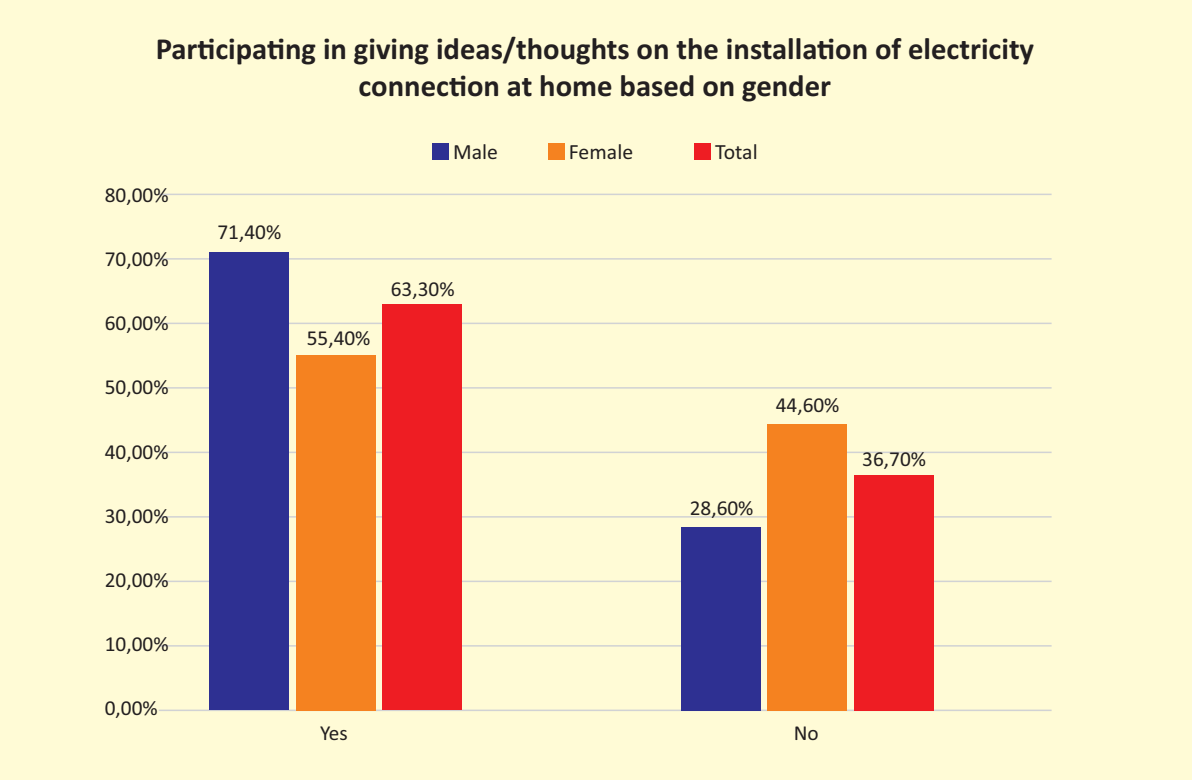


Figure 3.11 Bar chart of women's participation in electricity installation at home

Table 3.13 shows the participation in the maintenance of electrical connections at home, indicating that female family members have lower participation compared to male family members. The same pattern is also observed in Table 3.14 regarding women's participation in providing ideas for village electrification projects. The number of female respondents who stated that they were **not involved in the process of village electrification** (85.5%) is higher compared to male respondents (75.5%).

Table 3.13 Participation in the maintenance of electrical connections at home

Who takes care of the installation/device maintenance at home?	n	%
Husband	100	32.2
Wife	7	2.3
Wife and Husband	9	2.9
Father	8	2.6
Mother	1	.3
Father and Mother	1	.3
Son	8	2.6
PLN Technician	139	44.7
Electricity Technician of the Village	4	1.3
Village government	29	9.3
Others	5	1.6
Total	311	100.0

Table 3.14 Participation in providing ideas for the development of electricity generation In the village

Participation in providing ideas/thoughts about the development of electricity generation in the village/hamlet	Gender		Total
	Male	Male	
• Yes	39 24.5%	24 14.5%	63 19.4%
• No	120 75.5%	142 85.5%	262 80.6%
Total	159 100.0%	166 100.0%	325 100.0%

The low participation of women is not only in providing ideas but also in their participation in training related to electricity at the household level. The data shows that while none of the women respondents had taken part in trainings, **1,7% of male respondents had participated in trainings.**

Table 3.15 Participation in training on maintenance of electrical equipment
At the household level

Have you ever participated in training on the maintenance of electrical equipment (including electrical networks)?	Male		Female		Total	
	n	%	n	%	n	%
Yes	3	1.7	0	0.0	3	0.8
No	173	98.3	182	100.0	355	99.2

In addition to the survey results, an interview with member of Commission VII, DPR RI, representing Maluku constituency, Ms. Mercy, revealed three forms of women's participation in the renewable energy sector. First, women's participation at the strategic level as decision-makers. Ms. Mercy stated:

"The first level is the strategic level for policy stakeholders. We're talking about the context of Maluku in the Maluku Provincial Parliament. In my experience, dealing with energy transitions or renewable energy is actually part of a comprehensive package when discussing energy mix. So, at the national level, we have interventions for energy plans. In coordination between Commission VII of the Indonesian Parliament (DPR-RI) and the National Council, we allocate a sufficiently proportional budget to the national energy council for conducting socialization as well as advocacy to translate central policies to the regions. This ensures that the regional energy mix roadmap is developed."[7]

In addition, the participation of women who have careers in the energy sector, as reported by respondents from PT. PLN Area Maluku, Bappeda, and the Department of Energy and Mineral Resources of Maluku Province, who play a strategic role, also expressed:

"We, as women, strongly support and provide ideas for the effective utilization of renewable energy, especially in remote villages that are difficult for PLN to reach."

At the second level, among academics, activists, NGOs, and environmental observers, their role is to advocate for policies. Furthermore, Ms. Mercy stated:

"The second level is the intermediate level, consisting of academics, activists, NGOs, and environmental observers. Their role is to push for policy advocacy at the strategic level and to empower communities at the practical level. This requires the involvement of the middle class. I firmly believe that the middle-class group plays a crucial role in determining the speed and effectiveness of energy transition. Therefore, with various climate change programs in forestry, energy transition, and others, our hope is for intelligent collaboration among various stakeholders to pave the way for a better future. This way, our aspirations for accelerating energy transition in the eastern part of Indonesia can be effectively realized."

[7] Interview with Ms. Mercy Barends, Member of the Indonesian Parliament (DPR RI), 5 May 2023..

The role at the intermediate level is confirmed by the opinions of survey respondents from PT. PLN Area Maluku, Bappeda, and the Department of Energy and Mineral Resources of Maluku Province.

> *"The involvement of various components of society, NGOs, and other civil society organizations is highly significant in addressing the issue of 'energy access/clean energy' from a gender-based perspective."*

In summary, based on the survey respondents' feedback, women's participation at the intermediate level involves contributing ideas, advocating for change, and supporting initiatives in the energy sector. The transition to renewable energy clearly demands more progressive involvement from women.

The important role of women can also be found at the grassroots level, as mentioned by Ms. Mercy, one good practice of women's participation in renewable energy can be seen in Lelingluan Village in Tanimbar Regency. Women's participation goes beyond technical aspects and involves the spirit of ensuring the continuous operation of the solar power plant. Women mobilize funds, collaborate, and engage in collective efforts.

> *"At the grassroots level, the role and position of women in accelerating this transition are crucial. Women's position in the energy transition is not just as consumers but as producers. To empower women, it's not just about the technical aspects but about them being part of it. I am delighted to meet with the mothers and engage in lengthy discussions. We all talk and contribute money together... They work together to collect funds, and healthy competition even arises. The women who have not yet had access to renewable energy push us, asking if their capacity can be increased and they are willing to pay for it. This can serve as an example for other villages. If other villages want to develop in a similar way, we can become a best practice for neighboring villages."*

In general, women play a significant role in the utilization of new renewable energy sources. A survey respondent confirmed this finding:

> *"Women have a significant contribution in the utilization of renewable energy sources, especially in understanding household needs and family requirements."*

Women's roles in renewable energy utilization are essential at all levels, including grassroots levels, where they actively participate in activities such as maintaining solar power plants, fundraising, and contributing ideas.

B.3. Women's Control in the Energy Sector

Women's control in the energy sector is assessed through their control over determining the source of electricity in households and businesses, financing electricity at home, and selecting biomass (firewood).

Furthermore, regarding **women's control in the energy sector across these three domains**, there is a clear division of roles, but there is also a tendency for equal division of roles between men and women. Table 3.16 demonstrates gender-equitable control in determining the choice of electricity source in households. Approximately **47.9%** of the control over determining the electricity source at home is held by both male and female family members.

Table 3.16 Gender-based control in determining electricity in the household

Who determines the selection of the electricity source at home?	n	%
Male Family Members	82	26.4
Female Family Members	24	7.7
Male and Female Family Members	149	47.9
Non-Family Members	56	18.0
Total	311	100.0

The data from Table 3.17 indicates equal control in financing electricity in the household between female and male family members. A total of 46.6% stated that the decision is made together with both male and female family members.

Table 3.17 Control determining the electrical power in the house

Who determines the amount of electrical power in the house?	n	%
Male Family Members	91	29.3
Female Family Members	17	5.5
Male and Female Family Members	145	46.6
Non-Family Members	58	18.6
Total	311	100.0

Women have control over the use and management of energy in the household. **Engaging in discussions together** about energy usage allows women to have a say in its utilization. Their role as daily and monthly household financial managers enables women to exercise control. Ms. Tn, a resident of Soya Village, confirms this finding.

"The use of electricity also depends on income economics. If a household wants to use higher power, it requires additional costs, which are dependent on the family's economic situation and income. Therefore, it is important for spouses to engage in discussions and consult with each other to make decisions regarding electricity usage."[8]

Table 3.18 On control of biomass selection at home

Who decides to use Biomass at home	n	%
Male Family Members	11	6.7
Female Family Members	23	13.9
Male and Female Family Members	131	79.4
Total	165	100.0

In Table 3.18, the control of choosing firewood in the household is determined by both male and female family members through joint decision-making (79.4%). Female family members play the next significant role in determining the use of firewood (13.9%). This data is further supported by FGDs, which confirm the use of firewood as an energy source for cooking at home.

However, women's control in the social community domain differs from the domestic domain. For example, women in Nuanea VIllage do not have control in determining decisions in village meetings. Ms. AH expressed this:

"...In traditional meetings for decisions concerning the entire village, the women are not present at the meeting location. Only men attend. Afterwards, once the meeting is concluded, the decisions will be communicated."[9]

[8] Interview with Ms. TN, a woman from Soya Village, 17 March 2023.
[9] Interview with Ms. AH, a woman from Nuanea Village, 19 March 2023.

B.4. Benefits of Energy for Women

This section will explain the utilization of energy and renewable energy by women. Despite the damaged condition of some solar power plants (PLTS) and micro-hydro power plants (PLTMH) in several villages, there are still PLTS power sources being used for water pumps and street lighting. In Soya and Klis Villages, there are water pumps that utilize solar cells. The water pumps are used for household water consumption and agriculture needs. The survey assessed the benefits of energy for women based on the reproductive, productive, and social domains of society.

The utilization of energy in the three domains is used for:

- Lighting: This includes street lighting, lighting for maternal care in health centers or village midwives.
- Powering devices: This includes televisions, speakers, charging mobile phones, radios/tape players, internet access, computers/laptops, fans, water pumps for irrigation or water Flow, powering equipments/machinery, and LCD displays.
- Heating/cooling: This includes air conditioning, food storage, and providing warmth for infants in health centers or village midwives.

Table 3.19 Usage of electricity at home

Electricity Usage at Home	n	%
Lighting	311	100.0
Powering devices	269	86.5
Heating/Cooling	188	60.5

Based on Table 3.19, the utilization of electricity at home shows that it is mostly used for lighting purposes (100%), followed by powering devices at 86.5% and heating/cooling at 60.5%. The utilization of electricity at home is not only enjoyed by women but also by other family members.

Table 3.20 The utilization of electricity for business purposes

Utilization of Electricity for Business Purposes	n	%
Lighting	19	79.2
Powering devices	14	58.3
Heating/Cooling	10	41.7

Figure 3.12 The utilization of electricity from PLN for hydroponic vegetable business in Soya Village

Based on Table 3.20, the utilization of electricity for business purposes shows the highest percentage in lighting at 79.2%, followed by powering devices at 58.3%. Businesses such as kiosks, eateries, and photocopy shops require energy support. One of the benefits of electricity for women in their productive role can be seen in Soya Village, where hydroponic farming is practiced. This type of business relies on continuous electricity, as power outages can pose risks to vegetable crops. Solar energy is also utilized by women in Erersin Village for drying seaweed.

Table 3.21 The utilization of electricity in social community activities

Utilization of Electricity in Social Community Activities	n	%
Lighting	318	97.8
Powering devices	255	78.5
Heating/Cooling	36	11.1

Referring to Table 3.21, it is stated that the benefit of electricity in the social community domain is 97.8% for lighting and 78.5% for powering devices. However, this situation may differ in traditional villages such as Nuanea. In Nuanea, women participating in traditional rituals such as Pinamo and other customary activities are not allowed to use electrical appliances.

Meanwhile, women use firewood and kerosene for cooking at home. The most commonly used biomass type is firewood.

Table 3.22 Types of biomass used at home

What type of biomass usually used at home?	n	%
Wood briquettes	1	.6
Branch briquettes	1	.6
Dry leaves	1	.6
Firewood	172	100.0

Chapter IV
Challenges in the Role and Participation of Women in the Energy Sector in Maluku

"Because we are afraid of getting electrocuted. I had experienced it before, so I dare not engage in any activities related to electricity. It's usually the men who handle it."

Ms. TN, Woman from Soya Village, Ambon City

This section presents various findings on the challenges that hinder the role and participation of women in the energy sector in Maluku. The analysis of challenges to women's empowerment and participation will identify various factors that hinder women in the reproductive, productive, and socio-community realms. In addition, a transformative gender approach is used to analyze the cultural context that limits women's empowerment and participation in the energy sector.

A. Challenges of Women's Access to the Energy Sector

The challenges faced by women in accessing the energy sector are assessed based on the barriers women face in accessing electricity, particularly among respondents **identified as coming from low-income families**. The research findings indicate that the majority of respondents in this study come from financially disadvantaged families. Data shows that there are respondents with incomes less than 1,500,000 (74.3%) and 66.5% have social safety net cards (Table 1.4) provided by the government. On the other hand, only 24.3% of respondents with electricity meters at home are beneficiaries of free electricity. Based on the challenges of accessing free electricity, the optimization of Ministerial Regulation No. 3 of 2022 needs to be encouraged so that the government can provide free electricity installation programs. Some criteria for individuals to qualify for free electricity installation are:

- Not registered as PLN customers
- Located in areas with available low-voltage electricity distribution network without the need for network expansion
- Included in the Integrated Social Welfare Data (DTKS) list.
- Residing in 3T areas, namely Terluar (Outermost), Terdepan (Frontline), and Tertinggal (Disadvantaged) regions.
- In accordance with validation from the village head (lurah) or equivalent officials[1]

Free electricity installation, such as the New Electricity Installation Assistance Program (BPBL), is typically conducted by PT PLN, the Ministry of Energy and Mineral Resources (ESDM), and the ESDM Agency.

[1] Information obtained from Biaya Pasang Listrik Baru PLN 2023 Dilengkapi Cara Daftarnya (rumah123.com)

Table 4.1 Beneficiaries of free electricity based on ownership of social safety net cards

Having social safety net card from the government	Are you a recipient of the free electricity program?					
	Male			Female		
	Yes	No	Total	Yes	No	Total
Yes	31	59	90	24	83	107
	34.4%	65.6%	100.0%	22.4%	77.6%	100.0%
No	9	50	59	9	36	45
	15.3%	84.7%	100.0%	20.0%	80.0%	100.0%
Total	40	109	149	33	119	152

Table 4.1 shows that there are male respondents who have social safety net cards from the government but have not yet received free electricity access, accounting for **65.6%.** Similarly**, the number of female respondents in the same situation is 77.6% who have not yet received free electricity access.** This condition indicates a problem in accessing free electricity installation for economically disadvantaged women. The limitation of economic capacity is one of the obstacles for women to access free electricity from PLN.

According to the applicable regulations, there are several types of fees that must be paid for a new PLN connection, including connection fees (BP), subscription deposit fees (UJL), stamp duty fees, and a minimum initial electricity token of Rp5,000. Based on information from Indonesia.go.id, the cost of a new PLN connection is Rp 1,218,000, excluding stamp duty fees and the initial electricity token[2]

In addition to the challenge of women accessing electricity due to economic factors, there is also a challenge for women to pursue careers in the energy sector. Referring to the survey results, six respondents stated that there is equal access for both men and women to pursue careers. However, the dominance of gender bias perceptions makes women less interested in jobs in the technical field related to energy. Based on an interview with Ms. IK, an employee at the Provincial Energy and Mineral Resources Office in Maluku, it was stated that there is no discrimination between men and women in the recruitment process. The institution provides equal opportunities for both men and women to apply. However, in reality, the number of female applicants is lower compared to male applicants. This gender bias perception that discriminates against women is confirmed when women try to access training related to electrical maintenance/networking. Mr. RS, the Village Chief, stated:

"Well, men, because women, firstly, they already have specific expertise, and then

[2] Information obtained from Indonesia.go.id - Cara Pasang Sambungan Listrik Baru PLN dan Biayanya

they are not accustomed to things like that (electricity), so they are not allowed."[3]

Gender bias perceptions also hinder women from accessing electrical training because electricity is considered a male domain. As Ms. AH, a female figure from Nuanea Village, stated, gender bias perceptions result in discrimination against women, leading to their exclusion from decision-making meetings in the village.

"So, if it's about traditional meetings for decisions that concern the entire village, women are not present at the meeting location, only men. So, after the meeting, the decisions will be conveyed to them."

Table 4.2 confirms the statements from several informants above, indicating gender bias perceptions that reinforce patriarchal culture, which becomes a barrier for women in managing electricity at home.

Table 4.2 Barriers in managing electricity at home

What are the barriers you face in managing electricity at home?	Male		Female		Total	
	n	%	n	%	n	%
Not in accordance with customs	1	0.6%	2	1.3%	3	1.0%
Not in accordance with religious law	1	0.6%	0	0.0%	1	0.3%
Prohibited by the family	2	1.3%	0	0.0%	2	0.6%
Not given the opportunity	16	10.3%	8	5.1%	24	7.7%
Lack of self-confidence	41	26.5%	35	22.4%	76	24.4%
Lack of skills	89	57.4%	94	60.3%	183	58.8%
Men's work	3	1.9%	67	42.9%	70	22.5%
Not knowing	15	9.7%	9	5.8%	24	7.7%
No barriers	30	19.4%	17	10.9%	47	15.1%
Not involved	2	1.3%	3	1.9%	5	1.6%

Table 4.2 on the barriers in managing electricity at home shows that 42.9% of female respondents perceive it as men's work, which becomes a barrier in managing electricity at home. Another barrier is the lack of skills in handling electrical matters at home. These barriers confirm the issue that energy, particularly electricity, is perceived as **a masculine domain** based on the perspectives of female respondents.

3 Interview with Mr. RS, Gogorea Village Chief, 22 March 2023.

The study also found challenges faced by women in accessing firewood, which are related to **land conversion**. Ms. AH, a woman from Nuanea Village, stated that currently, finding firewood has become more distant. There are land clearing activities in their customary forests. Ms. AH stated:

"It's far. Because now the areas around the village have become gardens, so we have to go further to find firewood, sometimes up to 1 kilometer away from the village"[4]

Such condition experienced by Ms. AH represents significant impacts on women's life. The increased burden of women's reproductive roles, such as collecting firewood from distant places, can limit their time and energy for social and community activities.

Table 4.3 Obstacles faced by women in managing biomass (firewood) at home

Obstacles faced by women in managing biomass energy at home	Male		Female		Total	
	n	%	n	%	n	%
Prohibited by family	2	2.4	0	0.0	2	1.2
Male's job	16	19.5	6	6.7	22	12.8
No obstacles	55	67.1	60	66.7	115	66.9

Table 4.3 shows that 66.7% of female respondents do not face any obstacles in managing firewood at home, indicating a balanced role between men and women in this aspect.

Furthermore, another challenge for women in accessing fuel such as fuel oil (BBM) is due to **infrastructure factors, geographical conditions, policies, and data related to the distribution** of BBM. Mr. NF, the head of Erersin Village, stated:

"Yes, it's a remote area, so the distance from here, from the village to the city to buy BBM is very far. So sometimes the community's needs for diesel, gasoline, and kerosene are sometimes depleted. So only those who have stock can use it to illuminate their homes, sometimes using batteries. So flashlights, these flashlights are usually used, but if a flashlight is used, it's only limited to one room."[5]

"Usually, the residents of this village can obtain it when there are retailers, small shops, and chemical kiosks that sell kerosene. In those places, the villagers cannot get it without using their Family Card (KK) because they look at the address. So, if the address on the KK or ID card shows that they are local residents from the area, they will be served, If the address is outside of their area, it means they cannot be served."

[4] Interview with Ms. AH, Woman of Nuanea Village, 19 March 2023.
[5] Interview with NT, Erersin Village Chief, 26 March 2023.

There are distribution problems, data collection issues, and geographical factors that contribute to the scarcity of kerosene. This condition becomes one of the factors hindering women's access to kerosene.

> *"The scarcity of kerosene often occurs... It is one of the challenges for us, due to the weather conditions. Our natural conditions are quite unpredictable because we experience both the eastern and western seasons. However, during these seasons, the accessibility, especially at the harbor, cannot accommodate every season"* [6]

The challenges for women's access to renewable energy occur when solar power systems (PLTS) and micro hydro power plants (PLTMH) are damaged. This condition is exacerbated when their villages are located in geographically remote areas that have not yet been reached by the State Electricity Company (PLN).

The use of solar energy is also employed for water pumps, but **if the solar panels are damaged, the water pump will not function. This situation has an impact on women's access to clean water.** It is experienced in Erersin Village, where Reverend EM, expressed the challenges of accessing clean water and its implications for women:

> *"When there is a lack of clean water, it disrupts our activities. Cooking, for example, requires water, and all our needs depend on water. So, if there is a water shortage…."* [7]

The findings in Erersin Village reveal that when the solar panels for water pumps are damaged, the distribution of water to households is disrupted. The impact on women is that they have to search for water on other islands or reservoirs using boats. Figure 4.1 depicts women from Erersin Village using a boat to seek clean water.

Figure 4.1 Women of Erersin Village fetching clean water

[6] Interview, ST, Bappeda MBD, 21 March 2023
[7] Interview with Reverend EM, Erersin Village, 27 March 2023

B. Challenges in Women's Participation in the Energy Sector

The survey also identified challenges in women's participation in the energy sector based on thei participation in training programs. Additionally, the questionnaire, interviews, and FGDs identified the presence of patriarchal culture, limited involvement of women in village deliberations (musrembang), and the double burden faced by women as challenges to their participation.

Table 4.4 presents the profile of respondents' highest education level. For female respondents, the majority have a basic education background or no formal education, while male respondents predominantly have completed secondary and higher education.

Table 4.4 Profile of respondents' highest education level

Highest Education Level	Male		Female		Total	
	n	%	n	%	n	%
No Schooling	4	2.3%	9	4.9%	13	3.6%
Primary Education (Elementary-Junior High School)	77	43.8%	101	55.5%	178	49.7%
Secondary Education	72	40.9%	56	30.8%	128	35.8%
Higher Education	23	13.1%	16	8.8%	39	10.9%
Total	176	100.0%	182	100.0%	358	100.0%

Meanwhile Table 4.5 presents the reasons why women do not attend trainings on the use/utilization of electrical devices/equipment, of which the majority of the respondents answered that they did not know.

Table 4.5 Reasons for not attending training on the use/utilization of electrical devices/equipment

Reasons for not attending training on the use/utilization of electrical devices/equipment	Male		Female		Total	
	n	%	n	%	n	%
Don’t know	125	72.3%	127	69.8%	252	71.0%
Not invited	64	37.0%	59	32.4%	123	34.6%
Not interested	17	9.8%	30	16.5%	47	13.2%
Women not invited	0	0.0%	7	3.8%	7	2.0%
No quota for women	0	0.0%	2	1.1%	2	0.6%

Reasons for not attending training on the use/utilization of electrical devices/equipment	Male		Female		Total	
	n	%	n	%	n	%
No women participated	0	0.0%	4	2.2%	4	1.1%
Activity for men only	0	0.0%	18	9.9%	18	5.1%
Not in accordance with customs	0	0.0%	1	0.5%	1	0.3%
Training location far from the village	3	1.7%	2	1.1%	5	1.4%
Training location difficult to access	1	0.6%	1	0.5%	2	0.6%
No training activities	34	19.7%	27	14.8%	61	17.2%

Table 4.4 shows that the majority of female respondents **(69.8%) cited "don't know"** as the reason for not attending training on the use/utilization of electrical devices/equipment, followed by "not invited" (32.4%). Similarly, for male respondents, the main reason for not attending the training was also "don't know" (72.3%). These data indicate a lack of access to information for both men and women when it comes to training. It suggests that limited information on training is a challenge for the surveyed communities.

The findings also depict that women lack knowledge about energy-related matters, which makes them **reluctant and lack confidence** to participate in electrical maintenance at home. Ms. TN expressed:

> *"For example, there is a broken light, and the man will say, 'Yes.' 'Could you please take care of that light?' and the man would reply, 'Sure. You go buy the lamp, I will take care of the installation.' So it's the man's responsibility."*

> *"Because we are afraid of getting electrocuted. I had experienced it before, so I dare not engage in any activities related to electricity. It's usually the men who handle it."*[8]

These findings are confirmed by the FGD discussions with groups of women and teenagers, who expressed their lack of confidence in participating in electrical maintenance at home.

The participation of women in solar panel maintenance training is doubted due to the patriarchal culture that perceives **electrical work as not suitable for women**. Mr. LD, the Village Secretary of Tihu, stated:

> *"Not involving women, maybe they don't have talent for it."*

The involvement of women is only done out of necessity if they are widowed and there are no male family members at home. This indicates that women's participation is still seen as an alternative and they are not fully engaged in the energy sector.

The gender-based unequal relationship pattern is also evident from the limited involvement of women in the energy sector. This has resulted in

[8] Interview with Ms. TN, Woman in Soya Village, 17 March 2023

weak participation of women, and their technical involvement in electrical maintenance or energy-related matters is rare. Mr. SN, the Head of PMD in East Seram, stated:[9]

> *"Generally, what happens here is that these things become somewhat burdensome tasks, especially when it comes to power outages, there is no concern for it day and night. So, here it is far from involving women at a significant level. Maybe they are involved in administrative processes."*

> *"Perhaps the first thing we see here is a matter of habit. People here consider it not a woman's job. Expertise in women's energy-related functions is not clear, so we don't see any role for women in this regard. So, people here have the habit of considering it as men's work. But if it exists, God willing, they will also see it as a learning opportunity. So, the habit of people here is to have the courage to directly involve themselves in such matters. Thus, there are no women involved in electricity."*

Analyzing the aforementioned gender-biased statements that discriminate against and subordinate **women's capacities in the energy sector**, it can be observed that there is a lack of habit of involving women in the energy sector.

Obstacles to women's participation also occur in the Village Musrembang, where women's involvement in the energy sector is limited. Women's participation is mainly focused on activities related to the Family Welfare Program (PKK) and Integrated Health Services Post (Posyandu). Ms. BT, a women's activist in Maluku, stated:

> *"If we look at it, women's participation is very limited, whether it's in the Village Musrembang or other settings. Sometimes, even when they are involved, women's voices are not accommodated. Although there are a few representatives, in reality, from planning to implementation, we see that these programs hardly have a perspective that brings about changes for women as a vulnerable group. Sometimes I always say, 'Do they not always see their human rights? Are they not recognized? As part of the people in the village?' Because of the limited involvement, their needs are often overlooked from the planning stage to implementation. These things are forgotten and not considered important. Perhaps they also don't realize that women carry a significant burden in their families and in their micro-business endeavors. These aspects are almost forgotten and hardly ever included in the planning. So, in the future, mainstreaming should continuously remind the government to facilitate and include these needs in their planning."*[10]

Analyzing Ms. BT's statement, it can be observed that gender equality and justice are not yet optimal at the government level, especially at the village level, where women are not seen as integral parts of society and development. This finding is also supported by the survey respondents who expressed that women's participation in the energy field still needs improvement. **Local stakeholders tend to view women merely as energy consumers without**

[9] Interview with Mr. SN, Dept. Head of PMD, SBT, 15 May 2023
[10] Interview with Ms. BT, Maluku women's activist, 24 March 2023

critical voices, making them less of a priority for development programs. This condition reflects the labelling or stereotypes imposed on women.

The research found that support for women's participation in the energy sector is still minimal, and gender mainstreaming in the energy sector is not yet a concern. Interviews with 10 informants from the Bappeda of districts/cities in Maluku Province revealed that women's issues have not been integrated into the energy sector. Ms. IM, an official at DP3A in Maluku Province, stated:

> *"Our focus is on women and children. For energy, I must admit it is not yet a major focus... It falls under my area"*[11]

The barriers for women to pursue careers in the energy sector are also related to the double burden experienced by women. This presents challenges such as having to travel to distant and difficult locations for the installation of solar power systems in various areas. Difficulties in balancing work and their roles as mothers or wives result in women not being able to fully develop their potential.

C. Challenges in Women's Control Over the Energy Sector

Women's control in the survey is observed in terms of their ability to express opinions in productive and reproductive roles. Furthermore, challenges in control in the social sphere are evident in forums such as village development meetings (*musrembang desa*) and institutions like Village-Owned Enterprises (BUMDES), where women can exercise control.

As explained earlier, the patrilineal kinship system tends to prioritize men over women. The energy sector is still considered an extreme domain for women, leading to a dominance of men in that role. A village chief, RS, stated:.

> *Women in our community are placed in a special position. They are not allowed to engage in extreme or physically demanding activities that pose risks to their lives or safety, unlike men who work in extreme conditions."*[12]

Limited space and uncertain capacity create fewer opportunities for women to learn and acquire knowledge and skills. The fear of electric shocks often comes to mind for women, which can significantly affect their confidence in expressing opinions regarding electrical installations in their workplaces. Fifty percent of respondents stated that women face obstacles in expressing their opinions on the installation of electrical devices in the reproductive domain due to a lack of knowledge. Additionally, 28.6% of respondents believed that it is primarily men's work.

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[11] Interview with Ms. IM, Maluku Province DP3A Official, 7 March 2023
[12] Interview with RS, Village Chief of Gogorea, 22 March 2023

Table 4.6 Obstacles for women to express opinions in the workplace

Obstacles to expressing ideas/thoughts on electrical device installation in the workplace	Male		Female		Total	
	n	%	n	%	n	%
Not invited	0	0.0%	2	14.3%	2	8.3%
Lack of confidence	0	0.0%	3	21.4%	3	12.5%
Lack of knowledge	2	20.0%	7	50.0%	9	37.5%
Perceived as men's work	0	0.0%	4	28.6%	4	16.7%

In terms of social roles and community involvement, women's control is also limited. Traditional norms and patriarchal interpretations of religion restrict women from expressing their opinions and ideas.

> *"It is not possible for women to become imams or be involved in matters related to traditional customs. Women are expected to stay in the background. When it comes to general matters, everyone is involved."*[13]

The survey results in Table 4.7 confirm the findings that **53.0% of the respondents state that women are not invited to participate in activities discussing the use of operational costs for social-community purposes.** Furthermore, 34.9% of the respondents state that women do not receive information.

Table 4.7 Obstacles for women to exercise control in social-community activities

What are the obstacles for you to express ideas about monthly operational costs for electricity in social-community activities?	Male	Female	Total
	(n)	(n)	(n)
	(%)	(%)	(%)
Not in accordance with customs	0	2	2
	0.0%	1.2%	0.6%
Not invited	77	88	165
	48.4%	53.0%	50.8%
Not given the opportunity to express opinions	21	26	47
	13.2%	15.7%	14.5%
Lack of confidence/lack of courage to express opinions	13	26	39
	8.2%	15.7%	12.0%

[13] Interview with LJ, Community leader of Tihu Village, 17 April 2023

What are the obstacles for you to express ideas about monthly operational costs for electricity in social-community activities?	Male	Female	Total
	(n)	(n)	(n)
	(%)	(%)	(%)
Lack of knowledge	27	52	79
	17.0%	31.3%	24.3%
Not receiving information	52	58	110
	32.7%	34.9%	33.8%
Do not know	25	23	48
	15.7%	13.9%	14.8%
Not involved	5	1	6
	3.1%	0.6%	1.8%
No obstacles	23	12	35
	14.5%	7.2%	10.8%

The limited control in social-community activities indicates the issue that forums like Musrembang are still not optimal for women to express ideas beyond the scope of the PKK (Family Welfare Program) and Posyandu (Integrated Health Service). This is acknowledged by Ms. IM, an official from the DP3A (Population and Family Planning Agency) of Maluku Province, who stated:

> *"When I visit the villages, women play a significant role, but during the deliberations, women are always ignored. However, thanks to the strengthening and education initiatives, women's voices are now being heard and included in Musrembang."*[14]

Another challenge at the local government level is the absence of gender mainstreaming in the energy sector, which leads to a lack of specific targeting in inter-agency coordination. This was expressed by respondents in the survey, confirming the findings in Chapter 2, which highlighted the absence of gender-related regulations in the energy field.

Some of the researched villages also have BUMDES (Village-Owned Enterprises). In the village of Erersin, there is a BUMDES engaged in the business of karaka crabs. In the village of Klis, there is a BUMDES engaged in printing and water refill station businesses. BUMDES Soya is engaged in micro, small, and medium enterprises (UMKM), while BUMDES Gogorea is involved in the Pertamini (Pertamina's small-scale fuel kiosks/gas stations) business, although it is currently inactive. The participation of women in BUMDES is not yet strategic and is mostly limited to the treasurer position. This was expressed by Mr. SN, the Head of PMD (Community Empowerment Agency) in SBT:

> *"To accommodate capable women, many women are involved as village treasurers. It is not a cultural practice but a local habit that assigns women as financial managers."*[15]

14 Interview with Ms. IM, Maluku Province DP3A Official, 7 March 2023.
15 Interview with Mr. SN, Dept. Head of PMD, SBT, 15 May 2023.

D. Challenges for Women in Reaping Benefits from the Energy Sector

This section highlights the identification of challenges in utilizing energy that aligns with women's needs. The dominant role of women in the reproductive sector makes energy crucial for improving their lives. Additionally, the energy needs for women's productive roles can optimize their potential.

Survey respondents from PLN (state electricity company) stated that the utilization of renewable energy for women is still limited to household appliances such as lighting, radios, and televisions. This was confirmed in interviews with two village officials who have benefited from solar power systems (PLTS) and micro-hydro power systems (PLTMH). In the village of Tihu, the household electrical power was 50 watts when they were still using PLTMH. There was an agreement with the residents regarding the regulation of electricity usage, and penalties were imposed for excessive usage. Similarly, in the village of Erersin, the household electrical power was also limited to 50 watts when PLTS was functional, resulting in restricted use of electrical appliances. When the PLTS is not operational, they rely on kerosene lamps for lighting, which affect children's learning, disrupt domestic work for women, and pose health risks due to the fumes emitted by the lamps.

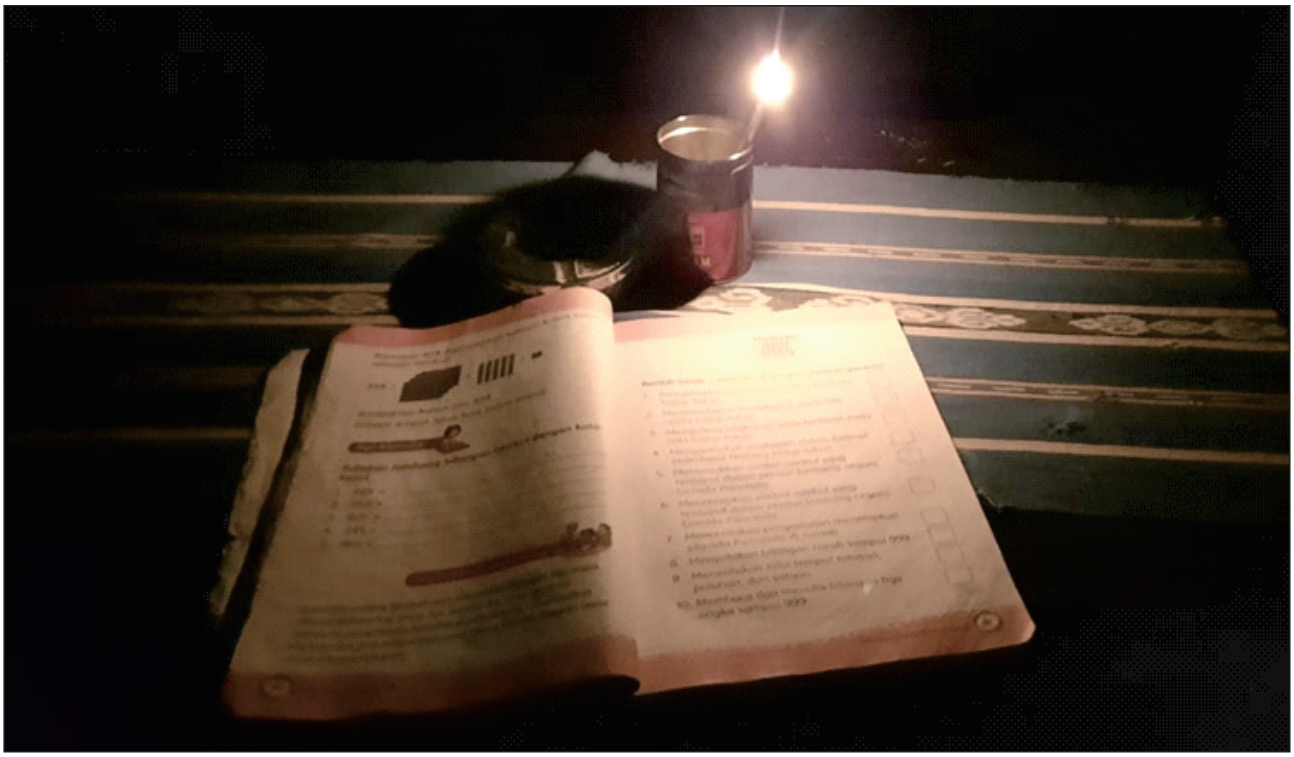


Figure 4.2 Lighting with oil lamp in Erersin Village

Since the micro-hydro power system (PLTMH) in the village of Tihu is no longer functional, lighting is provided by kerosene lamps, petromax lamps, and some households use personal generators. Currently, the electricity service is provided by PLN (state electricity company) but only operates for 12 hours, from 6:30 PM to 6:00 AM. The use of electricity for women's economic activities includes coconut grating, *kasbi (*cassava) grating, bread-making (using a mixer), refrigeration (for stalls), and others. Due to the limited 12-hour electricity service from PLN, some households in Tihu have their own personal generators for women's economic activities.

In Chapter 3, specifically Table 3.9, it is revealed that the majority of respondents use firewood (87.2%) as a cooking fuel. The long-term challenge of using firewood poses health risks for women. The use of firewood also indicates an unsustainable energy source, leading to women's vulnerability to health issues. Referring to the Indonesian Consumer Foundation (YLKI), solid fuels, such as firewood, are highly detrimental to health and the environment, as they produce 88 ppm of carbon gas during cooking.

The utilization of unclean energy persists due to economic factors and ease of access, making it difficult to change this **habit**. This was expressed by Ms. Mercy, a member of the Indonesian House of Representatives, who stated:

> *"The first challenge for women when talking about energy transition, as I mentioned before, is the issue of habit. They think it is the fastest and easiest. It requires joint efforts for capacity building, increasing their knowledge and skills, and critical awareness that they have alternative options. There are cleaner energy sources that do not harm the environment, they can stay pretty and go somewhere else after cooking more conveniently compared to when using fossil fuels such as kerosene, which is really unpleasant, or even using other energy sources, for example. Another challenge is to bring women closer to new applied technologies in renewable implementation. At least, there should be socialization, reaching even the mothers in the villages. Sometimes, regional officials at the provincial and district levels are not aware of new technologies, such as solar-powered street lighting."*[16]

The challenges of utilizing electricity for women are also influenced by cultural factors. This is evident in the Posune chamber, a place where Nuaulu women undergo traditional practices during their first menstruation and postpartum period in the village of Nuanea. The findings from focus group discussions with women and teenagers indicate that only kerosene lamps are allowed in the Posune chamber. The Nuaulu cultural tradition does not permit the use of electricity in the Posune chamber. Lighting with kerosene lamps, which use damar resin, poses risks to women's health. Such cultural factors tend to limit women from using safer energy sources for their health.

The challenges of utilizing energy are also related to limited access to knowledge. In an interview with Ms. AH from the village of Nuanea, she expressed fear of using a 3-kilogram LPG gas cylinder (commonly known as "gas melon") due

[16] Interview with Ms. Mercy, Member of Indonesia's House of Representatives (DPR RI), 5 May 2023

The challenges of utilizing energy are also related to limited access to knowledge. In an interview with Ms. AH from the village of Nuanea, she expressed fear of using a 3-kilogram LPG gas cylinder (commonly known as "gas melon") due to concerns about it exploding. This fear is related to the limited access to proper knowledge about alternative energy sources.

The survey results in tables 4.8, 4.9, and 4.10 identify the utilization of electricity and certain criteria for determining its usage and electrical appliances:

- General utilization of electricity includes lighting, freezer, refrigerator, water dispenser, water pump, television, sound system, and radio/tape.
- Electrical appliances that tend to assist women include hair straighteners, blenders, rice cookers and warmers, newborn baby temperature heaters, breast pumps, washing machines, salon equipment, grater machines, and mixers for baking.
- Electrical appliances that tend to be used by men include drill machines, welding machines, and tools for carpentry.

Table 4.8 Electricity utilization in social-community activities

Electricity Utilization in Social-Community Activities	n	%
General utilization	325	100.0
Specific utilization for women	69	21.2

Referring to Table 4.8, the utilization of electricity in the social-community domain shows that 21.2% of the utilization is specifically for women. Appliances such as breast pumps and breast milk warmers are examples of utilization that assist women

Tabel 4.9 Electricity utilization in the household

Electricity Utilization in the Household	n	%
General utilization	311	100.0
Specific utilization for men	6	1.9
Specific utilization for women	182	58.5

Referring to Table 4.9, the utilization of electricity in the household tends to be greater for women (58.5%). Appliances such as rice cookers, washing machines, and hair straighteners are associated with women's needs. Although cooking rice and doing laundry should be gender-neutral tasks, women dominate the reproductive role in the household context. Therefore, women's access issues in energy have an impact on their daily lives.

"We have a solar power system (PLTS), but it's already broken. Please fix it as soon as possible to reduce the burden on the residents, such as fetching water, which should be done with electricity, affecting children's study time, and reducing the use of expensive kerosene in our homes"

The Voice of Women in Erersin Village, Aru Islands

Chapter V
Support for Women in the Energy Sector in Maluku

"When the island is about to have electricity, mothers work to build sand dams....
Mothers enthusiastically make roads, searching for sand and gravel on the beach."

The Story of women's struggle on Kelang Island
when PLN electricity is about to arrive,
LJ, Village Community Leader of Tihu

This section explains and identifies the potential support for women based on access, participation, control and benefits (APKM) in the energy sector. In the previous chapters, the limited role and participation of women have been discussed, but there are still potential areas of support for women to engage in the energy sector. Opportunities can include commitments, affirmations in regulations, and practices that have been implemented.

A. Support for Women's Acess in the Energy Sector

Access support entails capturing various opportunities for women to access energy, including assistance and subsidies from PLN (the national electricity company) and the government, PLN's commitment to improving services, policy commitments such as coordination and data collection in the energy sector, particularly in regards to fuel, and a commitment to increasing access to electricity in underserved villages. Support also identifies opportunities for women's access to household electricity management and awareness programs on renewable energy by the Maluku Provincial Government to the community.

In Chapter IV, the survey results revealed that **77.6% of female respondents from low-income families have not yet obtained access to free electricity connections**. To address this challenge, PLN, in collaboration with the Ministry of Energy and Mineral Resources, has implemented the New Electricity Connection Assistance Program (BPLB), which targets households registered in the Integrated Social Welfare Data (DTKS). The BPLB program aims to meet the electricity needs of low-income households.

In addition, the BPLB program by PLN is accompanied by a program from the Provincial Government of Maluku through the Department of Energy and Mineral Resources (ESDM), which aims to improve the electrification ratio and meet the uneven electricity demand. The MALUKU 2022-2050 Strategic Plan for Energy Development (RUED-P) has strategic plans for increasing the electrification ratio by utilizing various energy potentials such as micro hydro, solar, geothermal, and biomass. Efforts are also

made to ensure the sustainability of power generation through training programs for village residents, although women have not been specifically targeted for these training programs. The data collection of village residents to be trained has been conducted by the Department of ESDM.

Regarding electricity access, PLN is committed to improving its services to minimize power outages in Ambon and its surrounding areas. Currently (in 2023), the electricity supply in Ambon and its surrounding areas is supported by the Barge Mounted Power Plant (BMPP) Nusantara-1, with a capacity of 60 megawatts (MW). The community can encourage PLN's commitment to maintaining reliable services by actively voicing their aspirations. Civil society and ombudsman institutions can serve as channels to convey public voices, including those of vulnerable groups.

Chapter IV has discussed the issue of fuel scarcity, which is influenced by infrastructure and coordination-data problems between regional governments and government agencies (OPD) that have not been fully optimized. This problem has been identified in the MALUKU 2022-2050 Strategic Plan for Energy Development (RUED-P), which aims to design better coordination and data systems. Even though this is still a plan, it should be seen as an opportunity. The collaboration between the community and NGOs can work together to encourage the government to realize its energy policy plans.

As mentioned in the previous chapter, the challenge faced by women in Maluku is the dominance of wood as a cooking fuel, which indicates health-related issues for women. There are opportunities that can be developed, such as the commitment to a clean energy transition through biogas. The implementation of biogas has started in Maluku, including in the village of Mamala, Central Maluku (Patty, et al., 2020). The utilization of biogas in Mamala village includes its use for cooking. Permanent livestock pens have been used by farmers in the village. Good practices like this can support women's access to clean energy. Additionally, the Department of Agriculture of the Provincial Government of Maluku has allocated a budget and implemented small-scale biogas waste management programs.

In the previous chapter, it was explained that women's access to electricity management in households and businesses tends to be equal, which can be an opportunity for women. For example, women are involved in determining the electricity capacity and the installation/electrical network in their homes.

Another support comes from the Bappeda program of the Provincial Government of Maluku, which aims to socialize and provide training on renewable energy to the community. Mr. AT, the Head of Bappeda of Maluku Province, expressed this:

> *"The New Renewable Energy program also includes training to provide understanding to the community about what New Renewable Energy is…."* [1]

[1] Interview with Mr. AT, Head of Bappeda of Maluku Province, 16 March 2023.

B. Support for Women's Participation in the Energy

Support for women's participation in this section identifies the survey results that capture women's participation in expressing ideas about electricity utilization in their homes (availability of information and participation in Musrenbang). Interviews with informants also identify policy and infrastructure support for women.

Table 5.1 Support related to conveying ideas for electricity utilization in the home

Forms of support needed by respondents to express ideas about electricity utilization in the home	Male		Female		Total	
	n	%	n	%	n	%
Easy access to information	91	58.7%	86	55.1%	177	56.9%
Clear and understandable information	71	45.8%	70	44.9%	141	45.3%
Asked for opinions	55	35.5%	52	33.3%	107	34.4%
Involved in arranging installation	30	19.4%	19	12.2%	49	15.8%
Involved in electrical maintenance	22	14.2%	12	7.7%	34	10.9%
Do not know	16	10.3%	18	11.6%	34	11.0%
Not involved	5	3.2%	3	1.9%	8	2.6%

Referring to Table 5.1 Support Related to Conveying Ideas for Electricity Utilization in the Home, 55.1% of female respondents stated that easy access to information and 44.9% mentioned clear and understandable information can help women participate in expressing ideas about electricity utilization in the home.

Table 5.2 Support needed to convey ideas for installing electrical devicesin business places

Support Needed to Convey Ideas for Installing Electrical Devices in Business Places	Male		Female		Total	
	n	%	n	%	n	%
Easy access to information	8	80.0%	5	35.7%	13	54.2%
Clear and understandable information	6	60.0%	4	28.6%	10	41.7%
Asked for opinions	4	40.0%	8	57.1%	12	50.0%
Involved in setting up installations	3	30.0%	0	0.0%	3	12.5%
Involved in electrical maintenance	3	30.0%	0	0.0%	3	12.5%

Indeed, according to Table 5.2, 57.1% of female respondents stated that they would convey ideas for installing electrical devices in business places if asked for their opinions. This indicates that the involvement of women needs to be supported or encouraged to be more active in such discussions.

Table 5.3 Support for residents to express ideas/concepts regarding
The use of power generators in social-community activities

Form of support for residents to express ideas/concepts regarding the use of power generators in social-community activities	Male	Female	Total
	(n)	(n)	(n)
	(%)	(%)	(%)
Easily accessible information	81	91	172
	50.9%	54.8%	52.9%
Easily understandable information	77	77	154
	48.4%	46.4%	47.4%
Involved in village/community development planning discussions (Village/Hamlet Musrembang)	40	35	75
	25.2%	21.1%	23.1%
Involved in regular meetings with residents our youth	45	34	79
	28.3%	20.5%	24.3%
Incorporated in village regulations	4	0	4
	2.5%	0.0%	1.2%

Form of support for residents to express ideas/concepts regarding the use of power generators in social-community activities	Male	Female	Total
	(n)	(n)	(n)
	(%)	(%)	(%)
Not aware	30	36	66
	18.9%	21.7%	20.3%
Do not require support	10	11	21
	6.3%	6.6%	6.5%

According to Table 5.3, female respondents stated that the forms of support for their participation in expressing ideas/concepts regarding the use of power generators in community social activities are easily accessible information (54.8%), easily understandable information (46.4%), and involvement in village/community development planning discussions (21.1%). This indicates that women have opportunities for participation but require accessible information and involvement in village discussions. The support for women to participate in training programs can also be encouraged by the village government. Village Chief NF from Erersin stated:

> *""If there are any courses or training programs organized by the Provincial or Central Ministry of Energy and Mineral Resources, the Village Government can encourage women's involvement in order to operate the Solar Power Systems (PLTS) in the future. So, as the Village Government, we can support and encourage women's participation."*[2]

The participation of women in the solar cell project for water pumps in the village also involves women working together in installing the water pipeline. Equal opportunities between men and women can support women's participation. Mr. MK, the Deputy Village Secretary of Soya, stated:

> *"Everyone, whether women or men, is involved in the work. For example, the installation of the solar cells is done by experts from the relevant institutions or the Public Works Department. But for tasks such as building ponds and installing pipelines, both men and women work together. There is no differentiation. Everyone carries stones and works together."*[3]

In a different context, the participation of women in the energy sector, such as in PLN (state electricity company), requires support in the form of affirmative actions and infrastructure. Survey respondents from PLN stated that the company provides equal rights to women to be more productive in fulfilling their roles in career, family, and society, despite having dual roles as mothers and working women. Support is provided through socialization, workshops, technical guidance, and other means. Ms. EK, a PLN official in the Maluku Area, mentioned support for infrastructure for women:

[2] Interview with NF, Village Head of Erersin 26 March 2023.
[3] Interview with MK Village Secretary of Soya, 17 March 2023.

"So, in terms of support from the company, there is full support with the implementation of gender mainstreaming. As PLN employees, now we have a simple system where attendance must be done online, and if there are menstrual periods, we are allowed one day off per month. If rest is deemed necessary, it is allowed. That is one form of support from the company, mainly related to office work. In the future, as I attended a seminar on 'Srikandi PLN' (PLN Heroines), PLN mentioned that they will pay more attention to specific needs of women, such as providing lactation rooms or breastfeeding rooms... In the future, they might be designed first at the regional office with a larger number of employees, which would be more than us. Special nursing rooms were suggested during the discussion. For example, if we, as women, have official duties outside, and if we have families and children, usually children become a factor that prevents us from attending training. In the place where we learn, a space will be provided where an employee can bring their child and caregiver, and the mother can continue her learning activities while the child is here. Because if the child doesn't come along, the mother's mind will wander. So, in the future, PLN will reach a stage where this will no longer be an obstacle. If my child is still young or whatever the situation is, they can be brought along. PLN can facilitate that."[4]

Note: "Srikandi PLN" is a program initiated by PLN to empower and support the development of women employees within the company.

Summarizing the findings above, it is evident that policies and affirmations are needed for women. Policy support and affirmations can encourage women's participation and careers in the energy sector.

C. Support for Women's Control in the Energy Sector

Support for women's control in the energy sector is facilitated through advocacy work by non-governmental organizations (NGOs). There are various NGOs in Maluku Province that are concerned with women's issues. Although there are no specific NGOs focusing on energy issues, advocacy and networking efforts can empower women to actively participate and have a role in decision-making processes to prevent male domination. In addition to advocacy support from NGOs, women also need to have sufficient capacity to actively voice their needs. Ms. ZK, an activist in Maluku, stated:

"So, there are various consortium networks created to promote this among Maluku women. We work together with NGOs that emerged at that time, with a shared vision. Each individual can work from their respective regions, but we work together.... Regardless of the existing structures, especially the customary ones, based on my experience in the field, I see that it ultimately comes back to women's capacity. No matter how much space is given to us, if our capacity is not strong, it becomes a barrier on its own, in addition to the existing barriers."[5]

[4] Interview with Ms. EK, PLN Maluku Official, 17 March 2023.
[5] Interview with Ms. ZK, Maluku women's activist, 8 March 2023.

In Chapter Three, Table 3.4 shows that gender-based behavior has indicated almost equal positions in determining household energy sources. This indicates the potential for gender equality at the domestic level. Therefore, women's control in the energy sector can start within the household domain.

D. Support for Women's Benefits in the Energy Sector

Support for women to maximize the benefits in the energy sector is conveyed by various informants and survey respondents. Policy support, both direct and indirect, in various technical sectors aims to enhance women's participation in the energy sector and ensure that women receive benefits.

Corporate Social Responsibility (CSR) programs from PLN and Pertamina for micro, small, and medium enterprises (MSME) managed by women are a form of support to enable women to benefit from the energy sector. Support from PLN's CSR program in the Maluku Area is expressed by Ms. EK:

> *"There are support programs for MSMEs in Ambon, including mentoring programs. We also support women through PKK (Family Welfare Movement) as well as support for female employees. And through CSR, we contribute dragon fruit seeds, and the management is done by the PKK."*

Another support in the energy sector for women to benefit in their daily lives is infrastructure. The form of this support is shown through the presence of solar-powered water pumps and solar street lights found in the village. Mr. MK, Village Secretary of Soya who has experience with solar-powered water pumps that distribute clean water to households stated:

> *"Yes, it definitely helps women's tasks. Here, our village is located on higher ground, while the water source is down below. So, when we used to do laundry, use the bathroom, or get water for drinking, we had to go down below. But now, with the water pump, we can simply turn the tap and the water flows into our homes. It is very helpful."*

Another form of infrastructure support is PLN's commitment to improving 24-hour electricity services. This is undoubtedly a form of support to ensure that the development of the energy sector benefits the quality of women's lives. Ms. EK from PLN Maluku Area stated:

> *"That's what we consider after evaluating this system's increased electricity consumption. We need to prepare by adding more generators and expanding the network. Our network can handle daytime usage, but for 24-hour service, we have to ensure that the network is reliable. We conduct evaluations to make sure the system can operate 24 hours a day because there is a demand from the community and our regional council has stated that it should be available 24 hours. We hope, step by step, as a business entity, we strive to increase electricity consumption and generate higher revenue for the company.*

We want everything to be available 24 hours, but due to logistical limitations and the nature of our island region, it will gradually be achieved."[6]

Policy and infrastructure support is driven by women in strategic positions and decision-makers. This can be seen from the efforts of Ms. Mercy in urging the local government to have strategic policies for continuous power generation. Ms. Mercy stated:

"...in this program, we urge the ESDM (Ministry of Energy and Mineral Resources) to restructure. When the solar power project, for example, is completed and ready to be handed over to the local government, it should be accompanied by a handover system, including how it will be managed and maintained in the long term. Secondly, capacity building is essential. If there are daily breakdowns, the daily operators should be trained according to the manual book, so they know what to do when something breaks. They shouldn't have to call technicians from Jakarta to come. However, if the damage is severe and systemic in the installation, the ministry itself opens up opportunities for technicians to be dispatched directly from Jakarta to assist local operators. But not all local governments follow this approach. It's an ongoing experiment and progress. They have integrated management teams, trained two operators, even at the district level. They have funding schemes for maintenance at the minimum level to preserve the environment and so on. This is something that should be adopted by other districts and cities. We expect all the assets that are handed over to be managed properly."[7]

Policy and infrastructure support will address the challenges faced by women in accessing electricity, which in turn affects their energy utilization. Ms. Mercy also expressed:

"It turns out that with solar panel poles, the community realizes that it provides bright street lighting. As a result, every night they clean the area around the streetlights and use it as a place for collective learning. Mothers sew, weave, and work under the light while their children study. This helps women become familiar with new technologies so that they are not technologically challenged. They also understand that there are many energy sources, not just fossil fuels, and that electricity can be generated from solar power."

Strategic support at the policy and infrastructure level, especially in renewable energy, can improve the quality of life for women. The hope is that by experiencing better benefits, women can become more critical advocates for gender equality and justice.

In addition to support through national legislative efforts, there are also initiatives by representatives in the Regional People's Representative Council (DPRD) of Maluku to promote new renewable energy policies and the utilization of new renewable energy for the well-being of society. The commitment to encouraging women's participation in energy policies in

[6] Interview with Ms. EK, PLN Maluku Area Official, 17 March 2023.
[7] Interview with Ms. Mercy Barends, 5 May 2023.

Maluku is conveyed by Mr. JH, Chairman of Commission II in DPRD, who stated:

> *"We, in DPRD, are also working to propose several Regional Regulations to position women and their roles in the energy sector. We must provide opportunities for women."*[8]

In addition, members of the Regional People's Representative Council (DPRD) also make efforts to educate the public about renewable energy and its utilization through their aspiration funds. Mr. JH stated:

> *"We cannot always rely on fossil energy sources such as oil and coal, as these resources will eventually deplete. That's why we invite the community, we educate them to not solely depend on them, like using kerosene and others for household needs. Instead, we encourage the use of solar energy for electricity. Recently, in MBD, some agricultural programs are powered by solar energy."*

> *"Regarding electricity and related matters, every year some members of the council have aspirations, and they provide assistance such as solar-powered lamps. We distribute Solar Power Panels to the community because we cannot solely rely on the government for support."*

[8] Interview with Mr. JH, Chairman of Commission II DPRD Maluku Province, 18 May 2023

Chapter VI
Conclusion & Recommendation

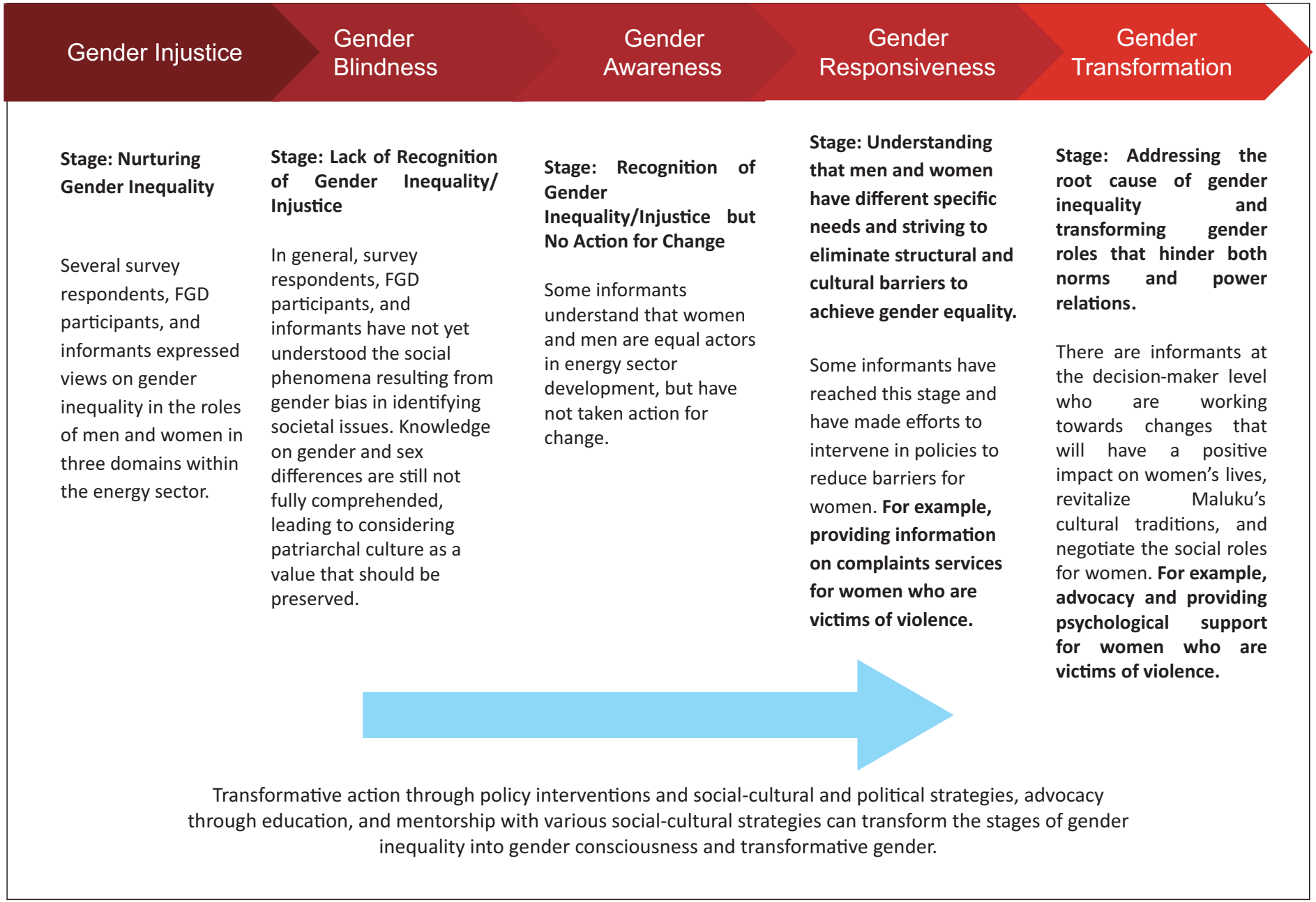
Conclusion

Gender and energy have not yet become integral parts of national and regional regulations, including in Maluku Province. The kinship system in Maluku, which is generally patrilineal, has the potential to cause stigmatization, subordination, stereotypes, and discrimination against women. However, there have been dynamics since state intervention in traditional institutions that still strongly adhere to patriarchal culture through regulations. The Village Law No. 6 of 2004, Law on the Ratification of the Convention on the Elimination of All Forms of Discrimination Against Women No. 7 of 1984, Law No. 12 of 2005 on the Ratification of the International Covenant on Civil and Political Rights, and Presidential Instruction No. 9 on Gender Mainstreaming in National Development in 2000. Traditional institutions that are manifested through *negeri/ohoi* accommodate regulations that involve women in all aspects of life.

There have been various regulations on gender mainstreaming and protection for women in various districts and cities, but they have not guaranteed gender equality and justice for women in Maluku. The government's concern is still primarily focused on gender-based violence, and thus, the issue of energy and women has not been fully integrated into all areas of development.

Summarizing the Gender Transformative Approach (GTA), this study captures various positions in understandings, and gender practices in daily life that impact women's access, participation, control and benefits in the energy sector. Through the GTA approach, the author identifies that respondents and some informants are still "gender-blind", which means they lack the ability to recognize gender differentiation, inequality, and injustice in the energy sector. There are differences in gender conditions among various purposively sampled villages. For example, in Soya Village, the research informants and respondents demonstrate good gender knowledge and attitudes. On the other hand, in villages such as Nuanea, Gogorea, Klis, and Tihu, interview informants and FGD participants tend to exhibit a gender-blind perspective. Factors such as education, societal heterogeneity, customs, and access to information contribute to variations in individual and community gender knowledge and attitudes.

Diagram 6.1 Summarizing the positions of the transformative gender approach



In addition, gender roles and participation in the energy sector based on APKM is presented through the following diagram:

Diagram 6.2 Gender Roles and Participation in the Energy Sector Based on Access, Participation, Control and Benefits (APKM)

Access	**Participation**	**Control**	**Benefits**
Limited access to energy, especially in productive and social community sectors in island regions. Women have access to the use and management of energy within the households. Discussions take place at the household level among male and female family members. Lack of information among women about energy, including energy management, maintenance, and renewable energy. Limited access to renewable energy due to unsustainable power generation. Lack of information on the harmful effects of fossil fuels and firewood on human health.	Minimal participation of women in initiating energy development and renewable energy. Women's careers in the energy sector are still limited due to patriarchal culture and women's dual burden, hence requiring support in regulations (affirmative actions) and infrastructure. Women are not involved in decision-making processes to determine energy sources for production, reproduction and social-community activities.	Women are greatly underrepresented in controlling the development in the energy sector Opportunities for women to participate in decision-making and engagement in Musrembang (village development planning), as well as training related to energy, are still limited and often perceived as mere formalities.	Women are the primary beneficiaries of renewable and non-renewable energy, although there are still challenges in accessing energy in practice. Women still have limited opportunities to benefit from renewable energy. Women have yet to benefit from clean energy. Women have limited opportunities and benefits from training organized by the government, NGOs, and companies.

Recommendation to:

Government/Local Institution

- Gender mainstreaming in the energy sector should be an integral part of regulations, policies, and programs at the regional level.
- Cross-sectoral/multi-sectoral coordination is important, with the Secretary and Regional Development Planning Agency (Bappeda) taking the lead, designating supporting agencies such as the Agency of Energy and Mineral Resources (ESDM), Agency of Women and Children Empowerment (DP3A), and Agency of Village Governance as the main supporting agencies for gender and energy policies. Other relevant agencies, such as the Agency of Agriculture, Education & Youth, Micro, Small and Medium Enterprises (UMKM), Cooperatives, Public Works and Spatial Planning (PU Perkim), Labor, Health, and others, should also be involved.
- Local governments that do not have gender-responsive regulations and policies should develop them, including at the village level.
- Capacity strengthening programs for the bureaucracy to design gender-responsive policies.
- Optimize the Musrembang forum and require women's representation in decision-making processes.
- Integrate energy issues into gender focal point activities, especially renewable and clean energy
- Affirmative action policies for women: Affirmative action policies for women in recruitment in the energy sector should be implemented, involving the Secretary and Regional Personnel Agency (BKD).
- Cross-departmental programs: Collaboration between Department of Energy and Mineral Resources (ESDM), Department of Women and Children Empowerment (DP3A), and Department of Health for education on clean energy. Forums such as Family Welfare Movement (PKK) and Integrated Health Services (Posyandu) can be used as educational platforms.
- Cross-departmental coordination for capacity strengthening programs on institutional management of renewable energy for Village-Owned Enterprises (BUMDES). Relevant departments include DP3A, PMD, Department of Cooperatives, UMKM, Department of Agriculture, and others.
- Cross-departmental coordination, including DP3A, PMD, and Department of Energy and Mineral Resources (ESDM), for capacity strengthening programs on the energy sector's institutional management for village heads, Village Consultative Boards (BPD), Village Apparatus, PKK, and youth organizations (*karang taruna*)
- Establish solid coordination between provincial and local governments to assess energy needs and mitigate energy scarcity.
- Maintain solid and sustainable coordination between the provincial government, especially the Department of Energy and Mineral Resources (ESDM), and the district/city governments to monitor the sustainability of installed solar power systems (PLTS) and micro-hydro power plants (PLTMH).
- Maintain solid and sustainable coordination between the provincial government, especially the Department of Energy and Mineral Resources (ESDM), and the district/city governments to strengthen the institutional capacity of existing solar power

systems (PLTS) and micro-hydro power plants (PLTMH) in villages
- The district/city governments, through the Department of Community Empowerment and Village Governance (PMD) and Public Works, Housing, and Settlement Area Department (PU Perkim), should strengthen capacity and monitor the implementation of Sustainable Development Goals (SDGs) in villages, particularly SDGs 5 and 7.

Community Leaders

- Advocate for gender equality in society through various forums, such as religious gatherings at churches/mosques/etc. and others.
- Cultural strategies: Community-based mentoring and support for knowledge and practices related to "gender equality and justice."
- Establish partnerships with energy sector companies such as PT. Pertamina for education and training programs for their communities, particularly women's groups.

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- Encourage local governments to design regulations and policies for gender mainstreaming in the energy sector.
- Provide support to the Regional Secretary (Sekda) and Regional Development Planning Agency (Bappeda) in developing the Regional Medium-Term Development Plan (RPJMD). The RPJMD for the Maluku Province will end in 2024 and serves as a reference for revising the Regional Energy Plan (RUED), making the RJPMD development process strategically important for gender mainstreaming in the energy sector.
- Encourage local governments at the district/city level to establish Local Government-Owned Enterprises (BUMD) that operate in the energy sector. Note: The scope of the use of solar power systems (PLTS) or renewable energy extends beyond just lighting to include power generation, heating, and cooling.

Advocacy and cultural strategies:

- Expand cooperation with various government agencies such as DP3A, PMD, Department of Agriculture, Department of Education, Youth and Sports, PU Perkim, UMKM, and Cooperatives for gender mainstreaming in the energy sector. For example, the use of solar power systems (PLTS) in the agricultural sector, livestock farming, water management (water pumps), and the utilization of renewable energy for UMKM. Implement initiatives like "Renewable Energy Goes to School" (for high schools and vocational schools), "Girls Talk on Renewable Energy," scientific research competitions for teenagers with a renewable energy theme, "Youth Careers in Renewable Energy," "Renewable Energy Warriors" for teenagers, vlog/reels/podcast/tiktok video competitions on renewable energy for all for high school/vocational school students, and provide assistance to teachers in developing learning modules for the Pancasila student profile project, specifically focusing on the theme of "sustainable lifestyle and local wisdom." There are numerous opportunities that can be explored to promote gender mainstreaming in the energy sector.
- Provide assistance to the Agency of Village

and Community Empowerment (Dinas PMD) in strengthening the capacity of village heads to develop and identify Village Government Work Plan (RKP) and Medium Term Development Plan (RPJM) in line with the Village SDGs (specifically SDG 5: Women of the village's involvement and SDG 7: Village with clean and renewable energy).

- Support DP3A in designing Regional Action Plan (RAD), gender focal point.
- Support the Regional Secretary (Sekda), Regional Development Planning Agency (Bappeda), and the Education, Youth and Sports Agency in designing a Youth Service Action Plan (RAD) that incorporates perspectives on renewable energy and climate change mitigation.
- Assist the Agency of Village and Community Empowerment (PMD) in strengthening the institutional capacity of Village-Owned Enterprises (BUMDES) in energy management at the village level.
- Establish partnership with universities for programs such as "Merdeka Belajar Kampus Merdeka/MBKM" (Independent Learning, Independent Campus), where student organizations like UGM's Energy Council, MBKM program "Energy Village" □ this collaboration involves not only engineering faculty, but also various other disciplines. Source: https://ugm.ac.id/id/berita/21867-mahasiswa-ugm-inisiasi-desa-energi
- Implementing cultural strategies targeting adolescents, students, and university students is important, recognizing their potential as change makers in society.
- **Cultural strategy**: Collaborate with local governments, churches, religious organizations such as NU, Muhammadiyah, GPM, and others to design discussions and training on "inclusive energy". The term inclusive would be more welcoming when cooperating with religious organizations.
- **Advocacy and cultural strategy**: Provide mentorship to rural communities, especially women, through:
  --> Conducting education on clean energy in villages with potential for renewable energy, such as biogas in Southwest Maluku, and villages with indigenous communities.
  --> Implementing affirmative action policies for women participants when providing support at the village and district levels to establish "women's agency". The initial stage of affirmation can begin by ensuring women's involvement..
- **Advocacy and cultural strategy:** Collaborate with the Agency of Village Community and Women Empowerment and Child Protection (Dinas PMD & DP3A) to strengthen the capacity and leadership of women in forums such as PKK (Family Welfare Movement), women's community, Karang Taruna (Youth Organization), and other youth organizations. Advocacy and cultural strategy: Collaborate with the Agency of Village Community and Women Empowerment and Child Protection (Dinas PMD & DP3A) to strengthen the capacity and leadership of women in forums such as PKK (Family Welfare Movement), women's community, Karang Taruna (Youth Organization), and other youth organizations.
- Increase the number of training programs for women, especially for participants from vulnerable groups such as poor women, single mothers, and individuals with diverse gender identities.
- **Advocacy and cultural strategy**: Support local governments in strengthening institutional capacity at the village level, particularly those managing solar power systems (PLTS) and micro-hydro power plants (PLTMH), and

micro-hydro power plants (PLTMH), and involving women to ensure the sustainability of PLTS/PLTMH.

- Assist village communities through Village-Owned Enterprises (BUMDES) and Family Welfare Forums (PKK) in institutionalizing PLTS and fostering the development of creative economy in line with the village's potential.
- Collaborate with women-led NGOs working on women's rights issues to educate and advocate for gender mainstreaming in the

Civil Society (NGO)

Advocacy and cultural strategies for gender equality and justice:

- Advocate for gender equality and justice in society through various forums, such as through Family Welfare Forum (PKK), Women's MSMEs (UMKM), and other women's forums to encourage women to pursue a career in the energy sector.
- Advocate for policies to local governments for gender mainstreaming regulations in all sectors, including at the village level.
- Advocate for policies that support women in the energy sector, such as leave allowances for menstruation, sexual abuse, sexual assault, support for women and children (providing lactation rooms, childcare facilities).
- Provide public speaking training for women's groups to enhance their confidence in expressing their opinions.
- Provide mentoring and capacity building for women to actively participate in village deliberation forums and village development planning (musrembang).
- Strengthen discourse on women's leadership in the media, for example, through advocacy articles in local media, podcasts, Instagram Live sessions, etc.
- Assisting local governments in improving the energy mix with a focus on increasing the share of renewable energy, especially in villages that lack adequate electricity supply and where electricity is not available 24 hours a day.
- Capacity building and mentoring for women, female-headed households, and people with disabilities to enhance their ideas and skills for improving the creative economy.
- Collaborate with community leaders to advocate for the fulfillment of people's rights to energy as a basic service. This perspective is important as local governments tend to prioritize education and healthcare as basic services, while energy is not yet recognized as a fundamental right. Several studies have shown the absence of teachers in schools located in remote areas due to the lack of electricity and clean water, which are essential daily needs.

Recommendations for future research by NZMATES

- Conduct further research in villages categorized as "best practices," which have effective institutional capacity to sustainably manage renewable energy systems like PLTS/PLTMH.
- Explore the roles and involvement of women in these "best practice" villages to understand their access, participation, control and benefits (APKM) in the renewable energy sector.
- Recommend using qualitative case studies as a research approach, conducting in-depth interviews with informants, and direct field observations to gain insights into potential barriers and opportunities.
- Utilize the "thick-description" approach to obtain comprehensive and in-depth descriptions.
- Employ snowball sampling technique for informant selection.
- Focus on institutional aspects and gender perspectives in subsequents studies.

Research Limitations:

- The research was conducted in eleven villages in the Maluku Province using a quantitative survey method. Qualitative data collection through FGDs and KIIs was conducted in six villages. The limitation of collecting qualitative data in only six villages resulted in a lack of in-depth information regarding the knowledge and practices of Gendered Energy Access, Participation, Control, and Benefits (APKM) among women in the energy sector in the other five villages. If researchers could visit the field directly, more in-depth data could be obtained, and data triangulation could be conducted.
- Data collection in the field, including surveys, FGDs, KIIs, and observations, was conducted nearing the month of Ramadan. This required careful planning of data collection timing in each location, taking into account the majority religion of the informants in each location, so as not to disrupt their religious practices during Ramadan. FGD and KII activities could be conducted in the late afternoon before iftar (breaking the fast) and at night after tarawih prayers, often lasting until late at night.
- The allocation of time for online KIIs conducted before and after Eid was a challenge, as the researcher had difficulty securing a convenient time with the informants. Scheduling meetings with informants proved to be challenging, and rescheduling was often necessary. Most informants were officials from government agencies (OPDs) who were busy in the days leading up to Eid and were still difficult to reach after Eid.
- The number of respondents with disabilities was less than 4.7%, and they were not decision-makers in their households. The participation of people with disabilities in this research was also limited, resulting in a lack of in-depth information regarding the Gendered Energy Access, Participation, Control, and Benefits (APKM) of people with disabilities in the energy sector. For future research, it is recommended to involve informants from the disability community qualitatively.

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