Women's Role in Village-Based Renewable Energy Development:
Assessing the Challenges and Supports

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ABSTRACT
This paper discusses the challenges and supports for women's role strengthening in village-based renewable energy development. The discussion is important because in practice women's role in energy policy has been marginalized. Meanwhile, based on our research, women in village level have big potential to be main actors in renewable energy development, despite their supporting/secondary position in family's economy. This paper is based on qualitative research in Rembang regency, Central Java, in the case of biogas development, to identify challenges and supports for further women's involvement in renewable energy development in village level. Based on our research findings, women have long been important part of cattle production and agriculture in village community, while at the same time leading in household management. Therefore, women are knowledgeable in terms of connecting "cage", "rice field", and household matters, something which men are not always aware of. However, village and regency's political structure in village level, has been disabled the further access and participation of women, so that only limited benefit can be acquired. Meanwhile, the regency is known to have big potential for being biogas centre in the eastern part of Central Java. In the mid of local energy pressure, the local government, including village government, needs to be responsive towards local potentials, to avoid crises in the future, and involve women as sparing partners in the mission.

Keywords: *Renewable Energy, Women Participation, Village Sustainable Development*

1. INTRODUCTION

This paper discusses challenges and supports for women's role strengthening in village-based renewable energy development in Indonesia. This paper is based on a case study in Rembang regency, Central Java, where potential to develop biogas is promising, given the live stocks that are available in the region, but poverty remains problem due to lack of access and facilities [1].

Women are still marginal in the study of energy and renewable energy [2], and energy policy and politics are often depicted as gender neutral [3]. Meanwhile, energy and renewable energy is very close to the need of women, and women are inseparable part of the policy, given their roles in the households, as well as in local economy. Yet, political structure, whether in local or in national, does not always support for further involvement of women in energy policy and development [4].

This paper intends to identify challenges and supports for village-based renewable energy development, using biogas as a focus of discussion. The concern on renewable energy, including those that considers women as inseparable part within, is getting important, given the government's rising concern on energy mix.

Indonesia has started to have concern on renewable energy development, and set up a target of energy mix by 2025 and 2050, to reach 23 percent and 31 percent respectively, as emphasized in National Energy General Planning (Rencana Umum Energi Nasional, abbreviated as RUEN) 2017, based on Presidential Regulation No. 22/2017. The General Planning document itself is a follow up of the mandate of Law No. 30/2007 on Energy article 12 point 2 and National Energy Policy (Kebijakan Energi Nasional, abbreviated KEN) as emphasized by Government Regulation No. 70/2014.

Since the launch of the laws, some policy initiatives have been exerted with the support of the Ministry of Energy and Mineral Resources (MEMR) and some other related stakeholders, including profit and non-profit sectors. The MEMR, for instance, has launched program

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for supporting the development of renewable energy sources in village level with the help of the provincial and regency government. On the other hand, non-profit organization like Hivos, Yayasan Rumah Energi, and their counterparts have taken part in supporting the development policy as through the program of biogas digester development in some local areas throughout Indonesia with various schemes. The policy also has encouraged the birth of some business initiatives that push renewable energy as their main products. All of these moves are supposedly able to support the achievement of the national target of energy mix, that meant to achieve 2025 and 2050 energy mix targets.

However, despite the strong assertion on the national target for energy mix, achievement is not as expected. National energy supply is still dependent on the fuel-based materials, while renewable energy has not been strongly mainstreamed in the national energy policy implementation strategy. The high dependence on the government subsidy, which lower the price for the citizen to spend on their daily energy needs, as through fuel subsidy, gas subsidy (for household cooking), and electricity subsidy are mentioned to be the bottlenecks for the weak political support towards the transformation to a more sustainable energy consumption. Yet, high subsidy has been seen as a burden for national government budget, not to mention, international concern on the environmental issues.

The problem is, although concern to speed up the achievement of energy mix, as well as the development of renewable energy potentials, is getting stronger, national government seems to lack of assertion on the participation of the public, except the business sector. It is because, the government believe that pushing energy mix needs big efforts, in which only companies that may have capabilities to speed up the target achievement.

Community is not seen as a crucial part because scope of work of community that can contribute to the achievement of the national energy mix target is seen too little. As a result, participation of community, moreover women, is marginal in the grand design of energy sector. Therefore, so far, strategy to expand the coverage on energy mix is still business oriented, instead of social development and empowerment [5].

Meanwhile, in society, potential to develop renewable energy resources are promising. It is predicted that biogas has potential of up to 32 gigawatt, but only1896.5 megawatt (as per 2020) that has been realized [6]. Up to 2025, it is targeted that Indonesia will have biogas plant b y 5500 megawatt. National Statistics Bureau (2020) identified there are 13 million household running at least an animal husbandry [7]. In 2021, in total there are 18.053.710 cow population, which means high potential for biogas development [8]. This is not to mention poultry potential, pig husbandry, tofu home industry, and palm oil production, which provide raw materials for biogas. Yet, a clear strategy to strengthen the application of renewable energy for household and industry supply has not been priority for the government. Fossil based energy has been very difficult to reduce, due to high reliance of society on it, and poses barriers for wider utilization for alternative energy sources.

All of these state of being brought barriers for further initiatives of renewable energy development. As a result, community participation in grassroot level is not counted as a crucial part within. Up to 2020, only 47,868 household applying biogas digesters as compared to 13 households running an animal husbandry and the total of more than 60 million households (2019) in Indonesia [9].

Equally, women's participation in renewable energy development is not emphasized. Women are hardly seen as crucial part within the policy strategy, although women are amongst the main parts that utilize the energy supply. Meanwhile, women, based on our research, could play important roles in speeding up the adoption of renewable energy sources, as an alternative for community's energy supply [10]. It is because, women run households as main consumers of national energy supply, followed by transportation and industry. Therefore, women's role needs to be underlined to success national energy transformation to be green and sustainable. Yet, it needs conditions and requirement. Therefore, assessing challenges and supports, including those in rural level becomes crucial to support energy policy transformation.

2. RESEARCH METHODS

This paper applies qualitative methods, and is based on field research, conducted in March-June 2022. The research is supported with desk study, as main data collection methods, which rely mostly on regulations as main information sources, as well as report on the biogas research. The research is supported with interviews and observation, conducted in three rural areas, in Rembang regency, including in Pamotan, Kaliori and Kragan. Interviews were conducted to community activists, who are the motor of the biogas program, together with village farmers and women farmers, as well as village government. The data analysis applied interpretative methods in which interview result is given meaning based on policy and political context.

3. FINDINGS AND ANALYSIS

Considering the problem as discussed above, it is important to look at the practice in local level. This paper uses Rembang regency as a case study to illustrate the complexities of renewable energy policy in local level, including within women participation. As a regency with high potential for livestock development, noted with 135.997 new born cows in 2019 [11], Rembang has been a promising region for renewable energy development,

especially for biogas. Moreover, there are still villages situated in isolated areas that are not covered with electricity and gas subsidy program. Biogas is expected to be an alternative for community, who has not gained access for energy sources, as well as for those, who are supposed to cut off their daily energy spending.

Kaliori, a sub-districted being visited, is amongst the first villages to have biogas development project implemented by the Ministry of Energy and Mineral Resources in the regency, since 2011. Meanwhile, Kragan is the next, with the support from HIVOS through Yayasan Rumah Energi (YRE) Indonesia since 2014. Some other sub-district, as Sale and Lasem, are the next, with the support from university and community.

In this case, women are amongst those whose interest is interrelated. Although women's role seem to be secondary or supporting in household's economy, as well as in village community, in fact, women are determining and most affected in rural energy sector.

In national level, although it has been proven that bio-energy is a big potential to support energy mix target achievement, priority is not on this sector. Biogas is seen to be minor for the micro-impact on national target achievement. There is lack of empowerment assertion in the mission of energy mix achievement, that the government merely sees large scale renewable energy sources, run by companies (5000 megawatt or above). Meanwhile, in that micro-level scale, the sense of empowerment and self-help development amongst rural farmers, including women, can be pushed. Yet, large-scale bias in renewable energy policy has hampered community, including women, to take further part in the shaping of national green energy mission.

In addition, based on our fieldwork in Rembang, women are amongst those who are knowledgeable about the impacts of renewable energy adoption in family's economy. Yet, they are hardly heard in family and village's decision making. Therefore, decision towards adopting renewable energy system for families and developing the supporting infrastructure, often left the women out.

As a result, although Rembang is amongst region with high biogas development potential, it has not reached the expected targets, and unable to speed up the achievement of energy mix ambition 23 % by 2025. In addition to the weak recognition for women's voices, local political economy has hampered further adoption of biogas.

The first, in regency level, the regency government has not yet put sustainable development as their mainstream, therefore, program like biogas development is not the regency government's priority. There seems to be lack of awareness towards the benefit of biogas for local energy resilience. Meanwhile, Rembang is amongst the regions that are prone to energy crisis. It often faces lack of water sources, and therefore, industrialization is rather hard to push. Although biogas is more water-saving, as compared to electric steam power plant, it remains not being the regency government's priority choice.

This clarifies us, in regency level, biogas is seen not as an urgent need that needs for a serious attention. Biogas is seen not to be beneficial, unless, it can be utilized as political commodity. As such, awareness that supporting renewable energy development, will mean to support women, has not been mainstreamed in local government's development strategy.

Secondly, adoption of biogas is not easy because of politics within rural elite. As the government distribute the subsidized fertilizer, village government head (currently the former one), who was responsible for the distribution in village level, obliged all the farmers to buy their natural fertilizer, as a requirement. As a result, bio-slurry that was resulted by biogas digester together with biogas producing, is not used by the farmers. In this case, personal interest, just due to the power the elite has, has hampered the women to have a more economical yet sustainable energy consumption.

Based on the above discussion, there are some crucial steps to consider to strengthen women participation in local renewable energy development, including in village level. First of all, there is a need to integrate gender perspective in the grand design of energy policy. In this regards, the government needs to take into account impact of its energy policy to men and women differently. Gender perspective can be asserted in the form of women participation at least in energy policy making and energy policy impact assessment. Secondly, there is a need to make sure that local government understand that support for renewable energy is not only support for a more sustainable living. Further, it also means supports for women to have a more ecologically friendly energy utilization. By integrating such an understanding, strengthening of women participation in local and village based renewable energy with stronger gender equality perspective is expected to develop.

4. CONCLUSION

Based on the discussion above, we can see that rural community, including women, has concern and interest on renewable energy development, based on the potential they have in their rural region. The problem is, in national level, the aspiration for developing renewable energy sources, as biogas, is not sufficiently supported by national energy policy strategy. The national government focuses mostly on large scale energy supply, which can speed up the achievement of energy mix. In local level, adoption of renewable energy, as biogas, is constrained with local politics, that not always see biogas as beneficial. In regency level, politics of budgeting has been the most constraints. Whilst, in village level, the

politics of the elite, has hampered further adoption of biogas and bio-slurry.

AUTHORS' CONTRIBUTIONS

Author conducted research and writing the proceeding paper.

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