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Energy Saving Education in Villages to Support National Energy Stability and Stability of Household Expenditures

Muhammad Hazmi[1*], Andriya Risdwiyanto[2], Jemadi[3], Bambang Sugeng Dwiyanto[4], Djoko Wijono[5]
Universitas Muhammadiyah Jember, Indonesia[1]
Universitas Proklamasi 45, Indonesia[2345]
Email: mhazmi.hazmi@gmail.com[1*]

Abstract

Mojogemi Village is one of the villages in Sukowono District, Jember Regency, East Java. Geographically, Mojogemi Village is very strategically located in the middle of Jember Regency. The population in Mojogemi Village is around 3,500 residents. When discussing with the Village Head and Mojogemi Village officials, Sukowono District, they encountered a number of problems regarding the wasteful use of electrical energy in the village that the people of Mojogemi Village, Sukowono District are currently facing. The problem in question is the lack of information regarding Energy Saving Education in Villages to Support National Energy Stability and Household Expenditure Stability in Mojogemi Village, Sukowono District, Jember Regency, East Java. To overcome this problem, an alternative solution that can be applied is for the author to discuss with village officials and suggest the use of alternatives to save electrical energy at this time to be able to overcome Energy Stability and Household Expenditure Stability in Mojogemi Village, Sukowono District, Jember Regency, East Java, so that Mojogemi Village can become a Villages that save energy, especially electrical energy, can stabilize energy and stabilize village household expenses and become environmentally friendly. Therefore, the aim of this community service is to see the potential for energy stability and household expenditure stability in the village in improving community welfare by saving electrical energy in Mojogemi Village, Sukowono District, Jember Regency, East Java. To obtain the data used were observation and literature study. This service activity is an educational effort to increase Energy Saving Education in Villages to Support National Energy Stability and Household Expenditure Stability in Mojogemi Village, Sukowono District, Jember Regency, East Java. As a manifestation of the author's thoughts, there are several efforts and breakthroughs offered, namely providing education on the use of energy saving to overcome the waste of electrical energy in Mojogemi Village, Sukowono District, Jember Regency, East Java so that it can support National Energy Stability and Household Expenditure Stability and become a solution for village communities. Mojogemi has its right as a citizen to obtain economical and environmentally friendly electrical energy.

Keywords : *Mojogemi Village, Electric Energy, Energy Saving*

INTRODUCTION

Indonesia is the country with the 12th most wasteful use of electrical energy in the world. Electrical energy consumption in Indonesia is 316 TWh per year. The types of electrical energy used in Indonesia are coal, natural gas, gasoline, diesel and LPG (Lintang, 2024). The Ministry of Energy and Mineral Resources (ESDM) noted that the realization of electricity consumption in 2023 in Indonesia skyrocketed by 14% when compared to the realization in 2022. Throughout 2023, actual electricity consumption will reach 1,337 kWh per capita. This realization is calculated to be up to 14% higher than electricity consumption in 2022 of 1,173 kWh per capita (Muliawati, 2024).

A country's electricity consumption is one of the parameters that we can use in assessing economic growth. As a country's economy grows, its electricity consumption will also increase. The recent pandemic conditions have caused the economy to experience a slowdown. The result is that Indonesia has a surplus of electricity. Existing power plants are not in line with adequate consumption (Saputra, 2022).

The consumption of electrical energy as a non-renewable resource is increasing, which is not in line with the availability of electrical energy sources. This allows for scarcity of fossil resources as fuel for power plants if they are not managed effectively and efficiently. The rapid growth in energy consumption is amidst a decline in the number of fossil energy reserves which currently remain the main source of electrical energy in Indonesia (Napis, *et al.,* 2023). The need for electrical energy among society is increasing every year in line with developments over time. Energy is the main source of needs in the current era of globalization (Rajagukguk *et al.,* 2015). To overcome this, Indonesia is now starting to experience progress in switching to renewable energy after successfully building the Citra Floating Solar Power Plant with a capacity of 192 megawatt peak (MWp). For information, the Citra Terapung Solar Power Plant has been named the largest Solar Power Plant in Southeast Asia (Lintang, 2024).

According to Azhar *et al.* (2018) Electrical energy as one of the results of utilizing natural resources and technology has an important role for the country in realizing the achievement of national development goals. Electrical energy seems to be society's primary need. This shift in energy needs in people's living needs will become real in the future with advances in technology, such as the development of electric stoves, electric means of transportation, and other means of meeting human needs that are based on electricity as the driving force (Adellea, 2022).

According to Muljono, *et al.* (2022) The increasing need for electrical energy can influence behavior, habits and lifestyles which tend to be wasteful due to work demands and daily activities. A lifestyle that does not save on electrical energy consumption will gradually threaten the availability of electrical energy sources for future generations. People are not yet aware of the culture of saving electrical energy at home, both in using it and choosing tools that tend to waste energy.

The per capita electricity consumption level of the Indonesian people is quite high compared to other countries. The electrical energy crisis is a threat amidst the increasing need for electrical energy. This is in contrast to people's behavior or habits that are wasteful in the use of electrical energy. This situation is a concern for the community service activity team to provide education on the culture of saving electrical energy for the next generation who will maintain or continue energy sovereignty in the future (Napis*, et al.,* 2023).

According to Fahriannur *et al.* (2017) A clear understanding among the public regarding the consumption of electrical energy used will provide them with new awareness of the efforts that can be made to save energy. Electricity is a basic human need. Electricity is a window to civilization towards the progress of a nation. With electricity, teaching and learning activities, communication, transportation and health services, as well as the development process can run smoothly. The results of sustainable development will be enjoyed by both the present and future generations (Pebriyanto, *et al.,* 2023).

The condition of society is not yet aware of the importance of saving electrical energy, due to several factors, namely understanding electrical energy, how to save electricity, choosing economical and environmentally friendly lamps or electronic devices, as well as the

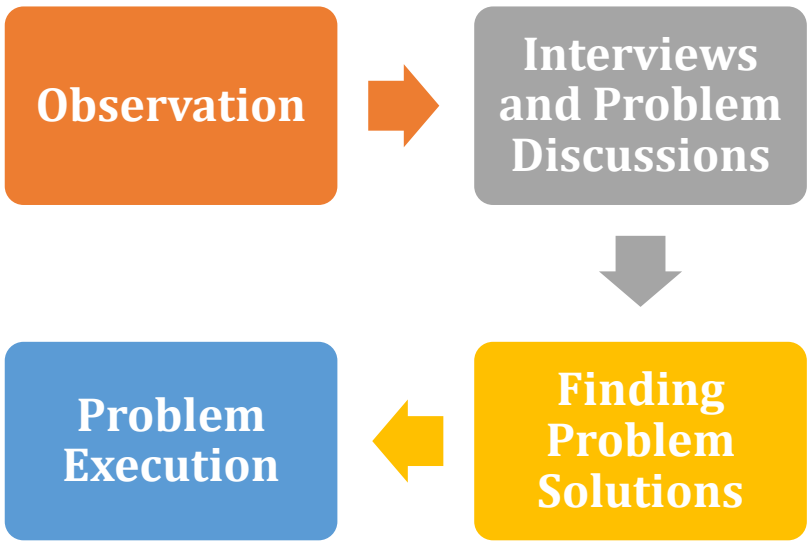
problem of wasteful behavior towards electrical energy. Therefore, it is important to take steps to save electrical energy through education. Energy saving is a behavior that a person can get used to as a form of preserving the environment and not wasting electricity (Abidin *et al.*, 2021).

When the author carried out community service in Mojogemi Village, Sukowono District, Jember Regency, East Java, the author encountered problems experienced by the community in the village, namely the lack of information and education regarding electrical energy so that the behavior and habits of the village community were not economical in the use of electrical energy. This will become a big problem, if not controlled, resulting in increasing usage costs. The use of the type and amount of lamp power also receives less attention.

Therefore, the author believes that by holding socialization about Energy Saving Education in Villages to Support National Energy Stability and Stability of Household Expenditures in Mojogemi Village, Sukowono District, Jember Regency, East Java, this can increase knowledge about electrical energy which is very lacking in formal education. so that residents or young people do not understand how to save electrical energy. Knowledge and understanding of measuring and calculating the cost of electrical energy consumption is also a problem faced by partners. This will have an impact on behavior or attitudes that do not save electrical energy. Knowledge of simple measurements and calculations is given to parents and young people so they understand the costs they have to pay per day, per week and per month. Citizens and the younger generation who do not understand the measurement and calculation of electricity costs will be apathetic, resulting in wasteful or inefficient attitudes or behavior regarding the use of electrical energy in various activities.

METHODS

Table 1
Problem discovery and problem solutions



During discussions with members of village officials, the community and teenagers in Mojogemi Village, Sukowono District, Jember Regency, East Java, the method of activity carried out was theory and direction to the local community and introducing the benefits of saving energy which could overcome wasteful electricity use in the village. From the observations made, it can be concluded that the public does not fully know that the benefits of energy-saving methods can overcome the waste of electrical energy. The problems presented in this method are such as:

1. Benefits of saving electrical energy
2. Solutions on how to overcome the waste of electrical energy in Mojogemi Village, Sukowono District, Jember Regency, East Java.

The important role of the village government and local communities in helping overcome the waste of electrical energy by using methods to save electrical energy properly and maximally, so that they can provide knowledge and input regarding how to overcome the waste of electrical energy in the village. Village residents can also reduce the increasing costs of electricity usage and can create Energy Savings in the Village to support National Energy Stability and Household Expenditure Stability.

RESULT AND DISCUSSION

This community service activity is carried out as a form of realization of the government's grand plan to save energy, especially electrical energy to support National Energy Stability and Household Expenditure Stability in the village by providing insight, guidance, guidance and assistance to village residents, the younger generation in Mojogemi Village, and Mojogemi Village devices which emphasize setting patterns, behavior and a culture of saving electrical energy in electronic devices in people's homes in Mojogemi Village, Sukowono District, Jember Regency, East Java. This activity is in the form of outreach and is carried out through outreach seminars to the people of Mojogemi Village.

This Community Service Activity carries the theme "Energy Saving in Mojogemi Village to Support National Energy Stability and Household Expenditure Stability". The activity began with a quiz session for 30 socialization participants in Mojogemi Village, Sukowono District, and the results showed that >55% of the village community had never received information about saving electrical energy. Then it was continued with a presentation of material about what the concept of Saving Electrical Energy is, its positive and negative impacts, preventive measures and ways to overcome electricity waste in Mojogemi Village, Sukowono District. Then continued with a 30 minute question and answer session. Before ending the activity, another quiz was held. Based on the quiz conducted at the end of the session for participants, the results showed that there was an increase in knowledge about saving electrical energy and preventing electricity waste after the education was carried out. The socialization participants were able to answer questions asked by the educational facilitator correctly.

The activities carried out went well and smoothly where the participants understood that the idea of an energy saving culture must begin to be instilled by each individual in the smallest sphere of life, namely in the household. In other words, the realization of this activity has achieved its main objectives, namely: public awareness, energy saving culture, and efficient use of electricity in the household environment. This can be seen from the enthusiastic questions and answers from the community when community service activities are being carried out or when the community service team is presenting outreach material.

Climate change and the global energy crisis have greatly driven the need for the development of a more sustainable energy system. Limited fossil energy resources and the negative impacts resulting from their use have encouraged increased use of new renewable energy sources, such as solar, wind, hydro and biomass energy. New renewable energy sources offer great potential in reducing greenhouse gas emissions and dependence on fossil fuels (Noor, *et al.,* 2023).

According to Redi, *et al*. (2021) As regulated in Article 33 paragraph (3) of the 1945 Constitution, where this Article contains 3 (three) important elements, namely: substance (natural resources), status (controlled by the state), and objectives (to Therefore, the existence of control and exploitation of natural resources is something that is important and fundamental for the life of the nation and state. Due to this, the state has an obligation to ensure that these energy sources can be used optimally for the greatest prosperity Indonesian people, in order to realize one of the ideals of the Indonesian nation, namely advancing general welfare. As we know, energy use is increasing rapidly in line with economic growth and population growth (Abduh, 2016)..

According to BPPT (2015), the National Energy Policy targets the electricity

generation ratio to reach around 115 GW in 2025 and 430 GW in 2050. Meanwhile, energy consumption per capita in 2025 is targeted at around 1.4 TOE/capita (10.07 BOE/ capita) and 3.2 TOE/capita (23.02 BOE/capita) in 2050. The very rapid development of technology has certainly triggered an increase in the need for energy. In this case, the need for electricity in daily life is increasing (Adellea, 2022).

Electrical energy is the energy most needed in life today. In modern society, electrical energy is the main component for all activities, whether in the fields of business, education, health, military, etc. It could be said that every building that is used for life activities will definitely require electrical energy to continue its activities. Not only every building, even outdoor areas also need electricity, for example for street lighting, traffic control, and so on (Citarsa, *et al.,* 2023).

According to Syahid, *et al.* (2022) Electrical energy is a basic need to encourage all types of human life activities, namely it can be used for lighting, public facilities, household needs, industrial needs and also helps improve the country's economy. Almost every household, which is the smallest form of society, has electrical equipment needed to carry out its daily activities. Starting from electrical equipment that requires small electrical power to quite large electrical power such as AC, microwave, freezer, etc. Electricity users on a household scale range from children to adults (Rohmah, *et al.,* 2022). Like fire, although it has many benefits, electricity also has potential dangers if handled incorrectly. These potential dangers include fire, electric shock and explosion (Malan, *et al.,* 2023).

Public awareness of saving electrical energy is currently still low. Moreover, a series of initial studies show that the teenage age group is a group that is considered inactive in efforts to save electrical energy (Onarelly, 2023). According to Sa'ban *et al.* (2020) Public awareness is a process that begins with a sense of responsibility so that it can produce awareness. Energy saving or energy conservation is the act of reducing the amount of energy used. Energy savings can be achieved by using energy efficiently where the same benefits are obtained by using less energy or by reducing consumption and activities that use energy (Firdaus, *et al.,* 2021).

Electricity saving is an activity that can reduce electrical energy consumption. Saving electricity not only saves costs, but also helps prevent electricity supply crises and protects the planet from damage caused by global warming due to excessive consumption of electrical energy (Wadjdi, *et al.,* 2021). Currently, the use of electrical energy continues to increase in all sectors of life. Wasteful behavior, not caring about equipment standardization is one of the factors that causes high electrical energy consumption. For this reason, it is necessary to change behavior in the use of electrical energy starting with educating the public regarding how to provide education to the public or socialization (Kona, *et al.,* 2023).

Apart from safe handling of electricity, electricity consumers should also understand the importance of being economical in the use of electrical energy. Although increasing the use of electrical energy can be used as an indicator of increasing prosperity in a society, excessive use of electrical energy can have a negative impact (Harahap, *et al.,* 2019). Increasing public consumption of electricity can cause problems, because the electricity supply provided by the State Electricity Company (PLN) is limited. Socialization of steps to save electricity usage to users will benefit both PLN and electricity consumers themselves (Rohmah, *et al.,* 2022). Saving electricity will reduce the costs required for electricity production and also ensure equal opportunities to enjoy electrical energy throughout Indonesia (Nugroho, 2016).

When the author carried out community service in Mojogemi Village, Sukowono District, Jember Regency, East Java, the author encountered problems experienced by the people in the village, namely the lack of information and education regarding electrical energy so that the behavior and habits of the village community were not economical in the use of electrical energy. This will be a big problem, if not controlled properly, this can result in continuous increases in electricity costs. The use of the type and amount of lamp power also receives less attention. This will have an impact on behavior or attitudes that do not save electrical energy. Knowledge of simple measurements and calculations is given to parents and young people so they understand the costs they have to pay per day, per week and per month. Citizens and the younger generation who do not understand the measurement and calculation of electricity costs

will be apathetic, resulting in wasteful or inefficient attitudes or behavior regarding the use of electrical energy in various activities.

CONCLUSION

Based on the explanation above, it can be concluded that this Community Service Activity has broadened the insight of local village residents in knowing that implementing energy saving electricity is able to prevent wasteful electricity usage so that it can support National Energy Stability and Stability of Household Expenditures in Mojogemi Village, Sukowono District, Jember Regency, East Java. although there are several things that still need to be improved for the progress of the community in Mojogemi Village. The implementation of saving electrical energy in Mojogemi Village currently still has many obstacles, such as:

1. The Lack of knowledge and information regarding methods for saving electrical energy has resulted in electricity waste in the village continuing to increase
2. The Lack of awareness among village communities and the younger generation who do not understand the measurement and calculation of electricity costs will be apathetic which results in wasteful or inefficient attitudes or behavior regarding the use of electrical energy in various activities.

EXPRESSING OF THANKING

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