The purpose of community service activities is (1) to help the poor in terms of minimizing the cost of electricity payment every month; (2) train partner skills to utilize waste plastic bottles into environmentally friendly solar-powered plastic bottle bulbs; (3) become a source of income for partners by producing solar plastic bottle lamp to be marketed. While the tools and materials needed in community service are mineral water bottles, metal plates commonly used for roof (zinc), silicone glue or heat and weatherproof glue, clothing bleach, and mineral water. The methods used in achieving the goals of community service are (1) determining the number of poor communities as participants in the socialization and training of solar plastic bottle lamps; (2) providing socialization and training of solar plastic bottle holder, and (3) giving opportunity to the target participants for the installation of solar plastic bottle lamps to install solar plastic bottle lamps in each home accompanied by the implementing team. The results achieved from the community service of solar plastic bottle lamp is the participants get clear and whole information about the benefits of using solar plastic bottle lamps in terms of knowledge and skills. In terms of implementation in the field, participants who became the target of plastic bottle lamp installation was pleased with the existence of these plastic bottle lamps, because in the daytime they no longer need to turn on the electric light to illuminate the dark room in the house.

**Keywords**: plastic bottle lamp, solar power, energy saving

1. **Introduction**

The energy crisis that began to occur in the world include the crisis of electrical energy, fuel oil, and gas. This crisis raises anxiety for the community about how to save and utilize energy efficiently. People are starting to find and make other alternatives to save energy. Middle-east countries have limited oil production that affects other countries. The real impact that can be felt by the public is the rise in fuel prices around the world, including in the country of Indonesia. In addition, this impact also causes the price of basic necessities to increase. If this crisis happens continuously, it can make people miserable. Electrical energy crisis is now starting to be much complained by the people of Indonesia, especially the middle to lower economic society. Along with the growing population, the use of electrical energy is increasing and feared will experience a crisis. At this time the Indonesian people who are in urban areas many are not aware of the importance of energy saving electricity. Although electric energy can
be created, but if this waste is continuously feared electric energy will experience a crisis.

In addition, the presence of plastic waste into its own problems today. This plastic waste is very difficult to decipher naturally. According to Elis (2014), to decompose plastic waste takes approximately 80 years to be degraded perfectly. Still according to Elis (2014), in everyday life, especially the people residing in Indonesia, the use of plastic materials can be found almost throughout life activities. Plastic bottle waste is a waste that is found in the middle of a densely populated residential community. Whereas the actual waste of plastic bottles can be recycled into something more useful. Thus, it has indirectly reduced the waste of plastic bottles that can be wasted after use and of course waste plastic bottles have a bad impact on the environment. One form of waste plastic bottle recycling is the use to make solar plastic bottle lamps that cost cheap because it only utilizes used goods and is certainly energy efficient because it only utilizes sunlight.

The densely populated residential conditions of a house in the town of Kolaka, especially in Lamokato and Kelurahan sub-districts, allow sunlight to enter the house during the day through the windows is very unlikely. Though sunlight is very useful as well as lighting is also beneficial to health. The condition during the day made people in dense settlements must turn on electricity to light the room in a dark house. Though economically, they live in the middle economic level down, even most of them belong to the category of poor people. Turning on the lights during the day makes them have to pay electricity bills every month is not small. This condition is very difficult for those whose income is just enough to meet basic needs only. So through the dedication of this society, as a lecturer who has a duty of community service felt to have the responsibility to find solutions to problems faced by the poor in densely populated residential villages Lamokato and urban villages Sea city of Kolaka.

2. Methodology

The methods used in this community service are (1) establishing the number of poor dwellers in Lamokato and Sea villages as participants in the socialization and training of solar plastic bottle lamps; (2) provide training in the form of knowledge of utilizing used plastic bottles into solar plastic solar lamps guided by a team of experts appointed by the proposer; And (3) provide opportunities for the poor who have been selected for the practice of making solar plastic bottle lamps in each home accompanied by a team of experts.

3. Findings and Discussion


The first step taken by the team is to prepare the place of socialization and training activities by putting up banners of activities along with the arrangement of the participants’ seats of socialization and training of plastic bottle lamps. A few minutes later, the head of the family who entered the target of the socialization and training participants went to the socialization and training site. The arrival of the head of the family was coordinated by the head of each neighborhood who had previously received direction from the lurah. During the socialization activities, participants seemed very enthusiastic to follow the socialization process. Even some of the participants who were not targeted for sociocultilation and training attended socialization activities because they heard information from other household heads. Even some housewives were also present in the event of socialization and training of plastic bottle lamp making.

![Figure 1. Socialization Activities Ongoing](image)
The socialization and training activities of solar plastic bottle lamps are designed with a combination of explanation and practice models. During the explanation process of solar plastic bottle lamp making, the participant directly practiced directly the process of making solar plastic bottle lamp.

![Figure 2. Participants Practice Making Plastic Bottle Lamps](image)

At the end of the socialization and training activities of solar plastic bottle lamps, the lamps produced by the participants were presented to all participants by the team and a joint photo session was held between the team and all participants of the socialization and training activities of plastic bottle lamp.

![Figure 3. Performance Results of Practice and Photo Sessions Participants and Teams](image)

b. Implementation of Activities

The socialization and training activities that have been carried out are then followed up with implementation in the field. The flow of implementation is as follows:

1) The preparation stage, ie preparation of tools and materials needed for the manufacture of solar plastic bottle lamp.
2) The stage of bottle installation, which starts with the process of zinc piercing in place to be fitted with zinc. After the process of installing the bottle on the zinc, the gluing is done to strengthen the bottle position and also to prevent the occurrence of water seepage out on the part that has been dilobangi for the installation of bottles when it rains, especially when the rain intestine is high.

![Figure 4. Preparation Tools and Materials and Bottle Installation Process](image)
3) The preparation stage of the installation process, the bottle that has been installed with the right position on the zinc is done preparation for the installation process on the roof of the house.
4) Stage installation of bottle lamps on the roof of the house.

![Figure 5. Preparation and Installation Process of Lights on House Roof](image)

After the installation process of solar plastic bottle lamps is done on the roof of the house, then the executing team documented the difference in the house circumstances before and after the installation of solar plastic bottle lamp. Differences in room conditions are presented as shown in Figure 6 below.

![Figure 6. Room Condition Before and After Plastic Bottle Lamp Installation](image)

c. Evaluation

In accordance with the criteria of the success of the program, the socialization and training is considered successful if able to improve the knowledge and insight participants. Based on the results of the follow-up evaluation is recorded that the practical benefits obtained by the participants through the socialization and training procedures for making solar plastic bottle lamp, that is they get clear and whole information about the benefits of using solar plastic bottle lamp in terms of knowledge and skills. In terms of knowledge they understand that used materials can be one alternative to overcome the problems faced, such as the problem of a dark
room during the day that can be overcome by using plastic bottle lamps made from plastic bottles used. In terms of skill, they are trained to produce solar plastic bottle lamps, which in its development can be developed into a household industry that can be used as one of the business in this case producing plastic bottle lamps to be marketed in the general public that is expected to sustain the family economy. In terms of implementation in the field, participants who became the target of plastic bottle lamp installation was pleased with the existence of this plastic bottle lamp. As usual, during the day they had to turn on the electric lights to illuminate the dark room in their home. With this plastic bottle lamp, electric lights are no longer turned on during the day.

Some suggestions worth considering are: 1) Participants socialization and training of plastic bottle lamp making as the key informant of information dissemination. So that the participants are expected to be an agent of information transfer, knowledge, and skills that have been obtained from the socialization and training training of solar plastic bottle lamps in their respective environments. 2). For related parties, it is expected to provide ease of policy support and information sharing to all its citizens in order to succeed the widespread information on the utilization of solar plastic bottle lamps to the entire community.

4. Conclusion

A high level of participation from community service program partners provides good results for program implementation, evident from the high participant's anthropism in participating in the socialization and training of solar plastic bottle lamp making. And the implementation of the field in the form of solar plastic bottle lamp installation to the targeted participants seemed to feel happy with the plastic bottle lamp is because with the solar plastic bottle lamp is, they no longer need to turn on the electric light to illuminate a dark room in the house Can directly reduce the amount of electricity that must be paid each month.

5. References


