PLN Waqf Solarfunding: Waqf-Based Solar Panel Innovation as a Form of Development in Papua to Create a Halal Philanthropic Industry

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A R T I C L E  I N F O
Keywords: Endowments, Crowdfunding, Development, Solar Panels, Inequality

A B S T R A C T
The background of this research and innovative writing is the problem of inequality and equitable development which is still lacking in the Papua region, Indonesia. The lack of equitable distribution of development in the Papua region causes income inequality compared to other regions. Cash waqf is one of the instruments of Islamic philanthropy that can be a solution to overcome these two problems. The existence of cash waqf specifically for the development of electricity resources in the Papua region is expected to facilitate the Papuan people in their economic activities so that people's income will increase and encourage good economic growth in the Papua region. This innovative research uses descriptive qualitative methods which make descriptions, systematic, factual and accurate descriptions of facts, characteristics and relationships between phenomena that exist in the field studied. The data is analyzed to find the right solution to dealing with the problem. The results of the research show that with the benefits of cash waqf for the development of electricity resources in the Papua region, it will be the right solution to encourage equitable distribution of development in Indonesia while reducing the problem of inequality. The proposed innovations are not only adapted to the community environment so that they are environmentally friendly but are also supported by advanced technology so that they can be implemented more easily and more efficiently to be accessed by the community. So that people can make waqf through crowdfunding waqf in the PLN-mobile application. By working together through crowdfunding waqf in the PLN-mobile application. By working together through PLN and BWI it is hoped that the development of electricity resources in the Papua region will be more effective and efficient. In addition, it is hoped that the Papuan people will be involved during the innovation program, starting from the development process to monitoring so that it can become an evaluation for the parties involved
INTRODUCTION

Background

The problem of economic inequality and development equity in Indonesia is still unresolved. The inequality in question is inequality in people's incomes, which since the pandemic started from increasing poverty and created a bigger gap between the rich and poor groups. Apart from that, infrastructure development is also related to the problem of existing inequality. According to Sukwika (2018), good and adequate infrastructure will encourage trading activities and increase mobility of production factors, so that people's income will increase. In Indonesia itself, the problem of inequality can still be felt in rural areas, even though now rural areas have had better access, there are still areas in eastern Indonesia, especially Papua, that still need infrastructure to support their economy.

The government has launched many programs to help reduce inequality in Papua. Starting from the SM-3T program to assist education and the development of telecommunication networks specifically aimed at the area. As reported in Kominfo (2021), the Government has allocated an infrastructure budget to support infrastructure development in the Papua region which is being carried out by the Public Service Agency of the Telecommunications and Information Accessibility Agency (BLU BAKTI) of the Ministry of Communication and Information. On the other hand, Islamic economics also plays a role in helping inequality and equity problems, one of which is through productive endowments. According to Kasdi in Al Arif (2012) that productive waqf has 2 visions, namely reducing the problem of inequality between the rich and poor and providing fertile land to encourage community welfare. Waqf as a form of Islamic philanthropy has an important role in improving people's welfare, meaning that waqf is also related to socio-economic problems, so waqf must be managed productively (Munir, 2015). Waqf in the eyes of the public is still generally recognized in the form of waqf of immovable objects such as land, buildings or wells. Over time, productive forms of waqf have developed, one of which is cash waqf (Lubis, 2020).

The potential for cash waqf in Indonesia is enormous because the funds can be used for productive economic activities in addition to carrying out social activities in the context of helping the poor and the interests of the people (Lubis, 2020). Meanwhile, infrastructure development is also an important sector that the government must pay attention to answer the gap in economic development and provide welfare to the people of Indonesia, especially in the 3T and Papua regions. So cash waqf is here to answer these problems seeing its enormous potential (Mudzakkir, 2018). Reported in the Waqf Information System (SIWAK) of the Ministry of Religion, that the potential for cash waqf or those that can be distributed in the form of cash waqf in Indonesia reaches IDR 180 trillion per year (Widianti, 2022). The existence of waqf is to be a solution for infrastructure development in the Papua region which will later make it easier for the community to carry out economic activities in the hope of increasing people's income.

Judging from the problems that exist in the Papua region, one of the government's concerns is the development of electric power, this can be the main goal of channeling funds from existing cash waqf. Cash waqf funds are channeled for the construction of qualified and comprehensive electric power specifically in the Papua region. As for the collection of waqf funds, you can use an online system considering technological advances in the economy, so that cash waqf can be accessed by people who want to make waqf easy as in the waqf crowdfunding system. However, it should be noted that the development of electric power in the area also has difficult access and needs to preserve the surrounding environment. Thus, a specially built electric power plant in the area can use solar panel power which is more efficient and environmentally friendly compared to other electric power plants. In addition, through cash waqf channeled for the development of electric power in special areas such as the Papua region, it is hoped that it can help the government to encourage equitable development, to reduce inequality that exists in Indonesian society. Departing from this problem, namely income inequality related to the problem of equitable distribution of development, we initiated an idea entitled "PLN Waqf Solarfunding: "Waqf-Based Solar Panel Innovation as a Form of Development in
Papua to Realize a Halal Philanthropic Industry”. Describe the background of your article in a concise and detailed way by using data and/or literature review to show the novelty. This section describes the problematic reality that is studied based on a scientific perspective. The introduction concludes by describing the purpose of writing the article.

Formulation of the Problem
The formulation of the problem taken in the preparation of research, namely:
1. What is the PLN Waqf Solarfunding scheme for the construction of solar panels in Papua?
2. What are the stages of making solar panels in Papua?
3. How is PLN Waqf Solarfunding’s innovation in supporting economic development in Papua?

Research Purposes
Based on the formulation of the problem that has been described, the objectives in this writing are as follows:
1. Mengetahui skema crowdfunding wakaf untuk pembangunan panel surya di Papua.
2. Knowing the stages of making solar panels in Papua.
3. Knowing the waqf crowdfunding innovation in economic development in Papua.

Benefits of Research
The benefits that are expected to help several parties in the preparation of research, namely:
1. Government
It can be a suggestion for the government to determine the direction of economic development policies, especially in the Papua region through the PLN Waqf Solarfunding innovation: "Waqf-Based Solar Panel Innovation as an Embodiment of Development in Papua to Realize the Halal Philanthropy Industry".
2. Society
Increasing public awareness of the contribution of waqf can help areas that still lack electricity resources.
3. Student
Writing research as a reference for future research by students or other researchers.

METHODS
Types of Research
The research in the case raised by the author uses a descriptive qualitative research method. According to Sugiyono (2018), the qualitative descriptive method is a research method based on the philosophy of postpositivism used to research natural object conditions (as opposed to experiments) where the researcher is the key instrument. Data collection techniques are carried out by triangulation (combined), data analysis is inductive /qualitative, and the results of qualitative research emphasize meaning rather than generalization. Thus the research was carried out by looking for non-numeric data such as data from previous journals, scientific articles, and so on, then after collecting the data the authors analyzed the data and described it in detail and clearly.

Place and Time of Research
The place used as a research benchmark is the village border area in Papua, especially areas that still do not have supporting electricity facilities. So that the goal of the PLN Waqf Solarfunding is to be more effective in helping areas that lack electricity. While the time of research starts on February 13, 2023.

Data Collection and Processing Techniques
In this study, the authors used data collection techniques in the form of secondary data which came from previous journals and scientific articles. The secondary data taken is not much related to the title of the research and the issues raised by the author. After the secondary data which is the source of the research has been collected, the next step is to process the data by analyzing it thoroughly. Manual data processing from analysis to results will be explained descriptively in the form of tables and writings.
Data Analysis

According to Sugiyono in Sari (2018), Data analysis is the process of finding and compiling data that has been collected systematically, the data here can be in the form of interviews, secondary data such as previous journals, field notes, and documentation, by classifying data into several categories, then broken down into units, then synthesized, arranged into patterns, selected between what is important and what will be analyzed, and finally made conclusions whose goal is to be easily understood by oneself and others. whereas in the data analysis conducted by the author steamy descriptive qualitative analysis, which means that existing data will be analyzed thoroughly and then described according to the data analyzed.

RESULTS

General Description

Geographically, Papua Island is located between 0º 20’ South Latitude to 10º 42’ South Latitude and stretches from 131º East Longitude to 151º East Longitude. The topography of Papua Island is the city with the highest topography in Puncak Jaya Regency. Meanwhile, the city with the lowest topography is Merauke City. Then, 71% of the area in Papua is tropical rainforest which is in valleys and high mountains. The island of Papua, which has a tropical climate, certainly gets heat from the sun every year. The presence of sunlight that illuminates the island of Papua certainly has a positive impact if it is put to good use using technology in the 5.0 era as it is today. Based on the Central Bureau of Statistics, in January 2020 the sun exposure level in Papua Province reached 60.00%, which means that Papua Province has an average solar radiation level. Here are some of the land boundaries of the island of Papua:

- In the north, it is bordered by the Palau Islands
- In the west, it is bordered by the Maluku Islands
- In the south, it is bordered by Australia
- In the east, it is bordered by the State of Papua New Guinea

Figure 1. Map of Papua Island
Based on the analysis of our observational data contained in the diagram above, it can be seen that solar radiation in Papua Province experiences dynamics from year to year. From 2018 to 2019 the quantity of solar radiation decreased. However, in 2020 the quantity of sunlight in Papua Province has increased significantly.

The total quantity of electricity customers in several districts/cities in Papua Province is quite diverse. This happened because it was caused by several things, such as population density, district/city topography, and so on. Based on our observations based on the Central Bureau of Statistics for Papua Province, Jayapura City is the city with the highest number of electricity customers in the province in 2017 with 41,780 people. This is because Jayapura City is the capital of Papua Province which is an industrial center that increases people's purchasing power for electricity. So it can be concluded that when the population of a city increases, automatically the number of electricity customers will also increase. Meanwhile, the smallest number of electricity customers in Papua Province are in Asmat City and Supiori City.
The total quantity of electricity customers in several districts/cities in West Papua Province is quite diverse. This happened because it was caused by several things, such as population density, district/city topography, and so on. Based on the results of our observations based on the Central Statistics Agency for West Papua Province, Sorong City is the city with the highest number of electricity customers in the province in 2019 of 20,040 people. This is because Sorong City is the capital of West Papua Province which is an industrial center that increases people's purchasing power for electricity. So it can be concluded that when the population of a city increases, automatically the number of electricity customers will also increase. Meanwhile, the smallest number of electricity customers in West Papua Province is in several cities, such as the Arfak Mountains, Wondama Bay, Bintuni Bay, and South Manokwari where even in these cities there are no electricity customers at all.

Thus, from research and observations that have been made, it turns out that the quantity of electricity customers is still dominated by the capitals of each province, namely Papua Province and West Papua Province. If the problem of inequality and inequality is not addressed immediately, it will have an impact on various sectors of the island of Papua, such as the economy, society, politics, culture, and even education. Meanwhile, several small towns in the interior of Papua still do not have a good source of electricity, which hinders community activities. For example, in West Papua Province, where many cities do not have electricity customers at all due to population size, regional topography, access to mobility, and even bureaucratic interference. So, based on the existing concerns, we launched a concrete solution called "PLN Waqf Solarfunding". PLN Waqf Solarfunding is a waqf-based solar panel innovation as a manifestation of Papua's development to create a halal philanthropic industry.
a. PLN Waqf Center

The PLN Waqf Center is a feature innovation in PLN Mobile that provides services for the Wakif as the party who donates money or his property for later the waqf assets that have been collected will be used for the construction of Solar Panels in the Papua area. PLN Mobile users to use this feature simply register on the website that will be provided. After registering, users only need to fill in several criteria columns, such as the Waqf category, namely cash waqf or land waqf, and the Papua area category. Armed with the purpose of Waqf for the benefit of worship and to advance public welfare, we divide 2 categories of Waqf that can be chosen by Waqf, namely Cash Waqf as movable object waqf and Land Waqf as immovable waqf. Apart from that, we also provide a selection of categories for the Papua region which is one of the poorest areas and lacks electricity resources in Indonesia. Then after filling in several criteria columns, the user can wait for the PLN admin to verify the account until it's finished and the PLN Waqf Center feature can be used.
b. Solar Panel Care

Solar Panel Care is a program innovation within PLN Mobile which contains the development of solar panels placed in the Papua area. The capital for the construction of this solar panel comes from the Waqf that has been collected from the PLN Waqf Center feature, namely in the form of cash waqf or land waqf that has been provided by the Wakif for the construction of the Solar Panel. The existence of the Land Waqf category is only intended for PLN Mobile users whose land and gardens are located within the Papua region. Meanwhile, the Cash Waqf category is intended for PLN Mobile users from all regions of Indonesia. The collection of capital for the construction of solar panels is a form of implementation of the crowdfunding system. Where a crowdfunding system is a form of funding that brings together entrepreneurs or people who need funds with funders, but in this case, many people provide capital.

Then, Solar Panel is defined as a solar cell whose function is to capture sunlight and convert it into electric power. Where, how the Solar Panel works will use several components, such as a charge controller, battery, and inverter. The charge controller is a regulator of electric current to make it more stable and can be channeled directly to direct current electrical equipment (DC Loads). Then, the battery can be in the form of a battery or dry battery that can be charged. Then, the inverter is a converter of DC into AC so that it can be used for electrical equipment that uses AC, such as refrigerators, lamps, electric stoves, and so on. Finally, to get the required electric power, a series of solar cells that are incorporated in the form of a solar cell panel (solar panel or photovoltaic module) are needed.
c. **PLN Sharia Stock**

PLN Sharia Stock is an innovative feature in PLN Mobile where several parties will take part in it later. As a forum for the continuation of Sharia investment, PLN Sharia Stock will work closely with the Indonesian Waqf Board in Papua. Thus, investors who are interested in the investment sector will also receive a profit of 30% which will later have an impact on investors in the long term. PLN Mobile users as investors who are interested in the investment sector can make endowments through PT. PLN. After that, the waqf assets that have been collected by PT. PLN will be forwarded to the waqf management, namely the Indonesian Waqf Board which is also a partner of PLN. From here, waqf assets, both stocks and investment profits, will be managed by the Indonesian Waqf Board (Nazir). Later, the waqf assets will be used for the program launching the Solar Panel Care feature, which is a solar panel development program in Papua to ensure electricity resources and the welfare of the people there (Marque).

d. **PLN Waqf Solarfunding**
The PLN Waqf Solarfunding program is an innovative program aimed at making it easier for the public to access the Waqf Solarfunding program facilities. This program has various features including PLN Waqf Center, Solar Panel Care, and PLN Sharia Stock. Of course, the PLN Waqf Solarfunding program can be a solution for equal distribution of electricity resources in the Papua region to achieve justice and eliminate inequality between regions in Indonesia. In addition, the existence of the PLN Waqf Solarfunding program is also a forum for Wakifs who wish to donate money or their property for the benefit of worship and promote public welfare.

**Parties Considered for Involvement**

The following parties can assist in the process of implementing the PLN Waqf Solarfunding program innovation through the PLN Mobile application:

1. **Indonesian Waqf Board (BWI) Papua**

   The Indonesian Waqf Board (BWI) Papua is the party that acts as a forum for waqf assets that have been distributed from Securities Companies in the PLN Sharia Stock program as a form of collaboration with PT. PLN. From here, waqf assets, both stocks and investment profits, will be managed by the Indonesian Waqf Board (Nazir). Later, the waqf assets will be used for the program launching the Solar Panel Care feature, which is a solar panel development program in Papua to ensure electricity resources and the welfare of the people there (marque alaih).

2. **Technician**

   Technicians are parties who act as designers and realize Solar Panels to be built on Papua Island. Where, the technician will assemble several components, such as the charge controller, battery, and inverter. Then, to get the required electric power, a series of solar cells that are incorporated in the form of a solar cell panel (solar panel or photovoltaic module) are needed.

3. **PT. PLN**

   PT. PLN is the party that facilitates the implementation of the PLN Waqf Solarfunding innovation by programming additional features on the PLN Mobile application in the form of Waqf features that combine the functions of the PLN Waqf Center, Solar Panel Care, and PLN Sharia Stock. In addition, PT. PLN also acts as a securities company that connects investors (wakif) with the Papuan Indonesian Waqf Board (BWI). So, later PT. PLN can monitor the running of the waqf scheme in which a 30% share profit will be used to build solar panels for the people of Papua.

4. **Papuan People**

   The Papuan people are the target parties of the PLN Waqf Solarfunding program innovation. This is because Papua Island is one of the poorest regions in Indonesia, which still lacks electricity resources in each region. This is proven based on research and observations that have been made that there are still disparities between regions in Papua which makes the number of electricity subscribers between regions different from one another.

5. **Student**

   The role of students is as a driving force in realizing the innovation of the PLN Waqf Solarfunding program through the PLN Mobile application as well as being an intermediary between the government and the community. The students also play a role in helping to socialize PLN Waqf Solarfunding so that the impact and benefits of the program can be known by all Indonesian people.
Strategic Steps and Timeline

The steps to implementing this idea are:

1. **Stage 1 (Designing Ideas)**
   Designing ideas, namely providing an initial description of the work system of the PLN Waqf Center, Solar Panel Care, and PLN Sharia Stock contained in the PLN Waqf Solarfunding program innovation. In addition, at this stage research and potential feasibility will also be carried out. Where this aims to find out how much potential and feasibility of several districts/cities in Papua will be provided with renewable electricity using solar panels. At the stage of designing the idea, the implementation will be carried out for about one year with all considerations of data and field research.

2. **Stage 2 (Socialization)**
   The outreach is explaining to the public, especially the people of Papua, to start introducing the concept of PLN Waqf Solarfunding which can help maximize electricity resources and eliminate inequalities between regions that exist there. Apart from that, at this stage ideas will also be introduced to attract investors and wakifs (waqf) to be willing to endow their money and land for the development of this idea, besides aiming for the benefit of worship and to promote public welfare. The implementation lasted for about one year prioritizing the role of students as the driving factor.

3. **Stage 3 (Crowdfunding)**
   After the socialization was carried out, the community was then invited to make waqf through the crowdfunding scheme contained in the PLN Waqf Solarfunding program in the PLN Mobile application by carrying out several stages, such as registration, selecting waqf categories and areas on Papua Island, verification, until completion. Crowdfunding stage implementation can be carried out in about two years. Where it is necessary to observe and test the success of this crowdfunding scheme with the Programer who is already owned by PT. PLN.

4. **Phase 4 (Provision & Installation of Solar Panels in the Papua Region)**
   After the waqf funds are collected, the Solar Panel construction will be carried out. Apart from cash waqf, Solar Panels are also built through land waqf funds originating from the Wakif. These Solar Panels will be placed in districts/cities that have been selected by the Wakif on Papua Island. The construction of solar panels cannot be separated from the parties who are partners in the PLN Waqf Solarfunding program. For example, engineers who will help design the construction of solar panels use several components, such as charge controllers, batteries and inverters. Then, to get the required electric power, a series of solar cells that are incorporated in the form of a solar cell panel (solar panel or photovoltaic module) are needed. The implementation of the supply and installation of solar panels can be carried out in approximately two years. Where it is necessary to do an observation and test the success of this stage.

5. **Stage 5 (Education on the Use of Renewable Electricity)**
   Communities in the Papua area will be given education about using electricity from solar panels. Such as procedures for using electricity from solar panels, simple solar panel repairs, to solar panel maintenance. At the educational stage on the use of renewable and environmentally friendly electricity,
the implementation will be carried out for about one year with all data and field research considerations.

6. Monitoring and Reporting

The Monitoring Phase aims to oversee the implementation of the PLN Waqf Solarfunding program so that there are no irregularities in the waqf funds provided. This is also due to several issues that have existed that waqf funds are often misused by irresponsible parties, for example, Nazhir.

CONCLUSION AND RECOMMENDATION

Conclusion

Papua's geography, which gets enough sun exposure, makes Papua an area with the potential to use solar panels to overcome the lack of electricity there. Despite the government's efforts to launch and implement various development programs in Papua, it is evident that there are still some underdeveloped aspects, namely electricity. However, seeing the development of the Indonesian economy, especially the Islamic economy which is quite significant, can provide efforts and solutions to these problems.

Waqf is part of Islamic philanthropy which is currently growing rapidly and is in demand and getting attention from the government. In addition, PLN as part of the government has also launched a solar panel program. If the concepts of electricity, solar panels, waqf, and technology are combined with collaboration between PLN and BWI (Indonesian Waqf Agency), it is hoped that the problem of electricity inequality in Papua can be resolved. PLN already has its application, here the author provides innovative suggestions in the form of adding features to the application relating to waqf as an intermediary connecting parties who need funds (Papua) with those who provide funds (wakif) just like crowdfunding but based on Islamic economics. For these various reasons, it is hoped that the community can contribute to developing Papua and reducing inequality.

Recommendation

Thus we made this paper, hopefully, it will be useful and add to the knowledge of readers. The author apologizes if there are spelling errors in the writing of words and sentences that are not clear and the writer hopes that the readers can provide criticism and suggestions so that the writer can make evaluation material for the next

REFERENCES


