

MENTORING THE MANUFACTURE OF ECO-FRIENDLY DISPOSABLE PLATES FROM ARECA NUT FRONDS BY PT PUPUK ISKANDAR MUDA IN GAMPONG BLANG ME, BIREUEN

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Abstract

PT Pupuk Iskandar Muda (PIM) is committed to developing and empowering the community through Corporate Social Responsibility (CSR) activities with the social responsibility to maintain the sustainability of the company by implementing environmentally sound activities within the economic, social, religious and cultural environment around the company. One of the community environments promoted by PT PIM is the Paya Nie area in Gampong Blang Me, North Aceh Regency, Aceh Province. In 2023, a program recommendation was made to innovate areca fronds into eco-friendly disposable plates. The program's support for the production of eco-friendly disposable plates from areca fronds in Paya Nie Gampong Blang Me, North Aceh, is seen as an environmentally friendly innovation in the North Aceh area. This is because the use of areca nut plant waste has never been done before in North Aceh. The impact of the program implementation is divided into 3 (three) categories, namely: (1) the impact of the program on the change in knowledge of the program participants has achieved the target of 100% (> 50%); (2) the impact on the change in behaviour of the program participants has achieved the target of 75% (> 50%); (3) in general, 60% of the program participants experienced an increase in income of more than 40%; (4) the business asset used is a disposable plate press, which is used to the maximum (100%) during the program.

Keywords: *Eco-friendly, disposable plate, areca nut frond waste, community empowerment.*

1. INTRODUCTION

One of the main requirements for implementing various community empowerment programs by companies is the concept of environmental sustainability. The company must implement programs that positively impact to surrounding environment. (Hayati & Suprajan, 2017). The company's empowerment programs focus on improving the standard of living of the communities around the company by transforming waste into environmentally friendly and economically valuable products. (Arief et al., 2022). PT Pupuk Iskandar Muda (PIM) also aims to implement community development programs in a sustainable and consequent way, especially in the vicinity of the company, through corporate social accountability (CSR) activities in accordance with Undang-Undang No. 40 of 2007 on Perseroan Terbatas, Article 74 on social and environmental accountability. (Tambarta et al., 2022). The CSR programs aims to improve the standard of living of the community so that the company's presence can have a positive impact on the community. (Pranoto & Yusuf, 2016). PT PIM's social responsibility is to maintain the sustainability of the company through the implementation of environmentally sustainable activities within the economic, social, religious and cultural spheres, striving to achieve development goals while taking into account the interests of the environment, the company, the community and stakeholders. (Yusra et al., 2023). The Paya Nie area in Gampong Blang Me, Kuta Blang District, Bireuen

Regency, Aceh Province, is one of the community environments supported by PT PIM. Most people in Gampong Blang Me are farmers because the topography of Gampong Blang Me is sloping or flat, so many people use it to grow food crops such as rice fields and other crops. The community also farms on forest land with areca nut trees. The presence of this plant is deliberately exploited to sell for textile dyes and other needs as a source of income for the community.

The areca nut is one of the plants that thrive in this region. The product of the areca nut plants in this region is the areca nut, while the fronds are simply thrown away as they are considered waste which has no economic value. (Hertati et al., 2021). However, areca fronds can be used for innovative and creative products such as disposable plates which have economic value. Areca nut fronds contain cellulose, hemicellulose and lignin as the main raw materials. This proves that areca nut fronds can be processed into packaging products, as cellulose is one of the biopolymers used to make packaging. (Yernisa et al., 2020). Most of the packaging currently used in Indonesia is made from materials that are not environmentally friendly, such as paper, plastic and polystyrene foam. In addition, most of this packaging can only be used once (Sujana et al., 2023). Disposable packaging is packaging that is designed to be used only once and is then immediately recycled or disposed of as solid waste. (Yernisa & Fera, 2018). Using disposable packaging that is not environmentally friendly can threaten environmental sustainability because the packaging waste cannot be properly decomposed. This creates a lot of waste, damaging the environment. In order to overcome this problem, PT PIM, together with scientists from the Agriculture and Biodiesel Research Center of Malikussaleh University, implemented a program to utilise the waste of areca nut frond into disposable board products in Gampong Blang Me, Bireuen.

This program is a continuation of the Paya Nie Lestari Berdaya (PANEL DAYA) program. This program focuses more on raising community awareness of the importance of protecting the environment and turning waste into a business opportunity with economic value to increase community income. PT PIM CSR also collaborates with the Agricultural and Biodiesel Research Centre of Malikussaleh University's for Community Research and Empowerment for innovation research and scientific publications. The goals of this program were to (1) convert the areca frond waste into an environmentally friendly, disposable plate with high economic value; (2) improve the economic welfare of the community and preserve local culture and wisdom; (3) increase the motivation of the surrounding community to start their own businesses; and (4) establish cooperation between industry, academia, and the community to develop the region.

2. IMPLEMENTATION METHOD

The method of implementation of this activity is designed in the form of training and mentoring, using a participatory approach and referring to the adult learning process with the system of Oriented Project Planning (OPP), consisting of:

1. Presentation of materials by PT PIM CSR team and academics from Malikussaleh University
2. In-depth discussion and assignment or exercise on each program
3. Post-program support

In this section, we will discuss the tools and materials used and how disposable plates are made. The tools used are an analytical balance, aluminum beaker, desiccator, basin, plastic brush, drying mat, and container printer. The materials used are areca nut (*Areca catechu* L) fronds, sand,

turpentine, and white indicator paper. Furthermore, the method of production is that the prepared areca nut fronds are washed and then molded by the areca nut frond plate press machine.

The next stage is evaluating the impact of activities. At this stage, several tests were conducted using specific instruments to see the impact of the program on changes in knowledge, behaviour and income generation of program participants. The impact of the program on knowledge and behavior change will be tested using a questionnaire with open-ended questions (1 - 5) regarding the understanding and behavior change of the program participants about the materials and practices provided through this community empowerment activity. The expected impact of the activity is:

1. Increased knowledge of program participants by more than 50%;
2. Increase in practice behaviour of program participants by more than 50%;
3. Increased profitability of program participants by more than 40%.
4. Effectiveness of asset utilisation during the program

3. RESULTS AND DISCUSSION

Gampong Blang Me is an Ring 1 area around PT Pupuk Iskandar Muda (PIM) where most of the people in Gampong Blang Me work as farmers. Topographically, Gampong Blang Me is on a sloping or flat plain, so many people use it to plant areca tree varieties and garden products in the form of areca nut are a source of income for the community. At present, the selling price of areca nut and dried grain is falling, especially in Aceh. This has begun to affect the economy of areca nut farmers in Gampong Blang Me. In order to improve the economy of the community, especially the areca nut farmers, it is necessary to use other resources such as the utilisation of plantation waste into various innovative products that have economic value. According to the social mapping study, there are several program recommendations that can be implemented in Gampong Blang Me. One of these is the innovation of areca fronds into disposable plates. The implementation of this program was followed by collaborative research on the potential of areca nut fronds for disposable plates with the Agricultural Research and Biodiesel Centre of Malikussaleh University. This research aims to assess the effectiveness of the program in changing behaviour, knowledge and increasing community income before and after the program was implemented.

First, scientists and the Malikussaleh University CSR team explained how to make disposable plates using pre-prepared tools and materials: areca nut fronds, sand, turpentine and white indicator paper. The fronds used are those that have fallen or separated naturally from the tree, as seen in the following image:





Figure 1: Raw material of areca nut frond disposable plate

The fronds are cut to separate the leaves and stalks. Next, the fronds are cleaned from dirt and sand using a brush and washed using water. The fronds are drained and wiped to reduce the remaining water attached to the surface of the fronds and then dried by sunlight. The next process is the molding of the disposable packaging, which is done using a press with the principle of hot felts. The press produces disposable plates with a base diameter of 11.5 cm and an edge width of 2.5 cm. Switch on the press and set the temperature control to 170o C. When the thermometer reaches 170o C, the press is ready for use. Stretch the fronds by pulling on them to open the folded fronds and place them on the mould, pressing down on the press until the fronds have been fully pressed in for one minute. The fronds are removed from the mould and cooled. The unprinted part of the frond is cut off and tested on the container. The material was presented directly to the community in the Paya Nie area, as shown in the following picture:



Figure 2. Explanation of the Process of Making Disposable Plate from Areca Fronds by PT PIM CSR Team and Academics to Beujroh MSME Members

The eco-friendly disposable plate products from this program were displayed on 1 August 2023 at the Social Forestry Festival, Dolok Sanggul, Humbang Hasundutan Regency, North

Sumatra. Mr. Moeldoko, the Presidential Chief of Staff, was also present at the event as shown below:



Figure 3. Mr. Moeldoko, who is the chief of staff of the presidency, visited the PT PIM UMKM Booth at the Social Forestry Festival.

This innovation is also considered to have great potential. This product is used as a souvenir for company guests visiting PT PIM. This can be a good forerunner of promotional/marketing activities in order to increase the marketing potential of the products coming out of this program.



Figure 4. eco-friendly disposable plate inovative product of areca nut fronds

The problem with this product is the presence of the powder from the top layer of the disposable plate. To solve this problem, the next innovation of this product is to use cassava biodegradable plastic as the top layer of the plate. Biodegradable plastic is a plastic that can be degraded by micro-organisms and is made from cassava starch, which is natural, so it does not harm the environment and is safe for health. (Rahmadani, 2019). Furthermore, the impact of implementing the program on the community surrounding Gampong Blang Me is divided into 3

(three) categories. First, the impact of the Areca Frond Disposable Plate Innovation Program on knowledge change among participants which shown in the following figure:

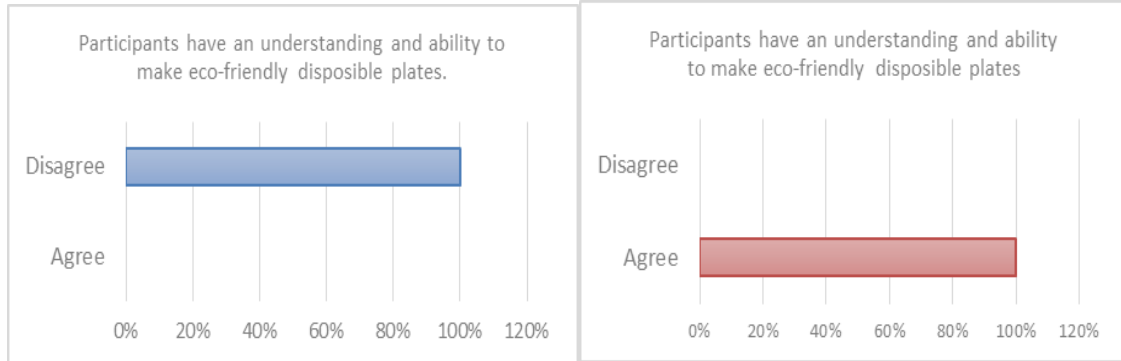


Figure 5: Impact of the Areca Fronds to Disposable Plate Innovation Program on Changes in Participants' Knowledge

The impact of the program to innovate the use of areca nut fronds in disposable plates on the change in knowledge of the program participants has met the performance target. The change in knowledge after the implementation of the program was 100% (>50%). This means that all members of UMKM Beujroh as implementers of the areca nut frond innovation program in disposable plates experienced an increase in knowledge after the program implementation. In addition, changes in the behavior of the program participants can be seen as follows:

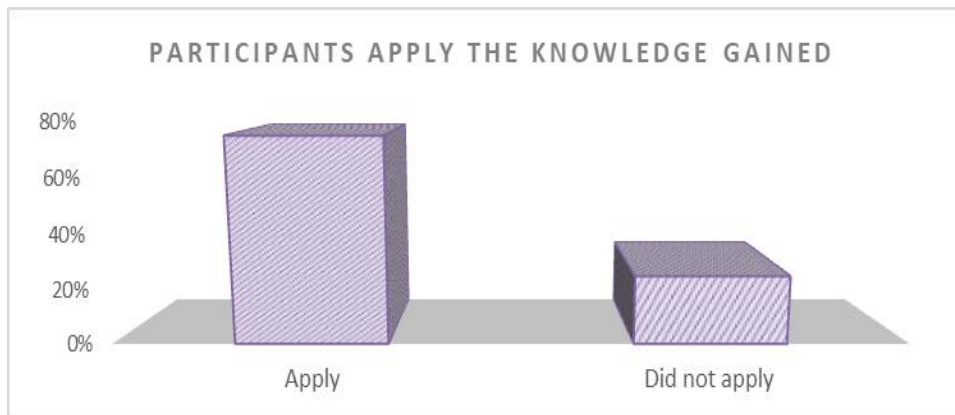


Figure 6: Impact of the Areca Fronds to Disposable Plate Innovation Program on Member Behavior Change

The impact of the areca nut frond innovation program on behaviour change among program participants met the performance target. The change in knowledge after implementing the program was 75% (>50%). This means that most of the program participants experienced an increase in behaviour change to implement innovations after the program. Most of the program participants did not have an income before the program. After implementing the program, program members receive increased income that varies from month to month, as shown in the following figure:

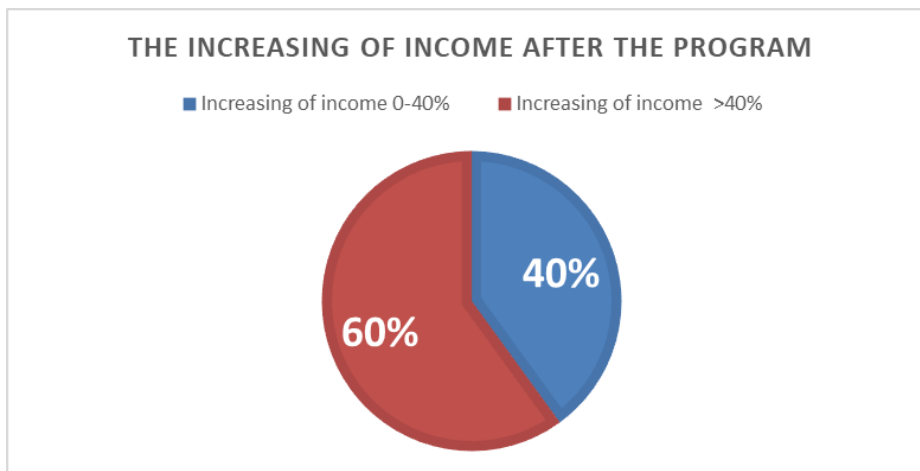


Figure 7. Increased income of program members after the program was implemented

Overall, 60% of the program members experienced an increase in income of more than 40% as a result of the innovation program "Areca nut fronds on disposable plates". This means that the program has had an impact on increasing the income of those participating in the program, but this impact is not optimal, as there are still 40% of those participating in the program whose income can still be increased. The use of assets during the program is also considered effective. This is because program members maximise the use of the assets provided by PT PIM in the implementation of the program. This is shown in the following figure:



Figure 8. Disposable plate press machine as a company asset

The company asset used is a disposable plate press machine which is (100%) used during the program. This machine has components: a power button, temperature control, temperature indicator light, thermometer, printing plate, and hydraulic felts.

4. CONCLUSION

The Paya Nie area in Gampong Blang Me is the surrounding area (Ring 1 area) of PT Pupuk Iskandar Muda (PIM). After conducting a social mapping study, several program recommendations emerged that could be implemented in Blang Me. One of these is to use areca fronds to make disposable plates. The program's support for the production of environmentally friendly disposable

plates from areca leaf is considered an environmentally friendly innovation in the Bireuen region. This is because areca nut waste has never been re-used in Bireuen. The impact of implementing the program on the people living around Gampong Blang Me is divided into 3 (three) categories, namely:

1. The impact of the areca frond innovation program in disposable plates on the change in knowledge of program participants has met the achievement target. The change in knowledge before and after the implementation of the program was 100% (> 50%).
2. The impact of the areca frond innovation program in disposable plates on changes in the behaviour of program members has met the achievement target. The change in knowledge before and after the implementation of the program was 75% (> 50%).
3. In general, 60% of the members of the areca frond innovation program in disposable plates experienced an increase in income of more than 40%.
4. The asset used is a disposable plate press, which is used optimally (100%) during the program..

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