

# Community Empowerment in Onion Waste Management Programs to Create A Circular Economy

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## ABSTRACT

**Purpose:** The purpose of this study is to get an overview of the application of circular economy to the community empowerment process carried out by PT Paiton Energy's CSR in the Sumber Rejeki farmer group in managing low-quality onion waste as raw material for instant seasoning.

**Design/methodology/approach:** The type of research is descriptive qualitative with a case study approach in the Sumber Rejeki farmer group, Pondok Kelor Village, Paiton District, Probolinggo Regency. Data were obtained through in-depth interviews, participatory observations and documentation. The subject of the study was a member of a fortune-source farmer group consisting of 10 people.

**Findings:** The results of community empowerment activities have implemented a circular economy, farmer groups have been skilled in utilizing low-quality onion waste into ready-to-eat cooking seasonings and into processed products typical of the village and producing an economic value of Rp. 8,488,000.00 per harvest period. Thus efforts to save low-quality onion waste provide benefits in increasing the income of onion farmer groups.

**Research limitations/implications:** Subjects in the study were limited to onion farmers who were members of the source farmer group and members who processed onion waste.

**Practical implications:** This revenue will not be generated if the group does not carry out sewage treatment.

**Originality/value:** The Sumber Rejeki Farmer Group is the first farmer group to process Onion waste and get a community empowerment program with a circular economy approach.

**Paper type:** A case study

**Keywords:** Circular Economy, Community Empowerment, Onion, Waste

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## I. INTRODUCTION

Onions are herbs whose existence is important for all circles of society. Onion production in Paiton district, Probolinggo Regency, East Java increased significantly from 2019 to 2020 Production of onions in 2019 is 1805 tons, and in 2020 it increase to 16,180 tons (Hadiyanto, 2020). The problem faced by Onion farmers in Pondok Kelor village is low-quality Onions that do not sell well, becoming waste every harvest period, especially when rainfall is high (Fadila, 2021). Onion waste is usually disposed of, has no economic value, and has the potential to pollute the environment (Susilowati et al., 2021). Some of the studies on onion waste that have been carried out are onion waste derived from the skin and leeks left over from production. From several studies, the Waste of onion peel and leeks can be processed into various products, including as an ingredient in cooking pindang eggs (Hidayati, 2018) as fertilizer (Susanawati, 2019; Rinzani, 2020; Banu, 2020) hand sanitizer (Usman, 2020) as a skin beauty cream and scrub (Kurniaty, 2020) and as pottery (Syamsiyah et al., 2019). The onion waste in the Pondok kelor village is not only composed of skins and leeks but is a low-quality Onion, whose low selling value is not even sold in the market which is further said to be onion waste. By the Sumber Rejeki farmer group, waste is processed into instant cooking seasoning products.

A circular economy is described as a combination of reduction, reuse, and recycling activities (Kirchherr et al., 2017). The emergence of a circular economy against the background of a Linear Economy with a consumption model “take-make-use-dispose” since the industrial revolution that caused various social, economic, and environmental problems, and was unsustainable (Agustin & Rianingrum, 2021). Circular economy applied at different levels (macro, meso, or/and micro) or for a different action or purpose (Smol, 2021). In the circular economy industrial activities are efforts to update and regenerate management processes so that resources are used as long as possible. The embodiment of a circular economy is carried out by, for example, suppressing the use of raw materials (Primus, 2022). In MSME (UMKM) activities, the practice of a circular economy system has been carried out by a small number of business actors. One of them is by minimizing the use of plastic bags to reuse packaging for products that are issued (Widya, 2021).

Efforts to process onion waste into instant seasoning products are carried out by the Sumber Rejeki farmer group in collaboration with the Corporate Social Responsibility (CSR) through community empowerment programs. Higher education institutions has a community service program as a form of concern, then the company also has a program that is carried out as a form of corporate responsibility for the community around the company or what is called Corporate Social Responsibility (CSR). CSR is a company's business ethics that is implemented in a program to improve the socio-economic community around the company (Widiputranti, 2020). CSR is an important part of a company, because in Indonesia there is a law that regulates it. In addition to complying with the law, CSR is also carried out because of the company's awareness in helping the state in alleviating poverty (Marwah, 2018). The objectives of this study are (1) analyzing the application of a circular economy to the process of obtaining added value from Onion waste, (2) analyzing the revenue by members of the farmer group from processing Onion waste.

## II. METHODS

The study was conducted in Pondok Kelor Village, Paiton District, Probolinggo Regency, East Java with the following considerations: (i) Farmer group Sumber Rejeki is the first in processing onion waste at the research site. (ii) Farmer Group Sumber Rejeki get mentoring from PT Paiton Energy's CSR through community empowerment programs (iii) Field research was conducted during the onion harvest period, from Februari to March 2022.

Informants are chosen by purposely, consists of 1) members of the onion farmers group Sumber Rejeki, which processes onion waste and does not process onion waste. 2) Community development specialists as community empowerment officers, as trainers and mentors for farmer groups. 3) The village headman as a community leader that very understanding about characteristics of the community.

Data obtained through interviews, observation and documentation. The variables in this study are (i) community empowerment practices (ii) circular economy practices (iii) Revenue from processed products onion waste. The analysis method used is descriptive qualitative, describing the process community empowerment and circular economy application. Analysis of the cost of processing onion waste is carried out by grouping the cost of production. To calculate Revenue using formulas: The two formulas that businesses use to calculate their earnings are: Gross revenue = (price per product or service) x (total number of products or services sold) Net revenue = (gross revenue) - (cost of goods sold).

## III. RESULTS AND DISCUSSION

### A. Application of the Circular Economy Concept to PT Paiton Energy's CSR Community Empowerment Program to the Sumber Rejeki Farmer Group

The results of the Sumber Fortune farmer group in the treatment of onion waste are as follows: 1) Community empowerment programs for farmer groups that have problems managing onion waste. 2) Training activities for processing waste into instant cooking seasonings are planned and implemented jointly between farmer groups and program-providing companies. 3) The training material is to process onion waste into instant cooking seasonings, marketing, gaturan finance in accordance with existing business needs and capabilities. The objectives of empowerment are: (1) Increasing community business awareness, especially in improving agricultural activities and local culture of the community, (2) increasing knowledge and skills of self-managed home-based businesses by utilizing natural resources. The method carried out is in the form of workshops in the form of networking, training and mentoring that reaches the community to achieve the goal of improving the economy of the creative community (Katili, 2019). Previously, onion waste almost never utilized due to limited knowledge about the management of low quality Onion. During the onion harvest season, almost every farmer's

house in the village has onion waste, to utilize onion waste, the community does not have sufficient knowledge and skills. Before there was an empowerment program, the community did not use onion waste as an economic product. Instead, onion waste is dumped into ditches, rivers, sewers, and buried around the house. Community empowerment implemented by PT PT Paiton Energy's CSR for Sumber Rejeki farmer groups is an effort to encourage, protect local economic growth and knowledge, skills and use of simple and appropriate technology by farmers based on people's power effectively and efficiently on the potential of local resources for the benefit of farmers.

Company involvement is very important to take part in agricultural business development. One thing that can be done is through CSR programs. CSR is one of the company's commitments that aims to build a better quality of life with related parties, especially the community and the social environment where the company is founded. Corporate CSR support and agricultural development are closely related, where CSR assistance provided by a company can improve agricultural development in regions throughout Indonesia. ISO 26000 interprets social responsibility as the responsibility of an organization for the impact of its decisions and activities on society and the environment, through transparent and ethical behavior, which is consistent with sustainable development and the welfare of society (Mahani, 2011). Community empowerment is one concept that is suitable for agricultural extension. Empowerment has the objectives of 1) developing community competencies (trying out, seeking information and managing activities) 2) Changing people's behavior and 3) Organizing communities. This is achieved by implementing strategies and stages of developing human resources, capital, business institutions and business development (Bista, 2018) Empowerment is a process of community awareness through transformative, participatory and sustainable capacity building to address the fundamental problems faced and improve living conditions as expected (Margolang, 2018) Empowerment is an effort to build community capacity by encouraging, motivating, increasing awareness of their potential, and trying to develop that potential into practical actions (Ngawit et al., 2020).

Community empowerment refers to the concept of empowerment which is interpreted as an effort to increase community empowerment to act in accordance with dignity, rights, and responsibilities as human beings and citizens (Margolang, 2018). PT PT Paiton Energy's CSR empowerment program is carried out by applying the concept of sustainability, both sustainability for the environment, as well as the sustainability of human, social, and economic life by prioritizing local characteristics (Anonymous, 2019). In the context of empowering the Sumber Rejeki farmer group, the area that is changed and developed is to increase the knowledge of farmer group members in managing Onion waste. As an institution, farmer groups need to be strengthened for the social and economic transformation of the community, besides that they also need to build trust, networks, and social synergies to support change by utilizing the full potential of social capital owned at the local level. The program implemented and monitored together with many parties/multi-stakeholders (Collaboration and synergy) whose results are measured and reported openly through written reports and reported to related parties, government, shareholders and the community (Anonymous, 2019).

CSR as a practice of community empowerment by companies, must be based on the theory: Community-based development that requires community participation and empowerment. Community empowerment is directed at increasing the capacity and power of the community in relation to increasing awareness, abilities and opportunities (Ramada et al., 2020). Participation (in decision making, planning, implementation, monitoring and evaluation as well as utilization of development results) will increase income and business distribution for the entire community. The explanation of the process is that each program begins with a needs analysis, needs analysis includes potential empowerment locations and problems, so that the community and the company will initiate joint activities according to the results of the needs analysis. The process of determining activities is carried out in a participatory manner to avoid program failures, after both parties agree, the new program can be run. In the case of farmer group Sumber Rejeki programs and activities are to overcome onion waste that does not yet have economic value, potentially causing methane gas and CO<sub>2</sub> which contribute to the greenhouse effect (Global Warming). In accordance with the vision and mission of PT Paiton Energy, how to contribute to reducing environmental damage through community empowerment programs, so that the economy continues to run, the environment remains sustainable and the community becomes empowered.

The implementation of the empowerment program is explained in the following table:

*Tabel 1. Implementation of community empowerment by PT Paiton Energy to the Sumberrejekki Farmer Group*

<i>No</i>	<i>Activity</i>	<i>Target</i>	<i>Schedule</i>	<i>StakeholdersI involved</i>
<i>1</i>	<i>Training processing Marketing training</i>	<i>2 Times of training</i>	<i>February 2021 to June 2021</i>	<i>The Sumber Rejekki Farmer Group  Village Government  Agricultural extension worker  Dinas Koperasi dan Perdagangan</i>
<i>2</i>	<i>Procurement of means of production</i>	<i>provision of capital for production equipment 1</i>	<i>February 2021</i>	<i>The Farmer Group Sumber Rejekki</i>
<i>3</i>	<i>Mentoring</i>	<i>Implementation of mentoring activities</i>	<i>February 2021 – February 2022</i>	<i>The Sumber Rejekki Farmer Group  Village Government  Agricultural extension workers  Office of Cooperatives and Trade</i>
<i>4</i>	<i>Evaluation</i>	<i>Evaluation of program activities is carried out</i>	<i>February 2022</i>	<i>The Sumber Rejekki Farmer Group</i>

The purpose of this training is to increase the knowledge of farmer group members in processing onion waste so that it has a higher economic value. Onion waste is converted into instant seasoning and onion cake. Supporting production equipment in the form of: Blender, jumbo pan, spatula, digital scales, food grade standard plastic packaging and sealer to the group. Support is given to the group to build independence and togetherness and cooperation among group members. It is hoped that this group will be motivated to buy production equipment from the results of the seasoning business. Mentoring is an activity carried out to maintain group consistency in practicing the results of training on processing onion waste into instant seasoning products and onion cakes. After attending training and practice as well as assistance in processing instant seasonings and onion cakes, the enthusiasm of the entrepreneurial community is increasing and in the end it is able to increase their economic income.

The last stage in community empowerment is the evaluation of the program The evaluation of the program is carried out as feedback which will be followed up on mentoring activities in the following year and as a recommendation for other institutions in implementing similar community empowerment activities. There is cooperation in organizing training, village government leaders are involved in training activities. Overall, the activities were followed well, the activities took place according to the expected standards, participants practiced independently in their respective homes so that seasoning production continued to run and generate income.

The process and results of applying the circular economy of processing onion waste into cooking spices are described as follows:

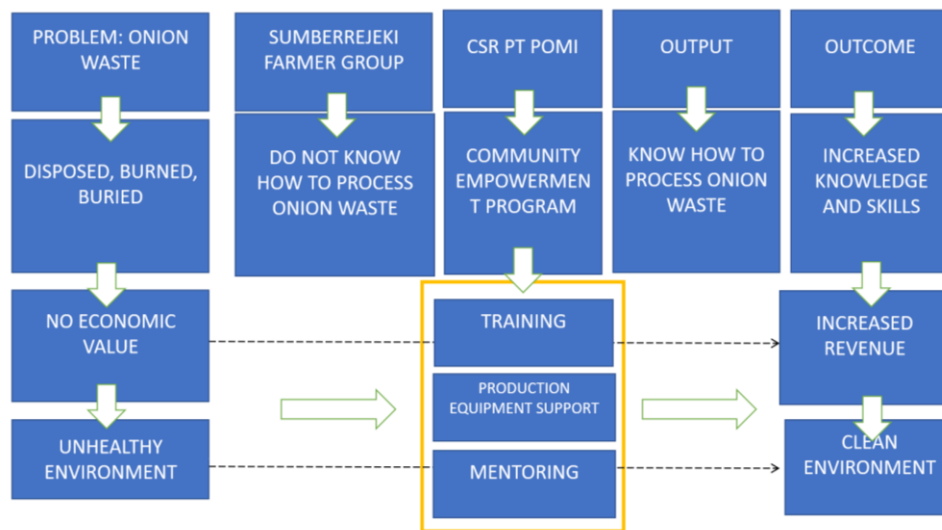


Figure 1 : Application of circular economy in the treatment of onion waste

Community empowerment programs Increasing community knowledge through training and mentoring activities, previously the community does not know that low-quality onion waste can be processed and used as a cooking spice with economic value. The community also does not have the skills on how to process onions, but after training, the community has skills in processing low-quality onion waste into cooking spice products that can be used as a basic ingredient for processing other foods such as cakes and other cooking spices. Previous research Rinzani et al. (2020) conducted research on the benefits of Onion skin waste as organic liquid fertilizer as a substitute for synthetic chemical fertilizers, as well as increasing the knowledge and skills of farmers in processing onion peel waste as organic liquid fertilizer. Onion waste was not used, sold cheaply and sometimes simply thrown away and even thrown away, so it has the potential to pollute the environment. In addition to seasoning, the leftover onion peels are processed into organic fertilizers for the needs of fertilizing their fields. as well as the empowerment of the cisadane river community (Intan, 2022) waste is used as a product of the creative economy that makes money. The circular economy concept can be applied to small farmer groups by empowering the community to optimize waste potential. The community becomes empowered to recognize the potential that exists around it (Naufal, 2021). By processing onion waste, the environment of pondok kelor environment which was once unhealthy is now clean and more healthy.

The circular economic system can have an impact on the creation of new jobs in small sector industries this is based on the assumption that as a circular economy or a new economic system aims to process waste, Along with the introduction of a circular economy by using waste as raw materials, people are trained to get used to processing individually the waste produced and in the agricultural industry, there is productivity, because there are human resources who are motivated to do it (Marup, 2021).

The circular economy aims to generate economic growth that maintains as long as possible the value of products, materials and resources in the economy, thereby minimizing the social and environmental damage caused by the longstanding linear economic approach of circular economy activities that focus on Reduce, Reuse, Recycle Reset, Renovate, and renew (Hart & Pomponi, 2021). In the modern world, the concept has been adapted as an economic framework, especially by the industrial sector to maintain value and increase efficiency. According to Winans Circular Economy became popular around the 1990s to answer the challenges of economic development and reduce excessive use of natural resources. According to his research circular economy is an economic system with the end of the product life cycle with the main concept of reducing, reusing, and increasing materials in the production/distribution and consumption processes (Henry & Kirchherr, 2020). CSR PT PT Paiton Energy has implemented the concept of a circular economy in the empowerment program for the Sumber Rejeki farmer groups. The definition of circular economy is an economic concept in a closed loop flow, trying to use resources, raw materials and finished products that can be reused as long as possible, and produce as little waste or waste as possible. In this concept, the 5R principles are applied, namely Reduce, Reuse, Recycle, Recovery and Repair (Anonymous, 2021).

Circular economy is a model that seeks to extend the life cycle of a product, raw materials, and reducing waste and pollution, keeping products and materials in use if possible, and regenerating natural systems (Ellen Macarthur Foundation). Through a circular economy, achieve more by using less (Anonymous, 2020). The

green economy is an economic concept that makes environmental sustainability an important part of realizing sustainable development goals (Auwalin, 2022). The problems faced by farmers in Pondok Kelor village often receive less attention, their production is still low, and has not been able to compete with other business units. The opportunity to process low-quality onions into superior products typical of Desa Pondok Kelor is quite prospective, the raw material for onions will always be there because it is produced in the village of Pondok Kelor itself.

**B. Revenue Analysis of Farmer Groups Sources of Fortune in Processing Onion Waste into Instant Cooking Seasonings**

Cost analysis is carried out by grouping the costs incurred to produce onion waste into instant cooking seasonings that are ready to be marketed. Production costs consist of fixed costs and variable costs. Cost Analysis is all the sacrifices that need to be made to a production process, expressed in units of money according to the prevailing market price, both already occurring and about to occur.

Production Volume: 1. Fixed Costs (FC) i.e. costs that do not increase along with the increase in production. 2. Variable Costs (VC) i.e. costs that increase along with the increase in production. 3. Total Cost (TC) is the overall cost incurred for production until the creation of goods.

Cost Calculation: Calculating the amount of costs used in a business is used cost analysis (Soekartawi, 1995).

Formula:  $TC = FC + VC$

Information:

TC is the total cost, calculated Rp/production process

FC is a fixed cost, calculated Rp/production process

VC is a variable cost, calculated rp/production process

The following are the results of the calculation and analysis of the cost of producing seasonings in the farmer group

*Table 2. Fixed costs*

<i>Item</i>	<i>Quantity</i>	<i>Unit</i>	<i>Unit Cost</i>	<i>Total</i>
<i>Blender</i>	<i>1.00</i>	<i>Unit</i>	<i>400,000.00</i>	<i>400,000.00</i>
<i>Washbasin</i>	<i>2.00</i>	<i>Unit</i>	<i>40,000.00</i>	<i>80,000.00</i>
<i>Digital Scales</i>	<i>1.00</i>	<i>Unit</i>	<i>200,000.00</i>	<i>200,000.00</i>
<i>Jumbo Griddle</i>	<i>2.00</i>	<i>Unit</i>	<i>500,000.00</i>	<i>1,000,000.00</i>
<i>Spatula</i>	<i>2.00</i>	<i>Unit</i>	<i>30,000.00</i>	<i>60,000.00</i>
<i>Stove</i>	<i>1.00</i>	<i>Unit</i>	<i>120,000.00</i>	<i>120,000.00</i>
<i>Tube</i>	<i>1.00</i>	<i>Unit</i>	<i>125,000.00</i>	<i>125,000.00</i>
<i>Total Fixed Costs</i>				<i>1,985,000.00</i>

*Table 3. Non-fixed costs*

<i>Item</i>	<i>Quantity</i>		<i>Unit Cost</i>	<i>Total</i>
<i>Onion</i>	<i>100.00</i>	<i>Kg</i>	<i>15,000.00</i>	<i>1,500,000.00</i>
<i>Garlic</i>	<i>50.00</i>	<i>Kg</i>	<i>20,000.00</i>	<i>1,000,000.00</i>
<i>Salt</i>	<i>10.00</i>	<i>Ons</i>	<i>2,000.00</i>	<i>20,000.00</i>
<i>Coriander</i>	<i>1.00</i>	<i>Ons</i>	<i>40,000.00</i>	<i>40,000.00</i>
<i>Flavoring</i>	<i>5.00</i>	<i>Bks</i>	<i>7,000.00</i>	<i>35,000.00</i>
<i>Cooking oil</i>	<i>10.00</i>	<i>Ltr</i>	<i>15,000.00</i>	<i>150,000.00</i>
<i>LPG Gas</i>	<i>1.00</i>	<i>Tab</i>	<i>18,000.00</i>	<i>18,000.00</i>
<i>Plastic Packaging</i>	<i>200.00</i>	<i>Pcs</i>	<i>500.00</i>	<i>100,000.00</i>
<i>Stickers</i>	<i>200.00</i>	<i>Pcs</i>	<i>300.00</i>	<i>60,000.00</i>
<i>Work Costs</i>	<i>1.00</i>	<i>Lot</i>	<i>50,000.00</i>	<i>50,000.00</i>
<i>Total Non-Fixed Costs</i>				<i>2,973,000.00</i>
<i>Total Cost</i>				<i>4,958,000.00</i>

Income is the result of business, which is the gross result with production that is assessed with money, then reduced by production and marketing costs so that the net income of the farming business is obtained (Mubyarto, 2003). Meanwhile, according to Hermanto (1995: 203) income analysis is very important in relation to the goals to be achieved by each business, as well as for those with an interest in business with various considerations and motivations. According to Soekartawi (2006:58), the calculation of operating income can be formulated:  $\pi = TR - TC$ .

Information:

$\pi =$  Revenue

TR = Total Revenue

TC = Total Cost

From the results of the sale of seasonings that have been obtained, it is known that once produced using 100 kg of onions plus other complementary ingredients, the group succeeded in producing 177 packaged cooking seasonings. Furthermore, the spices are packaged in a size of 50 grams per pack, so that when it is packaged into 3540 packs with a selling price of Rp. 2000, 00/ pack If added up, the result is Rp. 7,080,000.00

Income analysis musing the formula:  $\pi = TR - TC$ . This income is every 100 kg. Meanwhile, the waste onions that are disposed of on average reach 10-tons or equal to ten. 000 kg Based on the information of the rijek onion group (low quality) is equivalent to throwing away half of it even more, so from 10,000 kg of onions that can be saved 5,000 kg (Gross, it can still shrink) then the lowest value is taken, namely 4000 kg. Each 100 kg produces RP 2,122,000.00. From 4000 onions will yield Rp. 8,488,000.00 per harvest period. It will not be obtained if the group does not carry out sewage treatment.

#### IV. CONCLUSION

The empowerment program carried out by PT PT Paiton Energy's CSR to the Sumber Rejeki farmer group applies the circular economy concept, namely utilizing waste produced by a production process, namely onion production. Onion waste is processed into instant cooking seasonings that are economically beneficial, the results that have been achieved in community empowerment activities show that the Sumber Rejeki farmer group and PT PT Paiton Energy are skilled in utilizing low-quality onion waste into ready-to-eat cooking seasonings and then making it a typical village processed product. Onion fields can have a higher selling value and can increase the income of farmer groups. The results of the income analysis from processed onion waste as an instant cooking spice resulted in an economic value of Rp. 8,488,000.00 per harvest period. This effort to address low-quality Onions provides benefits in increasing the income of onion farming groups.

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