

Organic Waste Processing as Organic Fertilizer and Social Investment Impact of Community Development Program on Prabumulih Waste Bank

Desi Aryani^{1*}, Iwan Arissethyadi², Yanet Rustam³

¹Faculty of Agriculture, Universitas Sriwijaya

^{2,3}PT PLN (Persero) UID S2JB

*E-mail : desiaryani@fp.unsri.ac.id

ABSTRACT

The Mobile Waste Bank Program is one of the PT PLN (Persero) UID S2JB TJSL Program's as an effort to empower and develop community potential, so that there is an increased income through productive activities, along utilizing existing resources to make economically valuable and beneficial to the community. The objectives of this article are to: describes the processing of organic waste into compost and ecoenzymes; and analyze the impact of social investment resulting from the Prabumulih City Mobile Waste Bank program funded by the PT PLN (Persero) UID S2JB TJSL Program. The research used was qualitative and quantitative research method. The sampling method in this study was a purposive sampling technique which was carried out on 15 resource persons. All the stages that must be passed in this research refer to the six phases of the SROI analysis study method in the guidelines issued by the Social Value UK organization, namely: establishing scope and identifying key stakeholders; mapping outcomes; evidencing outcomes and giving them a value; establishing impact; calculating the SROI; reporting, using and embedding. The results of organic waste processing at BSP are compost and ecoenzymes as an organic fertilizer. Ecoenzyme is also used as ingredients for making environmentally friendly cleaning products such as dishwashing liquid, hand washing, and bodywash. Based on the results of the SROI analysis of the Mobile Waste Bank Program in the Prabu Ijo Community Group in Prabumulih City, it shows that the program is worthy to implement. The results of SROI analysis provide value of 1.12. The investment input value is IDR 506,000,000, for one year calculation has produced a social benefit achievement value that is equivalent of IDR 568,538,142 financial value. It is necessary to increase the portion of impact that is greater related to economic activities and business development impact.

Keywords: *community, outcomes, SROI, stakeholders, value*

Disubmit : 17 November 2023, **Diterima:** 3 April 2024, **Disetujui :** 28 May 2024

INTRODUCTION

A company's responsibility towards the public interest can be realized through the Corporate Social Responsibility (CSR) program or now also known as *Tanggung Jawab Sosial dan Lingkungan* (TJSL). TJSL is a form of commitment to the company's moral awareness in transparent and ethical behavior by making social strategies and policies in accordance with the values and norms that apply in society. Apart from that, the TJSL program is a form of investment for companies for their business growth and sustainability. Companies that carry out business activities in the field and/or related to natural resources are obliged to carry out social and environmental responsibilities (Wardie & Taufik, 2017; Veronica, 2020).



Lisensi

Ciptaan disebarluaskan di bawah Lisensi Creative Commons Atribusi-BerbagiSerupa 4.0 Internasional.

PT PLN (Persero) is one of the State-Owned Enterprises operating in the energy sector, in carrying out its duties it is determined to harmonize the development of the three aspects of electricity supply, namely economic, social, and environmental. PT PLN (Persero) developed the TJSL Program as a concrete manifestation of social responsibility to society, so that the relationship between the company and the community is not only a relationship as a customer, but PT PLN (Persero) also contributes socially to society. Through the TJSL program, PT PLN (Persero) plays a role and helps the government to improve people's living standards. The presence of the PT PLN (Persero) TJSL Program contributing to helping the economic life of the community, can also provide a positive image for the company (Herlina *et al.*, 2019; Matoati *et al.*, 2023). The implementation of TJSL program is the responsibility of each work area unit, as well as PT PLN (Persero) UID S2JB.

In 2023, one of PT PLN (Persero) UID S2JB TJSL Programs is the Mobile Waste Bank Program in Prabumulih. The location of the activity is in Wonosari Village, North Prabumulih District, Prabumulih City at the Bank Sampah Prabumulih, Prabu Ijo Community. Prabu Ijo Community (PIC) is a community organization that operates in the field of environment-based community empowerment in Prabumulih City. In 2016, PIC was entrusted with managing the Bank Sampah Prabumulih (BSP), which is the main waste bank for the city of Prabumulih. It is estimated that the volume of household waste in Prabumulih City transported to the Sungai Medang Final Disposal Site (TPA) reaches 15-20 tonnes per week or an average of almost 3 tonnes per day (Fitria & Fatiah, 2021). The research results of Putri *et al.* (2017), found that the average amount of waste generated per household in two research locations in Prabumulih City, namely in Sindur Village, was 1.8 kg/day or 0.5 kg/person/day. Meanwhile, the average amount of waste generated per household in Pangkul Village is 2.58 kg/day or 0.6 kg/person/day. Based on the composition, the percentage of organic waste is very high at more than 70%. Organic waste comes from food waste and yard/garden waste. The waste problem has become a national problem and an important issue in urban environmental problems. The accumulation of waste will not decrease or run out, in fact it will continue to increase along with the growth of the human population and the increasing level and complexity of human activities. Most of the piles of rubbish throughout Indonesia consist of food waste from households. If the waste is managed and processed well, it will be beneficial for the surrounding environment, for example as organic fertilizer. On the other hand, if organic waste is not managed properly it can cause environmental damage, because it can pollute nature and produce methane gas which has the potential to cause global warming (Tea *et al.*, 2022). Waste banks are one of the strategies for implementing 3R (reduce, reuse and recycle) in managing waste at its source in community level. In principle, implementing a waste bank is a form of social engineering to encourage people to sort waste (Saputro *et al.*, 2015).

The Mobile Waste Bank Program is a program that provides waste sorting and canister services on a regular basis around and on standby in strategic places in Prabumulih City and its surroundings. This program is one of the PT PLN (Persero) UID S2JB TJSL Programs in an effort to empower and develop community potential so that there is an increased income through productive activities, along utilizing existing resources to make economically valuable and beneficial to the community. Productive economic activities exist at the research location include recycling waste into economically valuable products, training in making crafts from plastic waste, and becoming a waste savings customer so that people can increase their income (Romadoni *et al.*, 2018; Fitria & Fatiah, 2021). Community empowerment program within the company as part of corporate social responsibility with the scope of activities Community Services (assistance programs related to community services or public interests) and Community Empowering (programs that provide wider access to the community to support their independence) (Feronika *et al.*, 2020).

Community development is a form of TJSL program which aims to increase community achieve better socio-economic and cultural conditions than before. The main goal of community development is to ensure that people have the capacity or ability to help themselves (Hadiyanto *et al.*, 2021). Therefore, community

development performance generally focuses on the empowerment process. The TJSL program is implemented through community empowerment to achieve optimal results by increasing community capacity and welfare to achieve sustainable independence (Rahmadani *et al.*, 2018; Nabilla & Hamid, 2021).

A program carried out in the community needs to measure its impact. In evaluating social impacts, it is recommended to use the Social Return on Investment (SROI) method. The SROI method can help measure business performance as well as the social performance of an ongoing program. SROI is considered appropriate for understanding impact investing (investment activities that aim to create a social impact), such as activities funded from the company's TJSL funds which are expected to create a social impact on the community, especially the community around the area where the company is located (Purwohedi, 2016; Silalahi *et al.*, 2018). A number of studies related to waste banks and the impact of TJSL using SROI method have been carried out, but the research has never been carried out in BSP which received TJSL funds from PT PLN (Persero) UID S2JB. Based on that, the objectives of this article are to: describes the processing of organic waste into compost and ecoenzymes; and analyze the impact of social investment resulting from the Prabumulih City Mobile Waste Bank program funded by the PT PLN (Persero) UID S2JB TJSL Program's. The analysis results can be used as a performance assessment in follow-up funding for subsequent community development program.

RESEARCH METHODS

The research was conducted at the Bank Sampah Prabumulih in Wonosari Village, North Prabumulih District, Prabumulih City. The research used was qualitative and quantitative research method (mixed methods). According to Creswell (2011), a mixed methods is a research approach that combines quantitative and qualitative research. This method was used because the data collected was descriptive, then the data was quantified in SROI analysis. Data collection was carried out in August 2023. To answer the first objective, it is carried out descriptively by explained the processing of organic waste into compost and ecoenzymes as organic fertilizer. Ecoenzyme is also used as ingredients for making environmentally friendly cleaning products.

To answer the second objective, analyze the impact of social investment resulting from the Prabumulih City Mobile Waste Bank program used SROI analysis. It was carried out on the Mobile Waste Bank Program in the Prabu Ijo Community Group, as a place to implement one of the PT PLN (Persero) UID S2JB TJSL Programs in 2023. The sampling method in this study was a purposive sampling technique which was carried out on 15 resource persons. It consisting of 6 administrators, 3 members (employees), and 6 people from the general public who are not group members.

All the stages that must be passed in SROI analysis refer to the six phases of the SROI analysis study method in the guidelines issued by the Social Value UK organization. It is necessary, so that research is more focused, systematic and makes it easier to analyze problems. The six stages consist of: (Banke-Thomas *et al.*, 2015)

1. Establishing scope and identifying key stakeholders
2. Mapping outcomes
 - a. Start on the Impact Map
 - b. Input and Providing Input Values
 - c. Clarifying Output
 - d. Describe Outcomes
3. Evidencing outcomes and giving them a value
 - a. Indicator
 - b. Financial Proxy
 - c. Time period

4. Establishing impact
 - a. Deadweight
 - b. Attribution
 - c. Displacement
 - d. Drop-off

5. Calculating the SRoI

$$\text{SRoI Ratio} = \frac{\text{Present Value of Benefits}}{\text{Value of Input}}$$

6. Reporting, using and embedding

RESULT AND DISCUSSION

Activity Overview of Bank Sampah Prabumulih (BSP). Bank Sampah Prabumulih (BSP) is the main waste bank of Prabumulih city which is entrusted to Prabu Ijo Community (PIC) as its manager. It is based on the Prabumulih Mayor's Decree Number:289/KPTS/BLH/2016 Regarding the Establishment of a Main Waste Bank in Prabumulih City. Currently BSP serves 35 waste bank units and 12 Sector waste banks (office and school waste banks) with a total of 6,963 customers spread across six sub-districts in Prabumulih City. Active customers saving waste at BSP are only around 60% of total customers. BSP is under the management of Dinas Lingkungan Hidup (DLH) Kota Prabumulih. All facilities and infrastructure needed for BSP operational activities are facilitated by DLH, such as the construction of BSP offices and warehouses as well as waste transportation vehicles.

BSP actively carries out educational activities to sort waste from its source. Educational activities are carried out continuously for the community with various activities such as education for students and the community, receiving visits from various schools and community organizations in the city and from outside the city. Apart from receiving various visits, BSP also carries out community tours to educate the public about sorting waste, how to save waste, how to become part of a waste bank, such as opening a waste bank unit or becoming a sector waste bank.

This educational activity was able to move people to start good habits in the form of sorting waste from the source to be deposited in waste banks as a form of responsibility and goodness for themselves and the environment. However, due to the distance to the BSP service office and existing BSP units, this caused difficulties for the community to save household waste.

At the beginning of 2023, in an effort to improve services to the community, PIC through BSP invited PT PLN (Persero) to work together in the Prabumulih Mobile Waste Bank Development Program. This program aims to provide mobile waste sorting and trash can services, especially for people who have access far from waste processing units and BSP service offices. PT PLN (Persero) provides funding assistance through the Social and Environmental Responsibility (TJSL) program for the Prabumulih Mobile Waste Bank Program. This financial assistance is intended as an effort to develop the Mobile Waste Bank so that the reach of BSP activities becomes wider and customers increase.

Financial assistance from TJSL PLN is used for main activities in the form of a program that provides regular rubbish sorting and canister services around and on standby in strategic places in Prabumulih City and its surroundings. Apart from that, there are also several activities developed in the Mobile Waste Bank Program, namely:

1. Providing Waste Sorting Tourism Edu packages and paid training for groups and individuals.
2. Create a Mini Laboratory which is used as a place to make coenzymes and their derivative products. Some of the products produced from this Mini Laboratory include dish washing and hand washing soap.

3. Increase the number of Prabumulih Waste Bank customers. The Mobile Waste Bank program is targeted to add a minimum of 1,000 customers in 1 year. It is hoped that the volume of waste entering the warehouse will increase so that income will also increase by 50% per year.

Mobile Waste Bank activities involve administrators and workers from the community in the area around the BSP location as workers in the administration (teller) and warehouse sections. BSP also recruits casual daily workers whose job is to sort plastic waste. Members of BSP come from residents in Prabumulih City and even from Muara Enim Regency at the border location between Prabumulih and Muara Enim. The members feels the activity is very useful because by becoming BSP customers they become accustomed to sorting waste and can earn additional income from useless waste into valuable waste.

Processing of Organic Waste Into Compost and Ecoenzymes in BSP. There are various sources of waste, including: from households, markets, shops, offices, public buildings, industry and roads. Further increase in human activity causes more waste. So far, the waste management system in urban areas has been carried out by relying on a waste collection fleet that transports waste from temporary to final disposal sites. This system requires a number of transport trucks, a waste storage area located far from domestic settlements, and an incinerator for burning waste. Waste disposal activities are often carried out. Organic waste has several difficulties in collection and disposal, so organic waste processing is very necessary (Marniza & Febriza, 2020). Organic waste can be processed into valuable products, including compost and ecoenzymes. Both products can be useful as organic fertilizer which contains macro nutrients which are useful for increasing soil and plant fertility. Ecoenzyme is also used as a mixture to make environmentally friendly cleaning products.

BSP carries out waste sorting activities from the source which is then collected in one place and then sold to third parties or reprocessed. Waste processing activities carried out at BSP include processing organic waste into compost and ecoenzymes. In the beginning, compost was made from customers' household waste which was deposited with BSP, but local people complained because the process gave off a bad smell. This is because household waste usually smells bad, especially if the customer handles it incorrectly. Therefore, now compost is only made from leftover organic waste from parks (Wonosari Park which is integrated with the current waste bank yard). The organic waste consists of forage and brown matter such as dry leaf residue and fresh leaves such as grass, then a starter such as Effective Microorganism (EM) 4 or ecoenzyme is added. The process of making compost takes around one to three months depending on the stirring, the more often you stir, the faster and better the results. According to Marniza 2020, composting is a natural microbiological decomposition process of organic waste materials. One of the technologies used to speed up the reaction is to use EM-4. The mature compost is then filtered using a sand filter and packaged ready for sale. Flow chart of processing organic waste into compost can be seen in Figure 1.

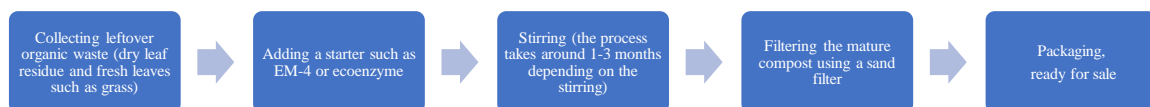


Figure 1. Flow chart of processing organic waste into compost

The processing of organic waste carried out by BSP produces compost and also produces ecoenzyme which is processed from fresh and clean fruit peel waste. Ecoenzyme is made from fermented fruit peel, which can be any fruit except those that contain oil and sap such as avocado, cempedak, durian and jackfruit. Ecoenzyme can also be made from fresh vegetable waste. BSP uses orange and pineapple peel waste as raw

material for making ecoenzymes. BSP does not use vegetable waste because the aroma is less fresh than made from fruit peels. This waste is obtained from orange ice sellers and pineapple sellers. Usually in Prabumulih, many people sell peeled pineapples, so the peel can be used as an ecoenzyme. In Prabumulih, orange and pineapple peel waste are abundant and easy to obtain and is available every day. This is one solution for fruit peel waste which should be thrown away but can be used as an ecoenzyme.

In line with (Tea *et al.*, 2022), ecoenzyme production at BSP is carried out in a ratio of 1:3:10, namely 1 part sugar (brown sugar/granulated sugar/molasses/honey), 3 parts fruit peel, and 10 parts water (well/rain/river water). The three ingredients are mixed and fermented for 3 months. Once the ecoenzyme is finished, it is filtered and then packaged in bottles ready for sale. The remaining solids from making ecoenzyme are used as fertilizer by mixing them in compost processing.

The ecoenzyme produced by BSP is also used as an ingredient in making environmentally friendly cleaning products such as dishwashing liquid, hand washing, and bodywash. This is based on the fact that the need for body and household cleaning tools is currently increasing rapidly. The product provider industry is increasingly diverse. However, most of the body and household cleaning products on the market use ingredients that are good for cleaning but are not environmentally friendly. This includes the use of SLS/SLESS as the main surfactant, which is very difficult for nature to break down, so that if these substances flow into the waters and accumulate in large quantities, the waters will become polluted and dangerous for the ecosystem within. There are some people who have sensitive skin, especially children and adults with sensitive skin who usually cannot tolerate using products that contain non-organic surfactants. Therefore, BSP is trying to make an environmentally friendly cleaning fluid that is friendly for sensitive skin by utilizing ecoenzymes produced from processing organic waste. The ingredients used in making environmentally friendly cleaning products include MES (a natural surfactant made from palm PCO), salt/NaCl, distilled water and ecoenzyme as a natural cleaning and anti-bacterial agent, as well as a few additional substances such as environmentally friendly foam, perfume and color. This additional substance is optional and can be used or not depending on taste.

In 2024, the BSP Mini Laboratory will also develop body cleansing products called real soap. The market share is people who have sensitive skin or people who really need body cleansing products that are skin friendly, natural, and have more benefits while also cleaning. The product developed is bar soap made from natural ingredients, a mixture of fatty acids and alkalis such as olive oil, castor oil, coconut oil and palm oil, and uses ecoenzyme as a natural anti-bacterial liquid which is one of the superior products of the BSP Mini Laboratory. To provide different variants and sensations for consumers, several variants of bar soap were made, including: Charcoal Enzyme (activated charcoal and ecoenzyme); Coffee Latte (coffee and ecoenzyme); and Turmeric Lemon Grass Enzyme. In the future, BSP Mini Laboratory will develop several other variants such as natural shampoo, natural deodorant and so on according to market needs. Bar soap products have been sent to various areas such as Tanjung Enim, Palembang, Lampung, and Bengkulu. The current obstacle is expanding the marketing network. There are plans to enter the online market but it is still delayed due to production constraints.

Social Return on Investment of Prabumulih Mobile Waste Bank Program:

1. Impact Assessment Scope

SROI measures change in a way that is relevant to the organization contributing to a program about how change is created by measuring social, environmental and economic outcomes that use monetary values to represent. The purpose of this measurement is to find out how effectively a program is implemented to reduce inequality, environmental degradation, and improve social welfare by using changes and costs as a means of measuring the value of the SROI ratio (Septasawitri *et al.*, 2023). The SROI assessment for the PT PLN (Persero) UID S2JB TJSL Program in the Prabumulih City Mobile Waste Bank Program in 2023 is an evaluation analysis. Evaluation analysis is an analysis of programs that have been carried out or are currently

running (Purwohedi, 2016), in this case the assessment is carried out for the period 2023 which is calculated in 12 months of utilization.

2. Identifying key stakeholders and mapping outcomes

Stakeholders are people (or groups of people) or organizations who experience changes, both positive and negative, as a result of the program/activity being analyzed. In this analysis, only stakeholders who are directly impacted by program implementation are identified. Key stakeholders those involved in Prabumulih Mobile Waste Bank along with their roles and outcomes can be seen in the Table 1.

Table 1. Stakeholders, Roles, and Outcomes on Prabumulih Mobile Waste Bank Program

No	Stakeholders	Roles in Program	Outcomes
1	Administrators and workers of BSP, Prabu Ijo Community	<ul style="list-style-type: none"> - As the person in charge/executor of TJSL activities and operational of the Mobile Waste Bank Program - As workers of BSP - As a teaching staff in training that teaches skills in sorting waste, making craft products, making ecoenzyme products and their derivatives 	<ul style="list-style-type: none"> - Increasing economic activity and group income - Get physical capital to developing business - Get income as workers at BSP
2	Prabumulih Citizen	<ul style="list-style-type: none"> - As members/customers of BSP 	<ul style="list-style-type: none"> - Easy access for throw garbage - Increasing members' knowledge and skills in waste sorting activities - Get income from saving waste at BSP
3	Prabumulih City Government, especially Dinas Lingkungan Hidup and Dinas Perumahan dan Kawasan Permukiman	<ul style="list-style-type: none"> - Supporting and facilitating the implementation of programs carried out by BSP - Helps motivate members to be active in activities 	<ul style="list-style-type: none"> - Obtain a positive image from other regions, city and provincial governments - Waste reduction is a task of Dinas Lingkungan Hidup thereby improving environmental quality - Reduced waste handling which is mandatory of Dinas Perumahan dan Kawasan Permukiman
4	Management of PT PLN (Persero) UID S2JB	<ul style="list-style-type: none"> - As a funder for program implementation of TJSL PT PLN (Persero) UID S2JB at BSP, Prabu Ijo Community Prabumulih City - Facilitating and monitoring administrators in program implementation 	<ul style="list-style-type: none"> - Increasing public trust in the company's reputation - Distributed corporate social responsibility to the community through useful programs

Based on Table 1, there are fours stakeholders identified, namely: 1. Administrators and workers of BSP, Prabu Ijo Community; 2. Prabumulih Citizen; 3. Prabumulih City Government, especially Dinas Lingkungan Hidup and Dinas Perumahan dan Kawasan Permukiman; and 4. Management of PT PLN (Persero) UID S2JB. Each of stakeholders also identified their role in the program and predicted their outcomes. Based on Table 1, calculated of the outcomes and financial assessment (monetization) is carried out of each outcome parameter. The results are listed in Table 2.

Table 2. Outcomes Calculation Approach and Monetization

No	Outcomes	Calculation Approach	Monetization Approach
1	Administrators and workers of BSP, Prabu Ijo Community		
1.1	Increasing economic activity and group income	Calculating income from selling customer waste	Estimated income from waste sales in a year
1.2	Get physical capital to developing business	Calculating the increase in income from developing Mobile Waste Bank Program	Estimated income from developing Mobile Waste Bank Program

No	Outcomes	Calculation Approach	Monetization Approach
1.3	Get income as workers at BSP	Calculating the number of workers working at BSP, 7 permanent workers and 3 casual daily workers	Calculating the costs incurred by BSP per month to pay the salaries of permanent workers and pay the wages of casual daily workers
2 Prabumulih Citizen			
2.1	Easy access for throw garbage	Calculating the amount of costs to pay the garbage collector's fees in a year	Multiply the number of active customers by the cost of paying the garbage collector's fees in a year
2.2	Increasing members' knowledge and skills in waste sorting activities	Calculating members/customers who actively saves waste at BSP, 60% of 6.963 total customers, so there are 4,177 active customers.	Multiply the number of members/customers who actively save waste at BSP who experience increased skills at the cost of waste sorting training per person
2.3	Get income from saving waste at BSP	Calculating the total income of members/customers from saving waste at BSP	Calculate the costs incurred by BSP per month to pay for customers waste saving
3 Prabumulih City Government, especially Dinas Lingkungan Hidup and Dinas Perumahan dan Kawasan Permukiman			
3.1	Obtain a positive image from other regions, city and provincial governments	Calculating the costs of creating programs that can have an impact on improving a positive image for the region	Multiplying the number of programs by their execution
3.2	Waste reduction is a task of Dinas Lingkungan Hidup thereby improving environmental quality	Calculating the costs of improving environmental quality	Calculating the costs of improving environmental quality which are monetized from the costs of disposing of waste to the landfill
3.3	Reduced waste handling which is mandatory of Dinas Perumahan dan Kawasan Permukiman	Calculating the costs reduction incurred for waste handling	Calculating the costs reduction incurred by the Prabumulih City APBD for waste handling
4 Management of PT PLN (Persero) UID S2JB			
4.1	Increasing public trust in the company's reputation	Calculating the increase in community engagement with the company and the company's positive image as well as community support for the company	To increase community engagement with the company and the company's positive image as well as community support, companies can use other methods, namely by gathering the community and holding educational training and community empowerment activities. Monetization is carried out by calculating the estimated costs of conducting training for administrators and group members in waste management.

3. Outcomes Calculation Results (Evidence)

At this stage, an assessment of the resulting outcomes is carried out, namely providing a monetary value for each outcome that occurs. This assessment is carried out using a financial proxy or financial forecasting. This financial forecasting is one of the advantages of SRoI that other analytical tools do not have. Determination of financial forecasting is carried out by referring to the approach method according to Purwohedi (2016), which can be used to determine the nominal unit of an outcome. All outcome events are calculated and estimated to obtain the outcome magnitude for each outcome parameter.

4. Establishing Impact

At this stage, an impact evaluation is carried out in relation to the SRoI principle, namely do not overclaim. This principle provides guidance to only provide value that can truly be created by an activity. If the impact experienced is caused not only by the program being evaluated, but also by other programs, then all that needs to be calculated is the magnitude of the attribution for the program being analyzed. Basically, this stage aims to ensure that the impact value that has been determined is not too large and reflects the true value (Nicholls et al., 2012).

a. Deadweight

Deadweight is a measure of the amount of impact that would occur even if the activity did not occur. Deadweight is measured as a percentage and then the percentage of the result is subtracted from the total amount of the result. Deadweight impact in this program is 50%.

b. Attribution

Attribution is an assessment of how much of the impact is caused by contributions from other programs or other parties. Attribution is calculated as a percentage (the proportion of results attributable to the program). Attribution impact in this program is 50%.

c. Displacement

Displacement basically answers the question of whether there are other positive activities that are replaced after the program being researched. Displacement is calculated as a percentage (the proportion of outcomes attributable to the program). Displacement impact in this program is 0%.

d. Drop-off

Drop-off is to find out how an impact will still be felt in the same or lesser amount after the second year of the program being studied. The drop-off percentage shows the percentage of decrease in impact value each year. The drop-off impact in this program is 0%.

5. Calculating the SRoI

This stage is calculating all information and assumptions into financial value. By predicting changes in currency values, the resulting benefit values will be converted into one value in the form of present value (PV). Present value is the current value of a detailed amount of money or cash flow with a certain rate of return. Future cash flows are discounted according to interest rates. The higher the interest rate, the lower the present value of future cash flows.

In this calculation, the interest rate value (r) used is based on the interest rate for BNI KUR/UKM loans for October 2021 with an average of 6% which refers to the BI 7-Day Reverse Repo Rate (BI7DRR) interest rate set by Bank Indonesia in August 2021 with an average of 3.5%. After the outcome value is calculated and monetized, then calculated the SRoI ratio value is using the formula present value divided by value of input. Table 3 displays the results of calculating the outcome value of this program.

Table 3. Calculation of SRoI for Mobile Waste Bank Program in 2023

No	Description	Value
A	INPUT	
1	Waste Management Facilities and Infrastructure	392,100,000
2	Other Supporting Facilities	67,900,000
3	Publication and Promotion	46,000,000
	TOTAL INPUT	506,000,000
B	OUTCOME	
1	Administrators and workers of BSP, Prabu Ijo Community	
1.1	Increasing economic activity and group income	168,000,000
1.2	Get physical capital to developing business	124,500,000
1.3	Get income as workers at BSP	120,000,000
	Total B1	412,500,000
2	Prabumulih Citizen	

No	Description	Value
2.1	Easy access for throw garbage	1,553,100,000
2.2	Increasing members' knowledge and skills in waste sorting activities	51,770,000
2.3	Get income from saving waste at BSP	168,000,000
Total B2		1,772,870,000
3	Prabumulih City Government, especially Dinas Lingkungan Hidup and Dinas Perumahan dan Kawasan Permukiman	
3.1	Obtain a positive image from other regions, city and provincial governments	30,000,000
3.2	Waste reduction is a task of Dinas Lingkungan Hidup thereby improving environmental quality	60,000,000
3.3	Reduced waste handling which is mandatory of Dinas Perumahan dan Kawasan Permukiman	85,222,080
Total B3		175,222,080
4	Management of PT PLN (Persero) UID S2JB	
4.1	Increasing public trust in the company's reputation	50,000,000
Total B4		50,000,000
TOTAL OUTCOME		2,410,592,080
	Deadweight	50%
	Attribution	50%
	Displacement	0%
	Drop Off	0%
	Total Outcome after discount	602,648,020
	Present Value (r=6%, n=1 year)	568,538,142
SRoI RASIO		1.12

Inputs are costs incurred as capital for the PT PLN (Persero) UID S2JB TJSL Program in 2023 at the BSP, Prabu Ijo Community. Input incurred by PT PLN (Persero) UID S2JB in 2023 is IDR 506,000,000 used for the Mobile Waste Bank Program in the form of waste management facilities and infrastructure, other supporting facilities, publication and promotion.

Outcome is the stakeholders perceived impact from PT PLN (Persero) UID S2JB TJSL Program in 2023 namely the Prabumulih City Mobile Waste Bank Program. Outcomes are assessed using a calculation approach and a monetization approach, then event calculations are carried out. The outcomes assessed are: increasing economic activity and group income; get physical capital to developing business; get income as workers at BSP; easy access for throw garbage; increasing members' knowledge and skills in waste sorting activities; get income from saving waste at BSP; obtain a positive image from other regions, city and provincial governments; waste reduction is a task of Dinas Lingkungan Hidup thereby improving environmental quality; reduced waste handling which is mandatory of Dinas Perumahan dan Kawasan Permukiman; and increasing public trust in the company's reputation.

The evaluation value of SRoI ratio in the Mobile Waste Bank Program at BSP, Prabu Ijo Community in 2023 is 1.12 (SRoI > 1), which means that every IDR 1 invested will produce benefits of IDR 1.12. This shows that the program is worthy to implement, it is able to obtain a good impact value that exceeds the investment provided. The ratio value of this program will continue to increase due utilization in the next few years. The program is projected to be successful in providing highly impactful benefits to stakeholders because it has a positive SRoI ratio. The benefits in this analysis will last for the economic life of the facilities and infrastructure that have been provided. Previous research results (Marsha & Matoati, 2021), reveal that companies that produce positive SRoI succeed in creating beneficial social impacts for their stakeholders. The company's investment in the TJSL implementation program is an investment that should be maintained and continued to be developed because the program implemented produces several impacts, including: increasing the company's good reputation, helping the family economy, improving health, reducing environmental pollution and absorbing the workforce. Furthermore, according to Septiana and Trimo (2019), program assistance with a good distribution process and right on target, indirectly becomes a means for groups to facilitate strengthening the capacity of their group members in various ways, for

example the capacity for cooperation between fellow members and outside parties as well as increasing the capacity of a larger network.

CSR or TJSL Program reflects a concept that stimulates companies maintain and improve the conditions of the community and environment around the company in the context of social, environmental and economic development (Putra et al., 2018). An overview of the benefits obtained by the company from its social investment, carried out in the form of social activities for society is changing positive direction to various stakeholders. These positive changes are not only interpreted in the form of financial benefits, but also benefits in kind social value, namely the occurrence of changes in patterns thinking and patterns of action towards stakeholders. So that more social change is created both in social, economic and economic aspects environment, and finally can support the company goal achievement (Santoso et al., 2021).

6. Reporting, Using and Embedding

The results of SROI analysis show that the outcome of easy access for throw garbage is the greatest impact. Therefore, it is necessary to increase the portion of impacts that are greater in the impact categories related to economic activities and business development. Increasing the portion of impact in this category can be improved by continuing to expand business capacity and market expansion, this is done without neglecting the contribution of social and environmental aspects.

The report of this analysis can be used by the management of PT PLN (Persero) UID S2JB as evaluation material in developing the company's TJSL program in the following years, beside that the stakeholders can see the value impacts of this program. The report of this analysis can be a source of information for TJSL program beneficiaries to find out how much benefit they feel and how big the benefit.

For PT PLN (Persero) UID S2JB, the benefit of the TJSL Program for the company is increasing community engagement with the company which will have an impact on the sense of ownership in maintaining company assets in locations around the assistance. Apart from that, the TJSL Program can improve the company's positive image and community support which will indirectly support the company's core business, such as: timely electricity payments, legal use of electricity, and so on.

CONCLUSION AND SUGGESTION

The results of organic waste processing at BSP are compost and ecoenzymes as an organic fertilizer. Ecoenzyme is also used as ingredients for making environmentally friendly cleaning products such as dishwashing liquid, hand washing, and bodywash. The results of SROI analysis of the Mobile Waste Bank Program in Prabumulih City in 2023 give an SROI value of 1.12, it is worthy to implement. It means the PT PLN (Persero) UID S2JB TJSL Program has succeeded in creating a social impact that provides benefits to stakeholders because it has produced a positive SROI ratio. Implemented programs have produced ten impacts, the greatest absorption was provided by the impact easy access for throw garbage, with an absorption contribution of 64 percent. It is necessary to increase the portion of impact that is greater related to economic activities and business development impact. There are several things that can be done include: more intensive socialization so that it attracts more people's interest in becoming customers and actively saving at BSP; there is continuous innovation for the development of activities and products produced, especially for the development of products from the Mini Laboratory, namely ecoenzyme derivative products; and developing BSP into a waste sorting tourism education that can attract visitors in Prabumulih City and its surroundings.

ACKNOWLEDGMENTS

The authors would like to thank PLN (Persero) UID S2JB that funding this research in 2023.

REFERENCES

- Astuti, V. S. (2020) 'Analisis SROI (Social Return on Investment) dalam Mengukur Keberhasilan Program CSR Mikrohydro oleh PT. PJB UP Paiton di Desa Andungbiru, Kabupaten Probolinggo', *Publicio: Jurnal Ilmiah Politik, Kebijakan dan Sosial*, 2(2), pp.15–22. Available at: <https://doi.org/10.51747/publicio.v2i2.601>.
- Banke-Thomas, A.O., Madaj, B., Charles, A., van den Broek, N. (2015) 'Social Return on Investment (SROI) methodology to account for value for money of public health interventions: A systematic review', *BMC Public Health*. BioMed Central Ltd. Available at: <https://doi.org/10.1186/s12889-015-1935-7>.
- Creswell, J. W (2011). *Research design: Pendekatan Kualitatif, Kuantitatif, dan Mixed*, edisi ketiga. (Terjemahan Achmad Fawaid). Yogyakarta (ID): Pustaka Pelajar.
- Feronika, E.S., Rahma Silva, K. and Raharjo, S.T. (2020) 'Tanggung Jawab Sosial Perusahaan Bidang Lingkungan', *Prosiding Penelitian dan Pengabdian Kepada Masyarakat*, 7(1), pp.1-11. Available at: <https://jurnal.unpad.ac.id/prosiding/article/download/28557/pdf>.
- Fitria and Fatiah (2021) 'Pemberdayaan Ekonomi Masyarakat Melalui Bank Sampah (Studi Kasus Bank Sampah Kota Prabumulih)', *Adl Islamic Economic: Jurnal Kajian Ekonomi Islam*, 2(1), pp.1-14. Available at: <https://ejournal.steialfurqon.ac.id/index.php/adl/article/view/22/21>.
- Hadiyanto, M. D., Satmoko, S. & Mukson, (2021) 'Community Empowerment Strategies Around Forest Through Community Collaborative Forest Management (PHBM) System in Pringapus Sub-District, Semarang Regency', *Agrisociomics: Jurnal Sosial Ekonomi Pertanian*, 5(1), pp.68-82. Available at: <https://doi.org/10.14710/agrisociomics.v5i1.7878>.
- Herlina, E., Venus, A., & Priliantini, A. (2019) 'Pengelolaan Program Corporate Social Responsibility (CSR) "PLN Peduli" (Studi Kasus di Kantor Pusat PT PLN (Persero))', *Jurnal Komunika: Jurnal Komunikasi, Media dan Informatika*, 8(2), pp.78-87. Available at: <https://jurnal.kominfo.go.id/index.php/komunika/article/view/1995>.
- Marniza, E. and Febriza, S. (2020) 'Pembuatan Kompos Dari Sampah Organik Pasar dengan Menggunakan EM-4', *Journal of Pharmaceutical and Health Research*, 1(1), pp. 6–10. Available at: <https://ejournal.seminar-id.com/index.php/jharma/article/view/84/58>.
- Marsha, A. A. & Matoati, R. (2021) 'Penilaian Dampak Investasi Sosial Pelaksanaan CSR PT. Catur Elang Perkasa Menggunakan Metode Social Return on Investment (SROI)' *Jurnal Manajemen dan Bisnis*, 14(1), pp.87-108. Available at: <http://jurnal.untirta.ac.id/index.php/jsm/article/view/12465/8553>.
- Matoati, R., Praningrum, Puspita, P., & Rosyadi, I. (2023) 'The Analisis Social Return on Investment (SROI) UMKM Kripik Jamur Tiram Desa Talang Kering melalui Program Tanggung Jawab Sosial (TJSL) PT. PLN Sumbagsel', *Jurnal Manajemen dan Organisasi*, 14(1), pp. 89–98. Available at: <https://doi.org/10.29244/jmo.v14i1.43706>.
- Nabilla, A. and Hamid, A. (2021) 'Tanggung Jawab Sosial Perusahaan Melalui Pemberdayaan Masyarakat Desa', *Journal of Social Work and Social Services*, 2(2), pp.103–111. Available at: <https://jurnal.umj.ac.id/index.php/khidmatsosial/article/view/14121/7353>.
- Nicholl, J., Lawlor, E., Neitzer, E. & Goodspeed, T. (2012) *A Guide to Social Return on Investment*. London (UK): Cabinet Office.

- Purwohedi, U. (2016) *Social Return on Investment (SROI): Sebuah Teknik untuk Mengukur Manfaat/Dampak dari Sebuah Program atau Proyek*. Available at: <https://www.researchgate.net/publication/313919309>.
- Putra, A. A. B. N. A. S., White, R. S. & Sarna, K. (2018) 'Corporate Social Responsibility and Its Implementation in Tourism Industry: A Comparative Study between Indonesia and Australia', *Udayana Journal of Law and Culture*, 2(2), pp.165-190. Available at: <https://doi.org/10.24843/ujlc.2018.v02.i02.p03>.
- Putri, S.E., Ngudiantoro, & Setyawan, D. (2017) 'Studi Timbulan dan Komposisi Sampah di Kelurahan Sindur dan Kelurahan Pangkul, Kecamatan Cambai, Kota Prabumulih', *Demography Journal of Sriwijaya*, 1(1), pp.1-7. Available at: <http://ejournal-pps.unsri.ac.id/index.php/dejos/article/view/17>.
- Rahmadani, R., Raharjo, S.T. and Resnawaty, R. (2018) 'Fungsi Corporate Social Responsibility (CSR) dalam Pengembangan dan Pemberdayaan Masyarakat', *Share: Social Work Journal*, 8(2), pp:203-210. Available at: <https://doi.org/10.24198/share.v8i2.20081>.
- Romadoni, Tahyuddin, D., & Husin, A. (2018) 'Pembinaan Masyarakat dalam Pemanfaatan Limbah Sampah di Bank Sampah Prabumulih', *Journal of Nonformal Education and Community Empowerment*, 2(1), pp.31-39. Available at: <https://journal.unnes.ac.id/sju/jnfc/article/download/23446/13515/>.
- Santoso, M.B. Humaedi, S., Raharjo, S. T., & Mulyono, H. (2021) 'Transformasi Nilai Sosial Budaya Menjadi Keuntungan Ekonomi: Refleksi Hasil Perhitungan Social Return on Investment (SROI) Program Siba Batik Kujur', *Share: Social Work Journal*, 11(1), pp.31-40. Available at: <https://doi.org/10.24198/share.v11i1.33210>.
- Saputro, Y.E., Kismartini, Syafrudin (2015) 'Pengelolaan Sampah Berbasis Masyarakat Melalui Bank Sampah', *Indonesian Journal of Conservation*, 4(1), pp. 83-94. Available at: <https://journal.unnes.ac.id/nju/ijc/article/view/5162/4194>.
- Septasawitri, D., Prabawani, B. and Nugraha, H.S. (2023) 'Analisis Social Return on Investment (SROI) dalam Penerapan Program Ketahanan Ekonomi dan Pangan Rumah Tangga Desa Dendang', *Jurnal Administrasi Bisnis*, 12(1), pp. 43–53. Available at: <https://doi.org/10.14710/jab.v12i1.45914>.
- Septiana and Trimo, L. (2019) 'Model Pengembangan Modal Sosial Adaptif Pada Komunitas Petani Kedelai Berbasis Program Upsus Pajale di Kabupaten Lampung Timur', *Jurnal Penelitian Pertanian Terapan*, 19(3), pp.168-177. Available at: <https://doi.org/10.25181/jppt.v19i3.1308>.
- Silalahi, D.C.G., Santoso, H. and Suliantoro, Y. (2018) 'Analisis Social Return on Investment Pada Kewirausahaan Sosial: Studi Kasus di Upreneur Aiesec Undip', *Industrial Engineering Online Journal*, 7(2), pp. 1-19. Available at: <https://ejournal3.undip.ac.id/index.php/ieoj/article/view/20769>.
- Tea, M.T.D., Pramita, D.A., and Kadju, F.Y.D. (2022) 'Training of Eco Enzyme Production from Agricultural and Household Waste As Organic Fertilizer for The Community in Tublopo Village, North Timor Regency', *Media Tropika: Jurnal Pengabdian Masyarakat*, 2(1), pp. 1-8. Available at: <https://ejournal.undana.ac.id/index.php/mediatropika/article/view/6656/3761>.
- Wardie, J. & Taufik, E.N. (2017) 'Kajian Implementasi Program CSR Perusahaan Perkebunan Kelapa Sawit Kepada Masyarakat di Kabupaten Kotawaringin Barat', *Agrisociomics: Jurnal Sosial Ekonomi Pertanian*, 1(1), pp.18-25. Available at: <https://doi.org/10.14710/agrisociomics.v1i1.1637>.