

Analysis of the Independent and Sustainable Waste Recycling Center Program (PADU PADAN) from PT Pertamina EP Prabumulih Field CSR

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KEYWORDS

wast; processing; impacts

ABSTRACT

The waste problem has become a disturbing problem in Prabumulih City. In Prabumulih City, there is over capacity at the Final Disposal Site. This is because the volume of waste coming in is very large and has not been managed well. The impact is very negative from an environmental, economic and social perspective. CSR PT Pertamina EP Prabumulih Field is participating in overcoming this through Program Pusat Daur Ulang Sampah Mandiri dan Berkelanjutan (PADU PADAN) as a community development (comdev) program. This research method is in the form of a qualitative field study or field research. The data collection techniques were carried out using observation with active participation, in-depth interviews, documentation and focus group discussions. The research results show: Program Pusat Daur Ulang Sampah Mandiri dan Berkelanjutan (PADU PADAN) program is an educational activity for sorting and processing organic and anorganic waste into marketable products. This program is under the auspices of the CSR of PT Pertamina EP Prabumulih Field in South Sumatra. Program Pusat Daur Ulang Sampah Mandiri dan Berkelanjutan (PADU PADAN) consists of two main programs, namely: 1) Perempuan Berdaya Bersama Kelola Sampah (MUDA BERSAMA), 2) Rumah Inovasi Daur Ulang Sampah Residu Anorganik (RINDU RESIK). The Muda Bersama Program specifically processes organic waste, while the Rindu Resik Program is a process for handling anorganic waste. These two programs have a positive impact on society both from an economic, social and environmental perspective.

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Introduction

Waste is waste material produced from an activity both on an industrial scale, households, and institutions carried out by humans (Aulia et al., 2021). In Article 1 of Law No.18 of 2008 concerning Waste Management, it is explained that waste is the rest of human daily activities and / or natural processes in solid form and specific waste is waste that due to its nature, concentration, and/or volume requires special management (Selviana et al., 2023).

The waste problem has become a problem that is quite troubling in various regions in Indonesia, including in Prabumulih City, South Sumatra (Rismoyo, 2018). The generation of waste from domestic activities in Prabumulih City is an environmental problem of concern due to the *overcapacity* of the Prabumulih Landfill (TPA). Referring to data from the National Waste Management Information System (SIPSN) - Ministry of Environment and Forestry (KLHK) in 2023, the amount of daily waste generation in Prabumulih City reaches 99.74 tons while the amount of annual waste generation reaches 36,405.83 tons (Nasution & Tjahjani, 2019).

In Prabumulih City, the composition of waste based on waste sources is dominated by household waste which reaches 57.85 tons / day and office waste which reaches 24.94 tons / day. This means that these two sources are the largest contributors to waste in Prabumulih City throughout 2023 (Forestry, 2023).

The composition of litter is also classified by the type of litter. Referring to data from the National Waste Management Information System (SIPSN) of the Ministry of Environment and Forestry (KLHK), the most types of waste generated in Prabumulih City throughout 2023 are food waste which reaches 53% and plastic waste which reaches 25.20% of the total waste generation (Rahmawati & Syamsu, 2021). From the data below, the accumulated percentage of inorganic waste (non-biodegradable) in Prabumulih City reached 43.75%. This means that more than one-third of the types of waste produced by Prabumulih City need special attention regarding recycling and management strategies (Ernawati et al., 2012). On the other hand, the accumulation of organic waste in Prabumulih City reached 56.25%. This also needs to be reduced by encouraging organic waste management efforts, especially *Food Waste*, into products that are worth selling (Forestry, 2023).

The waste problem in Prabumulih City also affects the risk of disasters that arise, especially during the rainy season (Ramadhanti, 2020). Throughout 2023-2024, Prabumulih City has been flooded 4 times. One of them is also caused by the accumulation of garbage at several points in the watershed (Yanto, 2023). In addition to natural disasters, social disasters in the form of disease outbreaks are also a problem experienced by people in Prabumulih City. Data from BPS Prabumulih City (2023) explains that dengue fever cases in Prabumulih City reached 202 cases and diarrhea cases reached 2,184 cases (Maya, 2022).

In addition to having an impact on the environment and health, the waste problem in Prabumulih City also has an impact on the failure of the Prabumulih City government in obtaining the 'adipura' award for 2 consecutive years. This needs to be a special concern for the government to collaborate with the public and private sector in managing waste in Prabumulih City (Purwanti, 2021).

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So far, one of the efforts to follow up on this, Mayor Prabumulih through Circular No. 660/194/DLH/2019 concerning Reducing the Use of Plastic Bags, invites all business actors in Prabumulih City to participate in contributing to reducing waste generation in the Prabumulih City Landfill through creative activities upstream (YULIYANTO & RAHDRIAWAN, 2009).

PT Pertamina EP Prabumulih as one of the existing business units in Prabumulih City has been committed since 2018 to contribute to reducing the generation of plastic waste through the PESAT Program (Integrated Waste Management) (Hadiyanti, 2018). The Rapid Program takes 3 pilot areas, namely Muntang Tapus Village, Majasari Village, and Sungai Medang Village in Prabumulih City. This program integrates the processing of organic and inorganic waste (Sari et al., 2018).

Pertamina EP Prabumulih Field in 2024 will replicate waste management programs in other regions with institutional innovations and new empowerment methods. The program is titled PADU PADAN (Center for Independent and Sustainable Waste Recycling). Through this program, the big projection is to recycle organic and inorganic waste into finished products that can be remarketed in Prabumulih City.

The novelty of this research lies in its pioneering approach to waste management through the PADU PADAN program, which uniquely integrates both organic and inorganic waste recycling strategies. This innovative method represents a significant departure from traditional waste management practices by offering a holistic and sustainable solution that can be adapted and scaled to address similar challenges in various regions globally.

The primary goal of this study is to assess the effectiveness of the PADU PADAN program in enhancing waste management practices. By evaluating its implementation, the research aims to provide insights into improving environmental sustainability and resource efficiency. Furthermore, the study seeks to highlight how integrated waste recycling initiatives can contribute to economic benefits, community development, and environmental conservation. Ultimately, the findings aim to guide policymakers and stakeholders in implementing effective waste management strategies worldwide, promoting sustainable development and environmental stewardship.

Research Methods

In implementing the Independent and Sustainable Waste Recycling Center (PADU PADAN) program, the CSR of PT Pertamina EP Prabumulih Field took the following steps: 1) Institutional formation of the PADU PADAN Program, 2) Development of an educational program for sorting and processing organic and inorganic waste, 3) Strengthening organic and inorganic waste processing tools and technology, 4) Training on diversification of KWT agricultural organic waste recycling products and waste recycling products inorganic, 5) Expansion of product marketing and development of innovative tools/methods/products, 6) Monitoring and evaluation of programs.

The Research Method is in the form of qualitative field studies or field research. Field research is research where data is obtained directly from sources in the field, so that the data obtained is a primary source (Sugiyono, 2019). The data collection technique is carried out by observation with active participation, in-depth interviews, documentation and focus group discussion.

Result and Discussion

Program Description of the Independent and Sustainable Waste Recycling Center (PADU PADAN)

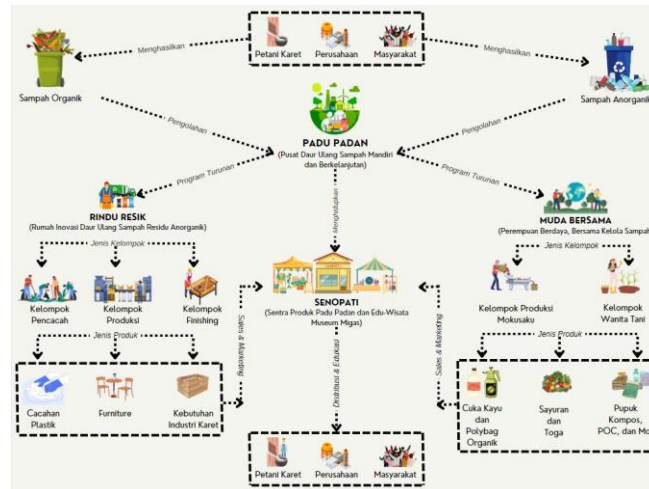


Figure 1: Independent and Sustainable Waste Recycling Center Program Framework (PADU PADAN)



Figure 2: Training: Tourism Waste Management



Figure 3: Recycled board processed chair at Pertamina Prabumulih General Manager Office House

The Independent and Sustainable Waste Recycling Center Program (PADU PADAN) is an educational activity on sorting and processing organic and inorganic waste into value-selling products. This program is under the auspices of CSR PT Pertamina EP Prabumulih Field located in South Sumatra.

The PADU PADAN program is realized in three villages including Muara Dua Village, Patih Galung Village and Sungai Medang Village. The direct beneficiaries of

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this program are waste activist groups who are members of the PADU PADAN Program. Meanwhile, the indirect recipients of this program are people in Prabumulih City, including industrial activities that produce organic and inorganic waste.

Specifically, the objectives of the PADU PADAN program are: 1) Recycling organic and inorganic waste into value-selling products based on community empowerment in Prabumulih City. 2) Integrating environmental activists who focus on waste problems in Prabumulih City. 3) Strengthening the capacity and institutions of the PADU PADAN Program through *knowledge sharing* from internal parties (Pertamina EP Prabumulih Field) and external (academics, NGOs, media and government). 4) Disseminate waste sorting and processing practices to increase collective awareness of waste handling. 5) Creating a circular economy with a sustainable collaboration model between various parties to produce innovative solutions that also have a direct impact on social and environmental conditions.

The Independent and Sustainable Waste Recycling Center (PADU PADAN) program consists of two main programs, namely: 1) Empowered Women Together Manage Waste (MUDA BERSAMA), 2) Inorganic Residue Waste Recycling Innovation House (RINDU RESIK). The Muda Bersama Program specifically processes organic waste, while the Rindu Resik Program is a process of handling inorganic waste.

Empowered Women Together Program Manage Waste (MUDA BERSAMA)

The Empowered Women Together Manage Waste Program (MUDA BERSAMA) is a community development activity in the field of environmentally friendly, healthy and sustainable agriculture in Patih Galung Village, West Prabumulih District, Prabumulih City. The main actor who runs the program and also the beneficiary is the Kemuning Peasant Women's Group (KWT) which consists of 30 women in Patih Galung Village, the majority of whom have backgrounds as housewives.

The existence of KWT Kemuning is obtained from good cooperation between the company and residents of Patih Galung Village in the form of Social Responsibility (TJSL). As a company with *core business* activities in the field of oil and gas exploration and production, PT Pertamina EP Prabumulih has a commitment to community development, namely making *the community development / comdev* program one form of TJSL to increase community independence from various aspects. As a form of its implementation, the company together with the people of Patih Galung Village actively find solutions to improve economic, social, environmental, and cultural conditions (Pertamina, 2024).

In realizing the Empowered Women Together Waste Management Program (MUDA BERSAMA) is carried out in several stages. *First*, the Beginning of the Program with social mapping of Patih Galung Village in 2021 which is updated annually and Program Planning by Preparing a Strategic Plan (Renstra-5 years), Work Plan (Renja-every year) MUDA BERSAMA, *Focus Group Discussion* with stakeholders and making program implementation. *Second*, the implementation of the program with CSR assistance of PT Pertamina Prabumulih Field which emphasizes more on community empowerment through increasing the capacity of Human Resources. *Third*, analyze the results of program implementation. *Fourth*, Evaluate the success of the MUDA BERSAMA program. *Fifth*, Communicating the MUDA BERSAMA program through *social media* platforms.

Impact Analysis of the Women Empowered Together Program to Manage Waste (MUDA BERSAMA)

The impact of the existence of the MUDA BERSAMA program can be felt by the Mokusaku Making Group and the Kemuning Farmer Women's Group and the Matoa Farmer Women's Group consisting of 30 members as direct beneficiaries and also 657 communities in Patih Galung Village as indirect beneficiaries. The program has 4 categories of impact which are also tangible forms of Village SDGs launched in Indonesia, namely the nature, *economy*, *well-being*, and *society categories*.

The development of organic, environmentally friendly and sustainable agriculture requires MUDA BERSAMA to switch from conventional farming with chemical pesticides, to organic farming that uses household waste as one of the fertilization media. Through organic tillage, peatland in the middle of residential areas has been used for an area of 675 m² and that also does not include the yards of residents' houses which are also planted with various organic vegetables. Through good tillage, the soil ph present in the group garden becomes neutral (ph 6). Fertilization carried out with household waste and kendang waste also succeeded in utilizing 204 liters of rice washing liquid waste and 270 kg of animal waste.

Some of the plants grown by KWT Kemuning are kale, spinach, chili, eggplant, onion, ginger, kencur, temulawak and many more. The group also has a typical plant, namely batik corn (*zea mays var. caratina*) as one of the prima donnas of the community that is eagerly awaited for the harvest period. From the harvest of vegetables and medicinal plants, some are consumed by group members, some are sold in raw form, some are processed into food and beverage products such as herbs, cakes, simplisia, and crackers.

The total that the group gets in one harvest reaches Rp 18 million where they can harvest crops every 2-3 months, so that the group's turnover reaches Rp 72 million / year. The success of the program also has an impact on improving the welfare and social of the community, for example, the program succeeded in providing skills to 30 group members, successfully planted 16 cultivated plants, produced 1.35 tons of compost and 1,926 liters of liquid fertilizer, gave birth to 10 KWT of replication, and had 3 groups as regular customers.

For the company itself, the impact felt by the MUDA BERSAMA program is the reduction of social conflicts in West Prabumulih District, especially in Patih Galung Village. By running TJSI, the company, community and stakeholders have the same vision and mission for the development of KWT Kemuning organic agriculture so as to minimize conflicts between the three parties. More or less the company's image has also increased along with the many positive news about KWT Kemuning.

The presentation showed that the Women Empowered Together Manage Waste (MUDA BERSAMA) Program conducted by the Kemuning Women's Farmer Group (KWT) under the CSR guidance of PT Pertamina EP Prabumulih Field had a positive impact in terms of economy, environment and social.

Inorganic Residue Waste Recycling Innovation House Program (RINDU RESIK)

The Inorganic Residue Waste Recycling Innovation House Program (RINDU RESIK) is a community development-based CSR activity (*comdev*) that focuses on processing plastic waste in Prabumulih City. The flow of activities of the RINDU RESIK Program starts from sorting waste, transportation, processing to producing products. In its implementation, the RINDU RESIK Program is a series of activities that focus on processing inorganic waste and inorganic residual waste which is processed into finished products and finished products (plastic boards and various *furniture*).

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The Inorganic Residue Waste Recycling Innovation House program is a form of collaboration between PT Pertamina EP Prabumulih Field in inorganic waste management and the Recycling Center (PDU) group in Sungai Medang Village. The initial establishment of PDU was armed with the knowledge and skills of Mr. Romdoni as the initiator of the Waste Bank that is able to manage inorganic waste. Mr. Romdoni then invited his closest people to process plastic waste. From the activities carried out, it is felt that it is able to handle the *urgent* problem of waste that is accumulating and ends up in the Landfill (TPA).

The Prabumulih Environmental Agency (DLH) through the Head of Waste Management of the Prabumulih Environmental Office hopes that the existence of PDU will be able to reduce plastic waste and environmental pollution. In line with PT Pertamina EP Prabumulih Field's CSR program in processing inorganic waste, under the direction of the Prabumulih City Environmental Office, cooperation was carried out in the Inorganic Residue Waste Recycling Innovation House (RINDU RESIK) program. The assistance provided by PT Pertamina EP Prabumulih Field is to provide training to group members in the form of procurement of tools and modifications to inorganic waste processing equipment and inorganic residual waste, market strengthening and development, as well as marketing training and product diversification. PDU gets the waste from the Waste Bank or TPS around Prabumulih as well as from 185 Waste Donors who are residents of Komerta and the community of Sungai Medang Village who are involved in fostering waste sorting.

The scheme of the Inorganic Residue Recycling Innovation House Program (RINDU RESIK) is carried out with the following steps: 1) Collection of plastic waste (inorganic) through Waste Banks, Waste Collectors, and community groups involved to deposit waste. 2) Waste is deposited with the Prabumulih City Waste Bank Group and sold to the Recycling Center (PDU). 3) Recycling Center (PDU) processes inorganic residual waste into Plastic Board that is ready for use. 4) Plastic boards will be made and formed with various products ranging from: *furniture*, rubber industry needs, and become a substitute for various types of wood products. 5) Downstream Products through product development, marketing is carried out directly by utilizing company assets and also the use of digital technology that empowers young people in Prabumulih City.

Impact Analysis of the Inorganic Residue Waste Recycling Innovation House Program (RINDU RESIK)

In the implementation of the RINDU RESIK program, of course, it has targets and also beneficiaries consisting of direct and indirect beneficiaries. The targeted communities are poor people and also unemployment in Lembak Village which increased sharply during the Covid-19 pandemic. Based on *the social mapping* that has been done, these two groups include vulnerable groups who face obstacles or limitations in enjoying a decent standard of living.

Inorganic waste is managed by the Central Recycling Group (PDU). Currently, there are 25 administrators who are able to process inorganic waste into recycled products into semi-finished products and finished products, including: plastic boards, and various types of furniture. There are 227 households of customers from waste pickers and communities around the Medang River who are able to sort waste independently. In addition, as many as 160 households in the Pertamina Complex are permanent donors of waste to be managed, there are 195,785 indirect beneficiaries consisting of the total population in Prabumulih City. Community waste, which is usually burned to cause various harmful emissions and cause air pollution, is now collected and utilized.

Prabumulih Field workers transfer *their core competency* to increase community knowledge in managing waste and generate added value.

From a social point of view, systemic changes that occur due to the RINDU RESIK program are the situation and conditions in the Medang River environment, Pertamina Prabumulih Housing Complex and Prabumulih City where at first there were piles of garbage, after the RINDU RESIK program the landfill began to decrease and the community has been educated with waste bank groups that participate in managing waste businesses in various villages in Prabumulih City. With the processing of inorganic waste and inorganic residual waste, it has changed the behavior of the community in handling waste in Prabumulih City with the formation of groups of inorganic waste depositors from households, companies, and institutions in Prabumulih City.

In terms of economy, the RINDU RESIK Program is able to increase capacity and income for 25 group members and produce a new economic chain for groups, the unemployed and also the community. An interesting thing that has the potential to be developed from the RINDU RESIK Program is that the existence of a plastic melting machine into boards which is an aid from PT Pertamina EP Prabumulih Field has produced results from the development of the previous year's program which only processed plastic into semi-finished processing and sold to plastic shredding containers, but now it has changed to processed plastic boards that have multi-function and are environmentally friendly, Plastic board products have also been used by companies, institutions and other community groups according to their individual needs. In addition, this plastic board product has also been studied in terms of durability and product feasibility by a team of UGM academics. In short, the RINDU RESIK program has a positive impact socially, economically and environmentally with measurable and sustainable achievement indicators.

Conclusion

The Independent and Sustainable Waste Recycling Center Program (PADU PADAN) is a community empowerment program that focuses on sorting and processing both organic and inorganic waste. This program is under the auspices of CSR PT Pertamina EP Prabumulih Field located in South Sumatra. The Independent and Sustainable Waste Recycling Center (PADU PADAN) program consists of two main programs, namely: Women Empowered Together Manage Waste (MUDA BERSAMA), 2) Inorganic Residue Waste Recycling Innovation House (RINDU RESIK). The Muda Bersama Program specifically processes organic waste, while the Rindu Resik Program is a process of handling inorganic waste. Both of these programs have a positive impact on the community both in terms of economy, social and environment.

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