

Kalanganyar Sentris Berseri: Corporate Social Responsibility (CSR) Program by Aviation Fuel Terminal Juanda to Unlocking the Potential of Suburban Area in Kalanganyar Village, Sidoarjo

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ABSTRACT : Kalanganyar Senti Berseri is a Corporate Social Responsibility (CSR) program by PT. Pertamina Patra Niaga - Aviation Fuel Terminal (AFT) Juanda. This initiative is implemented in Kalanganyar Village, Sedati Subdistrict, Sidoarjo Regency, East Java Province. Kalanganyar Village spans approximately 3,000 hectares, with 80% dedicated to milkfish ponds, which form the primary economic backbone of the community. These ponds have led to a new economic activity: milkfish deboning services provided by housewives. However, waste from this deboning process is often disposed of carelessly into water channels, causing odor and water pollution. Therefore, the company aims to address this issue through a community empowerment CSR program that actively involves the community. This paper examines the process of implementing the CSR program by PT Pertamina AFT Juanda, covering planning, implementation, monitoring, and evaluation, using the Participatory Rural Appraisal (PRA) approach.

KEYWORDS : *Corporate Social Responsibility (CSR), KalanganyarSentrisBerseri, PT. Pertamina Patra Niaga – Aviation Fuel Terminal (AFT) Juanda dan Participatory Rural Appraisal.*

I. INTRODUCTION

Kalanganyar is a village in Sedati District, Sidoarjo Regency, Indonesia which is directly adjacent to the pond area and the sea, and is one of the villages closest to PT Pertamina Aviation Fuel Terminal Juanda (AFT Juanda). Such geographical conditions cause 10.2% of residents in Kalanganyar to depend on the marine sector for their living, especially fish ponds (Sodec.2022). This village spans approximately 3,000 hectares, with 80% of its area consisting of ponds managed by the community. The signature product of Kalanganyar Village's ponds is the red-lipped milkfish. As a result of these pond activities, groups of housewives have emerged offering milkfish deboning services, alongside Micro, Small, and Medium Enterprises (MSMEs) processing milkfish into various food products. This phenomenon has earned Kalanganyar Village the nickname "Deboning Village," making it unique in Sidoarjo Regency. However, these activities have also generated solid and liquid waste due to inadequate management practices. Unfortunately, this waste is disposed of into household water channels by the community, resulting in unpleasant odors and causing water channels to turn deep black due to sedimentation.

The community that has most extensively developed milkfish deboning services in Kalanganyar Village is concentrated in the RT 17 RW 04 area. As a result, residential conditions in this area are significantly impacted by deboning waste. Since 2022, PT. Pertamina Patra Niaga – Aviation Fuel Terminal Juanda has implemented a community empowerment program in Kalanganyar Village through its CSR activities. These initiatives aim to address environmental issues stemming from these activities and to foster the village's existing potential.

II. METHODS

The implementation of the CSR program by PT. Pertamina Patra Niaga – Aviation Fuel Terminal Juanda, discussed in the KalanganyarSentrisBerseri Program, uses the Participatory Rural Appraisal (PRA) method. This method is used by the company in its CSR program because it views the community not just as an object but as a subject fully involved in the development process, from planning, prioritizing, budgeting, and implementation to monitoring and evaluation. Together with the community, efforts are made to reorganize the suburban village into a clean, beautiful fish center capable of independently managing its environment.

The information presented in this paper was gathered using qualitative data collection methods through a case study approach. This method was chosen because it allows for an in-depth examination of the relationship between the process and outcomes of social activities. Qualitative methods are employed to avoid assumptions derived solely from research questions, as this approach acknowledges multiple realities and facilitates the

exploration of emerging relationships during the research process (Moriarty, 2011). Therefore, this method is apt for assessing the actual changes resulting from the implementation of the CSR program.

This research focuses on the implementation of the CSR program by PT. Pertamina Patra Niaga – Aviation Fuel Terminal Juanda, specifically the KalanganyarSentrisBerseri program in Kalanganyar Village, Sedati Subdistrict, Sidoarjo Regency. It specifically examines waste management from milkfish deboning by the RT 17 RW 04 community. The paper aims to document CSR activities from planning through implementation to monitoring and evaluation, covering the period from 2022 to 2023.

III. FINDING/DISCUSSION

Planning of the KalanganyarSentrisBerseri Program.

Before implementing community empowerment activities, PT. Pertamina Patra Niaga – Aviation Fuel Terminal Juanda always conducts a social mapping study. The social mapping activity in Kalanganyar Village, located approximately five kilometers from the company, was conducted in collaboration with the Social Development Studies Center (SODEC) of Gadjah Mada University at the beginning of 2022. One of the identified issues was the lack of infrastructure and facilities, coupled with the limited capabilities of most deboning groups, resulting in improper waste disposal. This situation has led to water pollution due to the continuous discharge of solid waste and wastewater from milkfish cleaning into the drains. Each day, the milkfish deboning process in the RT 17 RW 04 area requires 1,800 liters of clean water. Consequently, 1,800 liters of water contaminated with bacteria from milkfish waste are discharged daily into the drains, causing them to turn deep black in color and inflicting unpleasant odors.

This program was initiated based on the results of a social mapping study conducted in Kalanganyar Village. The study revealed that the village is known for its extensive milkfish ponds, which have become a new economic focal point due to the emergence of milkfish deboning services. These services are provided by housewives who were previously unemployed but are now engaged in milkfish deboning. The cost for deboning services ranges from Rp 1,500 to Rp 2,500, depending on the size of the fish. This economic activity has significantly boosted the local economy. However, it has also caused a detrimental environmental impact, leading to polluted water channels emitting unpleasant odors and turning a deep black color. This issue arises from a lack of community knowledge in waste management, resulting in the indiscriminate disposal of milkfish waste into water channels. This practice has contributed to the degradation of the village into a slum area.

Figure 1: Activity of the Housewives Providing Fish Bone Removal Services



Source: Documentation of PT. Pertamina Patra Niaga AFT Juanda 2022

The company also conducted an in-depth water quality test in the deboning village in collaboration with the Ecology Analysis Team from GenerasiBiologi Indonesia, Biology Study Program, Universitas Muhammadiyah Lamongan. Laboratory test results showed that the disposal of fish washing waste into the residents' drains polluted the water, as evidenced by the failure to meet the clean water quality standards for Dissolved Oxygen (DO) and Biological Oxygen Demand (BOD) parameters. Compared to the values in uncontaminated well water, the parameters for temperature, Chemical Oxygen Demand (COD), Electrical Conductivity (EC), Total Dissolved Solids (TDS), and pH in the polluted drain water were higher. These water conditions do not comply with the clean water quality standards set by the Indonesian Government through the Minister of Health Regulation No. 32 of 2017 on Environmental Health Quality Standards and Health Requirements for Water for Hygiene and Sanitation Needs in Swimming Pools, Spas, and Public Baths. The following are the comparative test results of well water and contaminated water:

Table 1 Comparison Test Results of Well Water and Contaminated Water

Parameter	Quality Standard	Test Results	
		Well Water (WW)	Contaminated Drain Water from Milkfish Waste (CD)
Temperature	$\pm 3^{\circ}\text{C}$ air temperature	28,3°C	29,1°C
Color	-	Clear	Turbid
pH	6,5 – 9,0	6,28	6,62
TDS	1500	287 ppm	684 ppm
DO	6	7 mg/L	5,3 mg/L
BOD	12	10,33 mg/L	14,29 mg/L
COD	100	32,526 mg/L	39,368 mg/L
EC	30 – 200	1560 uS/cm	1340 uS/cm

Source: Final Report of Environmental Impact Study on the Innovation Program for Processing Fish Washing Waste on Water Quality, 2022

Subsequently, the company organized a consensus meeting or Forum Group Discussion (FGD) to delve deeper into the root causes of the issue and find collective solutions. This activity engaged various stakeholders including the Kalanganyar Village Government, residents, Village Community Empowerment Institutions, Village Consultative Body, and Neighbourhood Head. Eventually, it was decided to address the issue through innovative waste management and by enhancing community productivity. This involved managing solid milkfish waste for food processing and livestock pellets, and recycling liquid waste using a communal wastewater treatment plant (IPAL Komunal) to create new water and produce organic liquid fertilizer. The comprehensive waste management process is expected to boost community productivity and have positive environmental impacts by completely eliminating waste from the deboning process. The community hopes these efforts will transform Kalanganyar Village into a popular destination for milkfish fishing tourism in Sidoarjo Regency.

Implementation of the KalanganyarSentrisBerseri Program

The KalanganyarSentrisBerseri Program is an acronym for Kalanganyar Clean, Beautiful, and Serene Fish Center. The implementation of this program is based on social mapping studies and laboratory tests as follow-up actions to environmental issues identified in the social mapping results. Subsequently, a consensus meeting was held with stakeholders in Kalanganyar Village. Following the consensus meeting, the implementation process of the KalanganyarSentrisBerseri Program was carried out to address their issues. The following outlines the implementation of the KalanganyarSentrisBerseri Program from 2022 to 2023:

1. Utilization of Thick Liquid Waste into Liquid Organic Fertilizer (LOF)

Fish washing waste contains a lot of protein and fat, resulting in high nitrate and ammonia values. The nutrients contained in fish wastewater mainly consist of nitrogen (N) elements. The nitrogen content in fish wastewater is due to the high protein content found in fish.

Fish washing waste belongs to the category of organic waste. Organic waste is one of the pollutants commonly found in water bodies. When organic matter enters water bodies, it exerts ecological pressure that can affect concentrations of dissolved oxygen (DO), biochemical oxygen demand (BOD), chemical oxygen demand (COD), nitrate, ammonia, and phosphate (Prasti, A. dan Widyastuti. 2015).

The indiscriminate disposal of this liquid waste affects the water quality in the village and also produces unpleasant odors. Laboratory tests on well water and contaminated drain water from fish washing waste show significant differences in parameters. The quality of contaminated drain water from fish washing waste is lower compared to uncontaminated well water. The test results are presented in the following table:

Sampel	Parameter	Test Result	Quality Standard
Well Water (WW)	Temperature	28,3°C	$\pm 3^{\circ}\text{C}$ air temperature
	Color	Clear	-
	pH	6,28	6,5 - 9,0
	TDS	287 ppm	1500
	DO	7 mp/L	6
	BOD	10,33 mg/L	12
	COD	32,526 mg/L	100
	EC	1560 uS/cm	30-200

Contaminated Drain Water from Milkfish Waste (CD)	Temperature	29,1°C	±3°C air temperature
	Color	Turbid	-
	pH	6,62	6,5 - 9,0
	TDS	684 ppm	1500
	DO	5,3 mp/L	6
	BOD	14,29 mg/L	12
	COD	39,368 mg/L	100
	EC	1340 uS/cm	30-200

Source of data: Study on Fish Waste Organic Liquid Fertilizer Program by GenerasiBiologi, 2022

Through training on the utilization of thick liquid waste into organic liquid fertilizer, 1200 liters of concentrated milkfish washing wastewater has been successfully processed within one month, reducing waste discharged into the drainage by 22%. Additionally, the produced organic liquid fertilizer contains N: 0.06%, P: 0.03%, and K: 0.18% compositions, which can be utilized for irrigating all types of plants. The organic liquid fertilizer has also been integrated into greening activities in the village and Kalanganyar Village.

2. Communal Wastewater Treatment Plant (CWWTP)

The activity of removing fishbone spines in the neighborhood of RT 17, Kalanganyar Village, has caused quite serious environmental impacts. Leftover water from washing milkfish is discharged directly into the drainage without undergoing any processing. As a result, the drainage becomes clogged and emits an unpleasant odor. Approximately 1,080 liters of wastewater are produced and discharged daily. Through the Village Spine Removal Program, training is conducted on producing liquid organic fertilizer from milkfish wastewater and the Communal Wastewater Treatment Plant (CWWTP). The environmental impact aims to reduce water pollution and extend the water usage cycle.

The Communal Wastewater Treatment Plant (CWWTP) is a centralized wastewater treatment system where there is a building used to collectively process domestic liquid waste. CWWTP installations are commonly used by households to treat wastewater from toilets and bathroom/laundry water so that it can be safely discharged into the environment.

The Communal Wastewater Treatment Plant (CWWTP) in Kalanganyar Village differs from others in that it processes wastewater from washing milkfish obtained through the spine removal service in the local area, known as the Spine Removal Village. Situated in the village mosque area, the CWWTP aims to maximize the utilization of liquid waste from fish washing and ablution water from the mosque. The construction of the CWWTP actively involves the community, with funding provided by PT. Pertamina Patra Niaga AFT Juanda, while the community learns and collaborates on building the facility.

Figure 2

Communal Wastewater Treatment Plant (CWWTP) Manufacturing Process



Source: Documentation of PT. Pertamina Patra Niaga AFT Juanda 2023

In addition, the clean water produced is used for greening the village and can be reused for washing milkfish. Through this communal wastewater treatment plant, 1,000 liters of milkfish washing wastewater are no longer discharged indiscriminately into water channels. This activity aims to reduce water pollution and extend the water usage cycle.

3. Reforestation of Kampung Cabut Duri

Kampung Cabut Duri is a residential area for coastal residents, densely populated, and known for its dry, hot environment. Reforesting the village is crucial for the community to reduce heat and lower

temperatures, as well as beautify the region and attract tourists. Efforts include vertical gardening and hydroponics due to limited land availability. The community maintains plants with Liquid Organic Fertilizer (LOF) made from waste generated during milkfish processing, thus reducing their fertilizer costs. The reforestation activities in Kampung Cabut Duri have resulted in cost savings for the residents of RT 17 RW 04 in Kalanganyar Village. These efforts utilize POC (Protein of Crude) derived from solid waste of milkfish, which is used for four hydroponic installations with a capacity of 270 planting holes. These installations can produce 54 kilograms of vegetables per planting season (60 days), including 15 kilograms of water spinach, 15 kilograms of lettuce, and 24 kilograms of Bok Choy mustard greens. The harvested vegetables are collectively used by the community as part of Kampung Cabut Duri's social mission to benefit everyone and ensure food security. The following table illustrates the vegetable savings from the hydroponic installations in Kampung Cabut Duri over one year:

Table of Vegetable Savings from Hydroponic Installations in Kampung Cabut Duri

Vegetable Type	Quantity	Price/Kg	Sales Value
Water Spinach	60	Rp. 3.500	Rp. 210.000
Lettuce	90	Rp. 18.000	Rp. 1.620.000
Pokcoy Mustard Greens	144	Rp. 8.500	Rp. 1.224.000
TOTAL			Rp. 3.054.000

Source: Field Data Processing in Kampung Cabut Duri

4. Training on the Utilization of Milkfish Scale and Bone Waste

Another issue arising from the milkfish scale removal process is solid waste in the form of offal, bones, and scales. Milkfish waste contains high protein content and can be used as feed for livestock and fish. Fish feed or pellets processed from milkfish bone and scale waste offer a solution to the waste pollution generated by scale removal activities in Kalanganyar Village. The pellets produced can also serve as an alternative feed for fish farmers due to their relatively lower market price compared to conventional feeds. Production costs amount to Rp 6,050.00 per kilogram, with sales fetching Rp 16,000.00 per kilogram. In addition to fish pellets, fish meal can be processed into aquatic livestock feed, cosmetics, processed food products such as sausages and nuggets, organic fertilizers, and pet supplements. The advantage of pellets derived from milkfish waste lies in their high nutritional value, significant economic benefits, and capacity to mitigate adverse environmental impacts.

PT. Pertamina Patra Niaga AFT Juanda collaborates with academics from the Laboratory of Zoology and Animal Engineering, Department of Biology, Faculty of Science and Data Analytics, Sepuluh Nopember Institute of Technology (ITS) Surabaya. The initial activities begin with sampling and conducting research to examine the nutritional content contained in milkfish scale and bone waste when processed into flour. The results of the nutritional content testing yield the following information:

Nutritional Content	Scale Flour	Bone Flour
Ash content	25.88%	28.54%
Fat content	2.645%	20.43%
Carbohydrate content	0.605%	6.255%
Protein content	65.945%	38.39%
Moisture content	4.94%	6.38%

Source: Results from the Biology Laboratory Testing at Institut Teknologi Surabaya

Subsequently, fish feed/pellet production is carried out by creating a suitable composition or mixture to process milkfish waste into nutritious livestock feed. After conducting research and finding the appropriate composition, the community is finally trained to process the milkfish waste into animal feed.

The successful results of several mixture tests made by community groups can be seen in the table below:

Nutritional Content	Sampel 1 60:40	Sampel 2 50:50	Sampel 3 40:60
Carbohydrate (%)	4.23	4.98	5.67
Protein (%)	21.81	21.08	20.81
Fat (%)	4.09	3.32	2.90
Moisture (%)	69.16	69.99	70.20
Ash (%)	0.69	0.61	0.57

Source: Results from the Biology Laboratory Testing at Institut Teknologi Surabaya

Description :

Sample 1: 60% main protein from milkfish bone and scale flour, 40% additional protein from fine bran and other mixtures.

Sample 2: 50% main protein from milkfish bone and scale flour, 50% additional protein from fine bran and other mixtures.

Sample 3: 40% main protein from milkfish bone and scale flour, 60% additional protein from fine bran and other mixtures.

In each fish feed formulation created from processed milkfish bone and scale flour, the carbohydrate content approaches national standardization. Specifically, in fish feed sample 2, the ratio consists of 40% processed milkfish bone and scale flour as the main ingredient and 60% additional ingredients, resulting in a carbohydrate content of 5.51%. Sample 1 exhibits the highest protein content closest to the national standard (SNI) with a ratio of 60:40 and a protein content of 21.81%. Sample 1 also demonstrates the fat content closest to the SNI standard at 44.09%. Moisture content is relatively high, with sample 1 recording 69.16%, and the ash content, meeting SNI standards at 13%, falls within the range of 0.55-0.75%

5. SME Assistance

The utilization of both solid and liquid waste from milkfish in Kalanganyar Village does not stop at the training stage alone. The mentoring provided by PT. Pertamina Patra Niaga AFT Juanda also aims to enhance the group's capacity to market their products. Several SME groups have been mentored during the years 2021-2024, including:

No	Name of SMEs	Products
1	Olikan Group	Milkfish scale crackers
		Milkfish bone sticks
2	KeCe Group	Shellcraft products
3	Kucari Management Group	Kucari Catering
		Kucari POC (Protein of Crude)
		Kucari Fish Pellets
		KucariSinom
		Kucari Fish Crackers

Source: Data Processing Results from Kampung Cabut Duri

The activities carried out in this mentoring program include launching groups and products, procuring supporting equipment, building SME canopies, training in product processing or diversification, product packaging and digital marketing training, product showcases and participation in exhibitions, as well as monitoring and evaluation.

Figure 3 :(Left) Product Development Training for Olikan SMEs and (Right) Shellcraft Production Process



Source: Documentation from PT. Pertamina Patra Niaga AFT Juanda 2022

Monitoring and Evaluation

The monitoring and evaluation phase is conducted routinely every month with the aim of ensuring the smooth implementation of activities. By conducting regular monitoring, the program mentors can monitor and identify issues, as well as the needs or solutions required.

Meanwhile, for program evaluation, PT Pertamina AFT Juanda has implemented assessments such as the Community Satisfaction Index (CSI), Social Return on Investment (SROI) assessment, and meetings held at the end of the program year. This is aimed at assessing the success of program implementation and serving as a reference for improving ongoing programs.

Based on the CSI survey results in 2023, the implementation of the KalanganyarSentrisBerseri CSR program, which includes aspects of planning, implementation, mentor performance, monitoring evaluation, and benefits, achieved an index of 2.91 with a conversion value of 72.6 and a quality rating of B/Good. Meanwhile, the SROI assessment conducted in 2023 yielded a ratio of 1:3.08, meaning that every Rp. 1 invested by the company in the program implementation resulted in an impact of Rp. 3.08.

IV. CONCLUSION

The Community Empowerment Program conducted by PT. Pertamina Patra Niaga AFT Juanda in Kalanganyar Village begins with a social mapping study to identify existing potentials and issues as the foundation for program implementation. This social mapping study also provides recommendations for program execution to address the village's challenges. Subsequently, the company follows up by conducting Focus Group Discussions (FGD) and consensus meetings to determine program priorities and implementation stages, both for the long-term (3-5 years ahead) and short-term (initial 1-year budgeting) with all relevant stakeholders, including the Kalanganyar Village Government.

After reaching consensus among all relevant stakeholders in the FGD, program implementation commenced. This initiative involves active community participation in managing the Communal Wastewater Treatment Plant (CWWTP), processing fish waste, and developing SMEs as business units to boost income. Lastly, regular monitoring and evaluation of the program are conducted every month through consensus-based meetings. The community shares their opinions, the challenges they face, action plans, and their success in implementing the program. Monitoring and evaluation, besides being conducted internally, also involve external parties to measure the company's success in implementing CSR programs in Kalanganyar Village for better measurability. These activities are carried out through the Community Satisfaction Index (CSI) and Social Return on Investment (SROI) studies. The CSI study obtained an index of 2.91 with a conversion value of 72.6, equivalent to a Good rating. The SROI study yielded a value of 3.08, meaning that every Rp. 1 investment made by the company generates a benefit of Rp. 3.08 for the community..

PT. Pertamina Patra Niaga AFT Juanda, in implementing its CSR program, has a clear foundation aligned with the issues faced by the community, actively involving them from the initial planning stages to the final monitoring and evaluation phase. Consequently, it is expected that the community, once they no longer receive program support from the company, will become self-reliant and capable of enhancing their well-being. This approach aims to ensure the sustainability of community empowerment programs.

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