

Socialization and Education of the 3R Principles (Reduce, Reuse, Recycle) in Waste Reduction at the 3R TPS in Banyumudal Village, Moga District, Pemalang Regency

Agus Setio Widodo^{1*}, Unggul Sugi Harto²

^{1,2} Universitas Pancasakti Tegal

^{*}) Corresponding email: aguswidodo@upstegal.ac.id

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Abstract

Public concern and the low operational capacity of TPS 3R have resulted in a high waste production in Moga District, amounting to 110.77 cubic meters per day. This community service activity aims to provide socialization and education to the community and TPS 3R administrators about the importance of 3R-based waste processing (reduce, reuse, recycle) so that waste management can be more optimal. By using observation and counseling methods, TPS 3R Banyumudal Village was chosen as the subject of community service because it is the only TPS 3R in Moga District that is experiencing operational difficulties due to limited funding and technology. The results obtained from this activity are an increase in interest and understanding of the community and TPS 3R administrators in waste management based on reduce, reuse and recycle. The conclusion obtained from this activity is the still high need for socialization and education on waste management at TPS 3R in addition to the need for funding and environmentally friendly waste processing technology.

Keywords: *socialization, education, reduce, reuse, recycle, TPS 3R*

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1. Introduction

Moga is a sub-district in Pemalang Regency, Central Java. It is located 41 km south of the regency capital. It sits at an altitude of 500 meters above sea level. Its area is 41.40 square kilometers, or 3.71% of the total area of Pemalang Regency (Pemalangkab.bps.go.id, 2023). The climate in Moga District is cool to cold. Topographically, Moga District is mountainous and administratively divided into 10 villages.

The increasing population in Moga District means the increasing amount of waste generated. In addition, people's consumption patterns contribute to the generation of increasingly diverse types of waste (Ikhwan, 2022). Waste producers

in Moga District come from waste generated from activities: (1) Large and small industries, (2) Households, (3) Markets, Shops and Terminals, (4) Education, (5) Offices (6) Hotels and Lodging, (7) Hospitals and Community Health Centers, (8) Animal Husbandry, (9) Agriculture, (10) Plantations and (11) and so on. Waste generated from these activities can be divided into 2, namely: (a) Organic waste, namely waste originating from living things, such as leaves, kitchen waste, food scraps, fruit. This type of waste can decompose (rot/decompose) naturally, and (b) inorganic waste, namely waste in the form of paper, plastic, cans, cloth, iron, and others (Defitri, 2023). This type of waste cannot decompose naturally. The sight of unaesthetic piles of garbage has appeared in several corners of Moga District. This situation is certainly not in harmony and even disrupts Moga's status as one of the favorite tourist destinations in Pemalang Regency.

The current volume of waste generated in Moga District is the highest compared to surrounding districts. An overview of the population and waste generation in Moga District is presented in Table 1.2 below.

Table 1.2 Waste generation in Moga District

No	Sub District	Total Population			Volume of waste generation					
		Urban area	Rural area	Amount	Urban area		Rural area		Amount	
					(%)	(m ³ /day)	(%)	(m ³ /day)	(%)	(m ³ /day)
1	Moga	38.406	24.895	63.301	5,90	67,211	3,91	43,566	4,91	110,777
2	Warungpring	24.732	13.975	38.707	3,80	43,281	2,19	24,456	3,00	67,737
3	Pulosari	0	55.665	55.666	0,00	00,000	8,73	97,416	4,32	97,416

(Source: dlh.pemalangkab.go.id, 2024)

The Moga District Government has made waste management an urgent strategic issue (infomoga.com, 2023). However, the government's efforts will be meaningless without community participation in waste management. Several meetings and coordination sessions between the district government, the community, and the private sector have been held to address the waste problem.

The large amount of waste produced is inextricably linked to residents' attitudes toward waste. The poor practice of improper waste disposal, coupled with the lack of adequate provision and management of landfills, further worsens waste management in Moga District. The implications of the community's habit of indiscriminately disposing of waste, whether on roadsides/sidewalks, rivers, or in inappropriate landfills, create aesthetic problems. The impact of improper waste management includes the emergence of offensive odors, the creation of disease vectors, and the deterioration of the environmental aesthetics.

Therefore, it's time to abandon this negative waste management practice and replace it with a new paradigm of waste management based on the 3Rs (reduce, reuse, recycle) by utilizing existing 3R waste management facilities. Moga District currently has the only one several 3R waste management facilities (TPS 3R) in Banyumudal Villages, but they are still not functioning optimally. Therefore, socialization and education on the 3R principles are urgent and should be a priority program for this community service plan.

The partners in this community service activity were the Pemalang Regency Environmental Agency (DLH) and the 3R Waste Management Site (TPS 3R) in Banyumudal Village, Moga District. Some of the fundamental issues faced by the partners were lack budget for waste management at the 3R Waste Management Site. This has a serious impact on the operational of TPS 3R which is disrupted. Apart from that, community participation in waste processing is also low. The high level of waste produced, which is not commensurate with the capacity of the TPS and the availability of technology, makes the problem of the 3R TPS in Banyumudal Village increasingly acute.

2. Method

The implementation of community service in the form of socialization and education of the 3R principles (reduce, reuse, recycle) in waste management was carried out using a face-to-face lecture method accompanied by questions and answers and direct visits to the 3R TPS in Moga District.

Tabel 2.1 Methods of Implementing Community Service and its Approach

No	Problem	Step solutions	Approach Methods	Methods
1	Low of waste budget	Make the budget issue in financing scenarios.	Bottom up (participatory) by involving relevant actors and stakeholders	<i>Focus Group Discussion</i>
2	Low participation of the public and private sector	Encourage public participation	Bottom up (participatory) by involving all components of society and the private sector	<i>Focus Group Discussion</i>
3	Low use of waste processing technology	Encourage innovation in waste incinerator technology	Encourage partnerships with third parties	<i>Focus Group Discussion</i>

4	Lack of TPS and TPS 3R facilities	Discuss with the sub-district, village, and DLH	Bottom up (participatory) by involving relevant actors	<i>Visit to TPS 3R</i>
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3. Result and Discussion

Based on the analysis of the partners' situations and problems, several fundamental issues faced by the partners include the low budget for waste management at the 3R Waste Management Sites (TPS 3R), low public and private sector participation in waste management, low use of technology for waste management, and the high volume of waste generated, which is disproportionate to the availability of 3R Waste Management Sites (TPS).

In an effort to find solutions to the various issues faced by the partners, this program is detailed into the following priority programs:

1. Socialization and education on the 3R principles as stipulated in Law Number 18 of 2008 concerning waste management at the Moga District Hall, involving representatives from the sub-district government, the Environmental Agency (DLH), village governments, community leaders, school students, and private sector organizations in Moga District.
2. Presentation of material by the community service partner, the Environmental Agency (DLH), represented by the Head of the Waste Division, Dr. Agus Harto Wibowo, M.Si., on converting waste into economically valuable products, such as energy, compost, fertilizer, and industrial raw materials. He also received materials from the Banyumudal Village 3R Waste Management Site (TPS 3R) administrators to gain a real-world understanding of 3R waste management in the field.
3. Visits and assistance to 3R waste management sites in several villages in Moga District, conducted in collaboration with the District Government and the Pemalang Regency Environmental Agency (DLH).

The "Socialization and Education of the 3R Principles (reduce, reuse, and recycle) in the management of the 3R Waste Disposal Site (TPS 3R) in Banyumudal Village, Moga District, Pemalang Regency" program was well-received by the Banyumudal Village 3R Waste Disposal Site (TPS 3R) management, the Banyumudal village government, the Moga district government, the Environmental Agency, and the local community of Banyumudal Village.

Various initial preparations were made to ensure the success of the community service program. The first step was establishing communication and coordination with partners, namely the Pemalang Regency Environmental Agency through the Head of the Waste Division, Dr. Agus Harto Wibowo, M.Si., and the Banyumudal Village 3R Waste

Disposal Site (TPS 3R) management, Moga District, Pematang Regency. This communication was crucial for establishing a shared understanding regarding the scope of the outreach program, its expected benefits, and future follow-up plans.



Figure 3.1 Coordination with TPS 3R Management and Village Government

The socialization and education activities on the 3R principles in managing the 3R Waste Management Waste Management Site (TPS 3R) in Banyumudal Village were agreed to be held at the Banyumudal Village Hall on Saturday, September 6, 2025, from 8:30 a.m. to 11:30 a.m. WIB. The speakers included Dr. Agus Harto Wibowo, M.Si., Head of the Waste Management Division of the Pematang Regency Environmental Agency; Mang Udin, Chairman of the Banyumudal Village 3R Waste Management Waste Management Site (TPS 3R), and academic Agus Setio Widodo, S.IP., M.Si.

The community was quite enthusiastic about participating in the socialization on the first day. Twenty participants attended. Assisted by 10 UPS Tegal Community Service Program (KKN) students, the socialization proceeded quite lively. Furthermore, the Rp 25,000 per participant transportation allowance, adequate snacks, and comments from communicative speakers ensured a comfortable experience for the participants. Their understanding of the importance of managing waste based on 3R (reduce, reuse and recycle) is starting to be applied in their daily lives.



Figure 3.2 Group photo of TPS 3R socialization and education activities

Several questions arose from the participants, including one from Mr. Warso (a TPS 3R administrator), who questioned the Pemalang Regency government's commitment to fostering and funding the TPS 3R. Another question came from Mr. Ujang (a member of the Banyumudal Village Consultative Body), who inquired about the availability of technological assistance for the TPS 3R in Banyumudal village. In response to this question, the Head of Waste Management at the Pemalang Regency Environmental Agency stated that the Pemalang Regency government had donated a pickup truck and an incinerator for waste processing at the TPS 3R in Banyumudal Village.

Following the TPS 3R socialization and education activities, the community service activities continued with a visit and assistance to the TPS 3R location in Banyumudal village. This visit was crucial to ensure the functionality of the equipment available at the TPS 3R. Accompanied by a delegation from the Pemalang Regency Environmental Agency, the community service team observed firsthand how waste is processed at the TPS 3R. The findings were that the high volume of waste produced, up to 100 tons per week, caused the TPS 3R in Banyumudal Village to experience overload in waste processing.

A visit to the 3R Waste Management Site (TPS 3R) was conducted on August 28, 2025, accompanied by three representatives from the Pemalang Regency Environmental Agency. Of the three waste incinerators, two were damaged, leaving only one in operation. This situation significantly hampered waste processing at the 3R Waste Management Site. Furthermore, the large amount of waste piled up at the 3R Waste Management Site was

ultimately processed using traditional incineration. This, although necessary, inevitably led to environmental pollution, particularly air pollution.



Figure 3.3 Visit to TPS 3R, Banyumudal Village, Moga District

An important finding during the visit to the 3R Waste Management Site (TPs 3R) in Banyumudal village was that the processed waste produced into fertilizer turned out to have quite high economic value, and has been sold to consumers in Bandung for Rp. 800,000.00 per kilogram. On the other hand, the collection of waste fees of Rp. 5,000.00 per week per head of family is expected to help cover the operational costs of the 3R Waste Management Site (TPS 3R) in Banyumudal village. Assistance from the Banyumudal Village government amounting to Rp. 15,000,000.00 has been used to conduct a comparative study by the administrators of the 3R Waste Management Site (TPST) in Banyumudal Village to the Patikraja Waste Management Site (TPST) in Banyumas Regency.

The outcomes achieved in this community service activity are increased community understanding and skills in waste management based on the 3Rs (reduce, reuse, and recycle). This is evidenced by the response from community service participants after the community service activity.

4. Conclusion

Several issues were identified during the socialization and education activities on the 3R principles (reduce, reuse, and recycle) in the management of the 3R Waste Disposal Site (TPS 3R) in Banyumudal Village, Moga District, Pemalang Regency. First, the operational budget for the 3R TPS is insufficient, disproportionate to the volume of waste generated. Second, there is a lack of equipment needed for shampoo processing at the 3R TPS. Third, there is a shortage of personnel for waste processing at the 3R TPS. Fourth, there is a lack of public awareness about participating in waste sorting. Fifth, there is a lack of monitoring and guidance from the Pemalang Regency Environmental Agency.

The recommendations emerging from these socialization and education activities include: first, the need to increase the frequency of guidance and monitoring by the Environmental Agency regarding the 3R TPS. Second, the need to increase budget allocation from the local government to improve the quality and quantity of waste processing at the 3R TPS. Third, the need for community and private sector involvement in waste processing. Fourth, the need to integrate regional waste policies with spatial planning to minimize environmental pollution from waste processing at the 3R TPS.

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BIBLIOGRAPHY

- Bendahan, S., Camponovo, G., & Pigneur, Y. (2004). Multi-issue actor analysis: Tools and models for assessing technology environments. *Journal of Decision Systems*, 13(2), 223–253. <https://doi.org/10.3166/jds.13.223-253>
- Bupe Mwanza, A. P. (2013). Design of a waste management model using integrated solid waste management: A case of Bulawayo City Council. *International Journal of Water Resources and Environmental Engineering*, 5(2), 110–118. <https://doi.org/10.5897/IJWREE12.119>
- Chambers, R. (1994). The Origins and Practice of Rural Appraisal. *World Development*, 22(7), 953–969. <http://www.ircwash.org/sites/default/files/125-940R-16929.pdf>
- Chandra, S., Pellokila, M. R., & Ramang, R. (2015). Analisis Teknologi Pengolahan Sampah di Kupang dengan Proses Hierarki Analitik dan Metode Valuasi Kontingensi (Analysis of Waste Treatment Technology in Kupang with Analytic Hierarchy Process and Contingent Valuation Method). *Jurnal Manusia Dan Lingkungan*, 22(3), 350. <https://doi.org/10.22146/jml.18761>
- Defitri, M. (2023). *Sampah: Pengertian, Jenis, Hingga Peraturannya di Indonesia*. Waste4change.Com. <https://waste4change.com/blog/sampah-pengertian-jenis-hingga-peraturannya-di-indonesia/>
- Ditjen Cipta Karya. (2014). *Tata cara Penyelenggaraan TPS 3R*.
- DLHK Provinsi Jateng. (2018). Kebijakan dan Pelaksanaan Pengelolaan Persampahan di Jawa Tengah Tahun 2018 LHK Provinsi Jawa Tengah. *Materi Sosialisasi Pengelolaan Sampah Provinsi Jawa Tengah*.
- Fatah, A., Taruna, T., & Purnaweni, H. (2014). Konsep Pengelolaan Sampah Berbasis Teologi. *Jurnal Ilmu Lingkungan*, 11(2), 84. <https://doi.org/10.14710/jil.11.2.84-91>
- Metilova S. (2023). *Pengelolaan Sampah: Tantangan, Inovasi Digital, dan Harapan Masa Depan*. Id.Linkedin.Com. <https://id.linkedin.com/pulse/menghadapi-tantangan-pengelolaan-sampah-peran-ngo-dan-sitorus>